NOKIA

Commissioning UltraSite EDGE BTS

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Contents

1 Statutory information

1.1 CE Marking

Standard	Description
CE 0168 !	Hereby, Nokia Corporation, declares that this Nokia UltraSite EDGE Base Station is in compliance with the essential requirements and other relevant provisions of Directive: 1999/5/EC.

1.2 FCC Statement

Standard	Description
FCC Statement	Hereby, Nokia Corporation declares that this Nokia UltraSite EDGE Base Station 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. 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. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

2 Overview of commissioning UltraSite EDGE BTS

2.1 Overview of commissioning UltraSite EDGE BTS

Before you start

Before commissioning, the physical installation of the BTS (units, cabling, antennas and radios) must be complete.

Summary

Caution

Nokia recommends that only properly trained and authorised personnel perform commissioning operations on any Nokia BTS.

Steps

1. **Connect the LMP cable.**
2. **Power on the UltraSite EDGE BTS.**
3. **Set the BOIx unit 13 MHz clock.**
4. **Install BTS Manager.**
5. **Install BTS Hub Manager.**
6. **Install PSM Manager.**
7. **Commission the BTS.**

a. *Commission the UltraSite EDGE BTS.*
b. *Commission the UltraSite EDGE BTS with IBBU.*
c. *Commission the UltraSite EDGE BTS with WCDMA upgrade.*

3 Software descriptions for UltraSite EDGE BTS

3.1 Network Management System (NMS)/NetAct and BSC software

NMS 2000/NetAct software manages the entire GSM/EDGE network, including UltraSite EDGE BTS, using the BSC. This remote software minimises the need for on-site BTS management. NMS 2000/NetAct software incorporates a full range of functions—from fault, performance and configuration management to transmission, trouble and security management.

For more information, see Nokia NMS/NetAct documentation.

3.2 Nokia SiteWizard software

3.2.1 Contents

Nokia SiteWizard is a collection of software used to manage UltraSite EDGE BTS on-site. The applications run under Windows NT 4.0, Windows 95, Windows 98 or Windows 2000. For detailed system requirements, see *Release Notes* document.

Nokia SiteWizard is an application package for the commissioning and maintenance of Nokia UltraSite and MetroSite GSM base stations. The CD-ROM contains manager applications for the BTS and related transmission equipment on a BTS site.

Nokia SiteWizard includes the following applications related to UltraSite EDGE BTS:

- Nokia BTS Manager for managing UltraSite EDGE BTS
- Nokia BTS Hardware Configurator for configuring the UltraSite EDGE BTS cabinet
- Nokia RRI Manager for FXC RRI transmission unit
- Nokia E1/T1 Manager for FC E1/T1, FXC E1, and FXC E1/T1 transmission units
- Nokia Hopper Manager for Nokia MetroHopper and FlexiHopper Radio
- Nokia UltraSite BTS Hub Manager for commissioning the FXC transmission unit in the BTS hub
- Nokia SCF Editor

Note

The Nokia SiteWizard software package also contains manager applications for other Nokia BTS products. These applications are not included in the previous list.

Only BTS HWConfigurator, UltraSite BTS Hub Manager and BTS Manager are directly used in the commissioning.

Note

Only one application can be communicating with the BTS at a time. Close BTS HW Configurator before starting UltraSite BTS Hub Manager, and close Hub Manager before starting BTS Manager.

3.2.2 Installation

The installation program of Nokia SiteWizard installs the applications on the PC hard disk and creates the *Nokia Applications* submenu in the **Start | Programs** menu in Windows. You can launch the applications from this menu. For more information on the installation, see instructions on the Nokia SiteWizard CD-ROM case.

3.2.3 BTS Manager

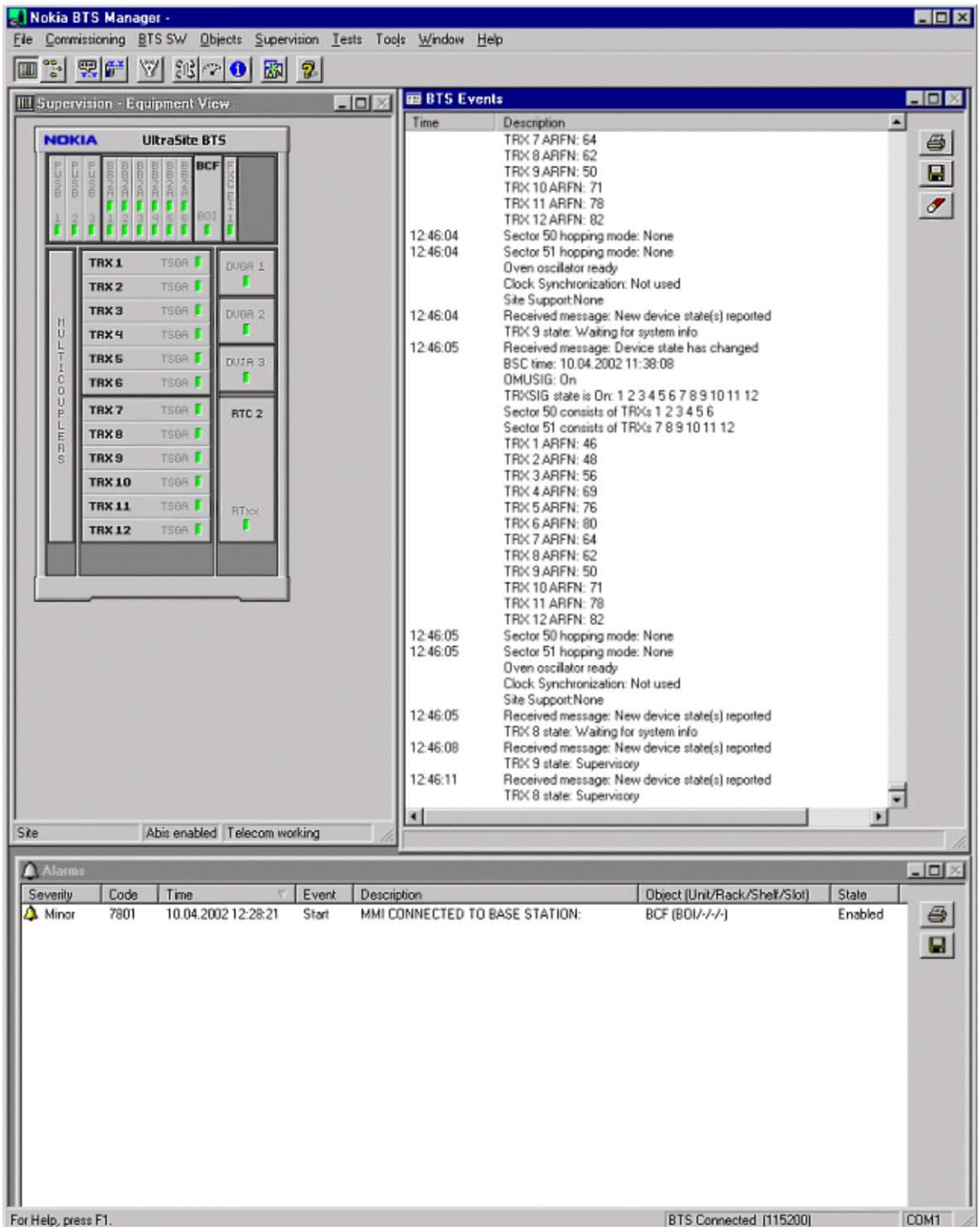

Figure 1. Nokia BTS Manager window

Nokia BTS Manager has the following main features:

- auto-detected base station hardware in a graphical *Equipment* view
- support for transmission configuration
- advanced BTS diagnostics and alarm management
- BTS testing
- Commissioning Wizard

3.3 BTS software

PU1.1 is the initial UltraSite BTS software for GSM 800, 900, 1800, and 1900. PU1E is the UltraSite BTS software that can support partial EDGE functionality.

CX3.3 is the UltraSite BTS software for EDGE. Some software features are:

- Auto-detection that automatically identifies the active BTS hardware. This feature reduces the number of required system data entries.
- Advanced BTS diagnostics system that considerably reduces the number of alarms. This system makes alarm information easily accessible and understandable.
- Storage for two applications in memory. The software loads either locally with Nokia BTS Manager or remotely from the BSC or NMS (through the BSC). The operator downloads the software as a background operation (without interrupting the BTS operation) and activates the new software at any time.

Software updates are delivered on CD-ROM and diskette.

4 Preparing to commission UltraSite EDGE BTS

4.1 Connecting LMP cable for commissioning UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

The LMP cable connects the PC running BTS Manager SW to the BOI unit in the BTS.

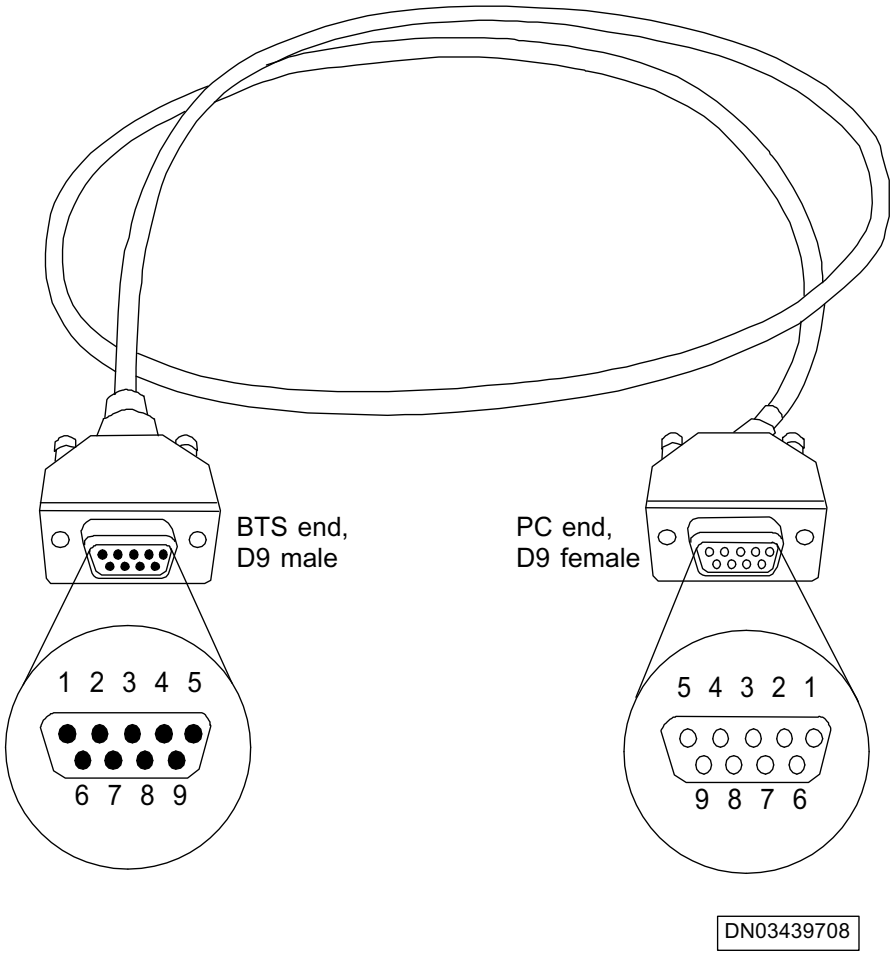

Figure 2. LMP cable

Table 1. LMP cable connector pin order

BTS end, D9 male, pin number	**PC end, D9 female, pin number**	**PC end, D25 female, pin number**
2, LMP in	3, transmitted data	2, transmitted data
3, LMP out	2, received data	3, received data
5, ground	5, ground	7, ground

Steps

1. **Remove the protective cover from the LMP port on the BOIx for GSM/EDGE connection.**

   Alternatively, remove the protective cover from the BTS master WAM unit for WCDMA connection.

2. **Connect the D9 female connector to the PC.**

3. **Connect the D9 male connector to the LMP port on the BOIx for GSM/EDGE connection.**

   Alternatively, connect the D25 female connector to the BTS master WAM unit for WCDMA connection.

4.2 Powering ON UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Ensure all internal BTS components are properly installed.

Summary

Warning

Be aware of the risk of lethal voltages and electric shock.

Steps

1. *If* Mains power has been switched OFF,

   Then

   Check the ADUx circuit breakers.

   Verify all ADUx unit circuit breakers are switched OFF.

2. *If* BTS power supplies are switched ON,

Then

Switch the power supplies OFF.

3. **Switch Mains breaker ON.**

4. **Switch ADUx unit breakers ON.**

5. **Switch BTS Power supplies ON.**

6. **Check BTS units for power.**

   Observe the LED lights of the units in the BTS and ensure power is supplied. If LED lights are not illuminated, troubleshoot the affected units as directed in *Overview of checking UltraSite EDGE BTS GSM/EDGE LEDs* or *Overview of checking UltraSite EDGE BTS WCDMA LEDs*.

4.3 Setting the Base Operation and Interfaces (BOIx) unit 13MHz clock before commissioning the UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Steps

1. **Connect the frequency counter to the 13 MHz test connector on the BOIx front panel with an appropriate test cable.**

2. **Check the current and permanent DAC value with the BTS Manager.**

3. **Adjust the trigger level on the counter to produce a frequency reading.**

   For details, see the manufacturer's handbook.

4. **Set the measuring period to one second for the first adjustment.**

5. **Adjust the current DAC value to 13 000 000.0 Hz with the BTS Manager.**

   Click the *Set as current* button.

Note

When searching for the 13 000 000.0 Hz frequency, it is useful to know that 40.8 DAC steps equals one Hz.

6. Save the current DAC value as the permanent DAC value with the BTS Manager.

When adjustments are complete, click the *Save Current Permanently* button.

7. Adjust the maximum measuring period to achieve the required sampling accuracy.

8. Re-check the displayed frequency.

9. *If* you must make more adjustments,

Then

Readjust the frequency.

a. Adjust the frequency to 13 000 000.0 Hz with the BTS Manager (see steps 4 and 5).
b. After adjusting the frequency, save the DAC value permanently.

Note

You should only need to adjust the 13 MHz clock after a new installation or when you replace the BTS master clock unit (BOIx). During normal operation, the BTS master clock uses the synchronisation signal coming from the transmission part as a reference.

5 Remote BTS Manager Setup

5.1 Remote BTS Manager Setup

Before you start

Review *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

This document explains how to configure and use the Remote BTS Manager feature for UltraSite EDGE BTS.

It provides a high-level view of the Remote BTS Manager connection. It also explains how to configure the NMS/OSS, BSC, and BTS, which are required for a connection to a remote BTS.

Note

The following BTS Manager functions are not available when using the Remote BTS Manager:

- Control Abis Interface (Enable/Disable Abis)
- BTS SW downloading
- Local object Block/Unblock
- LMB speed change
- Clock control
- Send BCCH carrier
- RTC Configure

In addition, the HW configuration function is not supported remotely.

The following diagram provides a high-level view of how the BTS Manager connects to a remote BTS. It also shows Local Connection mode.

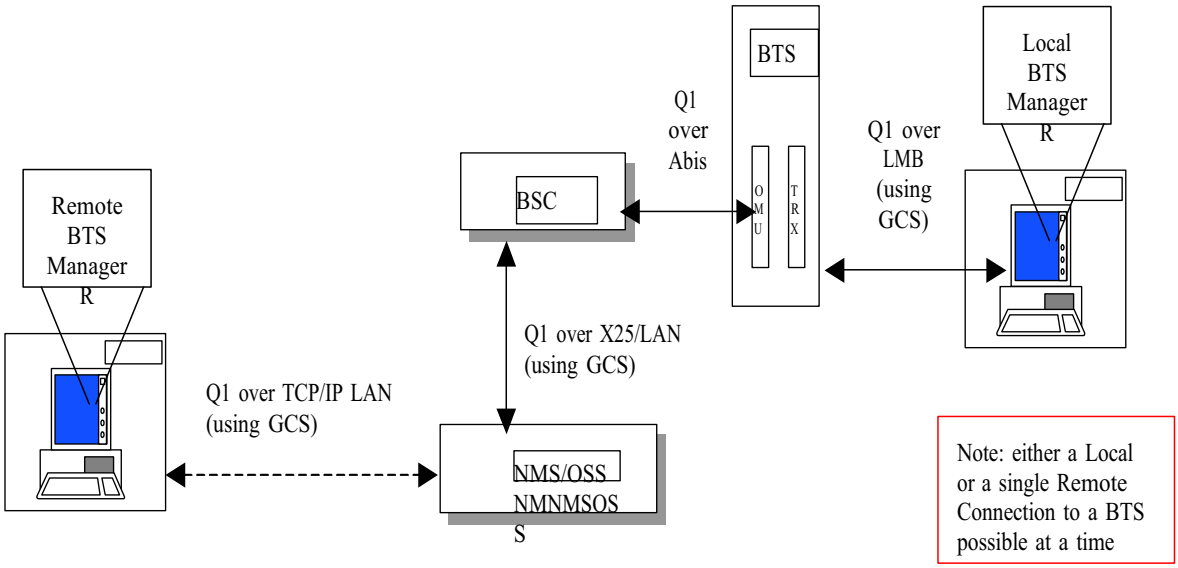

Figure 3. BTS Manager - Local and remote access

Steps

1. Set up NMS/OSS

Use NMS2000 software version T12 or later or OSS 3.1.

a. Log on to NMS/OSS.

b. Verify that the configuration file *$OMCPOLICE/osi/ouorapmx.cf* describes the NOD and RET applications.

Note

To locate these two files, check the Remote BTS Manager and Node sections of the BSC with which you are working.

c. Verify that NMS/OSS has *ornuser* set up in the user profiles:

i. From the Top Level User Interface (TLUI) menu, select *Utils*, *System mgmt*, *User profiles*, and *Users*.

Note

If the user profile does not exist, you must create it according to NMS/OSS instructions.

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2. Set up BSC

Use BSC with software version S10.5/S10.5 ED or later.

a. Log on to the BSC.
b. Verify that the BSC with which you are working has the NOD and RET applications. These applications must be in UNL-ENA state.

Note

These applications must be in UNL state to log on to remote access.

---

i. At the prompt, enter the MML command *ZQDI*. See also the following example.

```
DX 200    BSC5                    2002                           - 11 - 26   15:08:26

LOCAL OSI APPLICATION DATA

AE- NAME          APPL    NET ADDR  STATE    UNIT        FAM ID PROC ID
----------------        ------     --------       -------       ----------       -------      -------
BSC055423A       CMISE         LOCNMS   LOC   - ENA  OMU         021FH    0000H
BSC055423F       VFS    LOCNMS   UNL         - ENA   OMU
BSC055423VT      VTP    LOCNMS   UNL         - ENA   OMU
BSC055423EHA     CMISE  LOCNMS    LOC        - ENA  OMU         02B1H    0000H
BSC055423NOD     TPU    LOCNMS        UNL   - ENA  OMU         02AFH    0000H
BSC055423RET     TPU    LOCNMS   UNL         - ENA  OMU         0229H    0000H
```

Figure 4.   Example

In this example, BSC with C-Number 55423 is used. Notice the highlighted RET and NOD applications.

3. Set up BTS

UltraSite EDGE BTS must be running software version CX3.3 or later. No specific setup for the BTS is required. The BTS, which is identified by its BCF ID, must be switched on and commissioned (Abis O&M Link up and running).

To connect remotely with BTS Manager, the BTS Manager must not be connected locally to the same BTS.

4. Set up BTS Manager

Use the BTS Manager with SiteWizard 3.1 or later for the remote connection.

a. Verify that the GCS Installation Release 4.2 software is properly installed on the computer.

The GCS software is used to establish the BTS Manager connection to a BTS, both local and remote.

Note

If the GCS software is not installed, you can install it during SiteWizard 3.1 or later installation.

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b. From the Connection menu, select *Connection - Connect* to launch the Nokia GCS Connection Tool.

For more information, see Nokia GCS Connection Tool online help.

Note

You can also set up a connection separately using CLI with sobriquet.

Once established, the details are recorded in the GCS database and ready for use at a later date.

c. Set up the BTS connection.

i. Make sure you have the Database Property sheet open.

ii. Click *Connections*, and then select *Add ....*

iii. Enter a name for the connection.

iv. Select *BTS Connection* as the type of connection. The following connection definitions appear:

- Network parameters
- BSC parameters
- BTS parameters
- Optional parameters

v. Select *Network Parameters*. Click *Properties*, add the following parameters, and click *OK*:

Parameter	Enter ...
HOST NAME	Host IP address
PORT	7878

vi. Select *BSC Parameters* in the Connection Definition area. Click *Properties*, add the following parameters, and click *OK*:

Parameter	Enter ...
USER NAME	ornuser
PASSWORD	Password for the ornuser user profile in the NMS/OSS
PROTOCOL	1
BSC ID	C-Number of the BSC
BUS NUMBER	0

vii. Select *BTS Parameters* in the Connection Definition area. Click *Properties*, add the following parameters, and click *OK*:

Parameter	Enter ...
BCF ID	BCF ID of the BTS
PORT	1

Note

It is not necessary to modify the *Optional Parameters*.

viii. From the Database Property tab, click *Save*.

d. Create a node using the Nokia Connection Tool.

i. Select *Nodes* on the Database Property Sheet; then click *Add*.

ii. Enter the following information:

Parameter	Enter ...
CONNECTION NAME	Name given to the connection
NODE NAME	Name of the node
NODE CLASS	Q1 Node
NODE DEFINITION	Q1 Node

Q1 ADDRESS	4001

Note

All other parameters are *optional.*

e. Enter the following sobriquet command line argument to launch the BTS Manager using CLI:

BTSManager -sobriquet "aNodeNameYouHaveDefinedInNokiaConnectionTool"

Note

This command attempts remote connection straightaway.

f. Or, initiate the BTS Manager Remote Connection without the command line argument.

i. From the Connection menu, select *Disconnect.*

ii. Select *Connect* to open the Nokia GCS Connection Tool.

Note

The Direct property page must be open with existing connections displayed.

iii. Select the connection you want to use, enter the Q1 address, and click *Connect.*

Note

It is also possible to define new connections and nodes using the Database property sheet.

Tip

Check the following if the Remote Connection fails:

- Is the LAN running?
- Is the GCS Installation OK?
- Are the NMS/OSS and BSC up and running? Have they been set up properly?
- Have the connection and node in GCS Connection Tool been properly configured (in accordance with the System setup)?
- Is the BTS connected to the BSC?
- Is the Abis link up and running (is the BTS switched on)?
- Does the targeted BTS have the O&M software that supports Remote BTS Manager?
- Is there already a Local or Remote connection to the targeted BTS (in which case, the BTS Manager displays a message box indicating that the BTS already has an active BTS connection)?

5.2 Rules for EDAP transmission connections

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

It is recommended that the same timeslot allocation be used for the BSC and BTS. If required, the first EDAP timeslot at the BSC can be different than the first EDAP timeslot at the BTS. Cross connections are allowed, but it is recommended that the whole PCM frame or the n*64 cross connection complies with the ITU-T G.796 (Characteristics of a 64 kbit/s Cross-Connect Equipment with 2048 kbit/s Access Ports, Chapter 2.1) standard in respect to maintaining octet sequence integrity of signals being cross connected. The following precautions help to maximise the EDGE performance:

- EDAP and the TRXs that are tied to the EDAP (including traffic/master and signaling channels) must share the same physical Abis connection route. It is also recommended that PCM frames have octet sequence integrity, which can be achieved using one of the following methods:
  - Using 1-3 PCM lines that perform according to G.796. If BTS capacity requires several PCM lines, a normal network delay variance between the PCM lines does not impact EDGE performance. EDAP pool and the TRXs tied to it, have to locate on a single PCM. Example 4+4+4 configuration: TRX 1-4 and their EDAP(s) on PCM1, TRX 5-8 and their EDAP(s) on PCM2, TRX 9-12 and their EDAP(s) on PCM3.
  - Using fractional E1, n*64k connection that complies with G.796.
- The EDAP pool and TRXs tied to it must have a connection made within a single PCM or a single or multiple n*64k connection inside one PCM that comply with the G.796 in the respect of octet sequence integrity. This structure must be maintained throughout the network.
- If the PCM line does not fulfill the octet sequence integrity requirement as specified in ITU-T G.796, a maximum of +/- three PCM frame delay between timeslots is tolerated when BSC software S10.5 ED CD1.2 or newer is used.

Steps

1. **Use a telecom analyzer, such as Agilent E7580A or HP 37722A at the BSC end.**
2. **Measure from the line that comes to the E/T interface.**
3. **Define all time slots that are connected through the network to the BTS as transmit time slots in the Measurement Equipment view.**

Note

This also applies to fractional time slot blocks as well.

4. **Verify that the Measurement view does not contain/use any time slots used for any other BTS (or other purpose).**
5. **Loop the signal back with the FXC unit at the BTS using the Loop-to-Interface command.**

6. **Define the same time slots as receiving time slots in the Measurement Equipment view.**

7. **Start the pseudorandom (PRBS) test pattern.**

   If the measurement result for the 2Mbit/s line proves that the line is clean of errors during the short measurement cycle (e.g., 15 minutes), the line must be free of time slot phase shifts, and the G.796 is fulfilled.

5.3 Installing BTS Manager

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Before installing BTS Manager, check that system requirements are met.

Table 2. System requirements for BTS Manager

System component	Requirement
Computer	Intel® Pentium®-compatible PC
Operating system	Microsoft® Windows™ NT 4.0 (English version, Service Pack 4) Microsoft® Windows™ 95/98/2000 (English version)
System memory	NT 4.0 - 32 MB 95/98/2000 - 16 MB
Monitor	SVGA, min. 800 x 600 resolution
Disk space	50 MB
Local Connection	9-pin serial port and LMP cable (PC <-> BTS/node)
Remote Connection	Windows-compatible network card and network cable (PC <-> NMS network)
Accessories	CD-ROM drive Windows-compatible mouse or pointing device with required software Windows-compatible printer

Summary

BTS Manager and the other related management applications are delivered on the SiteWizard CD.

Steps

1. **Start Windows.**
2. **Insert the installation CD-ROM into the CD-ROM drive.**
3. **Wait a few seconds.**

   If the Setup program is not launched automatically, double-click the CD-ROM drive icon in the *My Computer* window to open the CD-ROM disk. Double-click the *Setup.exe* program icon in the window.

4. **Follow the instructions displayed in the Setup program.**

   The Setup program copies BTS Manager files. At the end of the procedure, it notifies you that the setup is complete.

5.4 Installing BTS Hub Manager

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Before installing BTS Hub Manager, ensure that system requirements are met.

Table 3. System requirements for BTS Hub Manager

System component	Requirement
Computer	Pentium-based (or better) IBM PC-compatible computer
Operating system	Microsoft® Windows™ NT 4.0 (English version, Service Pack 4) Microsoft® Windows™ 95/98 (English version) Microsoft® Windows™ 2000 (English version, Service Pack 3)

Table 3. System requirements for BTS Hub Manager (cont.)

System component	Requirement
System memory	NT 4.0 - 32 MB 95/98 - 16 MB (24 MB recommended) 2000 - 64 MB (128 recommended)
Disk space	50 MB hard disk space for Hub Manager
Monitor	SVGA-compatible (or better) graphical display, resolution 800x600 (or better)
Connection	Communication cable/network connection between the PC and the node
Accessories	CD-ROM drive Windows-compatible mouse or pointing device with required software

Summary

BTS Hub Manager and the other related management applications are delivered on the SiteWizard CD.

Steps

1. Install General Communication Service (GCS).

See the GCS `Readme.txt` file.

If you are installing the General Communication Service R4.2 in Windows NT 4, please apply Windows NT4 Service Pack 6a before the GCS installation. The Windows NT4 Service Pack 6a can be obtained from the SiteWizard installation CD (**\Accessories\NT4 SP6a\sp6i386.exe**). This is the Standard Encryption version for Intel (x86) platform. If you have previously installed 128-bit components on your system, download the High Encryption version from Microsoft Web site (**www.microsoft.com/ntserver/nts/downloads/recommended/SP6/allsp6.asp**).

2. Start setup.

Run **D:\setup.exe** from the SiteWizard installation CD to select and install required manager applications.

3. Follow the instructions in the installation program.

4. *If* installing in the Windows 2000 environment,

   Then

   Manually install XML parser.

   XML parser is included on the SiteWizard installation CD, at **\Accessories \XML\InstallXML Win2000.exe**.

Note

If you experience any problem while saving XML files from Hub Manager, manually install XML parser from the accessories folder in the SiteWizard installation CD.

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6 Using Site Wizard commissioning software

6.1 Overview of using Hub Manager of Site Wizard to commission and manage UltraSite EDGE BTS

Summary

Use UltraSite BTS Hub Manager to configure and test the transmission units of the BTS and its hub node during commissioning. You can commission the FXC transmission units manually or based on a node file. When commissioning the BTS or its hub node based on a node file, the UltraSite BTS Hub Commissioning Wizard sends the node file to the node during commissioning. Commissioning based on a node file allows some network set-up tasks to be completed off-site.

Note

If the BTS configuration includes an FC E1/T1 transmission unit, that unit is configured with the Commissioning Wizard in BTS Manager.

Steps

1. *If* manually commissioning FXC transmission units with UltraSite BTS Hub Manager,

   Then

   Manually commission FXC transmission units.

2. *If* commissioning FXC transmission units with UltraSite BTS Hub Manager based on a node file,

   Then

Commission FXC transmission units based on a node file.

6.2 Overview of using BTS Manager of Site Wizard to commission and manage UltraSite EDGE BTS

Summary

BTS Manager is a tool for configuring, commissioning and managing UltraSite EDGE BTS and related transmission equipment.

After UltraSite EDGE BTS is installed and commissioned, BTS Manager allows you to monitor and control the BTS operation, either locally at the site or remotely from the Network Management System (NMS/2000) or NetAct. BTS Manager lets you perform the following BTS management tasks:

- View and manage the BTS configuration in graphical format or as logical objects
- Monitor real-time status and alarm information, with continuous and automatic updates during the BTS Manager session
- Check, load or activate the BTS software locally
- Reset, block or unblock BTS units, to replace or them for local tests
- Read new TRX Abis allocations and send them to the BTS, when adding TRXs or altering Abis settings for existing TRXs

The BTS Commissioning Wizard within BTS Manager guides you through commissioning tasks. Commissioning Wizard includes an *Undo Commissioning* option that sets the BTS to non-commissioned mode. This is necessary if the BTS must be re-commissioned (for example, when it has been commissioned with incorrect parameters). Running the Commissioning Wizard is the third step in the overall commissioning sequence:

Steps

1. **Define the BTS configuration with Nokia BTS HW Configurator.**

   Nokia BTS HW Configurator allows you to *use an existing configuration* or to *create a new configuration*, if there is no pre-defined hardware configuration file available for the BTS. A BTS HW configuration file with basic UltraSite BTS configurations is delivered with Nokia BTS HW Configurator. You may use the default parameters or modify them as necessary.

2. **Commission the FXC transmission units with Nokia UltraSite BTS Hub Manager.**

   Use the Nokia UltraSite BTS Hub Manager to *configure and test the transmission of the BTS and its Hub node* during commissioning. You can commission FXC transmission units manually or based on a node file. When commissioning based on a node file, send the node file to the node during the commissioning procedure with the Nokia UltraSite BTS Hub Commissioning Wizard. This allows more network setup to be done off-site.

Note

If the BTS configuration includes an FC E1/T1 transmission unit, that unit is configured with the Commissioning Wizard in BTS Manager.

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3. **Commission the BTS with BTS Commissioning Wizard (includes FC transmission unit configuration).**

6.3 Software compatibility of UltraSite EDGE BTS

6.3.1 Compatibility between BTS hardware and BTS software

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
ACFU	468755A	.101, .203, .204, .205	Y	Y	Y	Y
ADUA	C-S71506.02		Y	Y	Y	Y
ATCA	468686A	.101, .102	Y	Y	Y	Y
BATA	C-S71505.02		Y	Y	Y	Y

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
BBAG	C-S70403.00		Y	Y	Y	Y
BB2A	467869A	.103, .104, .105, .106, .107[3]	Y	Y	Y	Y
BB2E	468131A	.101, .202	N	Y	Y	Y
BB2F	469643A	X02, X03, X04, .101	N	N	Y	Y
BOIA	467868A	.102, .103, .104, .105, .106	Y	Y	Y	Y
BPDN (GSM 800-1900)	C-S72994.01		Y	Y	Y	Y
BPDV (GSM 1800/1900 W/VSWR)	C-S72994.03		Y	Y	Y	Y
BPGV (GSM 800/ 900 W/ VSWR)	C-S72994.02		Y	Y	Y	Y
CCUA	C-S71508.02		Y	Y	Y	Y
CRMA	467851A	X53, X54	With restric-tions[1]	With restric-tions[1]	With restrictions[1]	With restrictions[1]
		.101, .102, .103, .204, . 205, .206, .207, .208	Y	Y	Y	Y

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
CRMB	468080A	X52, X53, X54, X55, .101, .102, .103	Y	Y	Y	Y
CRMC	468126A	X301, .101, .102	Y	Y	Y	Y
DU2A	467812A	.101	With restric-tions[1]	With restric-tions[1]	With restrictions[1]	With restrictions[1]
DVDA (GSM 1800)	468219A	.101, .102, .103, .104	Y	Y	Y	Y
DVDB (GSM 1800)	468220A	.101, .102, .103, .104	Y	Y	Y	Y
DVDC (GSM 1800)	468619A	X11, .101, .102	Y	Y	Y	Y
DVGA (GSM 900)	468216A	.101, .102	Y	Y	Y	Y
DVHA (GSM 900)	468217A	X21, .101, .102	Y	Y	Y	Y
DVJA (GSM 900)	468218A	X12, .101, .102	Y	Y	Y	Y
DVPA (GSM 1900)	468221A	.101, .102	Y	Y	Y	Y
DVTB (EDGE 800)	468133A	.101, .102	N	With restric-tions[2]	With restrictions[2]	With restrictions[21]

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
DVTC (EDGE 800)	468877A	.101, .102	N	With restrictions[2]	With restrictions[2]	With restrictions[2]
DVTD (EDGE 800)	469644A	.101, .102	N	With restrictions[2]	With restrictions[2]	With restrictions[2]
HETA	467937A	.101	Y	Y	Y	Y
	467937X	.301	Y	Y	Y	Y
IAKA	467852A	.101, .102, .203, .204, .205, .206	Y	Y	Y	Y
IAKC	468792A	.101	Y	Y	Y	Y
LMU (GSM 800 and 1900 or 1800)	469592A	SW4.0	N	Y	Y	Y
LMU (GSM 900 and 1800 or 1900)	468765A	.101	N	Y	Y	Y
M2HA (GSM 1800/1900 2-Way)	468532A	X301, .101, .102, .103, .104, .105, .106	Y	Y	Y	Y
M2LA (GSM 800/ 900 2-Way)	468530A	.101, .102, .103, .104, .105, .106	Y	Y	Y	Y
M6HA (GSM 1800/1900 6-Way)	468533A	.101, .102, .103, .104	Y	Y	Y	Y

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
M6LA (GSM 800/ 900 6-Way)	468531A	.101, .102, .103, .104	Y	Y	Y	Y
MNGA (GSM 900)	C-S72991.01		Y	Y	Y	Y
MNTB (EDGE 800 R)	C-S72991.02		N	With restric-tions[2]	With restrictions[2]	With restrictions[2]
MNTC (EDGE 800)	C-S72991.03		N	With restric-tions[2]	With restrictions[2]	With restrictions[2]
MNTB (EDGE 800 M)	C-S72991.04		N	With restric-tions[2]	With restrictions[2]	With restrictions[2]
MNDA (GSM 1800)	C-S72992.01		Y	Y	Y	Y
Ultra MHA (GSM 1800 high band)	C-S72992.02		Y	Y	Y	Y
Ultra MHA (GSM 1800 low band)	C-S72992.03		Y	Y	Y	Y
MNPA (GSM 1900)	C-S72993.01		Y	Y	Y	Y
MNPB (GSM 1900)	C-S72993.02		Y	Y	Y	Y

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
MNPC (GSM 1900)	C-S72993.03		Y	Y	Y	Y
Ultra MHA (DB bands)	C-S72993.04		Y	Y	Y	Y
Ultra MHA (EFC bands)	C-S72993.05		Y	Y	Y	Y
Ultra MHA (BEF bands)	C-S72993.06		Y	Y	Y	Y
MNPF (GSM 1900)	C-S72993.07		Y	Y	Y	Y
MNPF (GSM 1900 w/bypass)	C-S72993.08		N	N	Y	Y
OAKA	467853A	.101, .102, .203, .304, .305, .306	Y	Y	Y	Y
OAKA Kit	C-S71503.03		Y	Y	Y	Y
OAKB	469095A	.101, .202, .203, .204	Y	Y	Y	Y
OAKC	469152A	.101	Y	Y	Y	Y
PWSA (AC)	467865A	X01, X302, X303, .101, .102, .103, .104	Y	Y	Y	Y
PWSB (DC -48 V)	467866A	.101, .102, .103, .104	Y	Y	Y	Y

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
PWSC (DC +24 V)	468664A	.101, .102, .104	N	Y	Y	Y
RTDA (GSM 1800)	467858A	.102	Y	Y	Y	Y
RTDB (GSM 1800)	467859A	.102	Y	Y	Y	Y
RTDC (GSM 1800)	468721A	.101	With restrictions[1]	With restrictions[1]	With restrictions[1]	With restrictions[1]
RTGA (GSM 900)	467857A	.102	Y	Y	Y	Y
RTHA (GSM 900)	467861A	.101, .102	With restrictions[1]	With restrictions[1]	With restrictions[1]	With restrictions[1]
RTJA (GSM 900)	467862A	.101, .102	With restrictions[1]	With restrictions[1]	With restrictions[1]	With restrictions[1]
RTPA (GSM 1900)	467860A	.102	Y	Y	Y	Y
TSDA (GSM 1800)	467828A	.101, .102, .104, .105, .105A, .106, .107, .108, .109, .110	Y	Y	Y	Y

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
TSDB (EDGE 1800)	468705A	X55	N	Y	Y	Y
	469089A	X44, X46, X48, X64, X65, X67, X69, .101, .102, .103, .104, .105	N	Y	Y	Y
TSDC (GSM 1800)	469065A	X41	N	N	N	Y
TSGA (GSM 900)	467800A	.102, .104, .105, .106, .107, .108, .109	Y	Y	Y	Y
TSGB (EDGE 900)	468704A	.102, .103, .104, .105	N	Y	Y	Y
TSPA (GSM 1900)	467829A	.101, .103, .104, .105, .106	Y	Y	Y	Y
TSPB (EDGE 1900)	468706A	X51, X57, X64, X65, X71, X73, X2C, X4B, .101, .102, .103, .104, .105, .106	N	Y	Y	Y
TSPC (GSM 1900)	469066A	X32	N	N	N	Y
TSTB (EDGE 800)	469087A	X56, X59, X63, X64, X81, X3G, .101, .102, .103, .104, .105, .106	N	With restric-tions[2]	With restrictions[2]	With restrictions[2]

Table 4. Compatibility between HW and SW in Nokia UltraSite EDGE BTS (cont.)

Unit	Unit code	Unit version	SW Release PU1.0-x	SW Release CX3.0-x	SW Release CX3.3	SW Release CX3.3-1
TSTC (GSM 800)	469063A	X34	N	N	N	Y
UABA	469107A	.101	Y	Y	Y	Y
VXEA (FC E1/T1)	467201A	.101, .102	With restric-tions[1]	With restric-tions[1]	With restrictions[1]	With restrictions[1]
		.103	Y	Y	Y	Y
VXRB (FXC RRI)	467610A	X04[4]	With restric-tions[1]	With restric-tions[1]	With restrictions[1]	With restrictions[1]
		.101, .102, .103, .104[4]	Y	Y	Y	Y
VXTA (FXC E1)	467612A	X06[4]	With restric-tions[1]	With restric-tions[1]	With restrictions[1]	With restrictions[1]
		X07, .101, .102, .103, .104[4]	Y	Y	Y	Y
VXTB (FXC E1/ T1)	467611A	X06[4]	With restric-tions[1]	With restric-tions[1]	With restrictions[1]	With restrictions[1]
		X07, .101, .102, .103, .104[4]	Y	Y	Y	Y
WCDA (GSM 1800)	467834A	X31, .101, .102, .103	Y	Y	Y	Y
WCGA (GSM 800/ 900)	467833A	X31, .101, .102	Y	Y	Y	Y
WCPA (GSM 1900)	467835A	.101, .102	Y	Y	Y	

Y = Compatible

N = Not compatible

[1]There are no compatibility problems detected. However, the compatibility is not properly tested.

[2]EDGE 800 requires BSC SW version S10.

[3]PU1.0-2 SW or newer required for .107.

[4]For more detailed information about transmission unit hardware and software compatibility, refer to *ITN hardware and software compatibility* and *ITN compatibility in BSS transmission networks*.

6.3.2 Compatibility between BTS, SiteWizard, BSC, NMS/2000/NetAct and LMU software

Table 5. Compatibility between BTS, SiteWizard and BSC SW versions

BTS SW	Site Wizard	BSC SW			
		S9	S10	S10.5	S10.5ED
PU1.0	2.0[1]	Y	Y	Y	N
PU1.0-1	2.0[1] update	Y	Y	Y	N
PU1.0-2	2.1	Y	Y	Y	N
PU1.0-3	2.1	Y	Y	Y	N
PU1.0-4	2.1	Y	Y	Y	N
PU1E (-1, -2)	3.0	Y	Y[2]	Y	N
CX3L (-1, -2)	3.0	Y	Y	Y	N
CX3.0 (-1, -2, -2A)	3.0	Y[2]	Y[3]	Y	N
CX3.0-3	3.0	Y[2]	Y[3]	Y	Y

Table 5. Compatibility between BTS, SiteWizard and BSC SW versions (cont.)

BTS SW	Site Wizard	BSC SW			
		S9	S10	S10.5	S10.5ED
CX3.3	3.0[4]	N	N	Y	Y
CX3.3-1	3.0	Y	Y	Y	Y

Y = Compatible

N = Not compatible

[1]SiteWizard 2.0 is also compatible with PU1.0-2.

[2]BSS10 level features cannot be used.

[3]BSC SW S10 does not support 'Support of PCCCH/PBCCH' and 'GSM-WCDMA Interworking.'

[4]SiteWizard 3.0 with BTS Manager 3.3 and BTS HW Configurator 3.3.

Table 6. Compatibility between BTS, SiteWizard, NMS/2000/NetAct and LMU SW versions

BTS SW	Site Wizard	NMS 2000/NetAct SW				LMU SW
		T12	OSS 3.1	OSS 3.1 ED1	OSS 3.1 ED2	LMU1
PU1.0	2.0[1]	Y	Y	N	N	N
PU1.0-1	2.0[1] update	Y	Y	N	N	N
PU1.0-2	2.1	Y	Y	N	N	N
PU1.0-3	2.1	Y	Y	N	N	N
PU1.0-4	2.1	Y	Y	N	N	N
PU1E (-1, -2)	3.0	Y	Y	N	N	N

Table 6. Compatibility between BTS, SiteWizard, NMS/2000/NetAct and LMU SW versions (cont.)

BTS SW	Site Wizard	NMS 2000/NetAct SW				LMU SW
		T12	OSS 3.1	OSS 3.1 ED1	OSS 3.1 ED2	LMU1
CX3L (-1, -2)	3.0	Y	Y	N	N	Y
CX3.0 (-1, -2, -2A)	3.0	Y	Y	Y	N	Y
CX3.0-3	3.0	Y	Y	Y	Y	Y
CX3.3	3.0[2]	Y	N	Y	Y	Y
CX3.3-1	3.0	Y	Y	Y	Y	Y

Y = Compatible

N = Not compatible

[1]SiteWizard 2.0 is also compatible with PU1.0-2.

[2]SiteWizard 3.0 with BTS Manager 3.3 and BTS HW Configurator 3.3.

6.3.3 Compatibility between new features of UltraSite EDGE BTS software release CX3.3 and other network elements

Table 7. Compatibility between new features of CX3.3 and other network elements

New BSS10.5 features that are standard in BTS	BSC SW	NMS SW
Enhanced General Packet Radio Service (MCS 1-9)	S10.5 ED	OSS3.1
Dynamic Abis allocation	S10.5 ED	OSS3.1
Incremental Redundancy (IR)	S10.5 ED	OSS3.1

Table 7. Compatibility between new features of CX3.3 and other network elements (cont.)

New BSS10.5 features that are standard in BTS	BSC SW	NMS SW
Link Adaptation (LA)	S10.5 ED	OSS3.1
Remote BTS Manager	S10.5 S10.5 ED	T12 OSS3.1 (ED1, ED2)

6.4 ITN hardware and software compatibility

6.4.1 ITN versions

This section lists the FXC unit HW and SW versions when supplied from Nokia. For information on older versions, contact Nokia technical support.

The FXC unit identification information can be viewed in the unit identifications dialogue. The ITN C1.2 and earlier release FXC hardware product codes and versions are not shown in the unit identification dialogue. However, linking to HW may be done via the product code and version, visible in the unit identifications dialogue and in the unit label. In release ITN C2.0 and later, product HW, SW and boot code versions are shown in the identifications dialogue. However, the compatibility between HW and SW is determined by the ID information.

After upgrading an old FXC unit with ITN C2.1 software, *Product version* is deleted. Compatibilities may be traced by using *Product code and version for SW*, *Product code and version for HW*, and *Boot code and version*.

Table 8. Versions for FXC E1, VXTA

Product code and version	Product code and version for HW	Boot code and version	Product code and version for SW
467612A.101	E36123.01-A0	S36124.01-03	S36122.01-A0
467612A.101	E36123.01-A0	S36124.01-03	S36122.01-A1
467612A.102	E36123.01-A0	S36124.01-03	S36122.01-A3

Table 8. Versions for FXC E1, VXTA (cont.)

Product code and version	Product code and version for HW	Boot code and version	Product code and version for SW
467612A.103	E36123.01-A0	S36124.01-03	S36122.01-B0
467612A.104	E36123.01-B0	S36124.01-A	S36122.01-C0
467612A.105	E36123.01-E0	S36124.01-B	S36122.01-D1

Table 9. Versions for FXC E1/T1, VXTB

Product code and version	Product code and version for HW	Boot code and version	Product code and version for SW
467611A.101	E36133.01-A0	S36124.01-03	S36122.01-A0
467611A.102	E36133.01-A0	S36124.01-03	S36122.01-A1
467611A.102	E36133.01-A0	S36124.01-03	S36122.01-A3
467611A.103	E36133.01-A0	S36124.01-03	S36122.01-B0
467611A.104	E36133.01-B0	S36124.01-A	S36122.01-C0
467611A.105	E36133.01-E0	S36124.01-B	S36122.01-D1

Table 10. Versions for FXC RRI, VXRB

Product code and version	Product code and version for HW	Boot code and version	Product code and version for SW
467610A.101	E55833.01-A0	S55834.01-A	S55832.01-B1
467610A.103	E55833.01-A1	S55834.01-A	S55832.01-C0
467610A.104	E55833.01-B0	S55834.01-B	S55832.01-D0
467610A.105	E55833.01-C0	S55834.01-C	S55837.01-A

6.4.2 ITN HW compatibility

All the FXC HW versions mentioned in *ITN versions* are compatible with UltraSite EDGE BTS, MetroSite EDGE BTS and MetroHub cabinets.

6.4.3 ITN HW/SW compatibility

Table 11. HW/SW compatibility for FXC E1, VXTA and FXC E1/T1, VXTB

Product code and version for SW	**Boot code and version**		
	S36124.01-03	**S36124.01-A**	**S36124.01-B**
S36122.01-A0	Yes	No	No
S36122.01-A1	Yes	No	No
S36122.01-A3	Yes	No	No
S36122.01-B0	Yes	No	No
S36122.01-C0	Yes	Yes	No
S36122.01-D1	Yes	Yes	Yes

Table 12. HW/SW compatibility for FXC RRI, VXRB

Product code and version for SW	**Boot code and version**		
	S55834.01-A	**S55834.01-B**	**S55834.01-C**
S55832.01-B1	Yes	Yes	No
S55832.01-C0	Yes	Yes	No
S55832.01-D0	Yes	Yes	No
S55832.01-E0	Yes	Yes	No
S55837.01-A0	No	No	Yes

6.5 ITN compatibility in BSS transmission networks

SiteWizard

The node managers are delivered as a part of the Nokia SiteWizard Release C3.1. ITN C2.1 is compatible only with SiteWizard 3.1.

BTS SW

The ITN C2.1 release supports the following BTS software releases:

- MetroSite EDGE BTS
  - CXM3.0 and later releases
  - C3.3 and later releases
- UltraSite EDGE BTS
  - CX3.0 and later releases
  - CX3.3 and later releases

Microwave radios

Table 13. Radio software releases compatible with ITN C2.1

Nokia MetroHopper	P55820.01-B0, -C0, -D1, -E0	
Nokia FlexiHopper	P55040.01-F0,-G1, -H0, -H1	P55046.01-B0, -C0, -C1, -D0, -E0, -E1
Nokia FlexiHopper Plus	P58040.01 (limited verification)	

Note

Nokia FlexiHopper Plus is released after ITN C2.1 and thus only limited verification.

Network

Table 14. Network management systems compatible with ITN C2.1

BSC	S10.5 and later releases
NMS	OSS 3.1ED1 and later releases
NMS/10	SR5.1 C5.2 C6.0

ITN releases

ITN C2.1 is compatible with both ITN release C1.2 and ITN release C2.0 within the same network, however, not within one node.

FC units

Table 15. FC units supported in the ITN C2.1 release

Unit	Hardware version	Software version
FC E1/T1, VXEA	467201A.102 467201A.103/104	B1, C0 or C1 C0 or C1

Note

ITN C2.1 is compatible with FC units within the same network, however, not within one node.

Other transmission units

Table 16. Other transmission units supported in the ITN C2.1 release

Unit	Version	Software version

Table 16. Other transmission units supported in the ITN C2.1 release (cont.)

FIU 19	T55240.xx-B T55240.xx-C	P55234.01-B3, -C1, -D0, -F0, -F1 P55234.01-B3, -C1, -D0, -F0, -F1
FIU 19E	T55340.01-C0	P55303.01-C0
RRIC	T55290.01-B1 T55290.01-C0... -C3	P55298.01-C2 P55285.01-B2

Note

Where the version includes xx as in T55240.xx B, the xx refers to many different product versions.

7 Commissioning GSM/EDGE UltraSite EDGE BTS

7.1 Overview of commissioning GSM/EDGE UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

It is necessary to connect a Frequency counter to the BOI 13 MHz test port and power on the frequency counter before beginning the commissioning procedure. This enables the counter timer to warm up and thus get accurate measurements.

Summary

Nokia UltraSite EDGE BTS is manually commissioned, using these Nokia software applications:

- BTS HW Configurator - a tool for creating, checking, and updating the configuration of an UltraSite EDGE BTS cabinet.
- BTS Hub Manager - a tool for configuring and testing the transmission of the BTS and its Hub node (if there are FxC units in the configuration).
- BTS Manager - a tool for configuring, commissioning and managing UltraSite EDGE BTS and related transmission equipment. BTS Commissioning Wizard is included in BTS Manager (includes FC E1/T1 transmission unit configuration).

Note

Only one application can be communicating with the BTS at a time. Close BTS HW Configurator before starting UltraSite BTS Hub Manager, and close Hub Manager before starting BTS Manager.

Nokia BTS Manager and related UltraSite BTS Hub manager software have a convenient, context-sensitive online Help facility.

To get help, do one of the following:

- press F1
- click the Help button on the toolbar
- choose one of the Help menu commands
- click the Help button in any dialog box

To exit Help, press ESC or ALT+F4.

The Help Topics window displays a set of tabbed pages:

- Contents - displays a list of topics organized in books by category.
- Index - lists keywords in alphabetical order through which different topics can be reached.
- Find - provides a full-text search functionality that allows you to search for any word or phrase in the Help file.

Readers should note that all images in this document are typical in nature and are for general reference only. For hardware, the versions depicted may differ from the latest version of equipment. For software, any version numbers shown in any of the windows/screens/dialog boxes may not be the same as the actual software that is to be installed. It is important to remember that the procedure steps must be followed, as these will give advice on the correct software to be installed and the correct text that will be displayed in each window/screen/dialog box.

Steps

1. Define the BTS configuration with Nokia BTS HW Configurator.

Nokia BTS HW Configurator allows you to *use an existing configuration* or to *create a new configuration*, if there is no pre-defined hardware configuration file available for the BTS. A BTS HW configuration file with basic UltraSite BTS configurations is delivered with Nokia BTS HW Configurator. You may use the default parameters or modify them as necessary.

2. **Commission the FXC transmission units with Nokia UltraSite BTS Hub Manager.**

   The transmission of the BTS and its Hub node are *configured and tested during commissioning with Nokia UltraSite BTS Hub Manager*. FXC transmission units can be manually commissioned or commissioned based on a node file. When commissioning based on a node file, send the node file to the node during the commissioning procedure with the Nokia UltraSite BTS Hub Commissioning Wizard. This allows more network setup to be done off-site.

Note

If the BTS configuration includes an FC E1/T1 transmission unit, that unit is configured with the Commissioning Wizard in BTS Manager.

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3. **Commission the BTS with BTS Commissioning Wizard.**

   The BTS Commissioning Wizard *guides you through the commissioning tasks*, including manual entry of commissioning parameters. Commissioning Wizard runs automatic BSC-controlled tests and generates the BTS Commissioning Report, which contains information collected during the commissioning procedure. FC E1/T1 transmission units are configured during this step.

Note

If the BTS is already commissioned, **Undo Commissioning** is the only option available in the BTS Commissioning Wizard. Because the BTS can only be commissioned in its non-commissioned state, this procedure is typically necessary when the BTS has to be re-commissioned (for example, when it has been commissioned with incorrect parameters). The **Undo Commissioning** procedure clears previous commissioning data from the BTS.

7.2 Hub configuration of GSM/EDGE UltraSite EDGE BTS

7.2.1 Manual Hub configuration of UltraSite EDGE BTS

Summary

Caution

The Power On setting should not be used when two RRI units are connected with a Flexbus cable. If power is on in such a case, the units could be damaged.

Steps

1. **Open the Nokia UltraSite BTS Manager.**

   From the *Nokia Applications* submenu on the **Start | Programs** menu in Windows, select *Nokia UltraSite BTS Manager.*

   Wait until the BTS Manager has properly started and only then move to the next step.

2. **Start the Nokia UltraSite BTS Hub Manager.**

   Start Nokia UltraSite BTS Hub Manager from the BTS Manager's *Tools* menu.

   When the connection has been established, the *Equipment* view opens automatically.

3. *If* the connection fails,

   Then

   Troubleshoot the connection.

   Verify the connection speed and LMP cable connection from the **Tools | Options | Manager** options. You can also try the **Connection | Connect...** command and enter the connection parameters in the *Connect to Node* window. Using the Nokia Connection Tool, refer to the application's online Help.

4. **Define LIF settings.**

a. *Define FXC E1/T1 LIF settings.*
b. *Define FXC RR1 LIF settings.*

5. **Adjust identification settings.**
6. **Adjust service interface settings.**
7. **Configure radio units for FXC RRI units.**
8. **Adjust synchronisation settings.**
9. **Adjust synchronisation loop bit settings.**
10. **Adjust Q1 management settings.**
11. **Adjust alarm property settings .**
12. **Allocate transmission capacity.**
13. **Create bi-directional cross-connections.For more information about cross-connections, see Overview of managing cross-connections.**
14. **Exit UltraSite BTS Hub Manager.**

    BTS Manager opens automatically if you started the UltraSite Hub Manager from the BTS Manager.

7.2.2 Defining Line Interface (LIF) settings of UltraSite EDGE BTS FXC E1/T1 units

Before you start

Review *Manual Hub configuration of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

The line interface (LIF) settings available for each transmission unit depend on the type of the unit: FXC E1(/T1) or FXC RRI.

Steps

1. View unit-specific menu.

Click the appropriate FXC E1(/T1) unit in the *Equipment* view in Nokia UltraSite BTS Hub Manager. A unit-specific menu displays on the menu bar.

2. Display unit-specific settings.

Select *LIF Settings* on the *FXC E1/T1* menu. The *LIF Settings* window displays.

3. Select the tab for the line interface you want (LIF 1 - LIF 4).

4. *If* the interface will be used,

Then

Select the *Interface in Use* option.

Else

If the interface is not in use,

a. Deselect this option and proceed to the settings of another interface (step 3).

Note

Only when an interface is taken into use then alarms are reported for this interface and performance data is collected.

---

5. Name the interface.

Type a name for the interface in the *Interface Name* field.

6. Select the mode.

Select the mode from the *Interface Mode* list.

7. *If* you selected the E1 75 ohm interface mode or the E1 120 ohm interface mode,

Then

Define TS0 fixed bits in the LIF Settings window for E1 120 ohm mode . Only bits 4 - 8 can be modified, as bits 1 - 3 are reserved for CRC, frame alighnment and far end alarm indication.

Select the CRC in Use option if an E1 signal in multiframe mode is used. When using an E1 basic (double) frame, then the CRC in Use option should be de-selected (no checkmark in box).

8. *If* you selected the T1 100 ohm interface mode,

   Then

   Define the Framing Format, Line Code and T1 Interface Type settings in LIF Settings window for T1 100 ohm mode .

9. **Accept the changes.**

   Click *Apply* button to accept the changes for the selected LIF tab. The *Apply* button is disabled if you made no changes.

10. **If necessary, verify or modify the settings for the other line interfaces as described in steps 1 through 9.**

11. **Click OK to accept the changes.**

12. **Repeat steps 1 through 11 for all other FXC E1(/T1) transmission units in the configuration.**

7.2.3 Defining Line Interface (LIF) settings of UltraSite EDGE BTS FXC RRI units

Before you start

Review *Manual Hub configuration of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

The line interface settings available for each transmission unit depend on the type of the unit: FXC E1(/T1) or FXC RRI.

Steps

1. View unit-specific menu.

Click the appropriate FXC RRI unit in the *Equipment* view in Nokia UltraSite BTS Hub Manager. A unit-specific menu displays on the menu bar.

2. Display unit-specific settings.

Select the **Settings | Unit** command on the *FXC RRI* menu. The *Settings* window displays.

3. Select either the FlexBus interface to be configured or the platform interfaces.

The Platform interfaces are E1 interfaces connecting the radio/FlexBus part of the FXC RRI unit to the transmission node. There are 16 platform interfaces available per unit.

4. *If* the interface will be used,

Then

Select the *In Use* option.

Else

If the interface is not in use, deselect this option and proceed to the settings of another interface (step 3).

5. Select the capacity for the interface.

In the *Capacity* field, select from 2 x 2Mb to 16 x 2Mb.

Select the capicity according to the capacity of the Microwave radio link connected to a particular FlexBus interface.

6. *If* the RRI unit is directly connected to an outdoor unit (radio),

Then

Select the *Power On* option.

Caution

The Power On setting should not be used when two RRI units are connected with a Flexbus cable. If power is on in such a case, the units could be damaged.

7. Accept the changes.

Click *Apply* to accept the changes for the selected interface tab. The *Apply* button is disabled if you made no changes.

8. If necessary, verify or modify the settings for the other Flexbus interface as described in steps 1 through 7.

9. Define settings for platform interfaces.

a. Click the *Platform Interface tab* to display a list of platform interfaces.
b. Right-click a platform interface.
c. Select the appropriate commands from the pop-up menu (Interface in Use, CRC in Use).

10. Click OK to accept the changes.

11. Repeat steps 1 through 10 for all other FXC RRI units in the configuration.

7.2.4 Adjusting identification settings

Purpose

You can adjust the identification settings for the managed node using the **Hardware Identifications** dialogue. The user can fill in the name, site name, group name and site location, and these are valid for the whole node.

Summary

Identification-related settings are not mandatory but it is strongly recommended to use them. The settings are:

- Node ID (equipment name and site name)
- Transmission unit names and installation dates (in the corresponding transmission unit menu)

Note

If you change the master FXC unit of the node, all User Notes are lost. Other identification settings do not disappear.

Steps

1. **Connect to the node or open a file**

2. **Select Configuration → Identifications...**

   The **Hardware Identifications** dialogue opens.

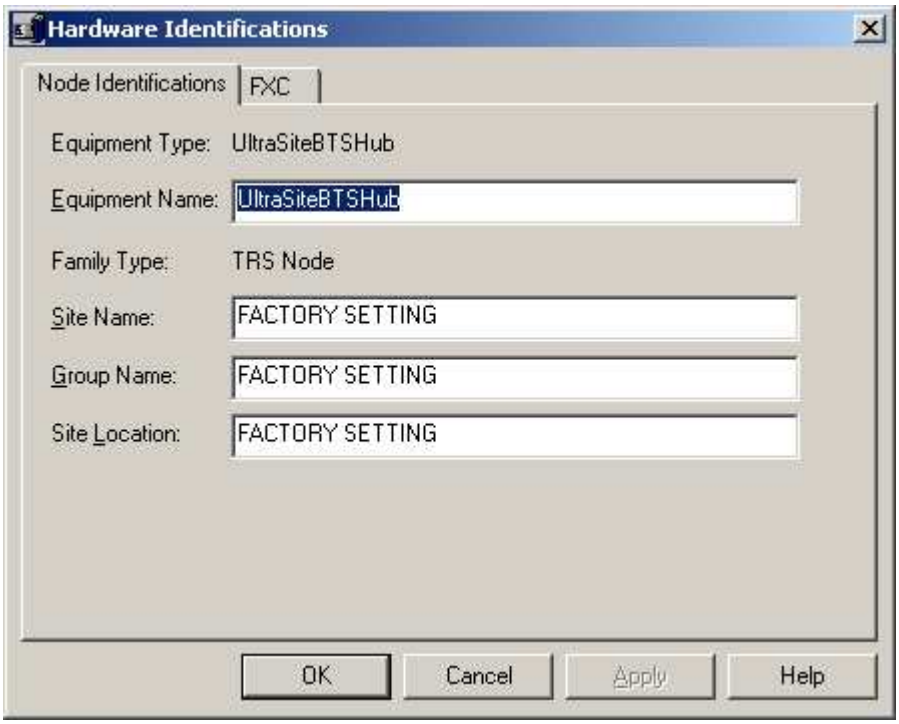

Figure 5. Hardware Identifications dialogue

3. **Select which identifications data you want to adjust, fill in the required information and click OK**

7.2.5 Adjusting service interface settings

Summary

You can adjust the settings of the LMP and the Q1 port. The settings are baud rate, Q1 address and Q1 group address. It is also possible to adjust timeouts under this menu.

The timeout settings concern the temporary settings of the whole node. These include, for example, interface loops and forced controls.

Steps

1. **Connect to the node or open a file**

2. **Select Configuration → Service Interface...**

   Expected outcome

   The **Service Interface** dialogue opens.

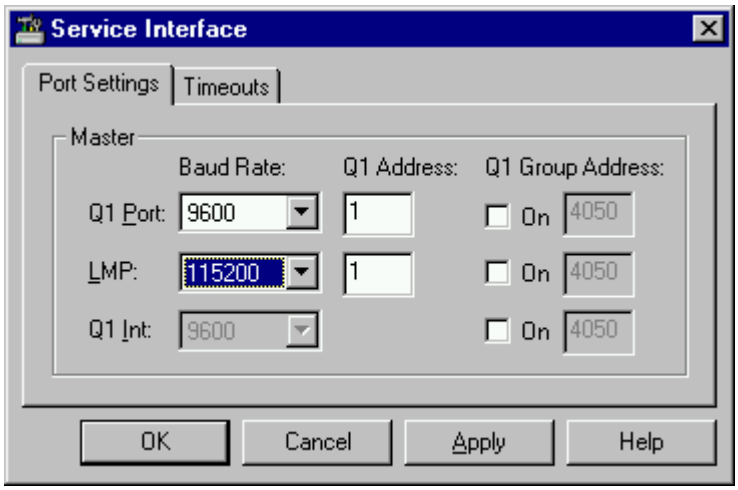

Figure 6. Service Interface dialogue

3. **Select either Port Settings or Timeouts**

4. **Adjust the settings**

   The supported baud rates for LMP are 9600–115 200 bit/s.

   Supported remote Q1 connection rates are 2400−9600 bit/s.

   The default baud rate is 2400 bit/s for Q1 and 9600 for LMP. The default address is 1 for the ports.

   The **Default** buttons in the **Timeouts** tab set the default values stored in the node.

7.2.6 Configuring radio units for FXC RRI units of UltraSite EDGE BTS

Before you start

This section describes how to configure the radio settings using the Radio Wizard. This is an alternative approach to the manual configuration described in Chapter *Obligatory radio settings*. For more information on the commissioning and maintenance of the radio units, refer to Nokia MetroHopper and FlexiHopper user manuals.

If there are no FXC RRI units in the configuration, proceed directly to Section *Synchronisation*.

Summary

To configure outdoor units:

Steps

1. **Click a FXC RRI transmission unit in the Equipment view in UltraSite BTS Hub Manager.**

2. **Select Radio Wizard on the FXC RRI menu to launch the Wizard.**

   The Radio Wizard is launched from the Nokia RRI Manager application.

3. **The Flexbus Settings page displays the type of the indoor unit and the outdoor units connected to each Flexbus.**

   The parameters displayed are dependent on the operation mode (HSB/ Single Hop) selected for RRI unit. See Figure *Flexbus settings page with HSB activated* and Figure *Flexbus settings page with Flexihopper (single mode) and MetroHopper outdoor units*. For more information on operation mode, see section *Traffic Protection in Nokia MetroHub Product Description*.

Note

The HSB mode can be configured only when both Flexbuses of the FXC RRI unit have Flexihopper radios connected to them.

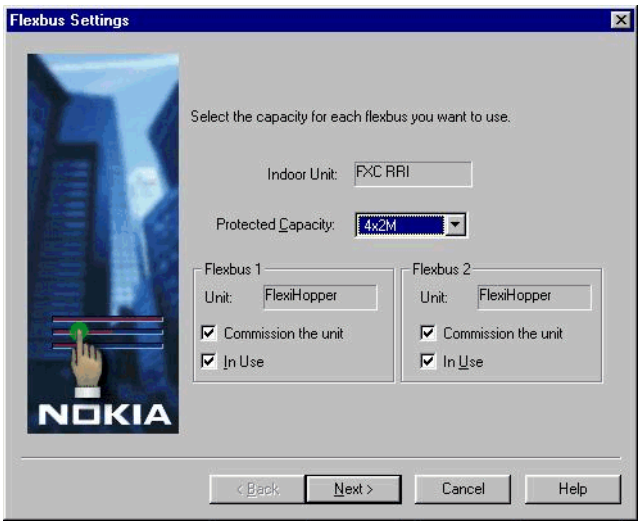

Figure 7. Flexbus settings page with HSB activated

4. Select the capacity for each outdoor unit from the Capacity drop-down list and select the Commission the unit and In Use option for each Flexbus you want to use. At least one outdoor unit must exist and be selected for commissioning (Commission the unit), before you can continue to the next Wizard page.

You can deselect the Commission the Unit option for a Flexbus, if you want to skip the commissioning of a radio for some reason (for example, far end not ready).

Note

With Nokia MetroHopper outdoor unit, the capacity is fixed to 4 x 2 Mbit/s.

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5. Click Next to continue.

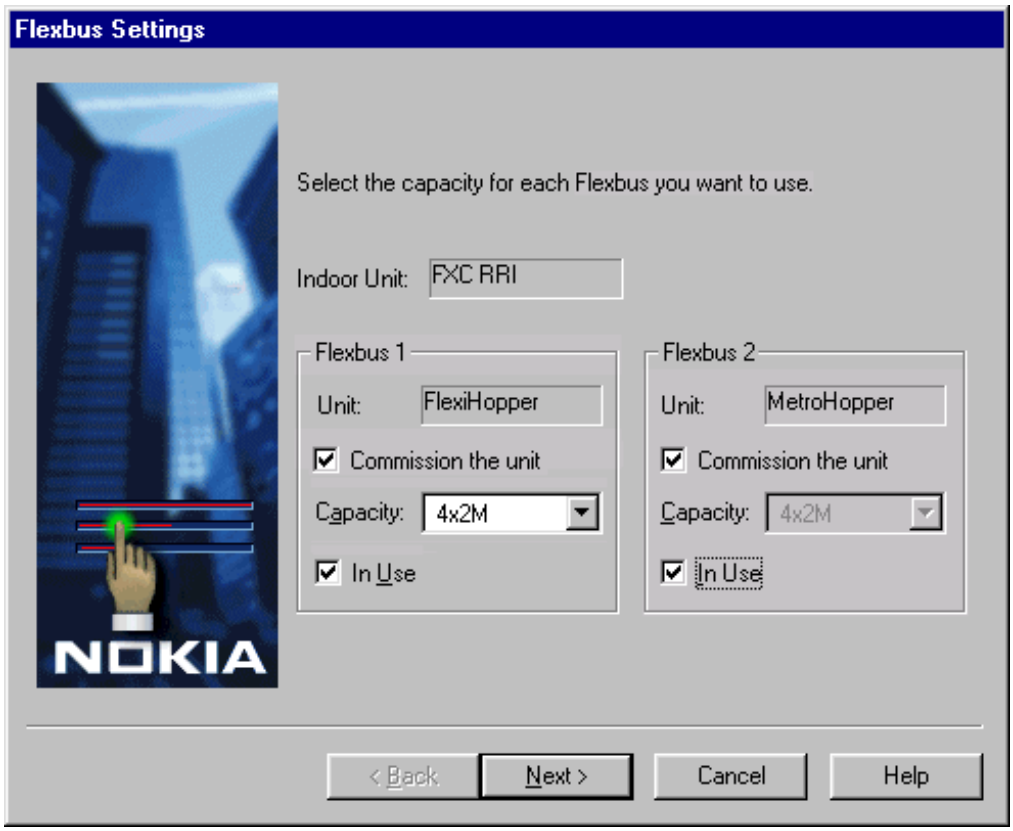


Figure 8. Flexbus settings page with Flexihopper (single mode) and MetroHopper outdoor units

Note

Bandwidth selection is available only with the FlexiHopper and outdoor unit.

The Flexbus 1 - FlexiHopper Settings page opens on the screen. The options on the page depend on the type of the outdoor unit connected to the interface. The settings for the FlexiHopper outdoor unit are presented in the following figure:

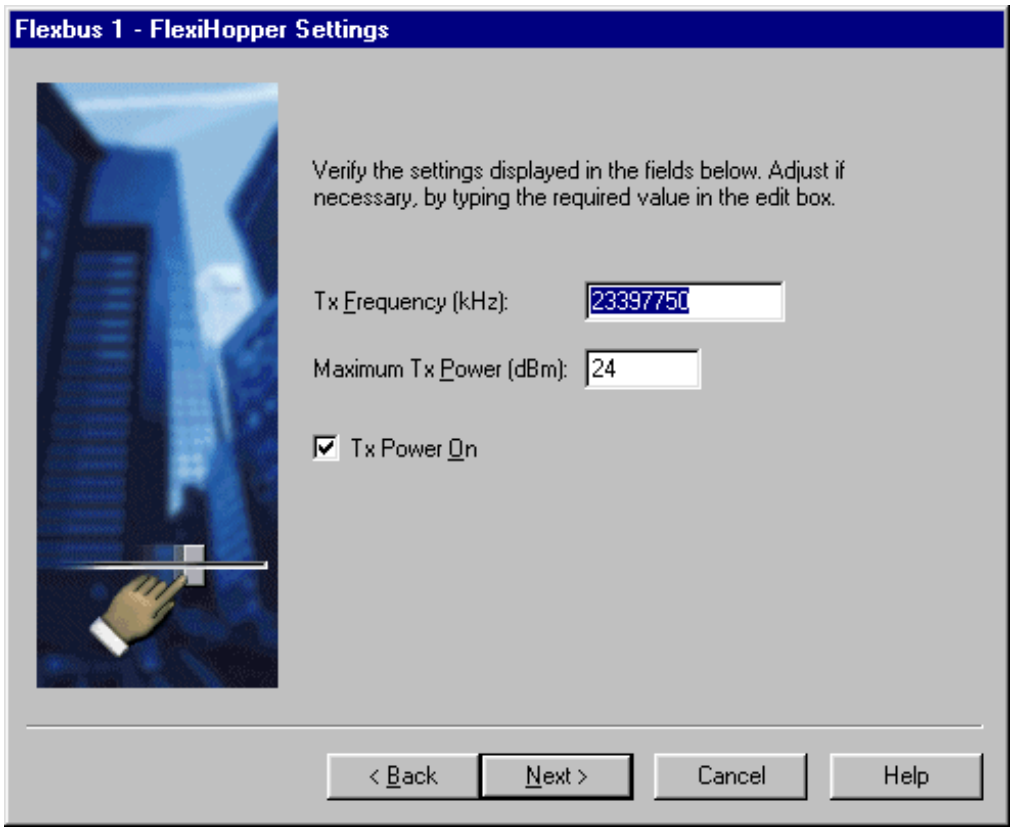


Figure 9. Flexbus 1 settings for FlexiHopper outdoor unit

The corresponding settings for the MetroHopper outdoor unit are presented in the following figure:

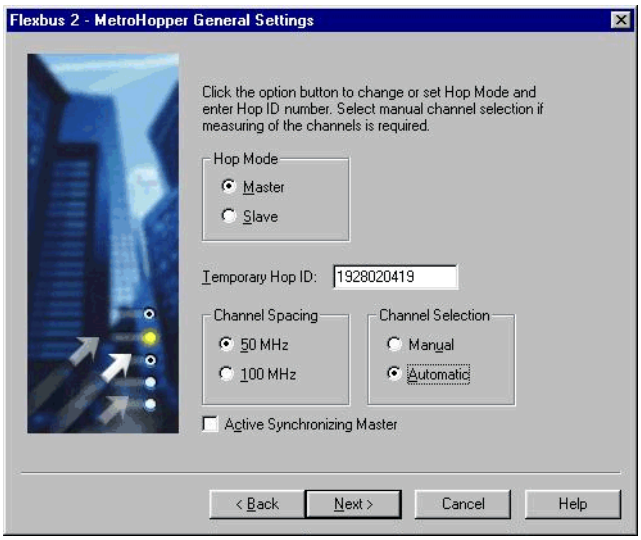


Figure 10. Flexbus 2 settings for MetroHopper outdoor unit

Note

The Temporary Hop ID on the MetroHopper General Settings page must be the same for both the master and slave terminal.

6. Select either the Manual or Automatic option under Channel Selection on the Flexbus 2 - MetroHopper General Settings page.

When you click Next, based upon the channel selection, either the Flexbus 2 - MetroHopper Manual Channel Selection page (see Figure *MetroHopper manual channel selection*) or Flexbus 2 - MetroHopper Automatic Channel Selection page (see Figure *MetroHopper automatic channel selection*) opens.

a. If you selected Manual channel selection, select one channel to be used. You can also click Measure to measure the signal strength of the selected channels and then select the best channel.

Note

At least one channel must be selected, before you can continue to the next page.

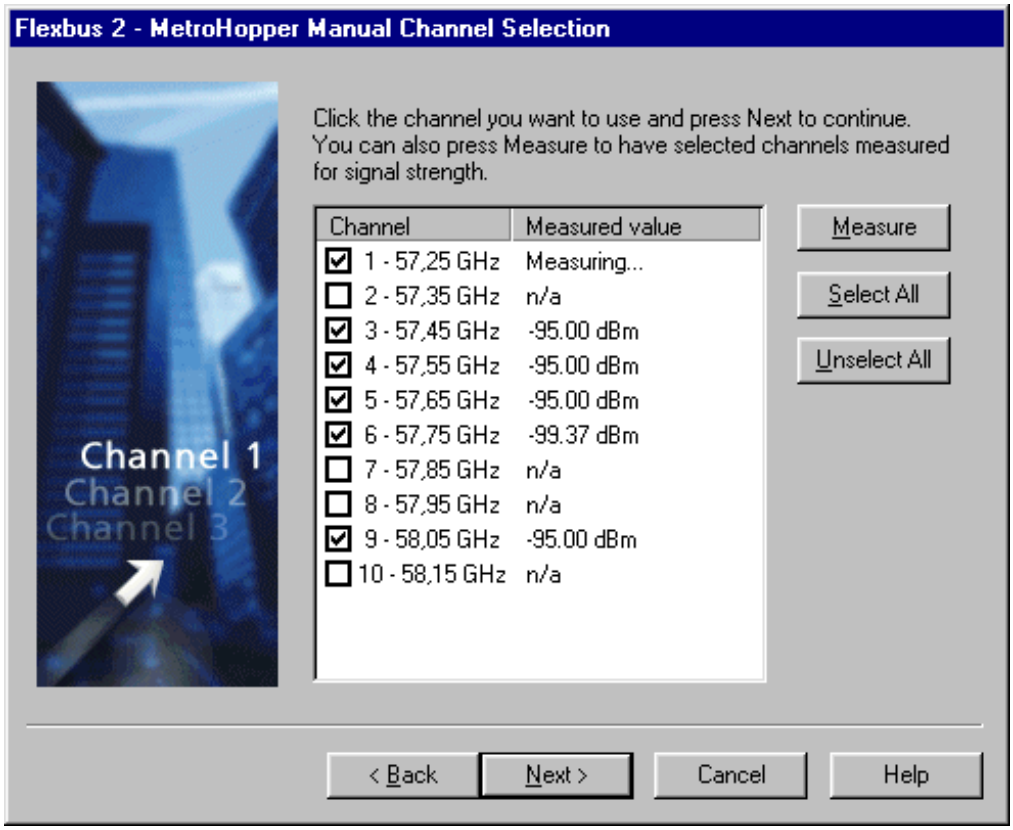


Figure 11. MetroHopper Manual Channel Selection

Note

At least one channel must be selected, before you can continue to the next page.

b. If you selected Automatic channel selection, the Wizard will automatically scan the channels to find the far end radio. Click Next to continue.

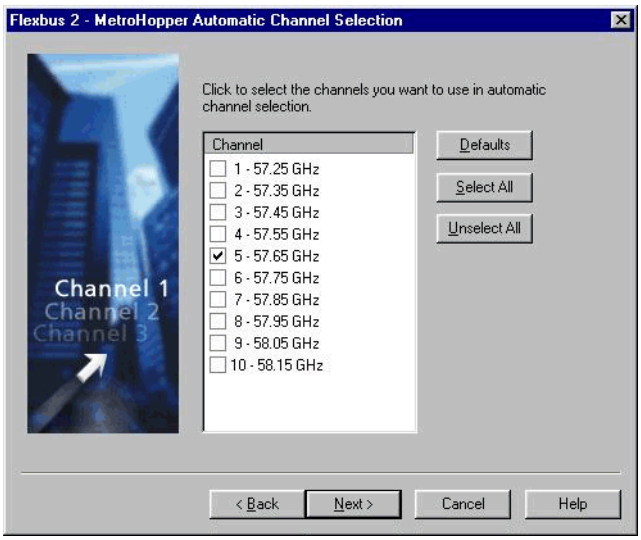


Figure 12. MetroHopper Automatic Channel Selection

7. If the transmission unit type is FXC RRI, define the Flexbus 2 settings for the outdoor unit as described in step 5. This is needed only if Commission the unit option for Flexbus 2 was selected in the Flexbus Settings page.

8. The Summary of Commissioning Settings page displays the settings you have defined for commissioning the radio(s).

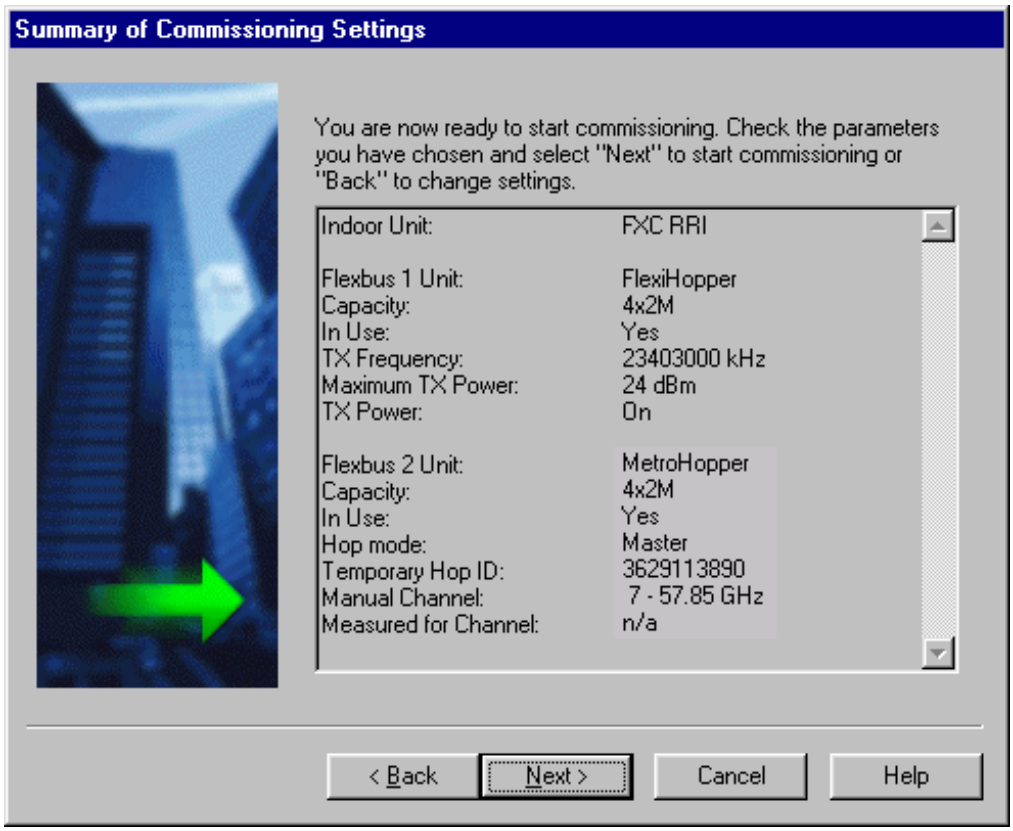


Figure 13. Summary of Commissioning Settings

Check that the settings are correct and click Next to start the actual commissioning procedure.

9. The Monitoring Hop page displays the status of the hops during and after the commissioning.

The commissioning may take some time, and the Status field displays the message 'reading status'.The status changes to 'Ready', if the commissioning was successful. If the commissioning fails for some reason, the Status field gives a short description of the failure (for example, 'Trying... no far end found'). If the commissioning still fails, refer to Nokia MetroHopper and FlexiHopper user manuals for more information.

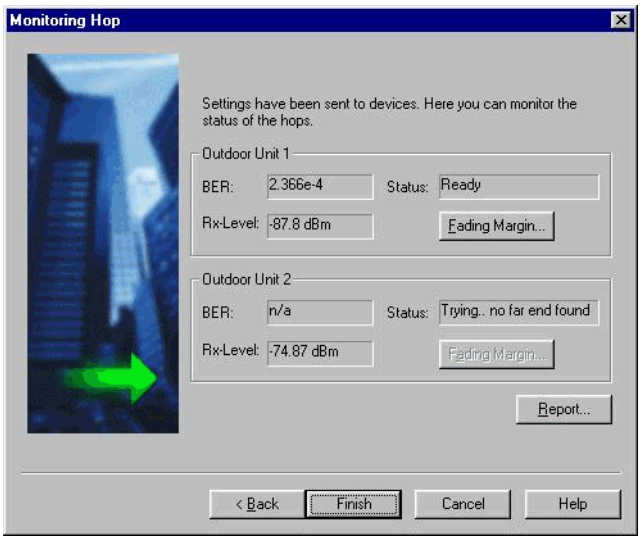


Figure 14. Monitoring Hop status

Note

The Fading Margin button for outdoor unit 1 is disabled when the outdoor unit 1 is not a FlexiHopper radio. The Fading Margin button for outdoor unit 2 is disabled when the operating mode for FXC RRI unit is set to HSB or when the outdoor unit 2 is not a FlexiHopper radio.

10. Click the Fading Margin... button to carry out fading margin measurement on the selected hop (selected outdoor unit). See Figure *Fading margin measurement* for single hop on outdoor unit 1.

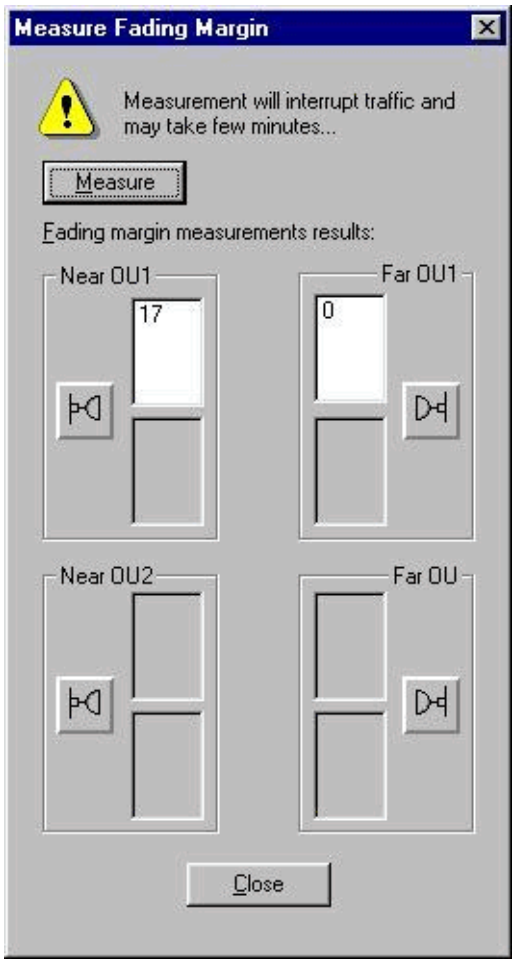


Figure 15. Fading marging measurement

11. Click Report... in the Monitoring Hop dialogue to see a more detailed commissioning report for each outdoor unit.

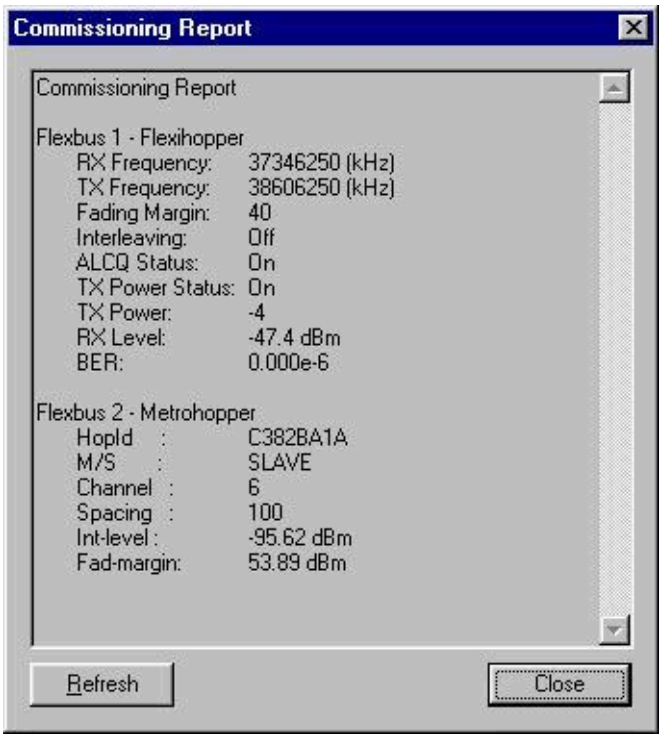


Figure 16. Commissioning report for outdoor units

12. Click Finish on the Monitoring Hop page to exit Radio Wizard.

7.2.7 Adjusting synchronisation settings of a managed node for UltraSite EDGE BTS

Before you start

Review *Manual Hub configuration of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

NBTS master clock uses the synchronization signal coming from the transmission part as a reference. To meet the BTS Air interface accuracy requirement ±0.05 ppm (set by ETSI), the transmission synchronization input must meet the long-term accuracy of ±0.015 ppm.

Steps

1. **Connect to the node or file.**

2. **Open Synchronisation window.**

   Select **Configuration | Synchronisation** menu command to open the *Synchronisation* window.

3. **Select the network topology according to the network type being built (chain or loop).**

   When *Loop* is selected, any interface with the *Far end alarm* active is not accepted as a synchronisation source. However, if *Chain* is selected, these interfaces are also accepted.

4. **Set synchronisation priorities.**

   You can set up to four synchronisation priorities. For each priority you must select a timing source.

   - *Rx Clock* type for an FXC E1 or FXC E1/T1 unit requires that an interface is also chosen.
   - *Rx Clock* type for an FXC RRI unit requires that Flexbus and channel are also chosen.
   - When *Sync Input* is selected, only FXC E1 or FXC E1/T1 units can be selected for the source, and the interface is fixed to 4.
   - When *Internal* timing is selected, all subsequent priorities will be disabled.

5. **If necessary, adjust the display of the used synchronisation source.**

   Click the *Refresh* button to adjust the display.

7.2.8 Adjusting synchronisation loop bit settings of UltraSite EDGE BTS

Before you start

Review *Manual Hub configuration of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Steps

1. **Open Loop Bits window.**

   Click the *Loop Bits* tab in the *Synchronisation* window to open the *Loop Bits* window.

2. **Select *Add* or *Modify*.**

3. **Select a transmission unit.**

4. **Select a timing option.**

5. *If* you selected FXC E1 or FXC E1/T1 unit

   Then

   Select interface for the loop bits

6. *If* you selected FXC RRI unit

   Then

   Select Flexbus and channel for the loop bits

7. **Select the MCB and LCB settings.**

   Select the desired settings for Master Clock Bit (MCB) in the master group and LCB (Loop Control Bit) in the loop group.

8. **Click OK.**

7.2.9 Adjusting Q1 management settings for UltraSite EDGE BTS

Before you start

Review *Manual Hub configuration of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

You must adjust Q1 management settings to enable remote management through the Embedded Operations Channel (EOC).

Note

Setting up the EOC is not required for the commissioning procedure. You can commission and integrate BTS to the network without these settings.

Note

The Commissioning menu is disabled if BTS Manager is connected to the remote BTS.

Steps

1. **Connect to the node or open the node file.**

2. **Open the Q1 Management window.**

   Select *Q1 Management* on the *Configuration* menu in UltraSite BTS Hub Manager.

   The *Q1 Management* window displays.

3. **Select the Bus tab.**

4. **Add EOC.**

   Click the *Add* button. The *Add EOC* window displays.

5. **Select the In *Use* option.**

6. **Select the unit to be configured.**

7. **Select the interface (for E1/T1) or Flexbus and channel (for RRI).**

8. **Select a timeslot for Q1 management.**

9. **Select a sampling rate and bit(s) for the Q1 channel.**

10. *If* the unit is an FXC RRI unit

    Then

    Select a Flexbus and overhead on the selected FXC RRI unit.

    Select either Overhead 1 or 2, depending on the selected Flexbus. Overhead 1 corresponds to Flexbus 1 and Overhead 2 corresponds to Flexbus 2. After this selection has been made, no further configurations for sampling rate are required because the sampling rate is fixed so that it is always at least 64 kbit/s.

    The advantage of using the overhead channel for Q1 is that it does not waste payload.

11. **Click OK.**

12. **In the *Q1 Management* window click OK.**

7.2.10 Adjusting alarm property settings

Purpose

The **Alarm Properties** dialogue allows you to view and modify alarm properties of a node, FXC transmission unit, and outdoor unit.

Steps

1. **Select Configuration → Alarm Properties...**

   Select **FXC RRI → Alarm Properties...** to view FXC transmission unit or outdoor unit in MetroHub or UltraSite

Expected outcome

The **Alarm Properties** dialogue opens.

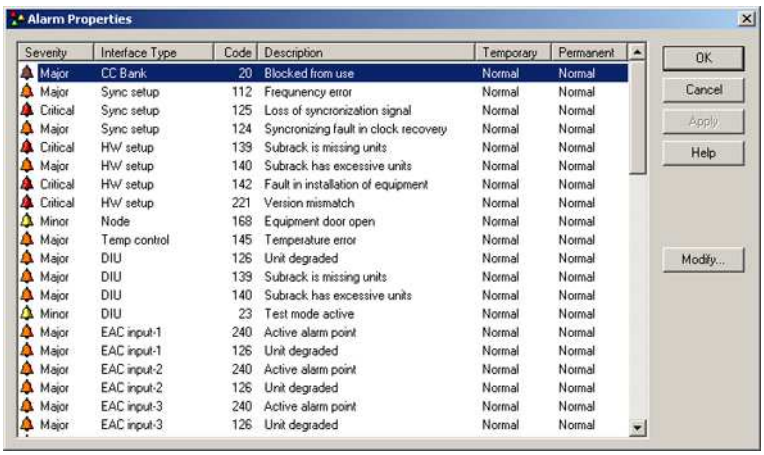


Figure 17. Alarm Properties dialogue

Further information

The **Severity** column shows a coloured alarm bell and text explaining the severity of the alarm. The severity can be critical, major, or minor.

The **Interface Type** column shows the interface the alarm relates to.

The **Code** column shows the fault code.

The **Description** column shows the name of the alarm.

The **Temporary** column shows the temporary state of the alarm. The possible temporary states are normal, inhibited and forced ON. If the temporary state is inhibited or forced ON, the state is cancelled by the node's control timeout.

The **Permanent** column shows the permanent state of the alarm, that is, the state that will remain even after a HW reset. The possible permanent states are normal, inhibited and forced ON.

2. Click the Modify button

Click the right mouse button over an alarm row and select **Modify...**

Expected outcome

The **Modify Alarm Properties** dialogue opens.

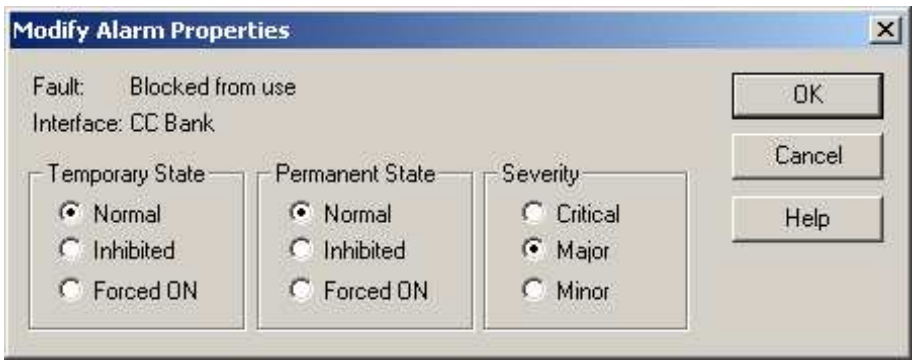


Figure 18. Modify Alarm Properties dialogue

You can adjust temporary state, permanent state, and severity of the alarm.

Note

Alarm severity can be modified in the **Modify Alarm Properties** dialogue. The modified alarm severity is visible in the local manager alarm window. The alarm is reported to the NMS and BSC with an alarm code. Local alarm severity modification does not override global severity settings in the NMS or BSC.

3. Adjust the settings as desired and click OK

Further information

Alarm property default settings can only be restored by *resetting the node*.

7.2.11 Allocating F(X)C transmission capacity of UltraSite EDGE BTS

Before you start

Review *Manual Hub configuration of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

You must now allocate BTS transmission capacity on the D-bus. Use the Traffic Manager, which is a graphical tool that allows you to allocate BTS transmission capacity, regardless of which Nokia UltraSite transmission unit is used. You must define the unit (for example, 1 E1/T1), the interface (with FXC units), and the incoming timeslot allocation on the Abis according to the transmission plan.

The D-bus allocation menu also allows for manual optimisation of cross-connections along a D-bus. This is a manual process of allocation whereas the Traffic Manager performs this operation automatically.

By performing manual D-bus allocations, information for all traffic signals inside the D-bus (EDAP, OMUSIG, TCH, TRXSIG) can be received by the BTS.

If you use the D-bus allocations alone, you must create the cross-connections individually with the *Cross-connection Wizard*. This method of allocation is used to optimise the traffic in the D-bus.

Define the capacity to be used by selecting its signal type (*EDAP, TCHs, TRXSIG, OMUSIG, or TRXSIG on TCHs*) and by reserving required *time slots and bits*.

Note

In the case of 1.5 MB links (T1), the Traffic Manager automatically reduces the number of time slot rows in the table to 24.

Steps

1. Open Traffic Manager.

Select the *Traffic Manager* command on the *Configuration* menu in Nokia UltraSite BTS Hub Manager. The *Traffic Manager* window is displayed.

2. Select the line interface being used.

Select from Interface 1 to Interface 4 with FXC E1(/T1) and up to 16 Channels/FlexBus with RRI transmission units. The number of available channels is decreased when FlexBus capacity is set to other than 16 x 2M. An FC E1/T1 unit has only Interface 1 available, because it has only one line interface.

3. Allocate transmission capacity.

a. Click the *TCHs* button.
b. Click in a cell in the *Abis allocation for the BTS* time slot table.
c. Repeat step b to allocate transmission capacity to all TRXs in the BTS configuration.

4. Select the link speed (alternative 1).

a. Click the *TRXSIG* button.
b. Click the first bit in a timeslot in the Abis allocation table.
c. Select the TRX to be defined from the pop-up menu.
d. Select the link speed from the pop-up menu.
e. Repeat steps b to d for all TRXs in the BTS configuration.
f. Click the *OMUSIG* button.
g. Click a cell in the Abis allocation table.
h. Select the link speed from the pop-up menu.

5. Select the link speed (alternative 2).

a. Click the *TRXSIG on TCHs* button.
b. Click the first bit in a timeslot you reserved for TCHs in step 3.
c. Select the link speed from the pop-up menu.
d. Repeat step c for all TRXs in the BTS configuration.

e. Click the *OMUSIG* button.
f. Click a cell in the Abis allocation table.
g. Select the link speed from the pop-up menu.

6. *If* you want to modify the allocation table at this point,

   Then

   You must first delete prior allocations.

   a. Right-click on the cell to be modified.
   b. Delete either one signal allocation, all signal allocations or delete all allocations for the selected port.

Note

Choosing *Delete all* while modifying the allocation table, deletes all transmission capacity allocation from the D-bus without a warning. If you execute the command by mistake, click *Cancel* and start the allocating procedure again.

---

7. Verify the signal timing.

Verify that the signal timing (either *Normal* or *Satellite*) is correctly set.

8. Click OK to send the information to the BTS.

Note

When the link capacity restricts normal signal allocation, you can use the *TRXSIG on TCHS* signal type.

---

9. *If* you wish to automatically allocate D-buses and create required cross-connections,

   Then

   Select an EDAP signal.

a. Make the first EDAP signal selection from the signal selection group.
b. After the EDAP signal selection, mark a new EDAP.
c. The EDAPs connect to buses D12 and D13. Use the first free place for the new EDAP.

Note

Do not change the locations of the existing EDAPs on Abis. If there are no free places in other D-buses, connect an EDAP to bus D11.

Note

If you use Traffic Manager, then D-bus allocation is NOT required to be done separately since Traffic Manager automates D-bus allocation during this process.

7.2.12 Creating bi-directional cross-connections for UltraSite EDGE BTS

Before you start

Review *Manual Hub configuration of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Because there is no Cross-connections file available, cross-connections for each transmission unit are created with Nokia UltraSite BTS Hub Manager's cross-connections tool. This FXC transmission unit configuration work includes also cross-connections on the D-bus.

Cross-connections define how signals are routed from an FXC transmission unit to another transmission unit. Cross-connections are created into banks that are either active or inactive. The cross-connections in the active banks are in use, whereas you can use those in the inactive banks for creating or editing cross-connections. This procedure describes how to manually create bi-directional cross-connections.

For more detailed information about cross-connections, refer to the *Nokia MetroHub Transmission Node* documentation set.

Steps

1. Start creating cross-connections.

Select the *Cross-connections* menu in the *Configuration* menu.

2. Open the active bank page.

3. Copy cross-connection bank.

Click *Copy* to copy the active bank into the inactive bank.

4. Open the

Add cross-connections Wizard.

Go to the *Inactive Bank* and click the *Add* button to open the *Add Cross-connection Wizard.*

5. Alternatively, initiate a cross-connection from the graphical view.

The *Add Cross-connection Wizard* displays.

6. Define cross-connection settings.

Define the following settings according to the cross-connection plan:

- label (name) of the new cross-connection (maximum 80 characters)
- cross-connection type; in this case the type is *bi-directional*
- granularity (with nx64k set also its coefficient n)

7. Select termination point settings.

Click *Next* button to display the *Overview* window, where you can edit the termination point(s).

8. *If* the FXC card is of *E1T1* type,

Then

Select the interface as the first termination point.

9. *If* the FXC card is of *RRI* type,

Then

Select the Flexbus as the first termination point.

10. *If* If the RXC card is of *RRI* type,

    Then

    Select the *Channel* and the *Interface.*

Note

In the timeslot table, the reserved timeslots and bits are grey, while the selected ones are blue. (If you modify your Windows colour settings, these timeslot colours will change accordingly.)

---

11. Define the start bit of the frame.

Click a cell in the table to define the start bit of the frame. Click the *Next* button.

12. Repeat steps 7 through 11 to select the second termination.

13. *If* the cross-connection is of *Protected* type,

    Then

    Set the condition.

    Click the *Condition* button to set the condition.

14. *If* the cross-connection is of *Masked* type,

    Then

    Set the Mask bits.

15. *If* the cross-connection is of *Unidirectional Fixed Data* type,

    Then

    Set the Fixed Data bits.

16. Exit the Add Cross-connections Wizard.

Click *Finish* button in the *Overview* window. The Wizard closes and you can view the cross-connection in the cross-connection list and the graphical view.

17. To create other types of cross-connections, if necessary, repeat steps 5 through 16.

18. Activate the bank.

Either click the *Activate* button or right-click the *Inactive bank* window and select *Activate* to activate the bank.

19. If you wish to change cross-connection settings, you will need to modify a bank.

a. To modify settings in an inactive bank, double-click the connection in the *Cross-connection* list view in the *Add Cross-connection Wizard* window.

b. Alternatively, you can select the connection and select *Modify* on the pop-up menu (which displays when you right-click the mouse).

c. Or, select the connection and click the *Modify* button.

d. If you have activated the bank, you will need to copy the cross-connection information to the inactive bank for modification since you cannot modify active banks.

Note

The copy command is also available in the pop-up menu.

---

20. Close the Cross-connection view.

7.2.13 Overview of upgrading the node manager and node software

Before you start

ITN C2.0 and later releases support remote software download, but ITN C1.2 does not. Upgrading from C1.2 has to be done on the site via the LMP connection.

If a hardware or BTS upgrade is also needed, it should be done before the software upgrade. See *Overview of replacing transmission units*. Also refer to related installation, removal and maintenance instructions in Nokia UltraSite EDGE BTS and Nokia MetroSite EDGE BTS documentation.

Steps

1. Upgrade the node manager from Nokia SiteWizard to your PC or laptop as described in Installing software from Nokia SiteWizard

2. Upload the node settings for a back-up as described in Saving node information in a file

3. *If* upgrading new transmission unit software in MetroSite BTS

   Then

   Open the transmission unit manager

4. Download the FXC unit software

   If there are several FXC units using the same kind of software package in the same cabinet, download the FXC unit software to the first unit. See *Downloading FXC unit software* for instructions. Thereafter, copy the software from the first unit to the other(s) as described in *Copying software between transmission units*.

Note

When upgrading to ITN C2.1 release, activate the downloaded SW on the master FXC unit before copying and activating the new SW on the other FXC units.

---

5. Upgrade the radio outdoor unit software last, if it is required

7.2.14 Installing software from Nokia SiteWizard

Purpose

Using Nokia SiteWizard, it is possible to install Nokia node managers, communication components, and tools required to manage related Nokia equipment. Each SiteWizard CD-ROM contains a compatible set of managers.

Before you start

To avoid compatibility problems, note the following:

- Check the compatible versions of managers.
- If your PC already contains previous node manager installations, it is recommended that you uninstall them before installing the new versions from the SiteWizard CD-ROM.

- The user ID used in the installation process must have local administrator rights when the software is being installed.
- Upgrade the Nokia GCS component in the following order:
  1. Install GCS version 4.1.
  2. Update the GCS to version 4.2.
  3. Install the managers as described below for Windows NT 4.0.

Steps

1. Start Windows

2. Insert the Nokia SiteWizard installation CD-ROM in the CD-ROM drive

3. Wait a few seconds

4. *If* the setup program does not start automatically

   Then

   Double-click the CD-ROM drive icon in the My Computer window to open the CD-ROM disk and then double-click the setup.exe program icon in the window

5. Follow the instructions displayed in the setup program

Expected outcome

The setup program copies the selected files. The user is notified when the installation is complete.

7.2.15 Checking the transmission unit product codes and versions

Purpose

The FXC unit product code and version number is printed on the label on top of the unit. This label identifies the hardware and the software version of the unit at the time of shipping from Nokia.

The FXC unit product code and the separate product code for software can be checked locally or by the Network Management System (NMS) or NetAct.

Steps

1. Open the FXC unit's manager by clicking the unit

2. *If* the unit is a FXC E1 unit

   Then

   Read the identifications in the E1 Manager under FXC E1/T1 → Identifications

3. *If* the unit is a FXC RRI unit

   Then

   Read the identifications in the RRI Manager under FXC RRI → Identifications → Unit/Outdoor Unit

Expected outcome

The manager displays the **Identifications** dialogue.

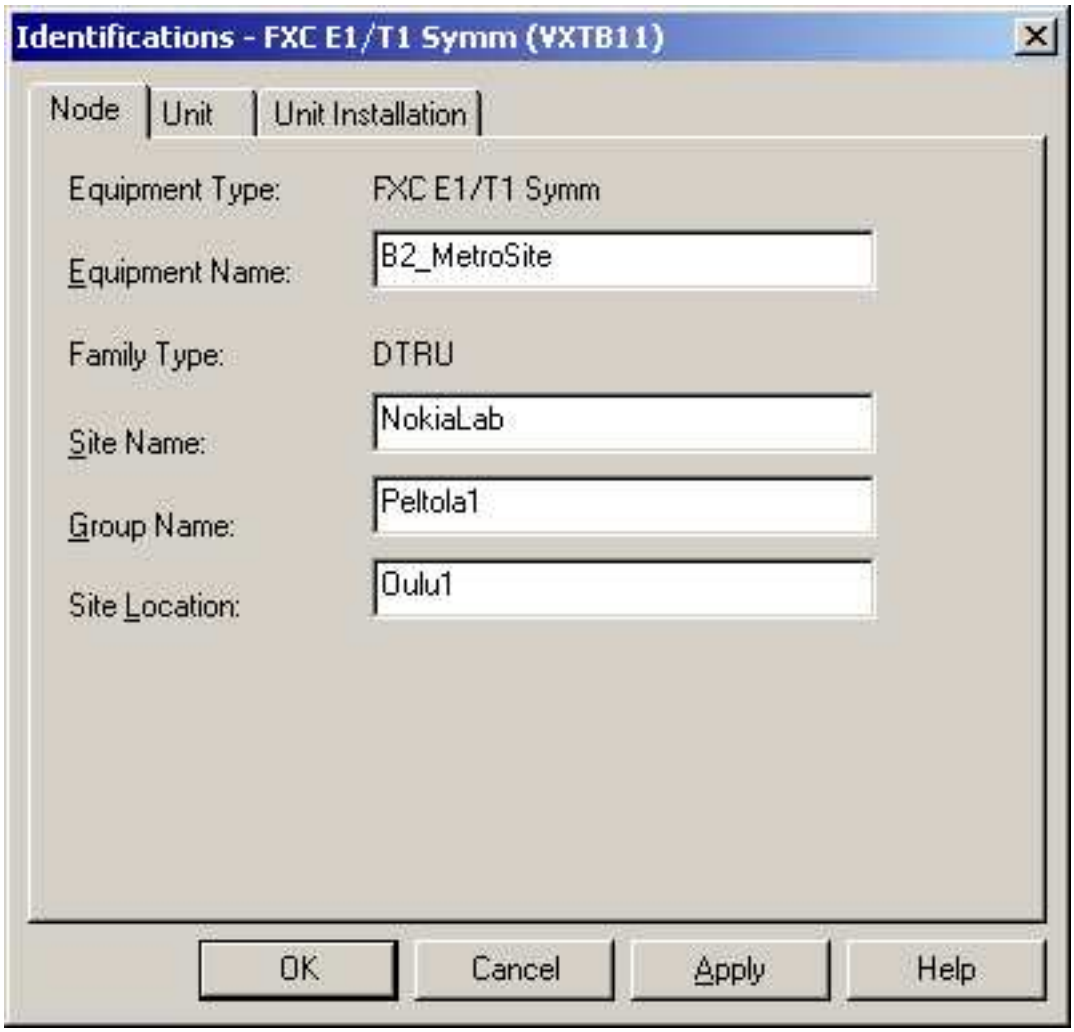


Figure 19. Identifications dialogue

Further information

Refer to *ITN hardware and software compatibility* for the supported hardware versions.

7.2.16 Downloading FXC unit software

Purpose

You can download unit software into an FXC unit with the node manager both locally and remotely. Remote download is supported in ITN C2.0 and later releases.

The ITN C2.1 release introduces a new application for remote software download called Transmission Loader. The Transmission Loader enables automatic remote software upgrade to network elements, using existing Q1 management channels. For more information, refer to the Transmission Loader documentation available in NOLS under Maintenance.

Note

Readers should note that all images in this document are typical in nature and are for general reference only. For hardware, the versions depicted may differ from the latest version of equipment. For software, any version numbers shown in any of the windows/screens/dialog boxes may not be the same as the actual software that is to be installed. It is important to remember that the procedure steps must be followed, as these will give advice on the correct software to be installed and the correct text that will be displayed in each window/screen/dialog box.

Before you start

Software can be downloaded to one unit at a time. If you have more units of the same type in the cabinet, download software into one unit first and then use *software copy* to update the rest of the units. Software copy is supported in ITN C2.0 and later releases.

Note

When upgrading to ITN C2.1 release, the downloaded SW on the master FXC unit has to be activated before the SW on other FXC units. Start by downloading the new SW to the master FXC unit and activate it, after that you can copy and activate the new SW on the other FXC units.

Summary

The FXC units have two software banks, and the active software bank always contains the running software. Downloaded software is always stored into the inactive software bank.

Downloading does not disturb the traffic in the transmission unit. However, after the download is completed, you need to activate the software with the manager. To activate the software, you need to warm-start the unit, which causes a short traffic cut in the transmission unit.

Note

Remote software download through the *Q1 management* channel may decrease the performance of remote alarm and performance monitoring via NetAct during software download.

The FXC application file extension is .pkt or .pkz (e.g. S36122D0.pkz). The file name includes the software code of the application. The extension .pkt is used for an uncompressed file and .pkz for compressed file. Therefore the .pkz file size is smaller and download is faster with it. Compressed file is uncompressed in the unit before stored into the flash. File compression is supported by ITN C2.0 and later releases.

Software/hardware compatibility

The application file compatibility (SW/HW) is checked at the beginning of the download by the unit software. If the file to be downloaded is not compatible, the download is not executed further. In that case the manager displays an error dialogue when the download starts.

Figure 20. Dowload error message when SW/HW compatibility check fails

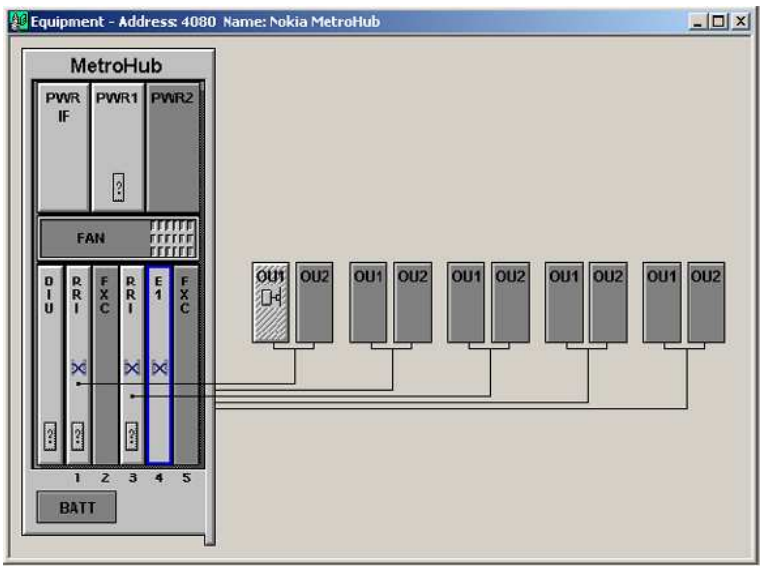
The inactive software bank is always cleared after a failed SW download.

Software/software compatibility

All the FXC unit software in a cabinet must be from the same release, for example ITN C2.1. The node master unit checks the release compatibility, and all the slave units must have the same release software. If a units has active software from a different release, the node gives the *221 Version mismatch* alarm and incompatible units are shown in the equipment view with a blue border. For removing the blue border and cancelling the alarm, see *221 Version mismatch*.

Note

The 221 Version mismatch alarm has to be cancelled in order to manage the node successfully.



Note

The equipment view looks slightly different for UltraSite.

Figure 21. Version mismatch in the equipment view

Steps

1. **Start the node manager**
2. **Establish a connection to the node**
3. **In the Equipment view, click the FXC unit to be upgraded**

   Expected outcome

   The FXC menu appears in the menu bar (on the left side of the Tools menu).

4. *If* the FXC unit to be upgraded is an FXC RRI

   Then

   Select FXC RRI → Unit software → Unit

Expected outcome

The **Unit Software Management** dialogue opens.

5. *If* the FXC unit to be upgraded is an FXC E1/T1

   Then

   Select FXC E1 → Unit software

   Expected outcome

   The **Unit Software Management** dialogue opens.

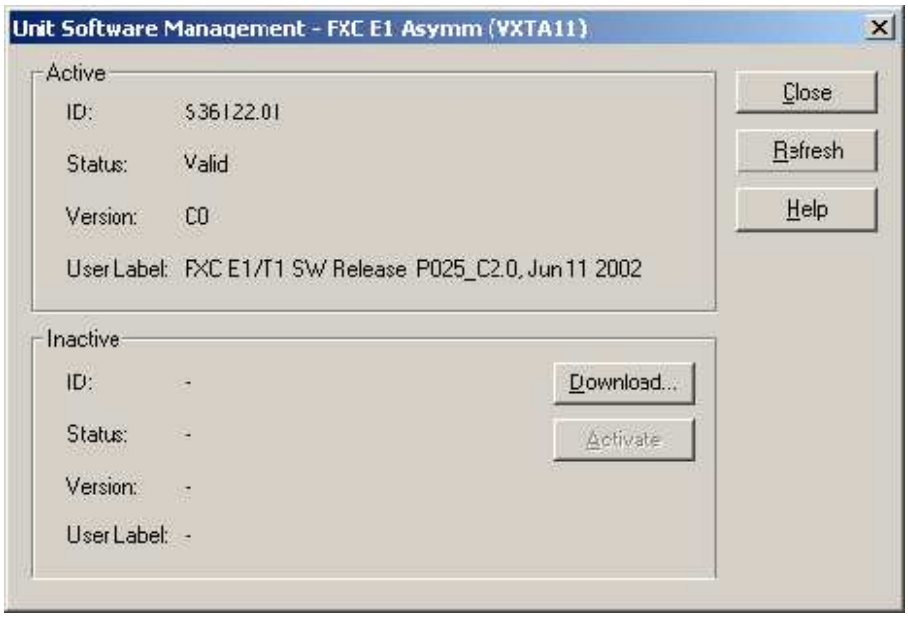


Figure 22. Unit Software Management dialogue

6. **Click Download**

   Expected outcome

   A standard Windows file selection dialogue opens.

7. **Select the file to be downloaded and click Open**

   Expected outcome

   The download starts, and the **Downloading Data** dialogue is displayed.

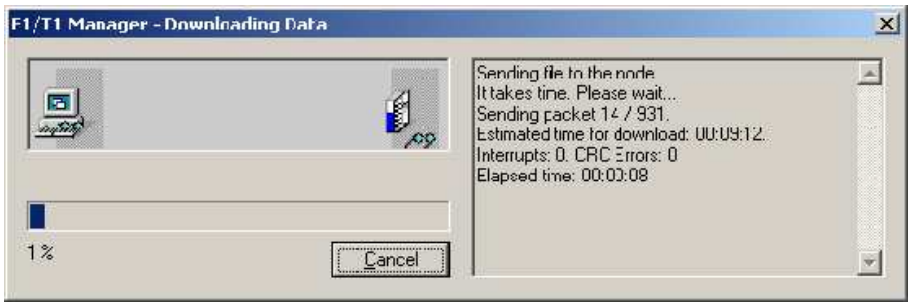


Figure 23. Downloading Data dialogue

The dialogue displays information about the reliability of the management channel used. The following counters are available:

- Packet counter
- SWDL interrupt counter
- CRC error counter

The estimated duration, and the actual elapsed time, are displayed.

The discontinuation of the download can easily be seen from a stopped packet counter. If, for example, the connection is lost, the SWDL interrupt counter is increased by one. The CRC error counter displays the number of erroneous packets.The values indicate the performance of the DCN channel.

The *Downloading Data* dialogue is displayed during the whole downloading process. It is closed after the download has been completed and the *Unit Software Management* dialogue is activated.

8. In case the transmission unit is operating in a Nokia BTS, block the BCF with Nokia BTS Manager or request BCF lock from the BSC.

9. Activate the downloaded software by clicking Activate

Expected outcome

The manager starts the software activation, and the unit executes the warm-start.

Note

When upgrading to ITN C2.1 release, activate the downloaded SW on the master FXC unit before the other FXC units.

Activating new software disturbs traffic in the transmission network. In MetroSite EDGE BTS and UltraSite EDGE BTS, all active calls may be cut.

When the activation is complete, the manager displays the downloaded software in the active bank. The previously active software is now inactive.

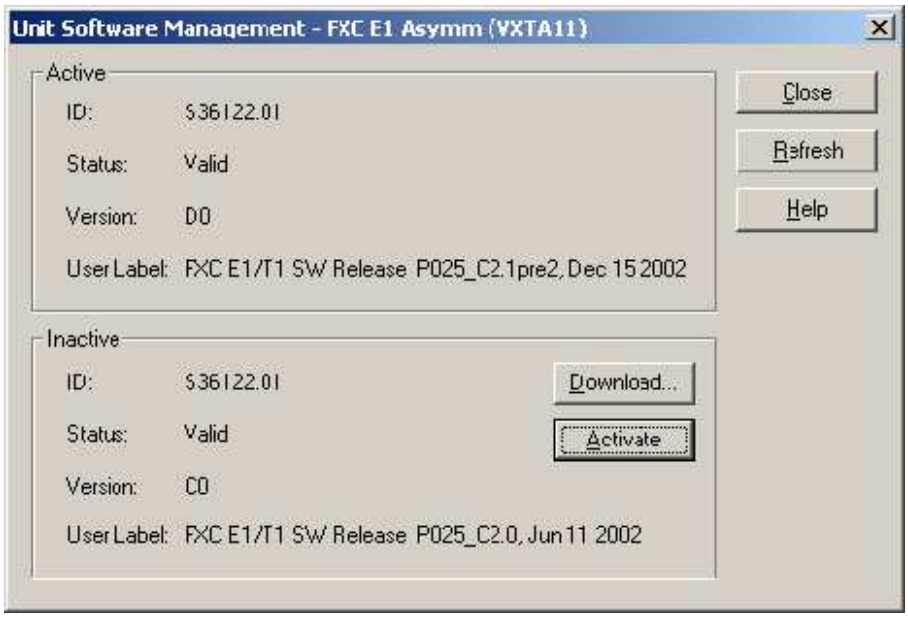


Figure 24. Unit Software Management dialogue after software download

10. In case the transmission unit is operating in a Nokia BTS, unblock the BCF with Nokia BTS Manager or request BCF unlock from the BSC.

11. Click Close

7.2.17 Copying software between transmission units

Summary

Inside a node, software can be copied between similar types of FXC units:

- from any bank of an FXC E1(/T1) to the inactive bank of an FXC E1(/T1)
- from any bank of an FXC RRI to the inactive bank of an FXC RRI

The compatibility of the software is checked before it is downloaded (or copied). The file to be copied is compared to the one in the target. Only software with the same software code are allowed to replace each other.

Note

Different hardware versions may in some cases require different software. See *ITN hardware and software compatibility*

The master unit of the node has a copy queue where the copy commands are situated. The master unit executes the commands in the background one by one. The copy queue has a maximum of four copy commands. If the queue is full, the queue must be cleared before any new commands can be accepted. A copy command can also include a software activation command, if the target is not the master unit.

Steps

1. **Start the node manager**
2. **Establish a connection to the node**
3. **Select Maintenance → Software Copy...**

   Expected outcome

   The **Software Copy** dialogue opens.

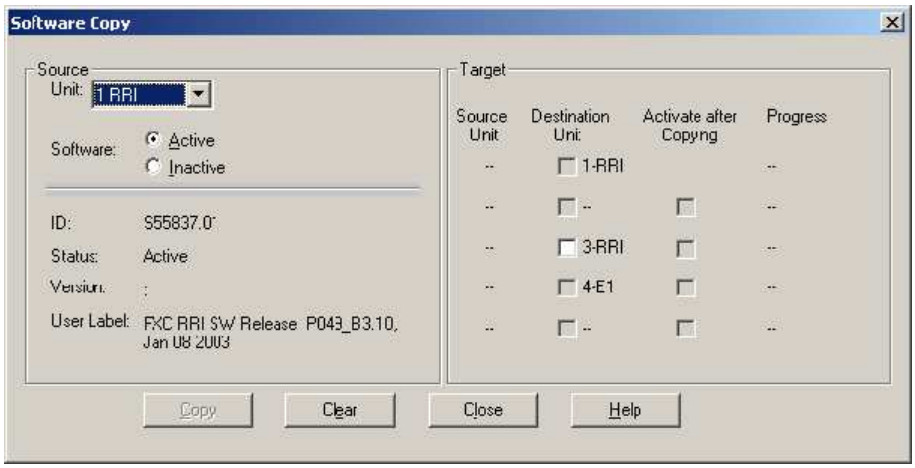


Figure 25. Software Copy dialogue

The *Software Copy* dialogue includes an individual software activation check box for each target FXC unit, which allows software activation after copying on only the selected units, instead of all units. The source and progress indication are also displayed for each target FXC unit.

The right-most column in the *Software Copy* dialogue shows the progress, in percent, when copying is ongoing.

4. Select the source unit and the bank

5. Select the target unit from the target group by clicking the checkbox

6. *If* you want the manager to activate the software after copying

   Then

   Check the Activate after copying check box

   When upgrading to ITN C2.1 release, activate the downloaded SW on the master FXC unit before copying and activating the new SW on the other FXC units.

7. *If* you want to copy software from another source unit into another target unit

   Then

   Repeat the steps above as many times as needed

8. Click the Copy button

Expected outcome

Software copying starts, and the progress is displayed in the **Software Copy** dialogue.

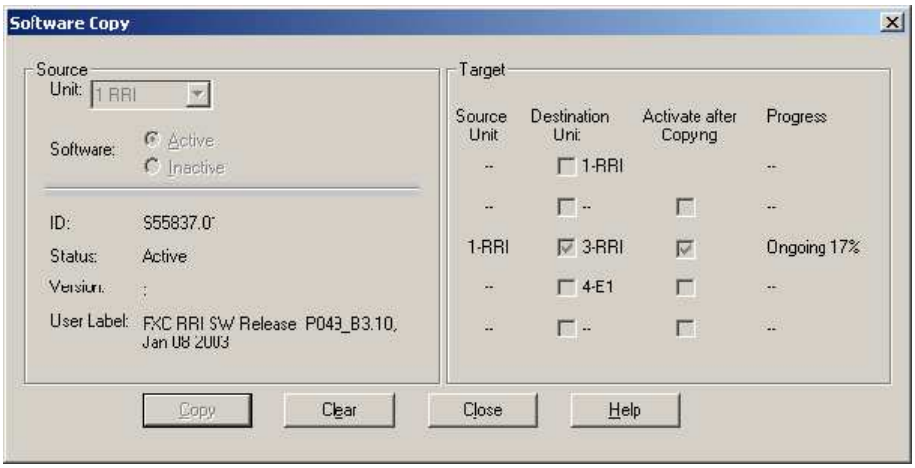


Figure 26. Software Copy dialogue when copying ongoing

After all the copy commands are executed and the **Progress** is set to **Done**.

Unexpected outcome

If there are mistakes in the copy definitions, click **Clear**. Note that this clears all the selections you have made.

9. Click Close to close the dialogue

When the dialogue is reopened, the copy progress is updated.

7.2.18 Downloading software to radio outdoor units

Purpose

New software can be downloaded to outdoor units from Nokia UltraSite EDGE BTS, Nokia MetroSite EDGE BTS or Nokia MetroHub via an FXC RRI unit.

Before you start

Note

Activating the new software disturbs the traffic in the transmission network. In Nokia MetroSite EDGE BTS and Nokia UltraSite EDGE BTS, all active calls may be cut.

Before downloading, ensure that you have the correct file for each radio type available.

Product codes for different radio types are presented in the table.

Table 17. Product codes for different radio types

MetroHopper SW	P55820.01
FlexiHopper SW	P55040.01 (for old HW versions)
FlexiHopper SW	P55046.01
FlexiHopper Plus SW	P58040.01

Steps

1. To upgrade new outdoor unit software in Nokia UltraSite EDGE BTS or Nokia MetroHub

Steps

a. Click either the outdoor unit or the corresponding FXC RRI unit.

Expected outcome

The FXC RRI menu opens in the menu bar.

b. Select FXC RRI → Unit Software → Outdoor Unit for the radio you need to upgrade

Expected outcome

The **Software Management** dialogue opens for the radio you need to upgrade.

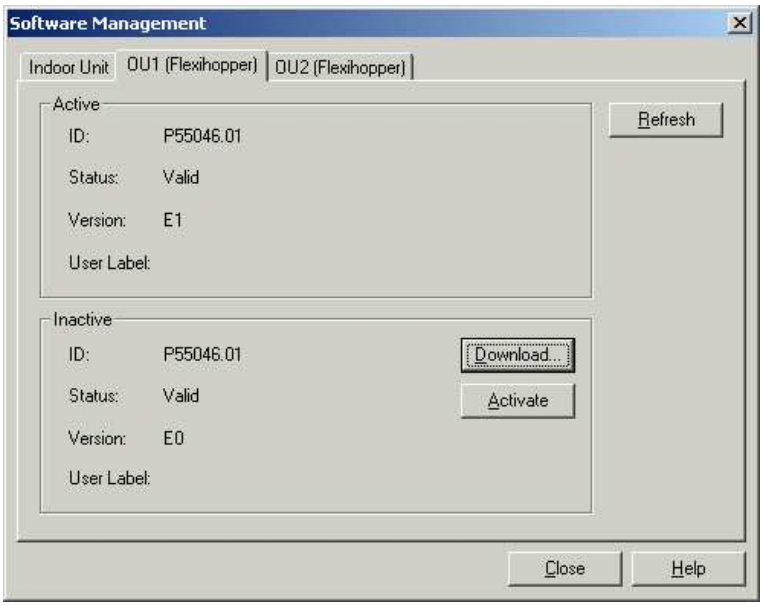


Figure 27. Software Management dialogue

2. To upgrade new outdoor unit software in Nokia UltraSite EDGE BTS or Nokia MetroHub

Steps

a. Select Transmission → Open.

Expected outcome

Nokia RRI Manager opens.

b. Select Maintenance → Unit Software → Outdoor Unit for the radio you need to upgrade.

Expected outcome

The **Software Management** dialogue opens for the radio you need to upgrade.

3. Click Download to browse for a file

4. Click Open to start the download

Expected outcome

The RRI Manager checks that SW code of the downloaded SW is the same as the running SW in the outdoor unit.

If the code is not the same, an error dialogue is displayed, which informs you that the selected binary is not compatible with the OU.

5. Click Activate to activate the new software in each of the radio units

---

Note

Activating the new software will cause an outdoor unit reset and thus interrupting running traffic through that outdoor unit. Management communication to the outdoor unit and traffic will be interrupted until the outdoor unit has been started up again Start-up of the outdoor unit may take 30 seconds to 1 minute. The actual start-up time after a reset depends on the outdoor unit type.

---

6. Repeat the procedure for the other outdoor units

7.2.19 Installing transmission units logically with the manager

Steps

1. To install a unit logically in the offline mode:

Steps

a. Open a node file (.dat or .nod) or an SCF file (.xml)

b. Right-click the desired unit to access the pop-up menu in the Equipment window

c. Select Install Unit from the pop-up menu

d. Select the type of unit to be installed

Expected outcome

The installed unit can now be used.

2. To install a unit logically in the connected mode:

Before you start

You can only install a unit that is physically present in the connected mode.

Steps

a. Insert a new unit into UltraSite EDGE BTS or MetroHub Manager

b. Connect to a node

c. Right-click the desired unit to access the pop-up menu in the Equipment window

d. Select Install Unit from the pop-up menu

Or

Select **Install All** from the pop-up menu if you want to install all units at the same time.

Further information

You can also insert a new unit when you have already established a connection to the node. In that case, to make the unit appear in the **Equipment** window, you need to select **Refresh** from the **Equipment** window pop-up menu.

7.2.20 Uninstalling transmission units logically with the manager

Purpose

You can logically uninstall one or more selected transmission units.

Note

Some unit-related settings (for example: EOC, synchronisation, cross-connections) are erased when a unit is uninstalled.

Steps

1. Connect to a node or open a node file

2. **Point to the unit(s) to be uninstalled and click the right mouse button to access the Equipment window pop-up menu**

3. **Select the Uninstall Unit pop-up menu command**

Expected outcome

The uninstalled unit(s) can no longer be used, and you can physically remove the unit(s).

7.2.21 Overview of managing cross-connections

Purpose

A cross-connection defines how the signals are routed between FXC units in a node.

If there is no cross-connection file available for commissioning the node, the cross-connections must be created manually with the MetroHub or UltraSite BTS Hub Manager.

Summary

Cross-connections are created into banks. The node contains two cross-connection banks. The state of a cross-connection bank can be active or inactive. Only the cross-connections that are in the active bank are in use in the node.

If you want to start using the cross-connections in the inactive bank, you must manually activate that bank.

Note

Adding new cross-connections or editing existing cross-connections is possible only in an inactive bank.

Note

Export the cross-connections from the inactive bank to a file before power reset, as the inactive bank is cleared from the node memory. Later, the same file can be imported to the inactive bank to restore the cross-connections.

You can edit cross-connections and banks only through the **Cross-connections** window.

Steps

1. To open the **Cross-connections** window

   #### Steps

   a. Create an online access to the node or an offline access to the file

   b. Select Configuration → Cross-connections...

Expected outcome

The **Cross-connections** window is divided into two parts. The upper window includes a cross-connection list view and on the right-hand side of the window you can find, for example, the buttons for adding, removing and modifying connections. The lower window includes a cross-connections graphic view.

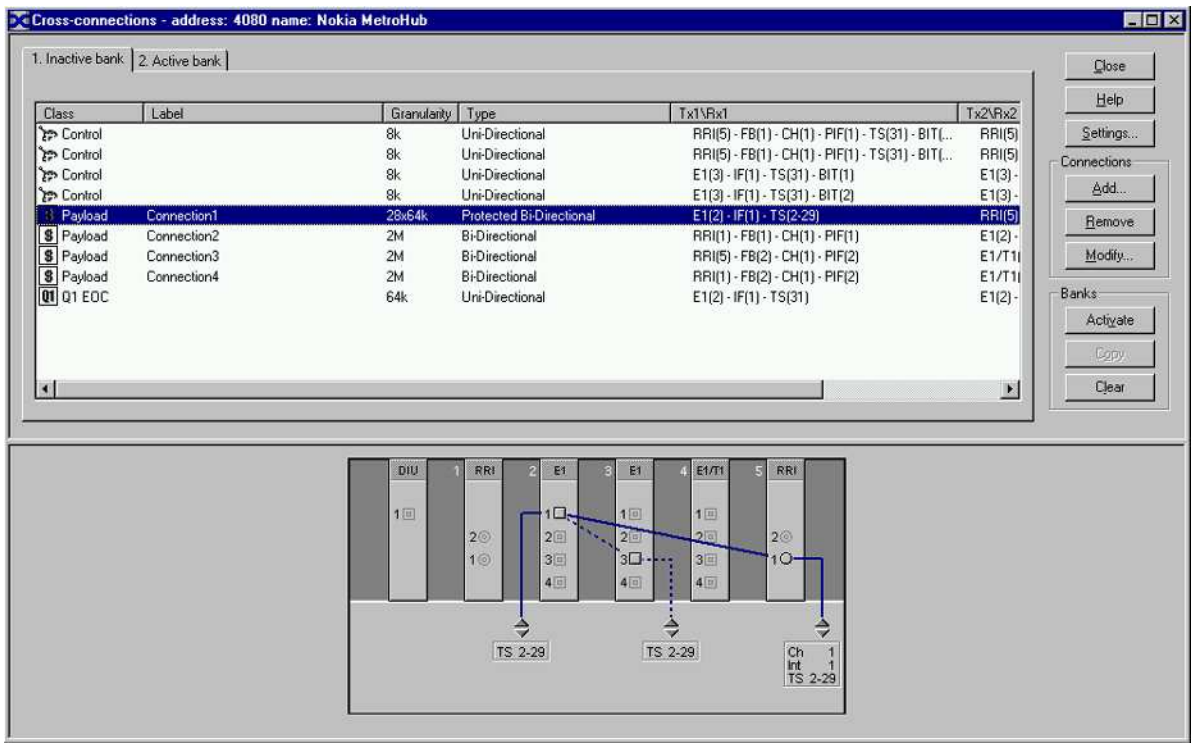


Figure 28. Cross-connections window

There is a list view for both the active bank and the inactive bank. The list view shows cross-connection related information in text format. A connection is always presented in one row. You can select several connections in the list. The view also provides a pop-up menu to carry out certain functionality for the selected cross-connection(s). It also provides buttons to carry out cross-connection-related or bank-related operations.

You can use the graphic view to create cross-connections and also to show how the selected connection in the cross-connections list view progresses from one FXC unit to another. The graphic view shows only one connection at a time.

2. To open the **Cross-connection Properties** dialogue

Steps

a. Select an active or inactive bank

b. Right-click the desired cross-connection

Expected outcome

A pop-up menu opens.

c. Select Properties

Expected outcome

Complete details about the selected cross-connection are shown in the **Cross-connection Properties** dialogue.

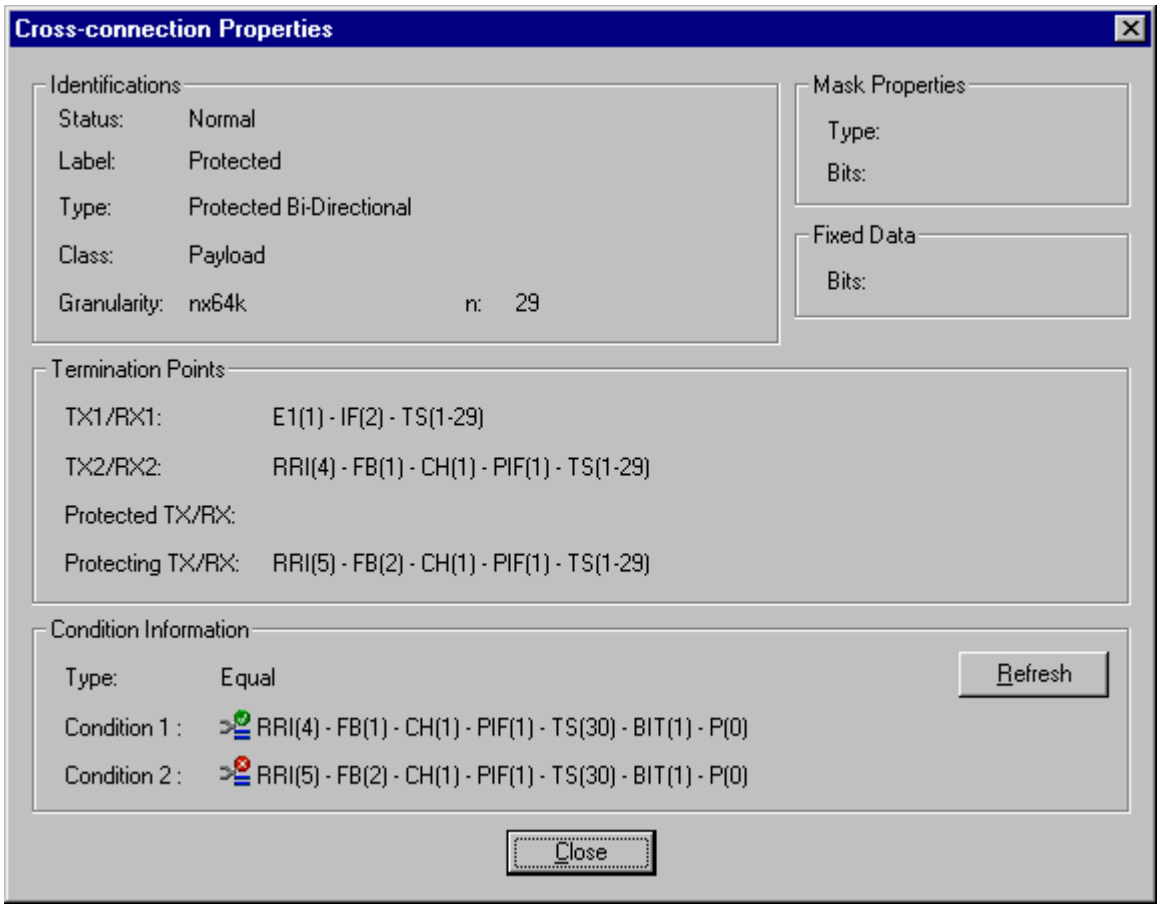


Figure 29. Cross-connection Properties dialogue

While managing a node (NE) with a protected cross-connection in the active bank, the dialogue also displays the condition bit status for Condition 1 and/or Condition 2. In such a case, the **Refresh** button is also available for refreshing the condition bit status. Once the condition bit status is read, the status is also displayed in the list view of the **Cross-connections** window for one or more cross-connections having the same condition(s).

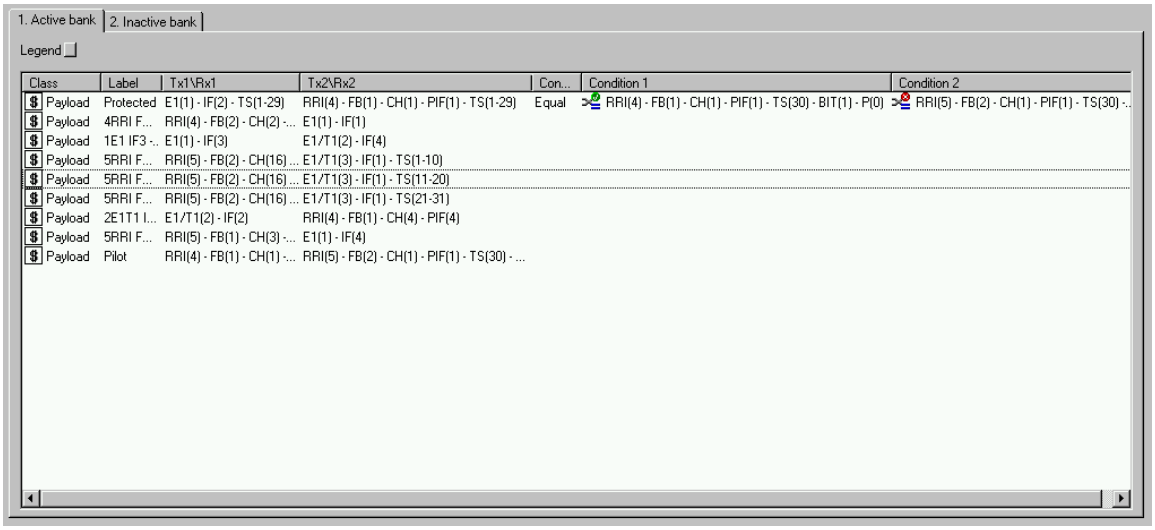


Figure 30. List view of the cross-connections window

Press the **Legend** button to see an explanation of the symbols.

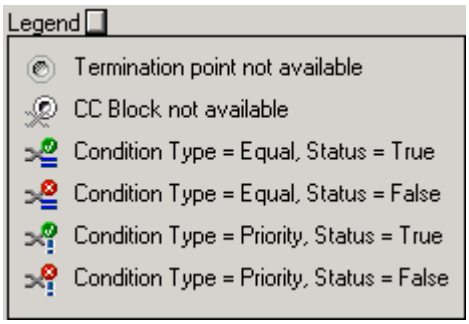


Figure 31. Symbols used in the cross-connections window

The condition bit status can also be read for selected cross-connections in the **Refresh** pop-up menu. The **Refresh** pop-up menu, which is available for the cross-connections active bank, refreshes the condition bit status for all the protected cross-connections in the bank.

3. *If* you want to add a cross-connection

   Then

See Adding cross-connections and Adding cross-connections in the graphic view

Further information

Bypass connections are always bi-directional and the granularity is 2M. These connections are only available for FXC RRI units.

A fast and easy way to add bypass cross-connections is via the graphical view in the **Cross-connections** window. Refer to *Adding cross-connections in the graphic view* for more information.

4. *If* you want to modify a cross-connection

   Then

   See Modifying cross-connections

5. *If* you want to remove a cross-connection

   Then

   See Removing cross-connections

6. *If* you want to create a cross-connection file

   Then

   See Creating and exporting a cross-connection file

7. *If* you want to import a cross-connection file

   Then

   See Importing a cross-connection file

Further information

Usability tips for cross-connections:

- The easiest way to edit an active cross-connection bank is to take a copy of it to an empty inactive bank, edit the connections there and activate the edited bank.
- Controls, for example, the Q1 EOC channel and MCB/LCB bits, are shown in the **Cross-connections** window as reserved capacity. These are also marked and seen as uni-directional connections, even though they are bi-directional by nature. It is only a way of marking.

It should be noted that control connections are just indicating the reservation of the cross-connection capacity, so they cannot be removed or edited in the **Cross-connections** window. They are reserving the capacity from both banks.

When the user chooses to create the EOCs/Sync loop bits, the contents of both active and inactive bank are validated for possible conflict.

If any conflict is detected, the manager displays a dialogue with EOC/Sync loop bits in conflict.

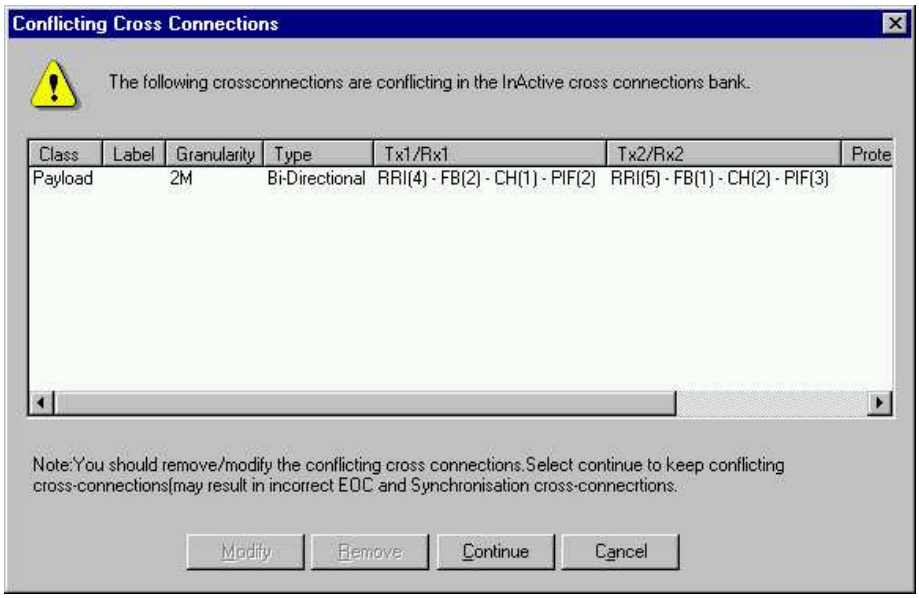


Figure 32. Conflicting cross-connections

The dialogue provides an option for the user to clear or preserve the inactive bank contents and to cancel or continue with current selections. The manager creates the required 2M cross-connections in the active or inactive bank depending on the user's decision.

7.2.22 Adding cross-connections

Summary

All different types of cross-connections supported by the node can be created using the **Add Cross-connection Wizard**. The wizard guides you through the different steps of adding a new cross-connection into an active bank. Should you forget to set some setting when adding a new connection, the wizard informs you about it.

You can also *create cross-connections in the graphic view* of the **Cross-connections** window.

The cross-connection types are explained in *Transmission unit cross-connections*. According to the **Cross-connection type**, only the required controls are enabled in the dialogue.

The following is an example of how to create a protected cross-connection with the **Add Cross-connection Wizard**.

Steps

1. **Click Configuration → Cross-connections**
2. **Select Inactive bank**
3. **Select Add**

   Expected outcome

   Add Cross-connection Wizard opens.

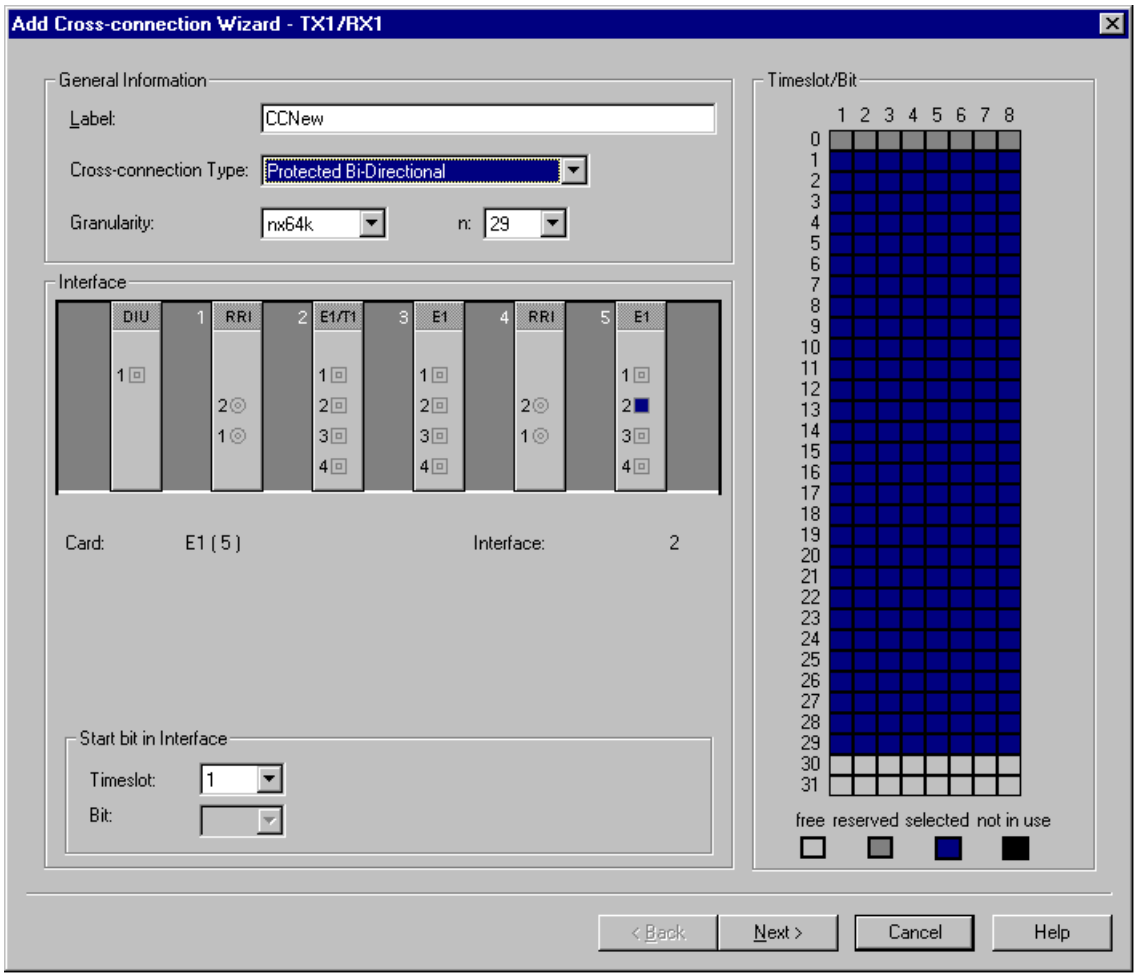


Figure 33. Add cross-connection wizard Tx1/Rx1 (FXC RRI) page

4. Modify the settings of the cross-connection

In the **Add Cross-connection Wizard** dialogue:

a. Select the reliable port by clicking the interface symbol (Tx1/Rx1)
b. Give the cross-connection a name (label)
c. Select 'protected bi-directional' as the cross-connection type
d. Select the granularity and click **Next**
e. Select the protected (Tx2/Rx2) port in the dialog that opens and click **Next**
f. Select the protecting port (Tx/Rx) and click **Next**

Expected outcome

The **Condition** dialogue opens.

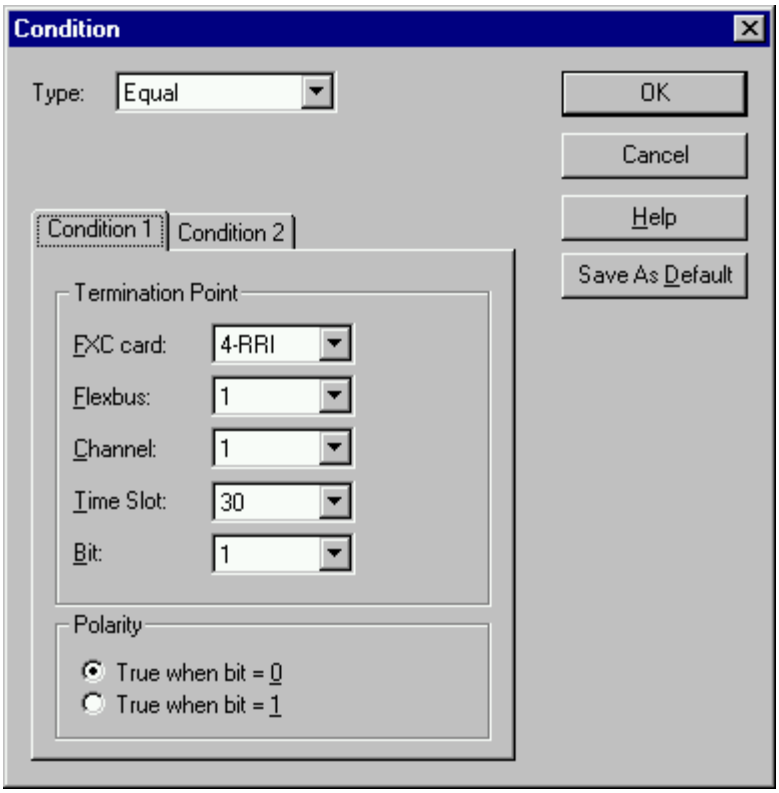


Figure 34. Condition dialogue (enabled only for protected cross-connections)

5. Modify the conditions of the cross-connection

Before you start

Note

'Local' (valid inside the 2 Mbit/s signal) or 'Global' (valid inside the whole node) common conditions are not supported in MetroHub or UltraSite BTS Hub protected cross-connections.

If you need to create several protected connections with common condition data, you can store the condition data by clicking **Set As Default**. The data is saved for the duration of the session and it is always taken into use by default for new protected connections.

In the **Condition** dialogue:

a. Select an FXC unit
b. If the unit is an FXC RRI, then select a Flexbus and channel in the FXC unit
   Else select an interface in the FXC unit
c. Select a time slot in the FXC unit
d. Select a bit in the FXC unit
e. Set the polarity and click **OK**

Expected outcome

The **Condition** dialogue closes.

The information displayed in the last page of the wizard provides an overview of the new cross-connection to be created and also seeks certain parameters (if required) depending on the selected cross-connection type in the first termination point page of the wizard. The arrows drawn in the space between termination point buttons indicate the direction of the cross-connection and its type.

The figure illustrates how the information is displayed when the desired Flexbus, channel and platform interface of an FXC RRI unit are selected on the first page of the **Add Cross-connection Wizard**.

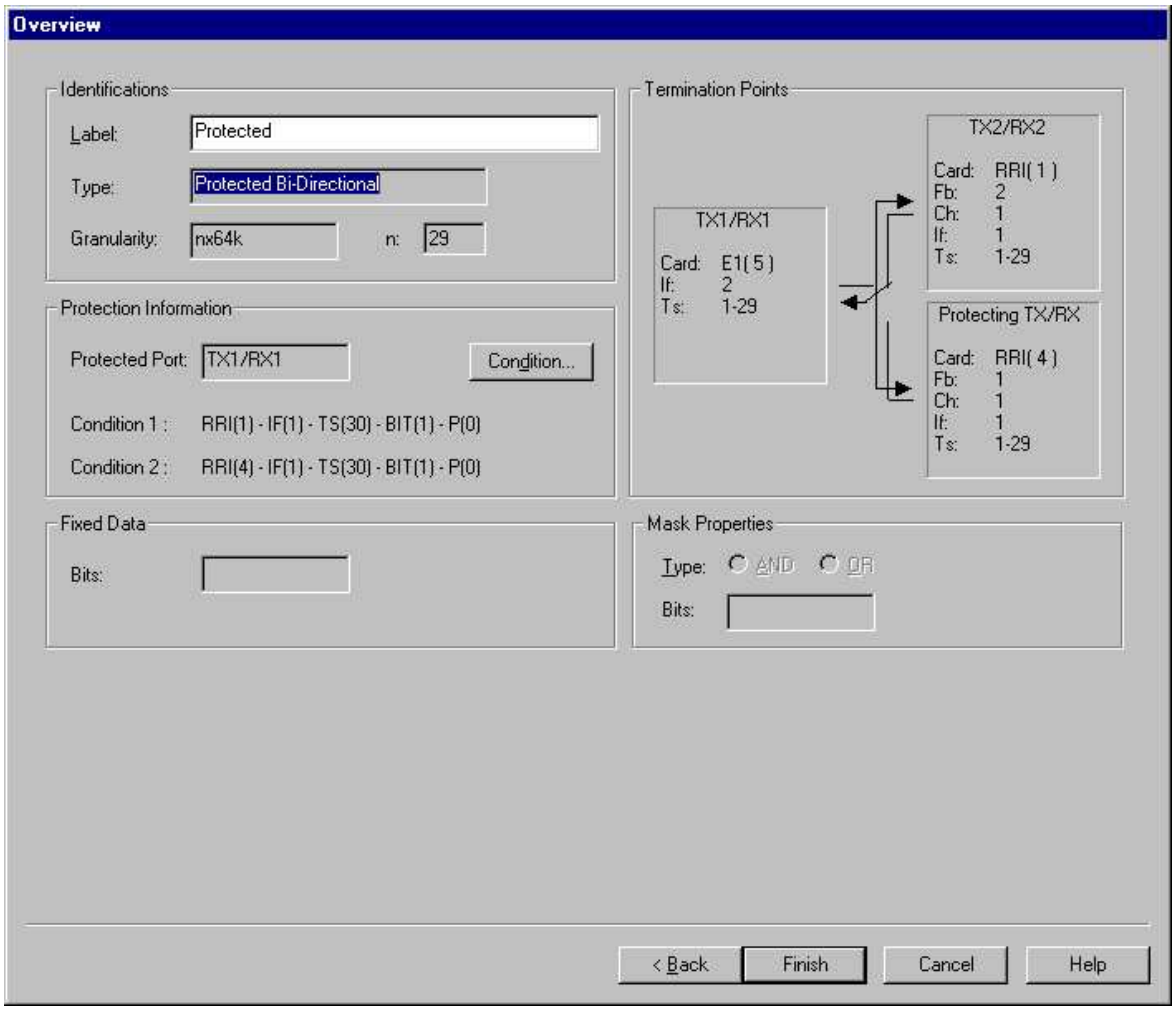


Figure 35. Add cross-connection wizard's last page: overview

7.2.23 Adding cross-connections in the graphic view

Summary

A fast and easy way to add cross-connections is via the graphic view in the **Cross-connections** window. You can select the unit, physical interface and granularity as shown in the figure below.

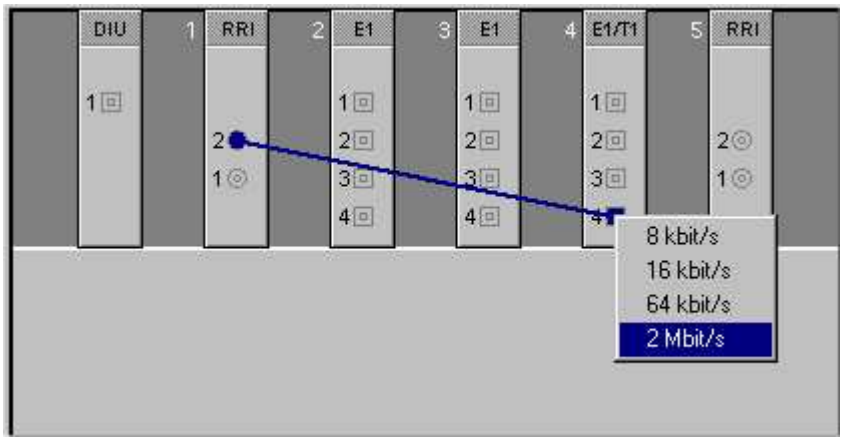


Figure 36. Selecting interface and granularity in the graphic view

Steps

1. **Press down the left mouse button to select an interface**
2. **Drag the line to the second termination point and release the mouse button**

   Expected outcome

   A pop-up menu is displayed.
3. **Select the granularity**

   Expected outcome

   The Cross-connection wizard opens.
4. **Select the cross-connection type on the first page of the wizard**
5. **Select the correct channel on the second page of the wizard**
6. **Click Next**
7. *If* the selected unit is a FXC RRI unit

   Then

   Select the desired channel

8. **Click Finish**

7.2.24 Modifying cross-connections

Purpose

You can modify existing cross-connections.

Steps

1. **Click Modify in the Cross-connections window**

   Expected outcome

   The **Modify Cross-connection Wizard** opens. The layout of this wizard is exactly the same as in the **Add Cross-connection Wizard**.

   Further information

Note

In the connection mode, only connections in the inactive bank can be edited.

   In order for the modified cross-connections to take effect, you must activate the bank manually. For instructions, see *Managing cross-connection banks*.

2. **Modify the settings as desired**

Further information

You can also modify cross-connections via a pop-up menu. Right-click the selected cross-connection in the inactive bank.

7.2.25 Creating and exporting a cross-connection file

Steps

1. **Open the manager and start the file mode by selecting File → New**

2. **Install the desired FXC units and radio outdoor units (OU) in the Equipment window**

Further information

Note

In order to restore the settings stored in a previously exported node (or cross-connection 'xcs') file, the hardware configuration of the node/xcs file must match the hardware configuration of the node where it will be restored.

3. **Open the Cross-connections window by selecting Configuration → Cross-connections...**
4. **Create all needed connections into an inactive bank**
5. **Click the Export button on the Cross-connections window**
6. **Save the exported file in the desired location**

7.2.26 Importing a cross-connection file

Steps

1. **Connect to the node or open a file**
2. **Select Configuration → Cross-connections...**

   Expected outcome

   The **Cross-connections** window opens.
3. **Select the inactive bank**
4. **Click the Import button on the Cross-connections window**
5. **Select the desired file in the dialogue that opens**
6. **Click the Open button**

Expected outcome

The file is imported to the inactive cross-connection bank.

Note

Cross-connections can only be imported to the inactive bank. For the imported settings to take effect, the bank has to be activated.

7.2.27 Managing cross-connection banks

Summary

Cross-connection banks can be activated, copied, and cleared.

Steps

1. *If* you want to activate an inactive bank

   Then

   Click Activate in the Cross-connection view

2. *If* you want to copy a bank

   Then

   Click Copy in the Cross-connection view

   ### Expected outcome

   This creates a copy of the cross-connections from an active bank to inactive bank.

   ### Further information

   This is useful if you want to create another cross-connection bank with only minor differences from the original.

3. *If* you want to clear a bank

   Then

   Select all cross-connections in the bank and click Remove in the Cross-connection view

   ### Expected outcome

   This removes all cross-connections from the inactive bank.

7.2.28 Removing cross-connections

Purpose

You can permanently remove a cross-connection from a bank.

Steps

1. **Select the connection or connections you wish to delete**
2. **Click Remove in the Cross-connections window**

Expected outcome

Before removing the cross-connections, the manager asks you to confirm if you want to go ahead with the removal. After you have confirmed the removal, the manager removes the cross-connection(s) from the bank.

Further information

You can also remove cross-connections via a pop-up menu. Right-click the selected cross-connection in the inactive bank.

7.3 Administering UltraSite BTS Hub

7.3.1 Starting the node manager

Before you start

Nokia node managers have been installed in your computer. For instructions, see *Installing software from Nokia SiteWizard*.

Steps

1. **Start Windows**
2. **Click Start, and then point to Programs → Nokia Applications**
3. **Click the node manager**

Expected outcome

When the node manager is started, an application window appears. The application window gives you access to all the other windows in the manager. No other windows are initially open.

The node manager application window has a toolbar that provides short-cuts to frequently needed menu commands. The window also has a status bar, which displays:

- connection parameters
- help information on the currently selected menu command
- COM-port that is currently connected
- if the application is running in file mode or connected mode

7.3.2 Using UltraSite BTS Hub or MetroHub Manager online help

Purpose

Nokia node managers feature comprehensive context-sensitive online help that provides help on all aspects of using the manager. Help is available at any time when you are using the manager.

Steps

1. **Give the menu command Help → Help Topics**

   Or

   Press the **F1** button

   Or

   Press the **Help** button of a dialogue

Expected outcome

The manager opens the **Help Topics** window.

Or

The manager displays the context-sensitive help of the current dialogue.

Further information

The context-sensitive help describes only the purpose and the layout of the dialogue or window in question. If you want to find more information about the node manager functions, it can be viewed by selecting the **Help Topics** button and then pressing the **Contents** tab and double-clicking the topic.

2. Select a topic from the Contents or the Index

Expected outcome

The selected topic is displayed.

Further information

The FXC unit-related online help is available from **Help → Transmission Unit Managers**. The help covers all the FXC units.

For further information on using online help in Microsoft Windows, refer to the Microsoft Windows user manuals.

7.3.3 Overview of connecting to the node online

Purpose

Nokia MetroHub or UltraSite BTS Hub Manager offers two ways to work: online and offline. In the online mode you can manage an actual node and all changes are made directly to the node. The offline mode allows you to manage a virtual node.

Note

You cannot fully manage the node in the offline mode. For example, not all settings can be modified.

Before you start

Start Hub or MetroHub Manager. Select the node that you want to manage by establishing a connection to the FXC unit acting as the *node control unit*. This may be done in three alternative ways:

Steps

1. Connect locally via LMP

Connect via Q1 address

Or

Connect using sobriquet connection

For information on how to access the node when you give the sobriquet on the command line, see *General Communication Service User's Manual* that is available in NOLS.

Further information

Accessing the node remotely via NMS

Security in Hub or MetroHub Manager is governed by the operating environment of the manager.

- Windows NT4.0 / Windows 2000

  When using an NMS system for remote management, the user must have the proper rights. To access a node manager, a user has to have the appropriate privileges in NetAct and Node Manager Server.

- Windows 95 and 98

  Hub and MetroHub Manager do not support NMS use in Windows 95 and 98.

7.3.4 Connecting locally via LMP

Before you start

Ensure that the LMP cable is connected.

Steps

1. Select Connection → Connect Locally

Note

This menu command can only be used if the local management port is used.

Expected outcome

The manager connects to the *node control unit* (any FXC unit in slot 1) using the fixed LMP address 4080 (default port settings: COM1, speed: 9600; these settings can be changed in the **Local Connection** folder which is opened by selecting **Tools → Options...**).

When the connection to the node has been established, the **Equipment** window opens automatically.

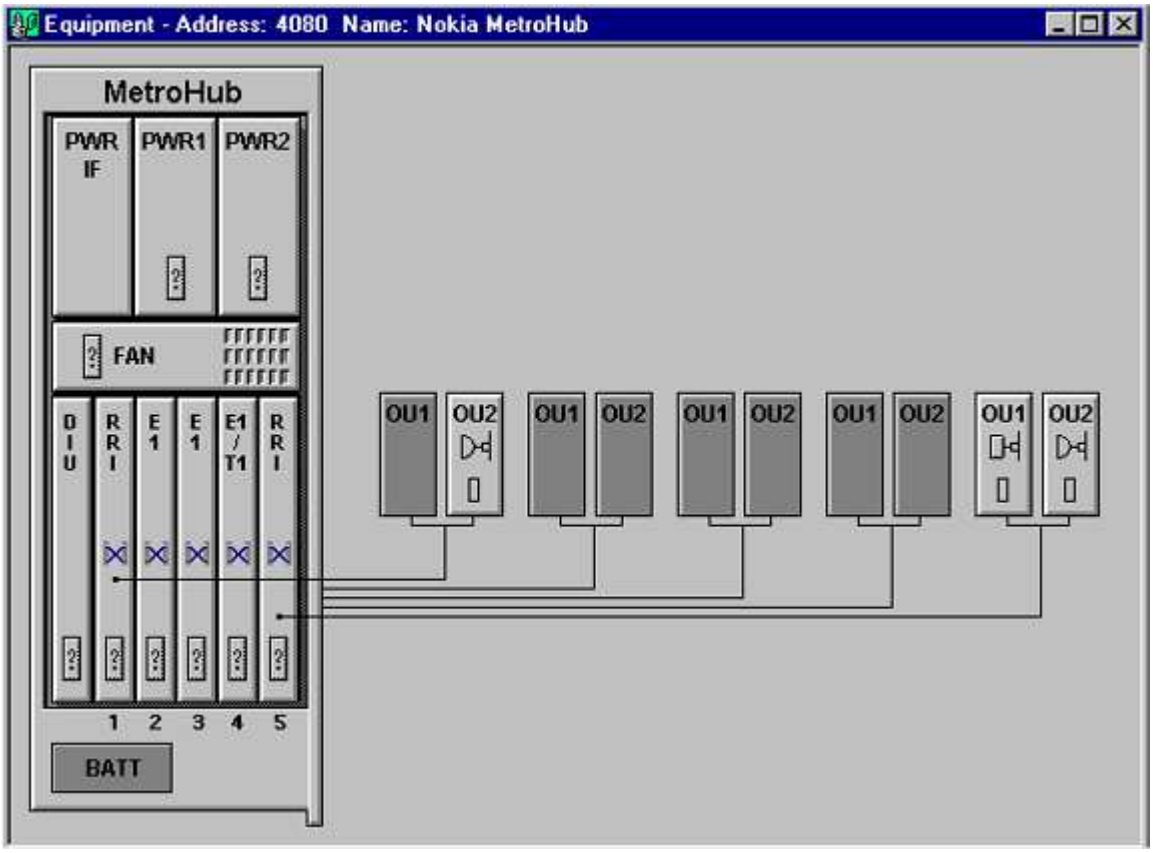


Figure 37. MetroHub or UltraSite BTS Hub Manager Equipment window (Connected to node)

The window presents a schematic overview of the node. You can select a unit by clicking it. When an FXC unit or an outdoor unit is selected, a unit-specific menu appears on the menu bar, on the left side of the MetroHub or UltraSite BTS Hub Manager **Tools** menu. Outdoor units are managed through FXC RRI units.

Note

Closing the **Equipment** window causes the connection to the node or file to be lost.

The status of the units is indicated by means of colour coding.

Table 18. Colour codes indicating the status of units

Colour code	Status of unit
Dark grey	Empty slot
Diagonal stripes	Physically inserted, logically uninstalled
Light grey	Physically inserted, logically installed (=operational unit)
Dark grey with a light grey border; type of unit indicated	Physically removed, logically installed (=missing unit)
Light grey with a red border; type of unit indicated	Physically inserted, wrong unit logically installed (=mismatched unit)
Light grey with a blue border; type of unit indicated	*Software version mismatch*. The unit's software is not compatible with the master unit's software.

Non-FXC units have to be ‘installed’ in order to be operational. By default, the following units are in use: power supply unit (on the left), power interface panel, fan unit, and interface unit.

Further information

If several nodes are chained via LMPs, the connection must be established as described in *Connecting via Q1 address*.

For information on installing and uninstalling the units logically with the manager, see *Installing units logically with the manager* and *Uninstalling units logically with the manager*.

7.3.5 Connecting via Q1 address

Purpose

The MetroHub or UltraSite BTS Hub node can also be accessed via the Nokia Connection Tool.

Steps

1. **Select Connection → Connection Tool...**

Expected outcome

The **Connect to Node** dialogue opens.

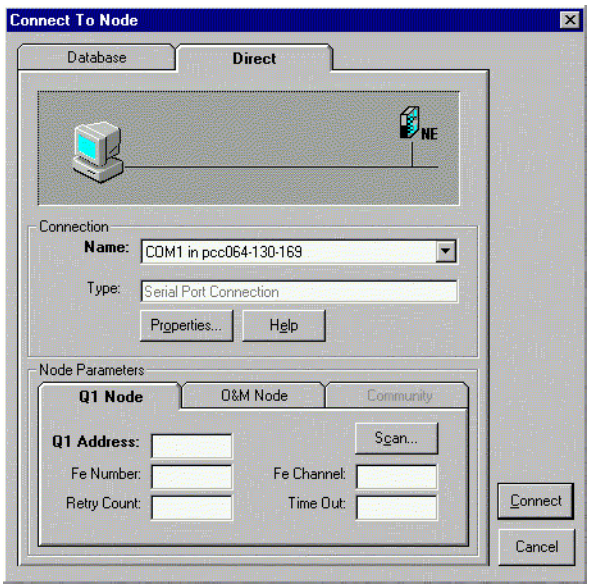


Figure 38. Nokia Connection Tool (Connect to Node dialogue)

2. Define the needed parameters

Select a previously configured connection

Further information

Detailed information on using the Nokia Connection Tool is available in *General Communication Service User's Manual.*

3. Fill in the LMP or Q1 address of the equipment to the Q1 Address field, depending on the connection used

Further information

If the LMP is chained, a unique Q1 address must be selected for the LMP, and the connection to the node is established with the **Connection Tool...** option in the manager.

7.3.6 Connecting to the node offline

Purpose

The offline mode allows you to manage a virtual node. All the information is saved in a file in your computer and this file represents an image of a real node.

By using this feature, it is possible to create a template which may be used to commission numerous installations with similar configurations. You can also use this to make changes to an installation while at the office before going on-site.

Summary

You can connect to the node offline either by creating a new virtual node offline file or by opening an existing file. For instructions on how to create a new node file, see the MetroHub or UltraSite EDGE BTS documentation set.

Steps

1. To open an existing file

Steps

a. Select File → Open...

b. Select the file to be opened

Further information

When in the offline mode, MetroHub or UltraSite BTS Hub Manager does not verify the entered configuration. The configuration is verified with the actual equipment when it is sent to the node. If the created configuration does not correspond to the actual installed equipment, a warning is displayed.

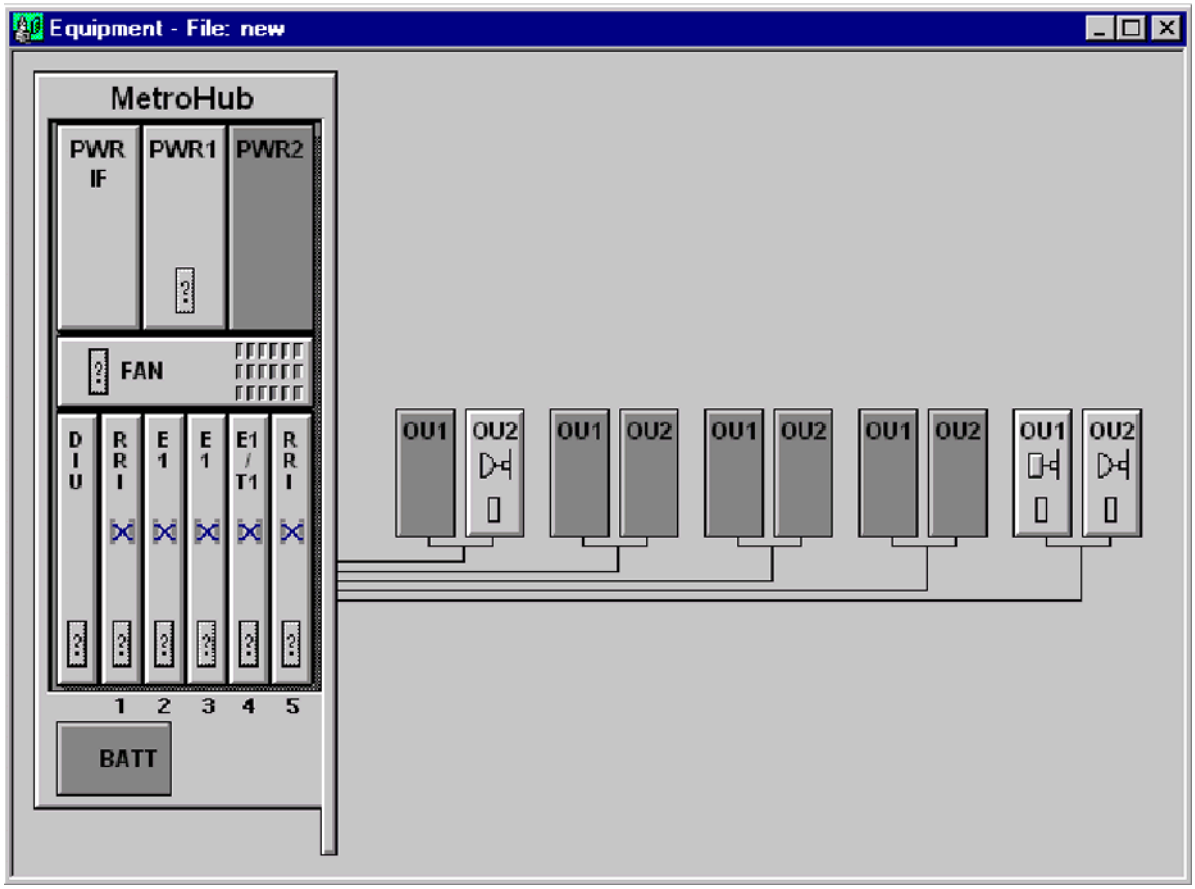


Figure 39. MetroHub or UltraSite BTS Hub Manager Equipment window (offline mode)

7.3.7 Resetting transmission units

Purpose

Resetting a node is an exceptional situation in normal operation, but when the network is initially built, a situation may occur when resetting the node is necessary. Generally, there are two kinds of resets: one for the whole node and the other for a single transmission unit. Resets to the transmission units can be given using the node manager.

In the **Resets** dialogue you can select the type of reset and the targeted units. The reset dialogue is only accessible in the connected mode and factory settings are only allowed in LMP connections. Hardware resets are possible for all units.

The node settings are not unit-specific settings maintained by the master unit like the cross-connection settings. Factory reset restores the default factory settings. The factory reset is automated when you start the Commissioning Wizard or restore backup settings.

Steps

1. **Select Maintenance → Resets...**

   Expected outcome

   The **Resets** dialogue opens.

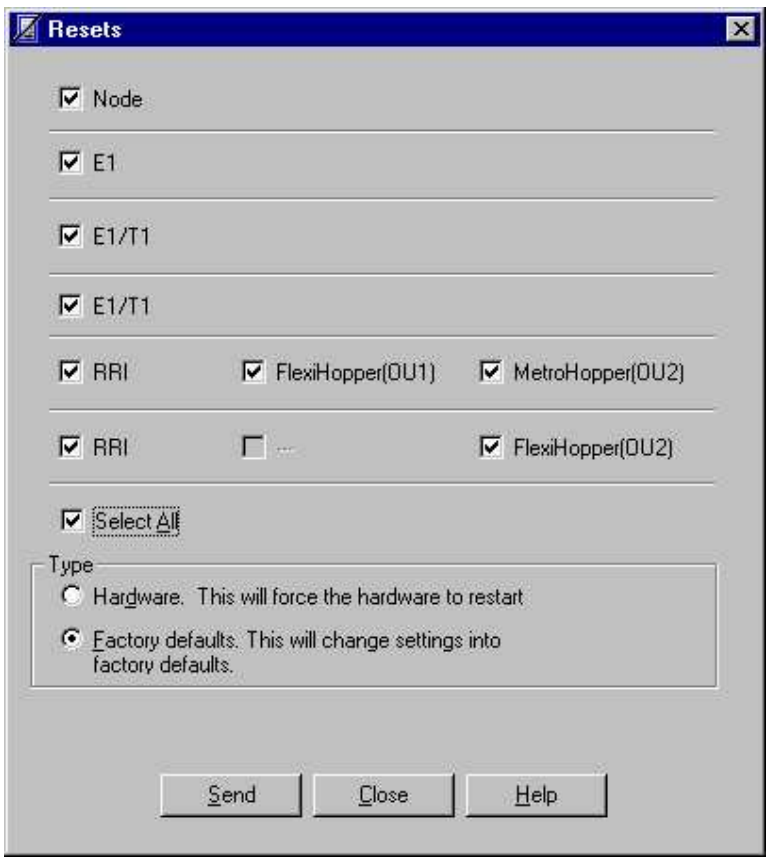


Figure 40. Resets dialogue

Further information

In this dialogue you can select which part of the UltraSite BTS Hub or MetroHub to reset. Selecting a unit resets the corresponding unit, and selecting the node resets the master unit of the node. When the command is sent to the node, UltraSite BTS Hub or MetroHub carries out the desired resets.

There are two different kinds of node resets:

- Hardware reset

  This reset equals hardware reset to a power off/on of transmission units. The traffic is cut and all settings remain unaffected. In case of a hardware reset to the node, the selection is disabled because the reset is the same as the one to the Unit1 (Node control unit).
- Restore factory settings

  This reset restores the node to its original settings. For a node selection, all node settings (cross-connections, synchronisation, EOC etc.) are deleted. If a unit is selected, the unit settings are deleted. After the settings have been deleted, the corresponding unit is reset, and the default settings are taken into use.

2. Select the units to be reset

3. Click Send

Expected outcome

If you select all units, the resets are executed in the following order:

1. Reset of the outdoor units.
2. Reset of the FXC units.
3. Waiting for the master unit to recover.
4. Reset of the node.
5. Waiting for the node to recover.
6. The initial value for LMP speed is restored.

7.3.8 Saving node information in a file

Purpose

Node information can be saved in a file for later use both online and offline.

If you save the node information online after commissioning the node, you can use the saved file as the backup file. This type of file cannot be used for commissioning purposes.

The file saved offline can be used in commissioning the node.

Before you start

The **Equipment** view is open.

Steps

1. **Select File → Save... or Save As...**

   Expected outcome

   The manager opens the **Save Node Settings** dialogue.

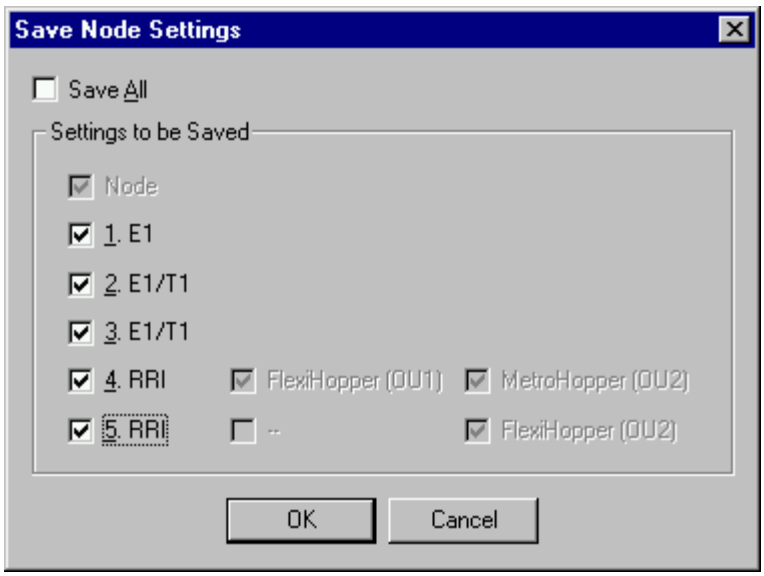


Figure 41. Save Node Settings dialogue

2. **Select either Select all or select the individual units that you want the settings to be saved for**

   Further information

Note

Node settings are always saved.

When a particular RRI is selected, all OUs connected to it are automatically selected (and cannot be unselected). Thus, the settings of the OUs are automatically saved along with those of the corresponding RRI.

3. Click OK

Expected outcome

The manager opens the **Save As** dialogue.

4. Give the file a name and select a file type

5. *If* you want to edit the file header

   Then

   Click the Edit button

6. *If* you edited the file header

   Then

   Click OK

   Expected outcome

   The manager returns to the **Save As** dialogue.

7. Click Save

Expected outcome

The file is saved.

Further information

UltraSite BTS Hub or MetroHub supports two site configuration file formats, .nod (for node offline file) and .xml. It is also possible to read older node files with the extension .dat.

7.3.9 Restoring backup settings from a file

Purpose

It is possible to save node and unit settings into a backup file (both extensions . xml and .nod), see *Saving node information in a file*. The backup file can be used in restoring backup settings of the node or the units.

Before you start

To be able to restore backup settings, the user must have a backup file. It is recommended to make a backup file (in .nod format) after a node has been commissioned and it has been verified that it functions as planned.

Note

Previously the backup file has been saved in .dat format. A file in .dat format can still be used, but all new backup files as well as old .dat files that have been modified are saved in the .nod format.

The backup dialogue is only accessible in the connected mode.

Note

Before restoring the settings at the node level, the node must be in the factory defaults state. If it is not, the factory settings are restored automatically.

Steps

1. **Select Maintenance → Restore Backup Settings**

   ### Expected outcome

   The **Restore Backup Settings** dialogue opens.

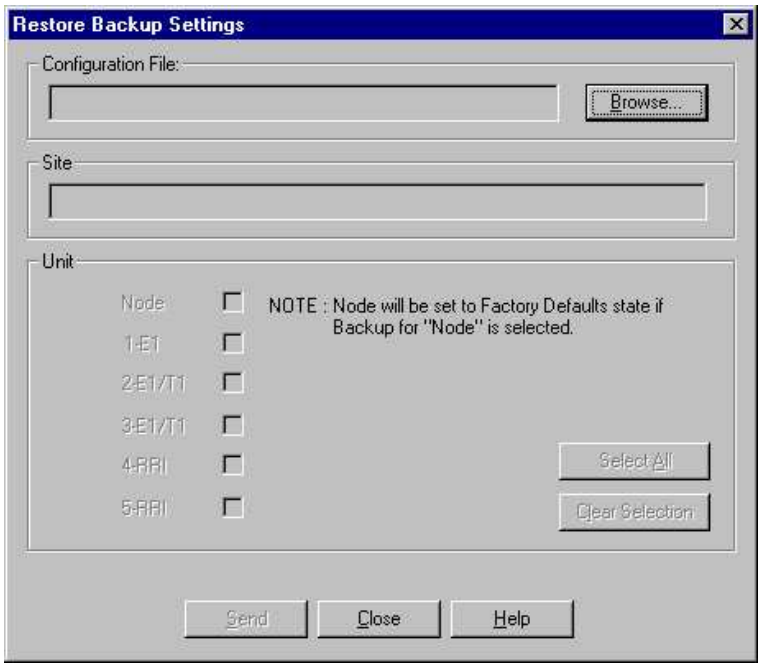


Figure 42. Restore Backup Settings dialogue

2. Click Browse...

Expected outcome

The manager opens the standard Windows open file dialogue.

3. Browse to the file, select it and click Open

Expected outcome

The file is opened in the backup dialogue, and the manager type and unit configuration is checked.

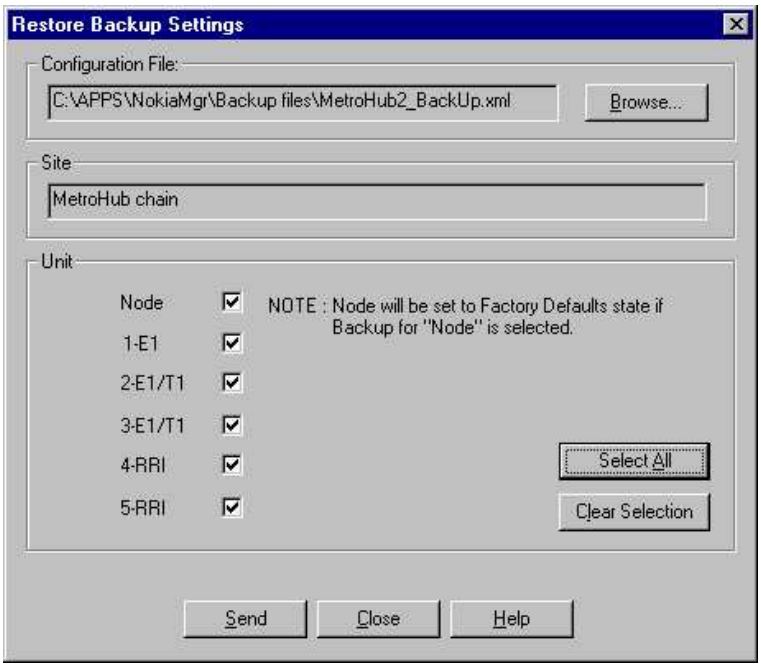


Figure 43. Restore Backup Settings dialogue

If the file contains correct data for the unit, the settings can be sent to the selected units.

If the file contains data that does not match to the configuration of the node, the manager gives a note and the user has to select a file containing the right configuration.

4. Select the units where you want to send the file to

5. Click Send

Expected outcome

The manager sends the settings to the selected units. During sending, the manager displays a progress dialogue. When the settings have been sent, the dialogue is closed.

7.3.10 Creating a configuration report

Summary

The configuration report contains all the configuration information of the connected Nokia MetroHub or UltraSite BTS Hub.

Steps

1. **Select Tools → Reports → Configuration Report**

   Expected outcome

   The **Configuration Report** window opens.

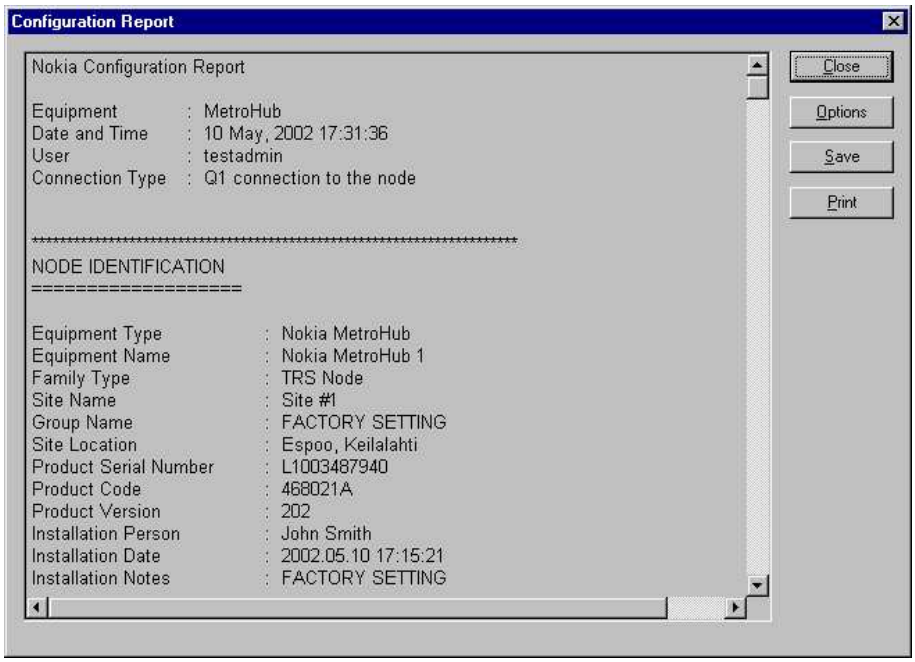


Figure 44. Configuration report

The configuration report contains all the configuration information of the connected Nokia MetroHub or UltraSite BTS Hub. You can also modify the contents of the configuration report.

2. Modify the contents of the configuration report

Steps

a. Click the Options button

Expected outcome

The **Configuration Report Options** dialogue opens.

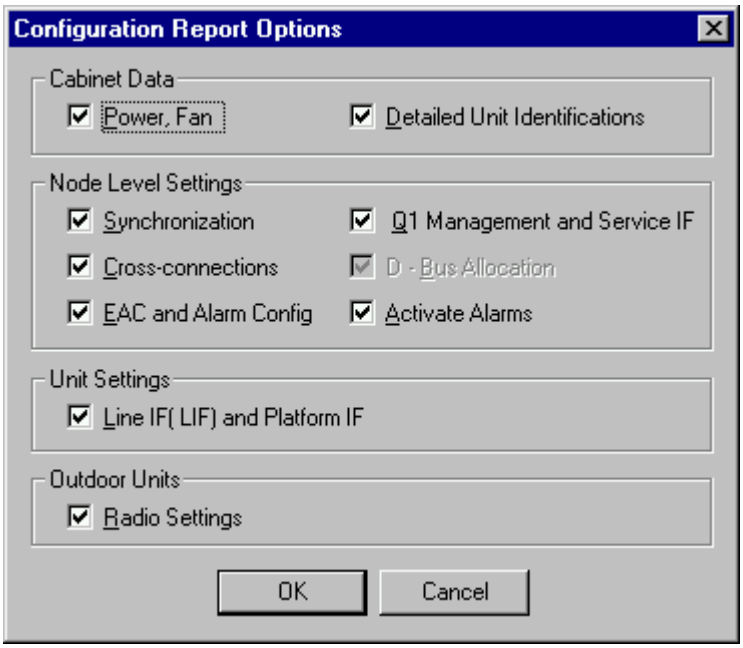


Figure 45. Configuration Report Options dialogue

b. Select what to include in the report

Further information

The following options exist:

- Power, Fan. When selected, the information on the power and fan units are included in the report.
- Detailed Unit Identification. When selected, the hardware/ software configuration part of the report contains information on the hardware and software versions.
- Synchronisation. When selected, information about node synchronisation is included.
- Q1 Management and Service IF. When selected, the report includes information on Q1 management and service interface of the node.

- Cross-connections. When selected, the report includes information on cross-connections.
- D-bus allocation. When selected, the report includes information on D-bus allocation. (Valid only in Nokia UltraSite BTS Hub Manager.)
- EAC and Alarm Config. When selected, the report includes information on EACs and alarm configuration.
- Include Alarms in Report. When selected, the report includes information on active alarms.
- Line IF (LIF) and Platform IF (PIF). When selected, the report includes information on LIF and PIF.
- Radio Settings. When selected, the report includes information on outdoor units (radios) of the FXC RRI units.

Note

These selections are not saved when you close the **Configuration Report** dialogue.

---

c. Click OK

Expected outcome

The configuration report is saved as a text file with the extension .cnr and has to be opened with a text editor.

7.3.11 Printing information

Summary

You can print information from **Equipment**, **Cross-connections** and **Alarm** windows.

Steps

1. Open the window which you want to print information from

2. Select File → Print

7.4 Configuring GSM/EDGE UltraSite EDGE BTS for manual commissioning

7.4.1 Creating a new HW configuration to commission GSM/EDGE UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning GSM/EDGE UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

HW configuration is defined with BTS HW Configurator.

The quickest way to create a new BTS HW configuration is to run the Wizard (*Configuration* | *Wizard*). The Wizard takes you through the task sequence in the correct order and provides instructions for each task. Additional information is available through the *Help* button.

If there is no predefined HW configuration file available for the BTS, you can create the configuration with the *Create New Configuration* option in the Wizard. Creating a new configuration with the Wizard requires no BTS connection, so you can create the configuration in advance and save it as an .hwc file.

The *Passive Units* view in BTS HWConfigurator allows you to enter information concerning all units that are not autodetected. This information includes part and serial numbers. This information is not required during commissioning and is not needed to get the BTS operational. It is possible to enter and update this information any time before, during, and after commissioning.

You can enter passive unit information with BTS HW Configurator off-line and on-line. You can also use a barcode reader to scan the part and serial numbers off stickers on the units. The SW recognizes the part number and identifies the unit type. One problem is that using a barcode reader with the PC requires the use of one serial port and many laptop computers have only one serial port. In this case, you must use BTS HW Configurator off-line to scan in the part and serial numbers. Once this is completed and the information is saved to a file, the hardware information file (.hwi) can be downloaded to the BTS.

Note

If you change the HW configuration in any way after the BTS commissioning has been finished, you will have to perform a BCF reset in order to make the changes active.

Steps

1. Open BTS HW Configurator.

Select *Nokia BTS HW Configurator* from the *Nokia Applications* submenu in the **Start | Programs** menu in Windows.

2. Start the HW Configurator Wizard.

Select the *Wizard* command on the *Configuration* menu.

3. Set up new configuration.

a. Select the *Create New Configuration* option from the *Configuration Wizard* window and click the *Next* button.
b. Select <*New*> from *Sector Configuration* window list and common network type from the drop down list.
c. If you want to change the network type of individual TSx units, click the *Modify* button.

Alternatively, you can select one of the predefined configurations from the *Modify Sector and Network* list, to be modified further.

4. Define TSx configuration on the Define TSx configuration window.

a. Select the TSx unit from the *Define TSx configuration* window list.
b. Select the basic configuration for the selected TSx unit from the *Configuration Type* drop-down list.

Note

There are four configuration types to select from:

- *Bypass with DDU* stands for one TSx unit connecting to a DDU half.
- *2-way DDU* stands for two TSx units connecting to a DDU half.

- *4-way DDU* stands for four TSx units connecting to a DDU half.
- *RTC* stands for six TSx units RTC.

---

c. Click the *Set* button for each TSx unit selected.

d. Click the *Next* button.

5. Define RX diversity for each TSx unit on the Define RX Diversity Cabling window.

a. Select the TSx unit from the *Define RX Diversity Cabling* window list.

b. Select the combiner unit for the selected TSx unit from the drop-down list.

c. Click the *Set* button to update the defined cabling configuration.

d. Click the *Next* button.

6. Define antenna settings on the Define Antenna Settings window.

a. If all antennas use High gain MHAs and/or VSWR monitoring, select the corresponding options in the *Properties for All Connected Antennas* group box of the *Define Antenna Settings* window.

Note

All UltraSite-specific MHA (MNxx) units are High Gain type. All other MHA units are Low Gain type.

---

b. Select an antenna in the *Antennas* list.

c. Select a unit for the selected antenna from the *DVx/RTx* list.

d. Update the defined antenna information to the configuration by clicking *Set* button.

e. Click the *Next* button.

7. Verify report on Report of New Configurationwindow and exit Wizard.

Verify the new configuration report and click the *Finish* button to exit the Wizard.

You can modify the configuration manually via properties pages, after the Wizard is closed.

8. Save new configuration.

Save the new configuration to hard drive by selecting the *Save* option from the *File* menu.

Note

Before saving the new configuration to a file, you can manually make changes to the unit properties, if necessary.

Alternatively, send the configuration information to the BTS from the *BTS* menu using the *Send BTS Configuration* command.

9. Proceed with Manual Hub configuration of UltraSite EDGE BTS.

7.4.2 Using an existing HW configuration to commission GSM/EDGE UltraSite EDGE BTS

Before you start

Review the *Overview of commissioning GSM/EDGE UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

This procedure requires a predefined HW configuration file (with file name extension .hwc) created from *Creating a new HW configuration to commission UltraSite EDGE BTS*.

Note

Creating a new configuration with the Wizard requires no BTS connection, so you can create the configuration in advance and save it as an .hwc file. A BTS HW configuration file (Basic Configs.hwc) with basic UltraSite BTS configurations is delivered with Nokia BTS HW Configurator. You can use the configurations as such, if possible, or you can modify them to suit your purposes.

Summary

HW configuration information is defined with BTS HW Configurator.

Steps

1. Open the BTS HW Configurator.

Select *Nokia BTS HW Configurator* from the *Nokia Applications* submenu in the *Start | Programs* menu in Windows.

2. Start the HW Configurator Wizard.

Select the *Wizard* command on the *Configuration* menu.

3. Retrieve the desired HW configuration.

a. Select the *Check BTS Configuration and Update BTS* option from the *Wizard Welcome* window.

The Wizard automatically displays the BTS HW configuration file that was used last.

b. Select the BTS to be configured on the *Select Configuration* window.

c. Click the *Next* button.

4. *If* the configuration you want is not in the list,

Then

Locate the appropriate configuration file.

a. Click the *Browse* button to load the appropriate .hwc file.

b. Click the *Next* button.

c. If BTS connection is not enabled, BTS HW Configurator asks if you want to activate it.

Note

BTS connection requires that the LMP cable is connected from the PC to the BTS. For information about the LMP cable, see *Connecting LMP cable for commissioning UltraSite EDGE BTS*.

---

5. Ensure that the configuration information is correct on the BTS connection window.

The *BTS Connection Status* list displays information about the BTS connection and the state of the BCF.

Click the *Next* button when the BCF is in the correct state.

6. Verify other associated information on the Cabinet Information window.

You can view information concerning the BTS cabinet type, clock synchronisation and the Line Terminal Equipment (LTEs) in the Site Support cabinet.

When done, click the *Next* button.

7. Verify cross-connections on the BB2-TSx Cross-connections window.

Verify the BB2 cross-connection to the TSxx units.

When done, click the *Next* button.

Note

If there are units that have not been detected automatically, click the *Autodetect* button. The BCF must be in the *BCF Commissioning* state. You can select the *View Autodetected Units* option to see the autodetected units in the *Graphical* view in BTS HW Configurator.

Note

- BSS 9 - All BSS 9 features can be used with the CX3.0/3.3 SW releases and the current SW release PU1.0-3 with the cross-connection functionality in case existing equipment has not been configured to use default connections. However, Nokia recommends that sites are reconfigured so that the cross-connection functionality is not used, especially if technical problems occur.
- BSS 10/10.5 - The cross-connection functionality is not supported in CX3.0/3.3 SW releases when the new BSS10/10.5 features are used. In order to use these features, you must reconfigure the sites to use default connections.
- BSS 11 - The cross-connection functionality will be permanently removed in the CX4.0 SW release.

Note

If a TSx unit does not exist in the configuration, the unit will be in brackets and greyed out.

8. Verify the TX, RX main and RX diversity cable connections for TRX1 to TRX12 on the Current Cabling window.

Clicking a cabling option in the list displays the selected cabling in the *Graphical* view on the left. The *View Settings* group box specifies the appearance of the *Graphical* view enabling you to show/hide wideband and multicoupler units and non-active cabling.

When done, click the *Next* button.

9. Verify antenna unit connections shown on the Antenna Settings window.

To enable VSWR monitoring for an antenna,

a. Select the antenna from the list.
b. Select the *VSWR Monitoring Enabled* option.
c. Click on an antenna in the list to display the corresponding antenna cable in the *Graphical* view.
d. If the MHA type is High gain, change attenuation values, if desired.

Note

All UltraSite-specific MHA (MNxx) units are High Gain type. All other MHA units are Low Gain type.

e. Click the *Next* button.

10. Open a HW information file from the Passive Units window.

a. Click on the desired folder to expand it and then click on the desired hardware unit.
b. Click the *Import* button to open the corresponding HW information file (.hwi).
c. When done, click the *Next* button.

Note

Passive unit information is not needed to make the BTS operational.

11. *If* you want to save the configuration report to a file,

    Then

    Select location and filename in the BTS Configuration Report window.

    Enter the path and filename in the *Save As* field or click the *Browse* button to specify the location and filename.

12. **Save configuration information and exit the Wizard.**

    Click the *Finish* button to save the configuration information in the BTS and exit the Wizard.

13. **Exit BTS HW Configurator.**

14. **Proceed with Manual Hub configuration of UltraSite EDGE BTS.**

7.5 Commissioning GSM/EDGE UltraSite EDGE BTS with XML Configuration File

7.5.1 Commissioning UltraSite EDGE BTS based on an off-line node file

Summary

To commission the BTS transmission with a node file, send the file to the node during the commissioning procedure with the Nokia UltraSite BTS Hub Commissioning Wizard. This allows more network setup to be done off-site. The site configuration file (.xml extension) is usually provided by network transmission planning.

Nokia NetAct Transmission Planning Tools do not support all the required parameters of the UltraSite BTS needed to fully commission the BTS. Missing settings are added to the file using UltraSite BTS Hub Manager.

The *Unsupported XML parameters* table lists the XML parameters that are not supported by the Nokia NetAct Planning Tools. Obligatory parameters that must be added are marked with an asterisk.

Table 19. Unsupported XML parameters

Category	Parameters
TruNet	TruNet Status IP Address Site Data
D-bus Allocation	Signalling Type EDAP Allocation
Identifications	Equipment Name Group Name Site Allocation Node and Unit installation information
Cross-connections	Cross-connection label
Q1 Management	Q1 group address Q1 baud rate Hybrid switches* (‘processor’, ‘internal’, ‘internal to external’ and ‘external’ EOC settings*
Synchronisation	Synchronisation sources*
Unit	Unit name and installation information Interface mode* (FXC E1/T1) Interface name (FXC E1 and FXC E1/T1) Interface CRC usage* Operation mode* (FXC RRI)
Radio Hop Information	Hop name Hop frequency* Hop maximum TX power* Hop temporary ID* Hop mode* Hop accept channels*

Note

One XML file can contain commissioning configurations for many BTS sites. You can only configure one site at a time with UltraSite BTS Hub Manager.

You can add other elements, such as cross-connections, with UltraSite BTS Hub Manager, but this procedure assumes that all other necessary elements for the site are already properly planned with Nokia NetAct Planner.

Steps

1. **Add unsupported parameters into existing XML file, if available.**
2. *If* a valid XML configuration file cannot be obtained from transmission network planning,

   Then

   Create a node off-line file for UltraSite EDGE BTS.
3. **Set obligatory radio settings for FlexiHopper.**
4. **Set obligatory radio settings for MetroHopper.**
5. **Commission the UltraSite BTS Hub node with the commissioning wizard.**

7.5.2 Editing an XML file for UltraSite EDGE BTS

Before you start

Review *Commissioning UltraSite EDGE BTS based on an off-line node file.*

Summary

Note

The detailed instructions of manual commissioning apply for all settings in this section, except for radio settings. For detailed instructions for creation of radio settings for a node file, see *Setting obligatory settings for FlexiHopper* and *Setting obligatory settings for MetroHopper.*

Steps

1. **Start UltraSite BTS Hub Manager and open XML file.**

   To open the XML file, select menu **File | Open...**.

2. *If* the XML file contains many sites,

   Then

   from the Site Selection window, select the site to be modified.

   The *Equipment view in Nokia UltraSite BTS Hub Manager* displays.

3. **Add or modify the desired parameters to node file.**

   See *Unsupported XML parameters table* for a list of parameters.

4. **Save the modified XML Site configuration file.**

   Select menu **File | Save** or **File | Save As...**.

5. *If* you want to modify more than one site,

   Then

   You must save the file after each site modification.

6. **Repeat this procedure from Step 1 until you modify all of the required sites.**

7.5.3 Creating a node off-line file for UltraSite EDGE BTS

Before you start

Review *Commissioning UltraSite EDGE BTS based on an off-line node file*.

Summary

If you cannot obtain a valid site configuration file from transmission network planning, you can create the node off-line file (with .dat extension) and include all of the necessary settings in the file, as provided by transmission network planning.

Note

The detailed instructions of manual commissioning apply for all settings in this section, other than radio settings. For detailed instructions on how to create radio settings for a node file, see *Setting obligatory settings for FlexiHopper* and *Setting obligatory settings for MetroHopper*.

Steps

1. **Open BTS Hub Manager.**

   Select *Nokia UltraSite BTS Hub Manager* on the **Start | Programs | Nokia Applications** menu in Microsoft Windows.

2. **Create a new file.**

   Select **File | New** in UltraSite BTS Hub Manager.

3. **Install the desired FXC units and radios in Equipment view.**

4. **Perform the necessary settings to the units and the node.**

   See *Manual Hub configuration of GSM/EDGE UltraSite EDGE BTS* (except for the radio settings).

5. **Save the node off-line file.**

   Select **File | Save as...**.

7.5.4 Setting obligatory settings for FlexiHopper

Before you start

Note

Familiarise yourself with the Nokia FlexiHopper by reading FXC RRI User Manual's Commissioning and Maintenance document before setting Nokia FlexiHopper radio settings. Refer to the commissioning instructions in *Nokia FlexiHopper Plus Product Documentation* before setting FlexiHopper Plus radio settings.

Summary

To set the obligatory settings for Nokia FlexiHopper and Nokia FlexiHopper Plus:

Steps

1. **Click the FXC RRI unit corresponding to the Nokia FlexiHopper or FlexiHopper Plus radio.**

2. **Select Settings -->Operation Mode on the FXC RRI menu. The Operation Mode dialogue opens.**

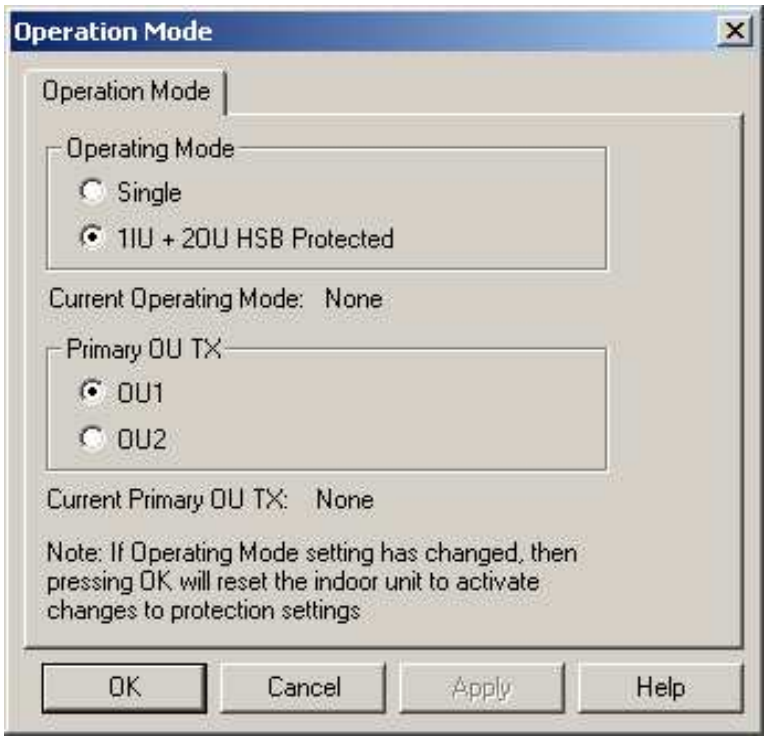


Figure 46. Operation Mode dialogue

The operation mode of an FXC RRI unit can be Single (no HSB protection) or 1 IU + 2 OU HSB Protected. The Operation Mode dialogue also allows the user to select which of the units should be the primary OU, which is the active protected OU when both OUs are operational.

3. **Select the operation mode, and in case of 1 IU + 2 OU HSB, also the Primary OU TX, and click OK.**

When the operation mode of an FXC RRI unit is set to 1 IU + 2 OU HSB Protected, the protected radio hop is displayed in the Equipment view of the hub managers.

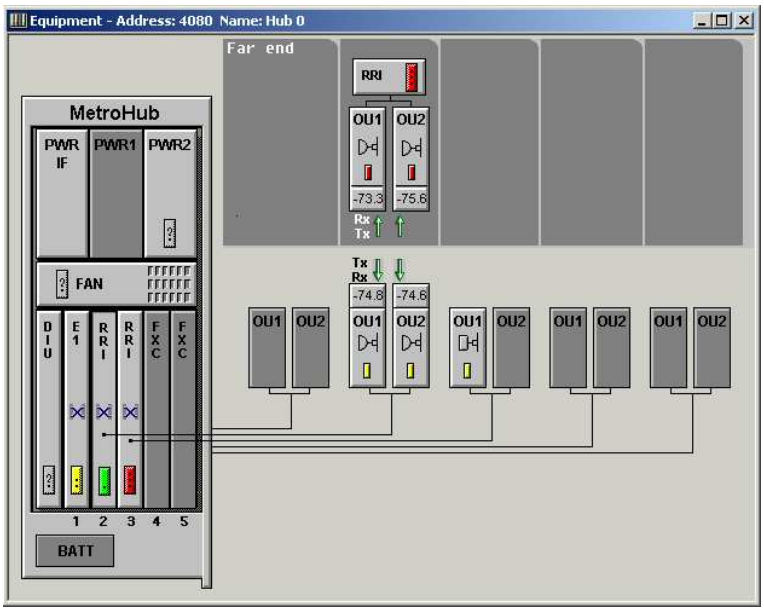


Figure 47. Protected radio hop in the Equipment view (Note: The Equipment view of UltraSite BTS Hub is similar to that of MetroHub)

The far end outdoor units and indoor unit are shown for each protected hop together with information on the hop status. The status information includes:

- an arrow representing the receive status of each OU,
  a. Green arrow = receiving OK
  b. Red cross over the arrow = not receiving
- numbers displaying the receive level of each OU in dBm, and
- text TX and/or RX beside each OU representing the currently active transmitter and receiver.

4. Select Settings --> Outdoor Unit on the FXC RRI menu corresponding to the FlexiHopper or FlexiHopper Plus radio. The Settings dialogue opens. The same dialogue is used for Nokia FlexiHopper and FlexiHopper Plus, but the options vary.

Figure 48. Nokia FlexiHopper or FlexiHopper Plus settings, single

In HSB mode, the Flexbus capacity and OU settings are common for both radios, except for the Maximum Tx Power and ALCQ (adaptive level control with quality measure) set point settings.

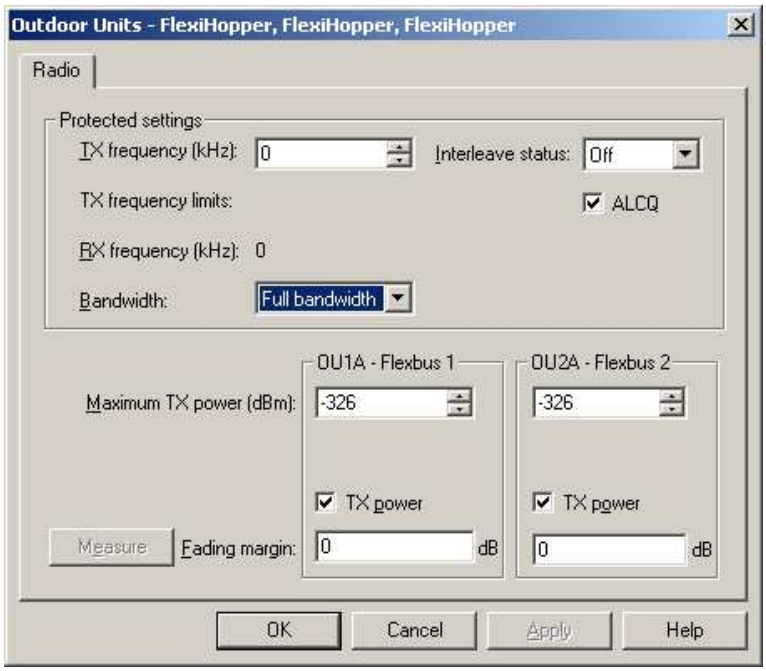


Figure 49. Nokia FlexiHopper or FlexiHopper Plus settings, HSB protected

5. Set the TX frequency.

Use the TX frequency provided by network planning.

6. Set the maximum TX Power.

This value is also provided by network planning. The value is dependent on the frequency band. For example, for a 38 GHz frequency band radio, the maximum allowed value is 16 dBm. For more information refer to *Nokia FlexiHopper Microwave Radio with FXC RRI User Manual, Product Description.*

7. Set the TX power ON.

8. Set the ALCQ (adaptive level control with quality measure) OFF.

If needed, the ALCQ can be switched on after the hop is commissioned and the fine-alignment of the antenna is performed. The RX input level, determined by the radio frequency planning, must also be correct.

9. **For the ALCQ to function, you must set the ALCQ set point value (dB). This value can be calculated by radio frequency planning.**

   For more information refer to *Nokia FlexiHopper Microwave Radio with FXC RRI User Manual, Product Description* document.

10. **Set Interleave Status, if needed. Possible values for the interleave status are Off, Depth 2 and Depth 4. Depth 4 is recommended. The status must be the same at both ends of the hop. For more information refer to *Nokia FlexiHopper Microwave Radio User Manuals Product Description* document.**

11. **Measure the fading margin by clicking the Measure button.**

    The Fading Margin Measurement dialogue opens.

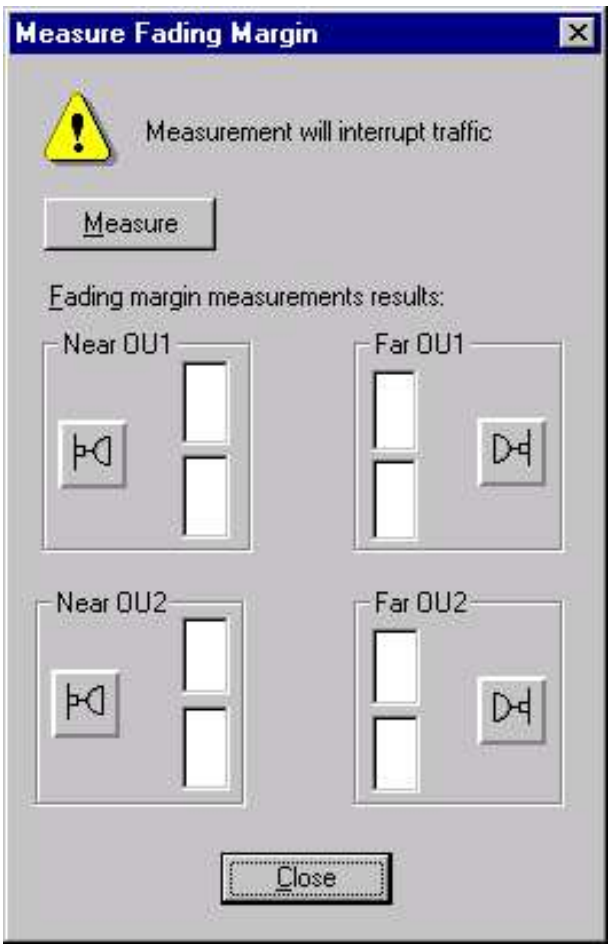


Figure 50. Fading margin measurement dialogue

The *fading margin measurement (FMM)* is an optional part of the *radio hop (single or HSB protected) commissioning process*. FMM can also be executed manually for an already commissioned hop. If far-end indoor unit type is not supported, the measurement field is grey.

Note

The measurement interrupts the traffic.

For single hop, the fading margin is measured for one radio (outdoor unit) at a time: the measurement result fields for the selected outdoor unit are enabled (white) and the result fields for the other outdoor unit are disabled (greyed).

The Fading Margin Measurement dialogue result field can contain up to three measurement results at the same time from which the most sensible should be seen as a valid result. The uppermost value is the last measured.

When the measurement is started, the outdoor units at both ends of the hop stop transmitting, that is, they both switch to MUTE. Both outdoor units start their timers, which determine how long they stay in MUTE mode. The measurement stops automatically after the timers are elapsed.

12. If the installation includes a Nokia FlexiHopper Plus, set the bandwidth.

The half bandwidth (higher modulation) mode is available for Nokia FlexiHopper Plus outdoor units with 8x2M and 16x2M capacities. Compared to using Nokia FlexiHopper, it is possible to achieve the same capacity using only half the bandwidth.

Note

For a link to be established, the same bandwidth has to be used at both ends of the radio hop. Changing the bandwidth resets the radio and interrupts management traffic for one minute.

The Nokia FlexiHopper Plus supports higher modulation, which translates into higher density in terms of bandwidth for the existing channels. FlexiHopper Plus is fully compatible with FlexiHopper. However, to benefit from the increased capacity requires a FlexiHopper Plus at both ends of the radio link, that is, both radios have to support the half bandwidth setting.

In HSB mode, the bandwidth selection is common for both radios. If one of the radios is a FlexiHopper, then both radios will have to use the full bandwidth setting, which is the only setting supported by FlexiHopper.

For more detailed information, refer to *Nokia FlexiHopper Plus* documentation.

13. Click the OK button.

Note

Familiarise yourself with the Nokia MetroHopper Radio by reading *FXC RRI User Manual's Commissioning and Maintenance* documents, before setting Nokia MetroHopper radio settings.

---

14. To set the obligatory settings for MetroHopper

a. Click the appropriate FXC RRI unit in the Equipment view. A unit-specific menu opens.

b. Select Settings -- Outdoor Unit on the FXC RRI menu corresponding to the MetroHopper radio.

The Settings dialogue opens.

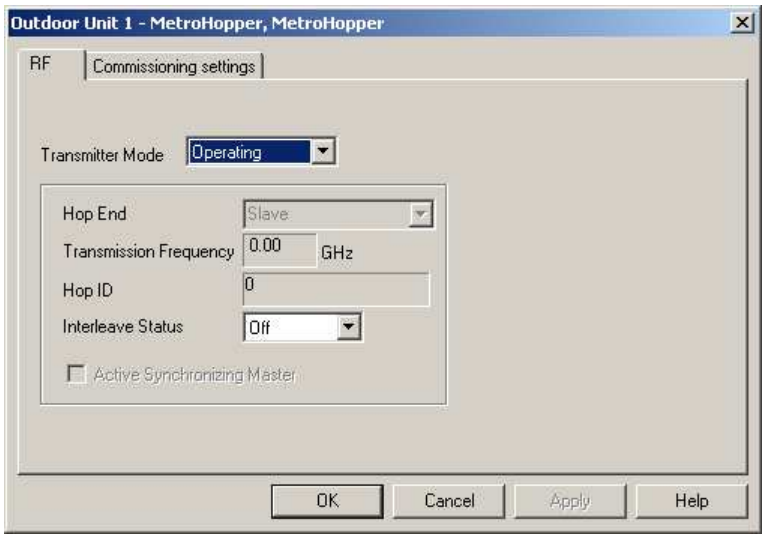


Figure 51. Nokia MetroHopper's RF settings for the outdoor unit in FXC RRI

c. Click the Commissioning settings tab. This tab is only visible in the node file mode.

The Commissioning settings dialogue opens.

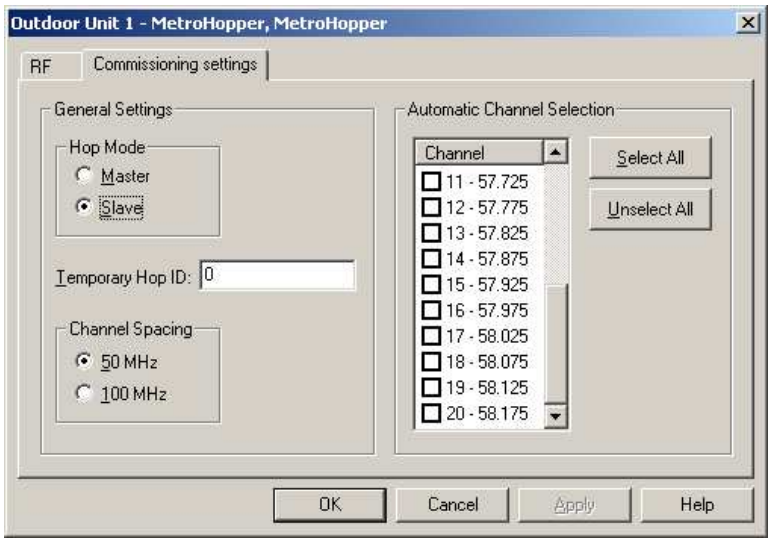


Figure 52. Nokia MetroHopper's commissioning settings for the outdoor unit in FXC RRI

d. Set the Hop Mode.

One end of the hop must be set as the master and the other end as the slave.

e. Set the Temporary Hop ID.

This value must be the same for both the master and the slave.

f. Select Channel Spacing.

When the channel spacing is changed, the automatic channel selection list is updated accordingly. Changing the spacing mode online resets the MetroHopper OU.

For more information on channel spacing, see *MetroHopper with FIU User Manual*.

g. Use the Select All button to select all channels in the Automatic Channel Selection.

h. Click the Apply button.

i. Click the RF Settings tab to view the RF tab again.

j. Set the Interleave Status, if needed. The status must be the same at both ends of the hop.

k. Set the Forced Synchronising Master, if needed. This check box is only enabled, if you set the Hop Mode as the master in step 4, Set the Hop Mode.

l. Click OK.

7.5.5 Setting obligatory settings for MetroHopper

Before you start

Read the *Commissioning and Maintenance* document of *Nokia MetroHopper with FXC RRI User Manual* before you set MetroHopper settings for the node off-line file.

Review *Commissioning UltraSite EDGE BTS based on an off-line node file*.

Steps

1. Click the appropriate FXC RRI unit in the Equipment view in Nokia UltraSite BTS Hub Manager.

A unit-specific menu displays.

2. Open the MetroHopper settings window of UltraSite BTS Hub Manager.

a. On the *FXC RRI* menu, select the **Settings | Outdoor Unit** corresponding to the MetroHopper radio.

b. The *OutdoorUnit1 - MetroHopper* window displays.

3. View the commissioning settings.

a. Click the *Commissioning Settings* tab. This tab view is only visible in the node file mode.

b. The *Commissioning settings tab of OutdoorUnit1 - MetroHopper window* displays.

4. Set the Hop Mode.

You must set one end of the hop as the *Master* and the other end as the *Slave*.

5. Set the Temporary Hop ID.

This value must be the same for both the master and the slave.

6. Select all channels.

Click the *Select All* button to select all channels in the *Automatic Channel Selection* list.

7. Save the settings for the FXC RRI unit.

Click the *Apply* button.

8. View the RF settings.

Click the *RF* tab to display the RF settings again.

9. *If* the *Interleave Status* is needed,

Then

Select the appropriate settings.

The status must be the same for both ends of the hop.

10. *If* you selected the Hop Mode as the *Master*,

Then

Enable synchronising.

Select *Forced Synchronising Master* box. This check box is only enabled if you set the Hop Mode as the *Master* in step 4.

11. Save RF settings.

Click *OK*.

7.5.6 Using off-line node file for commissioning of UltraSite EDGE BTS

Before you start

Review *Commissioning UltraSite EDGE BTS based on an off-line node file*.

Nokia delivers all units with factory settings. If you have already configured the units, you must restore the factory settings by using Factory Defaults on each FXC unit. Then you can run the commissioning wizard.

Steps

1. Open BTS Hub Manager.

Select *Nokia UltraSite BTS Manager* from the Microsoft Windows **Start | Programs | Nokia Applications** menu.

Wait until the BTS Manager has properly started and then move on to the next step.

2. Connect BTS Hub Manager.

a. Start UltraSite BTS Hub Manager from the BTS Manager's *Tools* menu.
b. The *Equipment view in Nokia UltraSIte BTS Hub Manager* opens automatically when the connection has been established.

3. *If* the connection fails,

Then

Verify the connection parameters.

a. Select **Tools | Options | Manager** and verify the connection speed and LMP cable connection.
b. Or, select **Connection | Connect...** and verify the connection speed and LMP cable connection in the *Connect to Node* window.
c. Or, using the Nokia Connection Tool, refer to the application's online Help.

Note

The units must not contain modified settings (such as cross-connections) when you run the Commissioning Wizard.

---

4. Open the Commissioning Wizard.

From the menu bar, select **Configuration | Commissioning Wizard**.

5. Run all UltraSite BTS Hub tests described in Testing with the Commissioning Wizard.

6. From the Testing window of UltraSite BTS Hub Commissioning Wizard, verify the results of the tests and fill in the required fields.

7. Click the *Next* button to open the Site Selection window.

8. Browse the node off-line file.

9. *If* the file is an XML file (received from NetAct planner),

Then

Select a site from the *Site Selection* window.

10. Ensure that the selected site is correct.

Click the *Next* button to open the *Accept Site Selection window.*

11. Accept the node off-line file and the site.

Click the *Next* button to accept the selected node off-line file and the site and to send the node settings to the node.

12. *If* no FXC RRI units are used,

Then

The End window displays.

The program then performs the node configuration.

13. *If* radios are included in the configuration,

Then

The Check Hops window displays.

This step is optional.

a. Verify and fine-tune radio hops.
b. Click the *Next* button when the required hop statuses are OK
c. The *End* window displays.

14. Save Commissioning Report on End window.

a. Verify the Commissioning Report.
b. Give the file a name.
c. Click the *Finish* button to store the report on the disk.

7.6 Manual commissioning of GSM/EDGE UltraSite EDGE BTS

7.6.1 Manual commissioning of UltraSite EDGE BTS

Before you start

Manual commissioning can be done only with a non-commissioned BTS. If the BTS to be commissioned is already commissioned, you need to first run the *Undo Commissioning* procedure in BTS Commissioning Wizard.

Summary

The BTS commissioning is done with BTS Commissioning Wizard. It is assumed here that the LAPD links and the PCM port are activated at the BSC. The BCF is still in *Locked* state.

Note

BTS SW is loaded to the BTS by the manufacturer. There is usually no need to locally load SW to the BTS during commissioning.

Steps

1. Open Nokia BTS Manager.

Select *Nokia BTS Manager* from the *Nokia Applications* submenu on the **Start | Programs** menu in Windows.

2. Start BTS Commissioning Wizard.

From the Commissioning menu, select *Wizard*. The *BTS Commissioning Wizard window of Nokia BTS Manager* displays.

3. **Select manual commissioning.**

   Select the *Manual Commissioning* option and click the *Next* button.

4. **Enter initial settings for manual commissioning of UltraSite EDGE BTS.**

5. **Verify the BTS Commissioning Report.**

6. **Save the report and exit the Wizard.**

   Click the *Finish* button to save the report and exit the BTS Commissioning Wizard..

7. **Exit the BTS Manager.**

   To quit BTS Manager, select *Exit* from the *File* menu.

8. **Disconnect your laptop PC from the BTS's LMP port.**

   The commissioning parameters are stored in the BOIA memory.

Note

To start the BTS, it must be unlocked at the BSC.

7.6.2 Entering initial settings for manual commissioning of UltraSite EDGE BTS

Before you start

Review *Manual commissioning of UltraSite EDGE BTS* for procedure to start manual commissioning. Pay careful attention to all Warnings and Cautions.

Steps

1. **Enter optional information in the Set Transmission Parameters window of BTS Commissioning Wizard.**

When done, click the *Next* button.

- Site name
- Site ID
- BCF ID
- BSC ID
- IP Address
- Network ID

2. *If* there is a FC E1/T1 transmission unit in the BTS configuration,

   Then

   Define LIF and synchronisation settings.

   a. Click the *LIF Settings* button to *define line interface (LIF) settings for manual commissioning of FC E1/T1 units*.
   b. Click the *Synchronisation* button to *define synchronisation settings for manual commissioning of FC E1/T1 transmission unit*.
   c. When done, click *Next* to continue. The *Transmission configuration window for FXC E1(/T1) unit* displays.

Note

If any transmission card other than an FC E1/T1 is used, then the *LIF Settings* and *Synchronisation* buttons do not display in the *Set Transmission Parameters* window.

---

3. Send commissioning parameters to the BTS.

In the *Transmission Configuration* window, click the *Start Commissioning* button to send the commissioning parameters to the BTS.

4. *If* there is an FC E1/T1 transmission unit in the configuration,

   Then

   Allocate F(X)C transmission capacity.

   The appearance of the *Transmission Configuration* Wizard window is different. Click the *Traffic Manager* button to allocate FC transmission capacity. This will establish a transmission connection between the BTS and the BSC.

Note

If the connection fails, see *Trouble management of UltraSite EDGE BTS commissioning*.

Note

When you click *OK* in Traffic Manager, the *Transmission Configuration* window reappears. The *Back* button is disabled, because the transmission parameters have already been sent to the BTS. If you need to change any parameters you have specified prior to this point, you must run the *Undo Commissioning* procedure and then re-commission the BTS.

5. *If* BTS SW is not correct,

   Then

   The BSC loads SW to the BTS.

   During the BTS/BSC start-up scenario the BSC checks the BTS SW, and if it is not correct, the BSC loads SW to the BTS. This process takes between 5 and 20 minutes, depending on the link speed. The BCF is reset automatically, which means that the *Supervision and Alarms* windows disappear for a few seconds, but the commissioning procedure continues after the BTS has started normally

   Else

   If no SW download takes place, the process takes about 10 seconds.

   After that, the BSC sends the configuration data to the BTS.

6. **Wait for the oven oscillator to warm up.**

   It takes a few minutes for the oven oscillator to warm up after the BTS is powered on. If the oven oscillator has not yet warmed up, the BCF remains in the *Configuring* state. The *BTS Events* list displays a message when the oven oscillator is ready.

7. **Run TRX tests.**

The TRX tests run automatically during BTS commissioning or you can run them manually. When the BTS is ready for testing, the Wizard automatically proceeds to the next window, and the BSC runs automatic tests on the Abis link and on each TRX installed in the BTS. For detailed information on TRX tests, see *Running a TRX test for UltraSite EDGE BTS*.

Caution

In order not to interfere the operation of other sites, ensure an RF attenuator is connected to every TRX in the BTS before you start local TRX tests.

---

8. *If* there is no BSC connection,

   Then

   Wizard asks if you want to use the SW stored currently in the BOI unit memory.

   If there is no BSC connection (the BCF remains in the *Waiting for LAPD* state) and you click the *Next* button, the Wizard asks if you want to give the *Use Current* command.

9. *If* you indicate you want to use the SW stored in the BOI unit memory,

   Then

   Click the *Yes* button.

   The BTS starts to use the BTS SW in the BOI unit memory and the Wizard proceeds to the *BTS Test Reporting* window.

   Else

   Click the *No* button.

   The BCF remains in the *Waiting for LAPD* state until the BSC connection (OMUSIG link) is created.

10. **Verify EAC inputs 1 to 12 in EAC Input Settings window of BTS Commissioning Wizard.**

a. Mark the required EACs as *In Use*.

The state of each EAC will change in real time as you test them. For example, when you blow some smoke on the smoke detector, the appropriate state changes from *Open* to *Closed*, or vice versa.

b. After testing the EACs, mark them *Checked*.

c. When you have completed the testing (or verifying), click the *Next* button.

Note

The *Next* button remains disabled until you select the checkbox for all inputs that are marked *In Use*.

---

11. Verify EAC outputs in the EAC Output Settings window of BTS Commissioning Wizard

a. Verify the EAC outputs by changing the EAC states.

b. Mark the required EACs as *In Use*.

12. Verify EAC inputs 13 to 24.

a. Verify EAC inputs 13 to 24 in the same way you verified inputs 1 to 12 (see step 9).

b. When you have completed the testing (or verifying), or if you do not use these EAC inputs, click the *Next* button.

13. Verify EAC outputs.

a. Verify the EAC outputs by changing the EAC states. Mark the required EACs as *In Use*.

b. When you have finished the EAC output settings, click the *Set Outputs* button to send the information to the BTS.

c. After you have completed verifying, click the *Next* button.

Note

The *Next* button remains disabled until you select the checkbox for all outputs that are *In Use*.

Note

EAC inputs and outputs windows are only for testing the lines. Recommissioning is not necessary if new EAC lines are added later. EAC lines are defined at the BSC, which activates the lines into use.

Note

The EAC names and polarities are defined at the BSC.

7.6.3 Defining Line Interface (LIF) settings of transmission (FC E1/T1) units of UltraSite EDGE BTS

Before you start

Review *Manual commissioning of Ultrasite EDGE BTS* for procedure to start manual commissioning.

Steps

1. **Display the LIF settings.**
   a. Click the *LIF Settings* button in the *Set Transmission Parameters window.*
   b. The *LIF settings window* displays.
2. **Select the *Interface in Use* option.**
3. **Select the interface mode from the list.**
4. *If* you selected the E1 750 ohm interface mode or the E1 120 ohm interface mode,

   Then

   Define the TS0 fixed bits in the LIF settings window for E1 120 ohm mode.

   TS0 fixed bits 1 to 3 are reserved for CRC and frame locking. Bits 4 to 8 are used for alarms and data transfer in national connections.

Select the *CRC in Use* option the way it is defined at the BSC.

5. *If* you selected the T1 100 ohm interface mode,

   Then

   Define the Framing Format, Line Code and T1 Interface Type settings in the LIF Settings window for T1 100 ohm mode of UltraSite BTS Hub Manager.

6. **Click *OK* to accept the changes.**

7.6.4 Defining synchronisation settings of transmission (FC E1/T1) units of UltraSite EDGE BTS

Before you start

Review *Manual commissioning of Ultrasite EDGE BTS* for procedure to start manual commissioning.

Steps

1. **Display the synchronisation settings.**
   a. Click the *Synchronisation* button in the *Set Transmission Parameters window.*
   b. The *Synchronisation window of UltraSite BTS Hub Manager* displays.

2. **Set timing.**

   Select the *RX Clock timing* option for *Priority 1.*

3. **Click *OK* to accept the changes.**

7.7 Using the Macro Recorder

7.7.1 Recording a macro

Purpose

The Macro Recorder function of the Nokia AXC Manager can be used to record, store and run a sequence of operations.

Before you start

Note

No software management operations like software download or activation of new software should be carried out during macro recording because of differences between software versions.

Steps

1. Click Tools → Macro → Record

The Record Macro dialogue will open.

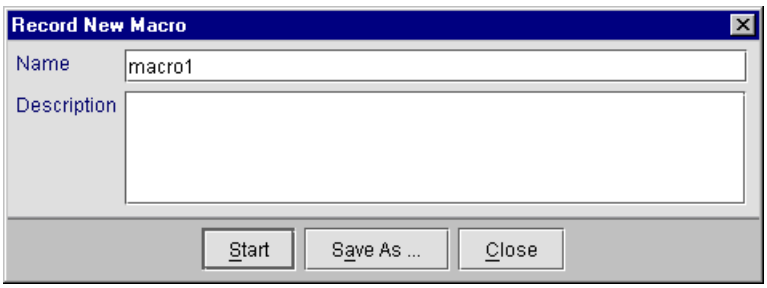


Figure 53. Record new macro

2. Enter the name and a description of the macro

Although the description field is not mandatory it is recommended that also this field is filled.

3. Start recording the macro

When you are ready to start recording the macro, click **Start**. The recording control dialogue will appear with the name of the macro visible in the title bar.

You can now record operations on the Nokia AXC. When the Macro Recorder is recording, all operations performed with the Nokia AXC Manager will be recorded in the open macro.

Note

An operation must be completed and successfully sent to the AXC by the Nokia AXC Manager before it is recorded in the macro.

Note

Refresh, Inspect, Logout and Disconnect will not be recorded in the macro.

4. *If* you want to carry out operations on the Nokia AXC Manager that you do not want to be stored in the macro

   Then

   Pause recording the macro

   Click **Pause** to pause recording.

Figure 54. Recording control: recording

You can now carry out operations and they will not be recorded in the macro. Click **Resume** to resume recording the macro.

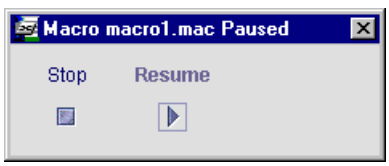


Figure 55. Recording control: paused

Operations carried out are now recorded in the macro.

5. Stop recording and store the macro

Click **Stop** to stop recording the macro. A request to confirm the action will appear. Click **No** to continue recording the macro. Click **Yes** to save the macro. By default the macro will be saved in File Storage.

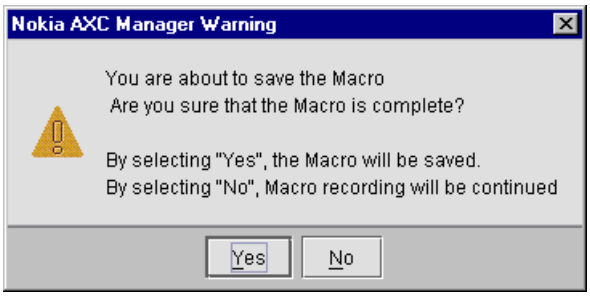


Figure 56. Save a macro

6. *If* you want to delete a macro

Then

Click Tools → Macro → Delete

The Delete a Macro dialogue will appear. Select the macro you want to delete. The dialogue will display information about the selected macro.

Click **Delete**. Confirm the deletion by clicking **Yes**.

7.7.2 Running a macro

Purpose

The Macro Recorder function of the Nokia AXC Manager can be used to run a sequence of operations used for example for restoring the Nokia AXC configuration after the hardware has been reset or a pre-recorded macro can be used to commission the AXC.

Before you start

Note

When executing a macro the configuration of the AXC should be the same as when the macro was recorded.

Steps

1. Click Tools → Macro → Run

The Run a Macro dialogue will open. Select the macro you want to run from the list.

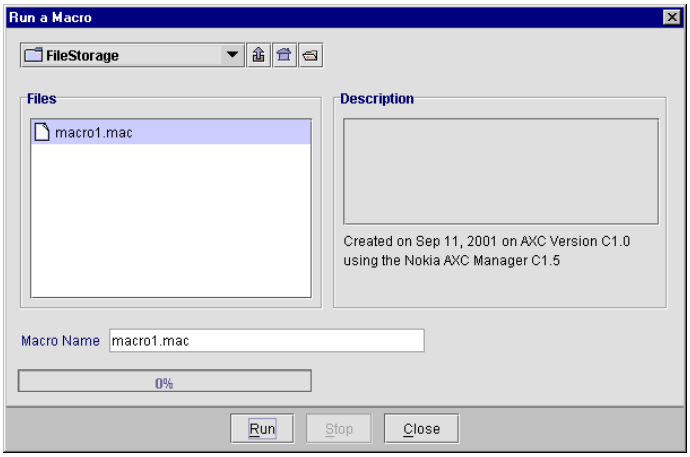


Figure 57. Run a macro

2. Run a macro

Click **Run** to run the macro. A warning will be generated requesting confirmation that the state of the Nokia AXC is the same as when the macro was recorded. Click **Yes** to run the macro. If you click **No** you will return to the Run a Macro dialogue.

Expected outcome

The macro will be executed. A progress bar on the Run a Macro dialogue will display the progress of execution of the macro. If the macro executes successfully the progress bar will indicate this. A message will also appear on the status bar of the Nokia AXC Manager indicating that macro execution was completed. To see the new settings in the AXC Manager click **Refresh all**.

Unexpected outcome

If the macro execution is unsuccessful an error message will be generated.

8 Integration of UltraSite EDGE BTS co-site to Talk-family BTS

8.1 Integrating UltraSite EDGE BTS co-site to Talk-family BTS

Purpose

To prepare the UltraSite EDGE BTS to serve traffic during co-siting installations where there is a requirement to minimise downtime.

Steps

1. **Install applicable RF diversity cable kit(s).**

   For more information, refer to *Installing applicable RF diversity cable kit (s) to the UltraSite BTS for UltraSite EDGE BTS Co-siting with Talk-family.*

Note

It is not necessary to power down the existing BTS during diversity cable installation.

2. **Disconnect RX diversity antenna cables from the Talk-family BTS and connect them as main antenna lines for the UltraSite BTS.**

   For more information, refer to *Nokia Talk-family/Nokia UltraSite EDGE Planning Reference* and *Nokia UltraSite EDGE Antenna System user documentation.*

Note

To connect antenna jumpers to existing antenna lines, refer to *Preparing for jumper cable installation of UltraSite EDGE BTS co-siting with Talk-family BTS*.

3. **Install transmission equipment for the UltraSite BTS.**

   For more information, refer to *Installing a Transmission (VXxx) unit in UltraSite EDGE BTS*.

4. **Power up the UltraSite BTS.**

5. **Commission and integrate the UltraSite BTS as an independent site.**

   For more information, refer to *Overview of commissioning UltraSite EDGE BTS*.

6. **Configure BSC to redirect traffic from the Talk-family BTS to the UltraSite BTS.**

8.2 Verifying co-site functionality

8.2.1 Verifying functionality of UltraSite EDGE BTS co-site with Talk-family BTS with down-time consideration

Steps

1. **Ensure that the master sends the synchronisation signals.**

   Verify configuration of synchronisation cables, if required.

2. **Ensure that the master is in the supervisory state.**

   Ensure that no clock alarms are received from the master.

3. **Power up the slave BTSs.**

4. **Verify that only the green OPR (operation) LED is lit.**

8.2.2 Verifying functionality of UltraSite EDGE BTS co-site with Talk-family BTS without down-time consideration

Steps

1. **Ensure that the master sends the synchronisation signals.**

   Verify configuration of synchronisation cables, if required.

2. **Ensure that the master is in the supervisory state**

   Ensure that no clock alarms are received from the master.

3. **Download the HW database locally from a PC.**

   For more information, refer to *Nokia Talk-family and Nokia PrimeSite BTS Hardware Database Editor User's Guide.*

4. **Download the BTS software.**

   For more information, refer to *Nokia Talk-family and Nokia PrimeSite BTS Man Machine Interface User's Guide.*

Note

You can download the BTS software either locally or from the BSC. After you reconnect the Abis cables, the BSC automatically downloads the BTS software.

---

5. **Download the HW Info Editor locally.**

   For more information, refer to *Nokia Talk-family BTS HW Info Editor User's Guide.*

6. **Verify that only the green OPR (operation) LED is lit.**

7. **Re-commission the BTS as a standard operation.**

9 Completing commissioning

9.1 Verifying commissioning

Purpose

It is recommended that the following checks are performed after commissioning.

Steps

1. **Check the interface settings for PDH and SDH interfaces**

   Check that the PDH and SDH interfaces are functional:

   - standard PDH links
   - Inverse Multiplexing for ATM (IMA) groups
   - ATM over fractional interfaces
   - Q1 Embedded Operation Channels (EOC)
   - Circuit Emulation Service (CES) links
   - SDH interfaces

   You can test the operation of the interfaces by settings loops. For more information see *Configuring loopbacks.*

2. **Check the AAL2 settings**

   Check that the AAL2 connections are functional.

3. **Check the synchronisation settings**

   Check that the synchronisation sources are defined and available.

4. **Check the Virtual Path and Virtual Channel connections**

   Check the ATM Virtual Path and Virtual Channel cross-connections.

5. Check the DCN settings

Check the Data Communication Network settings.

6. Check the IP management settings

Check the IP routing entries.

7. Check the management protocol settings

Check that the management protocol settings are configured.

8. Check the NTP servers

Check that all configured Network Time Protocol servers, the server ports and its IP addresses are visible in the list.

9. Check the Q1 Support Function settings

Check that the Q1 Support Function has been configured.

10. Check alarms

Check the alarm list in the Nokia AXC Manager (open the bottom view in the Hardware view by clicking **View → Bottom View**). For more information see *Reading alarms*.

11. Save the configuration

It is recommended that you save the configuration of the AXC for back-up purposes. The configuration can be saved in the AXC Manager by clicking **Node → Export Configuration...** and selecting a location and a name for the file.

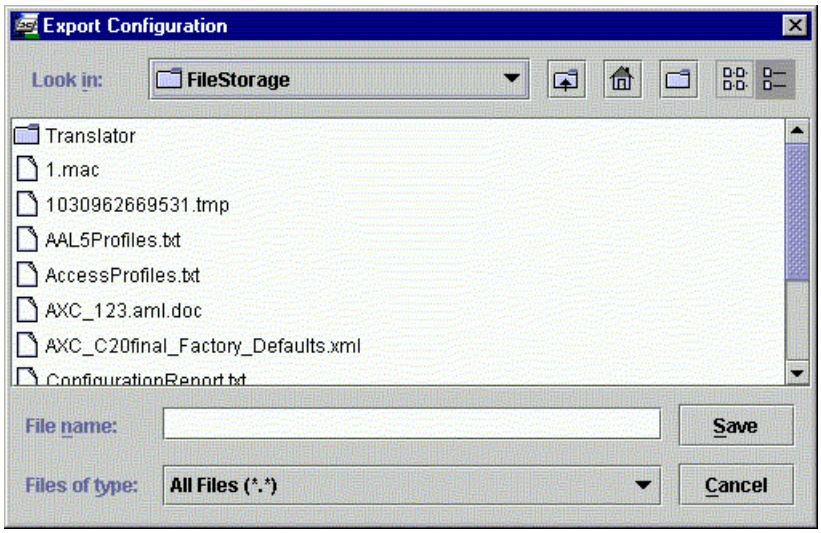


Figure 58. Export configuration

12. Store the item code and serial number report

It is recommended to store the network configuration on individual unit serial number level to enable fast and efficient search in the network, in case such information is needed. For more information see *Storing item code and serial number for traceability purposes.*

9.2 Closing connection to AXC

Steps

1. Click File → Disconnect

2. Save edited data

If there is some edited data that has not been sent to the network element, a confirmation message is displayed. To send this data to the network element click **OK**.

9.3 Powering down UltraSite EDGE BTS

Before you start

Familiarise yourself with the installation procedures for the additional site equipment before powering down the site.

Summary

Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the unit is properly grounded before attempting any connections to the unit.

Warning

Follow national regulations when working with power supply and power cables.

Maximum site downtime recommendations are provided by your Network Planning Engineer.

Steps

1. **Read the site downtime recommendations before powering down the site.**
2. **Collect site equipment information.**
3. **Follow the powering down procedures for the relevant BTS's or site support equipment's user manual.**

10 Test and activate

10.1 Overview of testing UltraSite EDGE BTS

Summary

There are two main types of UltraSite EDGE BTS tests:

- BTS commissioning tests - to ensure that the hardware is functioning properly at the time the BTS is commissioned and to generate a report of test results and configuration information, used for site acceptance
- BTS system tests - to verify the quality and maximum number of calls in a cell, and to verify the condition of the hardware and identify appropriate maintenance tasks

Steps

1. *If* ensuring that the hardware is functioning properly at commissioning or generating a commissioning report,

   Then

   Test with the commissioning wizard.

2. *If* measuring the quality and maximum number of calls in a cell, verifying hardware functioning or identifying maintenance tasks,

   Then

   Run UltraSite EDGE BTS system tests.

10.2 Powering on UltraSite EDGE BTS at a new site

Before you start

Ensure all internal BTS components are properly installed.

Summary

Warning

Be aware of the risk of lethal voltages and electric shock.

Steps

1. *If* Mains power has been switched OFF,

   Then

   Verify all ADUx unit circuit breakers are switched OFF.

2. *If* BTS power supply are switched ON,

   Then

   Switch BTS power supplies OFF.

3. **Switch Mains breaker ON.**

4. **Switch ADUx unit breakers ON.**

5. **Switch BTS Power supplies ON.**

6. **Check BTS units for power.**

   Observe the LED lights of the units in the BTS and ensure power is supplied. If LED lights are not illuminated, troubleshoot the affected units as directed in *Identifying faulty units of UltraSite EDGE BTS*.

10.3 Testing UltraSite EDGE BTS with the commissioning wizard

Before you start

The units must not contain modified settings (such as cross-connections) when you run the commissioning wizard.

Nokia delivers all units with factory settings. If you have already configured the units, you must individually restore the factory settings for each FXC unit before you run the commissioning wizard.

Summary

The testing phase includes activities that ensure the hardware is functioning properly. In this phase, all feasible tests are run in the UltraSite BTS Hub node and the transmission units in the node.

You do not need to perform any actions other than starting the testing process. All tests are run as default. Although you can select which test to run, site acceptance requires that all tests are completed successfully.

Steps

1. *If* the FXC units are already configured,

   Then

   select Factory Defaults for each configured unit.

2. **Start UltraSite Hub Manager.**

3. **Start the Commissioning Wizard.**

   Select **Configuration | Commissioning Wizard**. The *Welcome* dialog box shows the tests to be run.

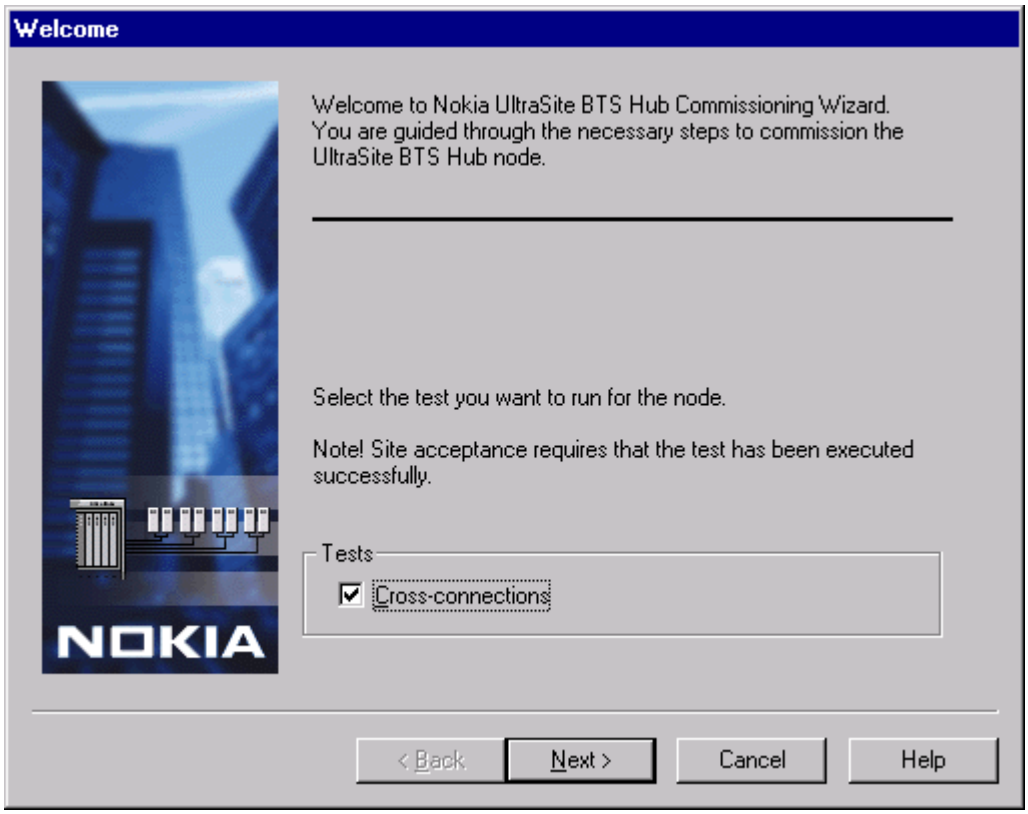


Figure 59. Welcome dialog box

4. Check the appropriate boxes to select the tests you want to run.

Note

The only test run at this phase is the cross-connection test.

5. Run the tests.

Click on the *Next* button to start running the tests. The tests start running and the *Testing* dialog box displays. The results are updated as the tests are completed.

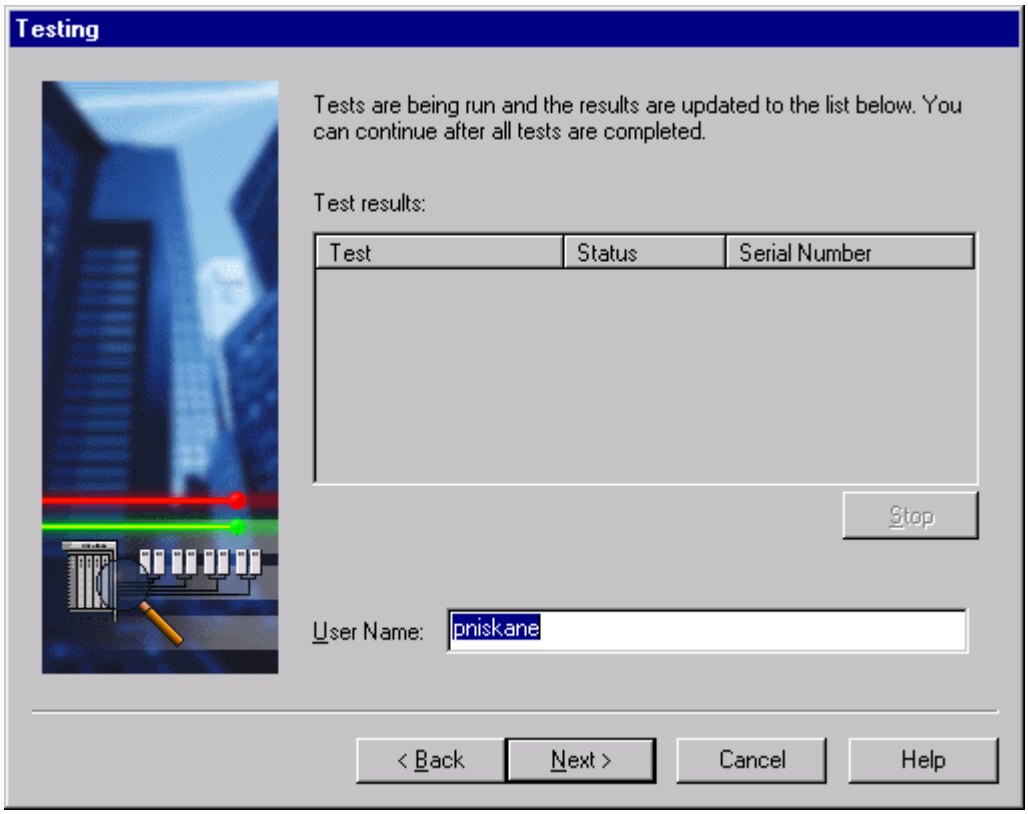


Figure 60. Testing dialog box

Note

Running the tests takes less than three minutes.

Expected outcome

When the tests are executed, the *Testing* dialog box shows the results.

The test results are gathered in the *BTS commissioning report*.

10.4 Running a TRX test for UltraSite EDGE BTS

Before you start

Review *Manually commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Caution

In order not to interfere the operation of other sites, ensure an RF attenuator is connected to every TRX in the BTS before you start local TRX tests.

The TRX tests run automatically during BTS commissioning. When the BTS is ready for testing, the Wizard automatically proceeds to the next window, and the BSC runs automatic tests on the Abis link and on each TRX installed in the BTS.

The following is an explanation of TRX test results displayed in *BTS Test Reporting window of BTS Commissioning Wizard*:

- TX power level is equal to BCCH TRX level. For example, if TRX power level 0 is used, TX power is +47 dBm +/- 4 dBm. Reported TX power is based on the measured RX level value, TRX loop conversion loss, and Power Level values stored the in TSxx units internal memory.
- The measured sensitivity value is the estimation from the background noise level detected by TSxx units throughout the whole RX chain at a tested RX frequency. Sensitivity value is typically from -109 dBm to -111 dBm in laboratory conditions and in field conditions with interference, an acceptable value can be around -100 dBm. In case of a failure as a result of the sensitivity test, initial troubleshooting would be to check the RX cabling and confirm that the DVxx and RTxx units are powered on.
- If BER in RF part exceeds 2%, the test fails. If BER in BB part exceeds 0%, the test fails.

Note

The purpose of the TRX test is to check for failure during the delivery. If you need accurate TRX performance values, see the unit test reports (factory test results) sent along with the TRX unit or use external measurement equipment, such as s power meter, to accurately check TX power.

Steps

1. BTS Test Reporting window displays.

When the *BTS Test Reporting* window displays, there is a slight delay before the automatic BSC-controlled tests start. If you click the *Manual* button to open the *TRX Test* window and the BSC-controlled tests start, the window closes automatically.

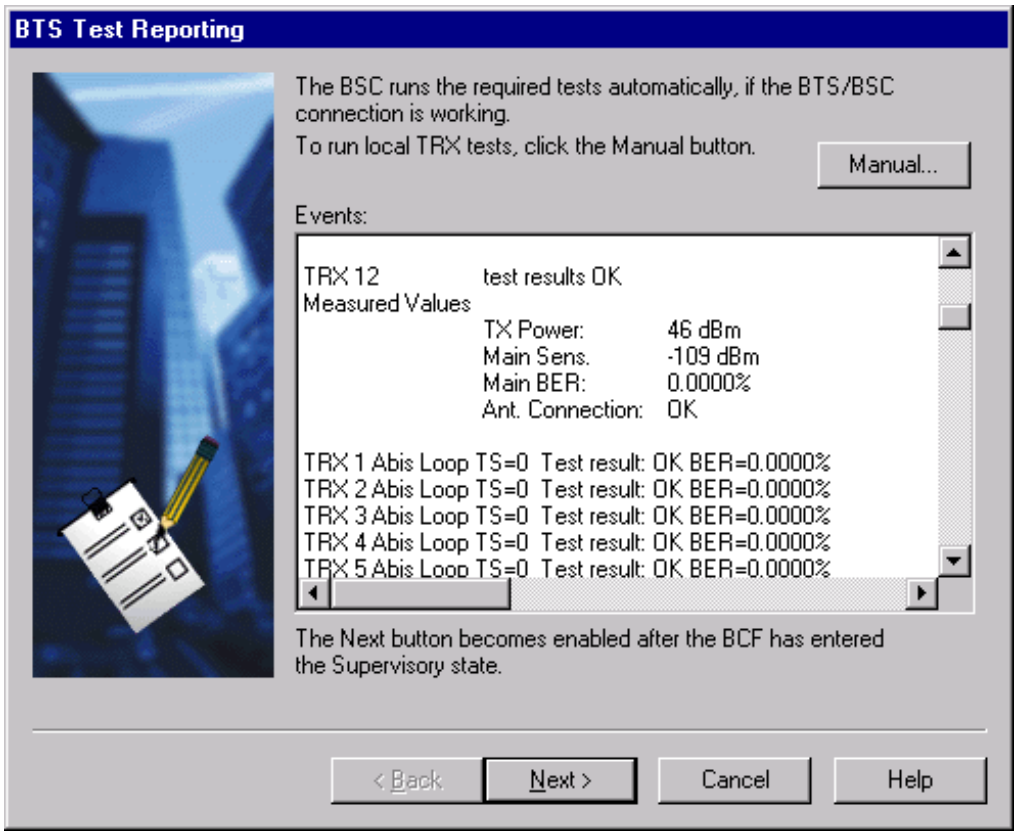


Figure 61. Test events

2. BSC runs tests on Abis link and on each TRX.

When the BCF is in the *Configuring* state and the TRXs are ready for testing, the BTS tests are run under the BSC's control. The BSC runs automatic tests on the Abis link and on each TRX installed in the BTS.

The TRX test takes about 6 to 7 seconds for one TRX (one radio time slot per TRX is tested), while the Abis loop test takes about 30 seconds per TRX.

Note

When the BSC-controlled tests are over, you can click *Manual* to run manual Abis tests.

---

3. *If* the establishment of the BTS/BSC connection did not succeed and you indicated you wanted to use currently stored SW,

   Then

   Click the *Manual* button to run local TRX tests.

4. *If* you wish to manually run TRX tests after commissioning testing is complete,

   Then

   Select manual testing.

   Click *Manual* in the *BTS Test Reporting* window of the Commissioning Wizard after commissioning testing is complete.

10.5 Running an Abis loop test for UltraSite EDGE BTS

Before you start

Review *Manually commissioning UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Steps

1. *If* you wish to automatically run Abis loop tests during BTS commissioning,

   Then

   BSC runs tests on Abis link and on each TRX.

When the BCF is in the *Configuring* state and the TRXs are ready for testing, the BTS tests are run under the BSC's control. The BSC runs automatic tests on the Abis link and on each TRX installed in the BTS.

The Abis loop test takes about 30 seconds per TRX.

Note

When the BSC-controlled tests are over, you can click *Manual* to run manual Abis tests.

---

2. *If* you wish to manually run Abis loop tests after commissioning testing is complete,

   Then

   Select manual testing.

   Click *Manual* in the *BTS Test Reporting* window of the Commissioning Wizard after commissioning testing is complete.

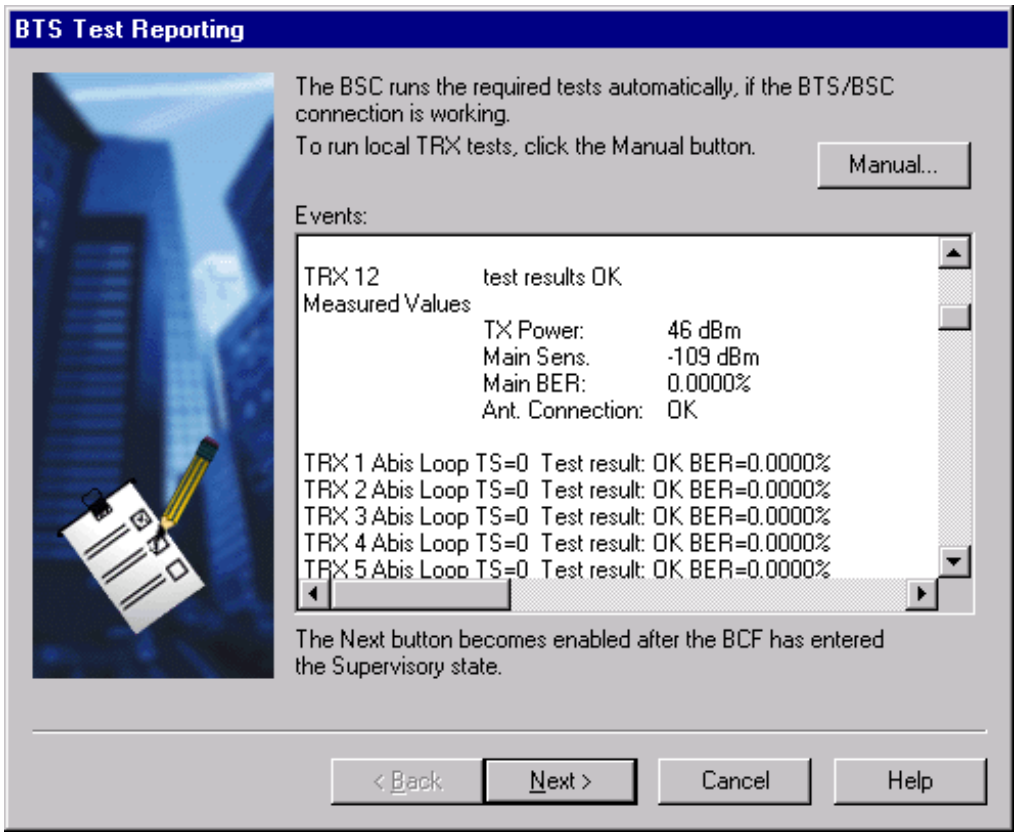


Figure 62. Test events

10.6 Commissioning reports for UltraSite EDGE BTS

10.6.1 HW configuration report

Purpose of the report

The HW Configuration Report is an ASCII text file (.hwr extension) that you can open and check with any word processor. This report, along with the*Transmission configuration report* and the *BTS commissioning report*, serves as the Site Acceptance document. It is recommended that you use the same filename for the different reports of the same site.

Understanding the report

Table 20. Report fields

Field Name	Description and possible values
Report title	
Date and time	
HW configuration filename	Displayed if applicable
BTS configuration name	Displayed if applicable
Cabinet information	
BB2-TSx connection information	
Cabling information	
Antenna settings	
HW information filename	

10.6.2 Transmission Configuration Report

Purpose of the report

The Transmission Configuration Report is an ASCII text file (.cmr extension) that you can open and check with any word processor. This report, along with the *HW configuration report* and the *BTS commissioning report*, serves as the Site Acceptance document. It is recommended that you use the same filename for the different reports of the same site.

Note

For UltraSite EDGE BTS installations using FXC Transmission units, you can obtain the Transmission Configuration Report by choosing **Tools | Configuration Report | Save...** from within the Nokia UltraSite BTS Hub Manager.

Note

If there are no separate FXC transmission units in the BTS configuration, there is no separate transmission configuration report. In this case, the FC E1/T1 transmission unit is configured during the BTS commissioning.

Understanding the report

Table 21. Report fields

Name	Description and possible values
Report title	• Equipment • Date and Time • User • File used in commissioning
Node Identification	• Equipment Type • Equipment Name • Family Type • Site Name • Group Name • Site Location
Node test report	• Test Time • Node Name • Node Address • Test Person • Cross-connections
HW/SW configuration	• Installed FXC units by slot: - Unit type - Serial Number - Code - Version - SW version

Table 21. Report fields (cont.)

Name	Description and possible values
Node settings	• Service interface - Q1 port address, speed and group address - LMP address, speed and group address - Q1 int speed and group address - Control and confirmation timeouts • Q1 management - State of the Q1 hybrid switches • Synchronisation settings
Alarm Configuration	• All active alarms listed
LIFs and Flexbuses	• Interfaces are listed and Flexbus capacities are shown
D-Bus allocation - D11-D13 (Traffic Management)	• Signal Timing mode • OMUSIG • TCHs • TRXSIGs • EDAPs
Cross-connections in active bank	
Outdoor units	• Radio measurements • Active alarms in radios

10.6.3 BTS commissioning report

Purpose of the report

The BTS Commissioning Report is an ASCII text file (.rpt extension) that you can open and check with any word processor. The report includes test results and configuration information. This report, along with the *HW configuration report* and the *Transmission configuration report*, serves as the Site Acceptance document. It is recommended that you use the same filename for the different reports of the same site.

Understanding the report

Table 22. Report fields

Field Name	Description and possible values
Report title	
Date and time	
User name	
Commissioning mode and network time	
BTS logical configuration	
Telecom status in TRXs	
BTS HW versions	
BTS SW versions	
EAC input and output test	
BTS test results	In the test reports, each test gives one of the following test results: • OK • Partially failed • Failed
Abis test results	
TRX test results	
BTS alarm test report	
External TREs in Q1 port	
Abis allocation report	Available if an FC E1/T1 unit exists in the configuration

11 Commissioning windows of UltraSite EDGE BTS

11.1 BTS HW Configurator/Create New Configuration windows

11.1.1 Configuration Wizard window of BTS HW Configurator

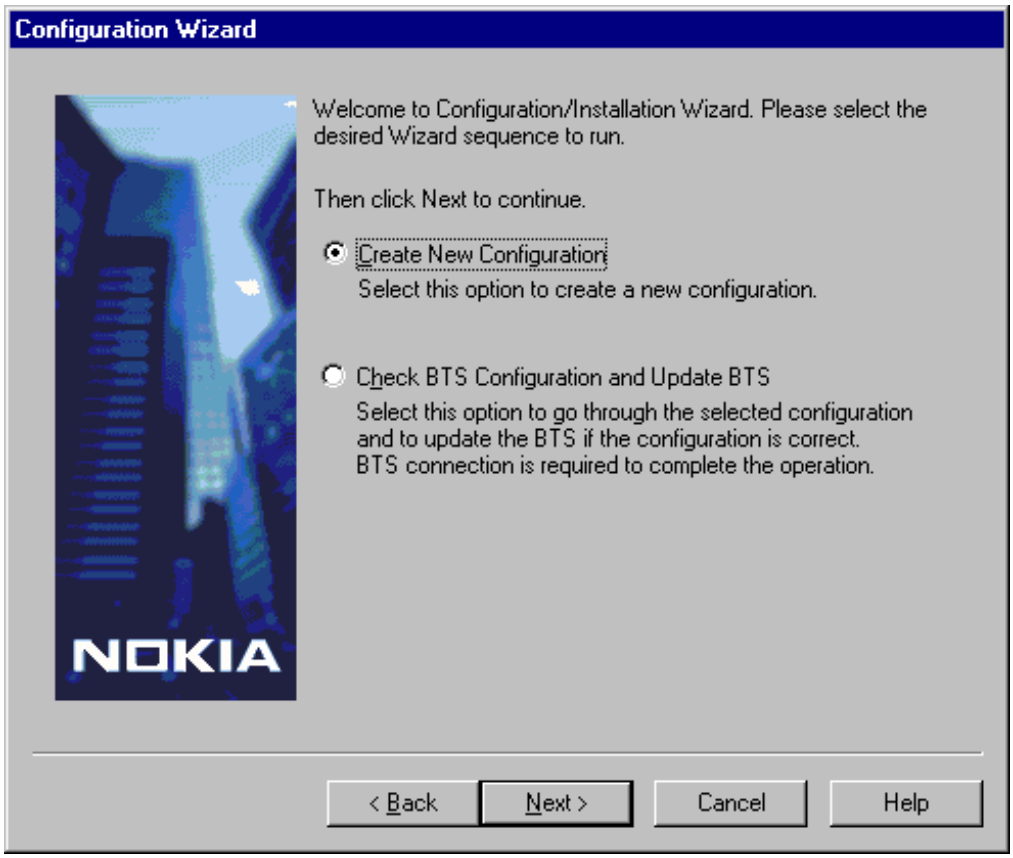


Figure 63. New configuration wizard welcome page

11.1.2 Select Sector Configuration window of BTS HW Configurator

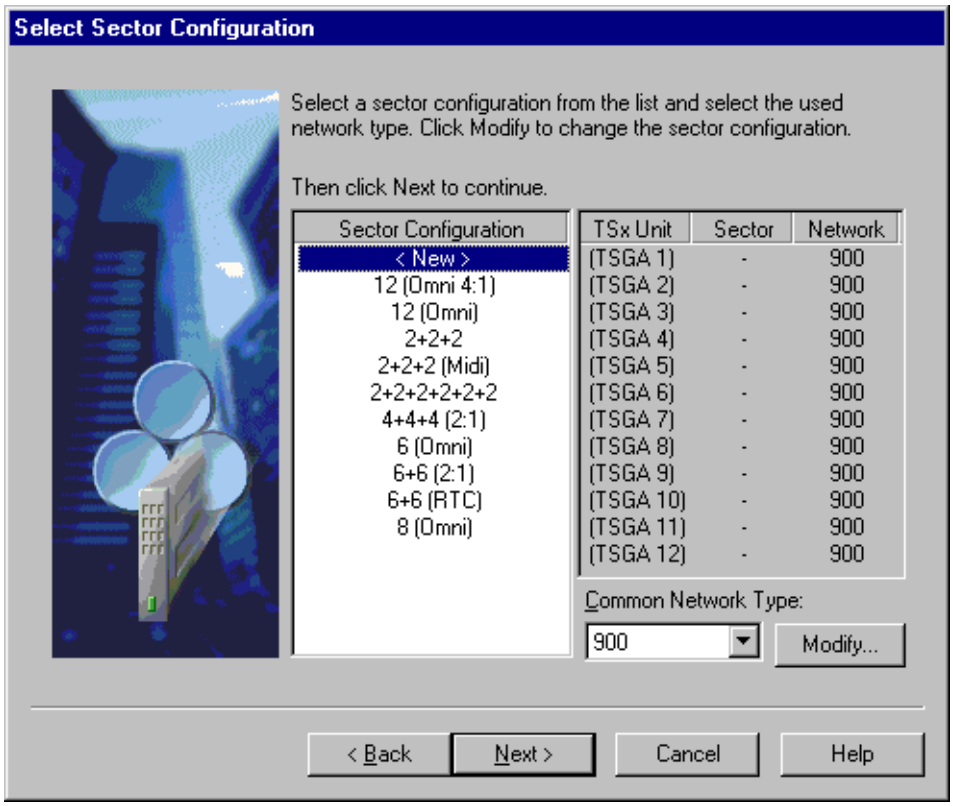


Figure 64. Sector configuration

11.1.3 Modify Sector and Network window of BTS HW Configurator

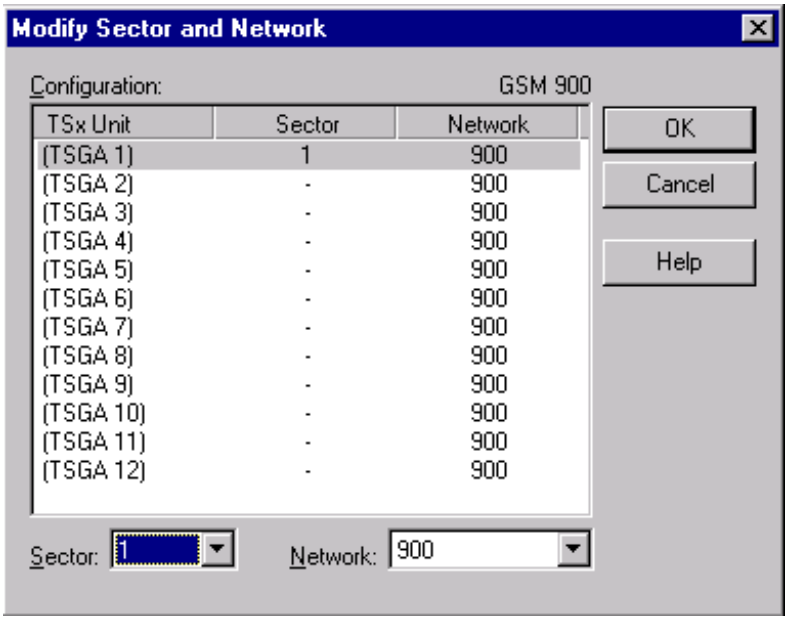


Figure 65. Modify sector configuration dialog box

11.1.4 Define TSx Configuration window of BTS HW Configurator

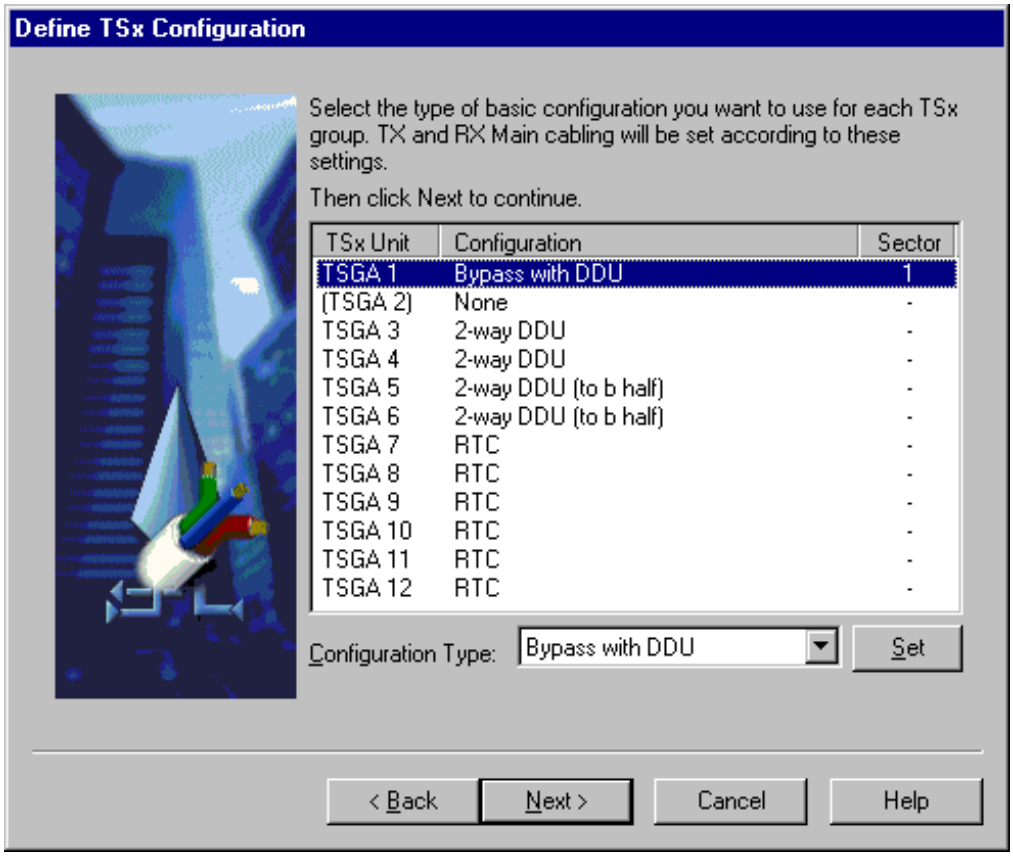


Figure 66. TSx configuration

11.1.5 Define RX Diversity Cabling window of BTS HW Configurator

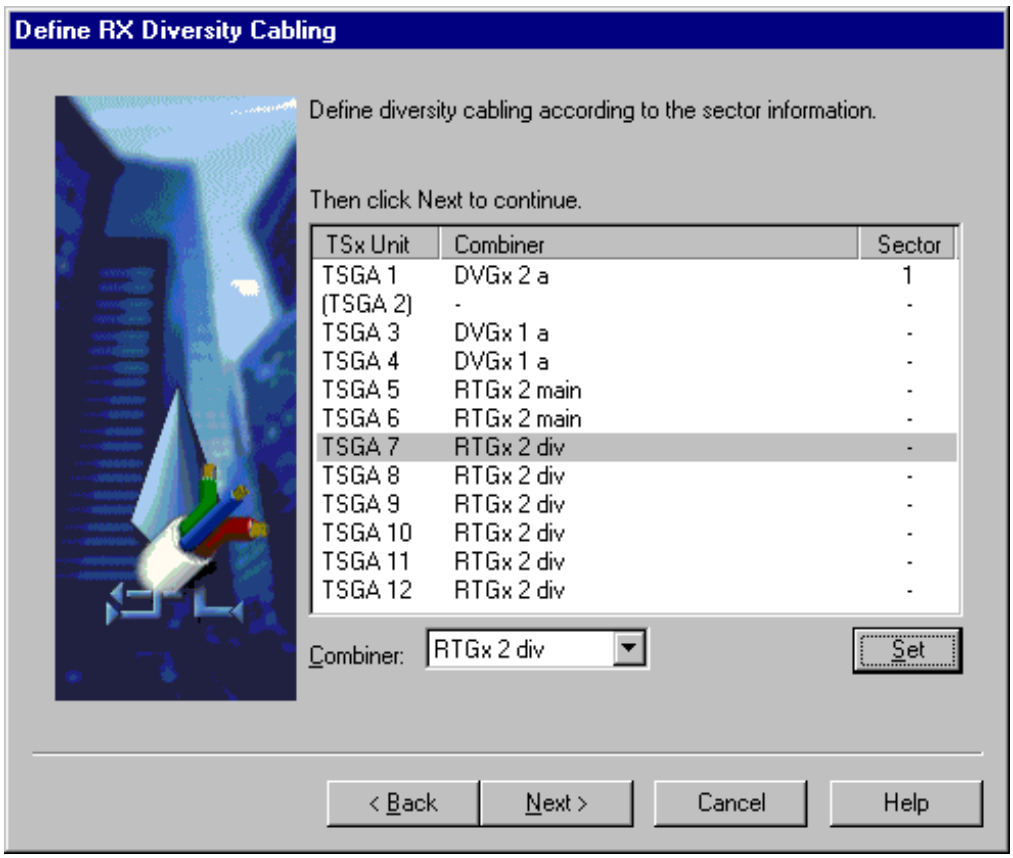


Figure 67. RX Diversity cabling

11.1.6 Define Antenna Settings window of BTS HW Configurator

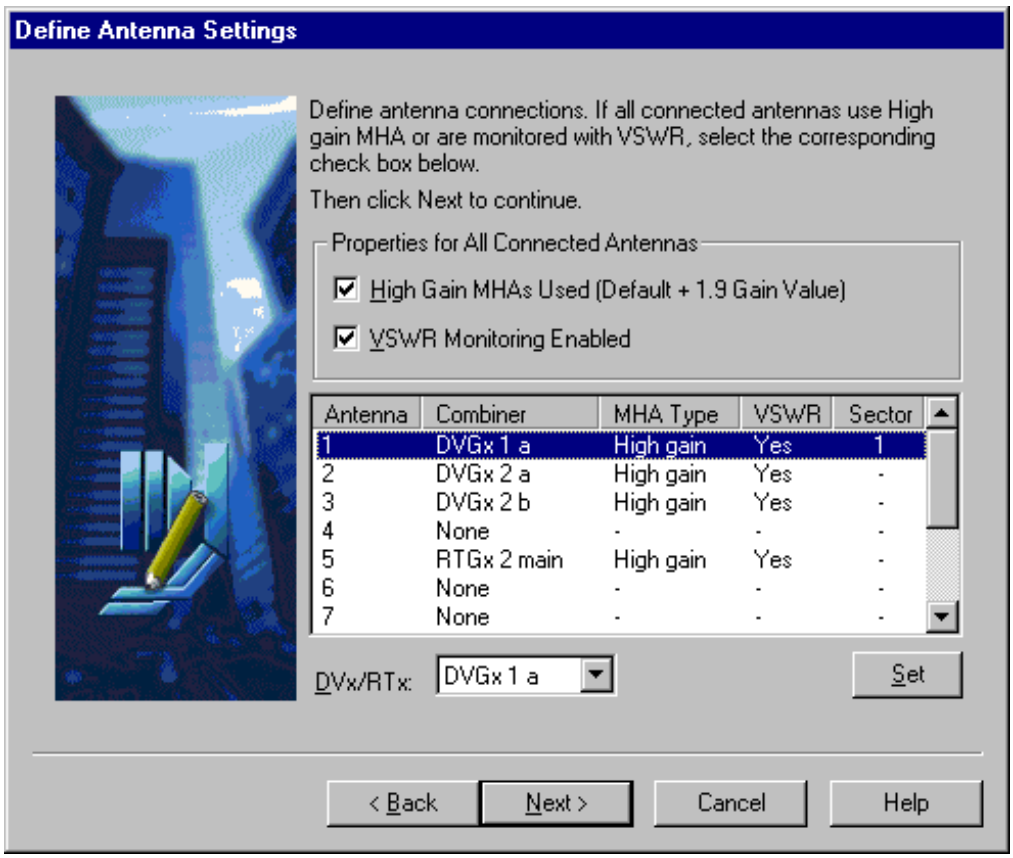


Figure 68. Antenna Setting

11.1.7 Report of New Configuration window of BTS HW Configurator

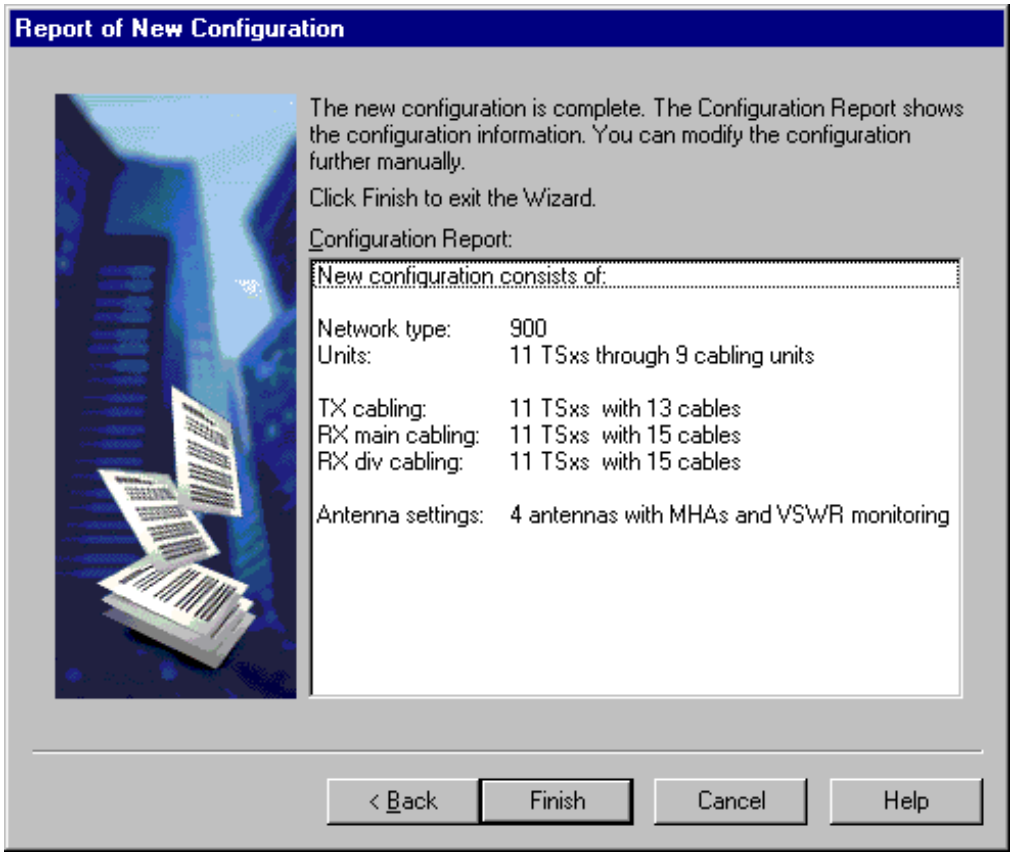


Figure 69. New configuration report

11.2 BTS HW Configurator/Check BTS Configuration and Update BTS windows

11.2.1 Configuration Wizard window of BTS HW Configurator

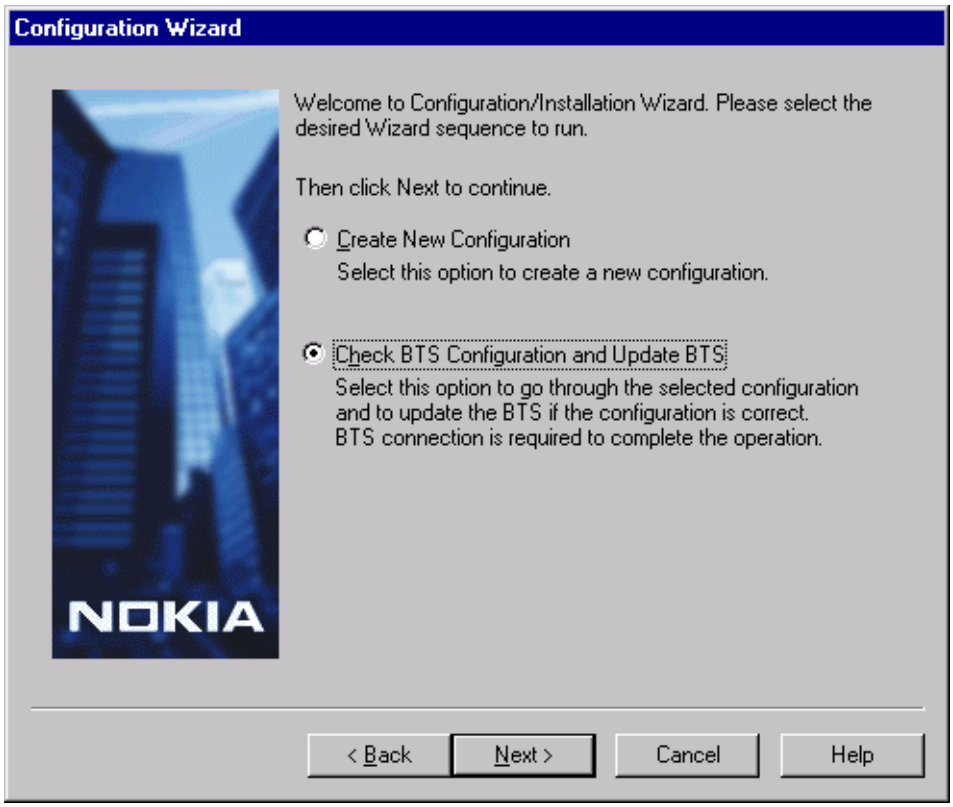


Figure 70. Wizard welcome page

11.2.2 Select Configuration window of BTS HW Configurator

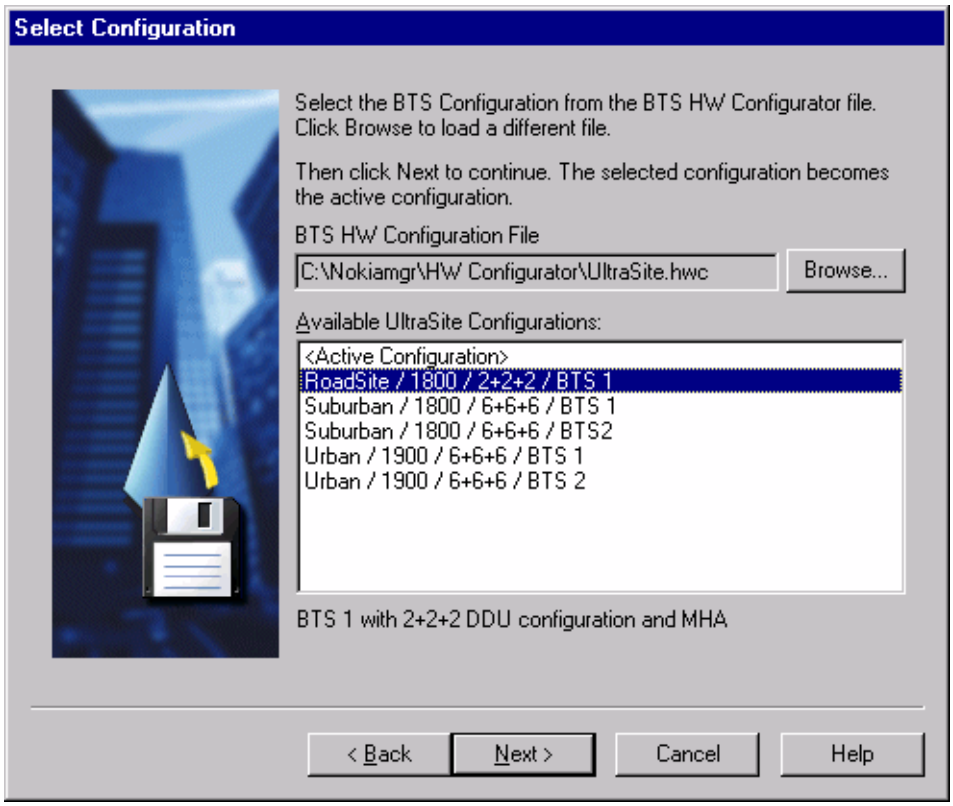


Figure 71. Select Configuration

11.2.3 BTS Connection window of BTS HW Configurator

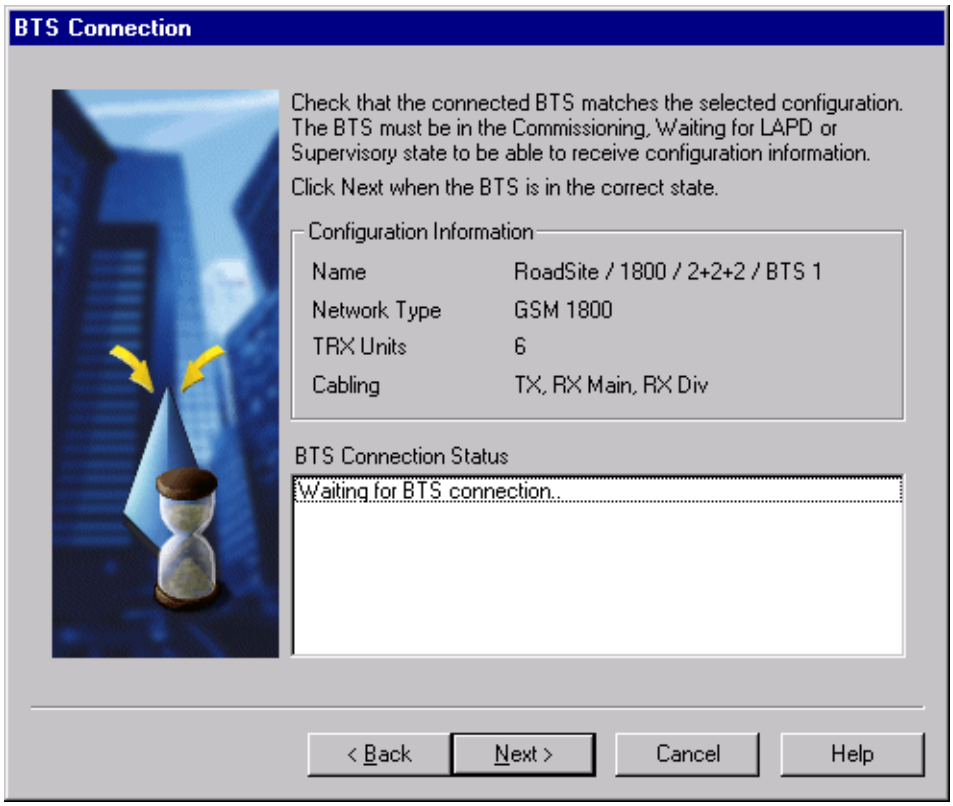


Figure 72. BTS connection

11.2.4 Cabinet Information window of BTS HW Configurator

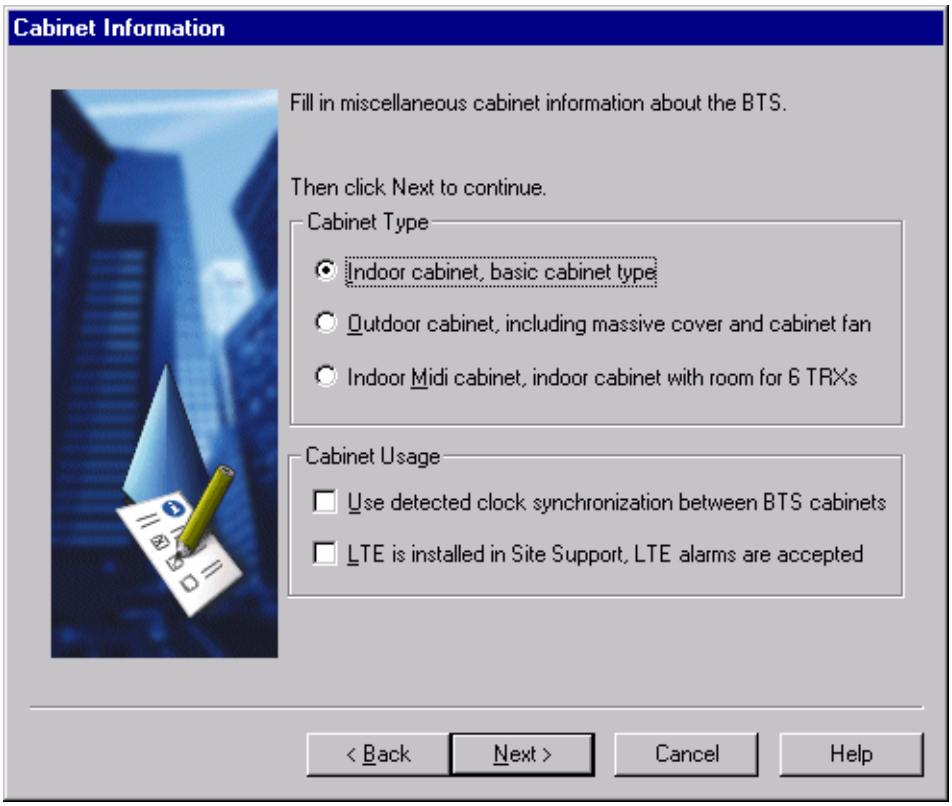


Figure 73. Cabinet Information

11.2.5 BB2-TSx Cross-connections window of BTS HW Configurator

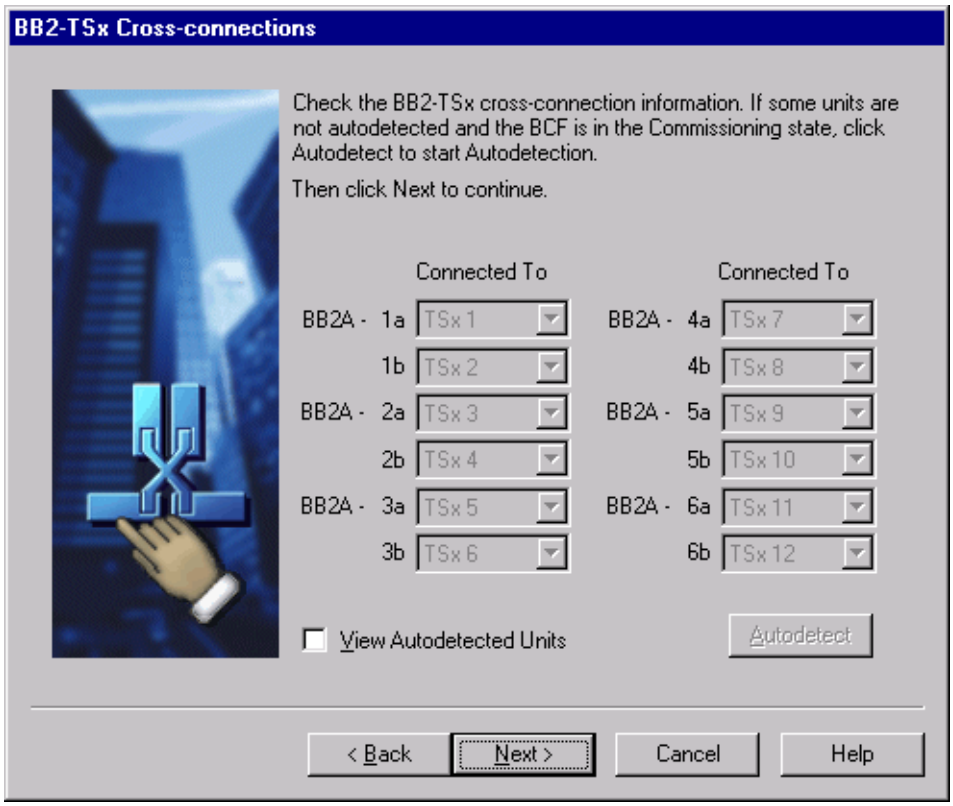


Figure 74. BB2-TSx Cross-connections

11.2.6 Current Cabling window of BTS HW Configurator

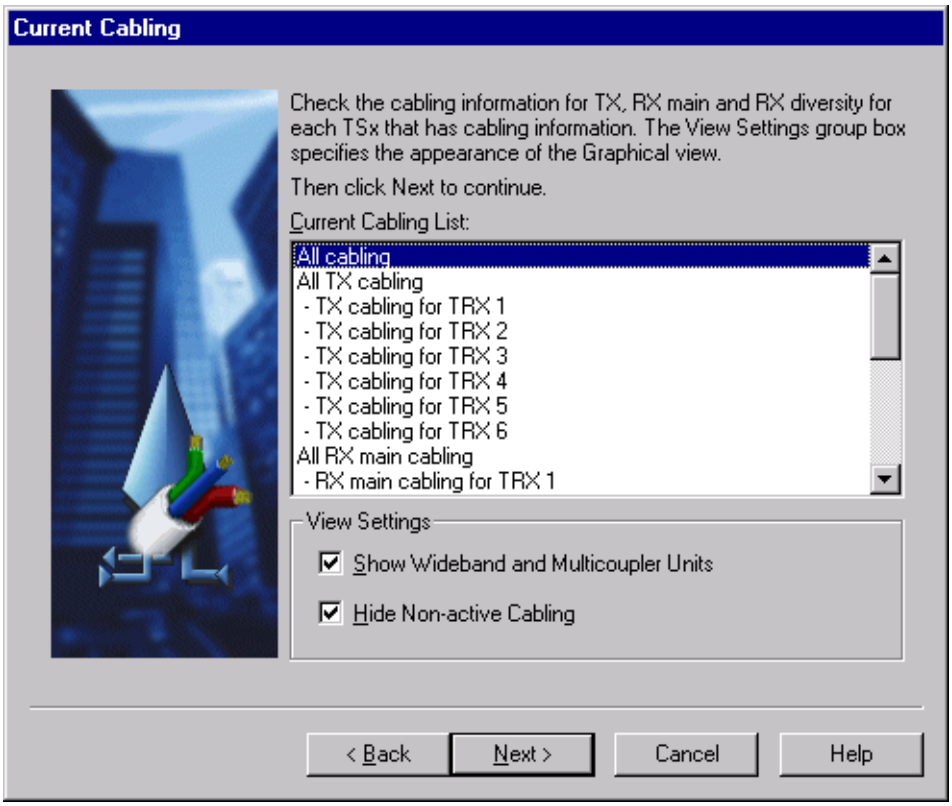


Figure 75. TSx cable connections

11.2.7 Antenna Settings window of BTS HW Configurator

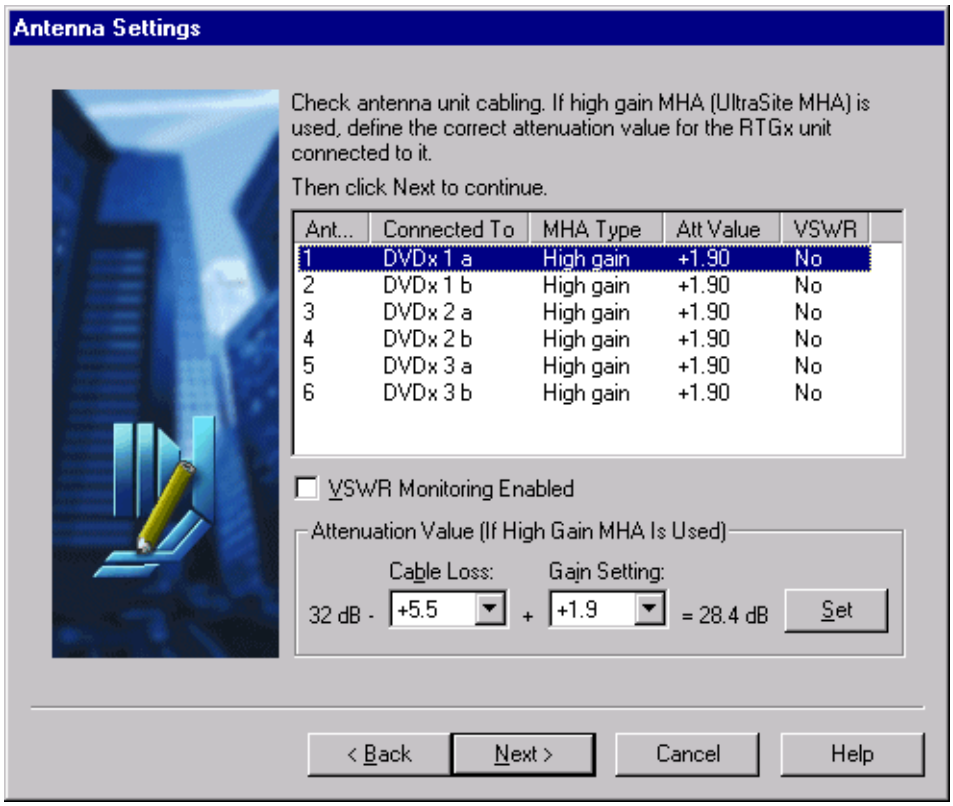


Figure 76. Antenna Settings

11.2.8 Passive Units window of BTS HW Configurator

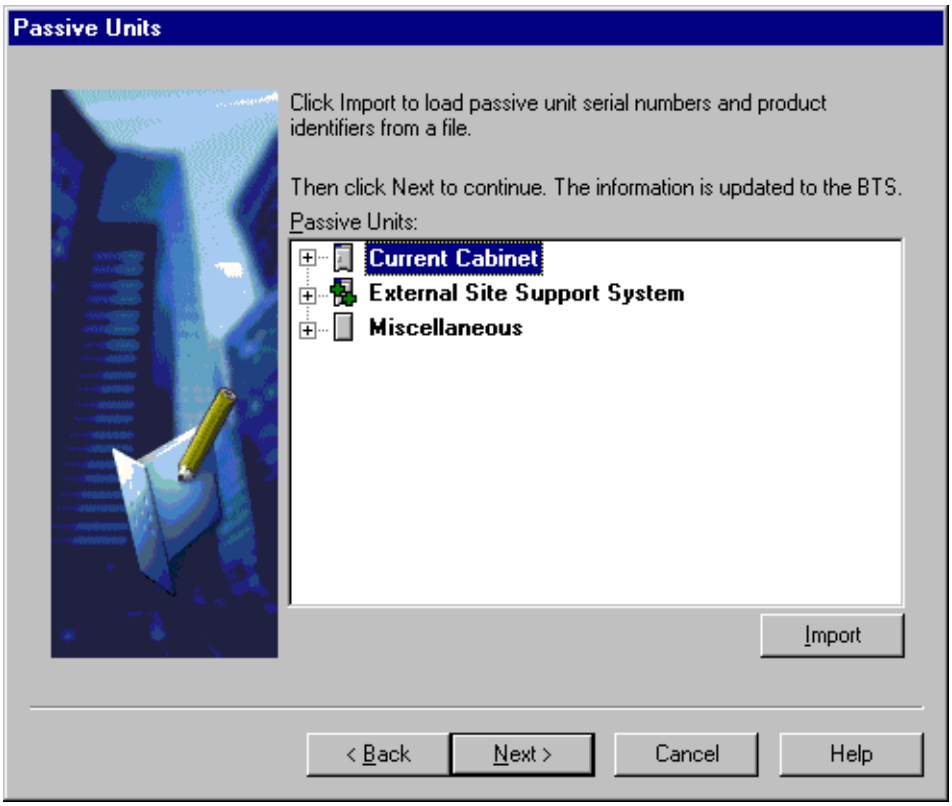


Figure 77. Passive Units

11.2.9 BTS Configuration Report window of BTS HW Configurator

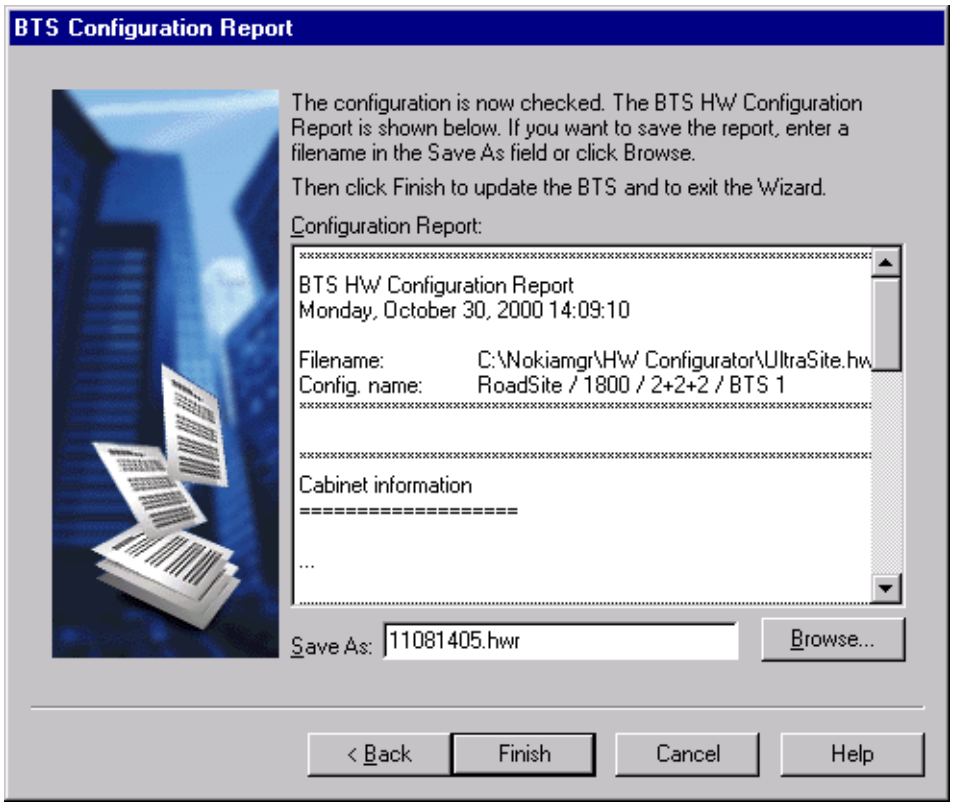


Figure 78. BTS Configuration Report

11.3 UltraSite BTS Hub Manager windows

11.3.1 Equipment - Address: window of UltraSite BTS Hub Manager

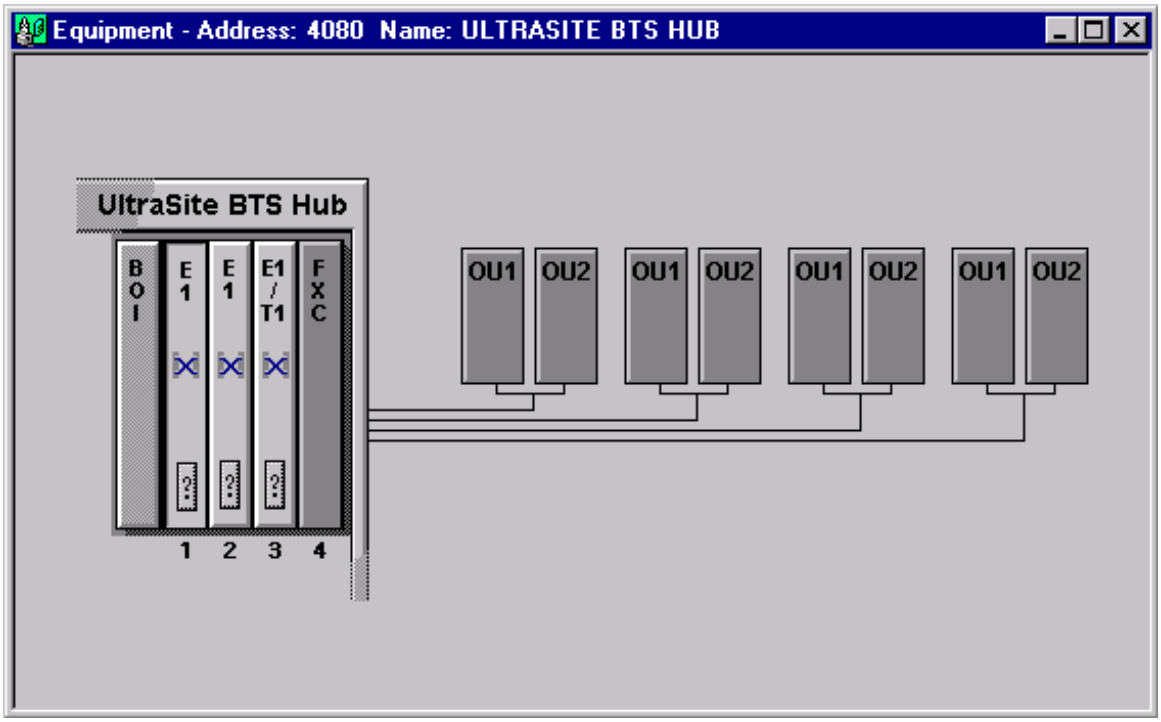


Figure 79. Equipment - Address: window of UltraSite BTS Hub Manager

11.3.2 LIF Settings window of UltraSite BTS Hub Manager

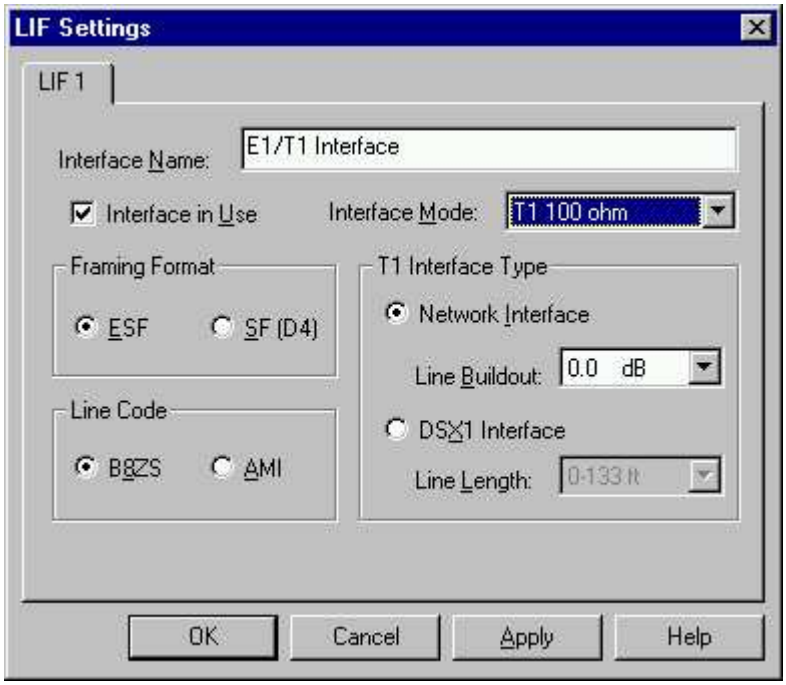


Figure 80. LIF Settings (E1/T1 Interface)

11.3.3 LIF Settings window for T1 100 ohm mode of UltraSite BTS Hub Manager

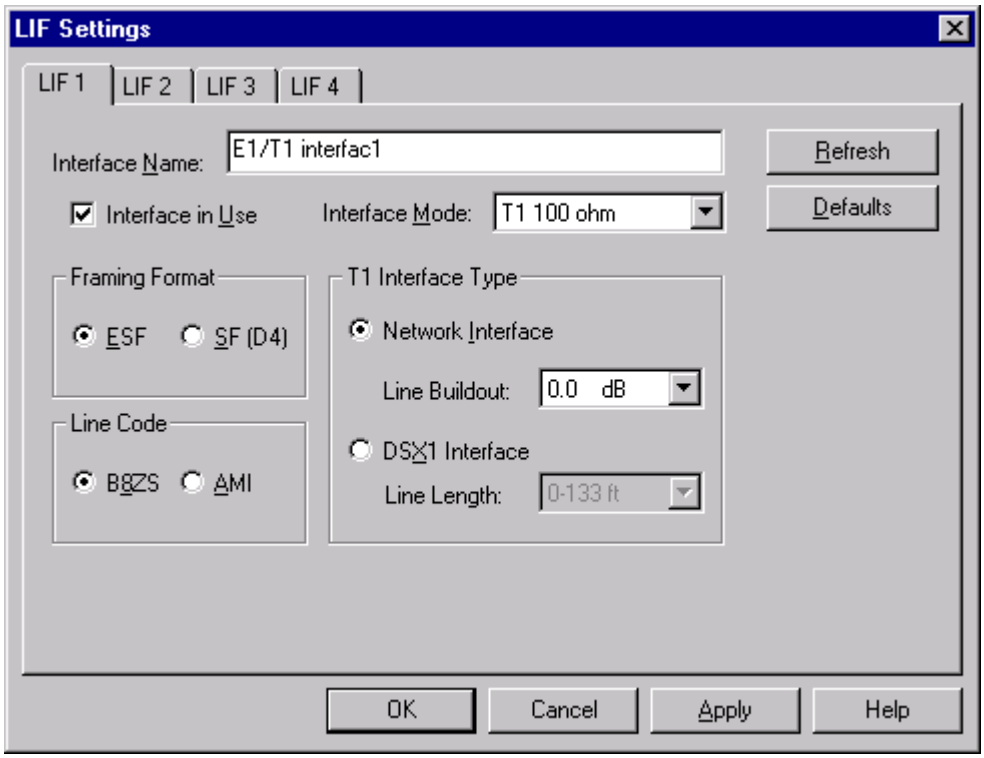


Figure 81. LIF Settings window for T1 100 ohm mode of UltraSite BTS Hub Manager - FXC

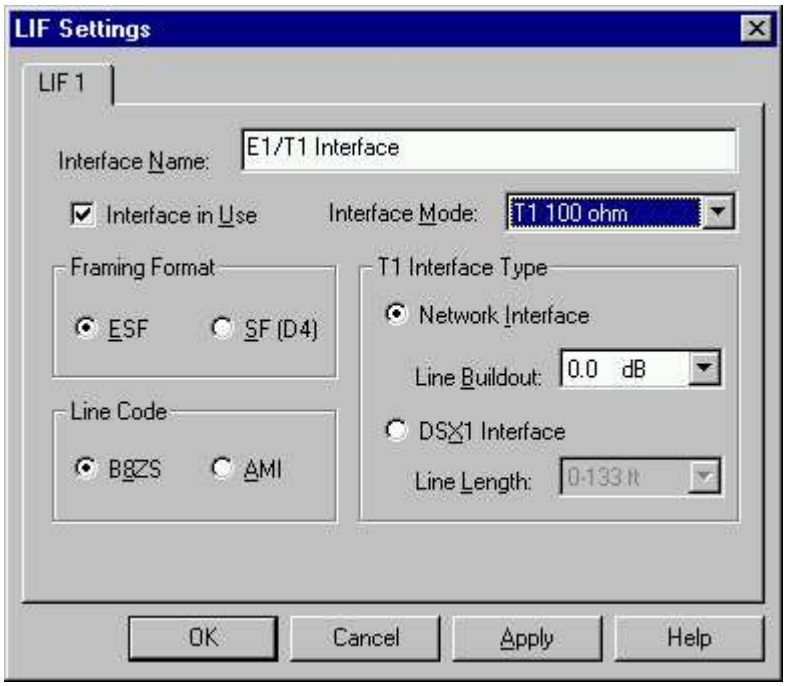


Figure 82. LIF Settings for FC E1/T1 unit in T1 mode

11.3.4 Unit settings with FXC RRI unit setting window of UltraSite BTS Hub Manager

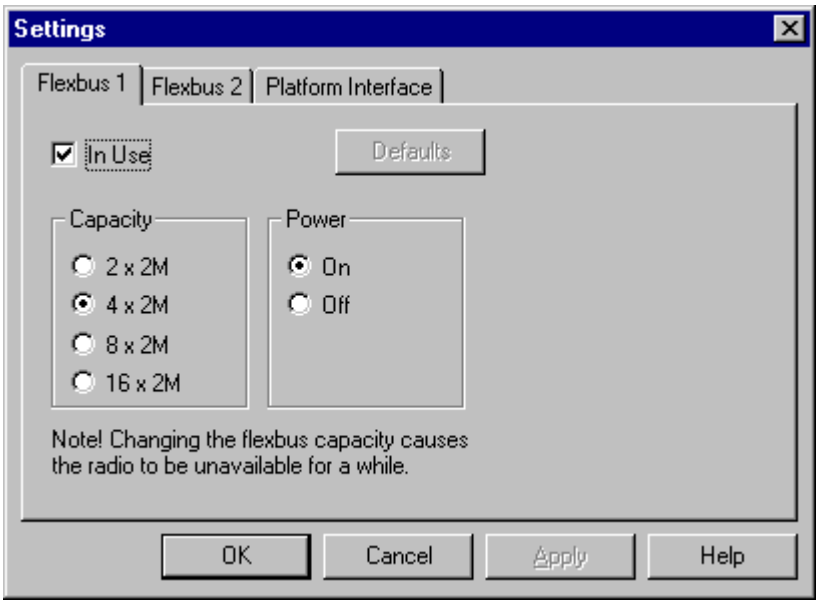


Figure 83. Unit settings with FXC RRI unit setting window of UltraSite BTS Hub Manager

11.3.5 Platform interface tab of settings window of UltraSite BTS Hub Manager

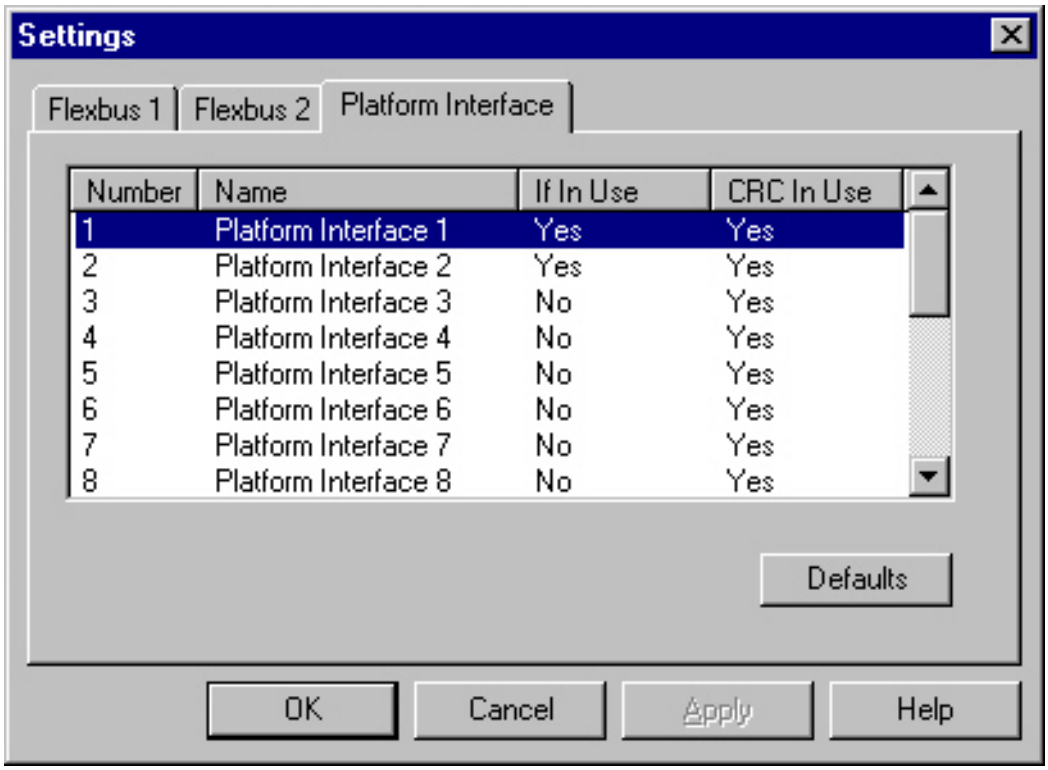


Figure 84. Platform interface tab

11.3.6 Flexbus Settings window of RRI Manager

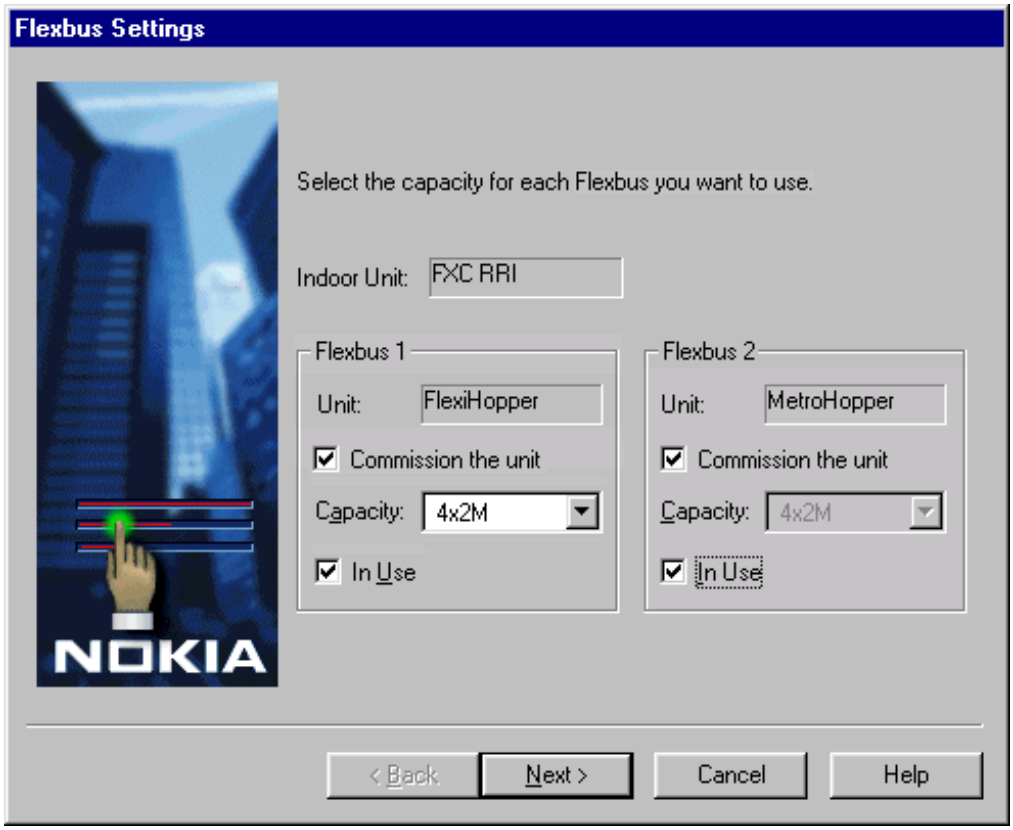


Figure 85. Flexbus settings with FXC RRI card

11.3.7 Flexbus 1 - FlexiHopper Settings window of RRI Manager

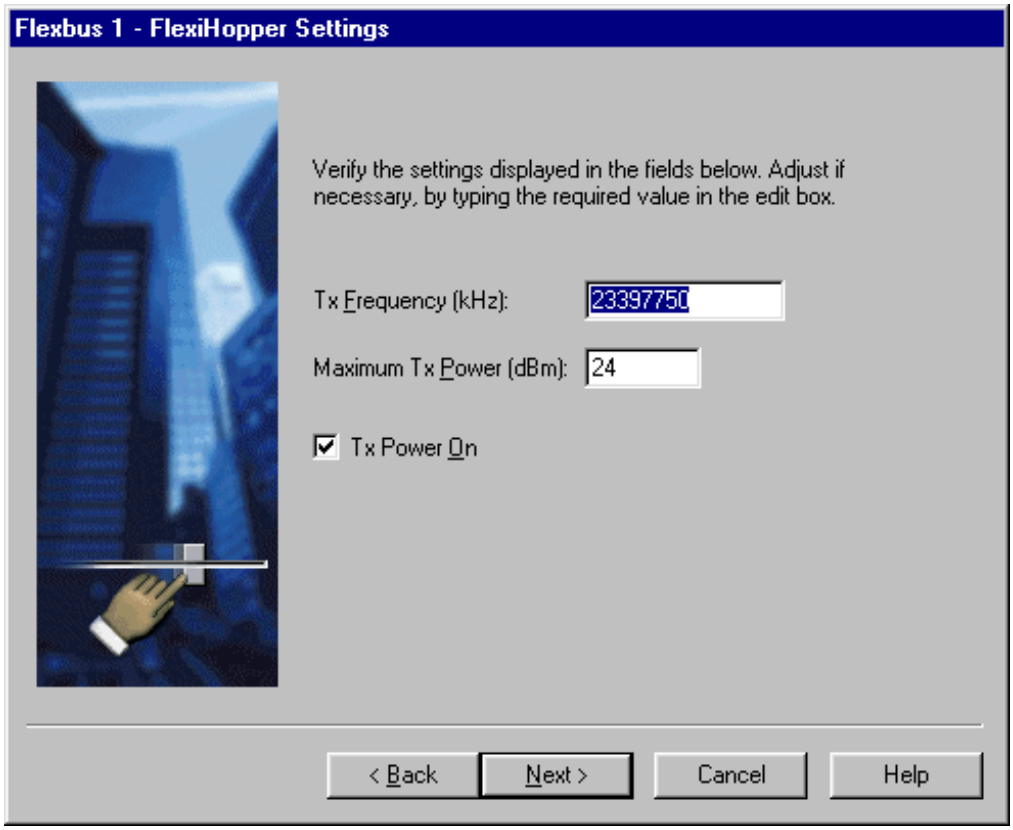


Figure 86. Flexbus 1 settings for FlexiHopper outdoor unit

11.3.8 Flexbus 2 - MetroHopper General Settings window of RRI Manager

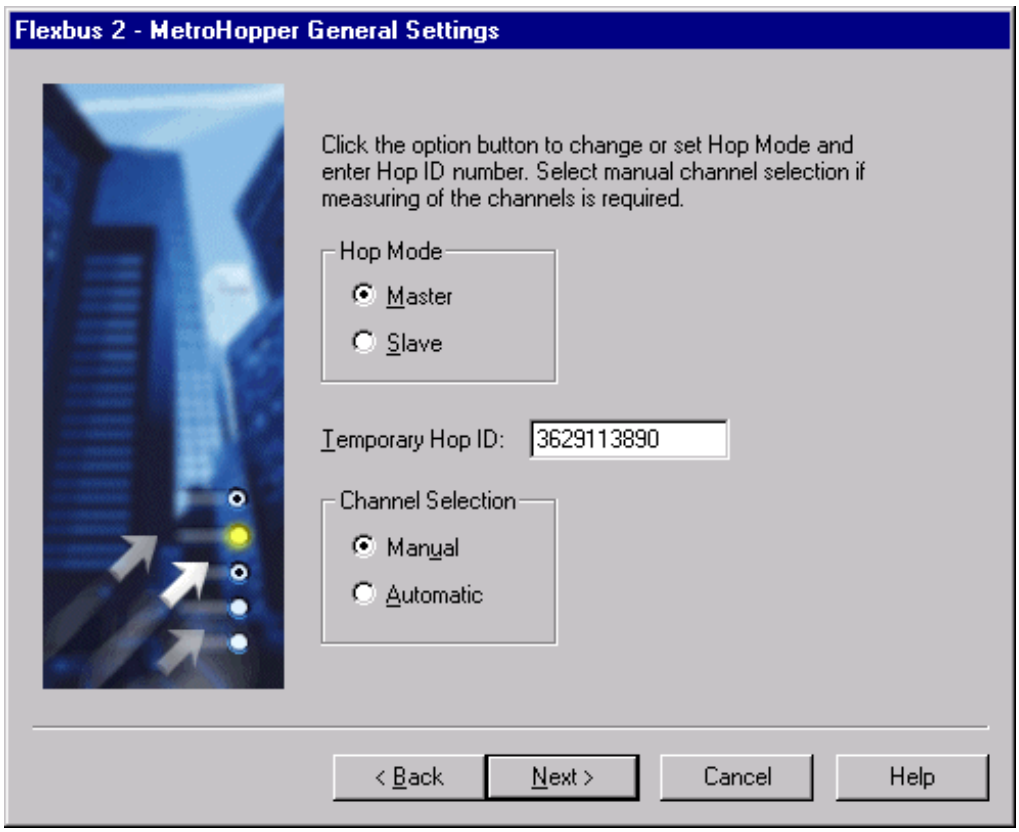


Figure 87. Flexbus 2 settings for MetroHopper outdoor unit

11.3.9 Flexbus 2 - MetroHopper Manual Channel Selection window of RRI Manager

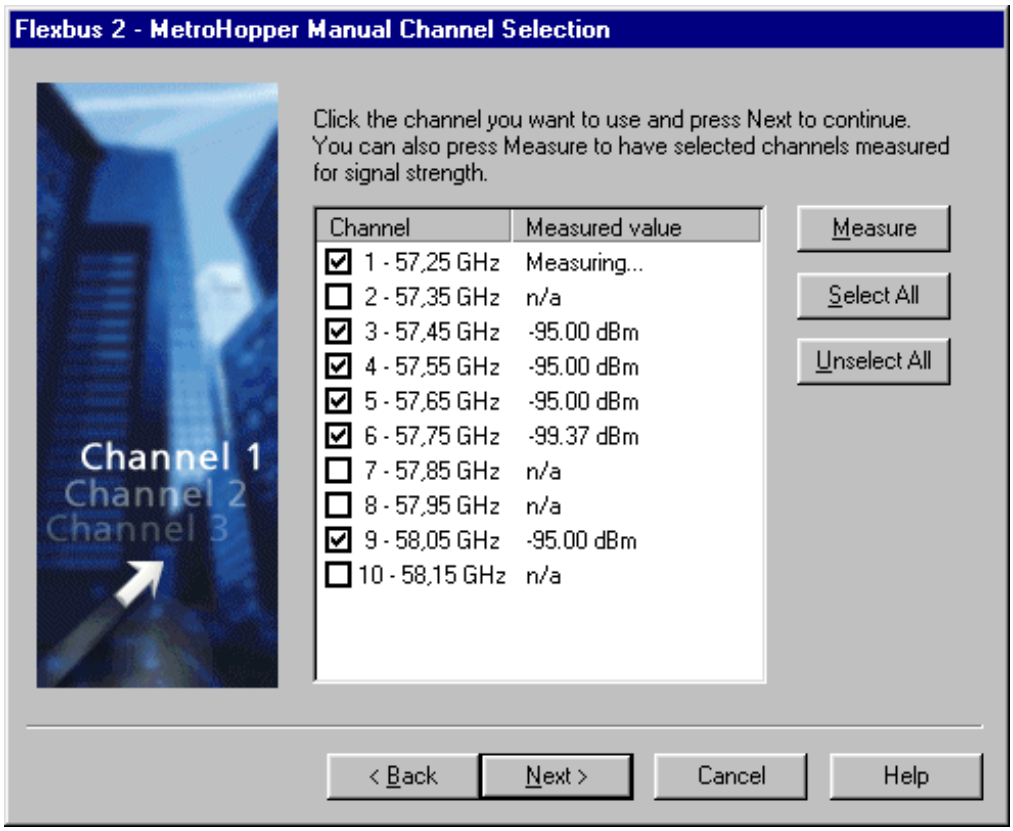


Figure 88. MetroHopper manual channel selection

11.3.10 Summary of Commissioning Settings window of RRI Manager

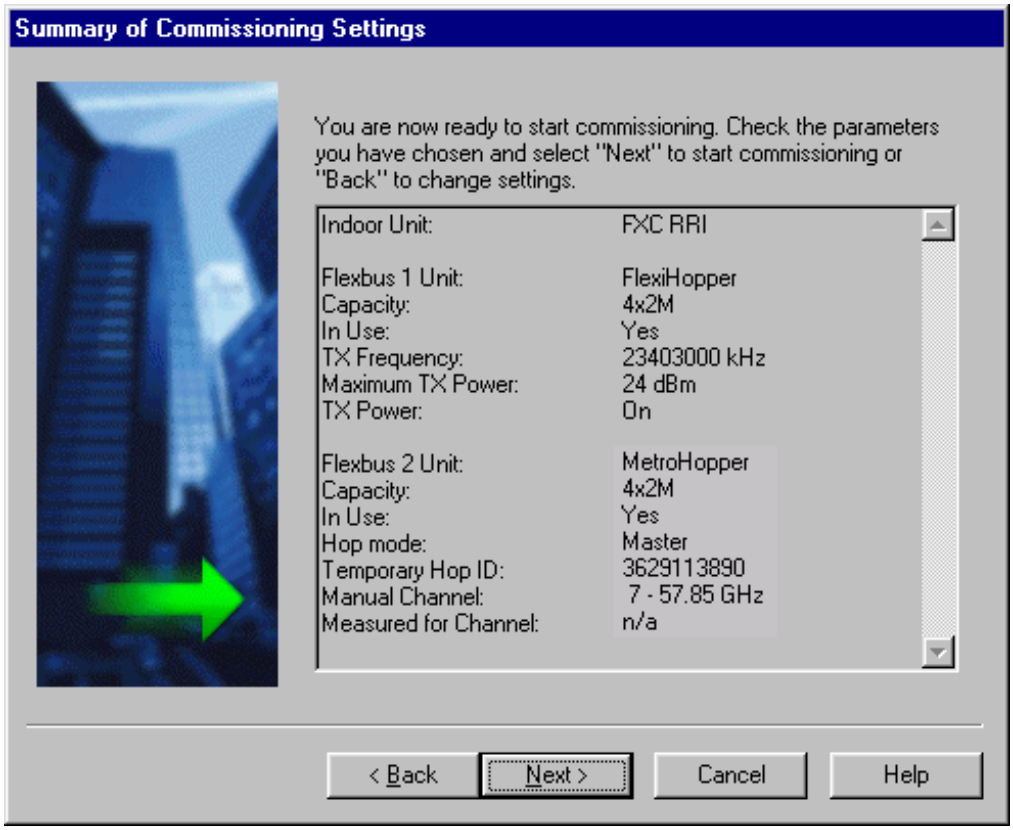


Figure 89. Summary of Commissioning Settings

11.3.11 Monitoring Hop window of UltraSite BTS Hub Manager

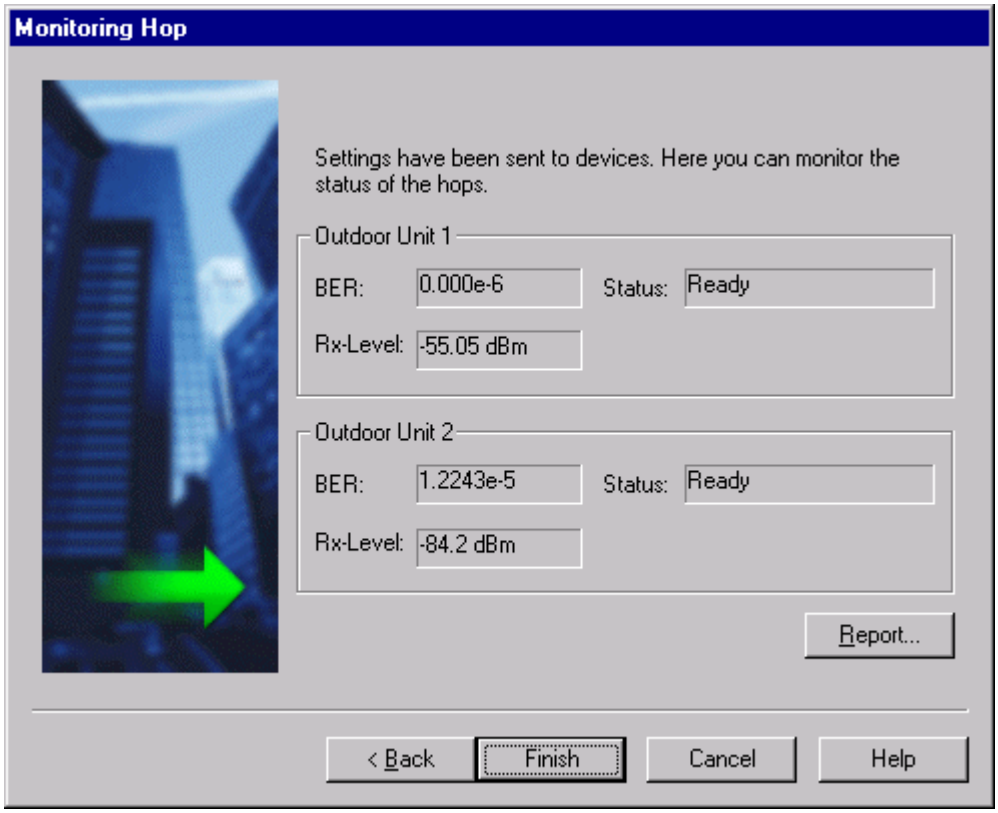


Figure 90. Monitoring Hop status

11.3.12 Synchronisation window

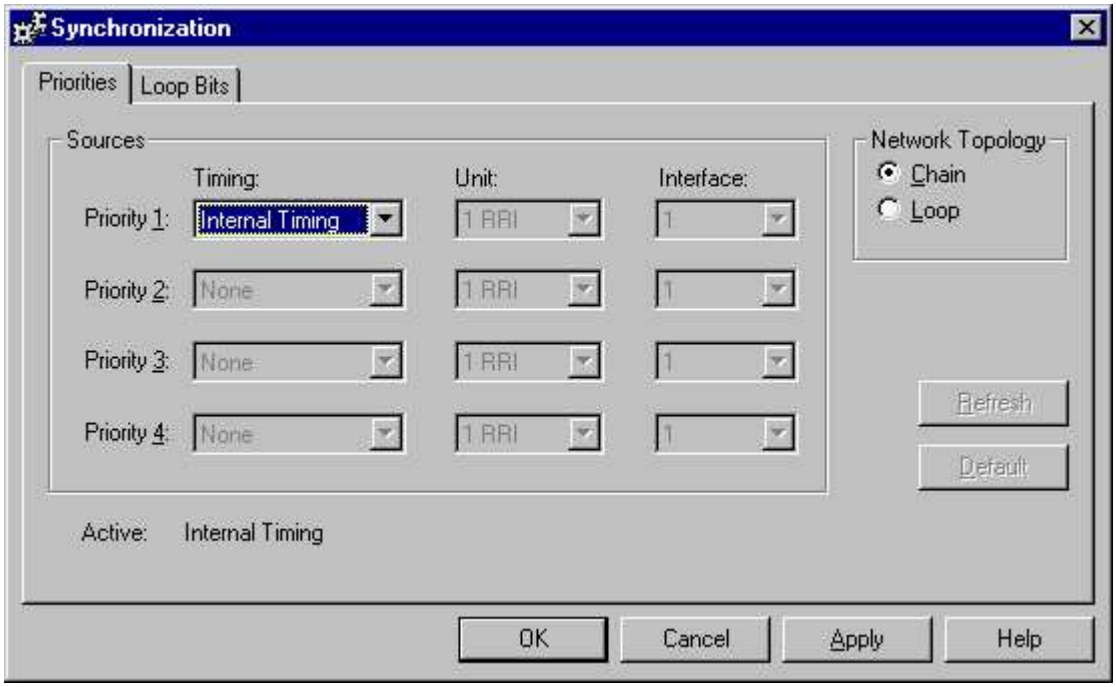


Figure 91. Synchronisation

11.3.13 Add EOC window of UltraSite BTS Hub Manager

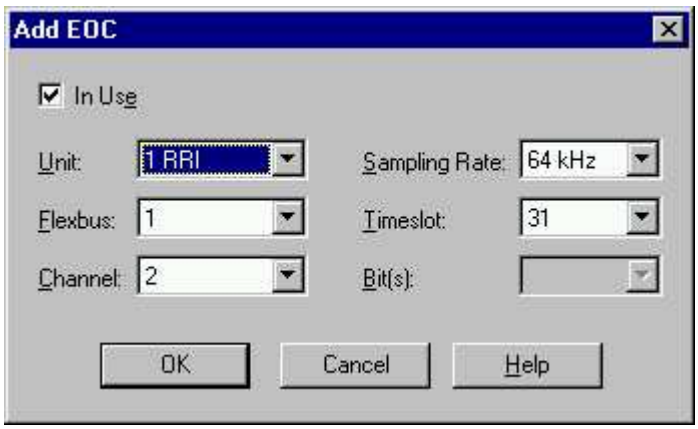


Figure 92. Add EOC

11.3.14 Traffic Manager window of UltraSite BTS Hub Manager

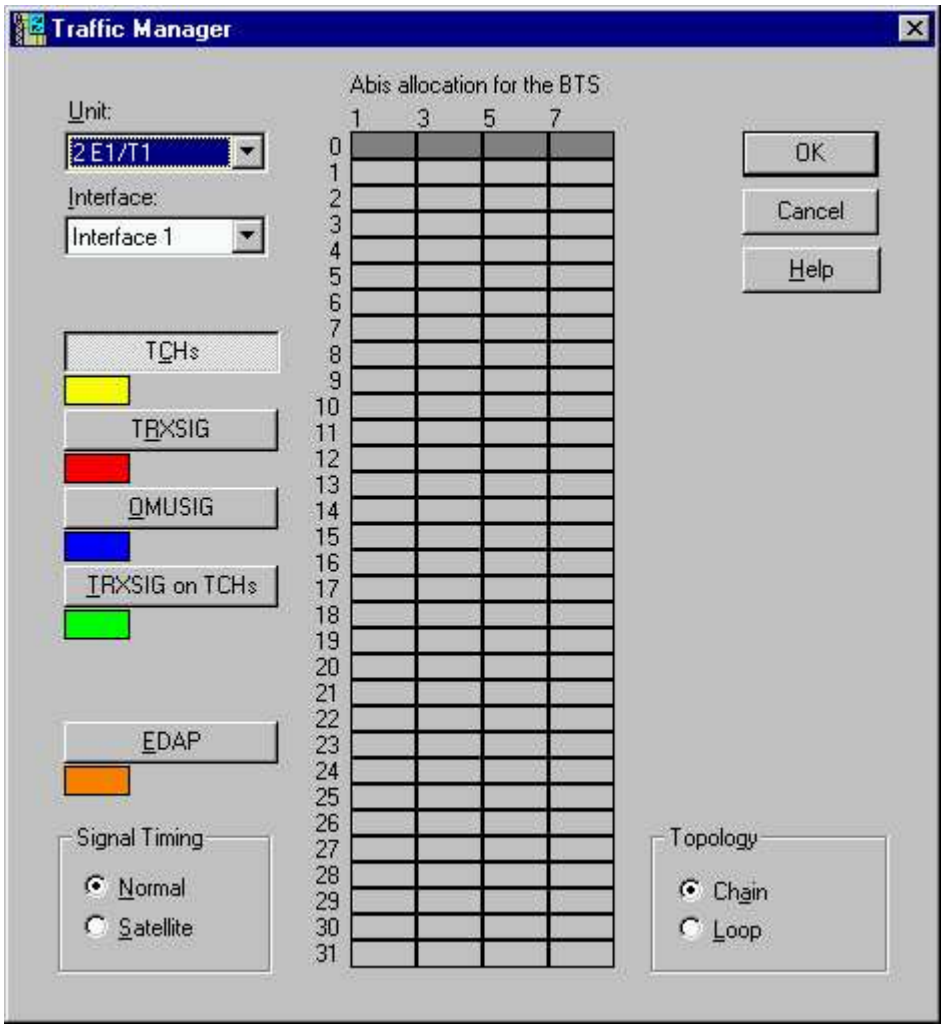


Figure 93. Traffic Manager for an E1 link

11.3.15 Add Cross-connection Wizard - TX1/RX1 window of UltraSite BTS Hub Manager

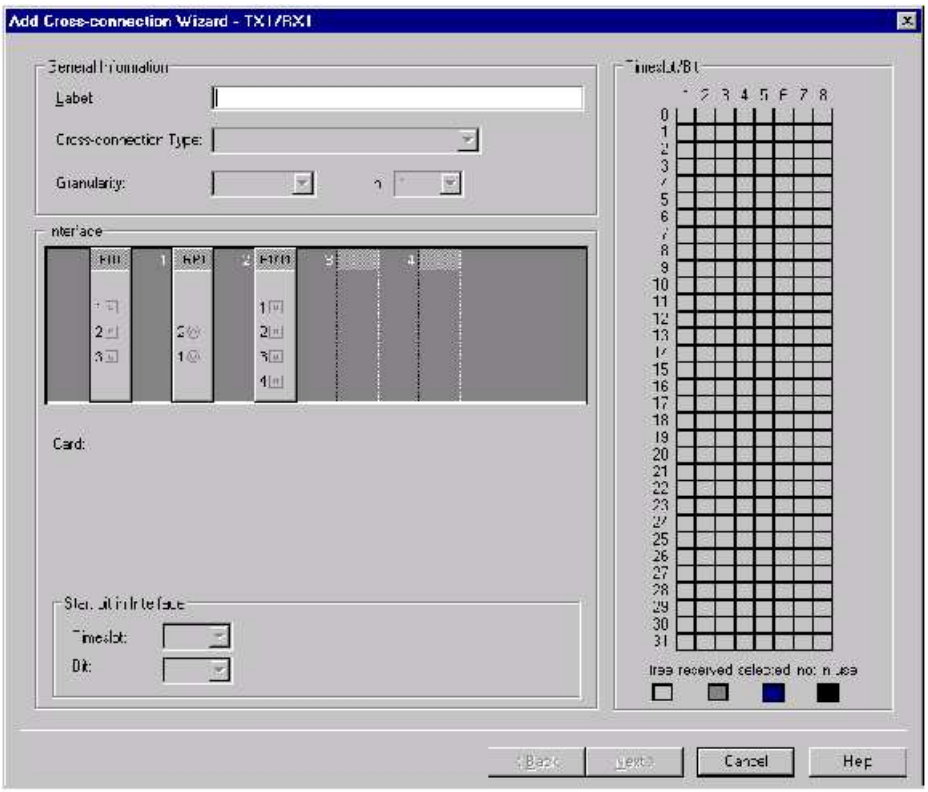


Figure 94. Add Cross-connection Wizard - TX1/RX1

11.3.16 Overview window of UltraSite BTS Hub Manager

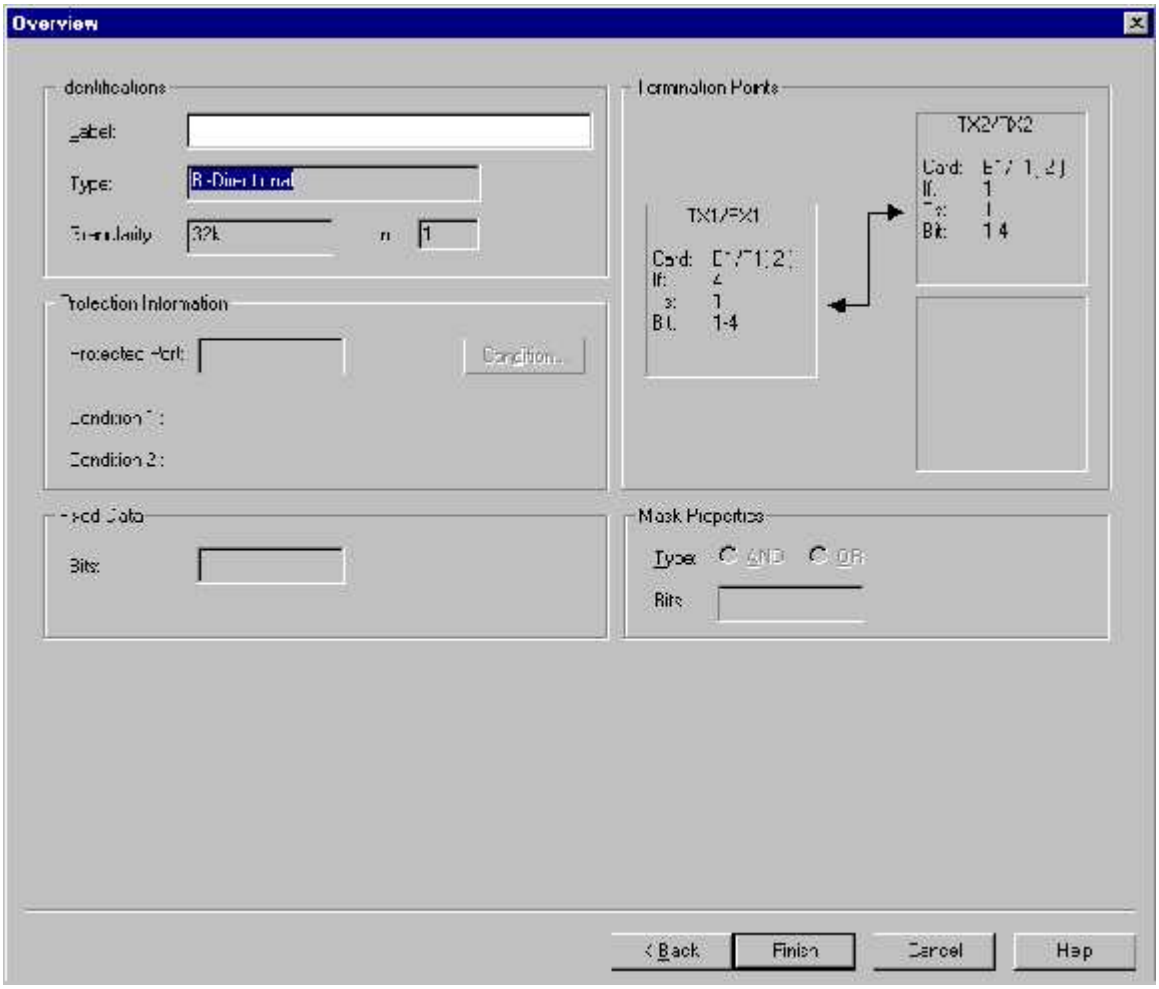


Figure 95. Overview Edit Termination Point

11.3.17 OutdoorUnit1 - FlexiHopper window of UltraSite BTS Hub Manager

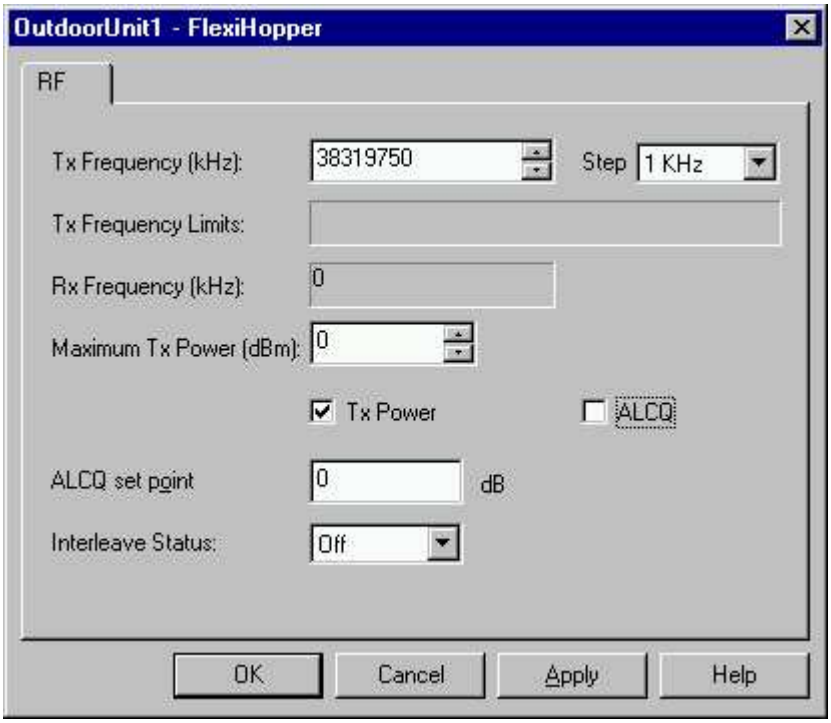


Figure 96. FlexiHopper settings for Outdoor Unit in FXC RRI

11.3.18 RF tab of OutdoorUnit1 - MetroHopper window of UltraSite BTS Hub Manager

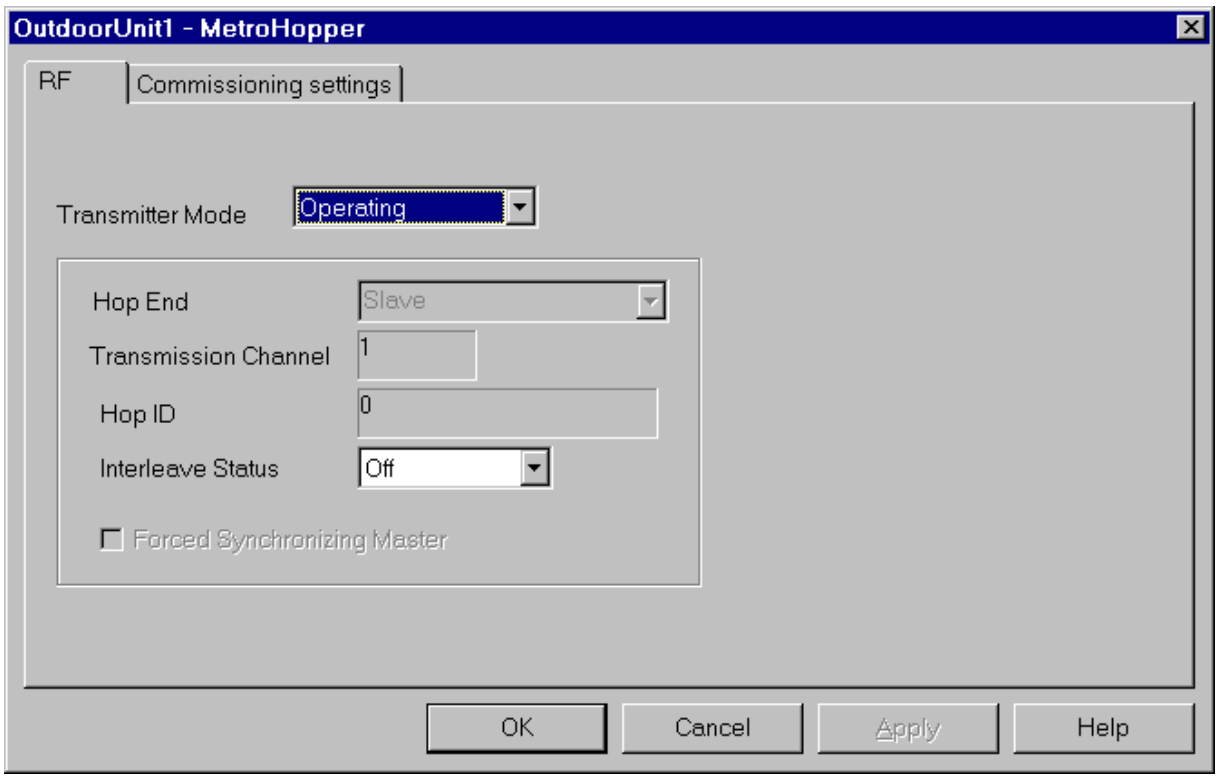


Figure 97. OutdoorUnit1 - MetroHopper RF settings

11.3.19 Commissioning settings tab of OutdoorUnit1 - MetroHopper window of UltraSite BTS Hub Manager

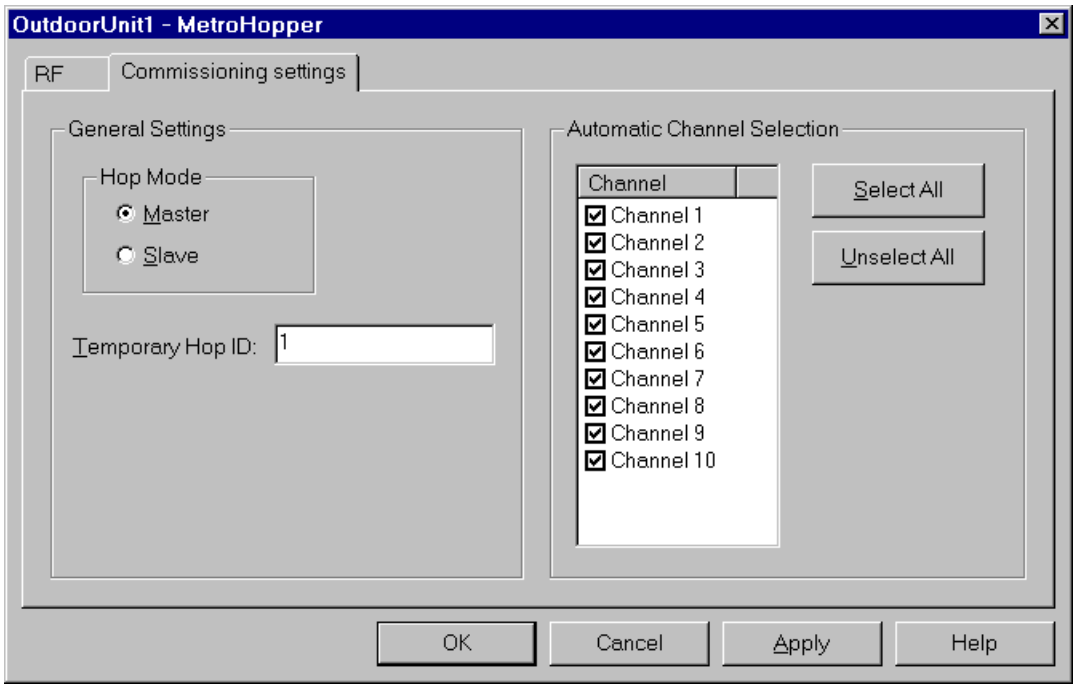


Figure 98. OutdoorUnit1 - MetroHopper commissioning settings

11.3.20 Welcome window of UltraSite BTS Hub Commissioning Wizard

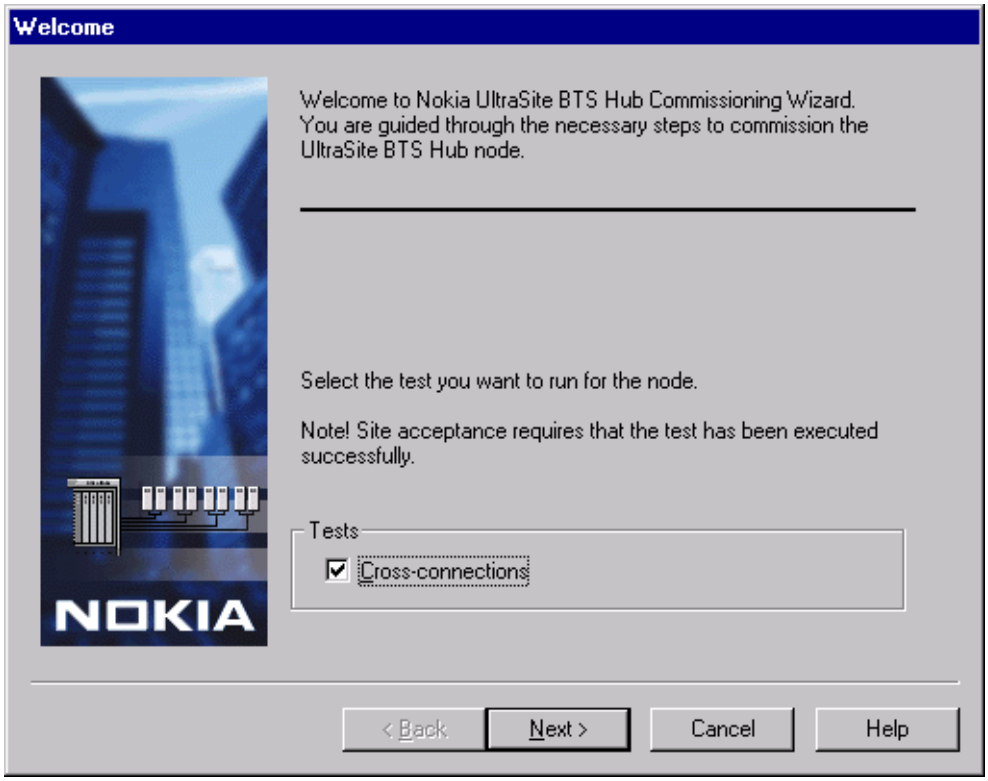


Figure 99. Welcome

11.3.21 Testing window of UltraSite BTS Hub Commissioning Wizard

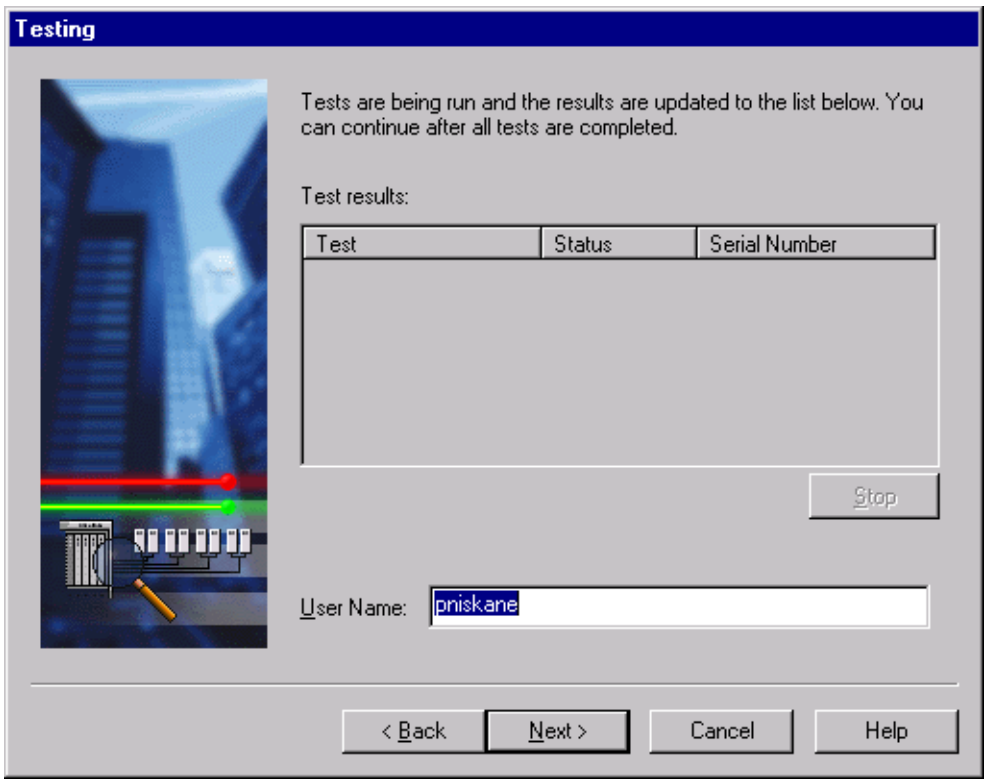


Figure 100. Testing

11.3.22 Accept Site Selection (File/Site ID/Site) window of UltraSite BTS Hub Commissioning Wizard

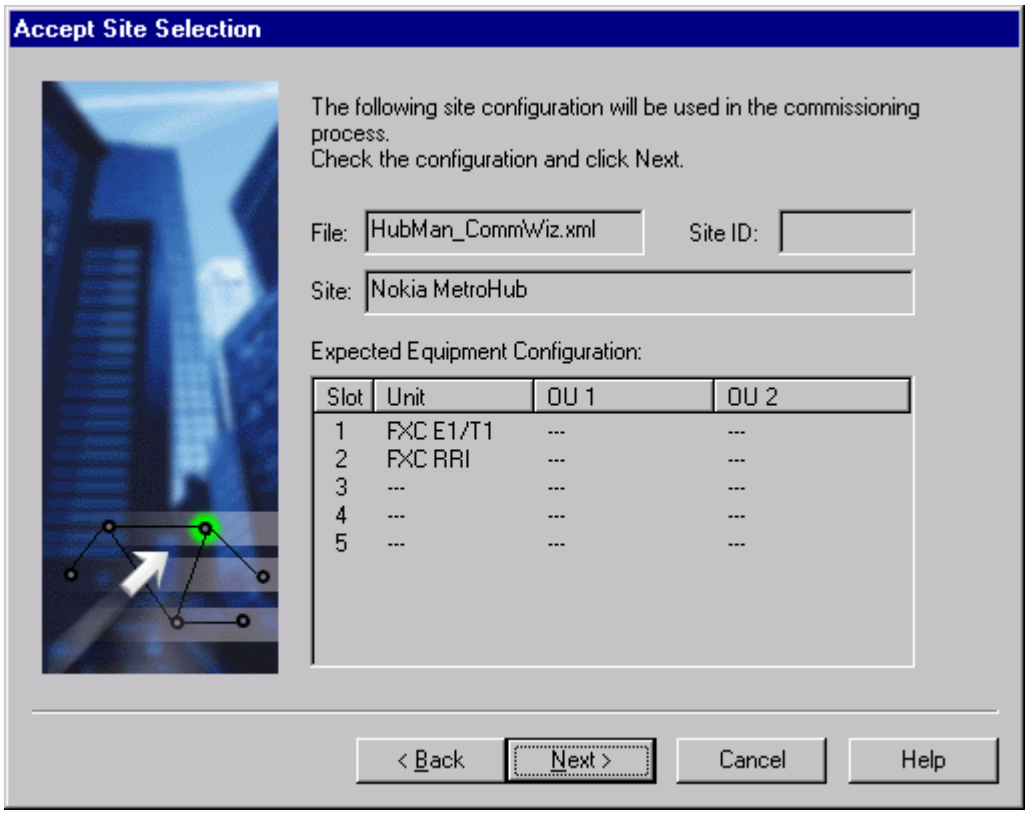


Figure 101. Accept Site Selection (File/Site ID/Site)

11.3.23 Accept Site Selection (Expected Equipment) window of UltraSite BTS Hub Commissioning Wizard

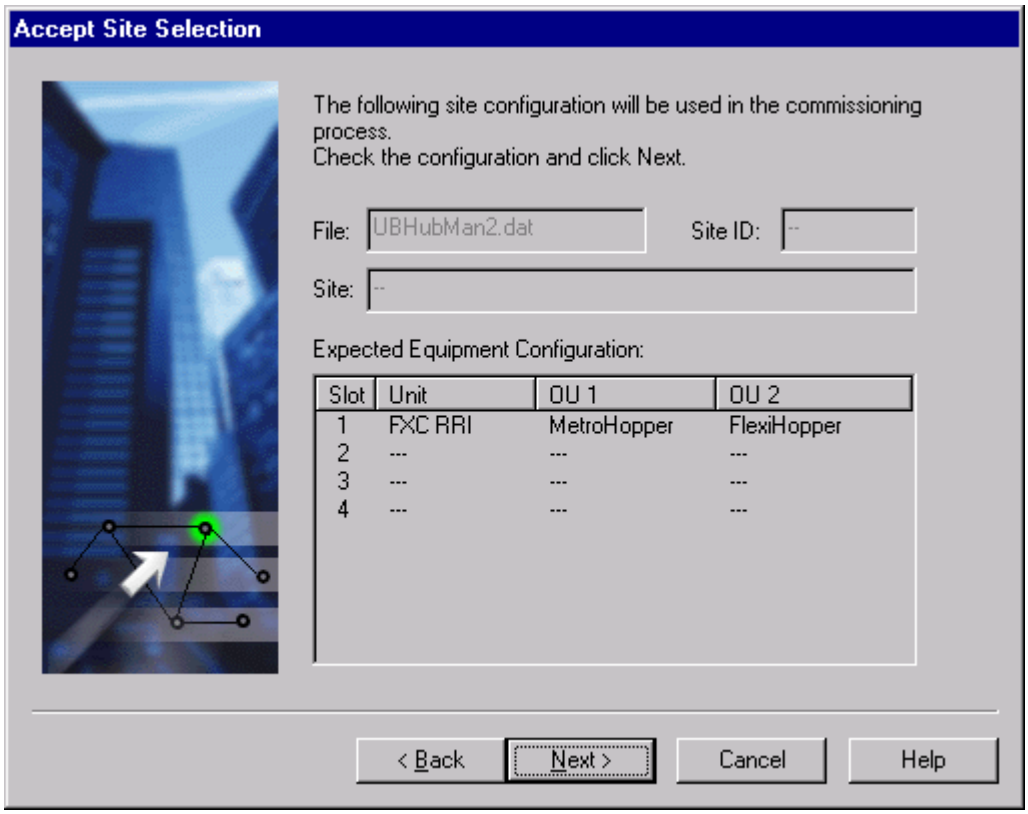


Figure 102. Accept Site Selection (Expected Equipment)

11.3.24 Check Hops window of UltraSite BTS Hub Commissioning Wizard

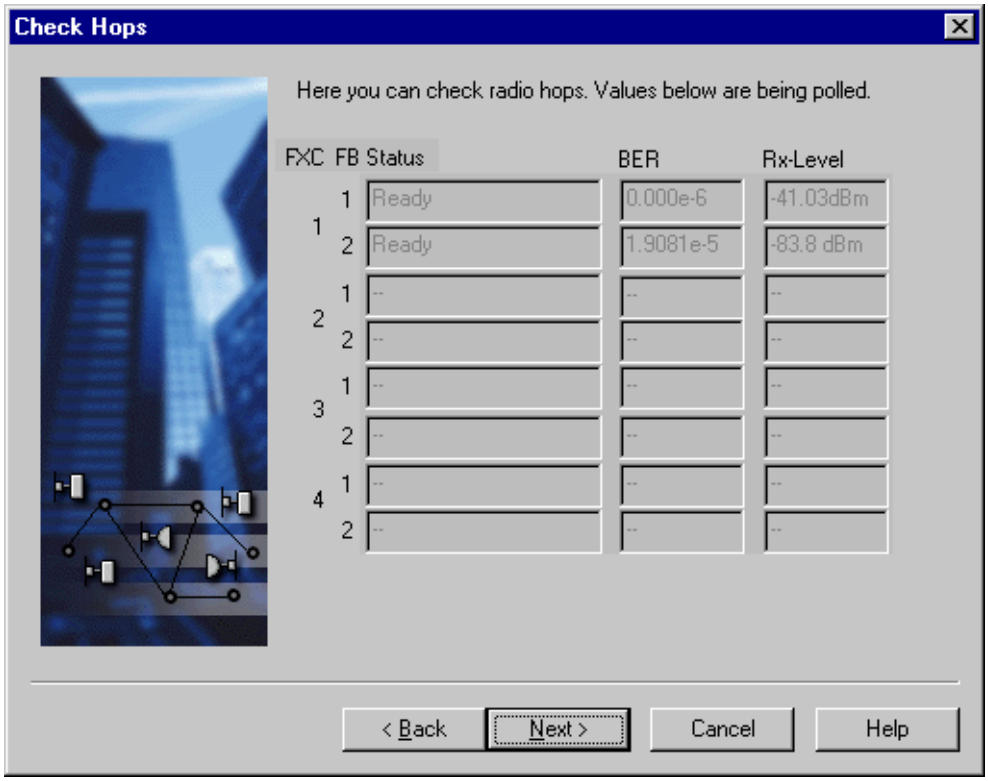


Figure 103. Check Hops

11.3.25 End window of UltraSite BTS Hub Commissioning Wizard

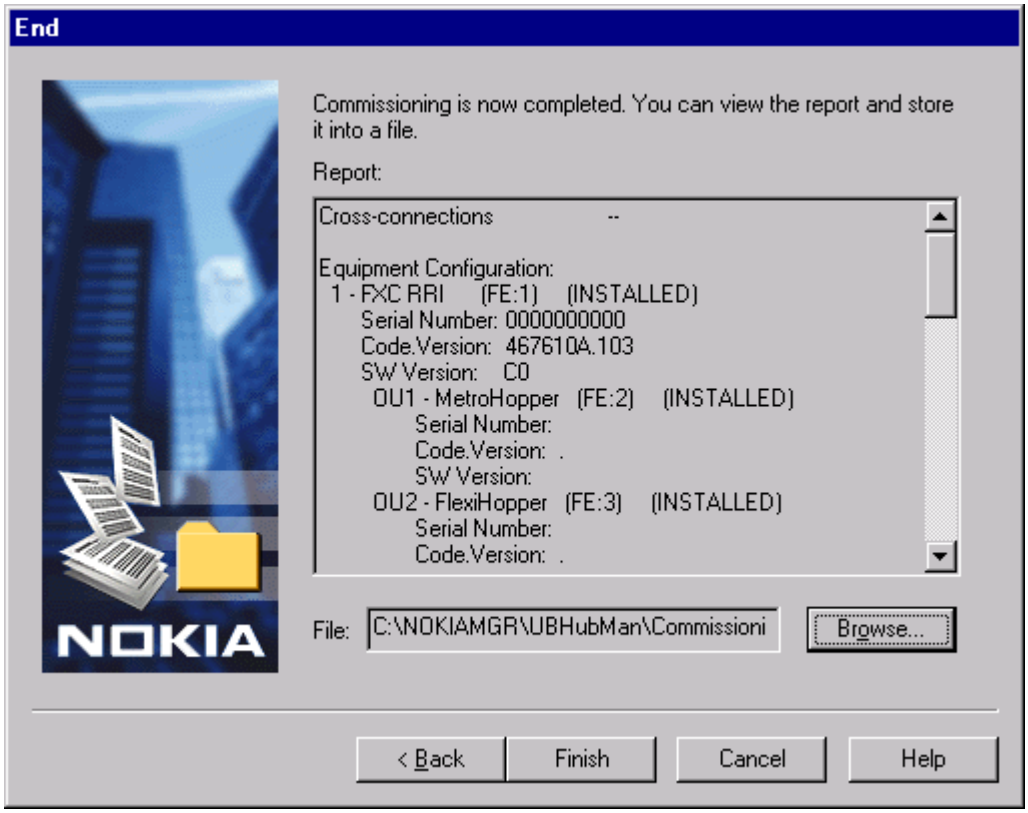


Figure 104. End

11.3.26 BTS Commissioning Wizard window of Nokia BTS Manager

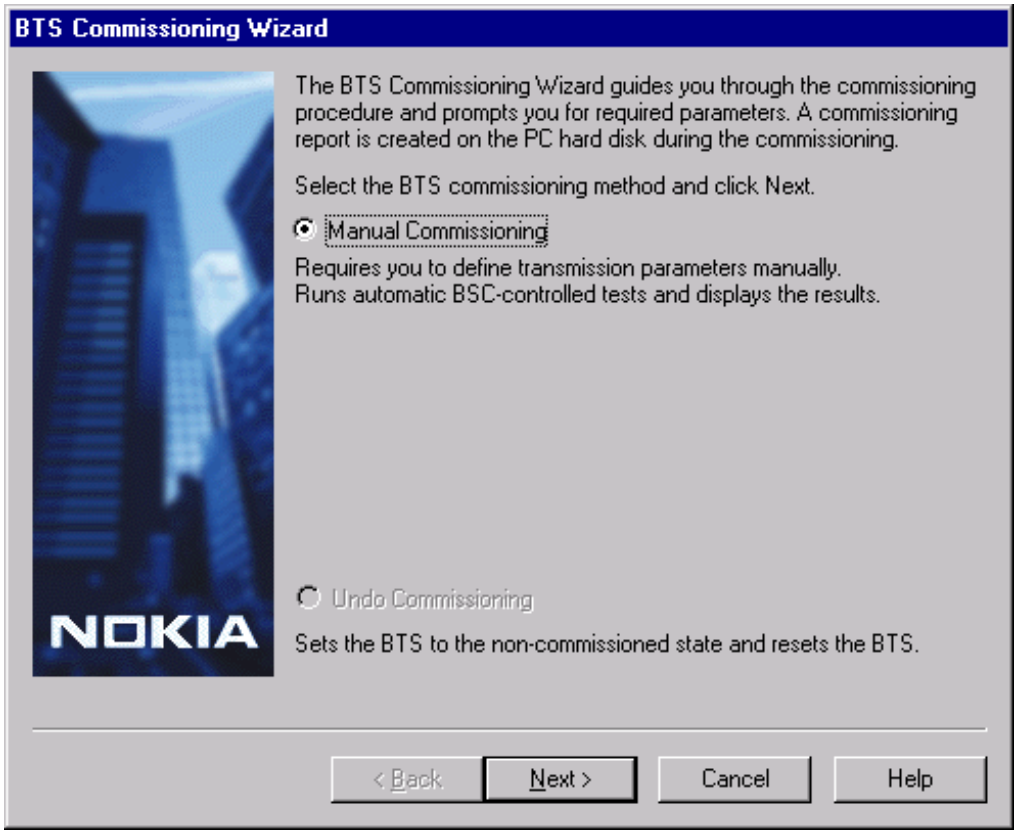


Figure 105. Manual Commissioning option

11.3.27 Set Transmission Parameters window of BTS Commissioning Wizard

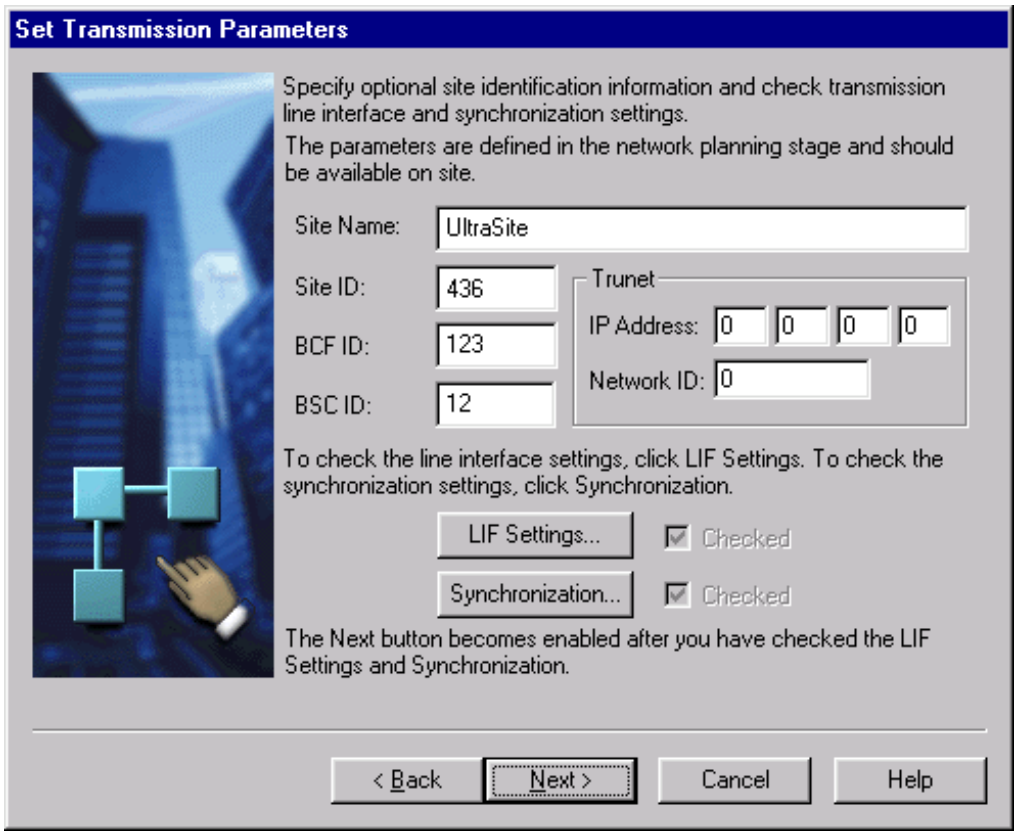


Figure 106. Set Transmission Parameters - FC unit

11.3.28 Transmission configuration window of BTS Commissioning Wizard

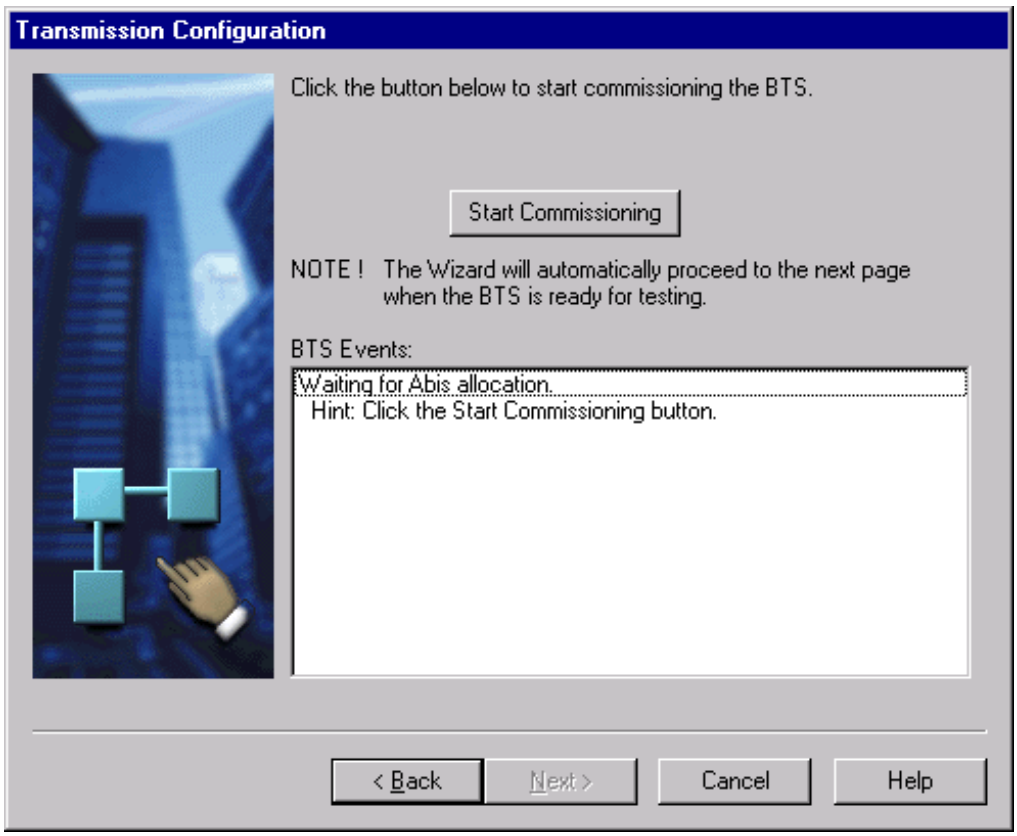


Figure 107. Transmission Configuration page for FXC E1(/T1) unit

11.3.29 BTS Test Reporting window of BTS Commissioning Wizard

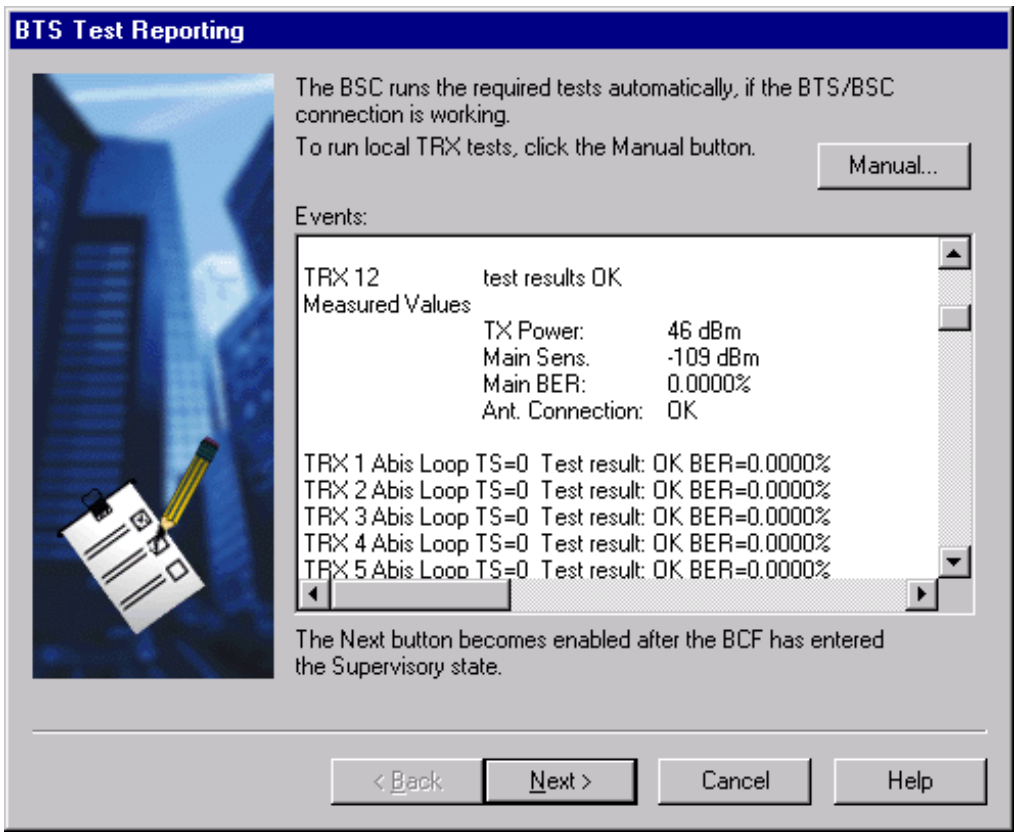


Figure 108. Test events

11.3.30 EAC Input Settings window of BTS Commissioning Wizard

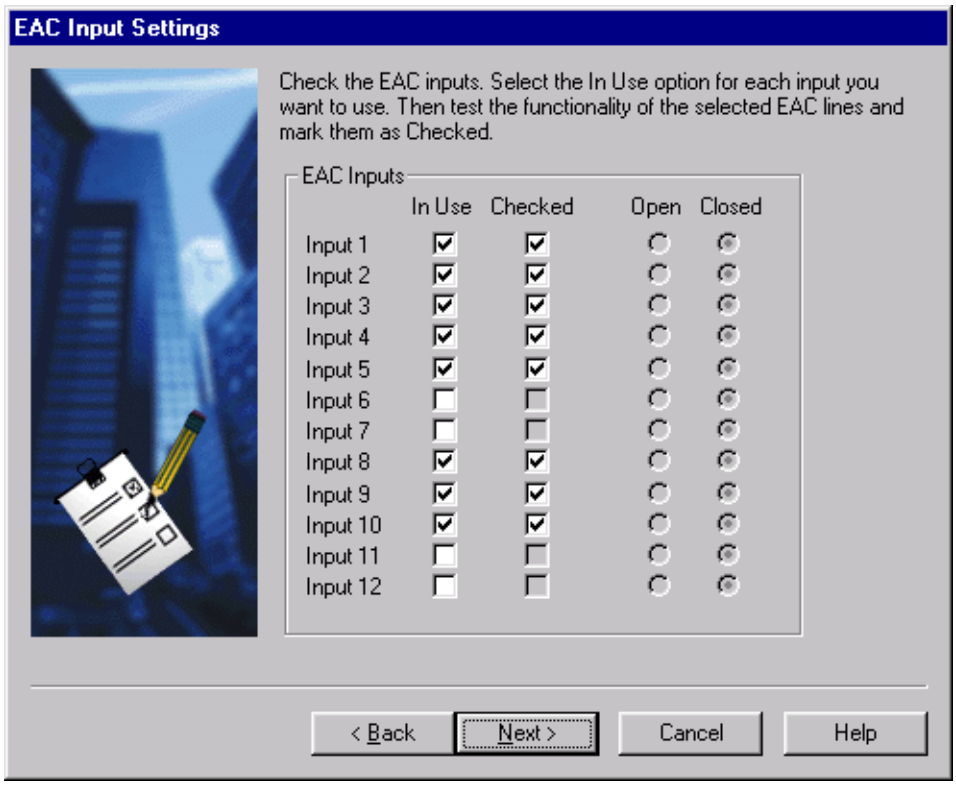


Figure 109. EAC inputs

11.3.31 EAC Output Settings window of BTS Commissioning Wizard

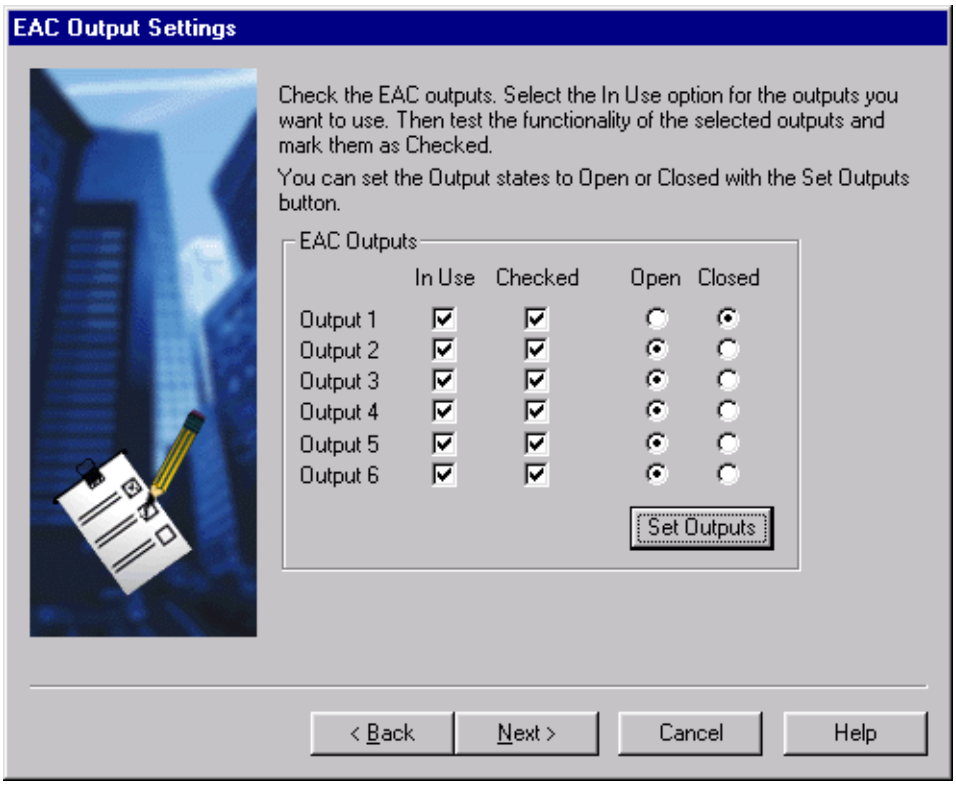


Figure 110. EAC outputs

11.3.32 BTS Commissioning Report window of BTS Commissioning Wizard

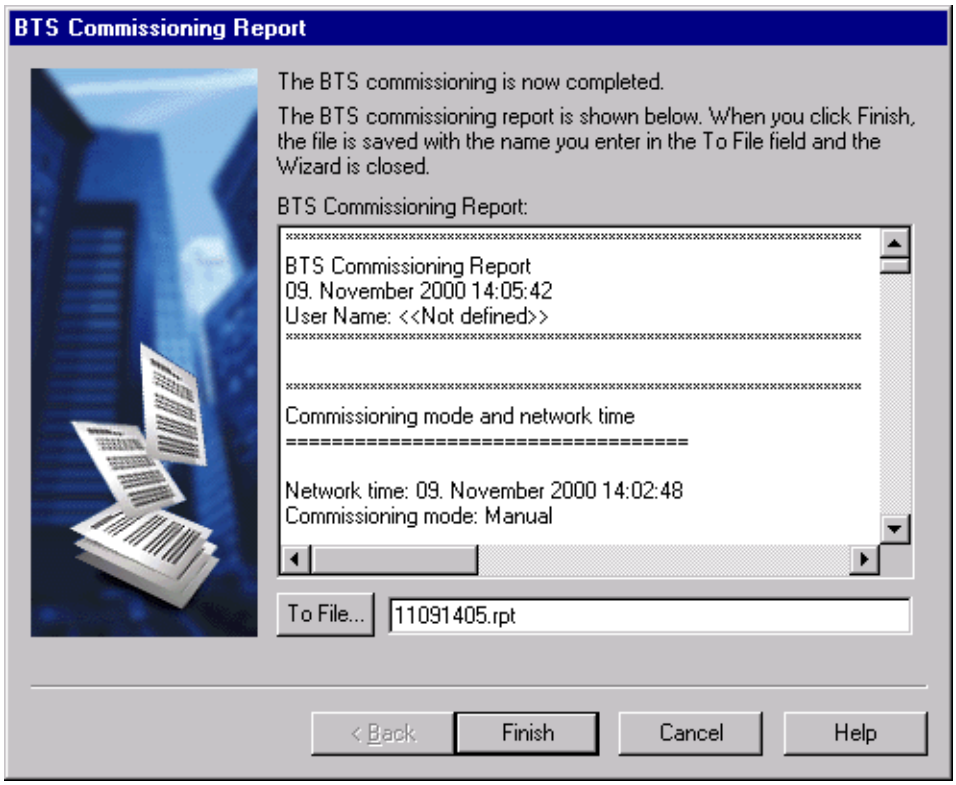


Figure 111. BTS Commissioning Report

11.3.33 Sychronization window of UltraSite BTS Hub manager

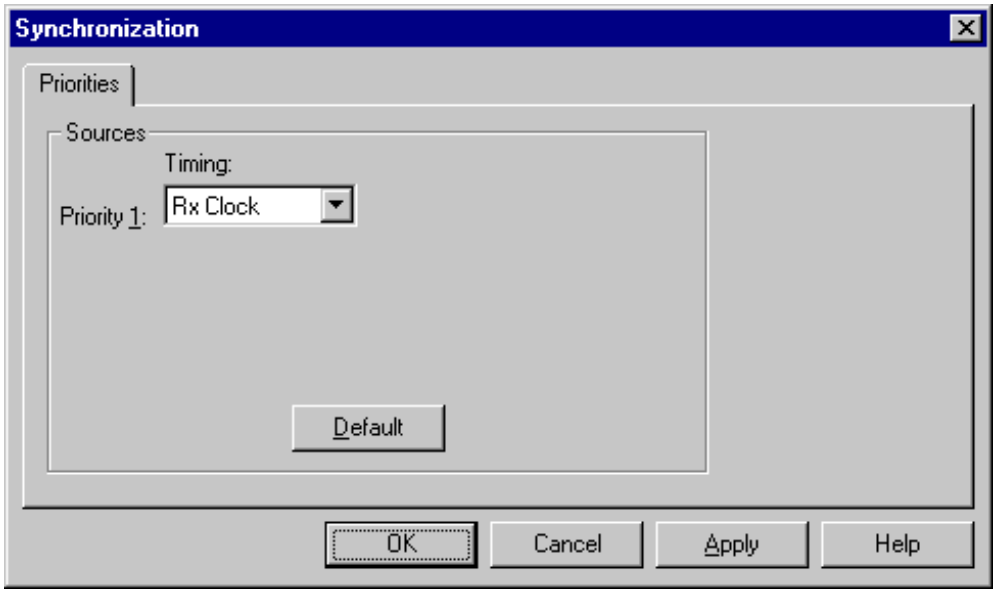


Figure 112. Synchronization settings for FC E1/T1 unit

12 Glossary

12.1 Glossary for UltraSite EDGE BTS

12.1.1 Abbreviations and acronyms

This section lists abbreviations and acronyms used throughout Nokia UltraSite EDGE Solution documentation.

AC	Alternating Current
ACFU	AC Filter Unit
A/D	Analog/Digital
ADC	Analog to Digital Converter
ADUA	AC/DC control and distribution unit for Integrated Battery Backup (IBBU)
AGC	Automatic Gain Control
ALS	Automatic Laser Shutdown
AMR	Adaptive Multi-Rate coding
ANSI	American National Standards Institute
ANT	Antenna connector
ARFN	Absolute Radio Frequency Channel Number
ASIC	Application Specific Integrated Circuit
ATM	Asynchronous Transfer Mode

AWG	American Wire Gauge
AXC	ATM cross-connect
AXU	ATM cross-connect unit
BAPT	Bundesamt für Post und Telekommunikation Telecommunications advisory agency of Federal Republic of Germany
BATx	Rectifier for battery backup
BBAG	12 V battery for Integrated Battery Backup (IBBU)
BB2x	Transceiver Baseband unit • BB2A for GSM • BB2E for GSM/EDGE
BCCH	Broadcast Control Channel
BCF	Base Control Function
BER	Bit Error Ratio The ratio of the number of bit errors to the total number of bits transmitted in a given time interval.
BIST	Built-In Self Test A technique that provides a circuit the capability to carry out an implicit test of itself.
BOIx	Base Operations and Interfaces unit
BPxN	Bias Tee without VSWR monitoring • BPDN for GSM 900/1800/1900 • BPxV Bias Tee with VSWR monitoring • BPGV for GSM 900 • BPDV for GSM 1800/1900
BS	British Standards
BSC	Base Station Controller

BSS	Base Station Subsystem
BTS	Base Transceiver Station (Base Station)
CC	Cross-Connection
CCCH	Common Control Channel
CCITT	Comité Consultatif International Télégraphique et Téléphonique International Telegraph and Telephone Consultative Committee (Telecommunications advisory agency of France)
CCUA	Cabinet Control Unit
CDMA	Code Division Multiple Access A technique in which the radio transmissions using the same frequency band are coded in a way that a signal from a certain transmitter can be received only by certain receivers
CE	Cable Entry; Consumer Electronics; Conformit Européen (European Conformity) CH Channel
CHDSP	Channel Digital Signal Processor
CN	Change Note A short trouble management document in a specified form sent to a customer about a modification in a product
CRC	Cyclic Redundancy Check A method for detecting errors in data transmission.
CRMx	Core Mechanics for Nokia UltraSite EDGE Base Station Indoor and Outdoor cabinet • CRMA for Indoor and Outdoor cabinets • CRMB for Site Support cabinets • CRMC for Midi Indoor and Outdoor cabinets
CSC	Customer Services Centre
D/A	Digital/Analog

DC	Direct Current
DCS	Digital Cellular System
DDS	Direct Digital Synthesis The frequency synthesis in which logic and memory are used to digitally construct the desired output signal, and a digital-to-analogue converter is used.
DL	(Downlink) The direction of transmission in which the BTS is the transmitting facility and the mobile station is the receiving facility.
DIP	Dual In-line Package
DRAM	Dynamic Random Access Memory
DRX	Discontinuous Reception
DSP	Digital Signal Processor
DTX	Discontinuous Transmission
DU2A	Dual Band Diplex Filter unit for GSM 900/1800
DVxx	Dual Variable Gain Duplex Filter unit • DVTB for GSM/EDGE 800 • DVTC for GSM/EDGE 800 co-siting • DVGA for GSM/EDGE 900 • DVHA for GSM/EDGE 900 customer-specific H band • DVJA for GSM/EDGE 900 customer-specific J band • DVDC for GSM/EDGE 1800 • DVDA for GSM/EDGE 1800 A band • DVDB for GSM/EDGE 1800 B band • DVPA for GSM/EDGE 1900
E1	European Digital Transmission Format Standard (2.048 Mbit/s)
EAC	External Alarms and Controsl

EC	European Community
EDGE	Enhanced Data rates for Global Evolution
EEC	European Economic Community
EEPROM	Electronically Erasable Programmable Read Only Memory
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EN	European Norm
EQDSP	Equaliser Digital Signal Processor
ESD	Electrostatic Discharge
ET	Exchange Terminal
ETSI	European Telecommunications Standards Institute
Ext.	External
FACCH	Fast Associated Control Channel
FACH	Forward Access Channel
FCC	Federal Communications Commission The United States federal agency responsible for the regulation of interstate and international communications by radio, television, wire, satellite, and cable.
FC E1/T1	Wireline transmission unit (75 [ohm] E1, 120 [ohm] E1, or 100 [ohm] T1) of Nokia UltraSite EDGE Base Station without cross-connection capability.
FCLK	Frame Clock
FET	Field Effect Transistor
FHS	Frequency Hopping Synthesiser

FIFP	Forwarded Intermediate Frequency Power
FIKA	+24 VDC Installation Kit
FPGA	Field Programmable Gate Array
FXC E1	Wireline transmission unit (75 [ohm] E1) with four line interfaces to the 2 Mbit/s (E1) transmission line; cross-connection capability at 8 kbit/s level.
FXC E1/T1	Wireline transmission unit (120 [ohm] E1 or 100 [ohm] T1) with four line interfaces to the 2 Mbit/s (E1) or 1.5 Mbit/s (T1) transmission line; cross-connection capability at 8 kbit/s level.
FXC RRI	Radio link transmission unit (radio indoor unit) with cross-connection capability at 8 kbit/s level. Used with MetroHopper Radio and FlexiHopper Microwave Radio.
Gb	Interface between RNC and SGSN
GMSK	Gaussian Minimum Shift Keying
GND	Ground; Grounding (protective earthing). See Grounding and PE.
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications • GSM 800 GSM 800 MHz frequency band • GSM 900 GSM 900 MHz frequency band • GSM 1800 GSM 1800 MHz frequency band • GSM 1900 GSM 1900 MHz frequency band
GUI	Graphical User Interface
HDLC	High-level Data Link Control
HETA	Base station cabinet heater
HO	Handover

	The action of switching a call in progress from one radio channel to another, to secure the continuity of the established call
HSCSD	High-Speed Circuit Switched Data
HV	High Voltage
HW	Hardware Specfically, electronic equipment supporting data transmission and processing tasks, and the electrical and mechanical devices related to their operation
IAKx	Indoor Application Kit for Nokia UltraSite EDGE Base Station • IAKA for UltraSite Indoor cabinet • IAKC for UltraSite Midi Indoor cabinet
IBBU	Integrated Battery Backup
IC	Integrated Cell
ICE	Intelligent Coverage Enhancement
ID	Identification; Identifier IE Information Element The basic unit of a transaction capabilities application part (TCAP) message.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IF	Intermediate Frequency
IFM	Interface Module
IFU	Interface unit
ILKA	Indoor Lock Kit
ILMT	Integrated Local Management Tool

IMA	Inverse Multiplexed ATM
IP	Ingress Protection
IRPA	International Radiation Protection Association
ISDN	Integrated Services Digital Network
ISHO	Inter-system handover The handover from one system to another.
ISO	International Organization for Standardization
ITU	International Telecommunication Union
L2	AC Phase 2
L3	AC Phase 3
Iu	The interconnection point between the RNC and the Core Network
Iub	Interface between the RNC and node B
Iubis	Interface between the RNC and the BTS
Iur	The logical interface for the interconnection of two radio network controller (RNC) components of the UMTS terrestrial radio access network (UTRAN) system
JIS	Japanese Industrial Standard
LAN	Local Area Network A data transmission network covering a small area.
LAPD	Link Access Protocol on D-channel between the BSC and BTS
LED	Light Emitting Diode
LMB	Local Management Bus
LMP	Local Management Port

LNA	Low-Noise Amplifier
LO	Local Oscillator
LTE	Line Terminal Equipment
LV	Low Voltage
LVD	Low Voltage Disconnect
LVDS	Low Voltage Differential Signalling
LVTTL	Low Voltage Transistor Transistor Logic
M2xA	2-way Receiver Multicoupler unit • M2LA for GSM/EDGE 800/900 • M2HA for GSM/EDGE 1800/1900 • M6xA 6-way Receiver Multicoupler unit • M6LA for GSM/EDGE 800/900 • M6HA for GSM/EDGE 1800/1900
MAC	Medium Access Control function, handles the channel allocation and multiplexing, that is, the use of physical layer functions.
MCLG	Master Clock Generator
MDF	Main Distribution Frame
MHA	Masthead Amplifier
MMI	Man-Machine Interface
MML	Man-Machine Language A text-based command language with a standardised structure, designed to facilitate direct user control of a system.
MNxx	Masthead Amplifier specific to Nokia UltraSite EDGE Base Station • MNGA for GSM/EDGE 800/900 • MNDA for GSM/EDGE 1800 A band • MNDB for GSM/EDGE 1800 B band

- MNPA for GSM/EDGE 1900 A band
- MNPB for GSM/EDGE 1900 B band
- MNPC for GSM/EDGE 1900 C band

MPT — Ministry of Posts and Telecommunications

Telecommunications regulatory agency of Great Britain.

MS — Mobile Station

User equipment which uses a radio connection, and which can be used in motion or at unspecified points. This is usually a mobile phone.

MSC — Mobile Switching Centre

The mobile network element which performs the switching functions in its area of operation, and controls cooperation with other networks.

MTBF — Mean Time Between Failure

NCRP — National Council on Radiation Protection and Measurements

NCU — Node Control Unit

NEBS — Network Equipment Building Systems

NED — Nokia Electronic Documentation

NMS — Network Management System

O&M — Operation and Maintenance

OAKB — Cable entry kit for BTS co-siting

OAKx — Outdoor Application Kit for Nokia UltraSite EDGE Base Station

- OAKA for UltraSite Outdoor cabinet
- OAKC for UltraSite Midi Outdoor cabinet
- OAKD for UltraSite Midi Outdoor to Talk-family Co-siting

OBKA — Outdoor Bridge Kit

OCXO	Oven Controlled Crystal Oscillator An oscillator in which the crystal and critical circuits are temperature-controlled by an oven.
OEKA	Outdoor (cable) Entry Kit
OFKA	Outdoor Air Filter Kit
OFKC	MIDI Outdoor Air Filter Kit
OMU	Operation and Maintenance Unit
OMUSIG	OMU Signalling
OVP	Over-Voltage Protection
PC	Personal Computer
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PE	Protective earthing (grounding) See GND and Grounding.
PFC	Power Factor Correction
PLL	Phase-Locked Loop
Point-to-point	Transmission between two fixed points
PSM	Power System Management
PWM	Pulse Width Modulation
PWSx	AC/DC Power Supply unit • PWSA for 230 VAC input • PWSB for -48 VDC input • PWSC for +24 VDC input
Q1	Nokia proprietary transmission management protocol

RACH	Random Access Channel
RAKE	A receiver capable of receiving and combining multipath signals
RAM	Random Access Memory
RAN	Radio Access Network A third generation network that provides mobile access to a number of core networks of both mobile and fixed origin.
RCD	Residual Current Device
RF	Radio Frequency
RFF	Radio Frequency Fingerprinting
RIFP	Reflected Intermediate Frequency Power
RLE	Radio Link Equipment
RNC	Radio Network Controller The network element in a radio access network which is in charge of the use and the integrity of radio resources.
ROM	Read Only Memory
RRI	Radio Relay Interface
RSSI	Received Signal Strength Indicator
RTC	Remote Tune Combining
RTxx	Remote Tune Combiner • RTGA for GSM/EDGE 900 • RTHA for GSM/EDGE 900 H band • RTJA for GSM/EDGE 900 J band • RTDC for GSM/EDGE 1800 • RTDA for GSM/EDGE 1800 A band • RTDB for GSM/EDGE 1800 B band • RTPA for GSM/EDGE 1900

RTN	Return
RX	Receiver; Receive
SCF	Site Configuration File
SCT	Site Configuration Tool
SDCCH	Stand-alone Dedicated Control Channel
SDH	Synchronous Digital Hierarchy
SMB	Sub-Miniature B Connector
SMS	Short Message Service
SSS	Site Support System
STM	Synchronous Transport Module
STM-1	Synchronous Transport Module (155 Mbit/s)
SW	Software
Sync	Synchronization The process of adjusting corresponding significant instances of signals, in order to obtain the desired phase relationship between these instances.
T1	North American Digital Transmission Format Standard (1.544 Mbit/s)
TC	Transcoder
TCH	Traffic Channel The logical radio channel that is assigned to a base transceiver station and is primarily intended for conversation.
TCP/IP	Transport Control Protocol/Internet Protocol
TCS	Temperature Control System
TDMA	Time Division Multiple Access

TE	Terminal Equipment Equipment that provides the functions necessary for user operation of the access protocols.
TMS	Transmission Management System The network system for managing equipment settings, and for centralised retrieval of statistics and alarm information from transmission equipment connected to the system.
TS	Time Slot A cyclic time interval that can be recognised and given a unique definition.
TRE	Transmission Equipment
TRX	Transceiver
TRXSIG	TRX Signalling
TS	Time Slot
TSxx	Transceiver (RF unit), specific to Nokia UltraSite EDGE Base Station • TSTB for GSM/EDGE 800 • TSGA for GSM 900 • TSGB for GSM/EDGE 900 • TSDA for GSM 1800 • TSDB for GSM/EDGE 1800 • TSPA for GSM 1900 • TSPB for GSM/EDGE 1900
TTL	Transistor Transistor Logic
TX	Transmitter; Transmit
UC	Unit Controller
UI	User Interface
UL	Underwriters Laboratories

UL (Uplink) The direction of transmission in which the mobile station is the transmitting facility and the BTS is the receiving facility.

- 2-way uplink diversity - The function by which a BTS uses two antennas and two receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.
- 4-way uplink diversity - The function by which a BTS uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

UMTS Universal Mobile Telecommunications System

UTRAN / UMTS
Terrestrial Radio Access Network

A radio access network (RAN) consisting of radio network controllers (RNCs) and base transceiver stations (BTSs). It is located between the Iu interface and the wideband code division multiple access (WCDMA) radio interface.

UPS Uninterruptible Power Supply

VC Virtual Channel

VCO Voltage Controlled Oscillator

An oscillator for which a change in tuning voltage results in a predetermined change in output frequency.

VLL Line-to-Line Voltage

VP Virtual Path

The unidirectional transport of ATM cells belonging to virtual channels that are associated by a common identifier value.

VPCI Virtual Path Connection Identifier

An identifier which identifies the virtual path connection between two B-ISDN ATM exchanges, or between a B-ISDN ATM exchange and a B-ISDN user.

VPI — Virtual Path Identifier

An identifier which identifies a group of virtual channel links at a given reference point that share the same virtual path connection.

VSWR — Voltage Standing Wave Ratio

The ratio of maximum to minimum voltage in the standing wave pattern that appears along a transmission line. It is used as a measure of impedance mismatch between the transmission line and its load.

VXxx — Transmission unit, specific to Nokia UltraSite EDGE Base Station

- VXEA for FC E1/T1
- VXRA for FC RRI
- VXRB for FXC RRI
- VXTA for FXC E1
- VXTB for FXC E1/T1

WAF — Wideband Antenna Filter unit

WAM

Wideband Application Manager unit

WBC — Wideband Combining unit

WCC — Wideband Cabinet Core

WCDMA — Wide band Code Division Multiple Access

A spread spectrum CDMA technique used to increase the capacity and coverage of wireless communication networks.

WCH — Wideband Cabinet Heater

WCxA — Wideband Combiner, specific to Nokia UltraSite EDGE Base Station

- WCGA for GSM/EDGE 800/900
- WCDA for GSM/EDGE 1800
- WCPA for GSM/EDGE 1900

WEK	Wideband Extension Kit
WFA	Wideband Fan
WHX	Wideband Heat Exchanger
WIC	Wideband Input Combiner
WIK	Wideband Indoor Kit
WOC	Wideband Output Combiner
WOK	Wideband Outdoor Kit
WPA	Wideband Power Amplifier unit
WPS	Wideband Power Supply unit
WSC	Wideband System Clock
WSM	Wideband Summing and Multiplexing unit
WSP	Wideband Signal Processor unit
WTR	Wideband Transmitter and Receiver

12.1.2 Terms

This section provides definitions for terms used throughout Nokia UltraSite Solution documentation.

Abis Interface
Interface between a Base Transceiver Station (BTS) and the Base Station Controller (BSC) and between two BTSs.

Absolute radio frequency channel number
See absolute radio frequency number.

Absolute radio frequency number; absolute radio frequency channel number; ARFN; ARFCN
Radio frequency used in connection with, for example, mobile originating and terminating test calls.

Adaptive multi-rate speech codec; AMR speech codec; AMR codec; AMR
Speech codec which adapts its operation optimally according to the prevailing channel conditions.

Air Interface — Interface between MS and BTS.

Alarm — Announcement given to the operating personnel about abnormal functioning of the system or about a failure, or an indication of the degradation of the service level or reliability.

Alarm Status — Classification of the severity of an alarm, such as Critical, Major, Minor, and Information.

Alternating current; AC
A periodic current having a mean value zero.

Analogue-to-digital converter; Analog-to-digital converter /US/; A/D converter; ADC
A device which converts an analogue input signal to a digital output signal carrying equivalent information.

Application-specific integrated circuit; custom circuit; custom IC; ASIC
Integrated circuit which is designed for a specific application and a specific customer and which is not available to other customers.

ATM connection control; connection control; CC
Function that keeps track of connection resources and based on those handles the operations related to different kind of cross-connections.

ATM inverse multiplexing
See inverse multiplexing for ATM.

Backplane — Connector board at the back of Nokia UltraSite cabinets to which plug-in units are directly connected. See also BATA backplane and RFU backplane.

Base station — See base transceiver station.

Base station controller; BSC
Network element in the public land mobile network (PLMN) for controlling one or more base transceiver stations (BTS) in the call set-up functions, in signalling, in the use of radio channels and in various maintenance tasks.

Base station system; BSS
System of base stations (BSs) and base station controllers which is viewed by the mobile services switching centre (MSC) through a single interface.

Base transceiver station; base station; BTS; BS
: Network element in a mobile network responsible for radio transmission and reception to or from the mobile station.

BATA backplane
: Additional backplane required in a Site Support cabinet when using 12 rectifiers.

Bias Tee
: Unit that provides DC power for an associated MHA unit.

Cabinet Control Unit
: Module of the ADUA or ADUB that manages battery control, climatic control, alarm reporting, and serial and version number reporting for the IBBU or Nokia UltraSite Support cabinet. The CCU connects to the BOIx with Q1-bus.

Cell
: Coverage area of a given BTS where transmission is acceptably received.

Cell breathing
: Variation of the cell coverage area; depends on the interference and power requirements.

Cellular Network
: Two or more base stations connected together to provide an area of coverage for Mobile Stations (MS).

CENELEC
: Comité European de Normalisation ELECtrotechnique. European Committee for Electrotechnical Standardization.

Chain Connection
: Transmission solution in which the BTSs are interconnected through a chain, and the first BTS in the chain is connected to the BSC. See Loop Connection, Multidrop Connection, and Star Connection.

Chip
: Signal element.

Chip rate
: Number of chips transmitted in one second.

Commissioning
: Tasks performed to enable the BTS to be connected to the network. Includes operational tests and configuring of the transmission equipment.

Coverage Area
: See Cell.

Cross-connection
: Connection between input and output ports of a network element.

Cross-connection bank
: Information base that defines the cross-connections of a network element. The network element contains two or more banks, one of which is always active.

Custom circuit
: See application-specific integrated circuit.

Custom IC
: See application-specific integrated circuit.

D-bus
: Bus used for traffic communication between the transmission units and BB2x units (D1-bus) and for internal O&M communication with the BOIx, BB2x, and RTxx units (D2-bus).

Despreading
: The received wideband signal is modulated with the spreading code to get a narrowband signal after the multipath propagation in spread spectrum systems.

Digital signal processor; DSP
: A processor designed for signal handling, resembling an ordinary microprocessor.

Discontinuous reception; DRX
: Means of saving battery power (for example in hand-portable units) by periodically and automatically switching the mobile station receiver on and off.

Discontinuous transmission; DTX
: Feature which enables saving battery power (for example in hand-portable units) and reducing interference by automatically switching the transmitter off when no speech or data are to be sent.

Downlink Diversity
: See Frequency Hopping.

Earthing
: See Grounding.

F-bus
: Frequency Hopping bus. See Frequency Hopping.

Finger; rake finger; RAKE finger
: Receiver unit that despreads one multipath signal.

Four-way uplink diversity; 4-way uplink diversity
: Function by which a base transceiver station (BTS) uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

Forward link
: See downlink.

Flash memory
: Nonvolatile, electronically writable memory, similar to EEPROM in function, but which must be erased in blocks.

Flexbus
: Bidirectional coaxial cable that carries up to 16 x 2 Mbit/s signals and power between transmission equipment, such as a radio outdoor and indoor unit.

Frequency-change oscillator
: See local oscillator.

Frequency Hopping
: Function in which a BTS swaps two transmitters on a single channel to obtain improved overall MS receiver sensitivity in a system that is subject to random fading.

Gain
: Signal amplification, expressed in dBi—decibels over a theoretic, isotropic, and uniformly radiating antenna.

Grounding
: Protecting the equipment and the users against lightning and surges through the external connections.

I^2C-bus
: Integrated Inter Cell communication bus used for polling, autodetection, version and serial number management, temperature polling, and alarm collection in units without a microprocessor.

Handover
: The handover occurs between two cells; the signal goes through one base station or base station sector at a time.

Human-machine interface; man-machine interface; HMI; MMI
: A subsystem or function which provides user interface functions in a man-machine language.

Installation
: Tasks performed to enable the BTS to be mounted at the site.

Integration
: Tasks performed to make the BTS functional in the cellular network. Includes making test calls.

Inter-frequency handover
: Handover where the new carrier frequency is different from the current one.

Inter-system handover
: Handover from one system to another, e.g. between a 3rd generation system and GSM.

Inverse multiplexing for ATM; ATM inverse multiplexing; inverse multiplexing; IMA
: The transmission method in which ATM cells in a cell stream are divided across several physical E1 links on a cell-by-cell basis, and then reassembled at the receiving end without affecting the original cell order.

Loop connection
: Transmission solution in which BTSs are interconnected in a loop. For example, the first and last BTSs are connected to the BSC. See Chain Connection, Multidrop Connection, and Star Connection.

Macrocellular
: Application that covers large areas with a cell radius of 1 to 10 km (0.6 to 6 miles). The coverage area is achieved when the antenna is installed high and off the ground.

Maximum ratio combining
: A signal combining technique in which each signal is multiplied by a weight factor that is proportional to the signal amplitude: the strong signals are further amplified, while the weak signals are attenuated.

Microcellular
: Application that typically covers areas with a cell radius of 100 m to 1 km (327 feet to 0.6 miles). The antennas are installed below rooftop level.

Microwave radio
: Radio equipment for establishing an aligned and fixed radio connection between two points.

Midi
: Indoor or Outdoor cabinet with up to six TRXs.

Multidrop Connection
: Transmission solution in which one or more BTS chains are connected to one BTS that is connected to the BSC. See Chain Connection, Loop Connection, and Star Connection.

Network Element

Any equipment that can be managed, monitored, or controlled in a telecommunications network.

Network Topology

Method of transmission between the cells of a network. Examples of transmission solutions are chain, loop, multidrop, and star connections.

Node Manager

A feature of Power System Management (PSM), the Node Manager software called PSMMan is used to control network elements, or nodes, of the Site Support System.

Nokia FlexiHopper

Nokia family of Flexbus-compatible microwave radios for the 13, 15, 18, 23, 26, and 38 GHz frequency bands, in which the radio transmission capacity can be selected using software. The radio transmission capacity of Nokia FlexiHopper can be 2 x 2, 4 x 2, 8 x 2, or 16 x 2 Mbit/s.

Nokia FlexiHopper outdoor unit can be used with different indoor units: FIU 19, RRIC, FC RRI, and FXC RRI.

Nokia Hopper Manager

PC software application used for controlling and monitoring Nokia FlexiHopper and Nokia MetroHopper radios connected to FIU19 or RRIC indoor units.

Nokia MetroHopper

Nokia Flexbus-compatible radio for the 58 GHz frequency band that does not require coordinated frequency planning. The main use of Nokia MetroHopper is to provide 4 x 2 Mbit/s, point-to-point wireless access for Nokia MetroSite BTS and Nokia MetroHub.

Nokia MetroHopper outdoor unit can be used with different indoor units: FIU 19, RRIC, FC RRI, and FXC RRI.

Nokia MetroHub

Nokia’s compact transmission node with cross-connection and grooming functions, such as FXC RRI. Nokia MetroHub contains up to five transmission units.

Nokia MetroSite GSM BTS

Nokia’s compact four-TRX GSM base station for Nokia MetroSite capacity solution. Nokia MetroSite GSM BTS can contain one transmission unit.

Nokia Q1 Connection Tool
: Program that makes connection and node definitions for identifying objects on a Nokia Q1 managed network. See Q1.

Nokia UltraSite
: Multimedia coverage and capacity macrocellular base station.

Omnidirectional Cell
: Cell with a 360× sector; also known as standard cell.

Operator
: Telecommunications company running telecommunications services in a specific geographical area.

PCM time slot
: 1.5 Mbit/s PCM circuit is divided into twenty-four 64 kbit/s time slots.

  2 Mbit/s PCM circuit is divided into thirty-two 64 kbit/s time slots.

Peltier elements
: Elements that absorb or emit heat when an electric current passes across a junction between two materials. Used for heating and cooling IP20 protection class equipment.

Point-to-point
: Transmission between two fixed points.

Q1-bus
: Bus in Nokia UltraSite EDGE BTS, used for local transmission management (Q1int) and for extending the management to external equipment.

Radio interface; air interface; AI
: The interface between the mobile station (MS) and the radio equipment in the network. This is defined by functional characteristics, common radio (physical) interconnection characteristics, and other characteristics as appropriate.

Radio Relay
: Microwave radio unit that replaces a fixed cable with a microwave radio link in the Abis Interface.

Rectifier
: Device for converting alternating current to direct current. See BATx.

RFU backplane
: Backplane in Nokia UltraSite EDGE BTS cabinet to which RF units are attached.

Sectored BTS Site
: A site with multiple cells positioned to supply the desired radiation.

Sectored Cell — A cell with a conical coverage area achieved by means of a directional aerial.

Single Sector — A part of the BTS's physical equipment that serves a single cell in the network radio topology.

Site — Location where telecommunication equipment has been installed. For example, a site can contain a base station and transmission equipment with an equipment shelter and antenna tower.

Several network elements can be located at a site.

Soft handover — Handover where the signal goes through two base stations or base station sectors at a time.

Softer handover — Handover where the signal goes through two sectors in one base station area at a time.

Software Package — Software collection consisting of the components of the BTS operating system.

Spreading — A process in which the signal is modulated with the pseudo noise code to get a wideband signal for multipath propagation in spread spectrum systems.

Spreading code — A code that is used to despread a signal in spread spectrum communications.

Star Connection — Transmission solution in which three branches with one BTS in each are connected to a common node. See Chain Connection, Loop Connection, and Multidrop Connection.

Synchronisation (Sync) — Process of adjusting the corresponding significant instances of signals (between adjacent and serving cells) to obtain the desired phase relationship between these instances.

Uplink — Direction of transmission in which the mobile station is the transmitting facility and the BTS is the receiving facility.

Uplink Diversity

2-way uplink diversity – Function in which a BTS uses two antennas and two receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

4-way uplink diversity – Function in which a BTS uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

See Frequency Hopping.

Related Topics

Overview of commissioning UltraSite EDGE BTS

Descriptions

Nokia SiteWizard

Network Management System (NMS)/NetAct and BSC software

References

Software compatibility of UltraSite EDGE BTS

Setting the Base Operation and Interfaces (BOIx) unit 13MHz clock before commissioning the UltraSite EDGE BTS

Instructions

Synchronisation of a managed node for GSM/EDGE UltraSite EDGE BTS

Rules for EDAP transmission connections

Recommended Abis time slot allocation

Abis time slot allocation with fragmented cross-connection

Installing BTS Manager

Reference

BTS Commissioning Wizard window of Nokia BTS Manager

Remote BTS Manager Setup

Installing BTS Hub Manager

Reference

Equipment - Address: window of UltraSite BTS Hub Manager

LIF Settings window for E1 120 ohm mode of UltraSite BTS Hub Manager

LIF Settings window for T1 100 ohm mode of UltraSite BTS Hub Manager

Unit settings with FXC RRI unit setting window of UltraSite BTS Hub Manager

Platform interface tab of settings window of UltraSite BTS Hub Manager

Overview of using Hub Manager of Site Wizard to commission and manage UltraSite EDGE BTS

Reference

Equipment - Address: window of UltraSite BTS Hub Manager

LIF Settings window for E1 120 ohm mode of UltraSite BTS Hub Manager

LIF Settings window for T1 100 ohm mode of UltraSite BTS Hub Manager

Unit settings with FXC RRI unit setting window of UltraSite BTS Hub Manager

Platform interface tab of settings window of UltraSite BTS Hub Manager

Transmission configuration report

Overview of using BTS Manager of Site Wizard to commission and manage UltraSite EDGE BTS

Reference

BTS Commissioning Wizard window of Nokia BTS Manager

BTS commissioning report

Overview of commissioning GSM/EDGE UltraSite EDGE BTS

Reference

Commissioning procedure overview - flow diagram

BTS Commissioning Wizard window of Nokia BTS Manager

Adjusting identification settings

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Manual Hub configuration of UltraSite EDGE BTS

Adjusting service interface settings

Instructions

Manual Hub configuration of UltraSite EDGE BTS

Configuring radio units for FXC RRI units of UltraSite EDGE BTS

Reference

Unit settings with FXC RRI unit setting window of UltraSite BTS Hub Manager

Adjusting synchronisation settings of a managed node for UltraSite EDGE BTS

Instructions

Adjusting synchronisation loop bit settings of UltraSite EDGE BTS

Adjusting synchronisation loop bit settings of UltraSite EDGE BTS

Instructions

Adjusting synchronisation settings of a managed node for UltraSite EDGE BTS

Adjusting Q1 management settings for UltraSite EDGE BTS

Instructions

Overview of adjusting node settings

Adjusting alarm property settings

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Resetting transmission units

Allocating F(X)C transmission capacity of UltraSite EDGE BTS

Reference

Set Transmission Parameters window of BTS Commissioning Wizard

Verifying transmission connections

Overview of upgrading the node manager and node software

Instructions

Overview of replacing power and transmission units

Downloading FXC unit software

Copying software between transmission units

Saving node information in a file

Installing software from Nokia SiteWizard

Instructions

Overview of upgrading the node manager and node software

Starting the node manager

Using online help

Downloading FXC unit software

Copying software between transmission units

Checking the transmission unit product codes and versions

Reference

ITN hardware and software compatibility

Downloading FXC unit software

Instructions

Starting the node manager

Copying software between transmission units

Reference

221 Version mismatch

Copying software between transmission units

Reference

ITN hardware and software compatibility

Installing transmission units logically with the manager

Instructions

Uninstalling transmission units logically with the manager

Overview of managing cross-connections

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Adding cross-connections

Adding cross-connections in the graphic view

Modifying cross-connections

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Creating and exporting a cross-connection file

Importing a cross-connection file

Managing cross-connection banks

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Overview of managing cross-connections

Adding cross-connections in the graphic view

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