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Nokia MetroSite EDGE Base Station

Commissioning

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FCC	FCC §15.21 - Information to user - This product is used as an intentional radiated equipment and any changes or modifications on the equipment without any approval by Nokia could void the user's authority to operate the equipment.

FCC §15.105 - Information to user - This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help. |

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Summary of changes

Version 1, November 1999

Version 2, March 2000

Version 3, June 2000

Version 4, April 2001

- Updated for EDGE, EDAP added to Traffic Manager.

- Commissioning software overview added.

Version 4, October 2002

- Commissioning for chaining feature added.

- BTS Manager windows and menu command paths renewed to reflect BTS Manager version 3.0.

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1 About this document

This document describes the commissioning of the Nokia MetroSite^{TM} EDGE Base Station (BTS) for the 800, 900, 1800 and 1900 frequencies with BTS SW version CX 3.2 and Nokia SiteWizard 3.0 with Nokia BTS Manager 3.0.

Commissioning is done with the Commissioning Wizard in Nokia BTS Manager. The document provides instructions on how to use the Commissioning Wizard and contains the following information:

- Nokia BTS commissioning software overview.

- Getting started with Nokia BTS Manager.

- The commissioning process with Commissioning Wizard, including:

    - Defining line interface and synchronization settings.
    - Allocating transmission capacity, including EDGE dynamic Abis and BTS chaining.

- Configuring external radio units with Radio Wizard.

- Setting up cross-connections for expanded transmission topologies.

- Description of the Commissioning Report.

- Troubleshooting and fault reporting.

- Description of the LMP connector from the commissioning PC to the BTS.

Read carefully *Nokia MetroSite EDGE Base Station: Warnings and Cautions* before starting BTS commissioning.

⚠ Caution

Commissioning tasks concerning any Nokia base transceiver station (BTS) may be performed only by properly trained and authorised personnel.

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2 Commissioning software overview

The Nokia MetroSite EDGE Base Station is configured in the network with Nokia SiteWizard software for GSM and/or GSM/EDGE with Nokia SiteWizard software, version 3.0 or later. BTS commissioning is done locally at the BTS using SiteWizard's BTS Manager software.

The appropriate CX software packages for the BTS's configuration are loaded to the master TRX at the factory or from the BSC. For EDGE transmission, CX 3.2 or later is required. These software packages are downloaded locally using Nokia BTS Manager during commissioning, or remotely from the BSC.

After commissioning, the BTS is normally managed remotely from the OSS via the BSC, although O&M tasks can also be done locally with BTS Manager.

2.1 Nokia SiteWizard 3.0

Nokia SiteWizard contains all the manager software required for commissioning a BTS and any transmission equipment that is connected to it.

Table shows the contents of Nokia SiteWizard version 3.0. For more information on the features of the software, see the *Software Release Binder* delivered with Nokia SiteWizard.

Included managers and files	Version
BTS Manager	3.0
Site HW configurator	2.0
MetroHub Manager	2.0.5
E1/T1 Manager	3.0.4
RRI Manager	3.0.10
UltraSite BTS Hub Manager	C1.2

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Included managers and files	Version
Hopper Manager	4.2.5
GCS 4.2 (Q1 stack)	Service pack 1
SCF Editor	1.0

2.1.1 Nokia BTS Manager 3.0

Nokia SiteWizard 3.0 contains Nokia BTS Manager version 3.0. This is used for commissioning the BTS and for carrying out maintenance functions locally at the BTS.

Nokia BTS Manager provides a graphical user interface to run in a laptop PC in the Windows environment. See Figure 1 for an example of the graphical user interface in Windows. The laptop is connected to the BTS via the local management port (LMP) on the BTS interface unit.

Nokia BTS Manager uses a Commissioning Wizard to guide the user through the BTS commissioning process. See Table 1 for a description of the Commissioning Wizard features of Nokia BTS Manager version 3.0.

Note

Nokia BTS Manager also provides a context-sensitive Help.

Table 1.   Main features of the Commissioning Wizard in Nokia BTS Manager, version 3.0

Feature	Description	Reference
LIF and Synchronisation settings	For defining line interface and synchronisation settings according to the interface unit used.	Chapter 7
Traffic Manager	For allocating Abis transmission capacity, including EDGE dynamic Abis pool (EDAP) and BTS chaining allocation.	Chapter 6

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Table 1.   Main features of the Commissioning Wizard in Nokia BTS Manager,
version 3.0 (Continued)

Feature	Description	Reference
Radio Wizard	For defining external radio units for the BTS, such as Nokia MetroHopper and Nokia FlexiHopper.	Chapter 8
Cross-connections (E1/T1 Manager)	For setting up cross-connections in expanded transmission configurations, such as BTS loop or chain topologies.	Chapter 9
Commissioning Report	Confirms the actions that have been taken during the commissioning wizard process.	Chapter 10

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3 Preparing for commissioning

Before starting BTS commissioning, complete the following procedure.

Preparing for commissioning:

1.   Check that the Abis cables are connected on the BTS.

Note

Commissioning can be performed without the BSC connection (Abis cables disconnected, for example). For more information, see Step 7 in the commissioning procedure in Chapter 5.

2.   Check that the Nokia MetroSite EDGE Base Station is powered up.

3.   Connect the Nokia BTS Manager PC to the BTS's LMP port. See Appendix A for a description of the LMP cable.

4.   Check that you have the required Site IDs (optional) and transmission capacity tables.

Note

BTS SW is loaded to the BTS by the manufacturer at the factory. There is no need to locally load SW to the BTS before commissioning. If the BTS SW is different from the SW at the BSC, it will be loaded automatically to the BTS during the commissioning procedure.

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4 Getting started with BTS Manager

This chapter gives instructions on how to install, set up and obtain on-line help on Nokia BTS Manager software. It is assumed that the user knows how to use the Windows operating system.

When Nokia BTS Manager is installed and set up, the BTS is commissioned by starting Commissioning Wizard, as described in Chapter 5 of this document.

4.1 Installing Nokia BTS Manager

Nokia BTS Manager is installed on a laptop PC which is connected to the BTS via the LMP connector on the interface unit.

The installation program creates a Nokia BTS Manager icon on the Windows desktop and defines the software's parameters.

For more information on software installation and the system requirements of the laptop PC, see the Nokia Site Wizard *Software Release Binder* or the instructions on the CD-ROM sleeve.

4.2 Setting up Nokia BTS Manager

Start Nokia BTS Manager as follows:

1. Make sure that the BTS Manager laptop is connected to the LMP connector on the interface unit of the BTS.

2. Double-click the BTS Manager icon on the desktop.

3. Enter the Nokia BTS Manager password. If the password checking option has not been turned on and it is required, go to FILE | OPTIONS in Nokia BTS Manager to set up a password (Windows 95/98 environment only).

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4. Nokia BTS Manager starts with the *Supervision - Equipment View* (1), *BTS Events* (2) and *Alarms* (3) windows opened (see Figure 1). The software checks the BTS configuration and represents it graphically it in the *Nokia BTS Manager - Supervision* window.

Note

The Nokia BTS Manager PC must be connected to the BTS in order to make BTS password checking possible. If no connection exists, password checking is not applicable.

4.2.1 Nokia BTS Manager main windows

The main window of Nokia BTS Manager contains the main menu bar and three sub-windows, *Supervision - Equipment view*, *BTS Events* and *Alarms*. The main window and sub-windows are shown in Figure 1. If the sub-windows are not displayed, see Section 4.2.2 of this document.

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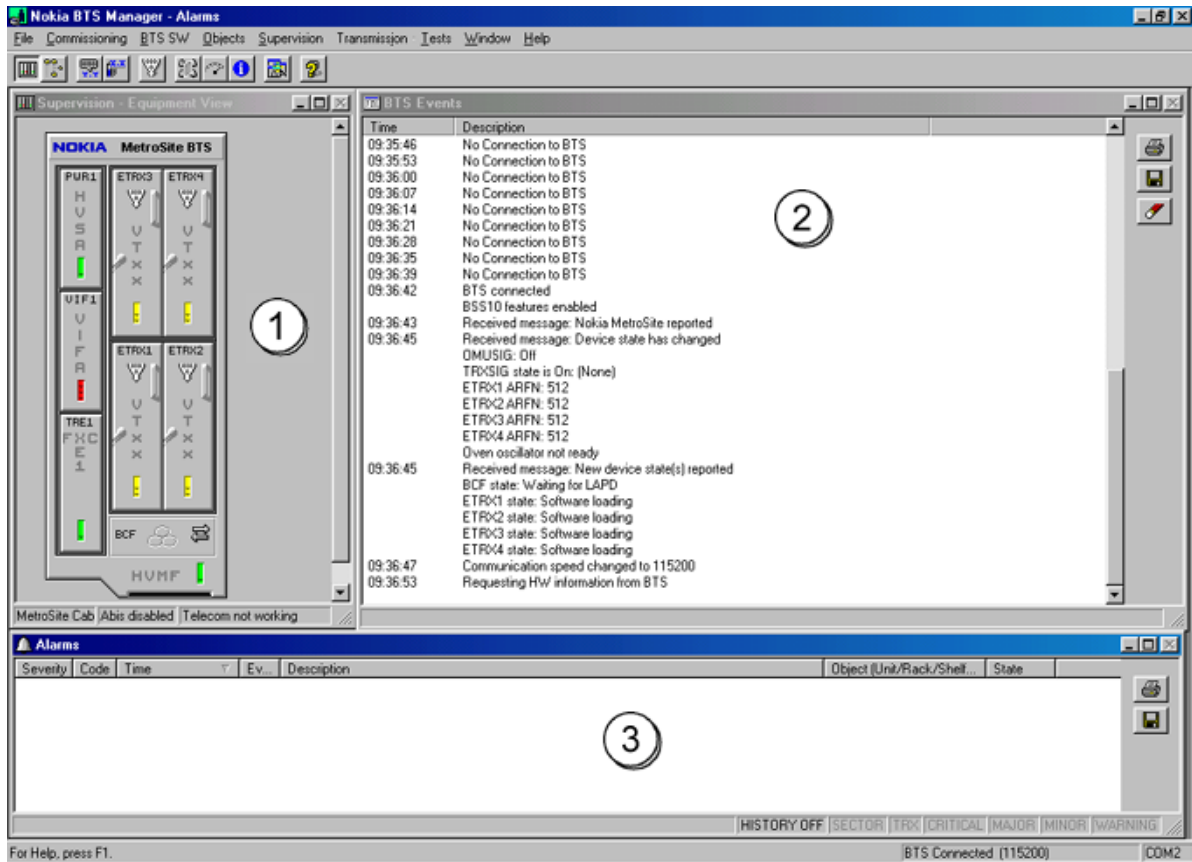
Figure 1.   Nokia BTS Manager - main window

In a BTS chaining configuration, where up to three BTSs are chained as one BCF object, the *Supervision - Equipment View* window will appear as shown in Figure 2.
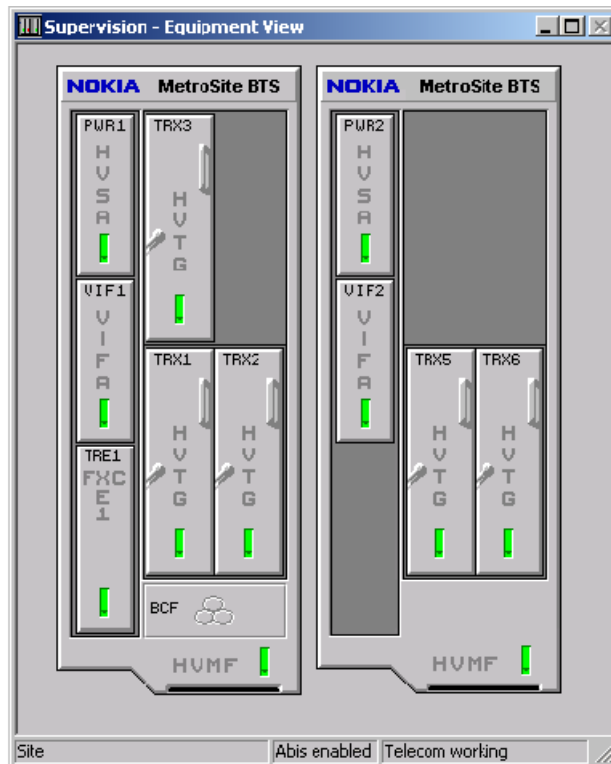
Figure 2.   *Supervision - Equipment View* window when two MetroSite EDGE
BTSs are chained as one BCF object

4.2.2   Defining Nokia BTS Manager options

If there is no connection to the BTS when starting Nokia BTS Manager, only the
BTS Events window is displayed and some BTS Manager menu options will not
be available. In this case, check the communication parameters. Check also that
the LMP cable is connected to the same COM port that is defined in BTS
Manager.

You can define the different BTS Manager options from FILE | OPTIONS.

4.3   Nokia BTS Manager Help

Nokia BTS Manager has a convenient, context-sensitive on-line Help facility for
getting information about a task you are going to perform, a feature you might
want to know more about, or a command you may want to use.

To get Help, do one of the following:

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- Press F1.

- Select the HELP menu from the main toolbar.

- Click the HELP button in any of the dialogue boxes.

In the *Help Topics* window you will see three tabbed pages: *Contents*, *Index* and *Find*.

Contents

The *Contents* page displays a list of topics organised into books by category. Because the BTS Manager supports both MetroSite and InSite^TM base stations, there are separate Operating and Reference books for the two types of BTS.

Index

The *Index* page lists keywords in alphabetical order through which different topics can be reached.

Find

The *Find* page provides a full-text search functionality that allows you to search for any word or phrase in the Help file.

To exit Help, press the ESC key or ALT+F4 on the PC keyboard.

Note

If the BTS is connected, the Help topics for the Transmission Unit Manager are also available on the HELP menu.

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5 Commissioning Wizard process

Commissioning is done with Nokia BTS Manager's Commissioning Wizard.

It is assumed here that the site has been created at the BSC (LAPD links created and PCM port active). If the site is newly created, the BCF is in the 'locked' state.

5.1 How to use Commissioning Wizard

Commissioning Wizard guides you through the commissioning process with a series of wizard pages. Each wizard page contains data entry fields or paths to dialogue boxes for data entry. When the settings on each wizard page are set up according to your requirements, move to the next stage of the wizard with the NEXT command, as described in the procedure in Section 5.2.

If you need to go back and change settings while in the wizard, click BACK. To stop the commissioning without saving any of the settings, click CANCEL. Click the HELP button on any wizard page to get a pop-up Help window.

Note

When starting commissioning, the BCF object in the *Supervision - Equipment View* window displays the 'BCF is commissioning' symbol (see Figure 3). You can also check the operational state of the BCF by moving the mouse pointer over the BCF symbol in the *Supervision - Equipment View* window, clicking the right mouse button and selecting the BCF Properties command.

Figure 3.   'BCF is commissioning' symbol

5.2 Commissioning with Commissioning Wizard

To commission the BTS, follow the steps in the procedure below. You will be asked to refer to other sections in this document for some operations in the procedure, after which you should return to this main procedure.

Commissioning with Commissioning Wizard:

1. Start Nokia BTS Manager 3.0 on your laptop.

2. In BTS Manager, choose the COMMISSIONING | WIZARD command from the main menu. The *BTS Commissioning Wizard* window appears.

3. Commissioning can only be done with a non-commissioned BTS. If the BTS is already commissioned, select 'Undo Commissioning' and NEXT in the *BTS Commissioning Wizard* window (this would be the only option available in Commissioning Wizard). The BTS will be un-commissioned and the 'Manual Commissioning' option will then appear in the *BTS Commissioning Wizard* window.

    To commission the BTS, select 'Manual Commissioning' in the *BTS Commissioning Wizard* window and click NEXT (see Figure 4).

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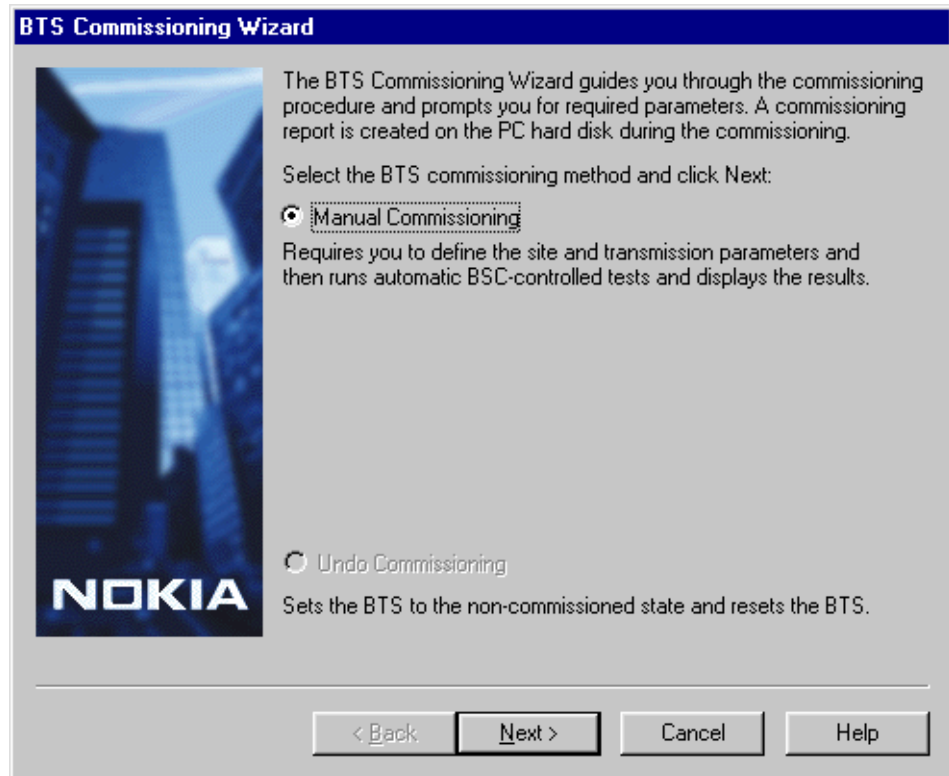
Figure 4.   Opening window of BTS Manager's Commissioning Wizard

4.   Enter the parameters on the *Set Transmission Parameters* wizard page (see Figure 5). All parameters on this page are optional. They appear in the Commissioning Report, but the BTS does not compare them with the corresponding parameters defined at the BSC.

Click LIF SETTINGS to check the line interface settings. Modify the settings, if necessary, and click OK. See Chapter 7.1 for more information.
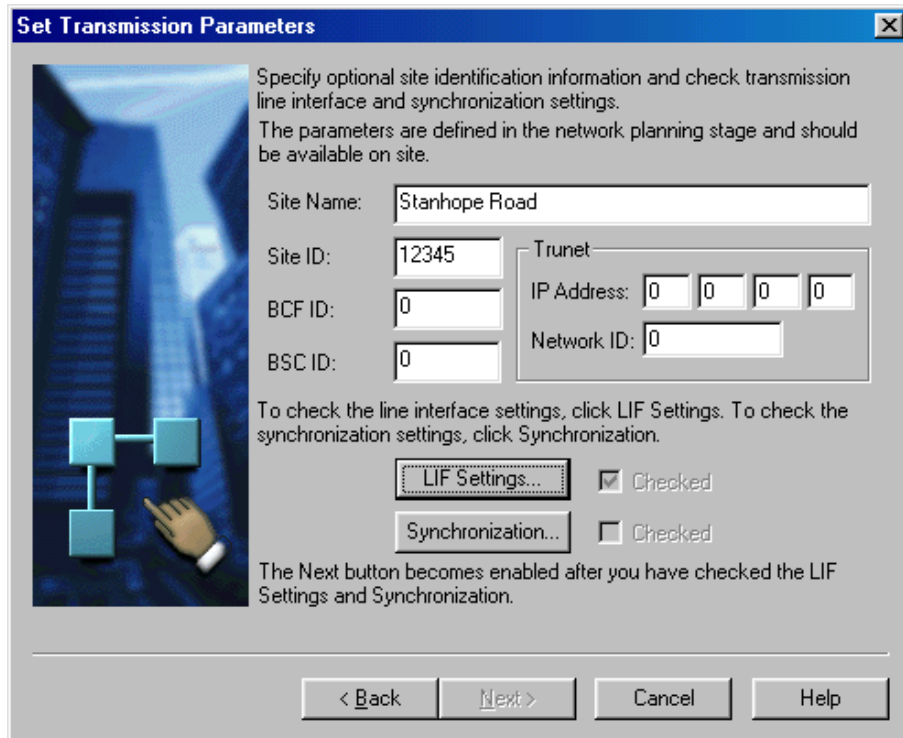
Figure 5.   The *Set Transmission Parameters* wizard page of Nokia BTS
            Manager's Commissioning Wizard

Click SYNCHRONIZATION to check the synchronization settings.
Modify the settings, if necessary, and click OK. See Chapter 7.2 for more
information.

Note

There are no synchronization settings for the FC RRI unit because the only
available timing option for that unit is Rx Clock. If the transmission unit in the
BTS configuration is FC RRI and you click the Synchronization button, a check
mark appears in the 'Checked' check box, and the NEXT button becomes enabled
(if you have already checked the LIF settings).

Note

The NEXT button remains disabled until you have checked the LIF and
synchronization settings.

Click NEXT after you have checked the parameters.

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5. The *Radio Links Settings* wizard page appears if BTS Manager detects an F(X)C RRI transmission unit in the BTS configuration (see Figure 6). If there are no radios in the BTS configuration and this wizard page does not appear, proceed directly to the next step in this procedure.

Click the RADIO HOP(S) button to launch the Radio Wizard (from the radio transmission unit manager) and check or adjust the radio hop parameters. The signal quality can also be checked when making these adjustments in the Radio Wizard. Refer to Chapter 8 for instructions on using the Radio Wizard.

When the radio links are ready, click NEXT to proceed.
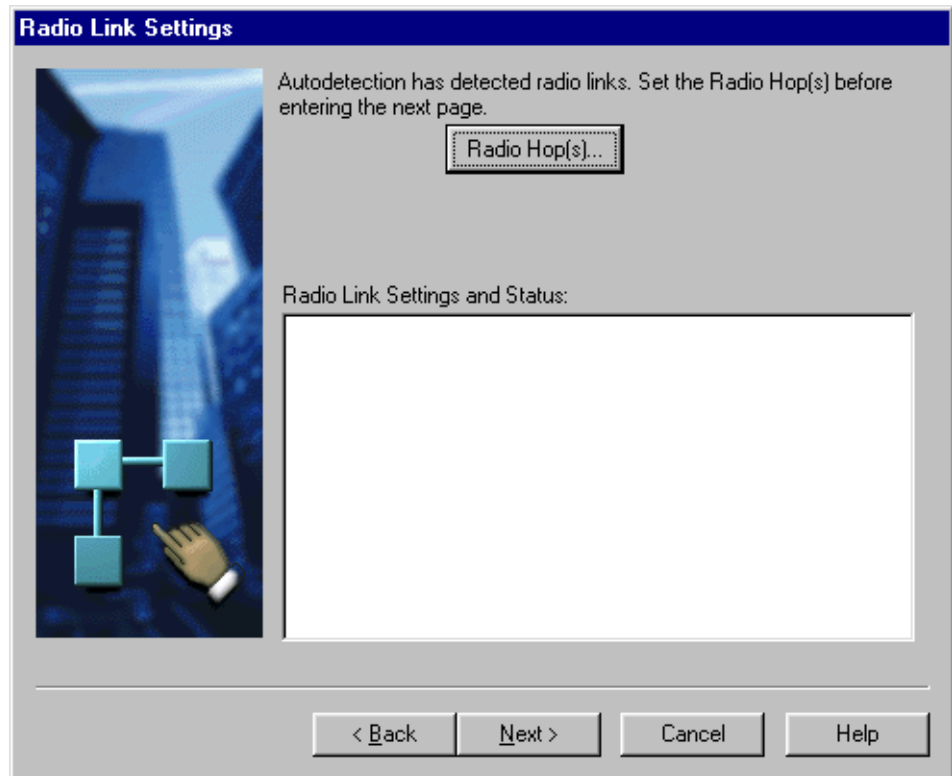
Figure 6.   Radio link settings in Nokia BTS Manager's Commissioning Wizard

6. To allocate incoming Abis capacity to the BTS, click the TRAFFIC MANAGER button in the *Transmission Configuration* window (see Figure 7) to open . For information on how to allocate the transmission capacity, see Chapter 6.
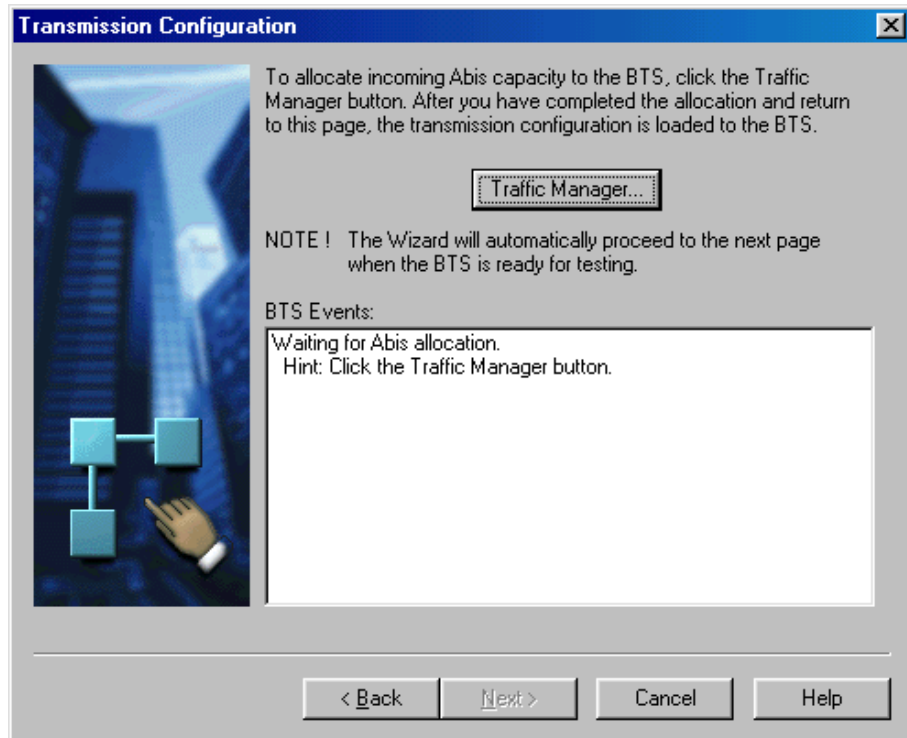
Figure 7.   Opening Traffic Manager from Commissioning Wizard

When you have completed the allocation in Traffic Manager and you return
to this wizard page, the BACK button is disabled because the transmission
configuration has been loaded to the BTS and the transmission connection
is established between the BTS and the BSC. If the connection fails, see
Chapter 11 of this document, 'Troubleshooting and fault reporting'.

If you need to change any of the parameters you have specified prior to this
point, click CANCEL, run the 'Undo Commissioning' procedure and then
re-commission the BTS with the correct parameters.

Note

Commissioning Wizard will automatically proceed to the next wizard page after
you have allocated the incoming Abis capacity and the BTS is ready for testing.

7.   Depending on the status of the Abis connection, proceed either from *Abis
      connected* or *Abis not connected.*

      1.   *Abis connected:*

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During the BTS/BSC start-up scenario the BSC checks the BTS SW and if it is not the correct one, the BSC loads SW to the BTS. This loading will take from 5 to 20 minutes, depending on the OMUSIG link speed. If no SW loading takes place, the process will take about 10 seconds.

If SW loading takes place, the BCF is in the 'SW loading' state during the SW loading operation. This information is shown on the BTS Events list. When the SW loading from the BSC is completed, the BCF is reset automatically. This means that the *Supervision - Equipment View* disappears for a few seconds, but after the BTS has started normally, the commissioning procedure continues automatically.

After the SW checking and/or loading, the BSC sends the configuration data to the BTS and the BCF enters the 'Configuring' state. It can take up to five minutes for the oven oscillator to warm up after the BTS is powered on. The *BTS Events* window displays a message when the oven oscillator is ready.

When the BTS is ready for testing, the Wizard automatically proceeds to the next wizard page and the BSC runs automatic tests on the Abis link and on each TRX installed in the BTS.

The Abis loop test will take about two minutes (all channels of all TRXs are tested).

2.   *Abis not connected:*

If the establishment of the BTS/BSC connection does not succeed (Abis cables are not connected, for example), the BCF remains in the 'Waiting for LAPD' state. If you now click NEXT, the Wizard displays a message (see Figure 8). The message also asks you if you want to give the 'Use Current' command. If you click YES in the dialogue box, the BTS starts to use the BTS SW in the master TRX memory and the Wizard proceeds to the *BTS Test Reporting* wizard page after TRX and BCF achieve the 'Configuring' state. If you click NO in the dialogue box, the BCF remains in the 'Waiting for LAPD' state until you connect the Abis cables.

Figure 8.   The Abis not connected dialogue box

⚠ Caution

In order not to interfere with the operation of other sites, make sure that an RF load is connected to every TRX in the BTS before you start local TRX tests.

8.   If Abis is connected, the *BTS Test Reporting* wizard page displays the test results (see Figure 9). Check the results in the 'Events' list.

Whether or not Abis is connected, BTS Manager requests HW reports from the BTS. The 'Events' list will display any alarms 10 seconds after the BCF has entered the 'Supervisory' state. The NEXT button becomes enabled at this point.

Click NEXT to proceed to EAC input settings.
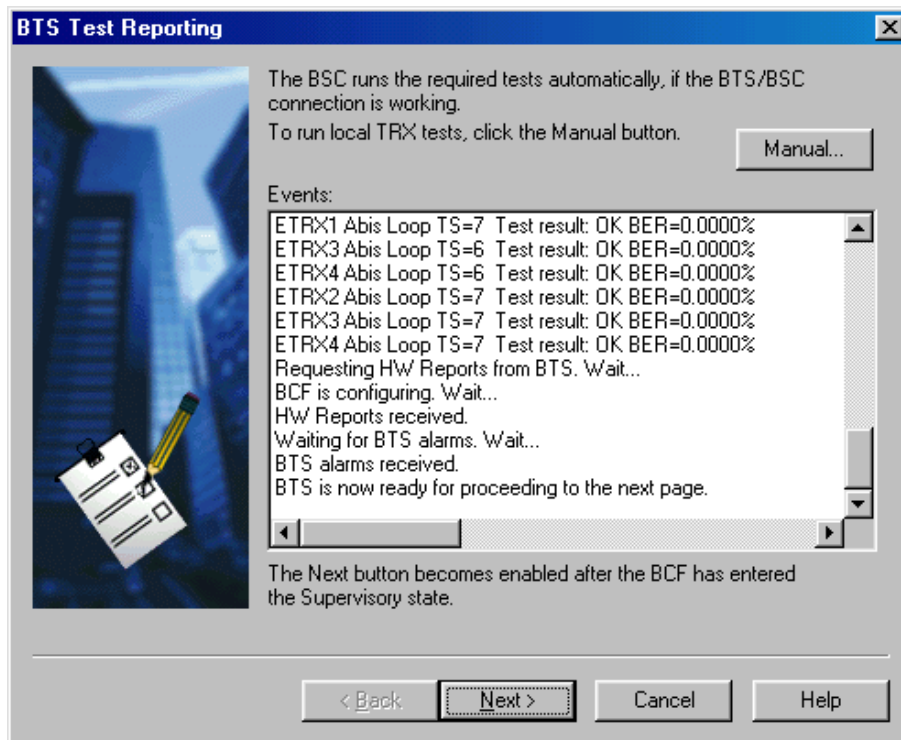
Figure 9.   BTS test events

9.   On the *EAC Input Settings* wizard page (Figure 10), select the required EACs as 'In Use' by marking the checkboxes and then test their functionality in real time.

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The state of each EAC will change in real time as you test it the alarm. Then, the appropriate state changes from 'Open' to 'Closed', or vice versa.

After testing the EACs, mark them as 'Checked'. When you have completed the testing, click NEXT.

Note

If the EAC inputs will not be used, just click NEXT without marking any checkboxes.

Note

The NEXT button remains disabled until you click a check mark in the 'Checked' check box for all inputs that are 'In Use'.

Figure 10.   Setting and testing EAC inputs in real time

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10. On the *EAC Output Settings* wizard page (Figure 11), test the required EAC outputs by ticking the 'In use' check box and testing the functionality of the outputs in real time. Mark tested outputs as 'Checked'.

When you have finished the EAC output settings, click the SET OUTPUTS button to send the information to the BTS.

After you have completed the required EAC output settings, click NEXT.

Note

The NEXT button remains disabled until you click a check mark in the 'Checked' check box for all outputs that are 'In Use'.

Note
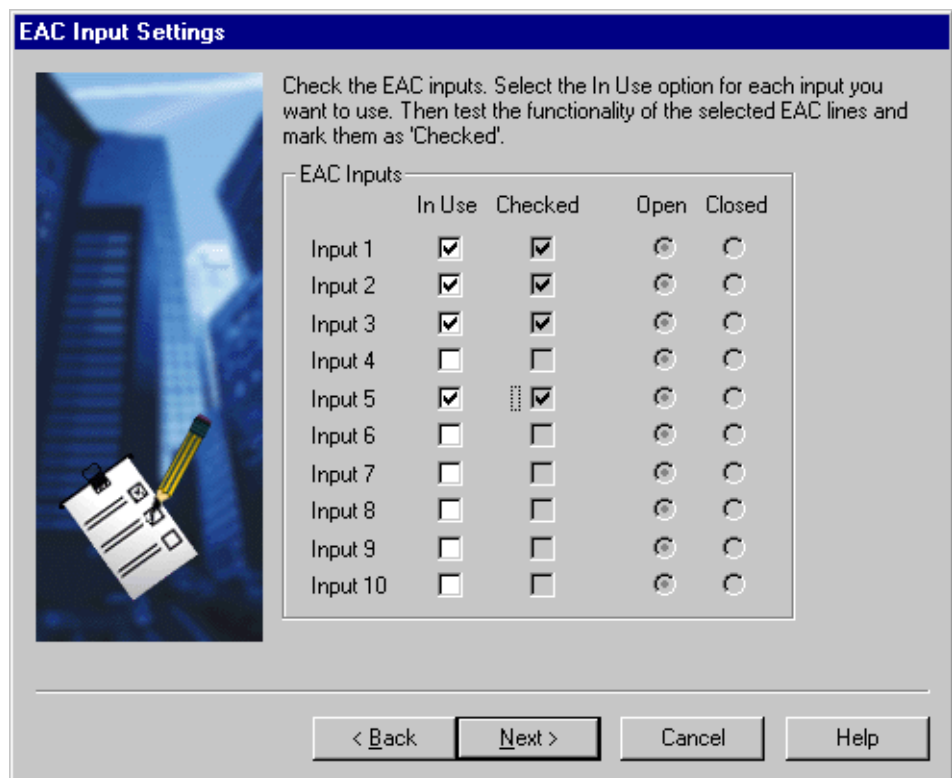
The EAC names and polarities are defined at the BSC.
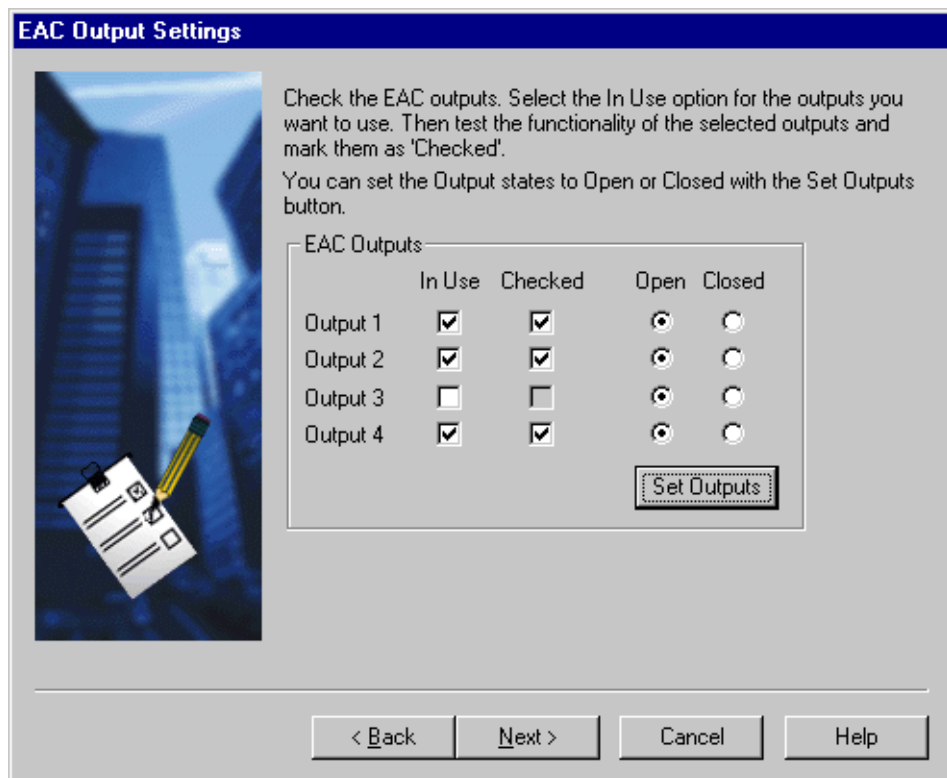
Figure 11.   Setting and testing EAC outputs in real time

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11. The *BTS Commissioning Report* wizard page appears (see Figure 12). Check the BTS Commissioning Report.

12. Save the BTS Commissioning Report to the your BTS Manager laptop by typing a path and a file name for the report in the 'To File' field, or clicking TO FILE and then BROWSE to specify the path and file name.

    If you do not save the report in this way, it will be automatically saved to your laptop's Windows desktop when you finish the commissioning.

Note

The BTS Commissioning Report is generated only at this point of the commissioning procedure. If you click CANCEL, the report is not saved and it cannot be generated anywhere else for this site.
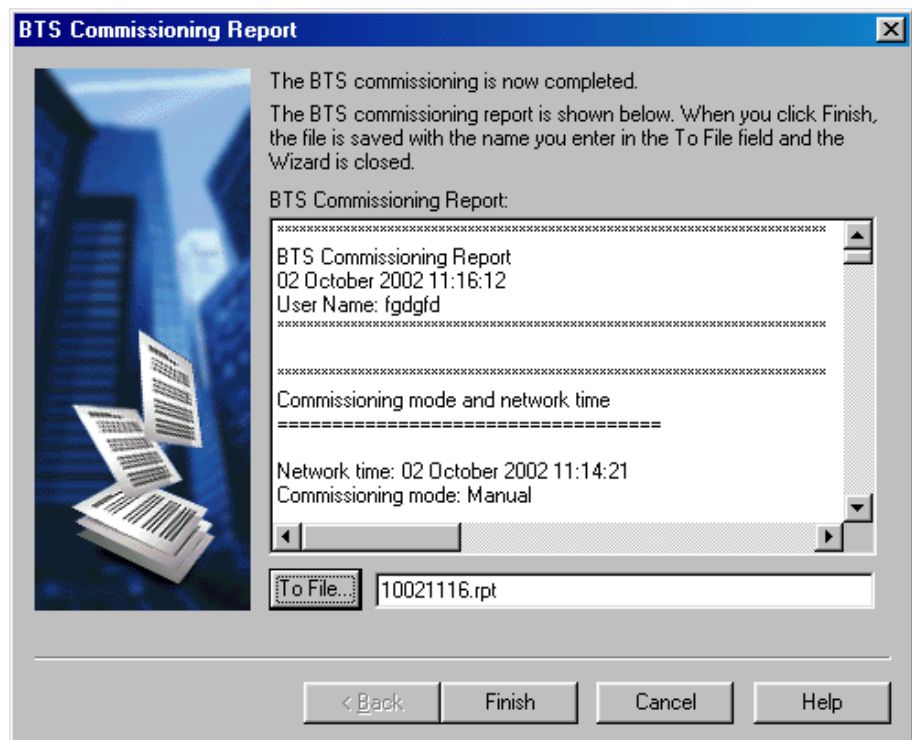
Figure 12. BTS Commissioning Report summary window

13. Click FINISH. The BTS Commissioning Report is saved to the location you have specified or automatically to your laptop's Windows desktop. Commissioning Wizard is now closed. See Chapter 10 for more details on the Commissioning report.

Note

If there is a need to route transmission capacity, the cross-connections have to be created manually. See Chapter 9 for instructions on how to create the cross-connections.

Note

For maintenance purposes, in the case of a BTS with only one TRX, it is recommended to make a back-up copy of the time-slot allocation settings using the Traffic Manager's export function (see Section 6).

At this point you should check the *Alarms* window in the main *Nokia BTS Manager - Supervision* window for possible alarms generated during commissioning. Figure 13 shows an example of a major alarm, which must be cleared. The minor alarms (cover open and MMI connected) are cleared when the BTS commissioning procedure is completed.

For alarm descriptions, see *Nokia MetroSite EDGE Base Station Alarm Descriptions*.

Note

For future maintenance purposes, it is recommended that you export the cross-connection information of the FXC E1/T1 transmission unit to a file. For instructions, see the section called 'Replacing the transmission unit' in *Nokia MetroSite EDGE Base Station Maintenance*.

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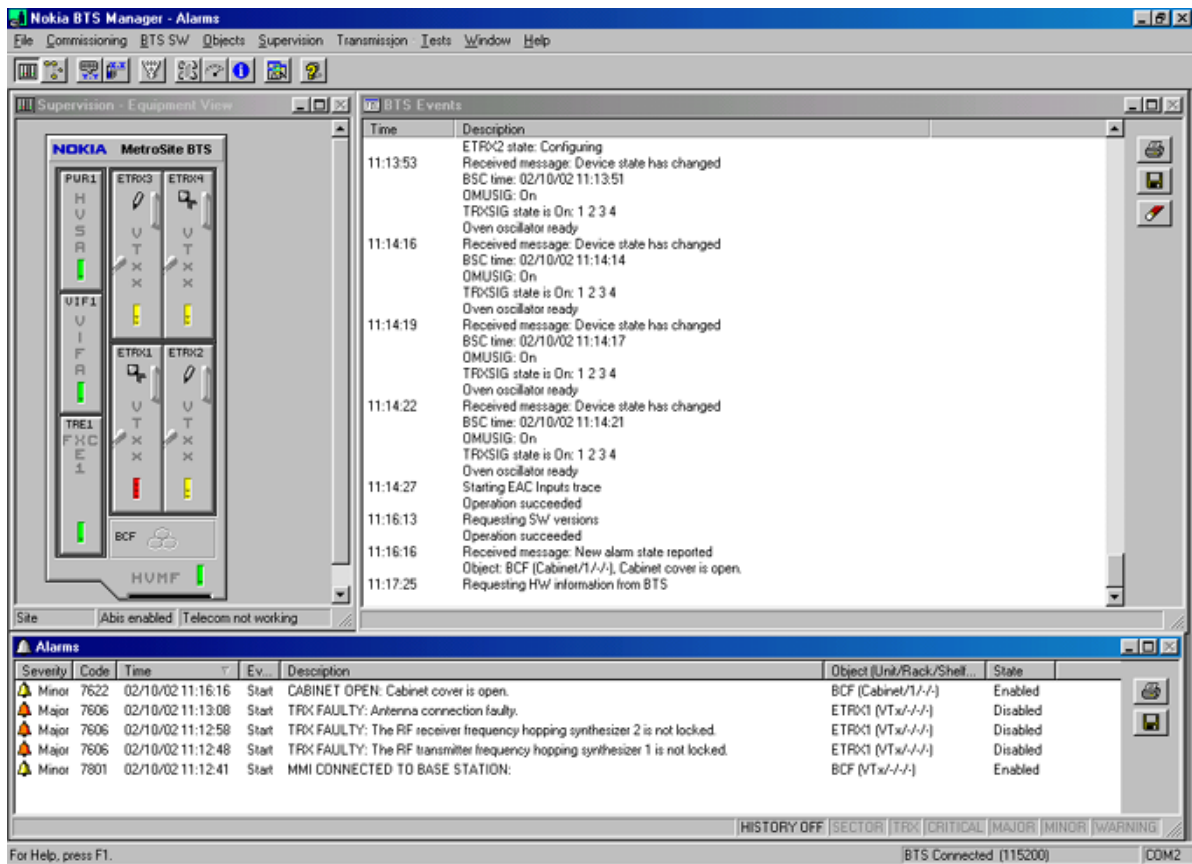
Figure 13.   Example of a major alarm reported in Nokia BTS Manager

14.   If the site was newly created at the BSC, it remains in the 'locked' state after commissioning. If the site is locked at the BSC, the TRXs remain in the 'Waiting for system information' state. The TRX objects in the *Supervision - Equipment View* window have the 'Waiting for system information' symbol (see Figure 14). You can also check the operational states of the TRXs by moving the mouse pointer over a TRX in the *Supervision - Equipment View* window, clicking the right mouse button and selecting the TRX PROPERTIES command.

Request a 'site unlock', including TRXs, from the BSC or NMS. After the 'site unlock', the BCF is reset automatically and all units enter the 'supervisory' state (the LEDs are green).

Figure 14. 'Waiting for system information' symbol

15. Exit Nokia BTS Manager from FILE | EXIT on the main menu bar.

16. Disconnect the BTS Manager PC from the LMP port of the Nokia MetroSite EDGE Base Station.

    Refit the BTS cover, as described in the document, *Nokia MetroSite EDGE Base Station Installation*.

The commissioning parameters are stored in the flash memory of the master TRX (TRX 1). The master TRX creates backup copies of these parameters in the slave TRXs' flash memory.

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6 Traffic Manager

Traffic Manager is a graphical user interface tool for allocating BTS transmission capacity, irrespective of which Nokia MetroSite transmission unit is used. With Traffic Manager, you can define the line interface (Port 1, for example) and the incoming time-slot allocation on the Abis according to your transmission plan. Figure 15 shows an unallocated BTS.
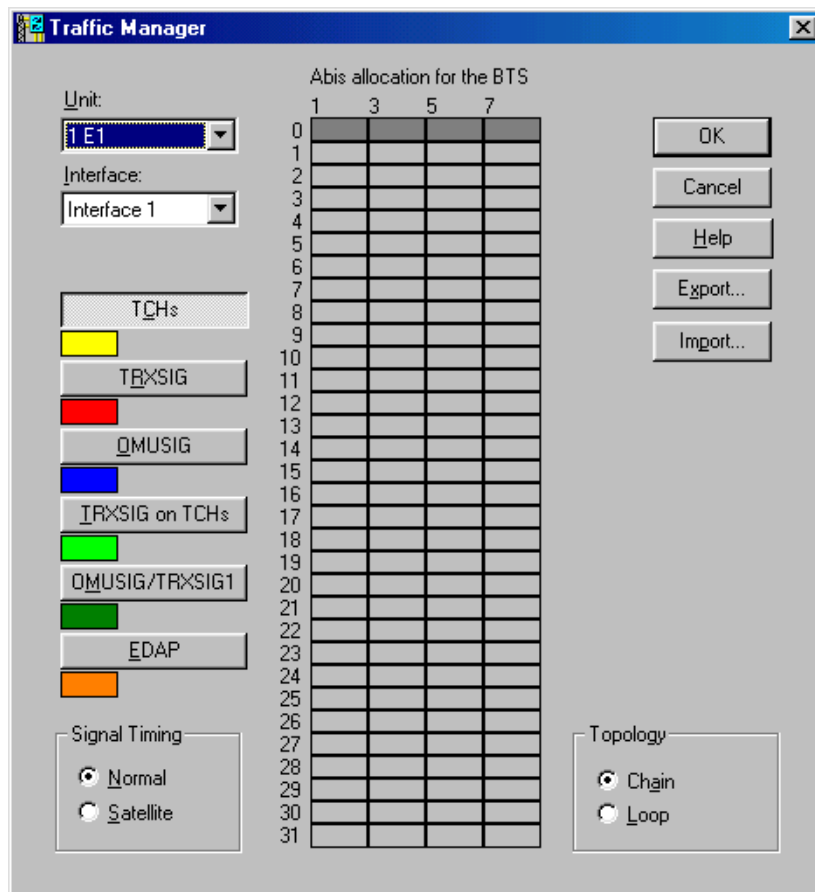
Figure 15.   Opening window for Traffic Manager, an unallocated BTS

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With an FXC transmission unit, the cross-connections to this BTS are created automatically after the capacity has been set and approved.

The capacity to be used is defined by selecting its signal type (TCHs, TRXSIG, OMUSIG, TRXSIG on TCHs or OMUSIG/TRXSIG) and by reserving required time slots and bits. The signal types are explained in more detail in Section 6.2.

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.

With EDGE transmission, the dynamic Abis feature is used to improve the efficient the use of transmission resources. This requires allocation of the EGPRS dynamic Abis pool (EDAP) between the available EDGE TRXs in a BTS or BTS chain.

6.1 Allocating transmission capacity

Transmission allocation capacity and dynamic Abis are both allocated from the *Traffic Manager* window.

6.1.1 Allocating Abis transmission capacity

Allocate Abis transmission capacity as follows:

1. Select the line interface used (Port 1 - Port 16, depending on the transmission unit). With an FC E1/T1 transmission card, the only possible option is Port 1.

2. Click the TCHs button and then click in a cell in the '*Abis TS Allocation for this BTS*' table to allocate time-slots. Repeat this step to allocate transmission capacity to all TRXs in the BTS. See Figure 16 for an example of allocating transmission capacity to a TRX.

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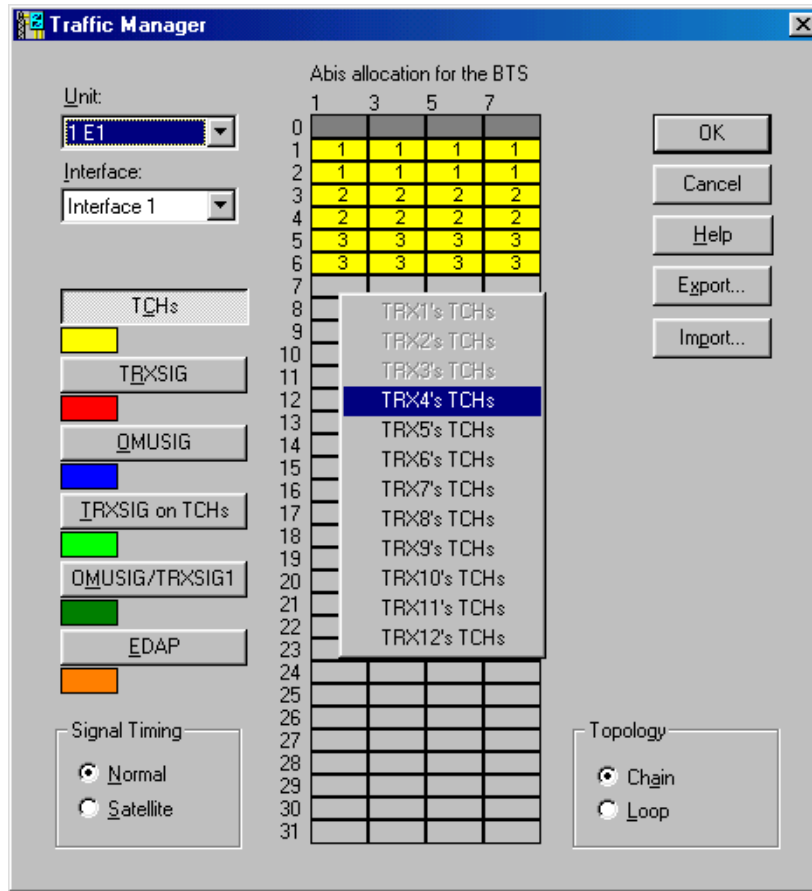
Figure 16.   Allocating transmission capacity to TRXs

From here onwards, you can choose one of three alternative ways to proceed.

3.   Alternative 1.

Click the TRXSIG button and then click the first bit in a time-slot in the Abis allocation table. Select the link speed from the pop-up menu. Repeat for all TRXs in the BTS configuration. Click the OMUSIG button and then click a cell in the Abis allocation table. Select the link speed from the pop-up menu. Figure 17 shows an example of a completed allocation.
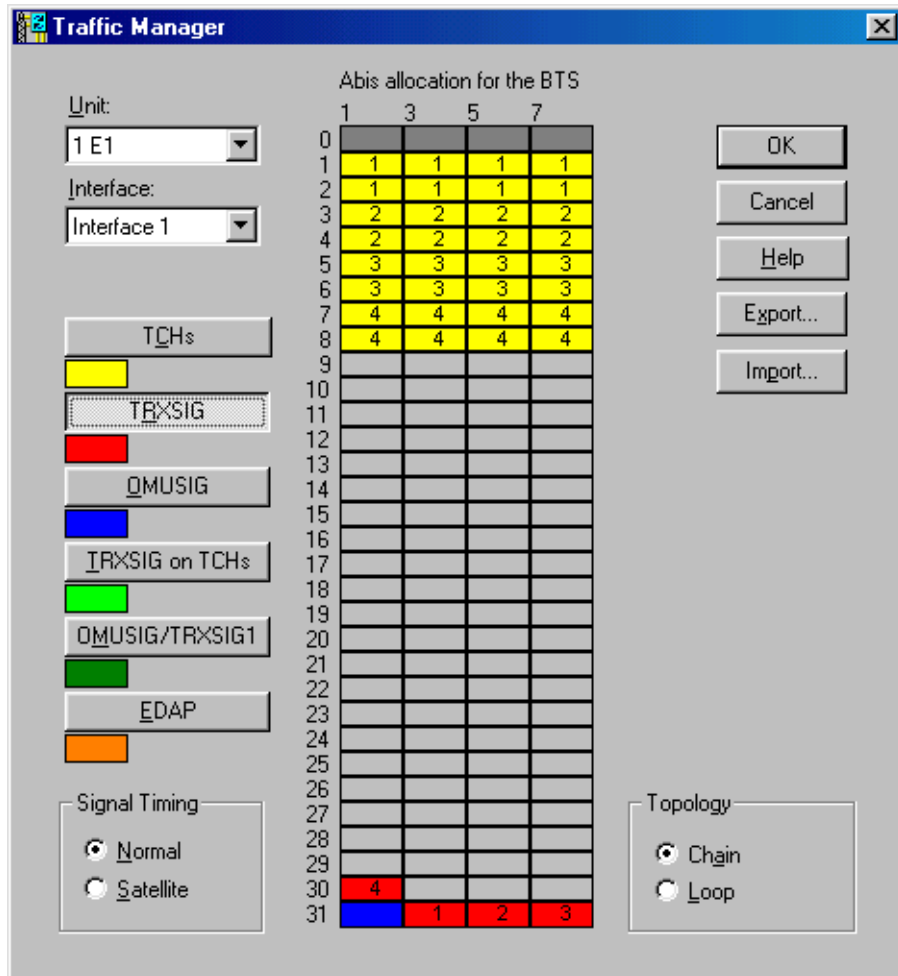
Figure 17.   Example of a completed allocation in Traffic Manager

Alternative 2.

Click the TRXSIG on TCHs button and then click the first bit in a time-slot
you reserved for TCHs in Step 2. Select the link speed from the pop-up
menu. Repeat for all TRXs in the BTS configuration. Click the OMUSIG
button and then click a cell in the Abis allocation table. Select the link
speed from the pop-up menu.

Alternative 3.

Click the OMUSIG/TRXSIG1 button and then click the first bit in the
TCHs allocation for TRX 1. Select the link speed from the pop-up menu.
Click the TRXSIG or TRXSIG on TCHs button and allocate TRXSIG
capacity for the other TRXs in the BTS configuration.

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4.   If EDGE transmission is not required, proceed directly to Section 6.1.4 to complete the Abis transmission allocation.

For EDGE transmission, proceed to Section 6.1.3 to allocate EDGE TRXs to the dynamic Abis pool.

For chained BTS transmission allocation, proceed to Section 6.1.2.

6.1.2   Allocating transmission capacity for chaining

The chaining feature is available for BTSs which have been loaded with CX 3.0 software or later. Two or three Nokia MetroSite EDGE BTSs can be chained together as one BCF object.

For example, a chain of two BTSs might contain five TRXs, as seen in the example of BTS Manager's *Supervision - Equipment View* window in Figure 2. The transmission capacity can be allocated between the TRXs in the chained BTSs, as described in the procedure below. BTS Manager is connected to the master BTS in the chain.

Note

Before beginning a site expansion, the site must be locked from the BSC or NMS with BCF lock.

You can check if the site has been locked by connecting a BTS Manager laptop to the master BTS in the chain, starting BTS Manager and checking TRX PROPERTIES in the *Supervision - Equipment View* window (right-click with the mouse over a TRX in the window).

1 2 3

Allocate transmission capacity for chaining as follows:

Note

If the FXC type transmission unit replaced an FC type transmission unit during a BTS upgrade for chaining, or if CX 3.0 software (or later) is not loaded at the BTS, the site must be uncommissioned and then re-commissioned before allocating transmission capacity for the BTS chain.

With BTS Manager, uncommission the master BTS by selecting COMMISSIONING | WIZARD from the main menu and selecting the 'Undo Commissioning' button. Make sure that CX 3.0 or later is loaded at the BSC or NMS and start Commissioning Wizard again, as described earlier in this manual.

1. Select the line interface used (Port 1 - Port 16, depending on the transmission unit). An FXC type transmission unit is required for chaining.

2. Click the TCHs button and then click in a cell in the '*Abis TS Allocation for this BTS*' table to allocate time-slots to a TRX. Repeat this step to allocate transmission capacity to all TRXs in the BTS chain (up to 12 TRXs are possible in a chained configuration).

    In the example shown in Figure 18, there are five TRXs in two BTS cabinets. TRXs 1, 2, and 3 are in the first BTS and TRXs 5 and 6 are in the second BTS in the chain.

    From here onwards, you can choose one of three alternative ways to proceed.

    Alternative 1.

    Click the TRXSIG button and then click the first bit in a time-slot in the Abis allocation table. Select the link speed from the pop-up menu. Repeat for all TRXs in the BTS configuration. Click the OMUSIG button and then click a cell in the Abis allocation table. Select the link speed from the pop-up menu.
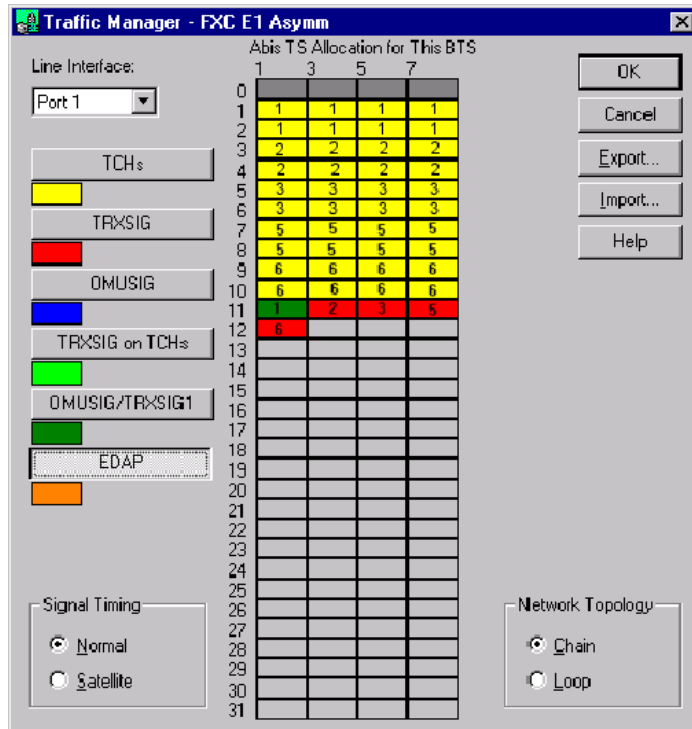
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Figure 18.   Example of traffic allocation for five TRXs in a two BTS chain

Alternative 2.

Click the TRXSIG on TCHs button and then click the first bit in a time-slot you reserved for TCHs in Step 2. Select the link speed from the pop-up menu. Repeat for all TRXs in the BTS configuration. Click the OMUSIG button and then click a cell in the Abis allocation table. Select the link speed from the pop-up menu.

Alternative 3.

Click the OMUSIG/TRXSIG1 button and then click the first bit in the TCHs allocation for TRX 1. Select the link speed from the pop-up menu. Click the TRXSIG or TRXSIG on TCHs button and allocate TRXSIG capacity for the other TRXs in the BTS configuration.

3.   If EDGE transmission is not required, proceed directly to Section 6.1.4 to complete the Abis transmission allocation. For EDGE transmission, proceed to Section 6.1.3to allocate EDGE TRXs to the dynamic Abis pool (EDAP).

6.1.3 Allocating for EDGE dynamic Abis transmission

Dynamic Abis uses the EGPRS dynamic Abis pool (EDAP) to efficiently allocate transmission resources for the higher EDGE data rates.

EDAP resources are shared between EDGE TRXs in a single BTS, chained BTSs, or cross-connected BTSs. The available TRXs are allocated in Traffic Manager from the EDAP command.

Allocate TRXs to the EDAP as follows:

1. Select the incoming line interface port according to the transmission unit used and then click the EDAP button.

2. Select the start time-slot by clicking with the mouse. Drag the mouse to the end time-slot and release. The *EDAP Properties* dialogue box is opened (see Figure 19).

Note

The *EDAP Properties* dialogue box appears automatically when you have selected more than 11 available timeslots.
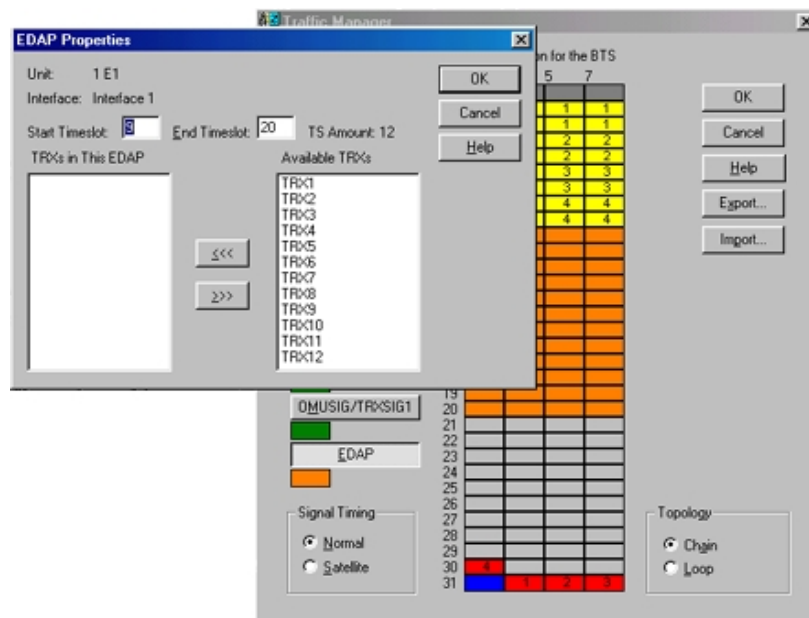

Figure 19.   Starting EDAP time-slot selection

3.   In *EDAP Properties*, select the available TRXs from the list and move them to the 'TRXs in this EDAP' list by clicking on the <<< button. See Figure .
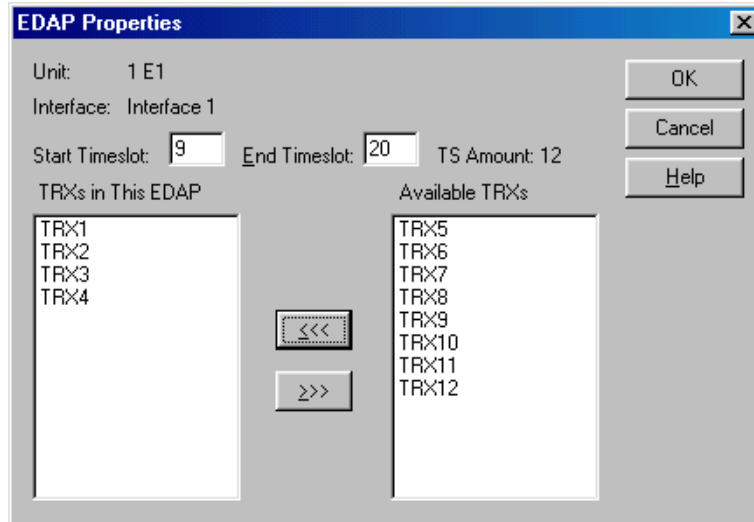

Figure 20.   Example of allocating EDGE TRXs for dynamic Abis

4.   If the EDAP is to be shared with other BTSs in a cross-connection, select the outgoing interface port in the 'Outgoing interfaces for this EDAP' box. See Figure 21 for an example of this part of the *EDAP Properties* window (this only appears if cross-connections are being used).

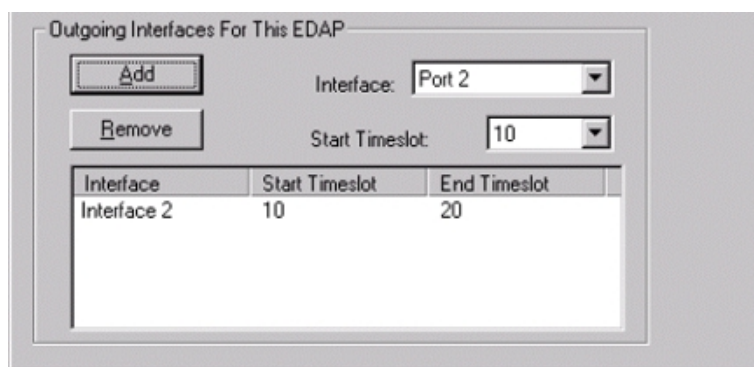For more information on cross-connections, see Chapter 9 of this document.

Figure 21.   Selecting the interface for EDAP allocation in a cross-connected BTS configuration

5. Click OK to return to the main Traffic Manager window. Figure 22 shows the resulting traffic allocation for this example.
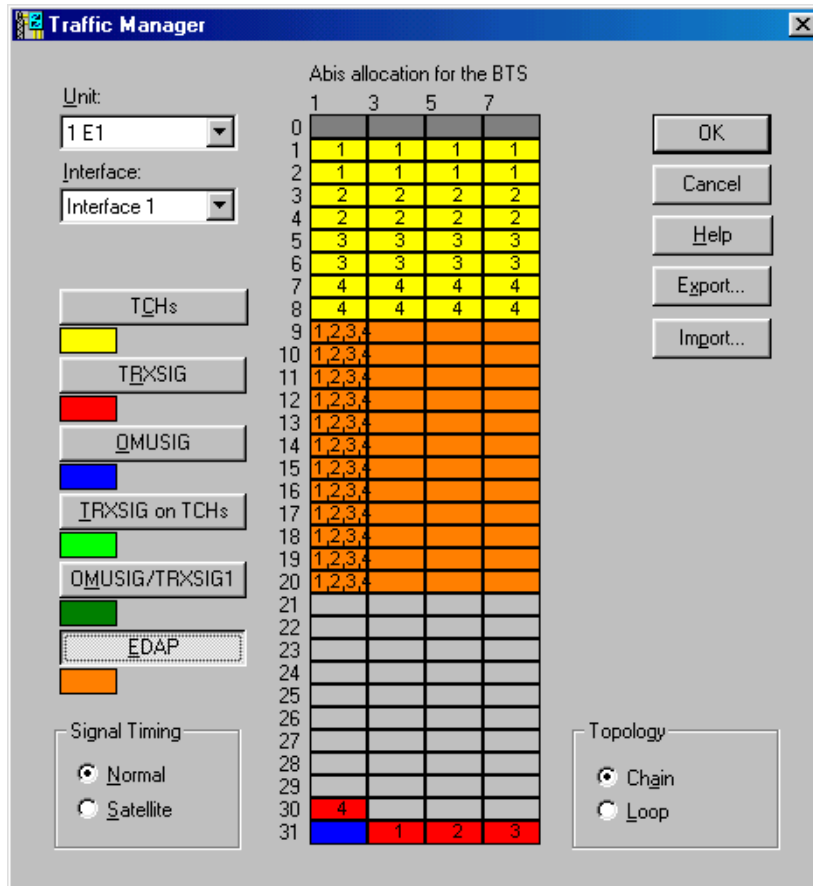
Figure 22.   Example of the traffic allocation with EDAP for EDGE transmission

6. To complete the allocation, proceed to Section 6.1.4.

6.1.4   Completing the transmission allocations

Set the transmission allocation in the BTS as follows:

1. Check that the signal timing is correctly set (either 'Normal' or 'Satellite').

   At this point you can click the EXPORT button to export the Abis time-slot allocation information to a file for future maintenance purposes.

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2. Click the OK button to send the information to the BTS.

Note

If you want to modify the allocation table at this point, you have to first delete prior allocations. Click the right mouse button on the cell to be modified and delete either one signal allocation, all signal allocations of a particular type or delete all allocations for the selected port.

Note

If you want to modify the allocations after you click OK in the Traffic Manager, you must first run 'Undo Commissioning' in the BTS Commissioning Wizard.

Note

When the link capacity restricts normal signal allocation, you can use the 'TRXSIG on TCHs' and combined 'OMUSIG/ TRXSIG1' signal types.

6.2 Signal types

OMUSIG

The BTS can have one OMUSIG which allocates 2, 4, or 8 bits in one time slot depending on the link speed used (16, 32, or 64 Kbit/s). If a combined OMUSIG/TRXSIG1 is used, the allocation of the OMUSIG is disabled.

OMUSIG/TRXSIG1

The BTS can have one combined OMUSIG/TRXSIG1 which allocates 2, 4, or 8 bits in one time-slot depending on the link speed used (16, 32, or 64 Kbit/s). When a compressed Abis time-slot allocation is used, the OMUSIG/TRXSIG1 can be located in radio time-slots 1 - 4 (starting from bit 1), which means that it overlaps the TCHs which are reserved for TRX 1.

TCHs

The BTS must be allocated at least as many TCHs as there are TRXs installed in it (1 - 4). Each TCH allocates two contiguous time slots (16 bits) for a single TRX, each of which is marked with the TRX number. The TCHs are numbered from 1 to 4 in the order they are defined.

TRXSIG

The BTS must be allocated at least as many TRXSIGs as there are TRXs installed in it (1 - 4). Each TRXSIG can allocate 2, 4, or 8 bits in one time slot depending on the link speed used (16, 32, or 64 Kbit/s). The TRXSIGs are numbered from 1 to 4 in the order they are entered.

TRXSIG on TCHs

The TRXSIG can be reserved on a traffic channel (TCH) but then up to four radio time-slots (8 bits) are lost. The signal type allocation must always start from the first bit of the time-slot.

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7   Line interface and synchronization settings

During the commissioning procedure, you need to check and, if necessary, change settings in the *LIF Settings* and *Synchronization* dialogue boxes.

7.1   Line interface settings

The contents of the *LIF Settings* dialogue box depends on the type of the transmission unit, F(X)C E1/T1 or RRI.

7.1.1   LIF settings for F(X)C E1/T1 transmission units

Define E1/T1 LIF settings as follows:

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

Note

If the transmission unit type is FC (no cross-connection capability), the dialogue box has only one tab, LIF 1.

---

2.   Tick the 'Interface in Use' option.

3.   Select the interface mode from the list. If you select 'T1 100 ohm', additional settings appear in the dialogue box. See Step 5.

4.   Tick the 'CRC in Use' option if this is defined at the BSC.

5.   If you selected the 'T1 100 ohm' interface mode, you need to define the TS0 fixed bits. TS0 fixed bits from 1 to 3 are reserved for CRC and frame locking. Bits 4 to 8 are used for alarms and data transfer in national connections.

6. If the type of the transmission unit is FXC E1/T1, check or modify the settings for the other line interfaces as described in Steps 1 - 5.
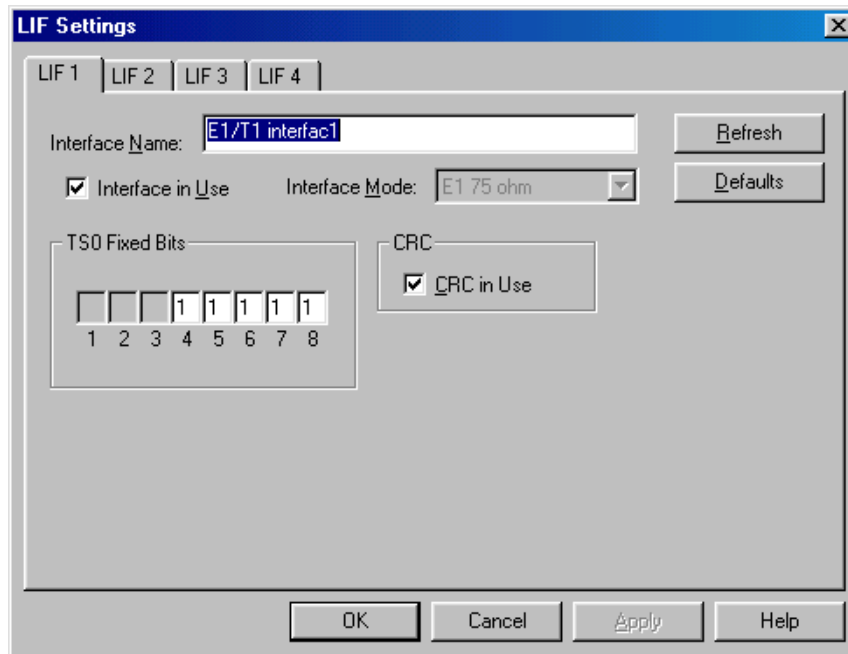
7. Click OK to accept the changes.

Figure 23. LIF Settings with the FXC E1/T1 interface unit

7.1.2 LIF settings for F(X)C RRI transmission units

Define RRI LIF settings as follows:

1. Select the tabbed page for the line interface you want (*Flexbus 1, Flexbus 2*, or *Platform Interface*).

Note

If the transmission unit type is FC RRI (no cross-connection capability), the dialogue box has only two tabbed pages: *Flexbus 1* and *Platform Interface*.

2. Tick the 'In Use' option.

3. Select the 'Capacity' option for the interface (2, 4, 8, or 16 x 2 MB).

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4.   Select the 'Power' option as 'On'.

5.   If the transmission unit type is FXC RRI, check or modify the settings for the other line interfaces, as described in steps 1 - 4.
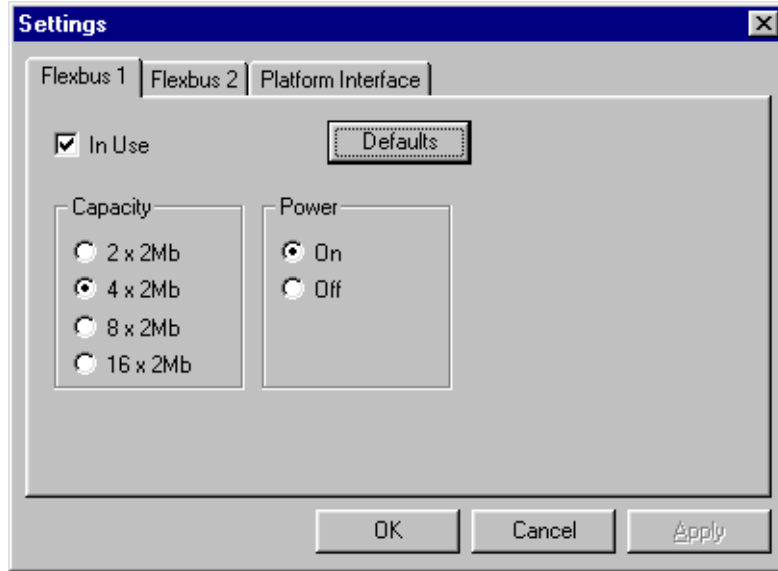
6.   Click OK to accept the changes.

Figure 24.   LIF settings with the FXC RRI unit

7.2   Synchronization settings

The contents of the *Synchronization* dialogue box depends on the type of transmission unit, F(X)C E1/T1 or RRI. There is no Synchronization dialogue box for the FC RRI unit.

7.2.1   Synchronization settings for F(X)C E1/T1 transmission units

Define the E1/T1 synchronization settings as follows:

1.   Select the 'Timing' option for priority 1 as 'Rx Clock' and select the interface that is used for synchronization (uplink direction).

        If the transmission unit in the BTS configuration is F(X)C E1/T1, you can define settings for other priorities.
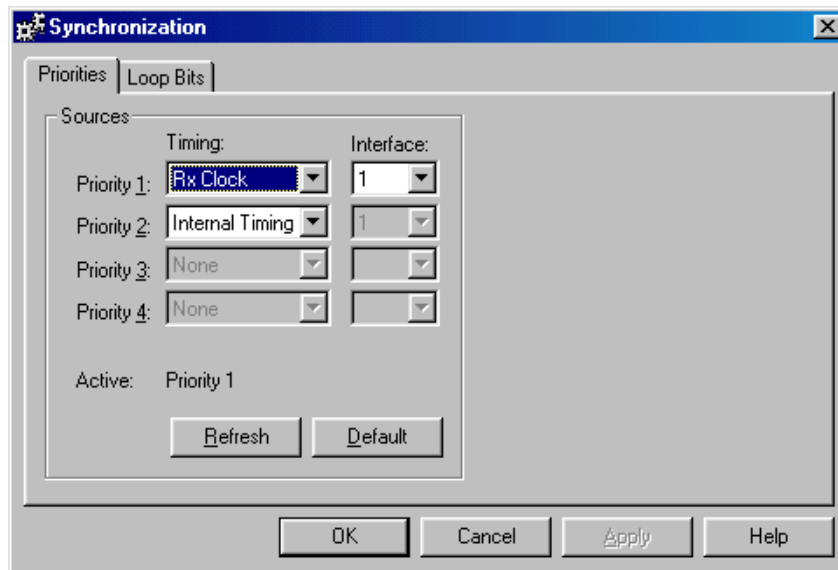
2.   Click OK to accept the changes.

Figure 25.   Synchronization settings with FXC E1/T1 unit

7.2.2   Synchronization settings for FXC RRI transmission units

Note

There is no *Synchronization* dialogue box for the FC RRI unit, because the only available timing option is Rx Clock.

Define RRI synchronization settings as follows:

1.   Select the 'Timing' option for priority 1 as 'Rx Clock' and select the interface number.

   If necessary, define settings for the other priorities in the same way.

2.   To see which timing source is currently active, click the REFRESH button.
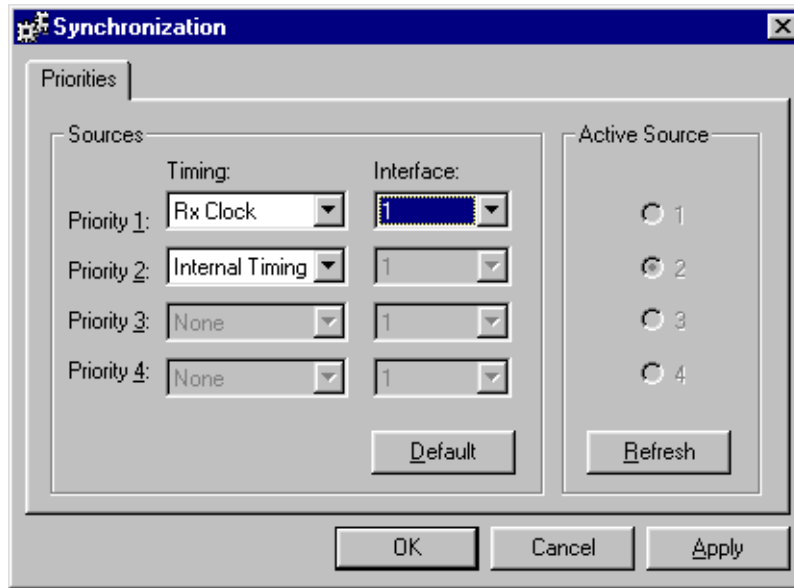
3.   Click OK to accept the changes.

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Figure 26.   Synchronization settings with FXC RRI unit

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8 Radio Wizard

When you click the RADIO HOP(S) button on the *Radio Link Settings* page in the BTS Commissioning Wizard, the Radio Wizard is launched from the Nokia MetroSite RRI Manager application. The Radio Wizard guides you through a series of tasks for defining Flexbus and outdoor unit settings.

For more information on the commissioning and maintenance of radio units, see the Nokia MetroHopper^{TM} and FlexiHopper^{TM} user manuals.

Commission radios as follows:

1. The *Flexbus Settings* page appears after you click the RADIO HOP(S) button in the BTS Commissioning Wizard. The page displays the types of indoor and outdoor units connected to each Flexbus.

   Select the capacity for each outdoor unit from the 'Capacity' list and tick the 'In Use' option for each Flexbus you want to use. At least one outdoor unit must exist and be enabled ('In Use'), before you can continue to the next Wizard page.

Note

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

Note

If the transmission unit type is FC RRI, the page displays only Flexbus 1 settings.

Click NEXT to continue.

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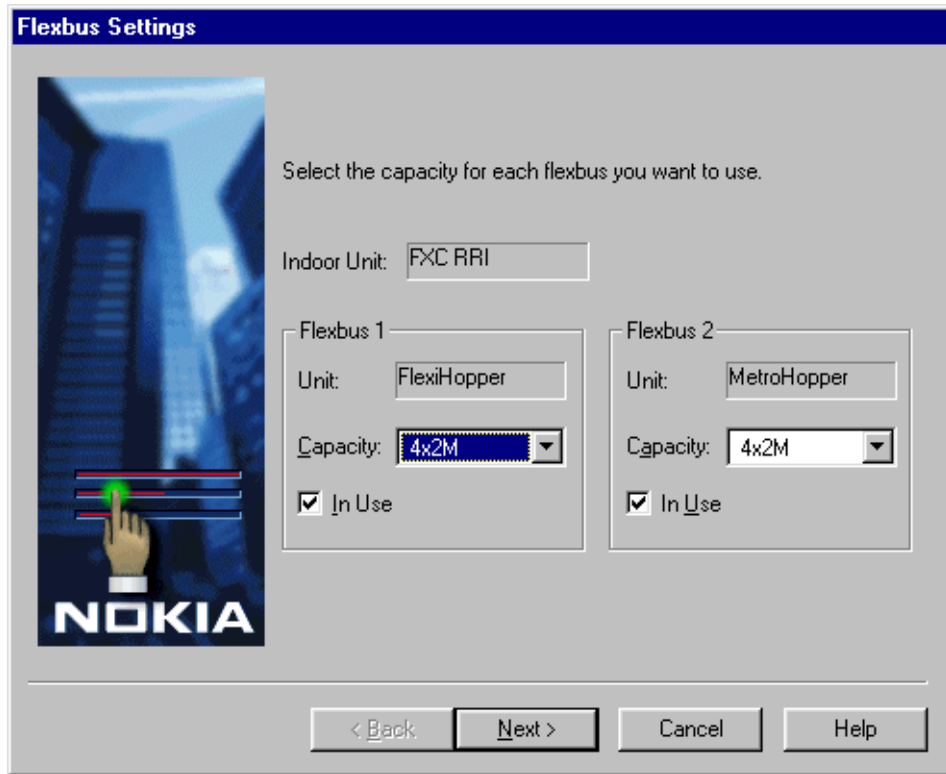59 (78)

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Figure 27.   Flexbus settings with FXC RRI card

2.   The *Flexbus 1 - FlexiHopper Settings* page appears on the screen. The
      options on the page depend on the outdoor unit connected to the interface.
      The settings for the FlexiHopper outdoor unit are presented in Figure 28.
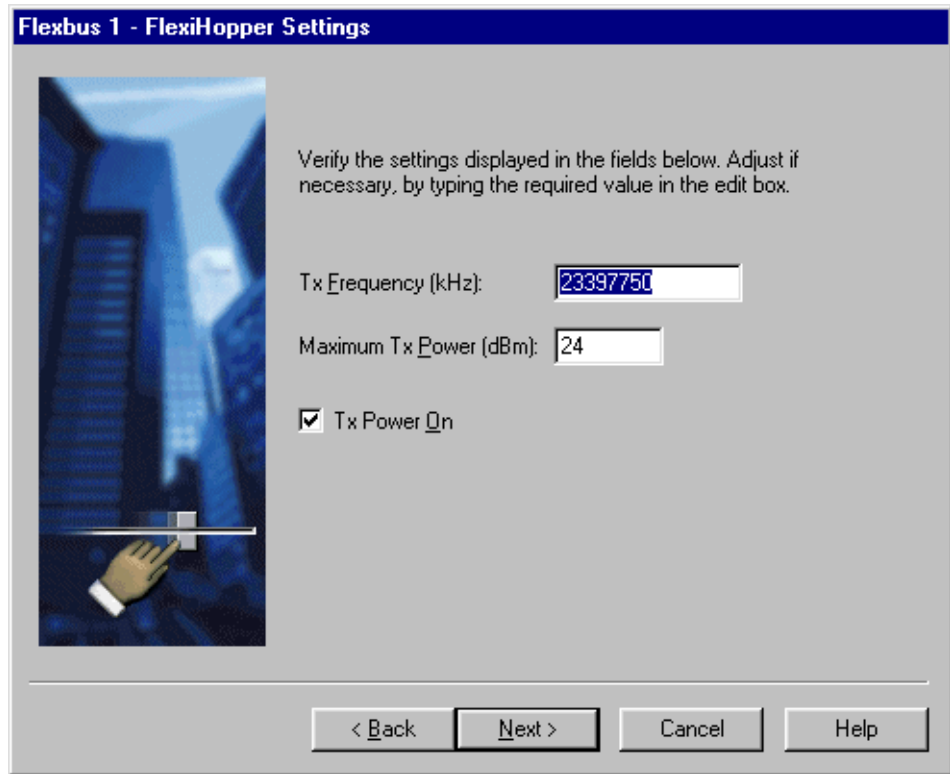
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Figure 28. Flexbus 1 settings for the FlexiHopper outdoor unit

The corresponding settings for the MetroHopper outdoor unit are presented in Figure 29.
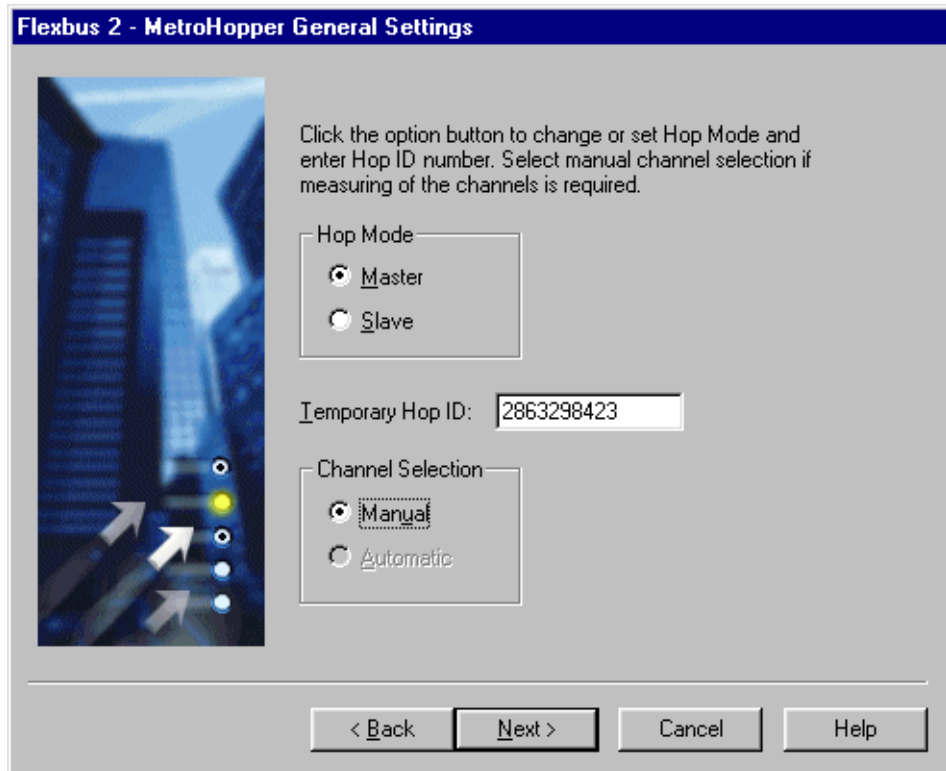
Figure 29.   Flexbus 2 settings for the MetroHopper outdoor unit

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Note

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

Select 'Manual' under 'Channel Selection' on the *Flexbus 2 - MetroHopper General Settings* page. When you click NEXT, the *Flexbus 2 - MetroHopper Manual Channel Selection* page appears (see Figure 30).

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.
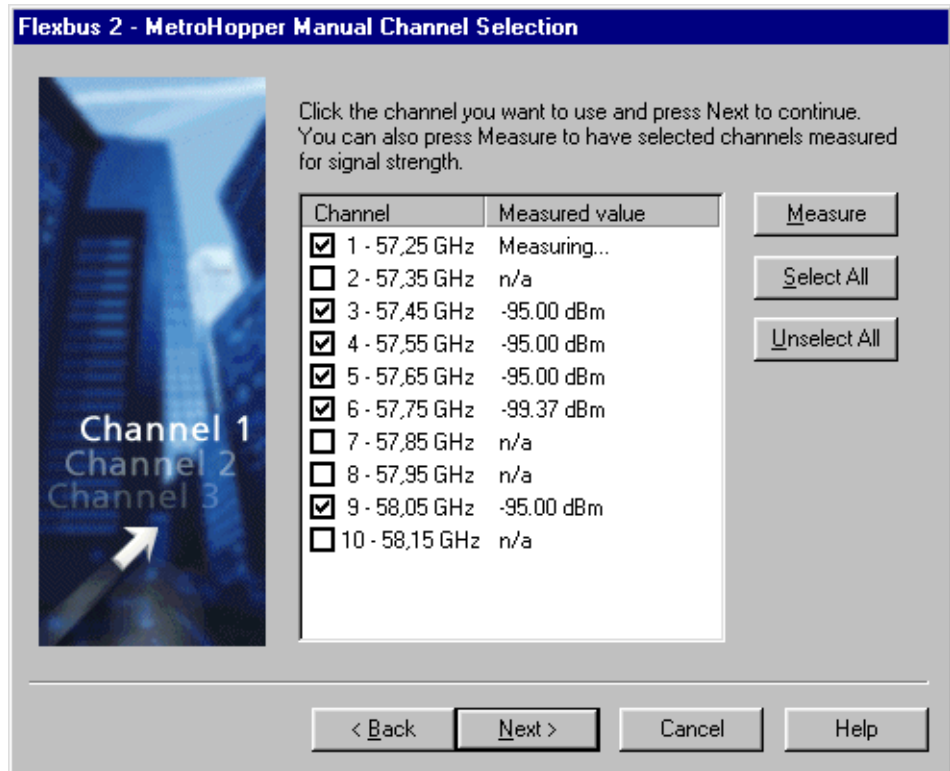

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Figure 30.   MetroHopper manual channel selection

Click NEXT to continue.

Note

If the transmission unit type is FC RRI, there are no Flexbus 2 settings. Proceed to Step 4.

3.   If the transmission unit type is FXC RRI, define the Flexbus 2 settings for the outdoor unit as described in Step 2.

4.   The *Summary of Commissioning Settings* page displays the settings you have defined for commissioning the radio(s).
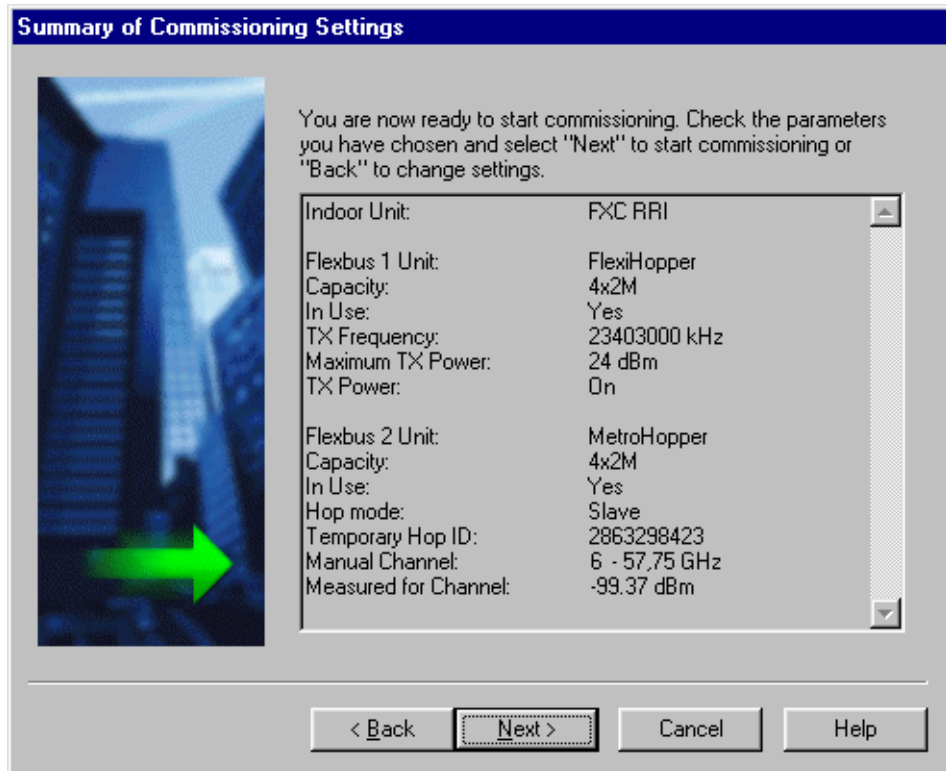
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Figure 31.   Summary of commissioning settings

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

5.   The *Monitoring Hop* page displays the status of the hops during and after commissioning. The 'Status' is shown as 'Ready' if the commissioning was successful. If the commissioning fails for some reason, the 'Status' field gives a short description of the failure (such as 'No far end found').
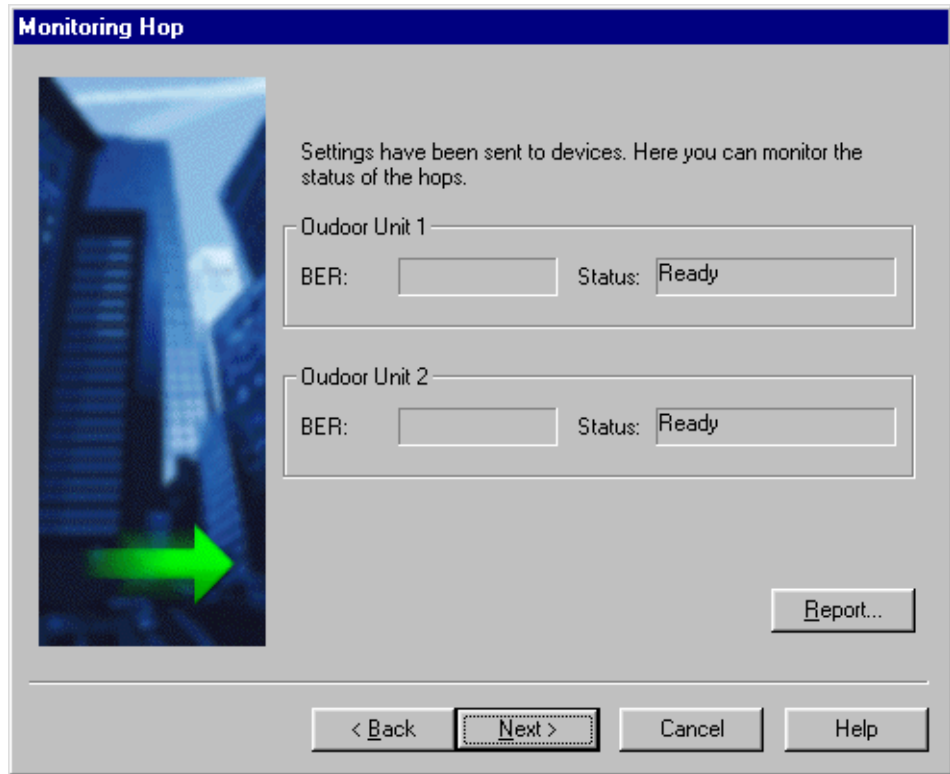
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Figure 32.   Monitoring hop status

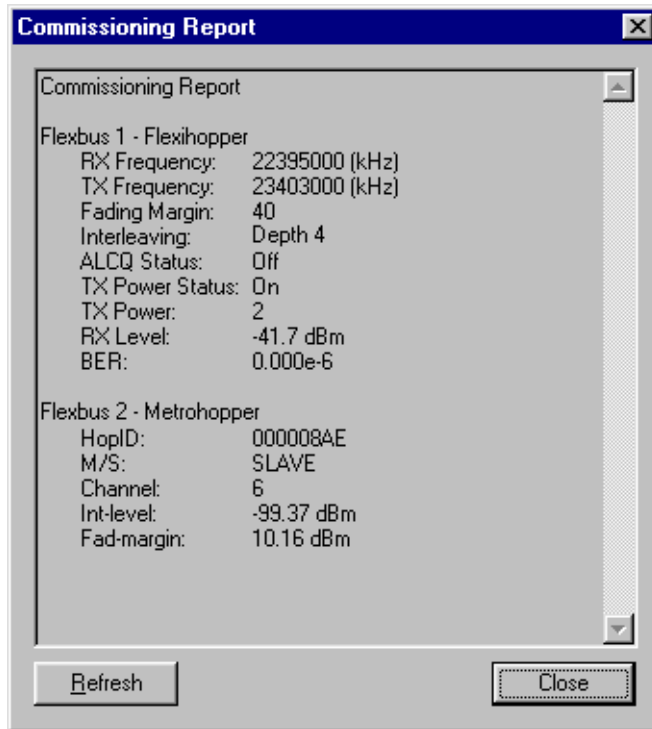Click REPORT to see a more detailed commissioning report for each outdoor unit (see Figure 33).

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Figure 33.   Commissioning report for outdoor units

Click NEXT on the *Monitoring Hop* page to return to the BTS
Commissioning Wizard.

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9 Cross-connections

Cross-connections need to be created for routing transmission capacity to the other BTSs in a chain or loop transmission topology.

Note

Cross-connections are only supported with the FXC type transmission units.

Note

The BTS has to be commissioned before creating the cross-connections.

9.1 Creating cross-connections

Cross-connections are created with the E1/T1 Manager (Transmission Unit Manager) application in Nokia BTS Manager.

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

Creating bi-directional cross-connections:

1.	Open E1/T1 Manager by selecting TRANSMISSION | OPEN on the BTS Manager menu bar. The E1/T1 Manager is launched and the BTS Manager session terminates.

2.	Select CONFIGURATION | CROSS-CONNECTIONS on the E1/T1 Manager menu bar. The *Cross-connections* window opens, as shown in Figure 34.
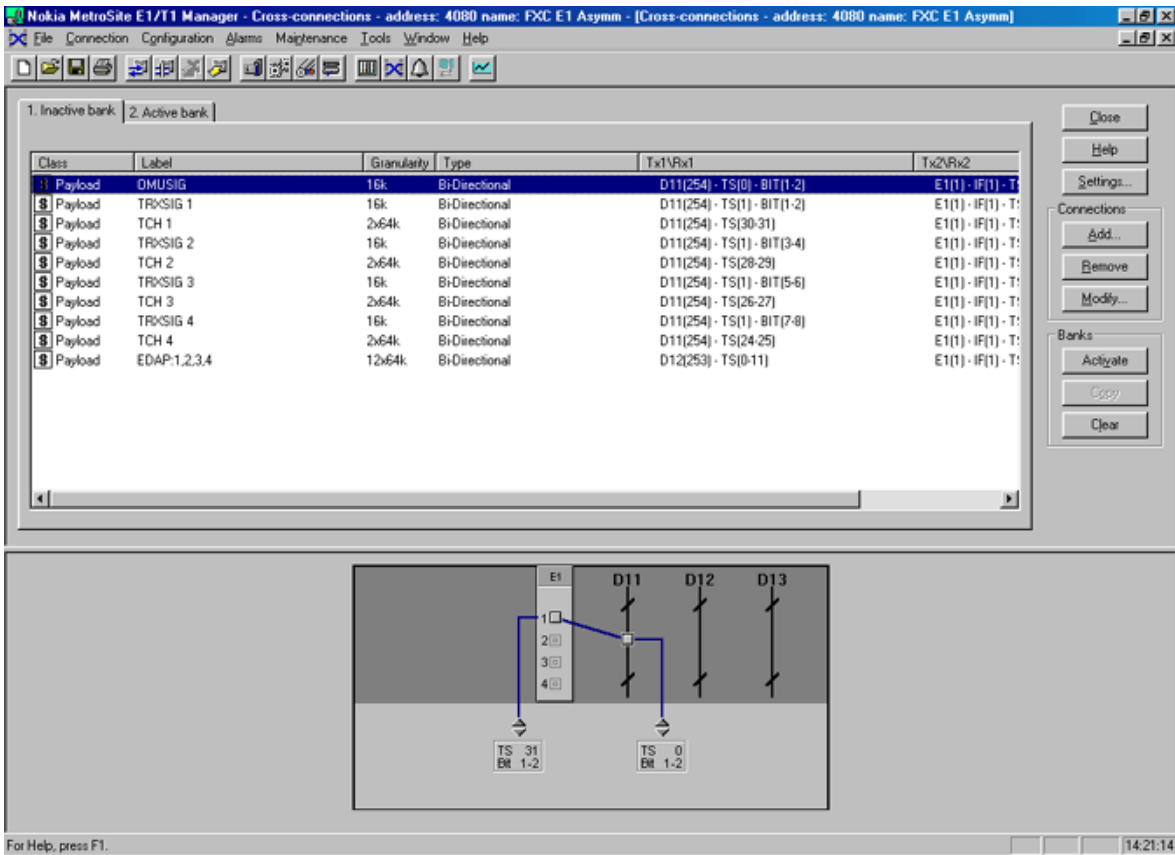
Figure 34.   Cross-connections window in E1/T1 Manager

3.   Click on the 'Inactive bank' tab to open the inactive bank page.

4.   Click the 'Connections' ADD button to open the Add Cross-Connection Wizard - TX1/RX1 dialogue box.

5.   Select the desired interface by clicking the interface symbol.

6.   Define the following settings according to your cross-connection plan:

   •   Label (the 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).

   •   Cross-connection class.

   •   Timeout.

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7. Click the NEXT button in the wizard to open the TX2/RX2 dialogue box.

8. Select the next interface, such as Interface 2.

9. Define the settings for this second interface and click NEXT.

10. The *Overview* dialogue box will open. Depending on the type of cross-connection, various fields will be enabled for defining the cross-connection parameters according to your cross-connection plan. For more information on the parameters, see the on-line Help in E1/T1 Manager.

    Click FINISH.

11. The Add Cross-connection Wizard will close and you will return to the *Cross-connections* window. The new cross-connection appears in the list in the upper part of the window.

12. Activate the bank by clicking the 'Banks' ACTIVATE button. Click YES when the E1/T1 manager asks you to confirm the operation.

13. Repeat Steps 1 - 12 for other types of cross-connections.

14. Quit the transmission unit manager by clicking the CLOSE button. Nokia BTS Manager starts again automatically.

Editing a bank

You can start to edit existing settings in an inactive bank by double-clicking the particular connection in the cross-connection list view in the *Cross-connection* window or by selecting the connection and choosing the EDIT command on the pop-up menu (which appears when you right-click the mouse).

If you have activated the bank, you need to copy the cross-connection information to the inactive bank for editing because active banks cannot be edited. The COPY command also is available in the pop-up menu.

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10 Commissioning Report

At the end of the commissioning procedure, the BTS Commissioning Report is saved as a file on the PC hard disk. See Figure 12 for an example of saving a Commissioning Report at the end of the BTS Commissioning Wizard procedure. The report is an ASCII text file that you can open and check with any word processor software, such as Microsoft Notepad.

The BTS Commissioning Report provides the following information:

- Report title, date and time, user name

- Network time

- BTS logical configuration

- Telecom status

- BTS HW report

- BTS SW report

- EAC input test report

- EAC output test report

- TS allocation report

- TRX test report

- Abis test report

- BTS alarm test report

- External TREs

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11 Troubleshooting and fault reporting

In the case of a failure in the commissioning procedure, check if there is a corresponding alarm in the *Alarms* window in Nokia BTS Manager (see the *BTS Alarm Descriptions* document in the Nokia MetroSite EDGE Base Station SW release binder). Also, you may check the cause of a failure from the commissioning report.

The commissioning procedure may fail for the following reasons:

- The Abis cables are not properly connected (the transmission unit LED will not show green).

- The pre-configuration failed at the BSC. For example, the BCF and TRX objects were not created.

- PCM time-slot allocations are incorrect. The parameters at the BSC and on the site are not the same. Run 'Undo Commissioning' and redo commissioning with the correct parameters.

- The PCM port is not activated at the BSC.

- The transmission path is incorrectly configured. Check cross-connections.

- The CRC and/or interface mode settings for the E1/T1 card are incorrect. In BTS Manager, choose LIF SETTINGS on the TRANSMISSION menu, and check that the 'CRC in Use' and 'Interface Mode' settings are correct for the interface.

Note

Before starting to re-commission the BTS, first run the 'Undo Commissioning' procedure. If the Commissioning Wizard has stopped, click CANCEL to abort the commissioning procedure.

Report all damages, failures or faults to Nokia using the Failure Report Form provided by Customer Services (CS).

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Appendix A. LMP connector description

Figure 35 below describes the connectors and pin order of the LMP cable which connects the Nokia BTS Manager PC to the BTS. The cable can be ordered from Nokia.
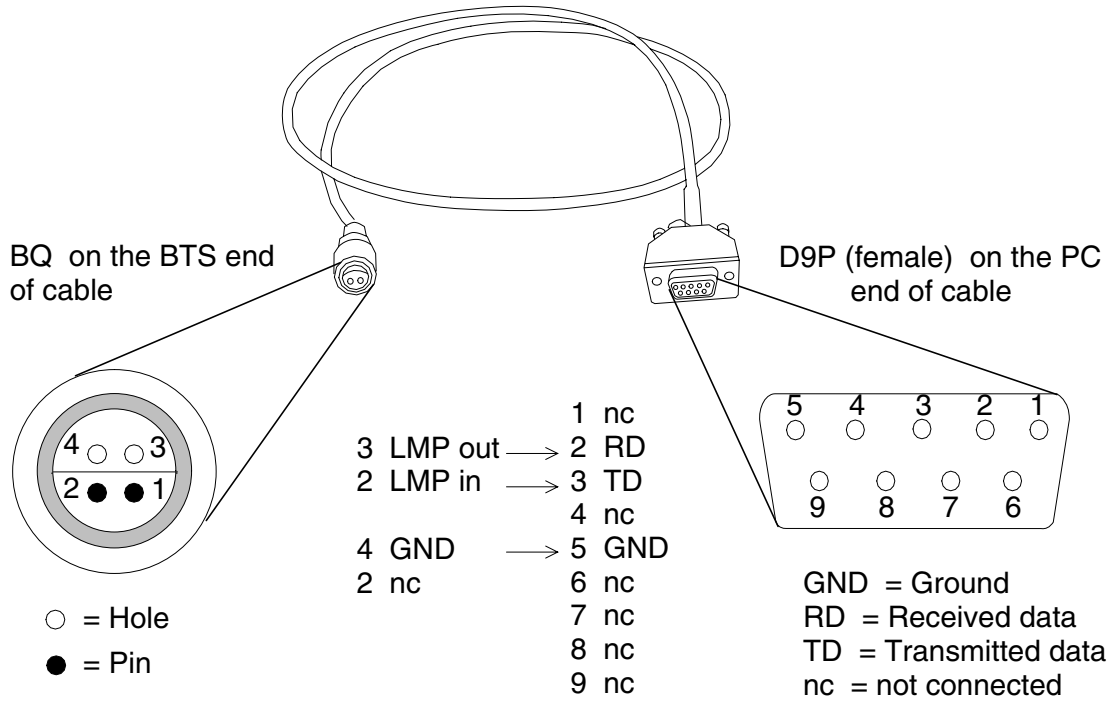
BQ on the BTS end
of cable

D9P (female) on the PC
end of cable

○ = Hole

● = Pin

1 nc
3 LMP out ⟶ 2 RD
2 LMP in ⟶ 3 TD
4 nc
4 GND ⟶ 5 GND
2 nc   6 nc
7 nc
8 nc
9 nc

GND = Ground
RD = Received data
TD = Transmitted data
nc = not connected

Figure 35.   LMP cable connectors

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