User’s Manual for OMT, Remote OMT and Remote OMT over IP

Due to continued progress in methodology, design and manufacturing the contents of this document are subject to revision without notice. Ericsson assumes no legal responsibility for any error or damage resulting from the use of this document.

1 Preface 6
2 Getting Started 8
2.1 Prior knowledge 8
2.2 Install the OMT software 8
2.3 Install the Remote OMT software and hardware 8
2.3.1 PCM communication boards 9
2.3.2 Installing a Thor-2-PCI board 9
2.3.3 Installing Thor-2-PCI board driver 9
2.3.4 Special handling for the Thor-2-PCI-Plus board 9
2.3.5 Configuration of the Thor-2-ISA board 10
2.3.6 Installing the Thor-2-ISA board driver 11
2.3.7 Remote OMT with Thor-2-ISA board under Windows 2000 11
2.4 Uninstall the OMT software 11
3 Learning OMT 13
3.1 OMT main window 13
3.1.1 Object 15
3.1.2 Operation 16
3.1.3 The different main menus 17
3.2 OMT states 18
3.2.1 State relations 19
3.3 View 20
3.3.1 System view 21
3.3.2 Cabinet view 22
3.3.3 Radio view 23
3.3.4 Object view 24
4 Using OMT 25
4.1 Start the OMT 25
4.1.1 The Exit command 26
4.2 Operations on objects 27
4.2.1 Make the Changes Permanent 27
4.2.2 Connect OMT 28
4.2.3 Connect Remote OMT 29
4.2.4 Connect Remote OMT over IP 30
4.2.5 Disconnect 32
4.2.6 Read IDB 33
4.2.7 Open IDB 34
4.2.8 Install IDB 35
4.2.9 Save IDB 36
4.2.10 Create IDB 37
4.2.11 Define Present RUs 47
4.2.12 Export Site Specific Data 48
4.2.13 Import Site Specific Data 49
4.2.14 Display Site Specific Data 51
4.2.15 Display Information 52
4.2.16 Display Status 54
4.2.17 Display Paging Queue Status 55
4.2.18 Display TEI Values 56
4.2.19 Display Software Information 57
4.2.20 Display Cable List 58
4.2.21 Display Inventory List 59
4.2.22 Display RBS Software Download 60
4.2.23 Display Battery Log 62
4.2.24 Monitor Information 64
4.2.25 Define Alarm Inlets 68
4.2.26 Define Antenna Supervision 70
4.2.27 Define TEI 71
4.2.28 Define Transmission 72
4.2.29 Define Hardware Information 73

4.2.30 Define Loss ... 75
4.2.31 Define Delay ... 76
4.2.32 Define GPS Parameters ... 77
4.2.33 Define ESB Delay List ... 78
4.2.34 Define TF Compensation ... 80
4.2.35 Define TF Holdover Mode ... 82
4.2.36 Define RBS Identity ... 83
4.2.37 Define Climate ... 84
4.2.38 Define VSWR Limits ... 85
4.2.39 Set CDU Power Supervision ... 86
4.2.40 Change Local/Remote State ... 87
4.2.41 Reset ... 88
4.2.42 Display Log ... 89
4.2.43 Set Measurement Reports On/Off ... 90
4.2.44 Set SSQIU On/Off ... 91
4.2.45 Display Faulty RUs ... 92
4.2.46 Save Field Configuration ... 93
4.2.47 Open Field Configuration ... 94
4.2.48 Display Field Configuration Information ... 95
4.2.49 Attach Field Configuration Information ... 96
4.2.50 Define TNOM ... 97
4.2.51 Display TNOM Values ... 98
4.2.52 Calibrate Oscillator ... 99
4.2.53 Define ALNA/TMA ... 100
4.2.54 Define Battery Parameters ... 102
4.2.55 Define System Voltage ... 104
4.2.56 Load Flash Card ... 105
4.2.57 Display Detected HW Information ... 107
4.2.58 Check IDB ... 108
4.2.59 Display Battery Backup Time Test Parameters ... 109
4.2.60 Define Battery Backup Time Test Parameters ... 110
4.2.61 Display Battery Backup Time Test Result ... 111
4.2.62 Change Battery ... 112
4.2.63 Display RX/TX Antenna Mapping ... 113
4.3 Tools ... 114
4.3.1 Wizards ... 114
4.3.2 Options – Local OMT ... 115
4.3.3 Options – Remote OMT and Remote OMT over IP ... 116
4.4 Help ... 117
4.4.1 Help menu contents ... 117
4.4.2 Contents ... 117
4.4.3 Context help ... 117
4.4.4 About OMT ... 117
5 Appendix ... 118
5.1 System software and hardware requirements ... 118
5.2 Cable specifications ... 119
5.2.1 OMT cable ... 119
5.2.2 Remote OMT cables ... 119
5.2.3 Remote OMT over IP cables ... 119
5.3 Contents of the Display Information Window ... 120
5.4 Contents of the Display Status Window ... 123
5.5 Monitor Description ... 128
5.6 RBS 2000 Configuration Parameters ... 146
5.6.1 Define ALNA/TMA Parameters ... 146
5.6.2 Define Alarm Inlets ... 150
5.6.3 Define RX-Imbalance Supervision Parameters ... 156
5.6.4 Define Battery Backup Time Test Parameters ... 159
5.6.5 Define Battery Parameters ... 162
5.6.6 Define Climate ... 166
5.6.7 Define Delay ... 167

5.6.8 Define GPS Parameters 169
5.6.9 Define Hardware Info 171
5.6.10 Define Loss 175
5.6.11 Define Present RUs 176
5.6.12 Define RBS Identity 178
5.6.13 Define System Voltage 179
5.6.14 Define TEI 180
5.6.15 Define TF Compensation 181
5.6.16 Define TF Holdover Mode 186
5.6.17 Define TNOM 187
5.6.18 Define Transmission 190
5.6.19 Define VSWR Limits 196
5.7 Terminology 200
6 Glossary 202
7 Index 207

1 Preface

The OMT, Operation and Maintenance Terminal, is a powerful PC application providing efficient aid for the operation and maintenance of RBS 2000 base stations. The OMT supports all RBSs in the RBS 2000 family and is used locally at the RBS site. It connects via a serial cable from the OMT PC to a port on the RBS.

The main areas of OMT usage are RBS 2000 configuration and fault localization.

Other important features are:

- An easy-to-use graphical user interface.
- On-line help.

The Remote OMT and the Remote OMT over IP have the same functionality as the OMT but can be used remotely. The Remote OMT utilizes the regular site transmission via the BSC for communication with the RBS. The Remote OMT over IP can connect to any RBS 2000 in the network from any remote location with IP access to the serving BSC.

The ability to perform OMT operations remotely yields a number of benefits:

- Limited presence at site is needed.
- Faster site configuration.
- Easier site surveillance.

The OMT, the Remote OMT, and the Remote OMT over IP are different products. The Remote OMT and the Remote OMT over IP does not replace the OMT, they are complements.

This manual describes the contents and functions of the OMT, the Remote OMT and the Remote OMT over IP. It contains instructions on how to perform all functions.
For information and instructions about RBSs, refer to the RBS manuals.

Unless otherwise stated, all information about the OMT in this manual is also valid for the Remote OMT and the Remote OMT over IP.

The manual is organized in five different parts.

Preface	General information.
Getting Started	General information and installation notes.
Learning OMT	A general overview of OMT usage.
Using OMT	Description of the different OMT functions.

Appendix	Requirements, Specifications, Abbreviations, and Terminology.

We hope that you will be satisfied with the OMT, the Remote OMT, and the Remote OMT over IP.

2 Getting Started

This chapter describes the required prior knowledge for OMT users, and how to install and uninstall the software.

2.1 Prior knowledge

- Basic Microsoft Windows™ knowledge.
- Good knowledge and understanding of the RBS technology.
- Basic knowledge of the BSC technology when the Remote OMT is used.

2.2 Install the OMT software

Before installation, make sure the system software and hardware requirements are fulfilled. For more information about these requirements, see the readme file.

The OMT is installed by executing the installation file: \OMT\ Setup.exe
found on the OMT installation CD-ROM. All OMT software on the CD-ROM is then installed to a specified or default (C:\Program Files\Ericsson AB\<Type> OMT <XXX>) directory on the hard disk.

Do as follows:

Insert the OMT installation CD-ROM into the CD-ROM drive.

Run the OMT installation program by browsing to and double clicking the \OMT\ Setup.exe file or by executing it from the Run... alternative in the Start menu.

Follow the setup instructions on screen.

The installation creates a new Program Menu entry for the OMT, from which the OMT can be started. When upgrading from an earlier version of the OMT, the new version is installed in another folder and a new Program Menu entry is created.

2.3 Install the Remote OMT software and hardware

Before installation, make sure the system software and hardware requirements are fulfilled. For more information about requirements, see the readme file. Follow the usual precautions regarding the handling of electronic components.

Be aware of the risk of damaging the sensitive electronics on the board with static electricity discharges. Use anti-static protection devices while handling the board.

For further instructions about the connection of a Remote OMT to the BSC, refer to the Operational Instruction *Remote Operation and Maintenance Terminal*, Connect document number: 3/154 31-APT 210 09 Uen.

2.3.1 PCM communication boards

There are two types of PCM communication boards that can be used with the Remote OMT software, Thor-2-PCI board and Thor-2-ISA board:

The Thor-2-PCI board is a dual T1/E1 PCI interface card for data and voice applications.

The Thor-2-ISA board is a T1/E1 Integrated Services Digital Network (ISDN) and Frame Relay interface card for Personal Computers.

For more information regarding the PCM Communication boards please visit http://www.odints.com/products.htm and select appropriated PCM board from the product list.

For further instructions about the connection of a Remote OMT to the BSC, refer to the Operational Instruction Remote Operation and Maintenance Terminal, Connect, document number: 3/154 31APT 210 09 Uen.

2.3.2 Installing a Thor-2-PCI board

Install the Thor-2-PCI board in a free PCI slot. Connect the Remote OMT cable to the board on the PC where the Remote OMT is installed.

For more information regarding on how to install the PCI board, please refer to the following document on the OMT installation CD-ROM:

\Document\InstallationGuideForOTXPCIAdapters.pdf.

2.3.3 Installing Thor-2-PCI board driver

For information regarding how to install the Thor-2-PCI driver, please refer to the following document on the OMT installation CD-ROM:

\Document\InstallationGuideForOTXPCIAdapters.pdf.

The driver software can be found at the OMT intallation CD-ROM in the following directory:

\HW Drivers\THOR-2-PCI\

It is very important that the appropriate driver is used, see table below.

Board type	Supported driver for Windows 2000/XP
Thor-2-PCI	1.0-P120
Thor-2-PCI-Plus	2.25.1.0

2.3.4 Special handling for the Thor-2-PCI-Plus board

If the Thor-2-PCI-Plus board is used the following must be done after the driver and the Remote OMT SW has been installed:

- Copy the file C:\WINDOWS\system32\OtxHwDll.dll to the directory where you have installed the Remote OMT.

  Note: To enable coexistence of other OMT types on the same computer as the Remote OMT, the OtxHwDll.dll must also be copied to those installation directories.

- Select Run in the Windows Start menu. Open the program “regedit” (Registry Editor). In the Registry Editor add a DWORD value in the directory “HKEY_CURRENT_USER\Software\Ericsson AB\PCS\ Communication\PCM\”. The new DWORD value shall have the name “Remote OMT Board Type” and the value 1.

When installing the Remote OMT SW the “Remote OMT Board Type” value in Windows Registry must either not exist or have a value that differs from 1.

2.3.5 Configuration of the Thor-2-ISA board

The Thor-2-ISA board is configured by setting a number of switches on the board according to the table below.

For more information regarding the configurations, see the manual for the board on the OMT installation CD-ROM:

\Documents\UserGuideForThor2-Rev_1_0.pdf
\Documents\UserGuideForThor-2-ISA_Rev_1_3.pdf

Function	Switch identity	Switch position
Board number	SW4	#7 - On
		#8 - On
I/O base address	SW4	#1 - On
		#2 - On
		#3 - On
		#4 - Off
		#5 - On
		#6 - Off
Line termination mode: T1 (100 Ω at 18 dB)	SW1&2	#1 - Off
		#2 - On
		#3 - Off
		#4 - On
		#5 - Off
		#6 - Off
		#7 - Off
		#8 - Off
Line termination mode: E1 (120 Ω at 6 dB)	SW1&2	#1 - Off
		#2 - Off
		#3 - Off
		#4 - Off

Function	Switch identity	Switch position
		#5 - On
		#6 - On
		#7 - Off
		#8 - On

After configuring the board, connect the Remote OMT cable to the installed Thor-2-ISA board.

2.3.6 Installing the Thor-2-ISA board driver

For information about how to install the Thor-2-ISA driver, refer to the following documents on the OMT installation CD-ROM:

\Documents\UserGuideForThor2-Rev_1_0.pdf

\Documents\UserGuideForThor-2-ISA_Rev_1_3.pdf

The driver software can be found on the OMT installation CD-ROM in the following directory:

\HW Drivers\THOR-2-ISA\

It is very important that the appropriate driver is used, as shown in the table below.

Board type	Supported driver for Windows 2000
Thor-2-ISA	1.24.3

2.3.7 Remote OMT with Thor-2-ISA board under Windows 2000

Before starting the Remote OMT, start the Thor2 driver:

1. From the command prompt run net start with Thor2 as parameter: ">net start Thor2".

2.4 Uninstall the OMT software

From the Start menu:

1 Select Settings | Control Panel.

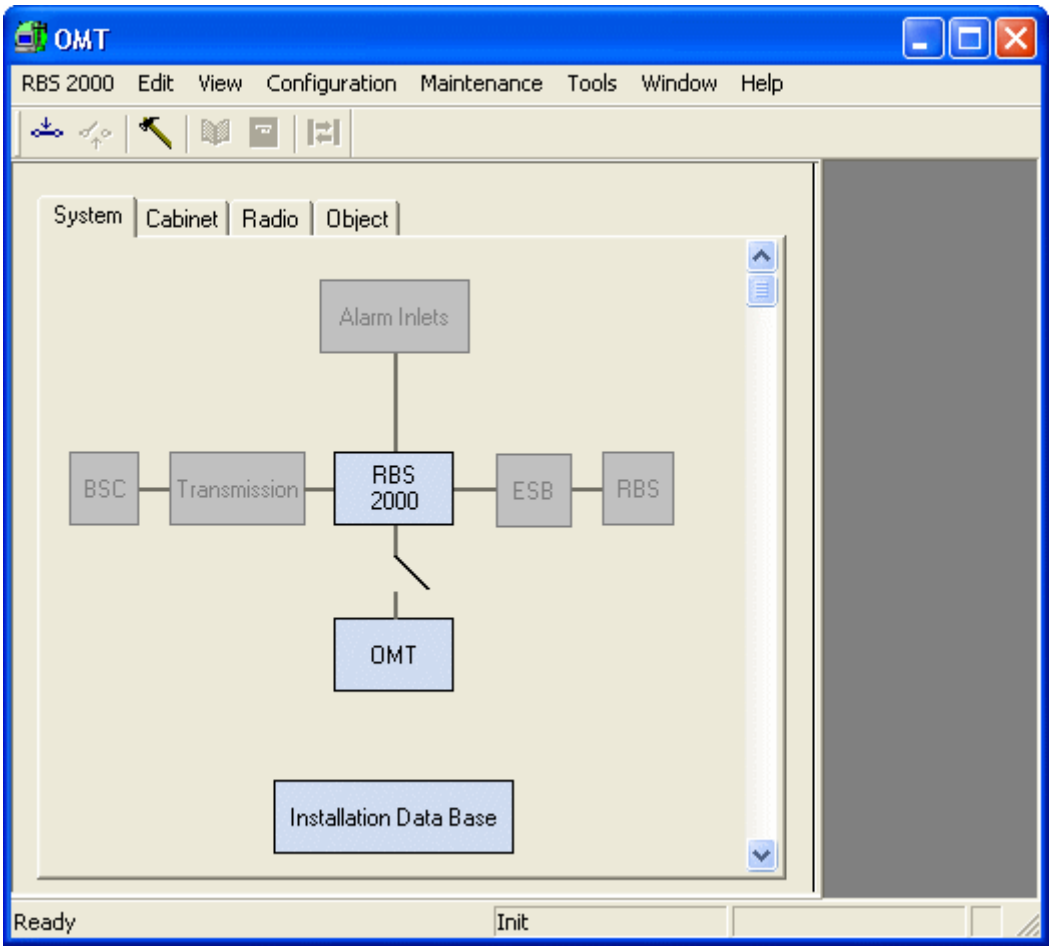
2 Click on Add/Remove Programs.

3 Select the OMT to be uninstalled and click on the Add/Remove button.

3 Learning OMT

This chapter gives a general overview of the OMT application. It shows the relationship between objects, operations, and states.

3.1 OMT main window



The toolbar at the top of the OMT main window shows buttons for the most common operations.

- The Connect icon
- The Disconnect icon
- The Create IDB icon
- The Read IDB icon
- The Install icon
- The Define Present RUs icon

A tab panel in the OMT main window displays a graphical view. The tab panel consists of tabs called System, Cabinet, Radio, and Object.
Information windows are shown in the right pane, and several windows can be open at the same time.
The status bar at the bottom of the OMT main window shows the current OMT state, the name of the selected object, and a help text for the highlighted menu option.

3.1.1 Object

The System, Cabinet and Radio views consist of objects displayed in different colors.

Color	Description
Light blue	The object is present in the current configuration, but it is not selected.
Dark blue	The object is present in the current configuration and it is selected.
Striped light blue	The object is supported by the current configuration but is not present at the moment. The object is not selected.
Striped dark blue	The object is supported by the current configuration but is not present at the moment. The object is selected.
Light grey	The object is not supported in the current configuration. A light grey object cannot be selected.

Objects in the Object view are selectable similar to a normal browser.

Line-Style	Description
Solid	The object is located in the cabinet
Dotted	The object is located in another cabinet but is still part of the current configuration.

Note: The logical RU address and the physical RU address are not the same. For example, in the cabinet, a TRU is numbered according to its physical position i.e. 1, 2, 3, 4, 5 or 6. In the OMT , its logical address i.e.0, 1, 2, 3, 4 or 5 is used.

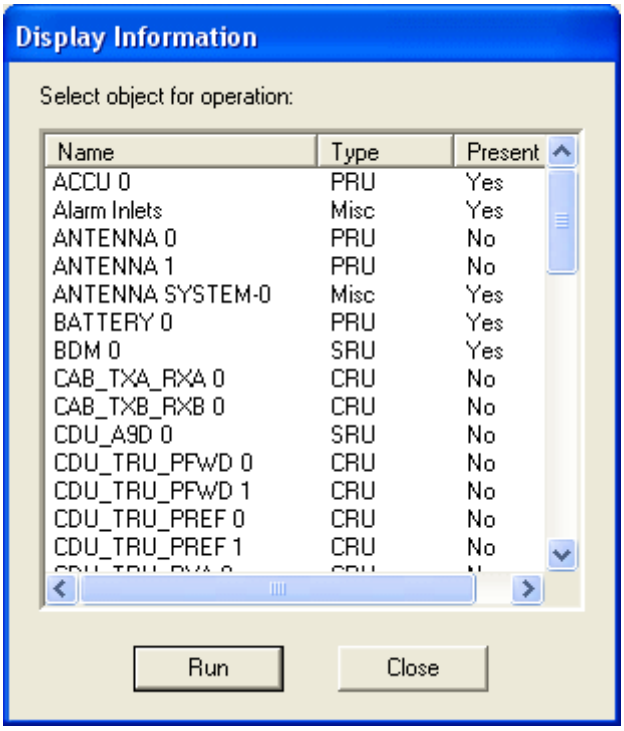
3.1.2 Operation

Every object has executable operations that vary depending on the object type. The operations that can be performed are either function-oriented or object-oriented. Operations in Connected state are not available for objects that are not present.

Function oriented:

1. **Select an operation from the main menu.**

   If several objects can support the operation, an object selection dialog box appears.



2. **Select object for operation.**
   Objects can be sorted by Name, Type, or Present state by clicking on the relevant column header.

3. **Click Run.**
   The dialog box or view for the operation appears.

Object-oriented:

1. **Select an object in a view.**

2. **Right click.**

3. **Select the operation in the context menu.**

3.1.3 The different main menus

Menu item	Functions/Content
RBS 2000	To connect/disconnect the OMT to/from the RBS: Connect Disconnect Exit
Edit	Copy Select All
View	The view menu enables the user to select different views: System view Cabinet view Radio view Object view
Configuration	The Configuration menu contains IDB-related operations: Create IDB… Install IDB Open IDB… Read IDB Save IDB… Save IDB as… Define Display Field Configuration Load Flash Card… Site Specific Data
Maintenance	Calibrate Oscillator… Change Local/Remote State… Check IDB Change Battery… Display Monitor… Reset… Set CDU Power Supervision… Set Measurements Reports On/Off… Set SSQIU On/Off…
Tools	Wizards… Options…
Window	Commands that are used to arrange windows and icons.
Help	The Help menu offers commands that display help pages for both the OMT application and the help tool.

3.2 OMT states

The OMT executes in one of five different states and the current state is displayed on the status bar.

The five different states are:

Init	By default, the OMT enters the Init state at startup. The OMT is not connected to the RBS and does not operate on any IDB.
Local IDB	The OMT is not connected to the RBS, but is operating on a local copy of the IDB. **Note:** To implement changes made in the IDB, the IDB must be installed in the RBS.
Connected (No IDB)	The OMT is connected to the RBS but has no access to any IDB. The Connected (No IDB) state should be seen as a transitional state.
Connected (Local IDB)	The OMT is connected to the RBS but operates on a local IDB copy. The Connected (Local IDB) state should be seen as a transitional state. **Note:** To implement changes made in the IDB, the IDB must be installed in the RBS.
Connected	The OMT is connected to the RBS and operates on its currently active IDB. The IDB has been read from the RBS to the OMT, or the local IDB copy has been installed in the RBS. **Note:** The IDB in the OMT is not automatically updated when the IDB in the RBS is changed.

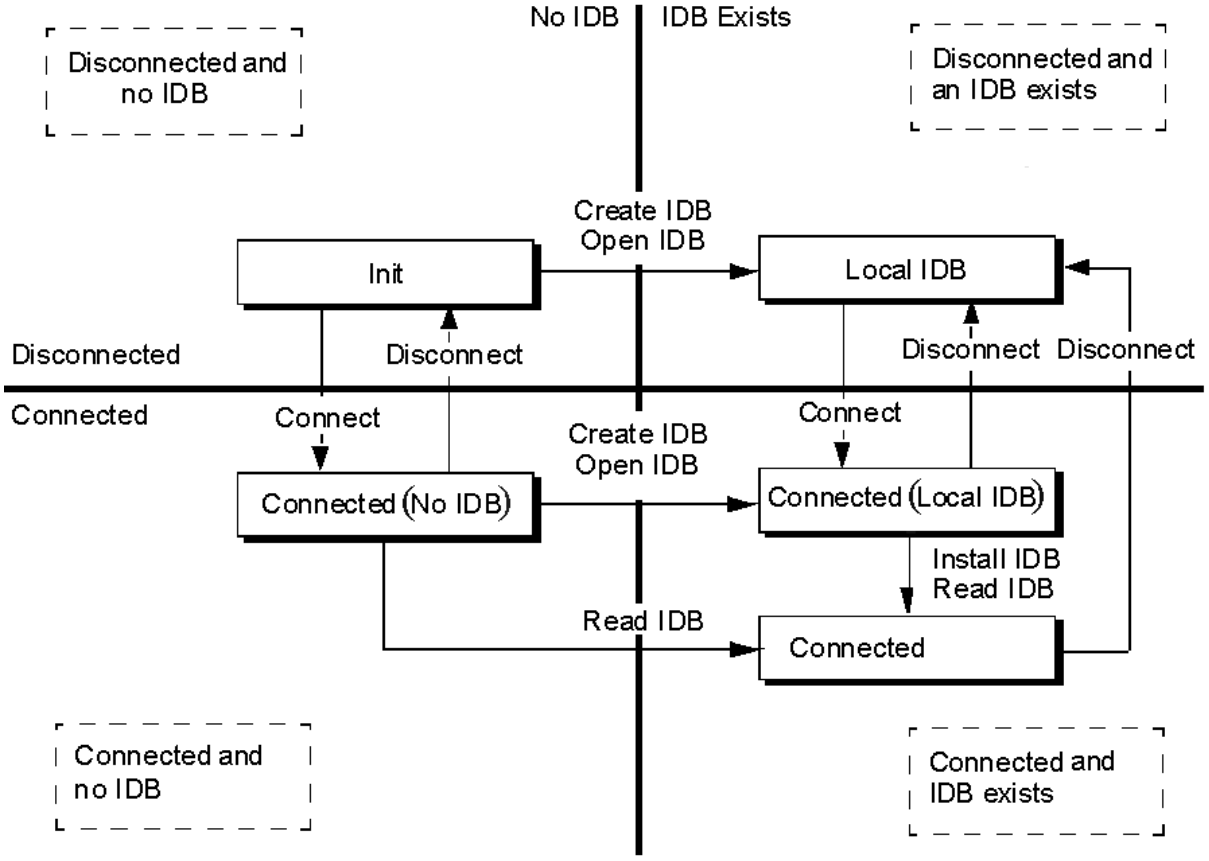
All operations are not available in every state. Menu items are displayed in light grey text when they represent operations that are not available in the current state or for the selected configuration.

3.2.1 State relations

The figure below shows the five different OMT states and how they interrelate.

In the graphical illustration, the arrows represent the changes in state when different commands are executed. For example, if the OMT is operating in stateInit and the Connect command is executed, the OMT state changes to theConnected (No IDB) state.
The state can also change when something unexpected happens, for example if the cable between the PC and the RBS is removed when the OMT is in the Connected state.

The two statesConnected (Local IDB) andConnected are in the same quadrant. These states differ in that in the Connected state the OMT operates on a copy of the RBSs IDB while in the Connected (Local IDB) state the OMT operates on a local IDB.



3.3 View

A view displays the RBS 2000 system graphically.

There are four types of views:

System view

Cabinet view

Radio view

Object view

A view contains several objects where each object represents a hardware unit or a logical unit, such as the Transmission, Alarm Inlets or objects in the Object view.

The number of objects in System view is fixed. The number of objects in the other views can change depending on the current IDB configuration.

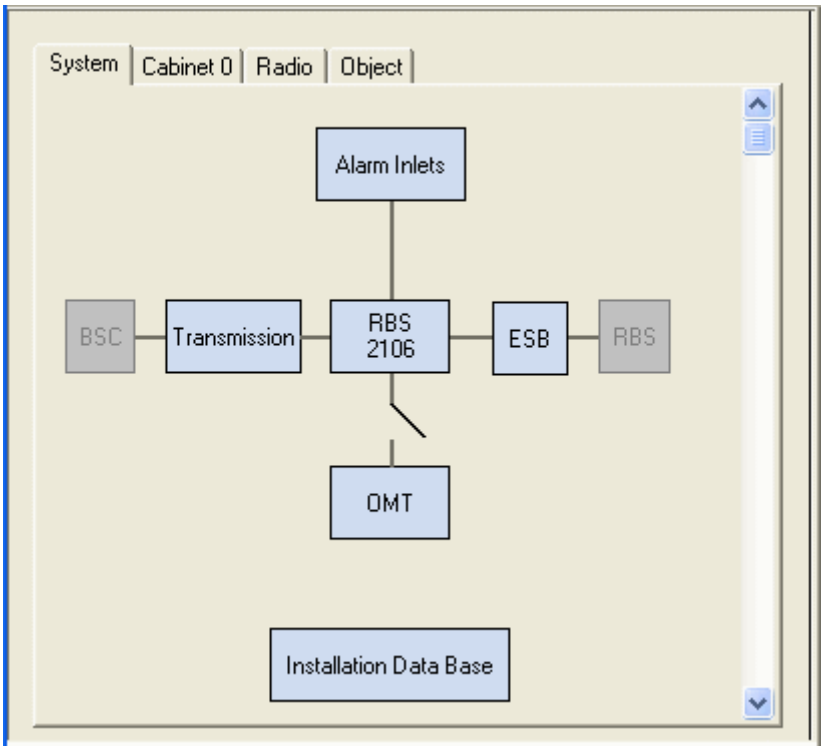
To select a view from the menu:

1. **View | a view.**

This command can also be executed by selecting the different views from the tabs in the OMT main window.

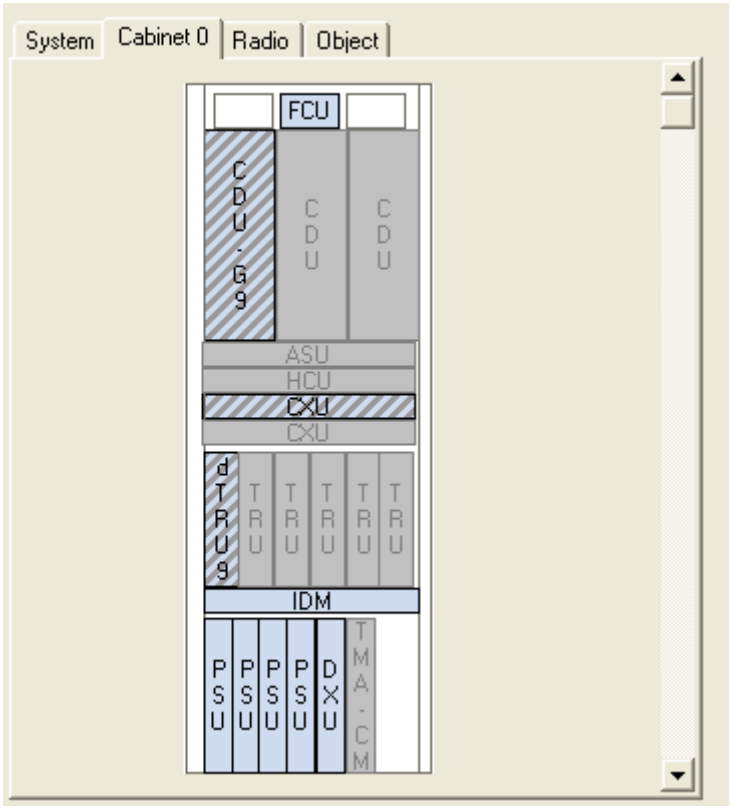
3.3.1 System view

The System view window shows an overview of the RBS and its environment. The System view is displayed when the OMT enters Init state.



3.3.2 Cabinet view

The Cabinet view displays the physical overview of the cabinet.

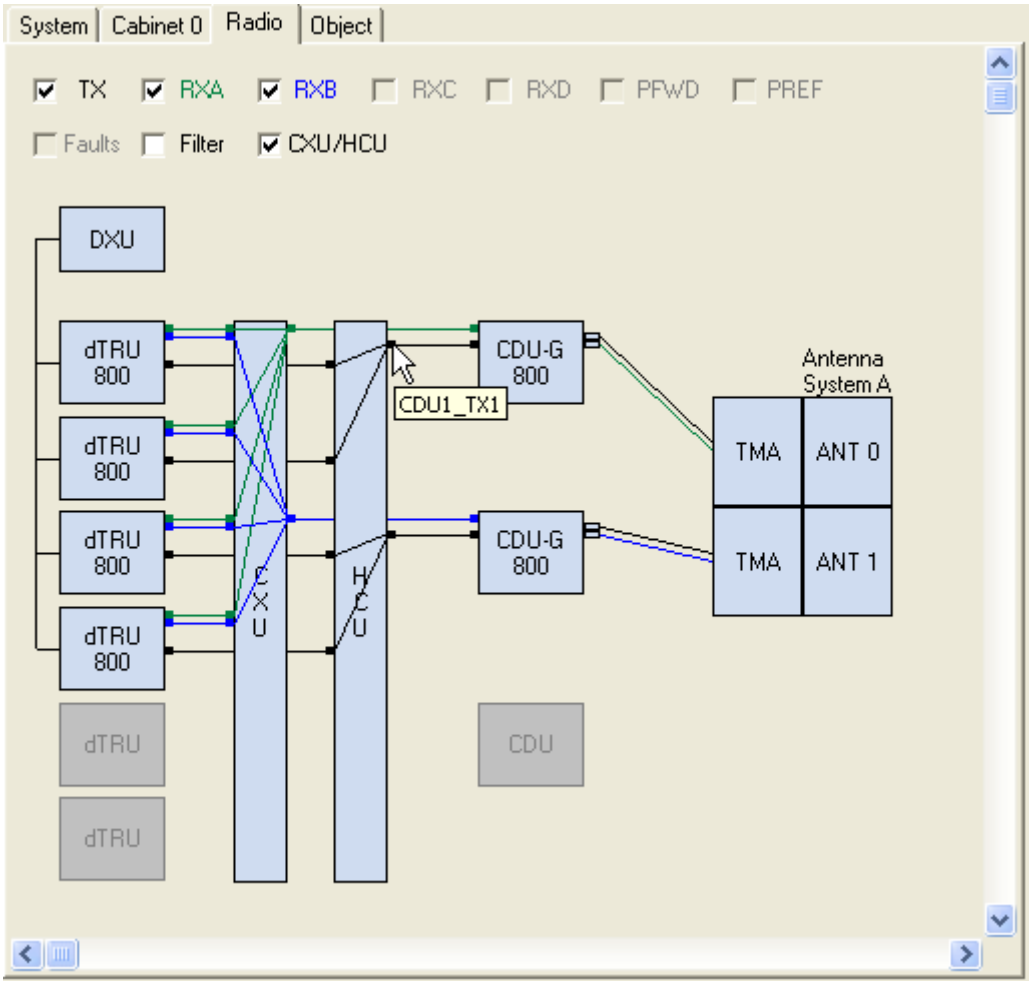


3.3.3 Radio view

The Radio View shows a schematic structure of the RBS where radio connections can be seen. Fault status monitoring can also be started in the Connected state. Faulty RUs are displayed in red and are not automatically updated when a fault is resolved.

The Filter function can be used to view only the enabled radio paths through the selected RU.

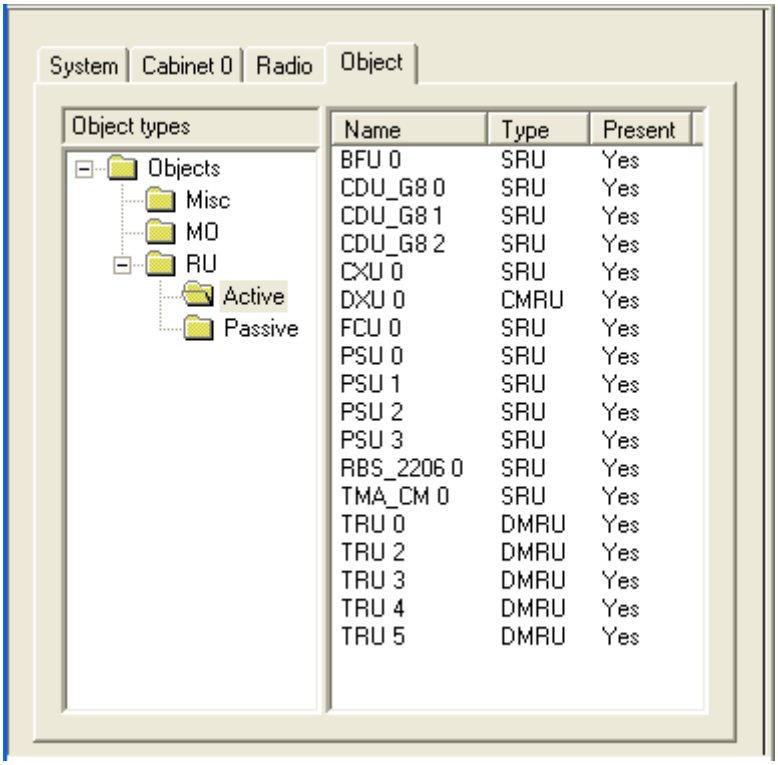
An example of a radio view for an OMT in Local IDB state is shown below



3.3.4 Object view

The Object view shows all available objects including the MO objects. The MO objects represent the BSC's model of the RBS.

The different object types are shown. A selected object shows its name, type and whether or not it is present. Objects can be sorted by Name, Type, or Present state, by clicking on the appropriate column header. By selecting an object and double clicking on the object name, information is shown in a separate window.



4 Using OMT

4.1 Start the OMT

Start the OMT as follows:

1. **Select the OMT program group from the Start | Program menu.**
2. **Select the OMT version to be started.**

4.1.1 The Exit command

The Exit command closes the OMT application.
Before closing the program, it is recommended to close all open windows and disconnect the OMT from the RBS.
Exit as follows:

1. **Select RBS 2000 | Exit.**

4.2 Operations on objects

4.2.1 Make the Changes Permanent

Changes made to the Local IDB are not synchronized with the IDB in the RBS until the IDB has been installed into the RBS. For more information regarding installation of an IDB, see section "Install IDB".

Save IDB to disk can be selected to save the new values before closing the OMT application. This must be done for parameters changed in Local IDB state.

4.2.2 Connect OMT

A physical cable must be connected between the OMT and the RBS (the DXU on Macro cabinets) before the OMT can monitor information or use the IDB in the RBS. See also Appendix, section "Cable specifications".

Valid OMT states:	Change to state:
Init	Connected (No IDB)
Local IDB	Connected (Local IDB)

Execute this command as follows:

1. **Select RBS 2000 | Connect.**

Note: If the OMT is older than the RBS SW, an information message is shown. The OMT is backward compatible and all functionality provided by older RBS SW is supported.

4.2.3 Connect Remote OMT

A physical cable must be connected between the BSC and the Remote OMT before the Remote OMT can monitor information or use the IDB in the RBS. See also Appendix, section "Cable specifications".

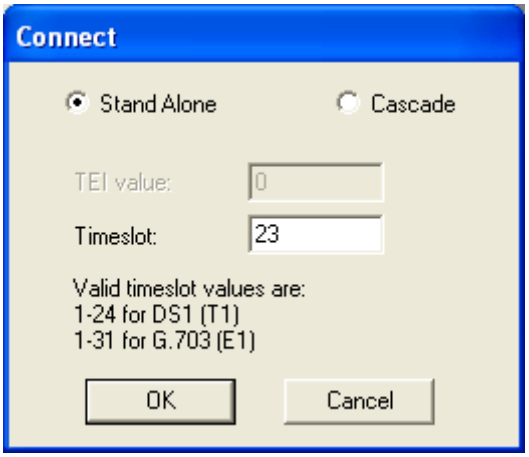
The RBS's address can be given when selecting one of several RBSs that are connected in a cascade chain. The address for the RBS is the CF TEI configured for the RBS.

Note: It is not necessary to enter CF TEI Value if the RBS is running standalone.

Valid OMT states:	Change to state:
Init	Connected (No IDB)
Local IDB	Connected (Local IDB)

Execute this command as follows:

1. **Select RBS 2000 | Connect**
   A Connect dialog box is displayed.



2. **Select Stand Alone or Cascade.**
   If Cascade is selected, then enter the RBS TEI value.

3. **Enter Timeslot.**
   The timeslot is used to communicate with the RBS.

4. **Confirm with OK.**
   Cancel closes the dialog box without making any attempt to connect.

Note: If the OMT is older than the RBS SW an information message is shown. The OMT is backward compatible and all functionality provided by older RBS SW is supported.

It may take up to four minutes for the Remote OMT to connect to the RBS.

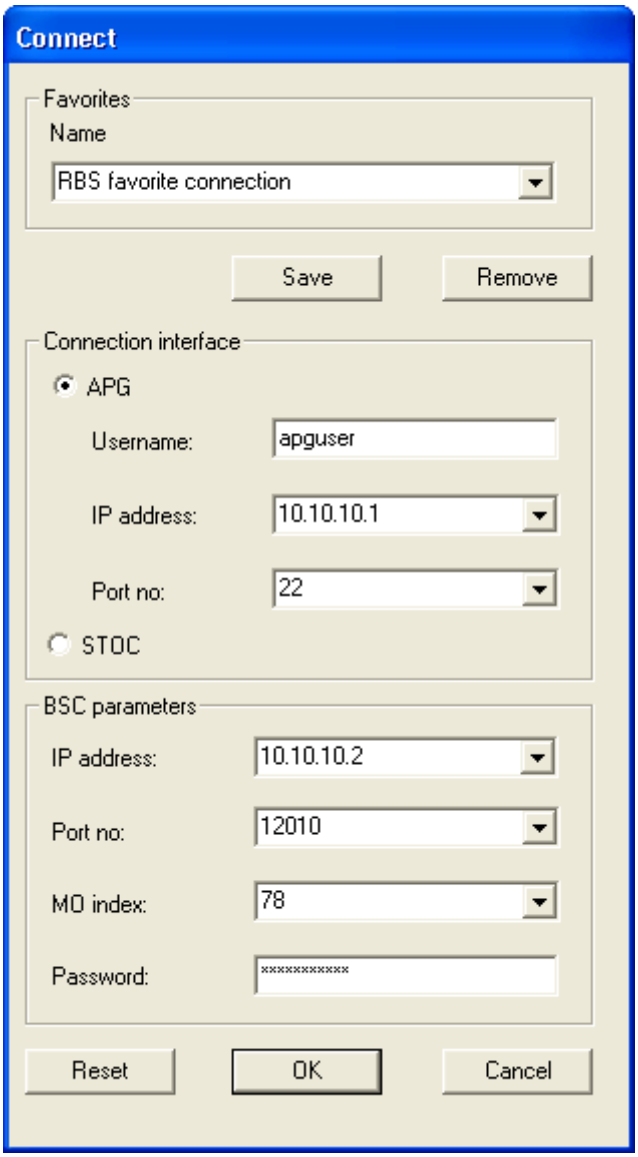
4.2.4 Connect Remote OMT over IP

The Remote OMT over IP must have IP access to the serving BSC.

Valid OMT states:	Change to state:
Init	Connected (No IDB)
Local IDB	Connected (Local IDB)

Execute this command as follows:

1. **Select RBS 2000 | Connect.**
   A Connect dialog box is displayed.



2. **Choose APG or STOC connection interface.**
   If connection interface is APG please enter:
   - Username for APG
   - IP address for APG.
   - Port number for APG (normally 22).

3. **Enter IP address for the BSC.**

4. **Enter Port number for the BSC.**
   Valid range is 12000 to 12110.

5. **Enter MO Index.**
   Valid range is 0 to 511.

6. **Enter Password.**
   Valid characters are: A-Z, a-z, and 0-9.

7. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog without making any attempt to connect.

Note: Connection parameters can be saved in a list of Favorites.

Note: If the OMT is older than the RBS SW an information message is shown. The OMT is backward compatible and all functionality provided by older RBS SW is supported.

Note: If the connection to the BSC is established with APG a password dialog may appear after confirming with OK. The password for the APG user must be entered in this dialog for the connection to be successful.

It may take up to 30 seconds for the Remote OMT over IP to connect to the RBS.

4.2.5 Disconnect

The OMT can be disconnected from the RBS by executing the Disconnect command.

Valid OMT states:	Change to state:
Connected (No IDB)	Init
Connected (Local IDB)	Local IDB
Connected	Local IDB

Execute this command as follows:

1. **Select RBS 2000 | Disconnect.**

If any monitors are running when the Disconnect command is executed, a warning message is displayed, indicating that all monitoring will be stopped.

4.2.6 Read IDB

This command transfers an IDB copy from the RBS to the OMT .

Valid OMT states:	Change to state:
Connected (No IDB)	Connected
Connected (Local IDB)	Connected

Execute this command as follows:

1. **Select Configuration | Read IDB.**
   If the OMT is in Connected (Local IDB) state, then a confirmation dialog box is displayed. Confirm with **Yes**.

A progress bar is shown during execution.
While the progress bar is shown, the operation can be cancelled by selecting **Cancel**.
This command changes the state to Connected (No IDB) or Connected (Local IDB) state.

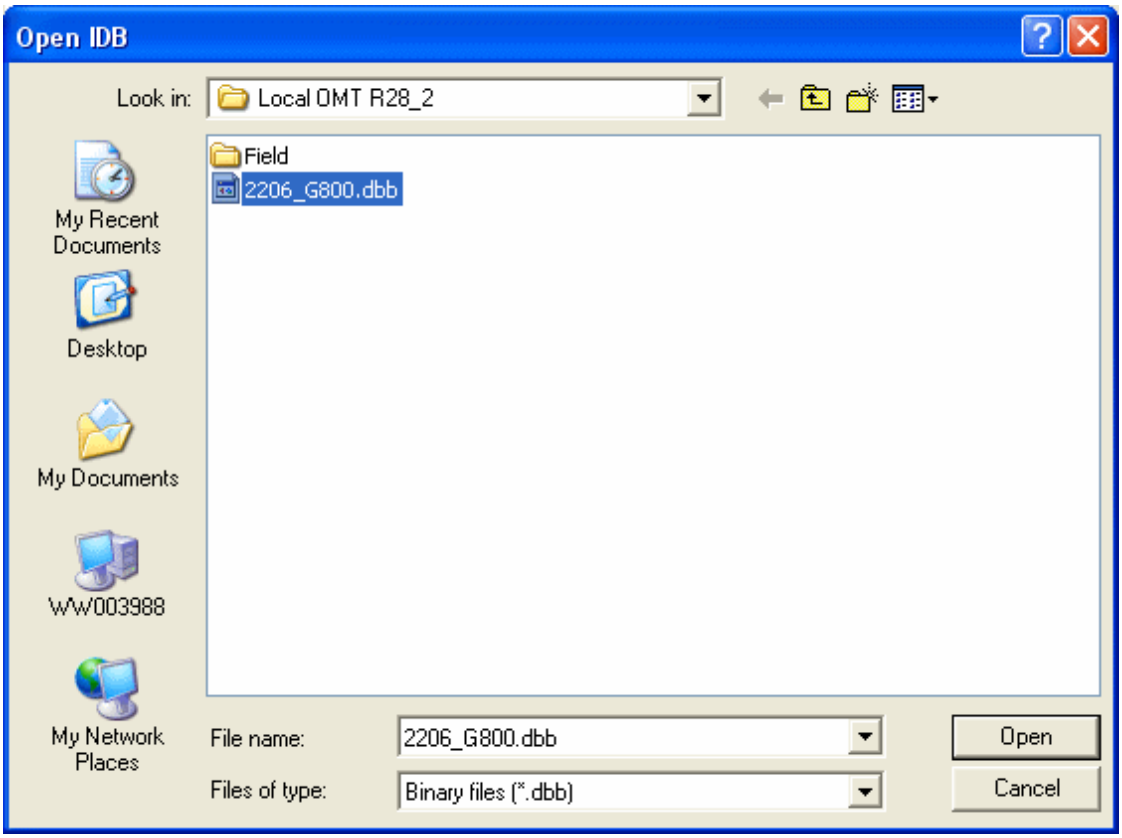
4.2.7 Open IDB

This command opens an IDB file.

Valid OMT states:	Change to state:
Init	Local IDB
Local IDB	Local IDB
Connected (No IDB)	Connected (Local IDB)
Connected (Local IDB)	Connected (Local IDB)

Execute this command as follows:

1. **Select Configuration | Open IDB…**
   An Open IDB dialog box is displayed.



2. **Enter the name of the file to be opened.**
3. **Confirm with Open in the dialog.**

When the OMT is in Local IDB or Connected (Local IDB) state, a confirmation dialog box is displayed. Reconfirm with **Yes**.

A progress bar is shown during execution.

4.2.8 Install IDB

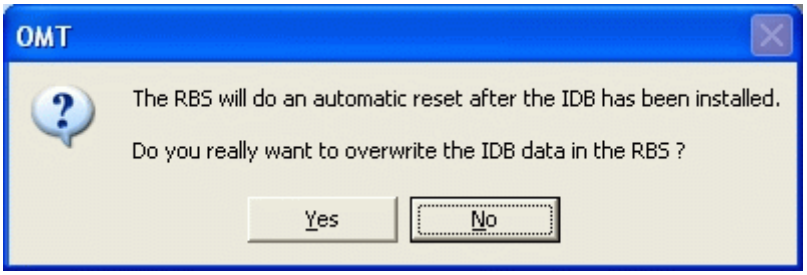
This command transfers an IDB copy from the OMT to the RBS and replaces the existing IDB in the RBS.

The DXU must be in Local Mode to be able to accept a new IDB. Change to Local Mode by using the Local Mode button on the front panel of the DXU or execute the Change Local/Remote Operation in the OMT. For more information see section "Change Local/Remote State"

Valid OMT states:	Change to state:
Connected (Local IDB)	Connected

Execute this command as follows:

1. **Select Configuration | Install IDB.**
   An Install IDB dialog box is displayed.



2. **Confirm with Yes.**

   Note: For RBSs equipped with dTRU or RRU the OMT performs an IDB and HW consistency check.
   The Install IDB dialog will pinpoint configuration parameters that are not consistent with the RBS HW. If any inconsistencies are displayed,
   select **No** and correct the IDB before proceeding.

A progress bar displays the progress of the installation.

This operation can be cancelled during the first 50% of the installation.

4.2.9 Save IDB

The commands 'Save IDB' and 'Save IDB as' saves the IDB to disk.

The 'Save IDB' command saves the IDB and asks for a filename the first time.
Subsequent saves will not ask for a filename again.
To save the IDB with a new filename use the 'Save IDB as...' command

Valid OMT states:

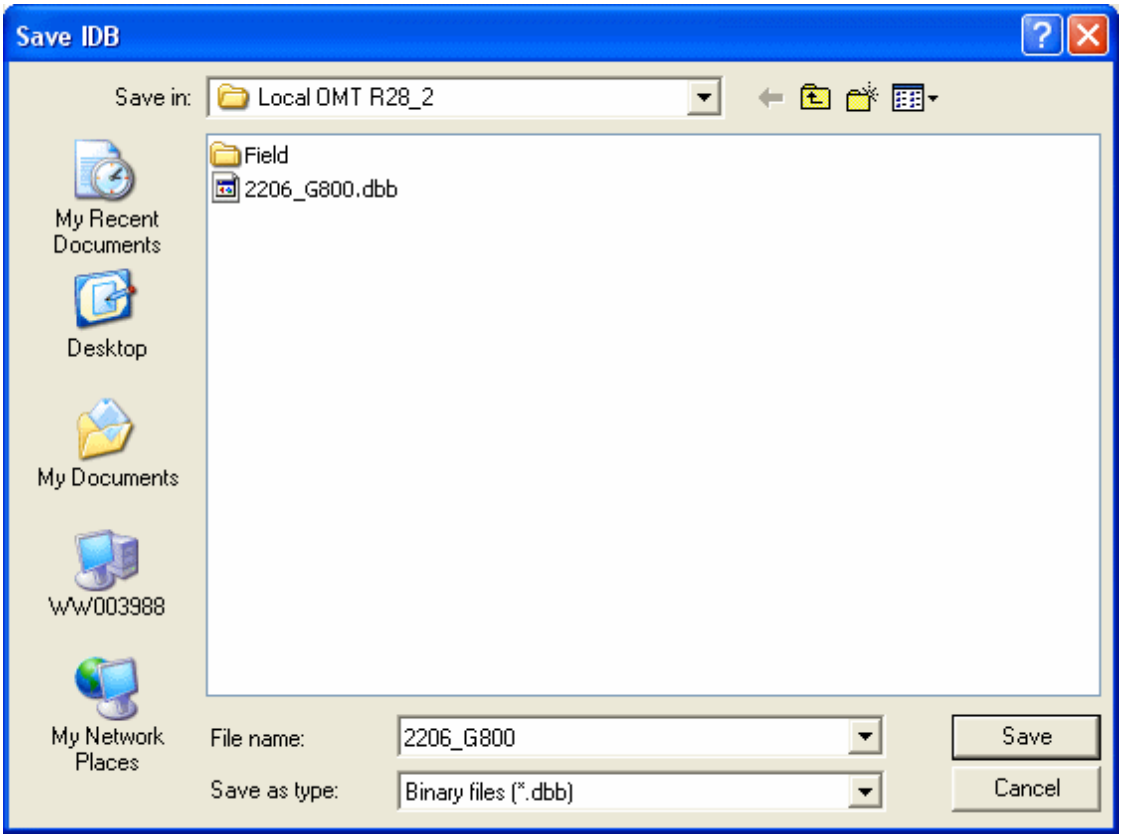
Local IDB

Connected (Local IDB)

Connected

Execute the Save IDB command as follows:

1. **Select Configuration | Save IDB...**
   A Save IDB dialog box is displayed.



2. **Enter the name of the IDB file.**

3. **Confirm with Save.**
   A progress bar is shown during execution.

4.2.10 Create IDB

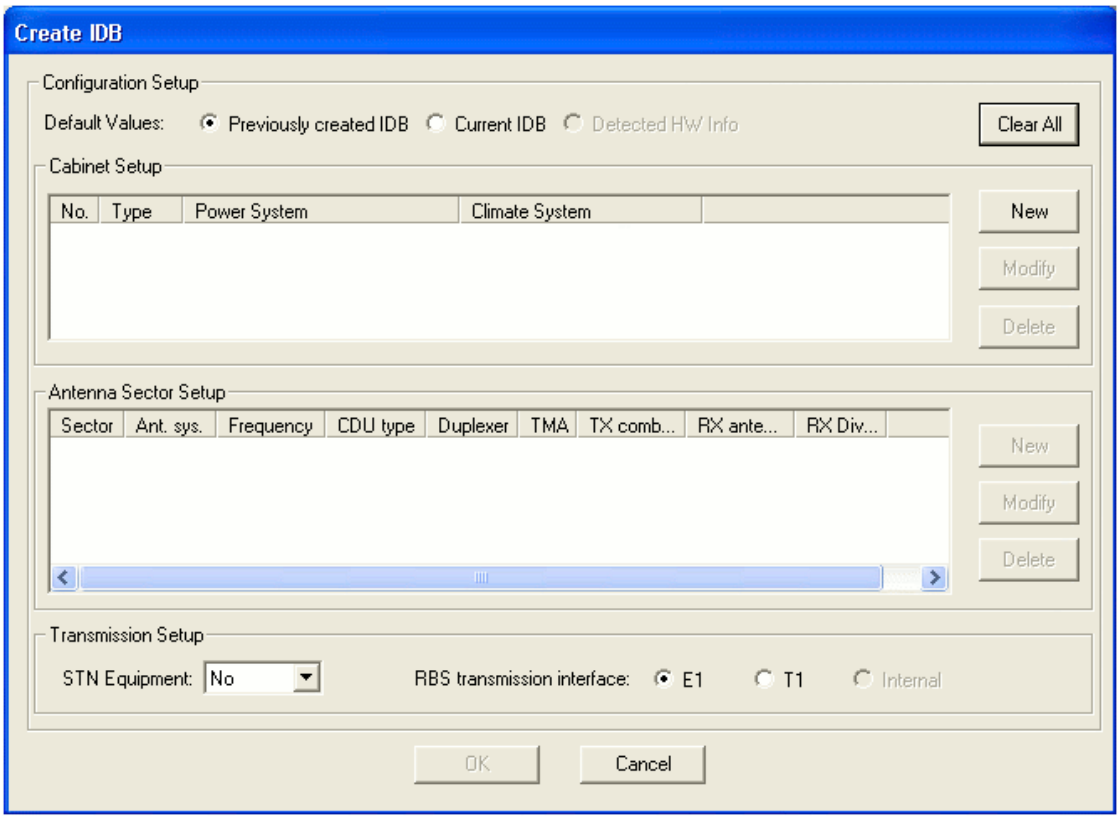
The Create IDB command creates a new IDB.

Note: It is important to make the selections in the dialogs from top to bottom, in order to ensure that the filtering of the configuration parameters functions correctly.

Valid OMT states:	Change to state:
Init	Local IDB
Local IDB	Local IDB
Connected (No IDB)	Connected (Local IDB)
Connected (Local IDB)	Connected (Local IDB)

Execute this command as follows:

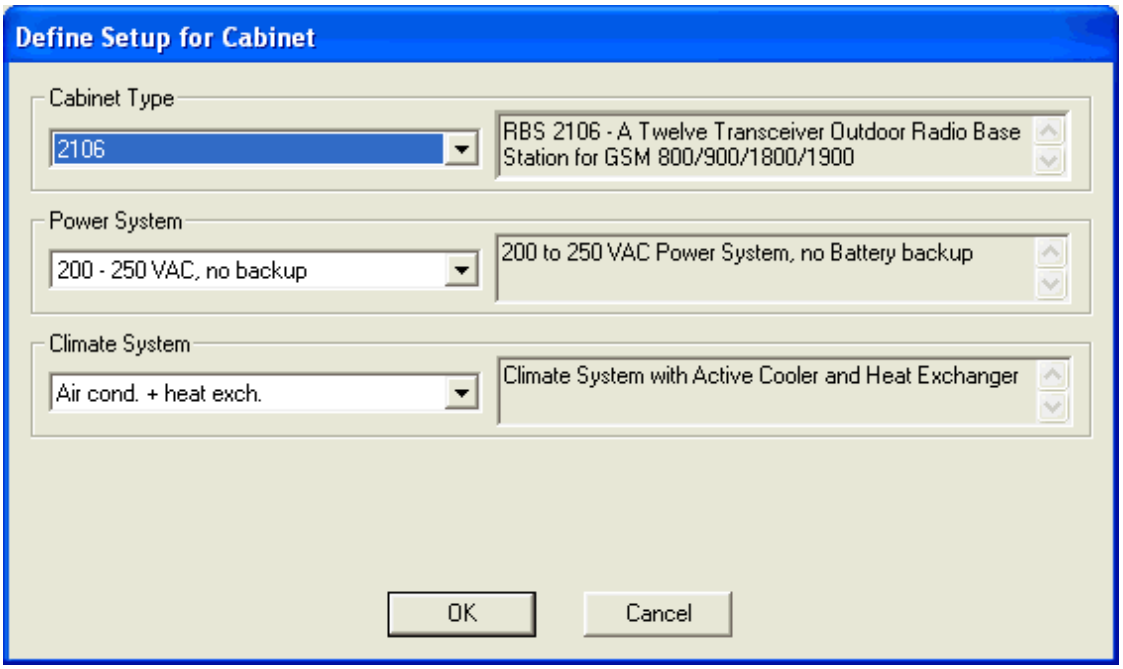
1. **Select Configuration | Create IDB...**
   The Create IDB dialog box is displayed.



2. **Select source for Default Values**
   The default values can be taken from:
   Previous Configuration (i.e. the last created IDB)
   Current IDB
   Detected HW information (if the OMT is connected to an RBS)

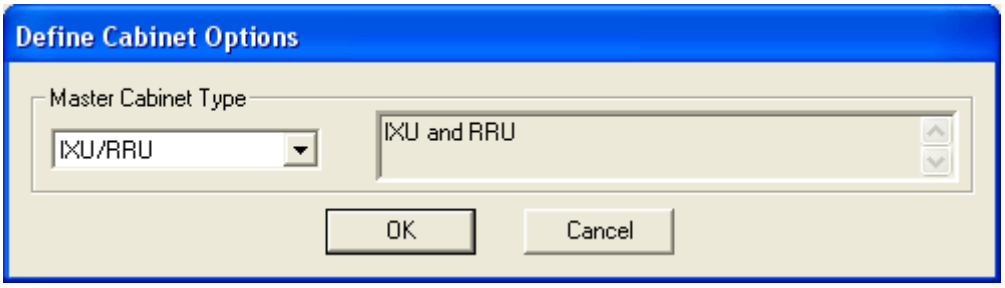
3. **Select Transmission Interface**
   There are 3 transmission interfaces to choose between, G.703 (E1), DS1 (T1) and IP.
   Note: If running the Remote OMT or Remote OMT over IP, the connection to the RBS will be lost if an IDB with incorrect transmission interface is installed.

4. **Create a new Cabinet by Selecting New.**
   A Define Setup for Cabinet dialog box is displayed.

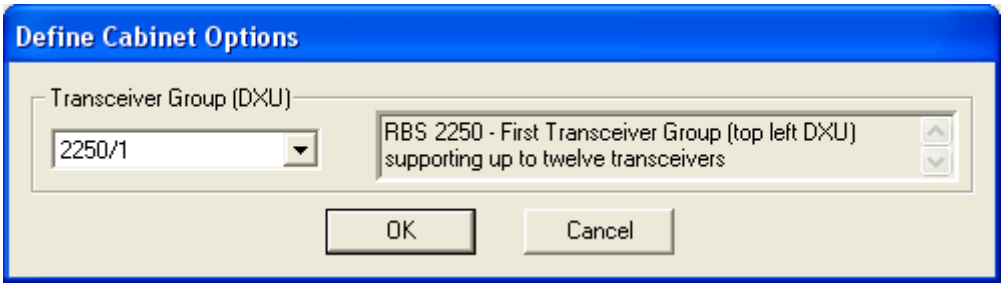


5. **Select Cabinet Type, Power System and Climate System.**
   A short description is shown for selected list box choice.

   Note: For RBS 2109, RBS 2308 and RBS 2309, the Define Cabinet Options dialog box is displayed, prompting for Master Cabinet Type.
   Select whether the IXU is to be used on its own or together with an RRU.

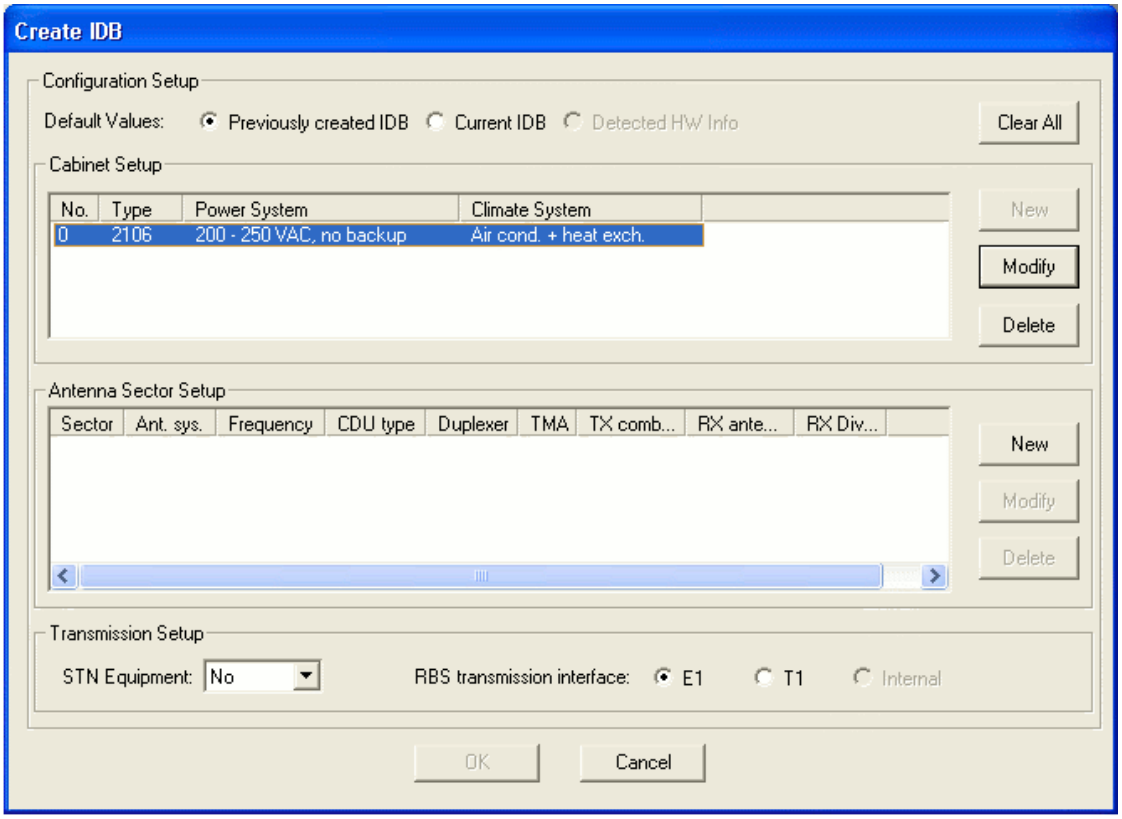


   Note: For RBS 2250, the Define Cabinet Options dialog prompts for target Transceiver Group (DXU).
   Select the physical target Transceiver Group/ DXU for which the IDB is intended.



6. **Confirm cabinet settings with OK.**
   Selecting **Cancel** closes the dialog box without making any changes.

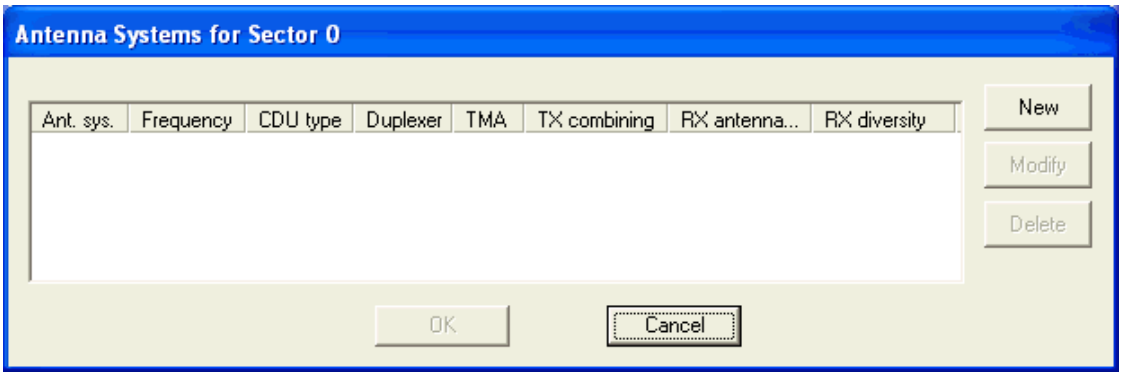
   The Create IDB dialog box is displayed again, now with a cabinet in the Cabinet Setup list.
   Select **Modify** in order to change cabinet settings, select **Delete** to delete the cabinet.



7. **Repeat steps 4 to 6 until the number of cabinets is correct.**

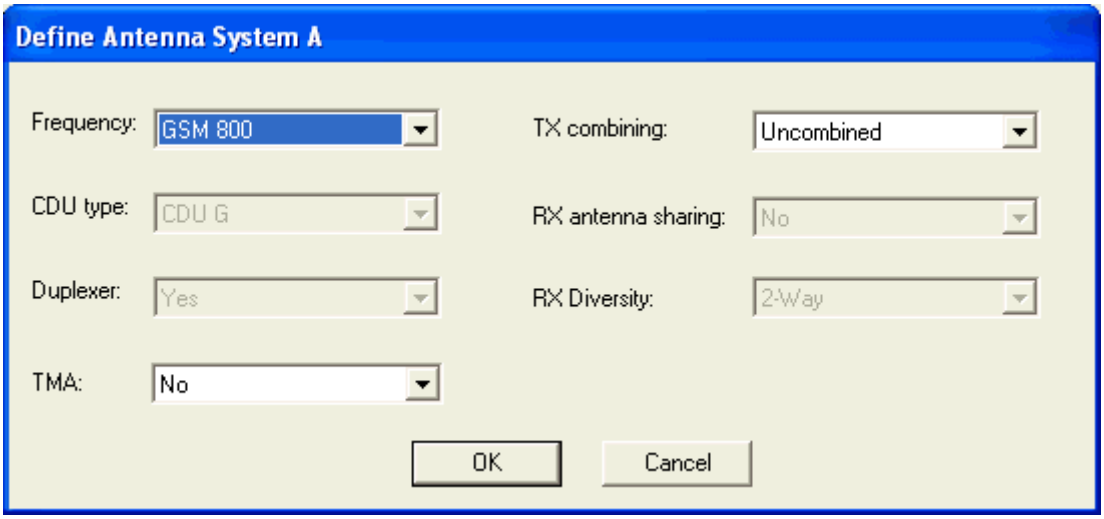
8. **Create an antenna sector by selecting New in the Antenna Sector Setup part of the dialog.**

   An Antenna Systems dialog box is displayed.



9. **Select New.**

   A Define Antenna System dialog is displayed.

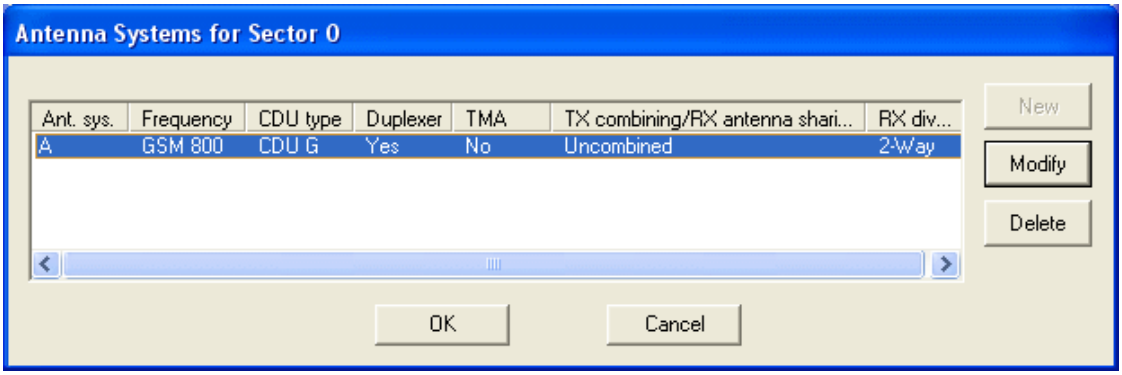


10. **Select Frequency, CDU Type, Duplexer, TMA, TX combining, RX antenna sharing and RX Diversity.**

    Note: For RBS 2216, the presence of splitter in the antenna system is also configurable in this dialog.

11. **Confirm with OK.**

    This command displays the Antenna Systems dialog box again.

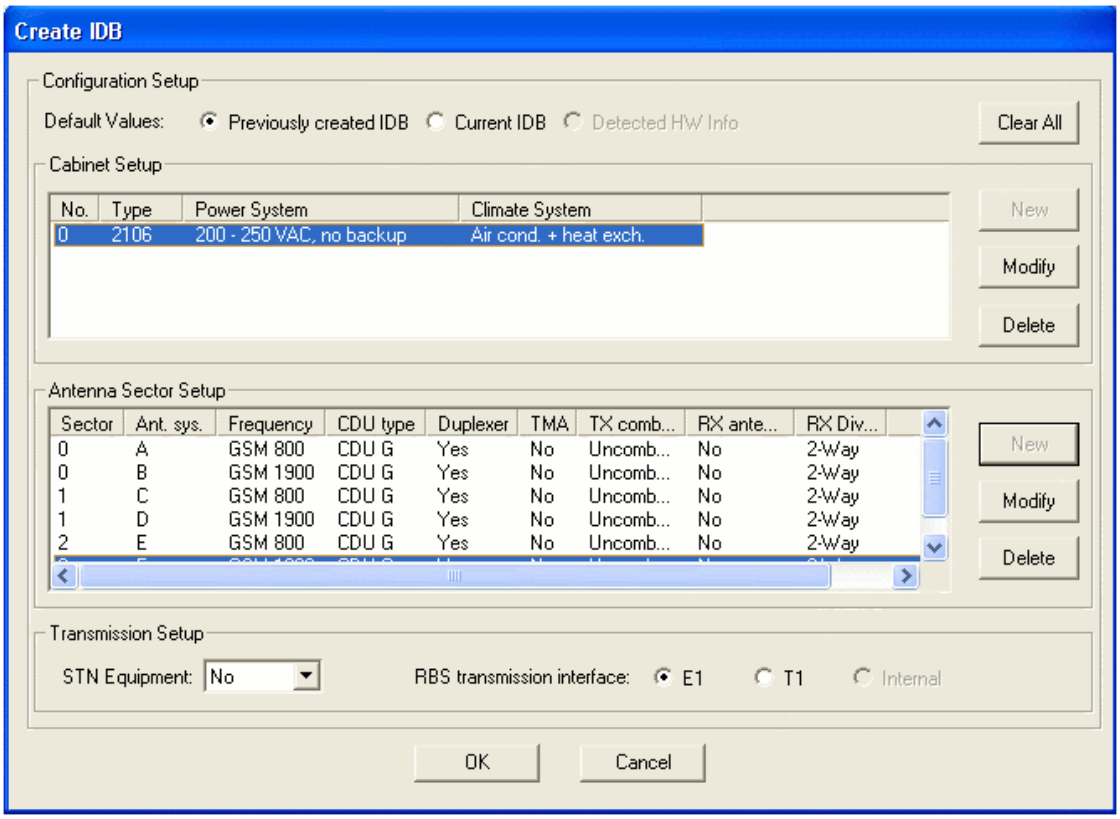


12. **Confirm with OK**

    This command displays the Create IDB dialog box again.
    Selecting **New** will create another antenna system in the same sector, continue with step 9.
    Selecting **Modify** will bring up the Define Antenna Systems dialog again.
    Selecting **Delete** will delete the selected antenna system.
    Selecting **Cancel** closes the dialog box without making any changes.

13. Repeat steps 9 to 12 until the number of antenna systems is correct.

14. Repeat steps 8 to 12 until the number of antenna sectors is correct.

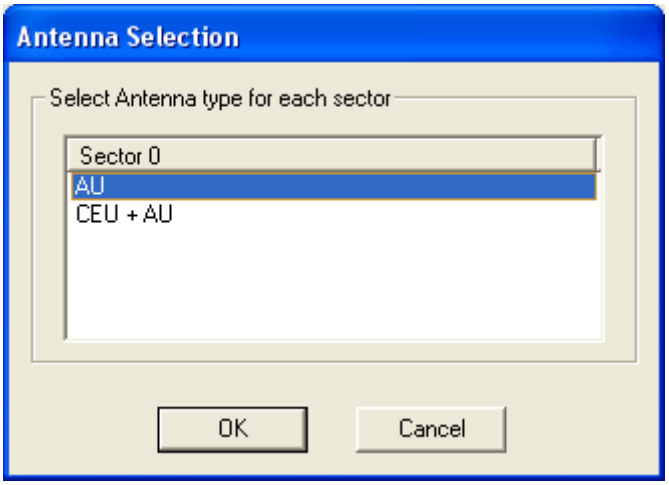


15. Confirm with OK.

Selecting **Cancel** closes the dialog box without creating a new IDB.
Selecting **Clear All** clears the Cabinet Setup and the Antenna Sector Setup list boxes.

Note: The OK button is enabled only if the chosen Cabinet Setup and Antenna Sector Setup comprise a valid combination.

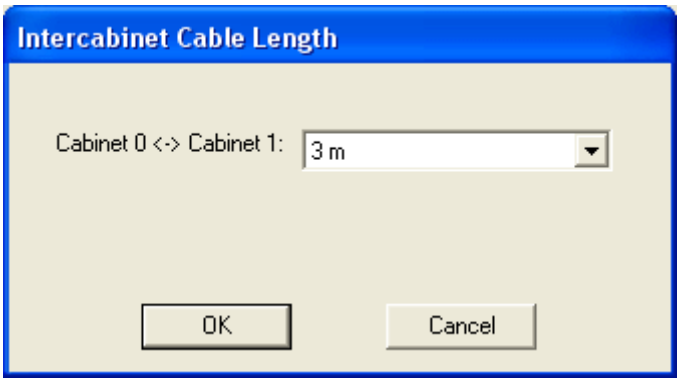
For some configurations an Antenna Selection dialog is displayed:



16. **Select the appropriate Antenna type.**

17. **Confirm with OK.**
    Selecting **Cancel** closes the dialog box without making any selections.

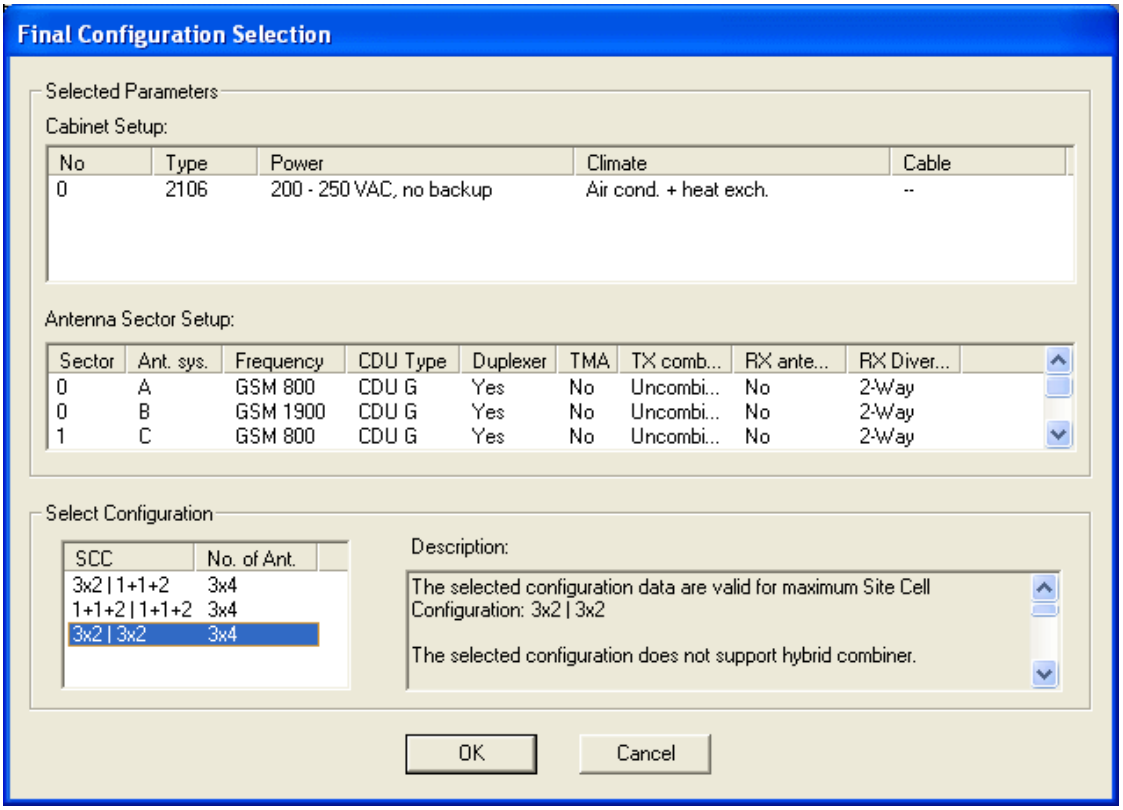
    For some configurations an Intercabinet Cable Length dialog box is displayed:



18. **Change the Intercabinet Cable Length.**

19. **Confirm with OK.**
    Selecting **Cancel** closes the dialog box without making any changes.

    A Final Configuration Selection dialog box is displayed.



20. Select Configuration.

In the configuration list, the combinations of SCC and number of antennas are displayed.
To separate frequencies in dual band configurations, the character '|' is used. E.g. 3x2|3x2 means:
3 antenna sectors with 2 TRXs in each antenna sectors first frequency
3 antenna sectors with 2 TRXs in each antenna sectors second frequency.

SCC uses one of the following formats:
< no. of antenna sectors > x < no. of TRXs in each antenna sector >
or
< no. of TRXs in antenna sector 0 > + < no. of TRXs in antenna sector 1 > + …
or
< 1 > x < no. of TRXs in antenna sector 0 > +
< 1 > x < no. of TRXs in antenna sector 1 >

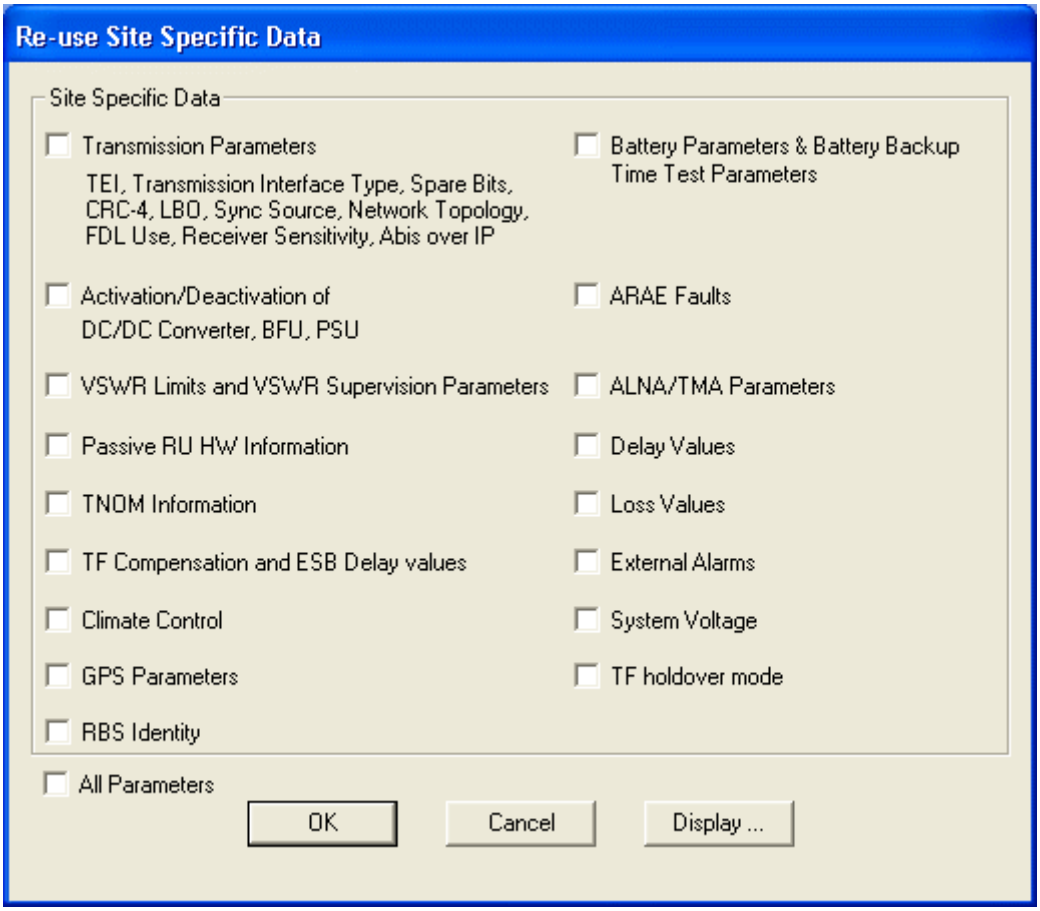
No. of Ant. uses one of the following formats:
< no. of antenna sectors > x < no. of antennas in each antenna sector>
or
< no. of ant. in antenna sector 0 > + < no. of ant. in antenna sector 1 > + …

Note: Plan for future capacity expansion when selecting SCC.

21. **Confirm with OK.**
    Selecting **Cancel** closes the dialog box without making any changes and returns to the Create IDB dialog box.

    Note: If an IDB already exists in the OMT, in Local IDB or Connected (Local IDB) state, a dialog opens relating to the re-use of site specific data from the previous configuration.
    Select **Yes** to re-use data, or **No** to use the default settings and skip the next step

    A Re-use Site Specific Data dialog box is displayed:



22. **Select the parameters to be re-used.**

23. **Confirm with OK.**
    Selecting **Display** displays a text file in the default text editor. The text file displays all site specific data values.
    Selecting **Cancel** closes the dialog box and displays the Final Configuration Selection dialog again.

Then a final confirmation window opens asking if it is OK to overwrite the existing IDB data in the OMT.
Confirm with **Yes**. Selecting **No** will close the dialog and return to the Final Configuration Selection dialog.

4.2.11 Define Present RUs

The Define Present RUs command causes applicable RUs to be active/inactive.

Note: This function is not available for RBS 2301, RBS 2302 or RBS 2401.

Note: The objects BFU, Battery and Battery Box are interdependent, i.e. changing the number of active BFUs also affects the number of batteries and battery boxes.

Valid OMT states:

Local IDB

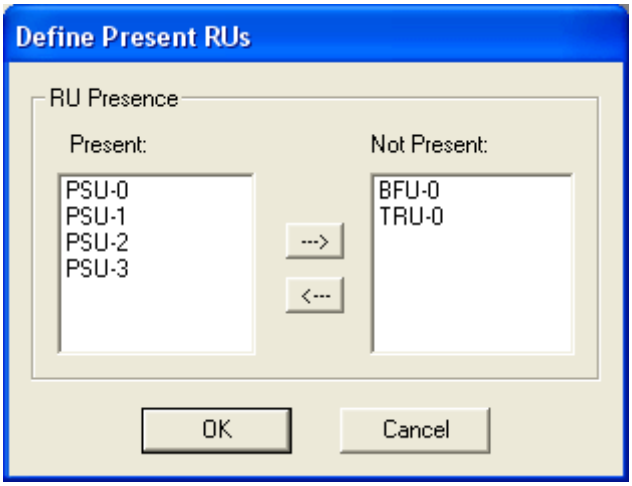
Connected

Note: When defining RUs as not present in the Connected state, the following steps must be taken before executing the Define Present RUs command.

1. **Change the RU Local/Remote state to Local.**
   See also section "Change Local/Remote State"
2. **Turn off the RU power.**
3. **Proceed with the Define Present RUs command.**

Execute this command as follows:

1. **Select Configuration | Define | Present RUs...**
   A Define Present RUs dialog box is displayed.



2. **Activate or deactivate one or more RUs.**
   Move the objects to one of the scroll lists either by double clicking on the object or by selecting the object and one of the arrow keys ---> or <---
3. **Confirm with OK.**
   Selecting **Cancel** closes the dialog box without making any changes.

4.2.12 Export Site Specific Data

The Export Site Specific Data operation can export data from the IDB in the OMT to a site-specific data file. See Appendix, Section "Terminology" for a definition of the contents of the site specific data.

Valid OMT states:

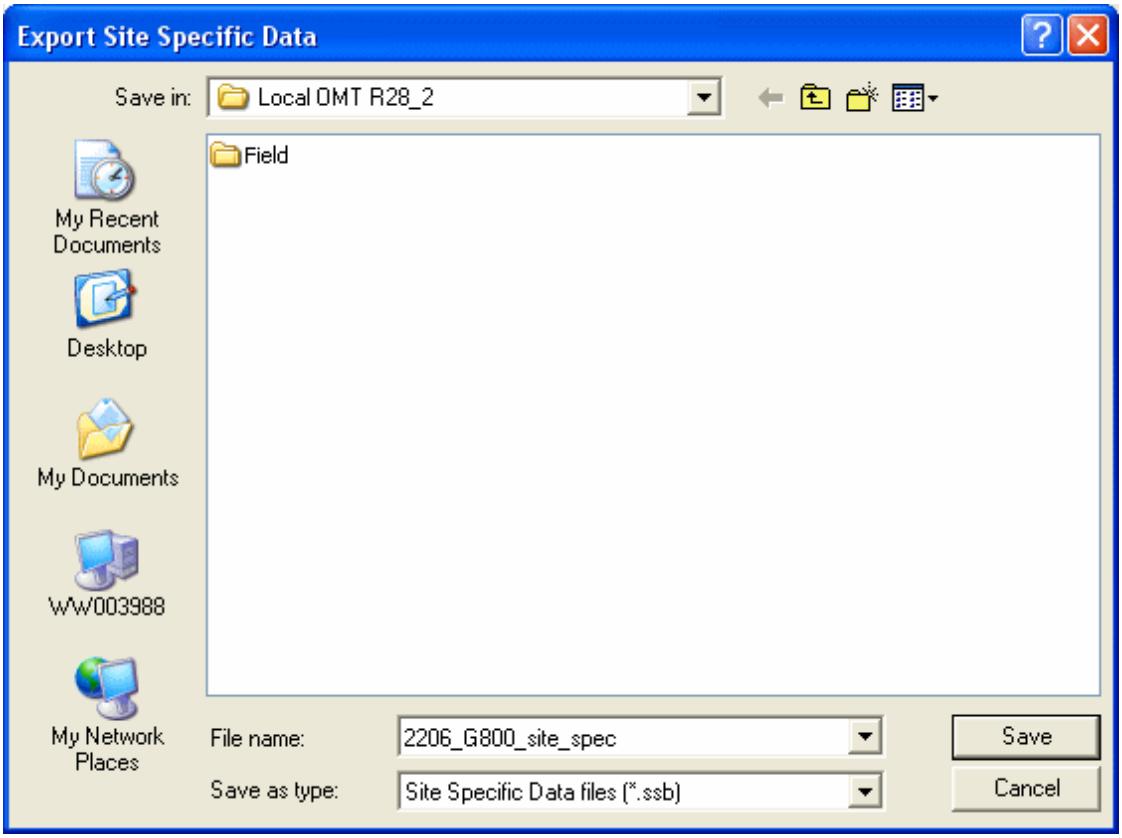
Local IDB

Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Site Specific Data | Export...**
   An Export Site Specific Data dialog box is displayed.



2. **Enter the name of the file that contains the site-specific data.**

3. **Confirm with Save.**
   Selecting **Cancel** closes the dialog box without making any changes.

4.2.13 Import Site Specific Data

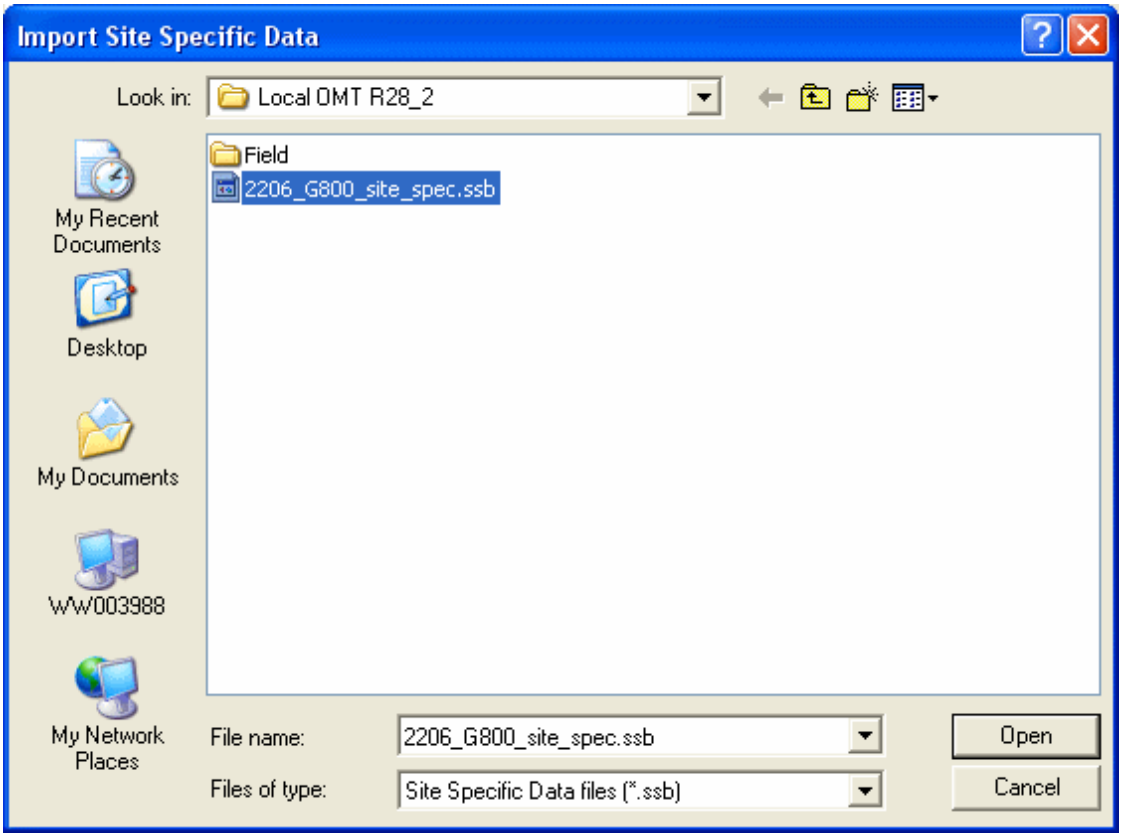
The Import Site Specific Data operation can import user changeable data from a site-specific data file to the IDB present in the OMT . See Appendix, section "Terminology" for a definition of the site specific data.

Valid OMT states:

Local IDB

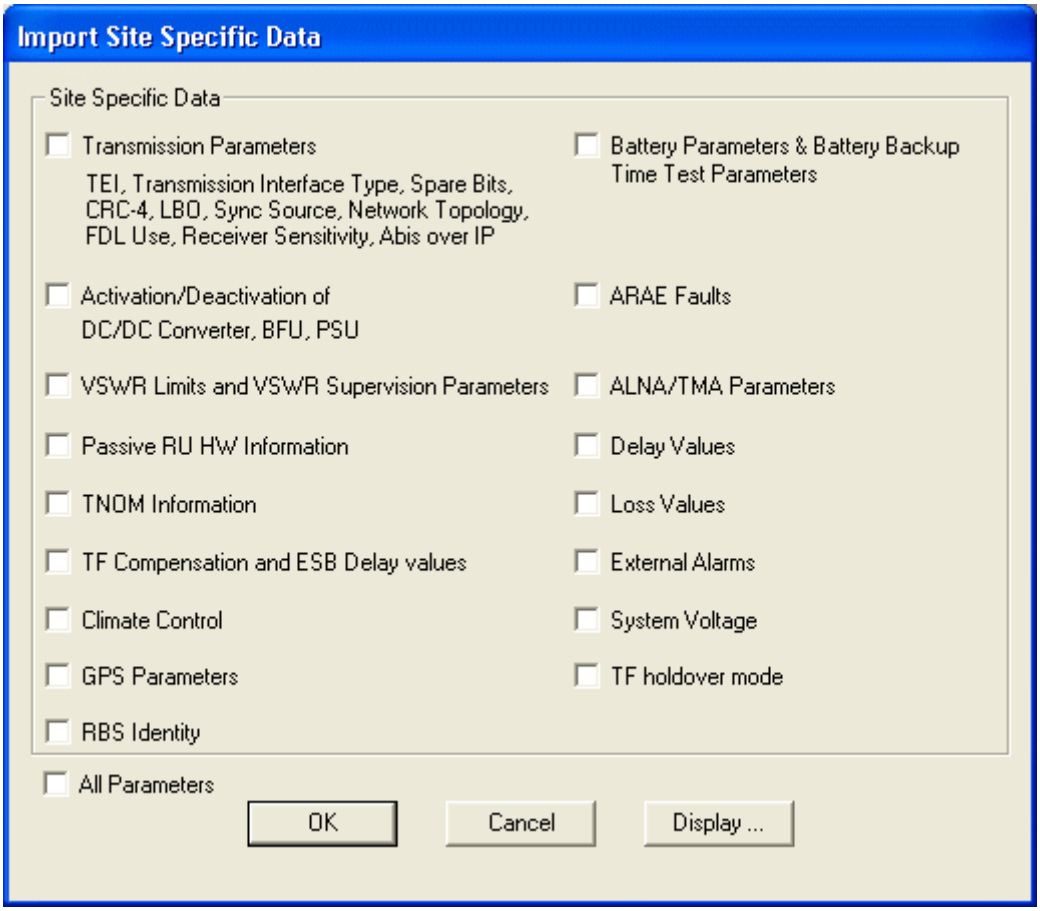
Execute this command as follows:

1. **Select Configuration | Site Specific Data | Import...**
   An Import Site Specific Data dialog box is displayed.



2. **Enter the name of the file that contains the site-specific data.**

3. **Confirm with Open.**
   An Import Site Specific Data dialog box is displayed.
   Selecting **Cancel** closes the dialog box without making any changes.



4. **Select the parameters to be imported.**

5. **Confirm with OK.**
   Selecting **Cancel** closes the dialog box without importing any data.
   Selecting **Display** causes a text file to be displayed in the default text editor. The text file shows all data and their values that can be imported.

4.2.14 Display Site Specific Data

The Display Site Specific Data operation opens a text editor associated with text files (.txt) and displays the site-specific data. See Appendix, section "Terminology" for a definition of the site specific data.

Valid OMT states:

Local IDB

Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Site Specific Data | Display.**

   A text editor (Notepad) window opens, displaying site-specific data.

4.2.15 Display Information

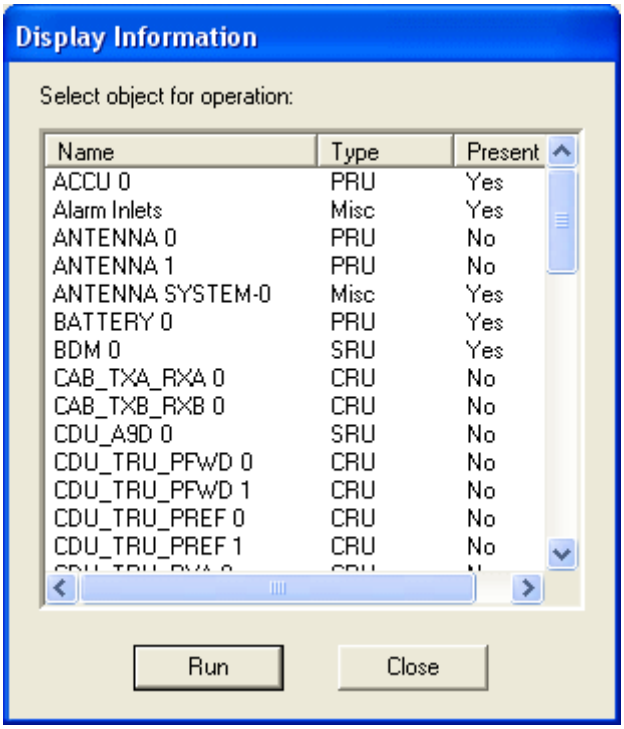
The Display Information command shows static information and can be executed on all objects. Depending on the chosen object, the Display Information window contains different information. See also Appendix, section "Contents of the Display Information window"

Object:	Valid OMT states:
IDB	All states
Flash Card	All states
OMT	All states
RBS	All states
MO objects	Connected
All other objects	Local IDB
	Connected (Local IDB)
	Connected

Execute this command as follows:

1. **Select Configuration | Display | Information…**
2. **Select an object to operate on.**
3. **Click Run.**

   A Display Information window opens.



This command can also be executed by double clicking on an object.

4.2.16 Display Status

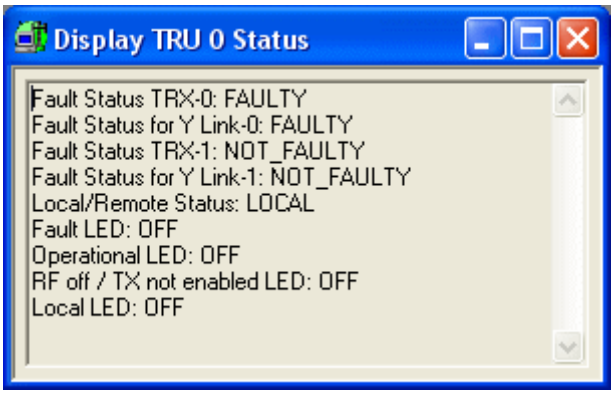
The Display Status window shows dynamic information and contains different types of information depending on the chosen object. The content of the window is updated every five seconds. For more information about Display Status for different objects, see Appendix, section "Contents of the Display Status window."

Object:	Valid OMT states:
OMT	All states
Other objects	Connected

Execute this command as follows:

1. **Select Maintenance | Display | Status…**
2. **Select an object to operate on.**
3. **Click Run.**

   A Display Status window opens.



4.2.17 Display Paging Queue Status

The Display Paging Queue Status operation enables the loading of the paging queues to be monitored.

The information displayed for the paging channels is :

- The number of pagings discarded due to a full paging queue since the monitoring started.
- The numbers of elements in the paging queue containing the most messages at the time of reporting.
- The maximum number of elements in any paging queue since the connection of CCCH.
- The length of a paging queue at current configuration.
- The number of paging groups at current configuration.

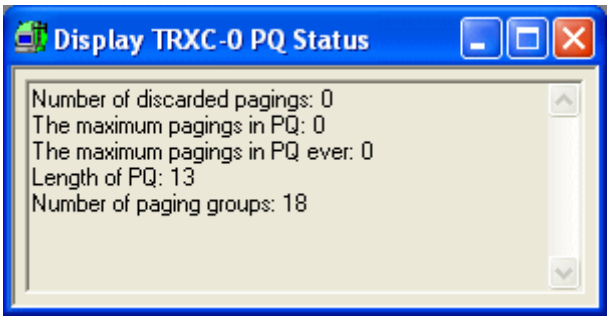
Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Display | Paging Queue Status…**
2. **Select an object to operate on.**
3. **Click Run.**

   A Display Paging Queue Status window opens.



4.2.18 Display TEI Values

The Display TEI Values window shows the position in the cabinet and the TEI values of all TRUs and the DXU.

Valid OMT states:

Local IDB

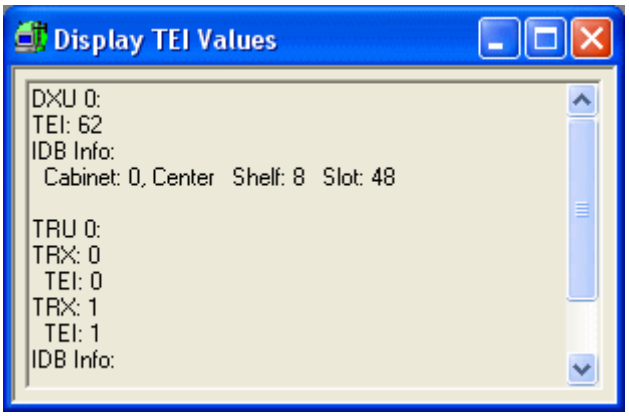
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Display | TEI Values.**

   A Display TEI Values window opens.



4.2.19 Display Software Information

The Display Software Information window shows information about the RBS software.

Valid OMT states:

Connected (Local IDB)

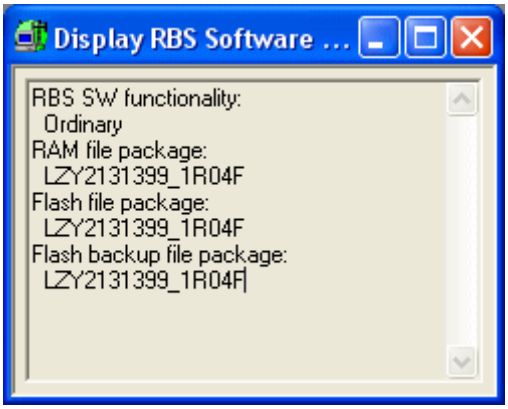
Connected (No IDB)

Connected

Execute this command as follows:

1. **Select Maintenance | Display | Software Information…**
2. **Select an object to operate on.**
3. **Click Run.**

   Display Software Information window opens.



4.2.20 Display Cable List

The Display Cable List operation shows a list of the cable product numbers, logical cable name and the connection points.

Valid OMT states:

Local IDB

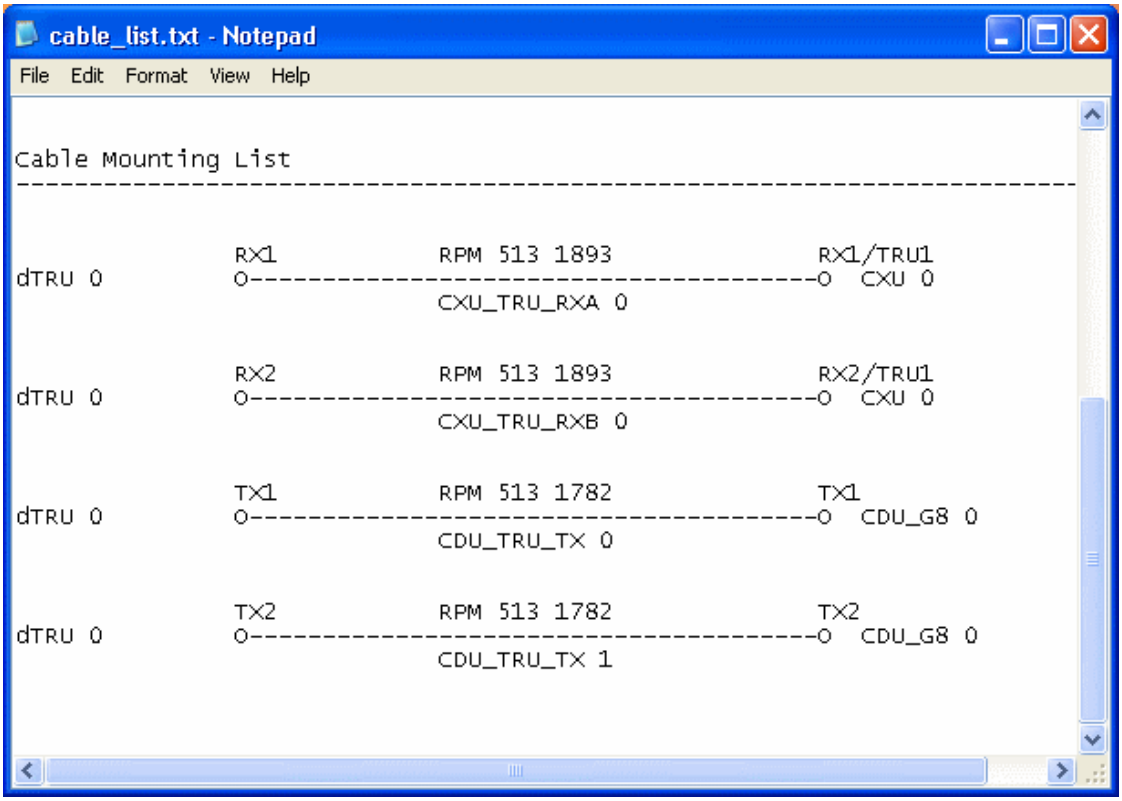
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Display | Cable List.**

   A text editor (Notepad) window opens.



4.2.21 Display Inventory List

The Display Inventory List command shows an inventory list of all RUs.

Valid OMT states:

Local IDB

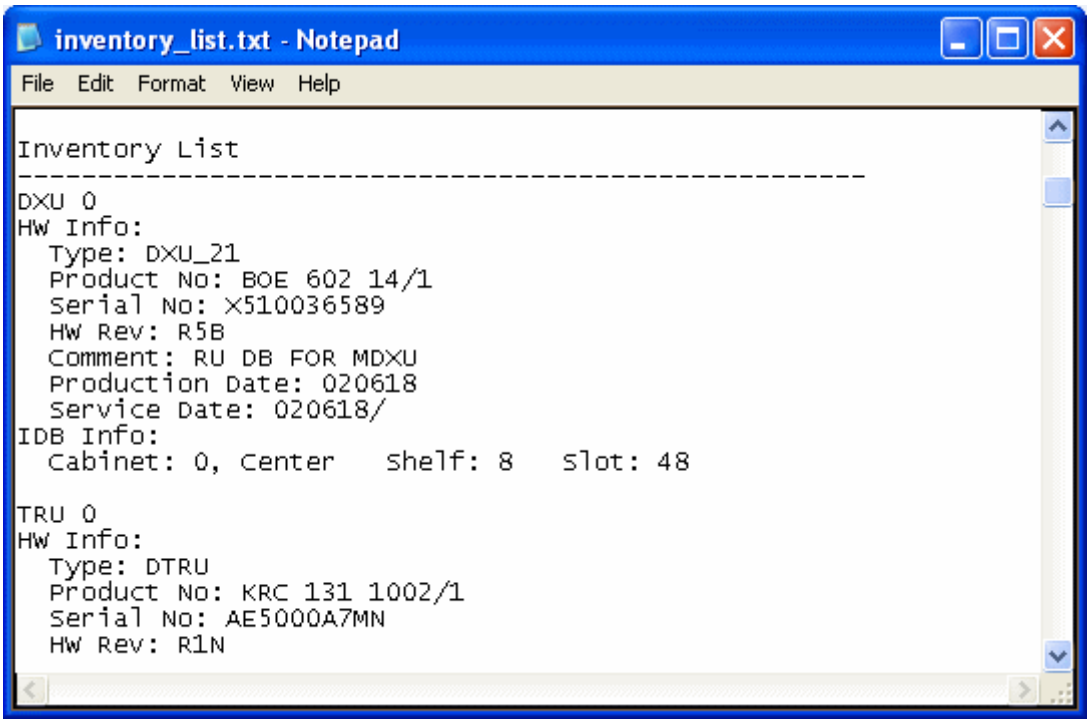
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Display | Inventory List.**

   A text editor (Notepad) window opens.



4.2.22 Display RBS Software Download

The Display RBS Software Download operation shows the following parameters during a software download from the BSC:

- Download status
- Filename
- Progress
- Downloaded files

Valid OMT states:

Connected (No IDB)

Connected (Local IDB)

Connected

Note: Only RBSs equipped with DXU-21, DXU-22, DXU-23, DXU-31 or IXU-21 can be monitored. The RBS also needs to be running on SW release 11A/10E or later.

Files to be downloaded:	Type:
ZFJxxxxZ	RBS SW file info file
DXPxxxxZ (1)	DXU/IXU load file
TRPxxxxZ (1)	dTRU/sTRU/RRU/DRU load file
ECAxxxxZ (2)	ECU load file
TRAxxxxZ (2)	cTRU load file
ECXxxxxZ (2)	ECU base file
TRXxxxxZ (2)	cTRU base file

[1] If an unconditional function change is initiated, the file is always downloaded. If a conditional function change is initiated, the file is downloaded if it differs from the file present in the RBS.

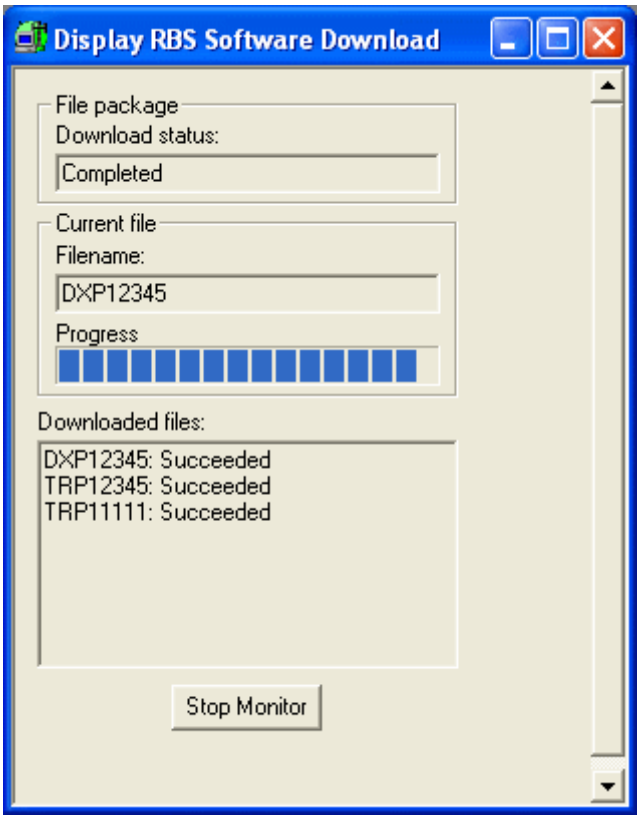
[2] This file is not always downloaded, depending on software version and RBS type.

Execute this command as follows:

1. **Select Maintenance | Display | RBS Software Download…**
2. **Select an object to operate on.**

3. **Click Run.**

   A Display RBS Software Download dialog box is displayed.



Stop monitoring as follows:

1. **Select Stop Monitor.**
   The monitoring also stops if the OMT and the RBS are disconnected.

4.2.23 Display Battery Log

The Display Battery Log shows information about Charging Mode and System Voltage.

The log contains the following information about the current battery:

- In service date.
- Time duration in different temperature intervals.
- Time duration in different voltage intervals in combination with an evaluation of the charging.
- No. of discharges and time duration in different voltage intervals.
- Maximum disconnect time.

The log contains the following information about the previous battery:

- In service date.
- Out of service date.
- Time duration in different temperature intervals.
- Time duration in different voltage intervals in combination with an evaluation of the charging.
- No. of discharges and time duration in different voltage intervals.
- Maximum disconnect time.

This operation is available only for RBS 2106, RBS 2106i, RBS 2107, RBS 2206 and RBS 2207 with AC Power Supply and Battery Backup.

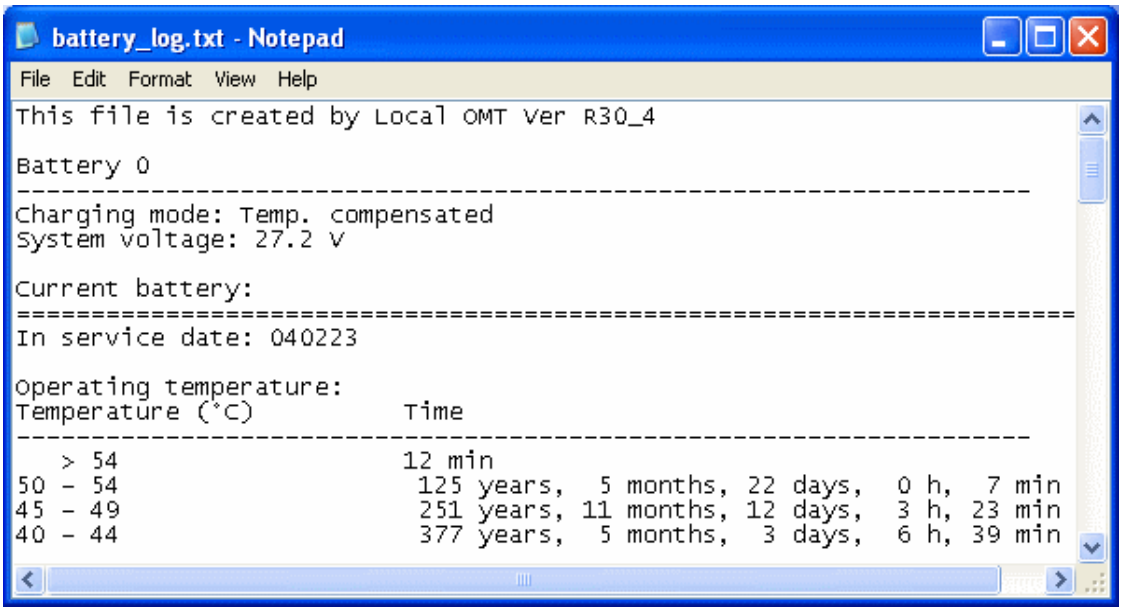
Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Display | Battery Log.**

   A text editor (Notepad) window opens.



4.2.24 Monitor Information

Use the monitor function to collect information about the fault maps for the RBS or to use the maintenance monitors.
See also Appendix, section Monitor Description.

Note: Resetting a main RU causes the monitoring on that RU to stop.

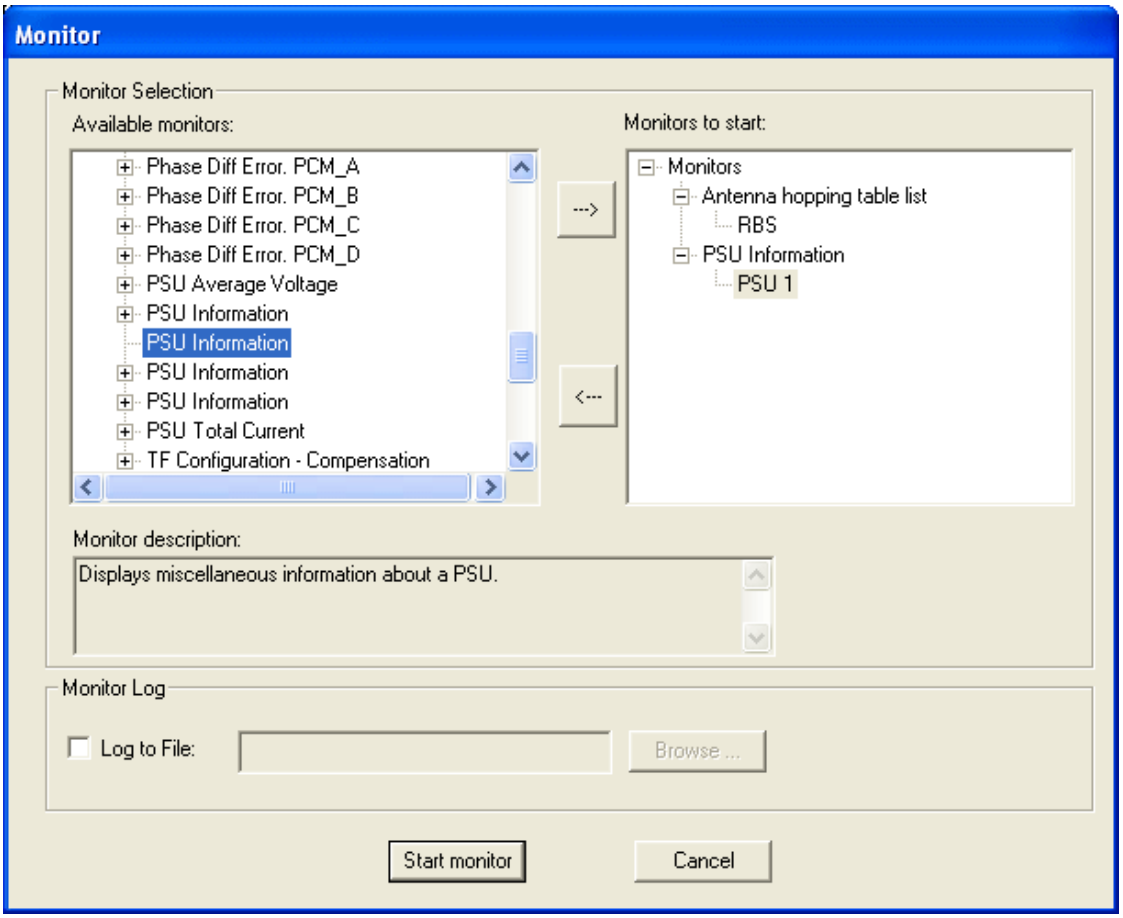
Note: If a Remote OMT over IP is used and if BSC-RBS transmission is configured to share communication channel for OMT-signalling and traffic-related signalling there is a minor risk that the OMT-signalling may disturb traffic when the BSC-RBS transmission is heavily loaded. Avoid starting many monitors during peak traffic hours.

Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Monitor…**
   A Monitor dialog box is displayed.



2. **Select monitors and objects from Available monitors list.**
   The Available monitors list shows all monitors that can be monitored. If a monitor is expanded, all objects supporting the monitor are shown. To add a monitor, select the object to be monitored and click the right arrow button. The selected object is moved to the Monitors to start list. To remove an added monitor, select that monitor and click the left arrow button.
   A short description of the selected monitor is given in the Monitor description field.
   In addition to reading the monitored data, it can also be saved in a text file (.log) by marking the Log to File check box and entering a file name. Selecting Browse causes a Log to File dialog box to be displayed.

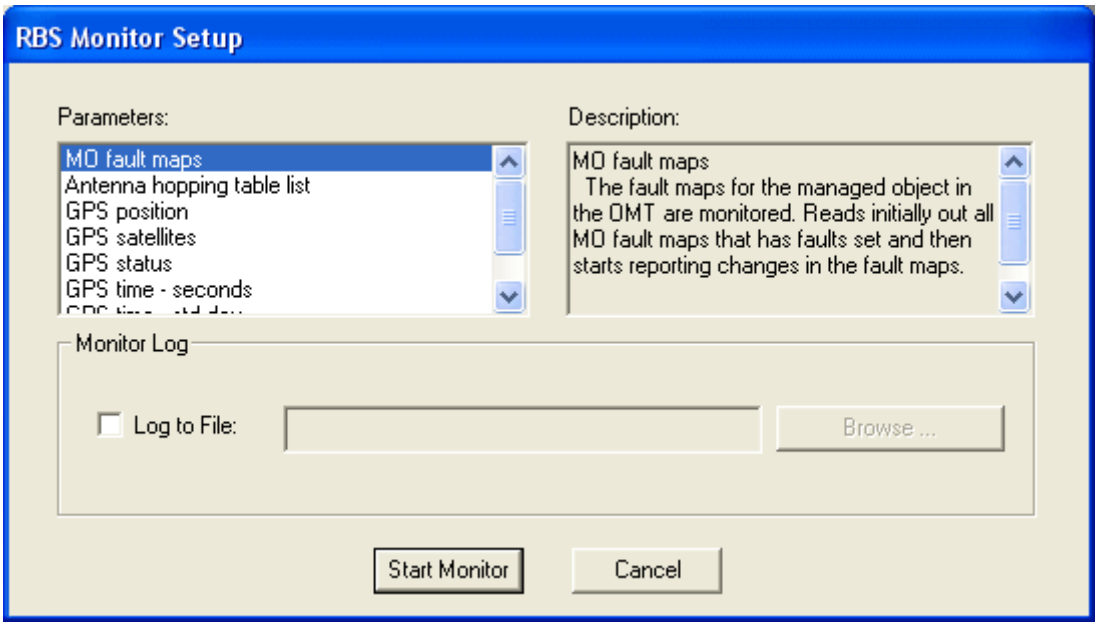
3. **Select Start Monitor in the Monitor dialog box.**
   All monitors in the Monitors to start list are started and displayed in the same window.

An alternative way to start monitoring is as follows:

1. **Select an object in a view.**

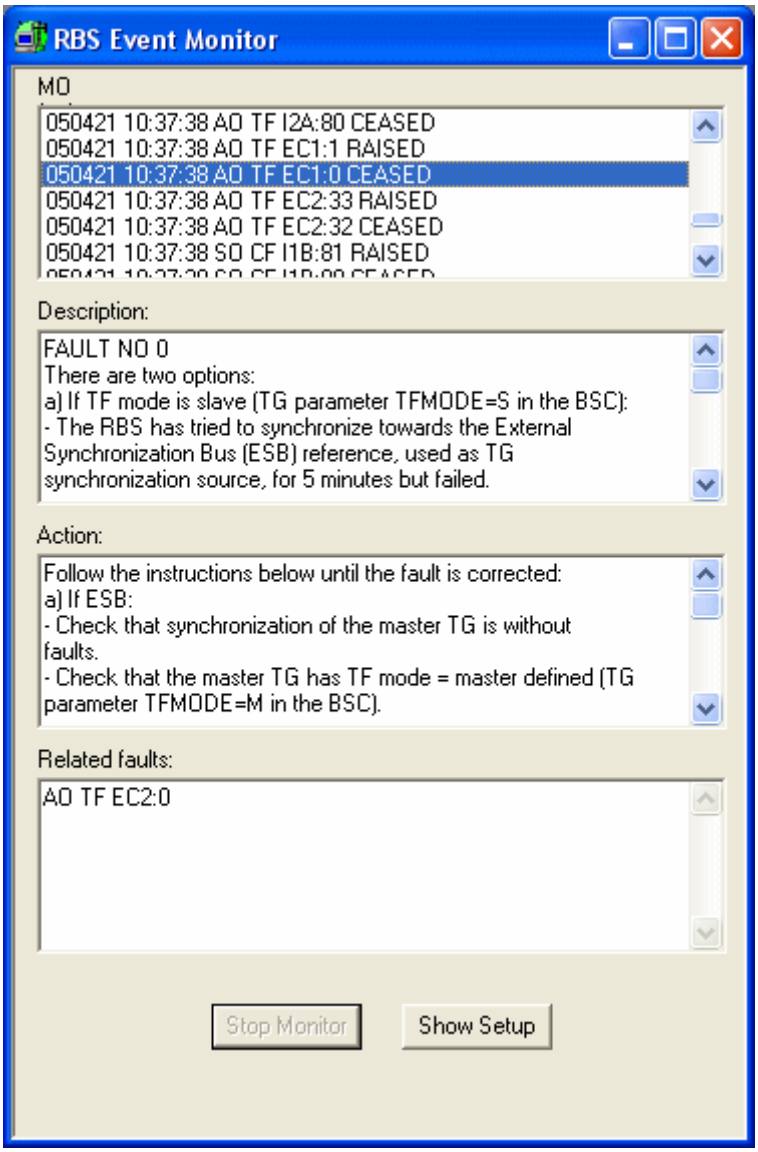
2. **Right click.**

3. **Select Monitor…**
   A RBS Monitor Setup dialog box is displayed.



4. **Select a monitor from the Parameters list.**
   The Parameters list shows all available monitors that can be monitored.
   A selected parameter is highlighted. Several parameters can be selected at the same time. A short description of the highlighted monitor parameters is given in the Description field.
   In addition to reading the monitored data, it can also be saved in a text file (.log) by marking the Log to File check box and entering a file name. Selecting **Browse** brings up a Log to File dialog box to be displayed.

5. **Select Start Monitor in the RBS Monitor Setup dialog box.**
   A RBS Event Monitor dialog box is displayed.



The RBS Event Monitor window shows the monitored data.

When an MO fault is selected, a corresponding fault description together with an action and related faults are displayed.

- The description part is a brief explanation of the MO Fault and its possible cause.
- The action part suggests what can be done to correct the fault.
- The related faults may be faults that appear as a consequence of the reported fault, or faults that precede the reported fault.

Show Setup displays a window where the chosen monitors are displayed.

Stop monitoring as follows:

1. **Select Stop Monitor.**

Monitoring also stops if the OMT and RBS are disconnected.

4.2.25 Define Alarm Inlets

For each alarm inlet, the usage (External Alarm, ARAE Fault, MCPA Fault and Not Used) can be defined.

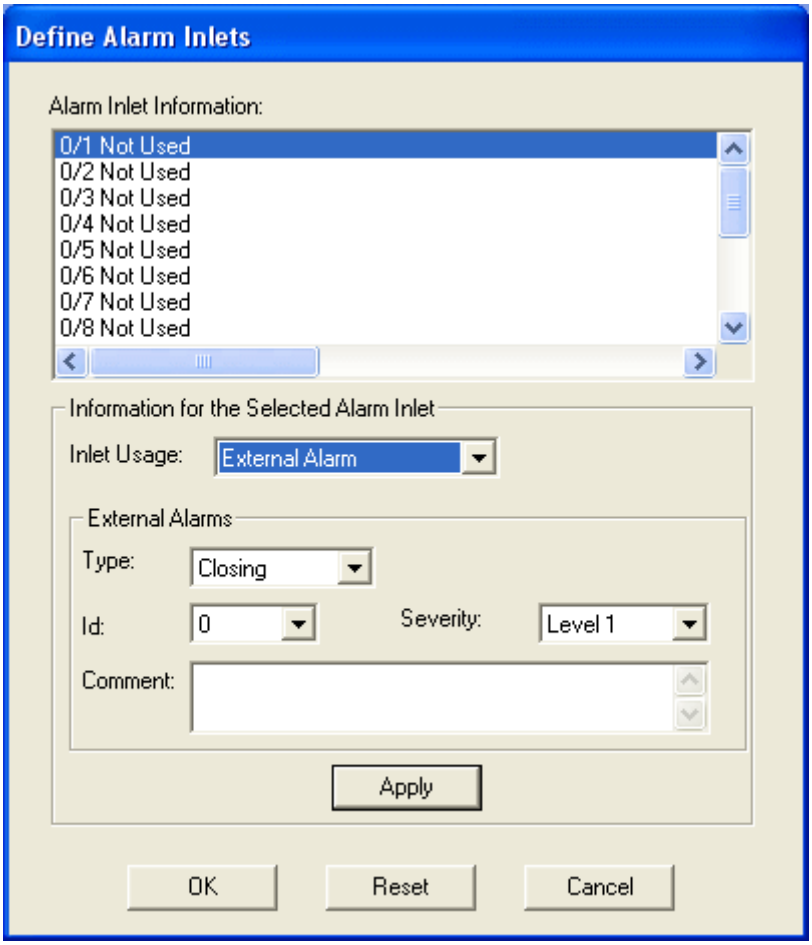
Valid OMT states:

Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | Alarm Inlets…**
   A Define Alarm Inlets dialog box is displayed.



2. **Select Alarm Inlet.**
   The inlet is identified by X/Y e.g. 0/1, where X is the cabinet number and Y is the inlet number in the cabinet (X).

3. **Select Inlet Usage.**

4. **Insert new value or values.**
   For each alarm inlet used for external alarms a unique ID, severity and contact closure for alarm (closing/breaking) must be defined. An optional text comment can also be defined.
   Valid characters are:
   A-Z 0-9 space ! # $ % & ' ( ) * + , - . / : ; < = > ? _.
   For each alarm inlet used for an ARAE fault, a fault class, functionality, contact closure for alarm (closing/breaking) and antenna instance must be defined.
   For each alarm inlet used for MCPA fault, the MCPA TX Redundancy Switch (enabled/disabled) and the MCPA instance must be defined.

5. **Confirm with Apply.**

6. **Repeat steps 3 to 5 until all desired Alarm Inlets are defined.**

7. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.26 Define Antenna Supervision

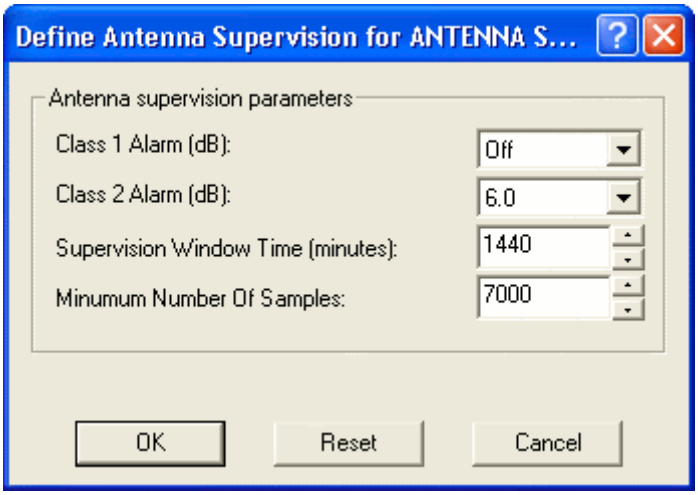
The Define Antenna Supervision operation is used to define threshold values for the supervision of RX antennas.

Valid OMT states:

Local IDB

Execute this command as follows:

1. **Select Configuration | Define | Antenna Supervision**



2. **Edit to appropriate values.**

3. **Confirm with OK.**

Selecting **Reset** reverts all changes to their previously defined values.
Cancel closes the dialog box without making any changes.

Class1 Alarm is the threshold value (0.1 .. 25.4) in 1/10dB for I1A and I1B faults on AO TX, defaults to Off.

Class2 Alarm is the threshold value (0.1 .. 25.4) in 1/10dB for I2A and I2B faults on AO TX, defaults to 6.0dB.

Supervision Window Time is the time (5..3000) in which the average RX path imbalance is measured in 5 minute intervals, defaults to 1440 (24h).

Minimum Number Of Samples is the minimum number (1..65535) in any given Window before any alarm may be raised, defaults to 7000 samples.

Note: Class2 Alarm should be less than Class1 Alarm for proper operation.

Note: Supervision Window Time values that are typed manually will be rounded to the closest 5 minute interval if outside such an interval.

Note: Any value outside the valid range will be converted to the default value.

4.2.27 Define TEI

Define TEI command changes the TEI value for the DXU object.

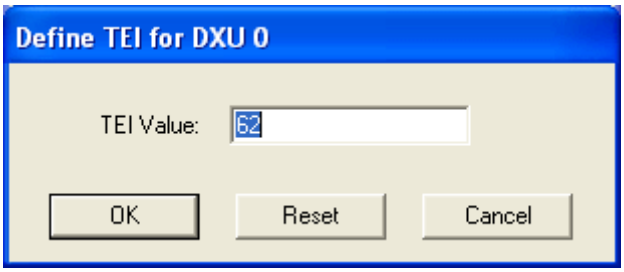
Valid OMT states:

Local IDB

Execute this command as follows:

1. **Select Configuration | Define | TEI…**
2. **Select an object to operate on.**
3. **Click Run.**

   A Define TEI dialog box is displayed.



4. **Insert a new TEI value.**
   Valid TEI values are 12--63.
5. **Confirm with OK.**
   Selecting **Reset** reverts a change to its original value.
   Cancel closes the dialog box without making any changes.

4.2.28 Define Transmission

The Define Transmission command defines the Transmission Configuration parameters.

Note: Check that the transmission type in the Define Transmission dialog box is set to the same rate as the hardware. If it is not, an IDB alarm is presented in the MO fault maps. This operation is not available when using transmission type Internal.

Valid OMT states:

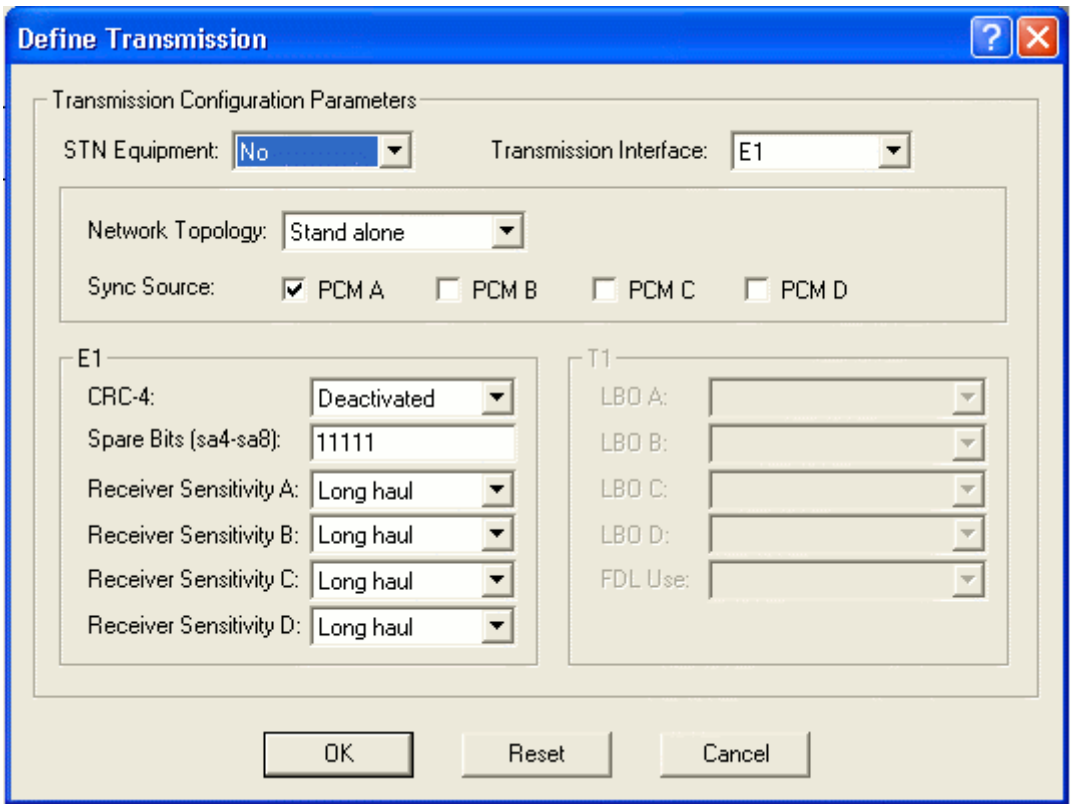
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | Transmission...**

   A Define Transmission dialog box is displayed.



2. **Change the Transmission Configuration parameters.**

3. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

Note: If running in Connected state, it is necessary to reconfirm with OK.

4.2.29 Define Hardware Information

The Define Hardware Information command defines new hardware values for all passive RUs and the active RUs for RBS_2106, RBS_2106i, RBS_2107, RBS_2112, RBS_2206, RBS_2207 and RBS_2250 TRX.

Valid OMT states:

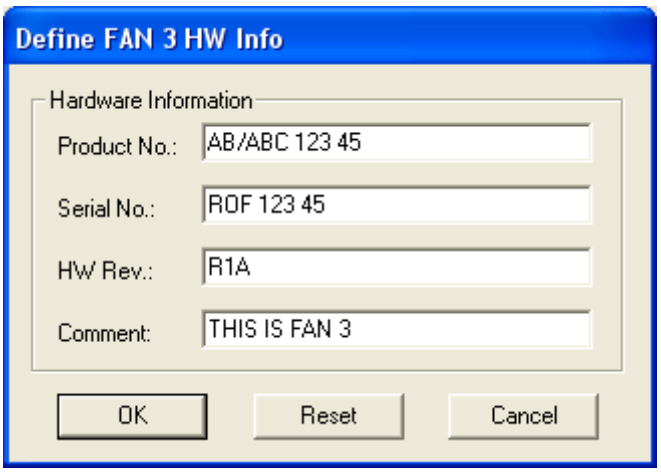
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | Hardware Info…**
2. **Select an object to operate on.**
3. **Click Run.**

   A Define Hardware Information dialog box is displayed.



4. **Insert new value or values.**
   The object product number, serial number and hardware revision can be changed. A text comment can be entered.

   Product number: Valid characters are: A-Z, 0-9, space and /.
   Syntax: optional values in parentheses:
   1 (1-3 characters/)
   2 Three letters, space, three digits, space, two digits
   3 (1-2 digits)
   4 (/1-5 characters)

Syntax:	1	2	3	4
	A/	ABC 123 45	63	/AE78G

Example 1: A/ABC 123 45

Example 2: A/ABC 123 45/AE89G

Serial number: Valid characters are: space ! # $ % & ' ( ) * + , - . / 0-9: ; < = > ? A-Z _

Hardware revsion: Valid characters are: A-Z, 0-9, space and /.
Syntax: optional values in parentheses:
1 Letter, 1-3 characters
2 (/character | /two digits)

Syntax:	1	2
	C2E6	9

Example: C2E6

Text comment: Valid characters are:
space ! # $ % & ' ( ) * + , - . / 0-9: ; < = > ? A-Z _

5. Confirm with OK.

Selecting **Reset** reverts all changes to their original values.
Cancel closes the dialog box without making any changes.

4.2.30 Define Loss

The Define Loss command enable the loss value to be set for cables, feeder cables, and feeder jumpers.

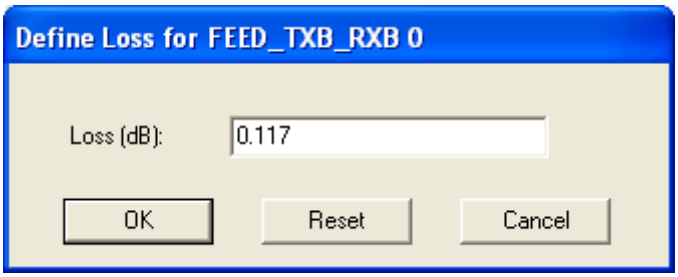
Valid OMT states:

Local IDB

Execute this command as follows:

1. **Select Configuration | Define | Loss…**
2. **Select an object on which to operate.**
3. **Click Run.**

   A Define Loss dialog box is displayed.



4. **Insert a new value.**
   The valid value range is -384.0 dB to +384.0 dB in 0.012 dB increments.
   Note: When the loss value is saved, the value will be adjusted automatically to match the legal increments.
5. **Confirm with OK.**
   Selecting **Reset** reverts a change to its original values.
   Cancel closes the dialog box without making any changes.

4.2.31 Define Delay

The Define Delay command enables the delay value to be set for feeders.

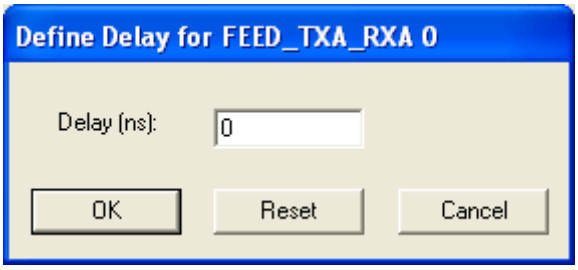
Valid OMT states:

Local IDB

Execute this command as follows:

1. **Select Configuration | Define | Delay…**
2. **Select an object to operate on.**
3. **Click Run.**

   A Define Delay dialog box is displayed.



4. **Insert a new value.**
   The valid value range is 0 ns to +10 000 ns.
   Note: When the delay value is saved, the value is adjusted automatically to match the legal increments.
5. **Confirm with OK.**
   Selecting **Reset** reverts a change to its original values.
   Cancel closes the dialog box without making any changes.

4.2.32 Define GPS Parameters

The Define GPS Parameters operation enables the presence, RX delay and RX DXU delay for the GPS to be set.

Note: GPS parameters can not be defined for RBS 2108 or RBS 2111.

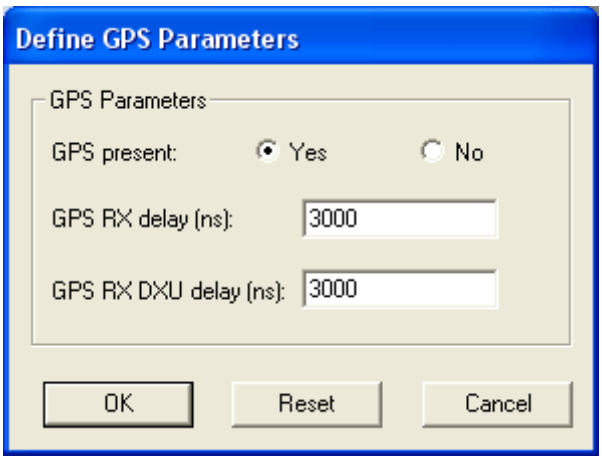
Valid OMT states:

Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | GPS Parameters…**
   A Define GPS Parameters dialog box is displayed.



2. **Edit to appropriate values.**

3. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.33 Define ESB Delay List

The Define ESB Delay List operation is used to define manually measured ESB Delay values for a Transceiver Group (TG) slave in a Logical TG Cluster. Specifying a delay value towards a TG instance, will override the automatic measurement the slave otherwise performs.

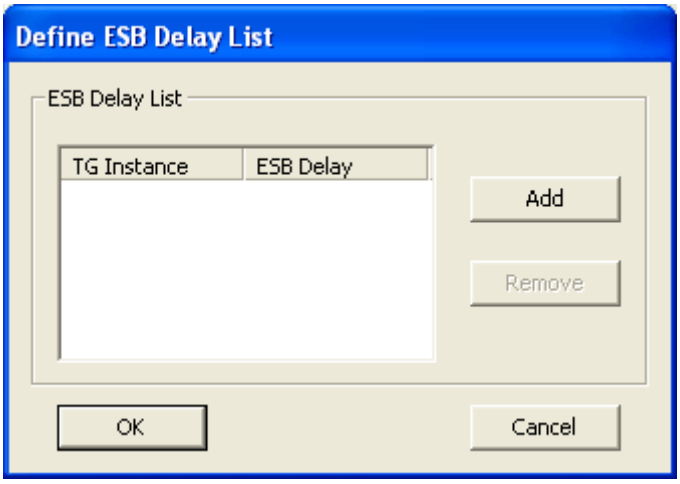
Valid OMT states:

Local IDB

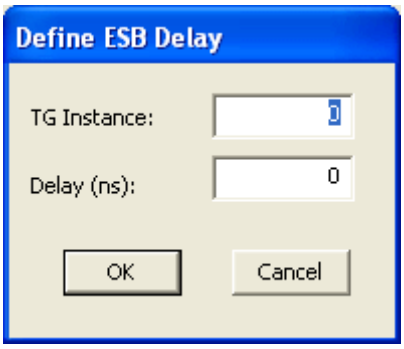
Connected

Execute this command as follows:

1. **Select Configuration | Define | Delay…**
2. **Select the ESB object.**
3. **Click Run.**
   A Define ESB Delay List dialog box is displayed.



4. **Click Add.**
   A Define ESB Delay sub-dialog box is displayed.



5. **Enter TG Instance.**
   The instance number is one of the possible TG Masters in the TG cluster.
   Note: This is not an arbitrary number. Use the same instance number as already defined via BSC or via OSS/BSM.

6. **Enter ESB Delay.**
   Enter the ESB delay value towards the TG defined in previous step.

7. **Confirm with OK.**
   Selecting **OK** closes the Define ESB Delay sub-dialog box and returns focus to the ESB Delay List dialog.
   Selecting **Cancel** will close the sub-dialog box without adding a ESB Delay value.

Confirm with OK in the Define ESB Delay List dialog.
Selecting **OK** will set the configured values.
Selecting **Cancel** will close the dialog box without making any changes.

To add more ESB Delay values for other possible TG Masters, click **Add** and repeat steps **5** to **7**.
To remove a previously defined ESB Delay value, select the ESB Delay value in the list and click **Remove**.

4.2.34 Define TF Compensation

This function is used to calculate and set a value for TF Compensation. It is only applicable for a TG configured as a slave in a Notional TG Cluster.

Note: Setting TF Compensation value is not applicable for DXU-01, DXU-03, RBS 2108, RBS 2111 or any Micro Cabinet since they do not support TG Synchronisation.

Before setting TF Compensation, information is required from the master TG.

If the master TG is an RBS 2000, the required information is the Transmitter Chain Delay. Use the OMT at the master TG to retrieve this information. The Transmitter Chain Delay information can be found by executing the Display Information operation on the RBS object. See section Display Information.

If the master TG is an RBS 200/RBS 205, the required information is Combiner type, usage of TMA and Feeder Delay.

In addition, delays for all feeder objects must be defined in order to get a correct recommended TF Compensation value. This is applicable for all types of master TG's. To define delay use the Define Delay operation. See section Define Delay.

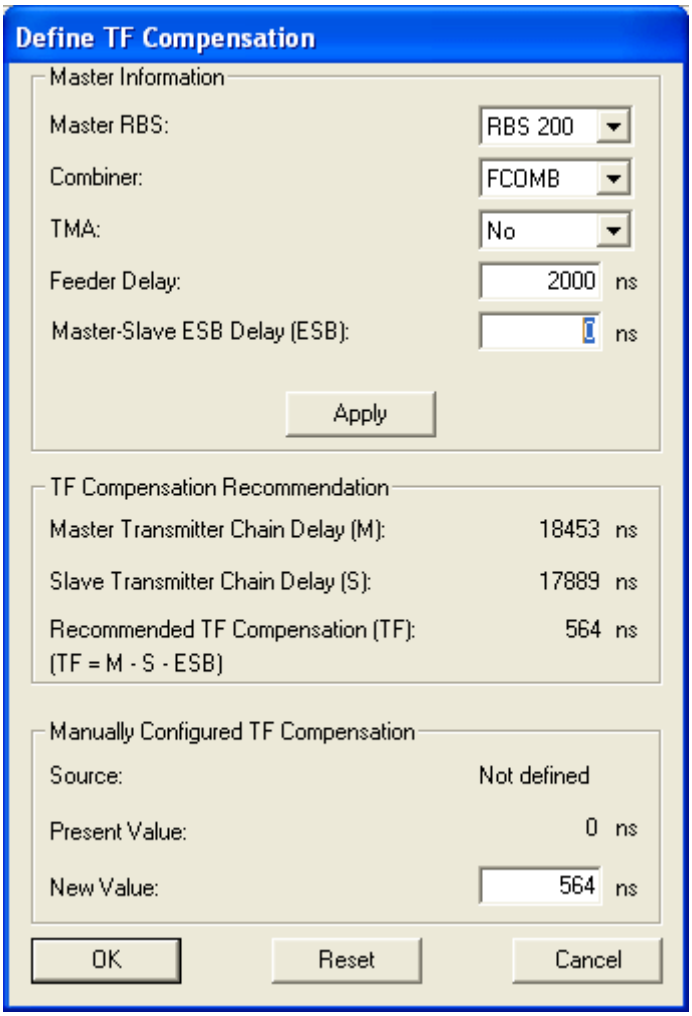
Valid OMT states:

Local IDB

Execute this command as follows:

1. **Select Configuration | Define | TF Compensation…**

   A Define TF Compensation dialog box is displayed.



2. **Enter Master Information.**
   Select the master RBS. If the master RBS is RBS 200/RBS 205, then enter Combiner type, usage of TMA and Feeder Delay; otherwise, enter the Transmitter Chain Delay.

3. **Enter ESB Delay.**

4. **Confirm with Apply.**
   A recommended TF Compensation value is calculated and displayed.

5. **Change New TF Compensation Value.**
   The valid value range is –10 000 ns to +10 000 ns. The recommended TF Compensation value is normally used.

6. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.35 Define TF Holdover Mode

This function enables the definition (or redefinition) of IDB parameter TF Holdover Mode. This IDB parameter states if a TF, configured as a slave, is to be in Intra-cell mode or Inter-cell mode.
The function is only applicable for RBSs equipped with DXU-21, DXU-22, DXU-23 or DXU-31.

- Intra cell mode: The RBS (TG) is used together with other RBSs (TGs) in a TG cluster to realize one or more cells.
- Inter cell mode: The RBS (TG) is used together with no other RBSs (TGs) to realize one or more cells.

Valid OMT states:

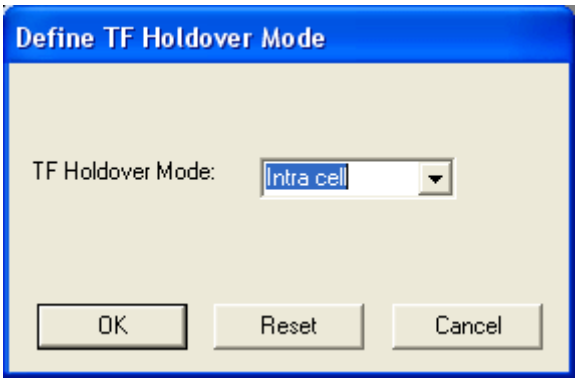
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | TF Holdover Mode…**

   A Define TF Holdover Mode dialog box is displayed.



2. **Select a new value.**

3. **Confirm with OK.**
   Selecting **Reset** reverts a change to its original value.
   Cancel closes the dialog box without making any changes.

4.2.36 Define RBS Identity

The Define RBS Identity operation enables a name for the RBS to be defined together with a description giving more detailed information about the RBS.

Valid OMT states:

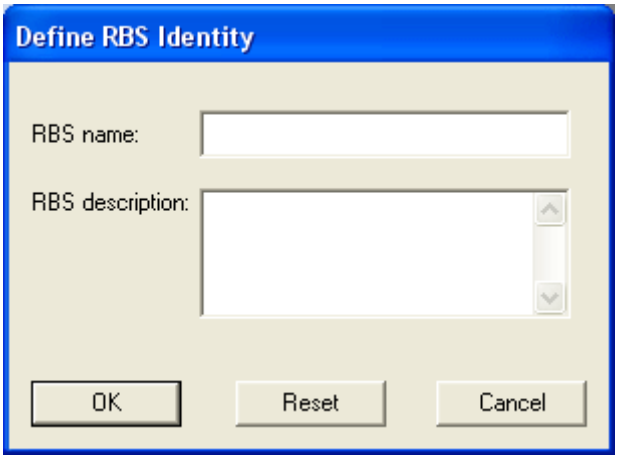
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | RBS Identity…**

   A Define RBS Identity dialog box is displayed.



2. **Insert RBS name and RBS description.**
   Valid characters are:
   A-Z 0-9 space ! # $ % & ‘ ( ) * + - / : ; < = > ? _
   A maximum of 20 characters can be entered into the RBS name field.
   A maximum of 100 characters can be entered into the RBS description field.

3. **Click OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.37 Define Climate

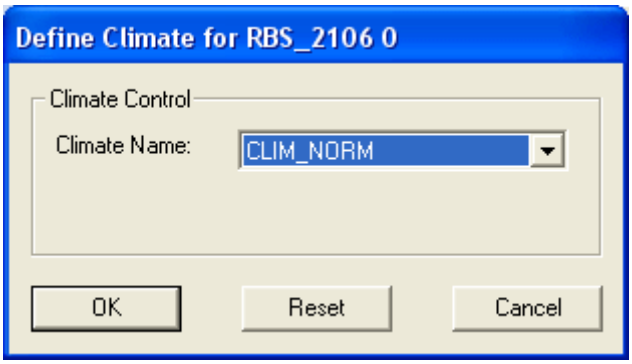
The Define Climate command sets the climate environment for the cabinet that contains the CCU.

Valid OMT states:

Local IDB

Execute this command as follows:

1. **Select Configuration | Define | Climate...**
   A Define Climate dialog box is displayed.



2. **Select a Climate Name from the drop down list.**

3. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.38 Define VSWR Limits

The Define VSWR Limits command changes the VSWR limits for a TX antenna.
To change the VSWR limits for all TX antennas in an antenna system, select the Antenna System object.

Note: VSWR Limits cannot be defined for Micro cabinets, RBS 2108, RBS 2109, RBS 2111 or RBS 2216.
Neither can VSWR limits be changed in connected state for RBS 2101, RBS 2102 or RBS 2202.

Valid OMT states:

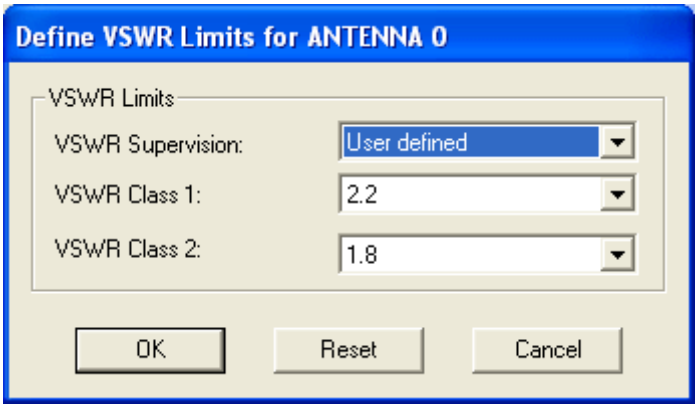
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | VSWR Limits...**
2. **Select an object on which to operate on.**
3. **Click Run.**

   A Define VSWR Limits dialog box is displayed.



4. **Insert new value or values.**
   VSWR Supervision, VSWR Class 1, and VSWR Class 2 can be defined for each antenna.

Note: The VSWR Class 1 and Class 2 limits can be changed only if VSWR Supervision is set to "User defined". If VSWR Supervision is set to "Default", the RBS SW sets the limits for Class 1 and Class 2 to 2.8.
In configurations that include CDU-J, only default values for VSWR limits can be set and these values cannot be changed.

5. **Confirm with OK.**

Selecting **Reset** reverts all changes to their original values.
Cancel closes the dialog box without making any changes.

4.2.39 Set CDU Power Supervision

This function disables and enables CDU/FU Power Supervision and CDU/FU Cable Supervision. This inhibits alarm generation in test situations, when cables connected to the CDU/FU connectors “Forward” and “Reflected” must be disconnected.

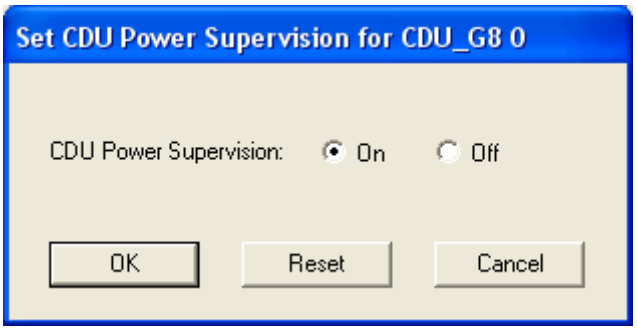
Note: For safety reasons, the CDU Power Supervision is activated when the link between the OMT and the RBS is disconnected.

Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Set CDU Power Supervision...**
2. **Select an object to operate on.**
3. **Click Run.**
   A Set CDU Power Supervision dialog box is displayed.



4. **Change the activation of the CDU Power Supervision.**
5. **Confirm with OK.**
   Selecting **Reset** reverts the change to its original value.
   Cancel closes the dialog box without making any changes.

4.2.40 Change Local/Remote State

This function changes the Local/Remote State for the selected object.

Object:	Valid OMT states:	Comment:
DXU, IXU	Connected Connected (Local IDB)	
TRU, RRU, DRU	Connected	
RBS	Connected Connected (No IDB) Connected (Local IDB)	Changes the state for the DXU/DXB/IXU
Micro Cabinet (Master)	Connected Connected (Local IDB)	Changes the state for DXB
Micro Cabinet (Extension)	Connected	Changes the state on the lowest numbered TRU in the cabinet

Execute this command as follows:

1. **Select Maintenance | Change Local/Remote State…**
2. **Select an object on which to operate on.**
3. **Click Run.**
4. **Confirm with Yes.**
   No closes the OMT dialog box without making any changes.

Note: A change from Local to Remote state for DXU or IXU, will cause a disconnection between the OMT and the RBS. A manual reconnection is necessary.

4.2.41 Reset

This command resets the chosen object.

Object:	Valid OMT states:	Comment:
DXU, IXU	Connected Connected (Local IDB)	
TRU, RRU, DRU	Connected	
ECU	Connected	
RBS	Connected Connected (No IDB) Connected (Local IDB)	Resets the DXU/DXB/IXU
Micro Cabinet (Master)	Connected Connected (Local IDB)	Resets the DXB
Micro Cabinet (Extension)	Connected	Resets both TRUs in the cabinet

Execute this command as follows:

1. **Select Maintenance | Reset…**
2. **Select an object on which to operate on.**
3. **Click Run.**
4. **Confirm with Yes.**
   No closes the OMT dialog box without making any changes.

4.2.42 Display Log

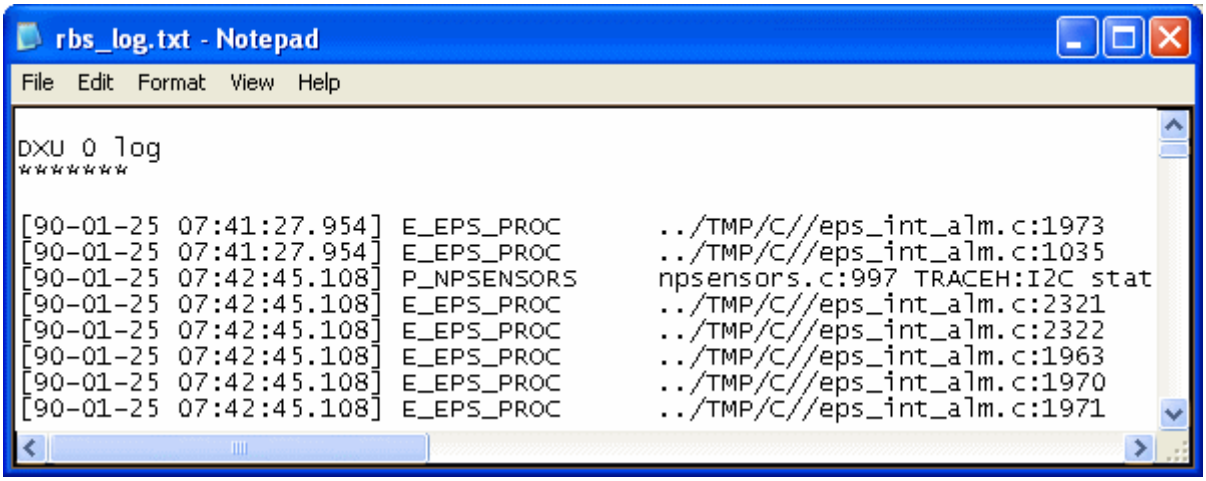
The display log operation reads the logs from the RBS and displays them in a text editor (Notepad).

Object:	Valid OMT states:	Comment:
DXU, IXU	Connected	
TRU, RRU, DRU	Connected	
ECU	Connected	
RBS	Connected	Displays the log for all main RUs
Micro Cabinet	Connected	Displays the DXB and TCB logs

Execute this command as follows:

1. **Select Maintenance | Display | Log…**
2. **Select an object on which to operate on.**
3. **Click Run.**

A text editor (Notepad) window opens.



Note: If a Remote OMT over IP is used and if BSC-RBS transmission is configured to share communication channel for OMT-signalling and traffic-related signalling there is a minor risk that the ‘Display Log’ function may disturb traffic when the BSC-RBS transmission is heavily loaded, e.g. during peak traffic hours.

4.2.43 Set Measurement Reports On/Off

This function disables and enables the generation of measurement reports for each timeslot belonging to the selected TRXC object. This function is useful in the verifying process, where irrelevant measurement reports might otherwise block the test equipment.

Note: Do not use this function when the RBS is carrying traffic, as traffic will be lost. Measurement reports are automatically enabled when the link between the OMT and the RBS is disconnected.

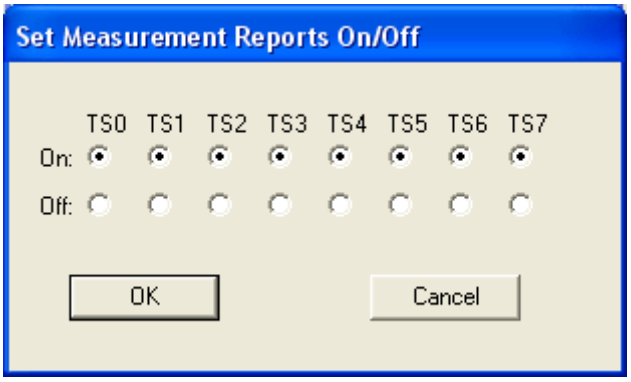
Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Set Measurement Reports On/Off…**
2. **Select an object on which to operate on.**
3. **Click Run.**

   A Set Measurement Reports On/Off dialog box is displayed.



4. **Change the Measurement Reports to On/Off.**
5. **Confirm with OK.**
   Cancel closes the dialog box without making any changes.

4.2.44 Set SSQIU On/Off

This function switches the SSQIU to On/Off for each timeslot belonging to the selected TRXC object.

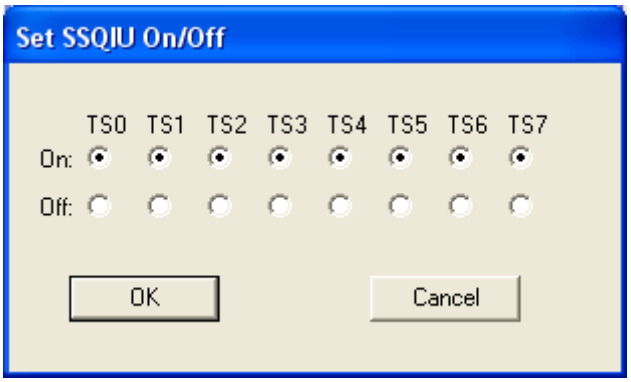
Note: The SSQIU is automatically enabled when the link between the OMT and the RBS is disconnected.

Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Set SSQIU On/Off…**
2. **Select an object on which to operate on.**
3. **Click Run.**
   A Set SSQIU On/Off dialog box is displayed.



4. **Change the SSQIU to On/Off as appropriate.**
5. **Confirm with OK.**
   Cancel closes the dialog box without making any changes.

4.2.45 Display Faulty RUs

This command displays a list of RUs that have been indicated as faulty by the RBS SW.

Note: When a fault is ceased it is not automatically updated in the window.

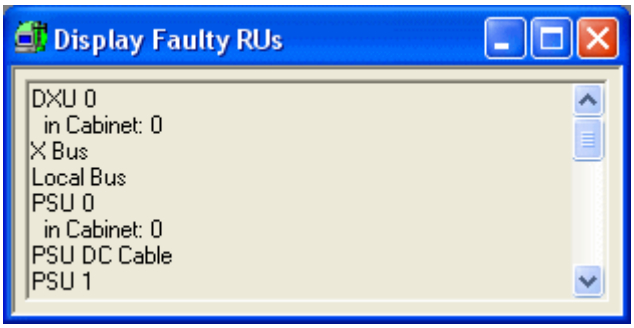
Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Display | Faulty RUs.**

   A Display Faulty RUs window opens.



The windows will contain RUs that are faulty.

Note: This operation may take a few minutes to complete.

4.2.46 Save Field Configuration

The configuration is saved in a library intended to contain only configurations used in the operator's network. For each configuration in the library, a short description can be added.

Select Tools | Options… to change the base directory of the library.

Valid OMT states:

Local IDB

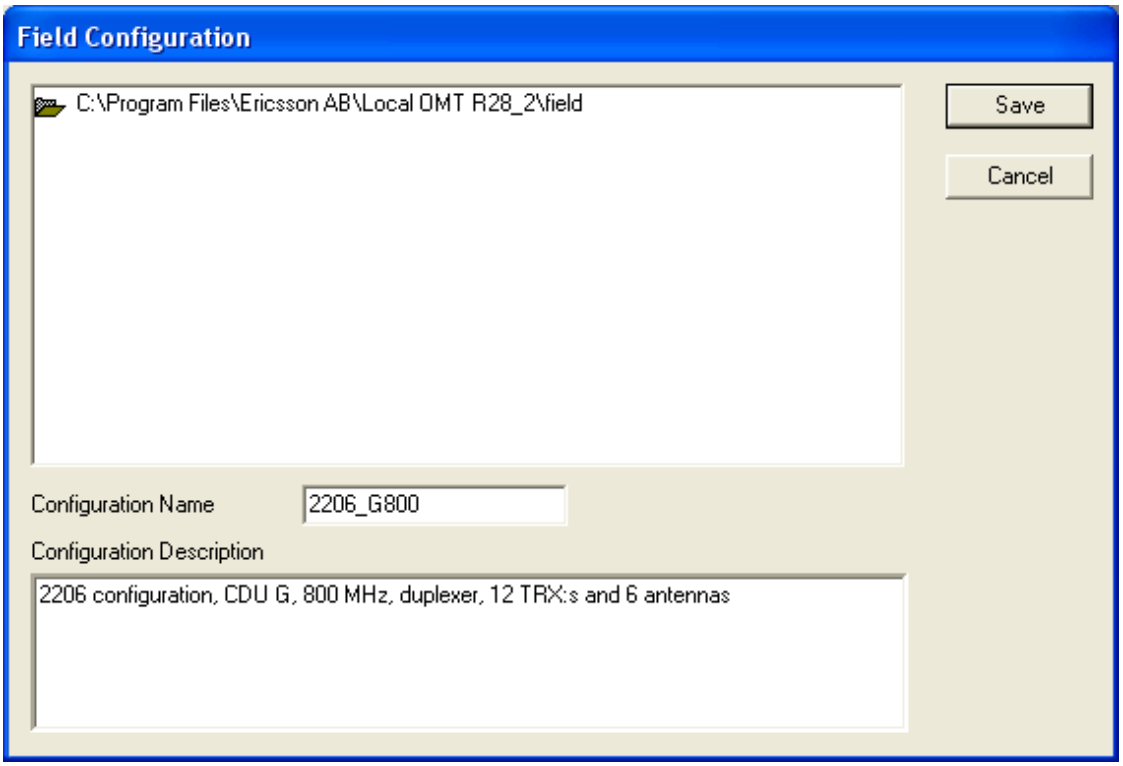
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Field Configuration | Save...**

   A Field Configuration dialog box is displayed.



2. **Select the directory in the dialog and enter a Configuration Name and a Configuration Description.**

3. **Confirm with Save.**
   Selecting **Cancel** closes the dialog box without saving the Field Configuration.

4.2.47 Open Field Configuration

A library of field configurations gives faster access to configuration files relevant to the operator's network.

Select Tools | Options… to change the base directory of the library.

Valid OMT states:

Init

Local IDB

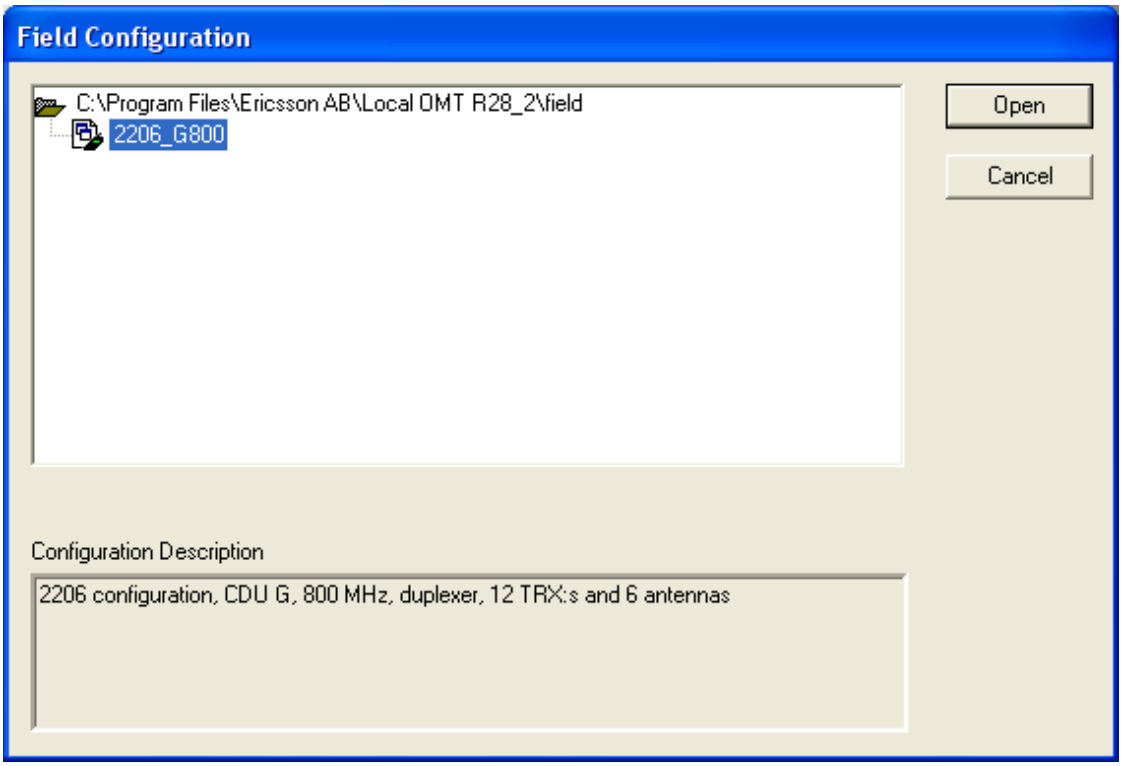
Connected (No IDB)

Connected (Local IDB)

Execute this command as follows:

1. **Select Configuration | Field Configuration | Open...**

   A Field Configuration dialog box is displayed.



2. **Select a file.**
   A configuration description is displayed.

3. **Confirm with Open.**
   Selecting **Cancel** closes the dialog box without opening the Field Configuration.

4.2.48 Display Field Configuration Information

This command displays attached configuration information or the IDB description for the current field configuration.

Note: This operation is valid only after Open Field Configuration or Save Field Configuration command.

Valid OMT states:

Local IDB

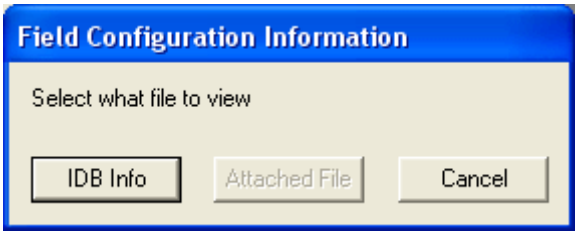
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Field Configuration | Display Information...**

   A Field Configuration Information dialog box is displayed.



   Selecting **IDB Info** will show a description of the configuration to be displayed in a text editor (Notepad). This file is automatically generated by the OMT.
   Selecting **Attached File** shows the file attached to the field configuration.
   Selecting **Cancel** closes the dialog box.

4.2.49 Attach Field Configuration Information

The Attach Field Configuration Information command attaches a file to the field configuration, which describes a configuration.

Note: This operation is valid only after a Open Field Configuration or Save Field Configuration command.

Valid OMT states:

Local IDB

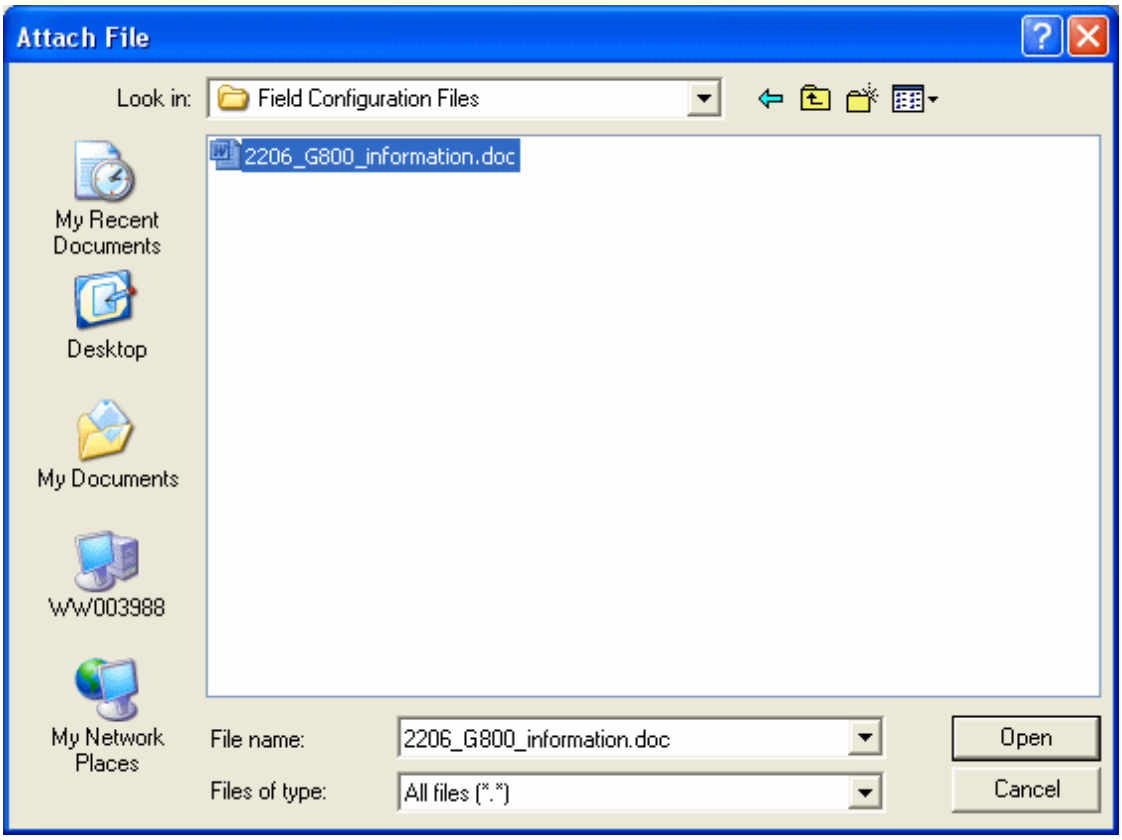
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Create a file using a text editor or another application.**
2. **Select Configuration | Field Configuration | Attach Information...**

   An Attach File dialog box is displayed.



3. **Select file name.**
4. **Confirm with Open.**
   Selecting **Cancel** closes the dialog box without making any changes.

4.2.50 Define TNOM

The Define TNOM operation enables TNOM Use, TNOM Timeslot, and TNOM Node ID to be defined.

Note: This operation is not available when using transmission interface type IP.

Valid OMT states:

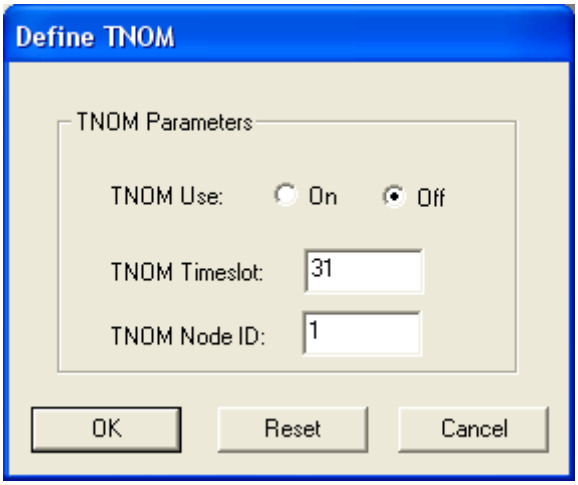
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | TNOM…**

   A Define TNOM dialog box is displayed.



2. **Change the TNOM Use.**

3. **Insert a TNOM Timeslot value.**
   Valid TNOM Timeslot values are 1-31 for G.703 (E1) and 1-24 for DS1 (T1).

4. **Insert a TNOM Node ID value.**
   Valid TNOM Node ID values are 1-65534.

5. **Confirm with OK.**
   Selecting Reset reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

6. **Reconfirm.**
   Note: A warning message is shown if the TNOM Timeslot is already in use.

4.2.51 Display TNOM Values

The Display TNOM Values enables the values of the TNOM Use, TNOM Timeslot and TNOM Node ID parameters to be displayed.

Note: This operation is not available when using transmission interface type IP.

Valid OMT states:

Local IDB

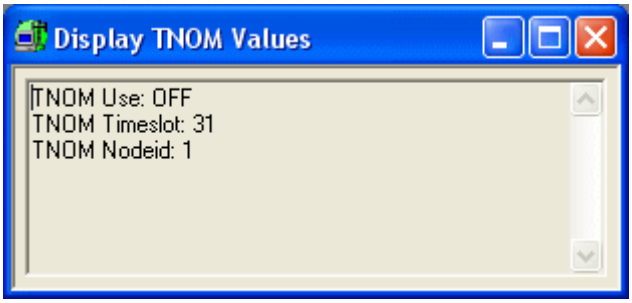
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Display | TNOM Values.**

   A Display TNOM Values window opens.



4.2.52 Calibrate Oscillator

The Calibrate Oscillator operation enables the RBS oscillator to be calibrated by entering a measured frequency.

Note: Only applicable for RBSs with DXU-03 or variants of RBS 2301, 2302 and 2401 with product numbers ending with '…/090/'.

Valid OMT states:

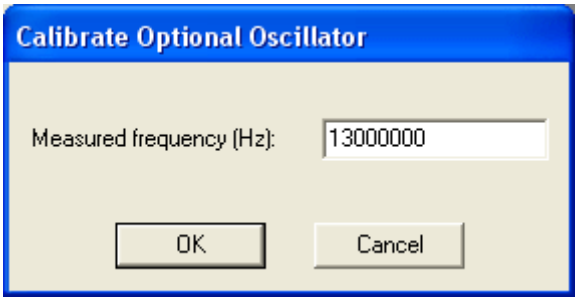
Connected (No IDB)

Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Maintenance | Calibrate Oscillator…**
   A Calibrate Optional Oscillator dialog box is displayed.



2. **Enter the Measured frequency for the optional reference oscillator.**
3. **Confirm with OK.**
   Selecting **Cancel** closes the dialog box without making any changes.

4.2.53 Define ALNA/TMA

The Define ALNA/TMA operation enables ALNA/TMA parameters to be defined.

Note: ALNA/TMA can not be defined for RBS 2108 or RBS 2111.

Note: TMA type is not valid for RBS 2109 or RBS 2250.

The loss parameter specifies the loss of the TMA. Since a TMA actually has a gain instead of a loss, the TMA gain is specified as a negative loss.

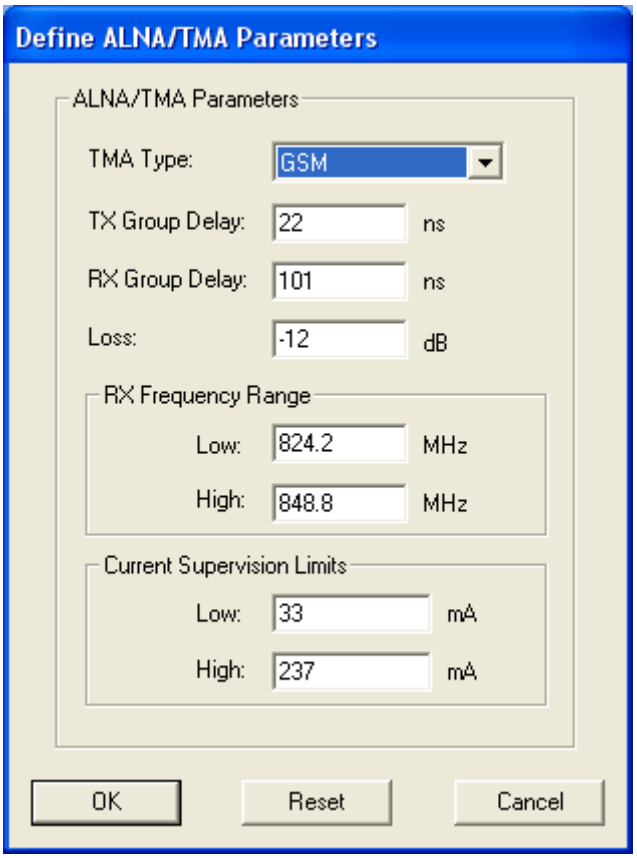
Valid OMT states:	ALNA/TMA parameters:
Local IDB	TMA Type Current Supervision Limits TX Group Delay RX Group Delay Loss RX Frequency Range
Connected	TMA Type Current Supervision Limits

Execute this command as follows:

1. **Select Configuration | Define | ALNA/TMA…**
2. **Select an object on which to operate.**

3. **Click Run.**

   A Define ALNA/TMA dialog box is displayed.



4. **Edit to appropriate values.**
   Note: When the values are saved, they are automatically adjusted to match the allowed increments.

5. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.54 Define Battery Parameters

The Define Battery Parameters operation enables the Disconnect/reconnect voltage, Alarm raise limit, In service date, and Charging parameters for the battery to be defined.

Note: This operation is valid only for Macro cabinets, with the exception of RBS 2108, RBS 2109, RBS 2111 and RBS 2216.
The Disconnect level prioritized cannot be defined for configurations containing BDM objects.
The In service date parameter is valid only in the Connected state.

Valid OMT states:

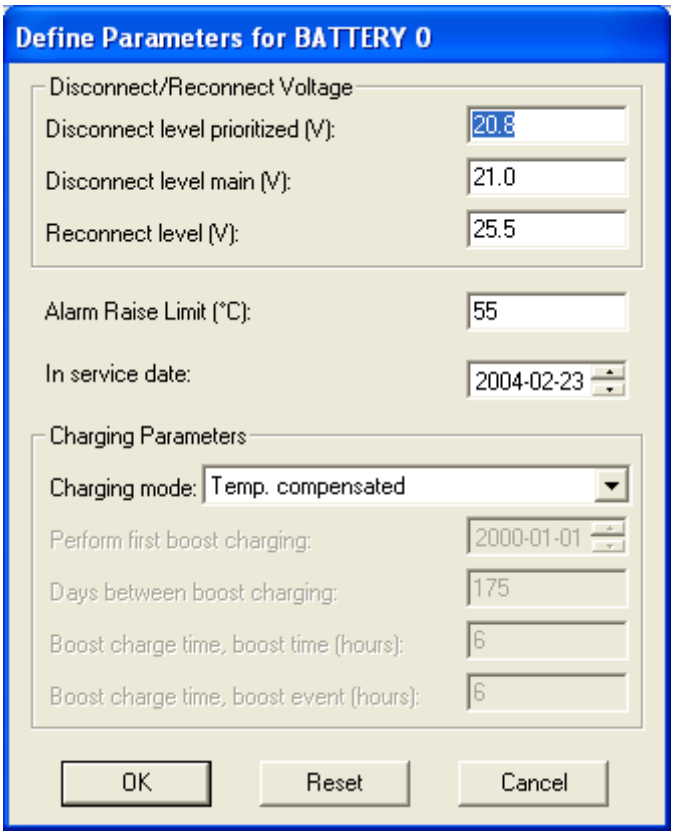
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | Battery Parameters…**
2. **Select an object on which to operate.**
3. **Click Run.**

   A Define Battery Parameters dialog box is displayed.



4. **Edit to appropriate values.**
   Note: When the values are saved, they are automatically adjusted to match the allowed increments.

5. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.55 Define System Voltage

The Define System Voltage operation sets the system voltage for a cabinet. This operation is available only on RBS 2106, RBS2106I, RBS 2107, RBS 2206 and RBS 2207.

Valid OMT states:

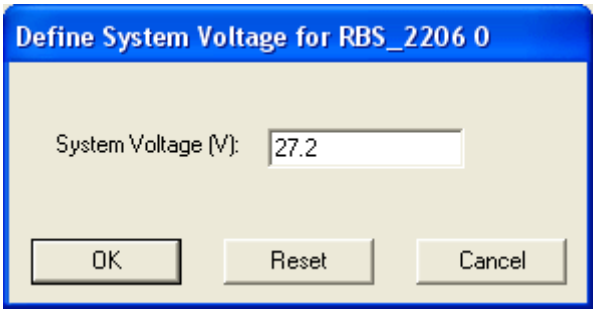
Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | System Voltage…**
2. **Select an object on which to operate.**
3. **Click Run.**

   A Define System Voltage dialog box is displayed.



4. **Insert a new value.**
   Note: When the value is saved, it is automatically adjusted to match the allowed increments.
5. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.56 Load Flash Card

The Load Flash Card operation enables the RBS SW and the IDB to be loaded onto a flash card. To perform this operation, the flash card must be removed from the DXU or IXU and then connected to the PC using a PCMCIA adapter.

Note: Only flash cards provided by Ericsson must be used. If a flash card becomes corrupt, replace it with a new flash card from Ericsson. Do not use a reformatted flash card.

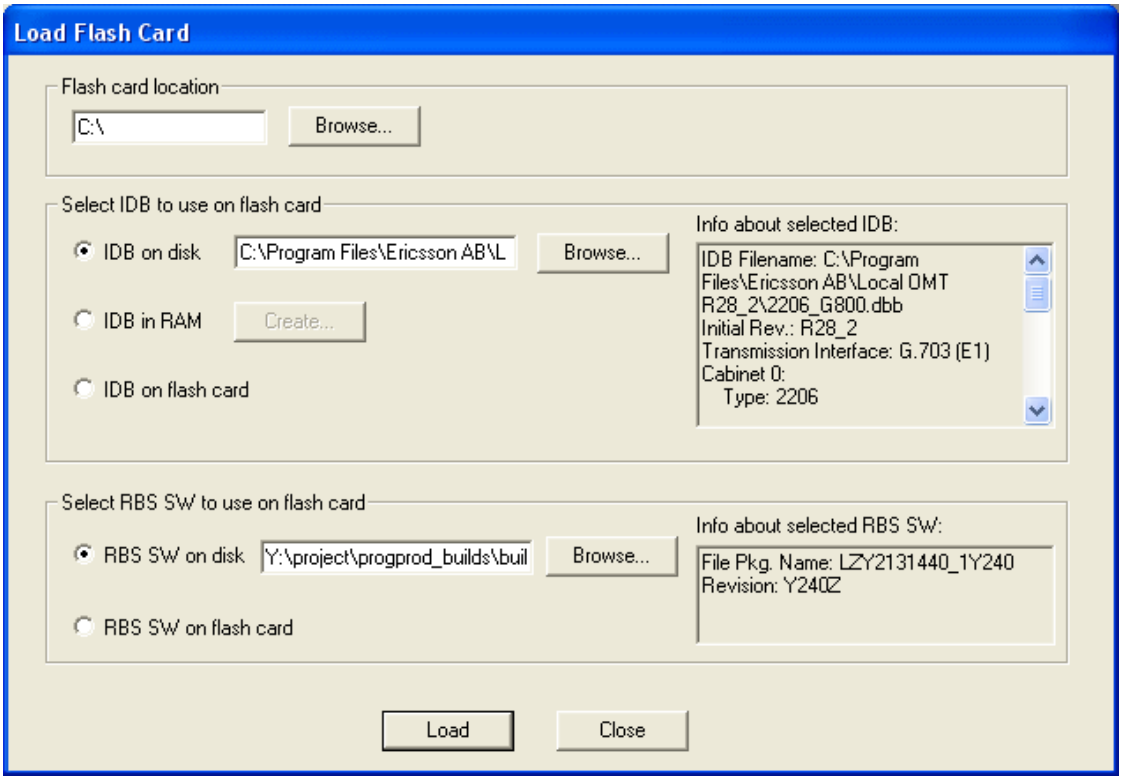
Some flash card writers do not inform the OMT that the writing of data was unsuccessful. To minimize the risk of a corrupt flash card, close the Load Flash Card dialog box and remove the flash card from the writer. Insert the flash card again and use the Load Flash Card dialog to check if the OMT can read the IDB and RBS SW information.

Valid OMT states:

All states

Execute this command as follows:

1. **Select Configuration | Load Flash Card…**
   A Load Flash Card dialog box is displayed.



2. **Enter the Flash card location.**
   The drive where the PCMCIA adapter is connected can be entered. If selecting Browse, a Select flash card drive dialog appears. This dialog shows all available drives for the PC.

3. Select IDB to use on flash card
There are three options:

Select IDB on disk:	Enter the path to the IDB in the textbox or select **Browse**
Select IDB in RAM:	The existing IDB in the OMT is loaded onto the flash card. Selecting **Create** causes a Create IDB dialog box to be displayed, which enables a new IDB to be created in RAM. **Note:** When creating a new IDB, the existing IDB in the OMT is overwritten
Select IDB on flash card:	The existing IDB on the flash card is retained.

Information about the selected IDB is shown.

4. Select RBS SW to use on flash card.
The RBS SW to be used can be located on disk or on a flash card.
Select RBS SW on disk: Enter the path to the directory that includes the RBS SW file package or select **Browse**
Select RBS SW on flash card: The existing RBS SW on the flash card is retained.
Information about the selected RBS SW file package is shown.

5. Select Load
The selected RBS SW and IDB is to be loaded to the flash card. A progress bar is shown when the RBS SW is copied to the flash card. Selecting **Close** closes the dialog box without loading the flash card.

4.2.57 Display Detected HW Information

The Display Detected HW Information operation shows HW information detected by the RBS.

Note: Only applicable for RBSs equipped with dTRUs, DRUs or RRUs.

Valid OMT states:

Connected (No IDB)

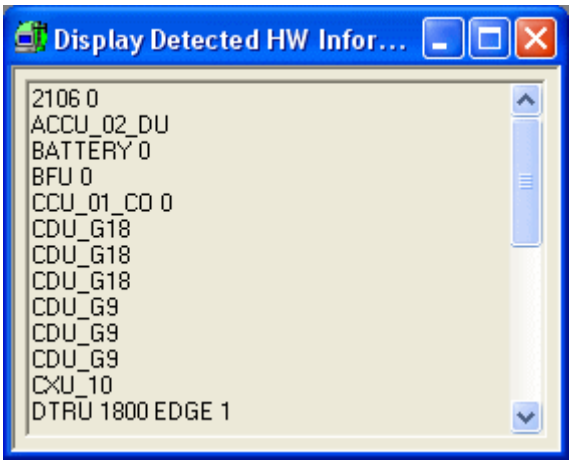
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Maintenance | Display | Detected HW Information.**

   A Display Detected HW Information window opens.



4.2.58 Check IDB

The Check IDB operation consists of two IDB checks:

- HW and IDB Comparison Status, which compares detected HW information with information from the IDB.
- IDB status, which detects IDB Type (standard or expert) and checks if this OMT supports an updated version of the IDB.

Based on the results of the above checks, an IDB replacement may be considered.

Note: The HW and IDB Comparison Status check is only applicable for RBSs equipped with dTRUs, DRUs or RRUs.

Valid OMT states:

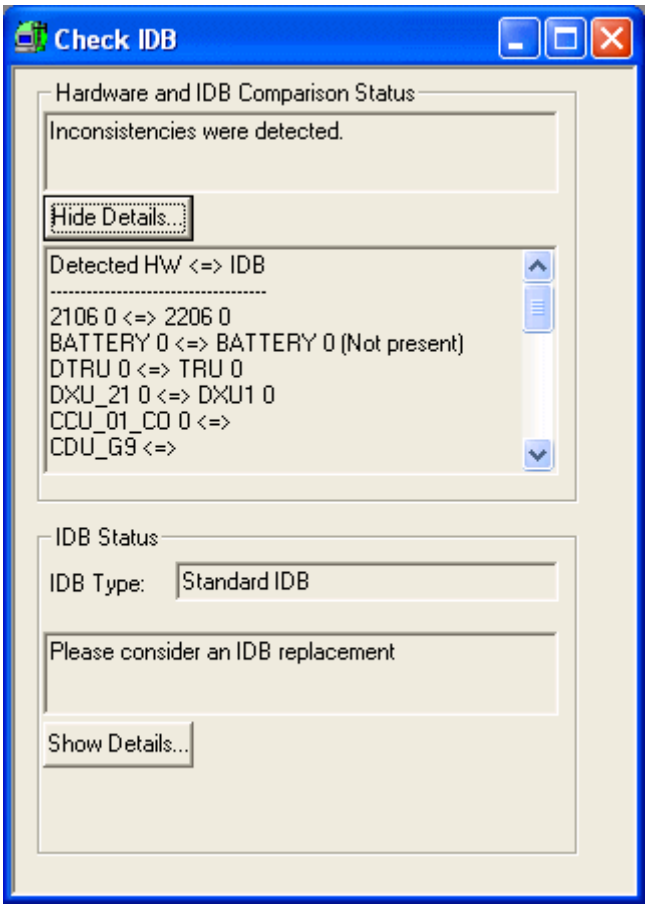
Local IDB (IDB Status check only)

Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Maintenance | Check IDB.**
   A Check IDB window opens.



4.2.59 Display Battery Backup Time Test Parameters

The Display Battery Backup Time Test Parameters operation displays information about Test enabled/disabled, Start time, Stop criteria, Test interval, and Expected backup time.

Note: This function is valid only for Macro cabinets, with the exception of RBS 2109 and RBS 2216.

Valid OMT states:

Local IDB

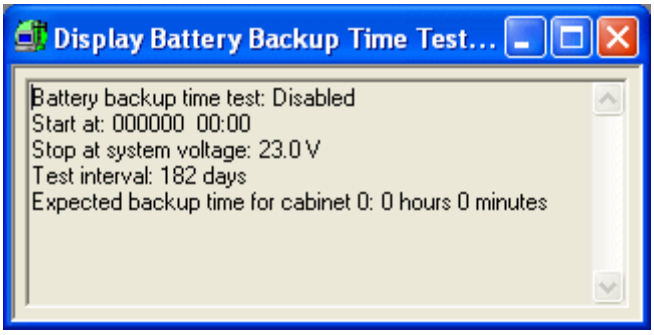
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Display | Battery Backup Time Test Parameters…**

   A Display Battery Backup Time Test Parameters window opens.



4.2.60 Define Battery Backup Time Test Parameters

The Define Battery Backup Time Test Parameters operation enables the test enabled/disabled, start time, stop criteria, Test interval, and Expected backup time parameters to be defined.

Note: This function is valid only for Macro cabinets, with the exception of RBS 2108, RBS 2111, RBS 2109 and RBS 2216.

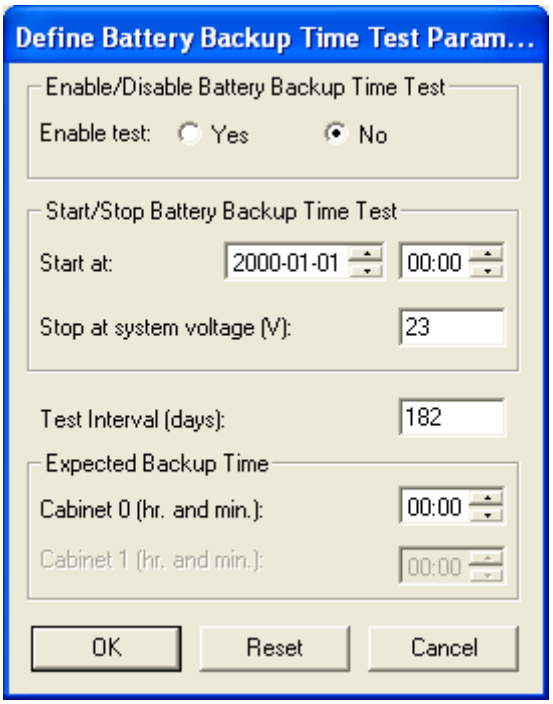
Valid OMT states:

Local IDB

Connected

Execute this command as follows:

1. **Select Configuration | Define | Battery Backup Time Test Parameters.**
   A Define Battery Backup Time Test Parameters dialog box opens.



2. **Edit to appropriate values.**

3. **Confirm with OK.**
   Selecting **Reset** reverts all changes to their original values.
   Cancel closes the dialog box without making any changes.

4.2.61 Display Battery Backup Time Test Result

The Display Battery Backup Time Test Result operation displays information about Date, Result, Measured backup time, and Expected backup time.

Note: The displayed Expected Backup Time is the current Expected Backup Time in the IDB in the OMT. It may differ from the actual Expected Backup Time in the RBS.

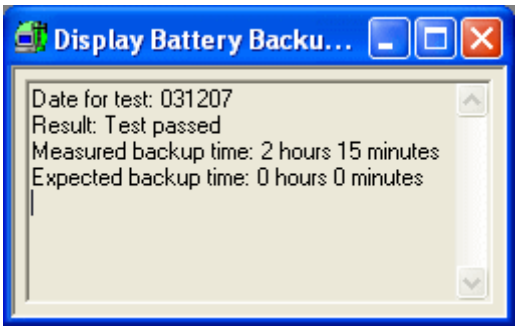
Valid OMT states:

Connected

Execute this command as follows:

1. **Select Maintenance | Display | Battery Backup Time Test Result.**
2. **Select an object on which to operate.**
3. **Click Run.**

   A Display Battery Backup Time Test Result window opens.



4.2.62 Change Battery

The Change Battery operation is used to prepare the RBS for a battery replace operation.

Valid OMT states:

Connected

This operation is available only for RBS 2106, RBS 2106i, RBS 2107, RBS 2206 and RBS 2207 with AC Power Supply and Battery Backup.

Execute this command as follows:

1. **Select Maintenance | Change Battery…**
   A Change Battery window dialog box opens:

2. **Click Disconnect.**
3. **Change the battery.**
4. **Click Reconnect.**
   The dialog box closes when reconnection is successful.

4.2.63 Display RX/TX Antenna Mapping

The Display RX/TX Antenna Mapping operation shows how TX, RXA, RXB, RXC and RXD in a TRX are mapped to the antennas.

Valid OMT states:

Local IDB

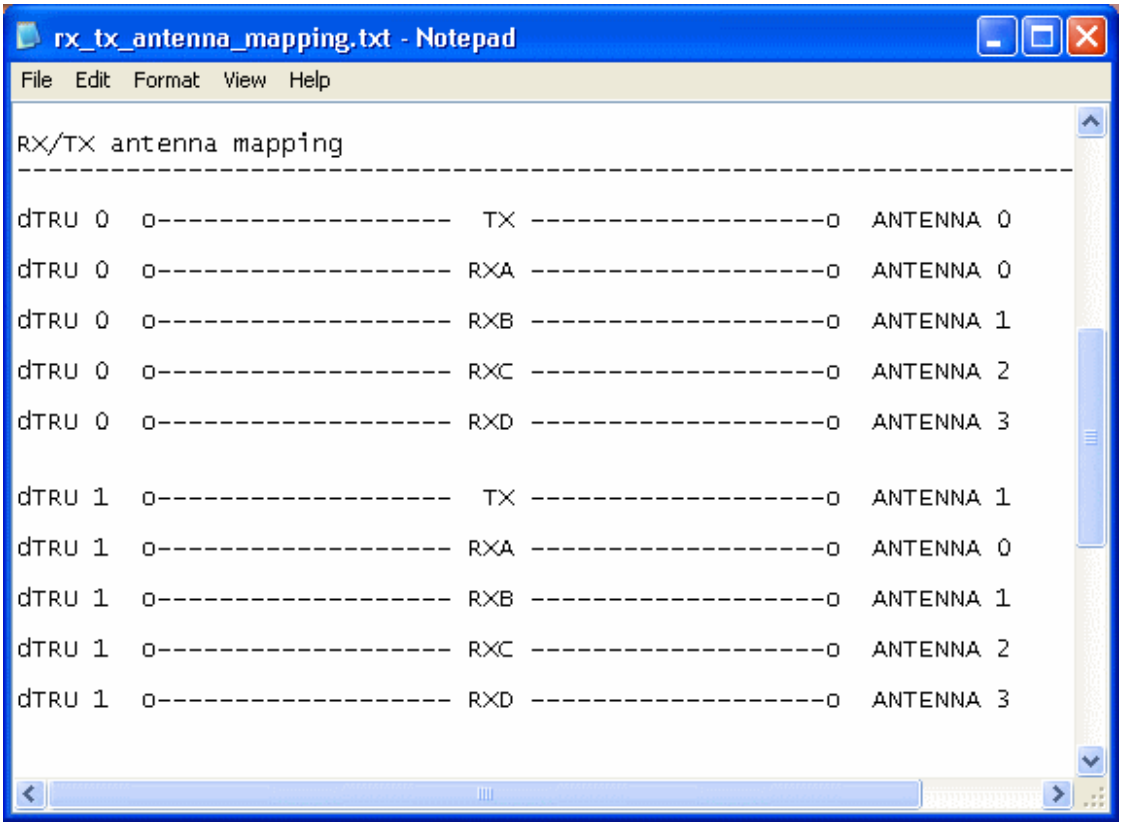
Connected (Local IDB)

Connected

Execute this command as follows:

1. **Select Configuration | Display | RX/TX Antenna Mapping.**

   A text editor (Notepad) window opens.



4.3 Tools

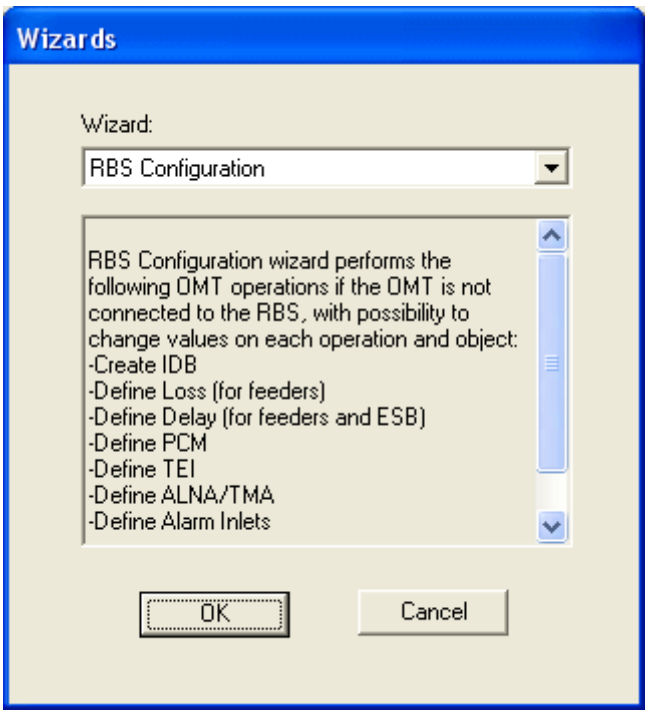
4.3.1 Wizards

The Wizard dialog offers possibility to select and start execution of a wizard. An example of a wizard is as a guide through a sequence of operations needed to perform a specific task, another example is a wizard that fully automates several operations in one go. A description for the selected wizard is displayed in the information field.

Execute this command as follows:

1. **Select Tools | Wizards.**

   A Wizards dialog box is displayed.



2. **Select wizard to execute.**
   A description of the selected wizard is displayed.

3. **Select OK.**

The selected wizard starts to execute, performing each of the steps that constitutes it.
An information window is shown during the execution which can be stopped by selecting **Abort**.

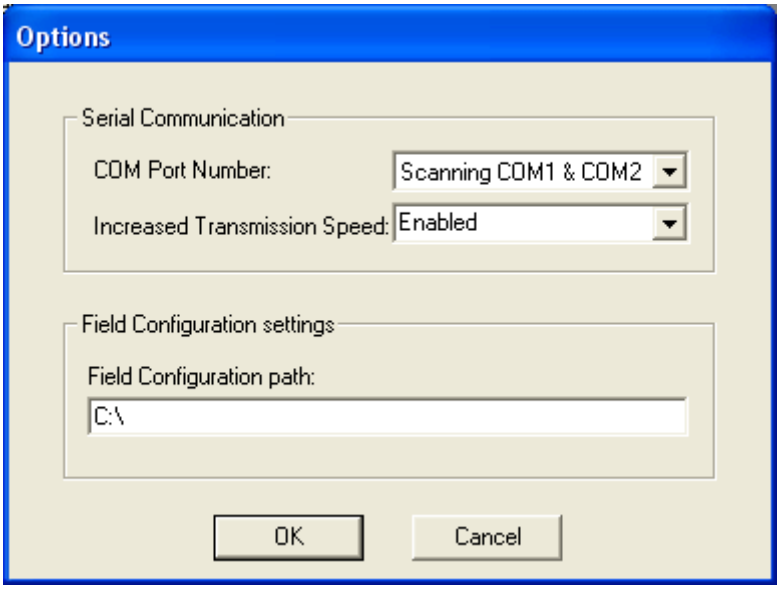
Note: When a wizard is running no other OMT operations are available.

4.3.2 Options – Local OMT

The Options dialog enables a COM Port Number and a Field Configuration Path to be set.

Execute this command as follows:

1. **Select Tools | Options.**
   An Options dialog box is displayed.



2. **Select appropriate COM Port Number**
   The default COM Port Number is “Scanning COM1 & COM2”, i.e. the OMT establishes communication on the first available of COM Port 1 or COM Port 2, starting with COM Port 1.
   Note: The OMT must be restarted before COM port changes take effect.

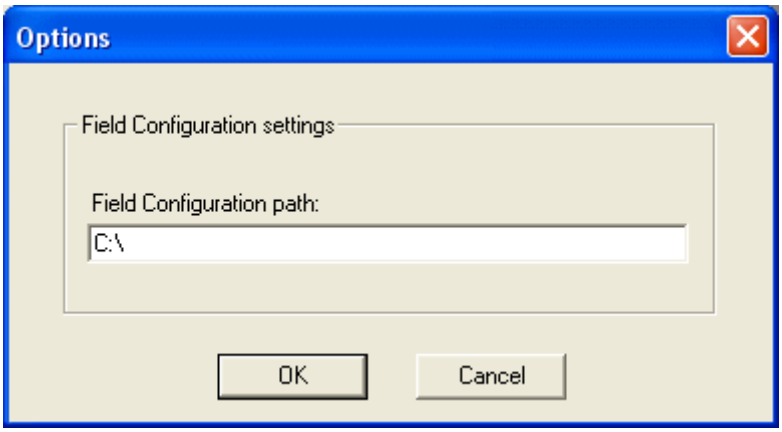
3. **Select Increased transmission speed**
   If Increased transmission speed is set to Enabled, the OMT will use baud rate 115 200 bits per second if it is supported by the RBS SW.
   If the RBS SW does not support the higher transmission speed, the OMT will use baud rate 19 200 bits per second.
   When Increased transmission speed is set to Disabled the OMT will always use the lower baud rate.

4.3.3 Options – Remote OMT and Remote OMT over IP

The Options dialog enables the Field Configuration Path to be set.

Execute this command as follows:

1. **Select Tools | Options.**
   An Options dialog box is displayed.

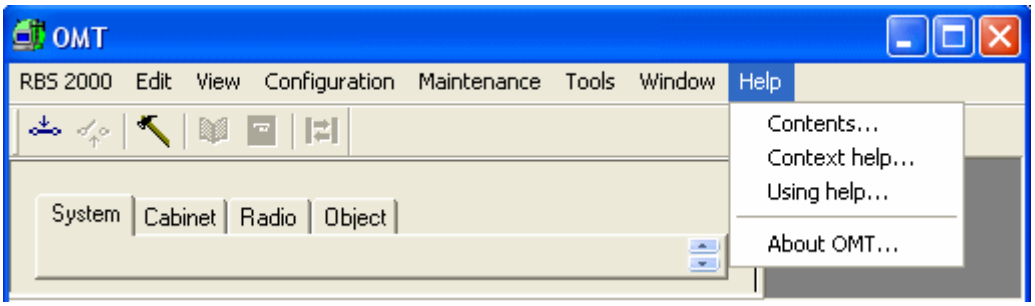


4.4 Help

Integrated help has been implemented to give assistance when operating the OMT .
The help is valid in all OMT states.

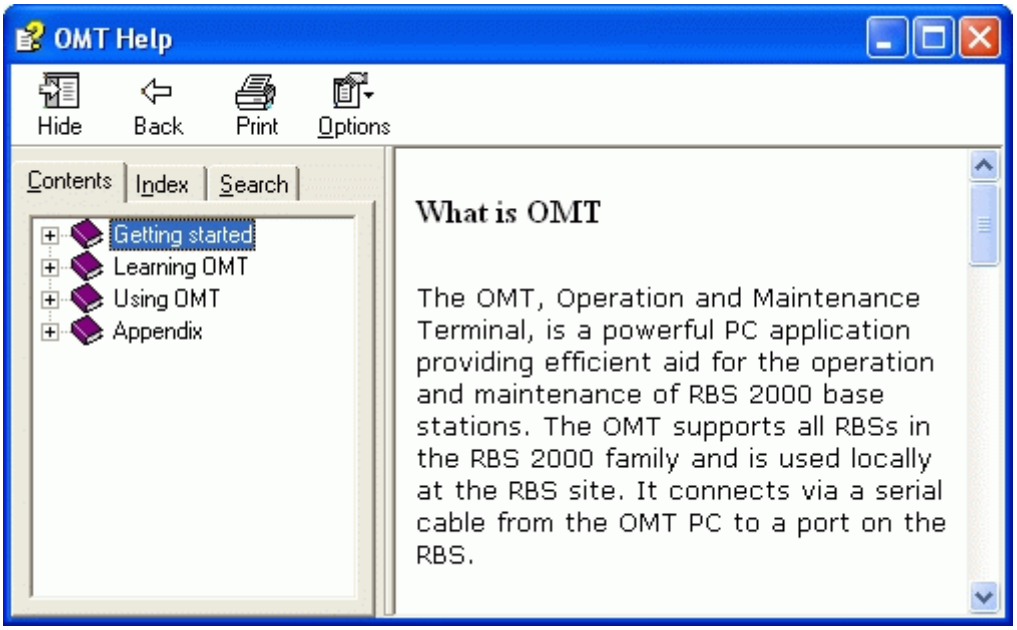
4.4.1 Help menu contents

The help menu contains four menu options.



4.4.2 Contents

The Contents function contains OMT-specific help information. It displays all four chapters of this manual.



4.4.3 Context help

Selecting Context help causes a question mark to be displayed in the dialog box. Click in the selection where the help is needed.

4.4.4 About OMT

The About OMT command shows information about the OMT program: i.e. OMT type, version, and installed functions.

5 Appendix

5.1 System software and hardware requirements

Please see the readme file for information regarding system software and hardware requirements.

5.2 Cable specifications

5.2.1 OMT cable

Cable product number: RPM 113 463, for a 9-pin DSUB connector.

5.2.2 Remote OMT cables

Dependant on BSC Interface version, different types of Remote OMT cables are used:

Product number:	BSC Interface:	Thor-2 board type:
RPM 513 1389/20000	BSC ETC4 (E1-BYB 202)	ISA
RPM 513 1404/20000	BSC ETC4 (T1-BYB 202)	ISA
RPM 513 1939/20000	BSC ETC5 (E1-BYB 501)	ISA
RPM 513 1940/20000	BSC ETC5 (T1-BYB 501)	ISA
RPM 513 1943/20000	BSC ETC4 (E1-BYB 202)	PCI
RPM 513 1944/20000	BSC ETC4 (T1-BYB 202)	PCI
RPM 513 1941/20000	BSC ETC5 (E1-BYB 501)	PCI
RPM 513 1942/20000	BSC ETC5 (T1-BYB 501)	PCI

5.2.3 Remote OMT over IP cables

Two types of Remote OMT over IP cables are used:

Product number:	Description:
RPMR 102 10/1	Ethernet cable, straight 3 m
RPMR 102 11/1	Ethernet cable, cross 3 m

5.3 Contents of the Display Information Window

Object:	Displayed Information:
Active RUs	TEI Product number Hardware revision Serial number Position Free text comment Dependent RUs (only for TRUs and RRUs) Climate Value (only for RBS 2106, RBS 2106i and RBS 2107) System Voltage (only for RBS 2106, RBS 2106i, RBS 2206, RBS 2107 and RBS 2207)
Alarm Inlets	For all defined External alarms: Alarm ID Alarm severity Closing/Breaking Alarm text For all defined ARAE faults: Closing/Breaking ARAE functionality Fault class Antenna instance For all defined MCPA faults: TX Redundancy MCPA instance
IDB	IDB filename Created by OMT version Cabinet type Transmission type STN Equipment Power system Climate system CDU type Frequency Duplexer TX combining RX antenna sharing RX Diversity Max TRX Max antennas Antenna TMA

MO Objects	Main RU ID (MO identity) Executing on main RU Associated SO (only for TS objects)
Passive RUs	Product number Hardware revision Serial number Loss (only for some cables and feeders) Delay (only for feeders) Position (not for cables) Which cable set the cable belongs to (only for cables) Connection points (only for cables) Dependent main RUs (only for cables) Cables in set (only for cable sets) Free text comment (not for cables) VSWR Supervision (only for TX antennas) VSWR Class 1 (only for TX antennas) VSWR Class 2 (only for TX antennas) TMA Type (only for ALNA/TMA) TMA Port (only for ALNA/TMA) TMA_CM Instance, if available (only for ALNA/TMA) TX Group Delay (only for ALNA/TMA) RX Group Delay (only for ALNA/TMA) Loss (only for ALNA/TMA) RX Frequency Range (only for ALNA/TMA) Current Supervision Limits (only for ALNA/TMA) Battery Parameters (only for BATTERY in macro cabinets except for RBS 2109 and RBS 2250) System Voltage (only for CABINET, RBS 2250 MCPA excluded)
Antenna System	Antenna system ID Logical ID for all antennas in the antenna system
Flash Card	IDB and RBS SW
OMT	OMT type, version, and installed functionality.
Transmission	Transmission interface STN Equipment Available synch. source Network topology Spare bits (sa 4 – sa 8 and only for E1 system) CRC-4 (only for E1 system) LBO (only for T1 system

	FDL-use (only for T1 system Receiver Sensitivity (only for E1 system)
RBS	GPS parameters TF compensation Transmitter chain delay TF holdover mode RBS Identity

5.4 Contents of the Display Status Window

Object:	Displayed information:
ACCU	Fault Status
ACCU_02_CU	Fault Status
ACCU_02_DU	Fault Status
ACT_COOL_FAN	Fault Status
ANTENNA	Fault Status
ASU	Fault Status for ASU_RXA units or cables Fault Status for ASU_RXB units or cables
ASU_CDU_RXA	Fault Status
ASU_CDU_RXB	Fault Status
BATTERY	Fault Status
BDM	Fault Status Fault LED Operational LED
BFU	Fault Status Fault Status for BATT_TEMP_SENSOR Fault Status for BFU Fuse or Circuit Breaker Fault LED Operational LED
CAB_HLIN	Fault Status
CCU_01	Fault Status
CDU	Fault Status
CDU, CU	Fault Status for CDU Bus Fault Status for IOM Bus Fault LED Operational LED
CDU_CDU_PFWD	Fault Status
CDU_CDU_PREF	Fault Status
CDU_CXU_RXA	Fault Status
CDU_CXU_RXB	Fault Status

CDU_TRU_PFWD	Fault Status
CDU_TRU_PREFL	Fault Status
CDU_TRU_RXA	Fault Status
CDU_TRU_RXB	Fault Status
CU	Fault Status
CXU	Fault LED Operational LED
CXU_TRU_RXA	Fault Status
CXU_TRU_RXB	Fault Status
DPX_RXIN	Fault Status
DRU_DRU_RXA	Fault Status
DRU_DRU_RXB	Fault Status
DU	Fault Status Fault LED Operational LED
DXB	Fault Status for Environment
DXU, DXB, DXU-21/22/23/31, IXU-21	Fault Status Fault Status for Local Bus Fault Status for X Bus Fault Status for Timing Bus Local/Remote Status
DXU, DXU-21/22/23/31, IXU-21	Fault LED Operational LED Local LED RBS fault / BS fault LED External alarm LED
DXU-21/22/23/31, IXU-21	Fault Status for Power Com Loop (Not for DXU-31) Fault Status for Environment Fault Status for Flash Card EPC bus Fault LED (Not for DXU-31) Transmission OK Port A LED Transmission OK Port B LED Transmission OK Port C LED Trransmission OK Port D LED Fault status for GPS RX Fault status for GPS RX DXU

ECU	Fault Status Fault Status for Environment Fault Status for Power Com Loop Fault LED Operational LED Battery mode LED DC disconnect LED AC fault LED
FAN	Fault Status
FCU	Fault Status FAN 1 Fault LED FAN 2 Fault LED FAN 3 Fault LED FAN 4 Fault LED Fault LED Operational LED
FU	Fault Status Fault LED Operational LED
FU_CU_PFWD	Fault Status
FU_CU_PREFL	Fault Status
H/E_EXT_FAN	Fault Status
H/E_INT_FAN	Fault Status
HEATING_UNIT	Fault Status
HLOUT_HLIN	Fault Status
HUM_SENSOR	Fault Status
IDB	Fault Status for RBS-DB
Micro Cabinet	Fault Status Local/Remote Status Fault LED Operational LED Local Mode LED Reduced Capacity LED Battery fault LED External alarm LED (only valid for the master cabinet in mixed configurations)
MO Objects	Main RU ID (MO Identity) MO State

OMT	OMT State Connect Parameters
Transmission	Fault Status for LOS DP #1 Fault Status for LOF DP #1 Fault Status for AIS DP #1 Fault Status for ERATE DP #1 Fault Status for CSES DP #1 Fault Status for RAI DP #1 Fault Status for UAST-OUTG DP #1 Fault Status for UAST-INCOM DP #1 (#1=0…3)
PSU	Fault Status Fault Status for PSU_DC cable Fault LED Operational LED
PSU_A	Fault Status
PSU MICRO	Fault Status
RBS 2106, RBS 2106i, RBS 2206, RBS 2107, RBS 2207	Battery mode LED External alarms LED RBS fault LED
RRU	Fault Status for Environment
RXU	Fault Status
SPLITTER_DRU_RXA	Fault Status
SPLITTER_DRU_RXB	Fault Status
SPLITTER_TRU_RXA	Fault Status
SPLITTER_TRU_RXB	Fault Status
TEMP INLET	Fault Status
TEMP OUTLET	Fault Status
TIM	Fault Status
TMA_A	Fault Status
TMA_B	Fault Status
TMA_CM	Fault Status Fault Status for TMA_CM cable Fault LED Operational LED

	TMA OK LED
TRU, dTRU, sTRU, RRU, DRU	Fault Status Local/Remote Status Fault LED Operational LED RF off / TX not enabled LED Local LED
dTRU, sTRU, DRU	Fault Status for Y-link
dTRU, DRU	Fault Status for HCOMB
TXU	Fault Status

5.5 Monitor Description

Monitor Name	OMT Objects	Unit and Value Range	Description
Absolute Radio Frequency Channel, *RX*	TRXC	EGSM 975..1023, 0, 1..124 800 128..251 900 1..124 1800 512..885 1900 512..810	The absolute radio frequency channel number for the receiver is displayed. **Note:** The monitor will display “frequency hopping” when monitor “Frequency Specifier Marker” shows value 1.
Absolute Radio Frequency Channel, *TX*	TRXC	EGSM 975..1023, 0 , 1..124 800 128..251 900 1..124 1800 512..885 1900 512..810	The absolute radio frequency channel number for the transmitter is displayed. **Note:** The monitor will display “frequency hopping” when monitor “Frequency Specifier Marker” shows value 1.
Adjustment Value, Optional	CF	Unit: ppb	The adjustment value for adjusting a known error in the optional synchronization reference is displayed.
ALNA Power Supply Current	TMA_A, TMA_B	Unit: mA	Displays the power supply current of the chosen TMA_A or TMA_B. Only supported by DXU–01, DXU–03 and DXU–11.
ALNA Power Supply Voltage	TMA_A, TMA_B	Unit: mV	Displays the power supply voltage of the chosen TMA_A or TMA_B. Only supported by DXU–01, DXU–03 and DXU–11.
Antenna Hopping table list	RBS		Displays all active antenna hopping tables in the RBS.

ARAE Alarm Status	Alarm Inlets	Activated or Not activated	The status of the ARAE alarms is displayed.
BCC Filler Pattern	TRXC	0 = BCC 0 1 = BCC 1 2 = BCC 2 3 = BCC 3 4 = BCC 4 5 = BCC 5 6 = BCC 6 7 = BCC 7	The chosen BCC filler pattern is displayed.
BDM Information	BDM		Displays miscellaneous information about a BDM. The following information is displayed: – System Voltage (V) – Battery temperature (°C)
BFU Average Voltage	*ECU*, DXU–21/23	Unit: V	Displays the average BFU battery voltage.
BFU Information	BFU		Displays miscellaneous information about a BFU. The following information is displayed: – Battery voltage (V) – Battery current (A) – Battery temperature (°C) Note: A negative current means that the RBS is running on batteries.
BFU Total Current	ECU, DXU–21/23	Unit: A	Displays the total BFU current.
Cabinet Internal Humidity	ECU	Unit: %	Displays the internal humidity in the cabinet. Only valid for RBS 2101 and RBS 2102.
Cabinet Internal Temperature Sensor #1 (#1 = 1..2)	ECU	Unit: Degree Celsius	Displays the internal temperature in the cabinet. Only valid for RBS 2101, RBS 2102 and RBS 2202.
Chosen Synch	CF	Format 1: Format 2:	Depending on the RBS type

Source		0 = PCM_REF1 1 = PCM_REF2 2 = OPT_REF 3 = ESB	PCM A PCM B PCM C PCM D OPT ESB GPS NO REF Note: NO REF represents no executive reference available	the chosen synchronization source is displayed either according to Format 1 or Format 2.
CON Configuration	CF	ICP to Abis		The CON configuration parameters are displayed.
Current FS offset	CF	Unit: quarter of an air symbol, that is 923 ns 0..13578239999 (if defined) UNDEFINED (if undefined)		Actual FS offset. Note: The value range is restricted to one GSM hyperframe (~3.5 hours). So if FS offset is configured to a value greater than one GSM hyperframe and *TF* is synchronized, this monitor display a value corresponding to the configured FS offset modulo 13578240000. For example if the configured FS offset is 13578240001 and TF is synchronized, this monitor display the value 1.
DC System Voltage	ECU, DXU–21/23/31	Unit: V		The measured value of the DC System Voltage is displayed. Not available in case of micro cabinet or RBS 2109.
Diversity	TRXC	0 = Diversity B side 1 = Diversity A side 2 = Diversity A & B side 3 = 4–way Diversity A, B, C & D side		The chosen diversity configuration is displayed.
Diversity Supervision	TRXC			Note: The result cannot be presented before the

Measurement			5-minute measurement period is over. The site must carry site traffic and the more traffic there is, the more accurate are the values. For best result, the MSs should be as far away as possible from the BTS with a high TA value.
		Unit: %	Channel Utilization: Usage of the *TS* during the measurement period, high value, 80–100%, needed for accuracy.
		Unit: dB	Signal Strength Imbalance: A-side minus B-side average measurement per TS during the measurement period, should be –3 dB to +3 dB when normal, absolute values of 12 or higher are unacceptable.
		Unit: %	Gross Channel Utilization ratio: Usage of all TS in the TRXC during the measurement period, high value needed for accuracy.
		Unit dB	Gross Signal Strength Imbalance: A-side minus B-side average measurement on all TS in the TRXC during the measurement period, should be –3 dB to +3 dB when normal, absolute values of 12 or higher are unacceptable.
ESB Delay	CF	Unit: ns 0..65534 (if defined) UNDEFINED (if undefined)	Displays the measured ESB delay.
ESB distribution	CF	0 = No 1 = Yes	Shows if the ESB distribution of synchronization signals has

			been switched on or not.
ESB Measurement	CF	0 = OFF 1 = ON	Shows if measurement of ESB delays is active or not
External Alarm Status	Alarm Inlets	Activated or Not activated	The status of the external alarms is displayed.
Filler Power	TRXC	Unit: dBm	The chosen filler power is displayed in dBm.
Filler Type	TRXC	0 = CO filler 1 = No filler 2 = TX filler	The chosen filler type is displayed.
Forward Power on TS#1 (#1 = 0..7) at *CDU* output	TRXC	Unit: dBm	Displays the forward power at CDU output/timeslot 0 7 for the chosen TRX. The accuracy of measured Output Power is within ±4 dB for CDU-A, C, C+, D configurations and within ±2.5 dB (*GMSK*) or ±3 dB (8-PSK) for CDU-F, G, J and L configurations. The Output Power measurement is frequency selective, that is, each carrier power is measured separately, even though combined with the same antenna.
Forward Power on TS#1 (#1 = 0..7) at TRX output	TRXC	Unit: dBm	Displays the forward power at TRX output/timeslot 0 7 for the chosen TRX.
Frequency Specifier Marker	TRXC	0 = Steady state 1 = Frequency hopping	The frequency specific marker is displayed. It indicates if frequency hopping is used or not.
GPS position	RBS	Latitude and Longitude are displayed in degrees (deg), minutes ('), fractional minutes (") and direction (N[orth], S[outh], E[ast], W[est]). Altitude is displayed in	This monitor contains a string indicating the GPS position, derived by TCS from GPS Latitude, GPS Longitude and GPS Altitude. Note: The monitor shows

		0.1 metres over (+) / below (-) the WGS84 ellipsoid. Degrees (0..180) Minutes (0..59) Fractional minutes (0..9999) Altitude value (0..65535)	the last values received from the GPS.
GPS satellites	RBS	0..255	This monitor contains the number of used satellites. It is fetched from parameter UsedGPSSatellites. Note: The monitor shows the latest known value received from the GPS receiver.
GPS status	RBS	Faulty Locked Free running Not synchronized Unknown	This monitor contains a string indicating the status of the GPS receiver. The value within parentheses indicates specified parameter and its value in the LMU-link. Note: The monitor shows the last value received from the GPS receiver or the value unknown if no values have been received within a predefined time period.
GPS time seconds	RBS	0..604799 seconds since the beginning of the GPS week.	This monitor keeps the latest known value of GPS *TOW* (indicating the number of seconds elapsed since the beginning of the GPS week). It is fetched from the parameter GPS TOW.
GPS time std dev	RBS	If Value available: 0..65535 TOW standard deviation in ns. If Value not available: NOT_AVAILABLE If Not supported: Default (50 ns)	This monitor keeps the last value of the standard deviation of the GPS TOW. It is fetched from the information provided by the GPS receiver. Value not available: If no values have been received or no values are

			expected from the GPS receiver (that is, marked as not present) then it is indicated that the standard deviation is not available Not supported: If the GPS receiver does not support the reporting of standard deviation then it is indicated that a default value is used.
GPS time week	RBS	0..65535 Number of weeks	This monitor keeps the last value of GPS week. It indicates the number of weeks since the start of the GPS epoch (6 January 1980). It is fetched from the parameter GPS week.
Holdover time	RBS	0..999 Holdover time in hours 0..59 Holdover time in minutes	This monitor keeps a value, indicating the estimated holdover time during normal operation and estimated remaining holdover time during holdover operation. Note: The monitor shows the latest estimated value and may therefore change because of temperature changes etc.
IS Configuration	CF	From ICP to ICP/subrate	The IS configuration parameters are displayed.
Line attenuation for PCM-#1 (only for T1) (#1 = A,B,C,D)	Transmission	Unit: dBm	Not available for Transmission interface IP. The measured line attenuation at the PCM-#1 transmission line is displayed. This value is used to calculate an LBO-value, which assures that the far end will receive a signal with correct value, that is, a signal that is attenuated enough. Note: The reported value

			will only be correct if Transmission Interface is T1 and Automatic *LBO* is used.
Nominal Output Power	TRXC	Unit: dBm	The nominal output power for the transmitter is displayed in dBm.
Phase Difference Error, Optional	CF		Displays the measured phase difference error. Available when using optional source as synchronization reference. If the reference is good, the phase difference error should be around 0.
Phase Difference Error, PCM-#1 (#1 = A,B,C,D)	CF		Displays the measured phase difference error. Available when using PCM-#1 as synchronization reference. If the reference is good, the phase difference error should be around 0. Not available for RBSs with DXU–21/22/23 or IXU–21 with SW newer than release 9.1B.
PSU Average Voltage	ECU, DXU–1/23	Unit: V	Displays the average PSU voltage. Used in fault conditioned/preventive maintenance for setting the correct output voltage according to load or for testing/checking the alarm thresholds.
PSU Information	PSU		Displays miscellaneous information about a PSU. The following information is displayed: – Measured output DC voltage (V) – Measured output current (A) – Percentage of max output

			power (%) – Internal PSU temperature (°C)
PSU Total Current	ECU, DXU-21/23	Unit: A	Displays the total PSU current.
Reflected Power on TS#1 (#1 = 0..7) at CDU output	TRXC	Unit: dBm	Displays reflected power at CDU output/timeslot 0 7 for the chosen TRX. The accuracy of measured Output Power is within ±4 dB for CDU-A, C, C+, D configurations and within ±2.5 dB (GMSK) or ±3 dB (8-PSK) for CDU-F, G, J and L configurations. The Output Power measurement is frequency selective, that is, each carrier power is measured separately, even though combined to the same antenna.
Reflected Power on TS#1 (#1 = 0..7) at TRX output	TRXC	Unit: dBm	Displays reflected power at TRX output/timeslot 0 7 for the chosen TRX. Available only for cTRUs.
RF Loop Test Parameters	TRXC	Unit: % Unit: dBm Unit: dBm	Average RX bit error rate. Average RX level idle A and B. RX level loop. Note: When using four way receiver diversity this monitor must be used.
Super Channel Quality	IS	Unit: Frames	The behaviour of this monitor depends on RBS software version. For RBS software older than 07B this monitor displays the number of lost frames per Super Channel during the last 5 and 60 minute period. E.g.:

SC1 Lost frames: 0, 34
SC2 Lost frames: Not active
SC3 Lost frames: Not active
SC4 Lost frames: Not active

This example shows that Super Channel 1 has lost 0 frames the last 5 minutes and 34 frames during the last 60 minutes. All other Super Channels are inactive.

For RBS software 07B and newer this monitor displays the number of lost frames, the number of frames that were delayed from 0% to 25%, from 25% to 50%, from 51% to 75%, from 76 to 100% and more than 100% of the configured jitter buffer depth during last 5 minutes. The number of thrown TFP frames, thrown TFP in DXU frames and thrown P-GSL frames in the DXU per Super Channel during last 5 minutes is also shown. And the average delay and delay of TFP and P-GSL frames sent uplink in milliseconds are displayed in the report. The report for each Port is divided into two parts and send one after another.
E.g.:
"thirst part for Port A"

Port A:
  Lost frames: 50
  TFP frames delayed:
    0-25%: 1
    26-50%: 2
    51-75%: 3
    76-100%: 4

more than 100%: 5
Delay average: 6
Thrown TFP frames: 7

"second part for Port A"

Delay of TFP and P-GSL frames uplink: 8
Thrown TFP frames in DXU: 10
Thrown P-GSL frames in DXU: 11
TFP frames recieved: 12
P-GSL frames received: 13

Port B:
Lost frames: Not active
.....
P-GSL frames received: Not active

Port C:
Lost frames: Not active
.....
P-GSL frames received: Not active

Port D:
Lost frames: Not active
.....
P-GSL frames received: Not active

This example shows that Port A has lost 50 frames during the last 5 minutes. During the same period of 5 minutes 1 frame has a delay of not more than a 25% of jitter buffer depth. 2 frames have delay between 26% and 50% of jitter buffer depth, 3 - between 51% and 75%, 4 - between 76% and 100% and 5 frames have a delay more than 100% of jitter buffer depth. The average delay and Delay of TFP and P-GSL frames sent

		uplink are 6 and 8 milliseconds respectively. The number of thrown TFP frames, TFP frames thrown in the DXU, and P-GSL frames thrown in the DXU is 7, 10 and 11 respectively. 12 and 13 are the numbers of TFP and P-GSL frames received respectively. All other Ports (B, C and D) are inactive.
Super Channel Configuration	IS	Holds the Super Channel Configuration. For each Super Channel, the TRX's on that Super Channel is shown, in addition to ICP and bandwidth. E.g.: SC1: TRX0, TRX1, TRX2 ICP: 4 CI: 124 SC2: TRX3, TRX4, TRX5 ICP: 132 CI: 124 SC3: Not active SC4: Not active Since 07B RBS software version the names of Super channels were changed from SC1-SC4 to Port A - Port D respectively. E.g.: Port A: TRX0, TRX1, TRX2 ICP: 4 CI: 124 Port B: TRX3, TRX4, TRX5 ICP: 132 CI: 124 Port C: Not active Port D: Not active
Supervision SDCCH#1-TS#2	TRXC	Note: If the time slot that is measured is not used for

Supervision TCH-TS#2 Supervision TCH_F -TS#2 Supervision TCH_H#3-TS#2 (#1 = 0..7) (#2 = 0..7) (#3 = 0, 1)			traffic at the moment nothing is printed about RX-LEV and RX-BER. If the time slot is used for traffic it takes up to 50 s before RX-LEV and RX-BER are displayed.
			Access timing error
		Unit: %	RX bit error rate
		Unit: dBm	RX Level
		Unit: dBQ	Speech Quality Index
		Unit: Bit	SQS Bit Error Sum
		Unit: Frame	SQS Erased Frames
		Unit: Frame	SQS Consecutive Lost Frames
			Timing Advance
			MS Timing Offset
			Interference Level Band
			Channel group state
			Encryption On/Off
			Link State
		Unit: Hex	No. of sent physical info.
			SACCH Deactivated
			In-service Channel Combination
TF Compensation Current value	CF	Unit: ns	Indicates the actual TF compensation value
TF Compensation – Source	CF	0 = No compensation 1 = Manual Compensation 2 = Automatic compensation	Indicates whether a TF compensation value is used to compensate the timing on the Timing Bus and, in that case, if it is manually configured or automatically

			calculated.
TF Configuration – Compensation	CF	Unit: ns	Configured TF compensation value
TF Configuration ESB TS	CF	0..15 (if defined) UNDEFINED (if undefined)	Displays the configured ESB timeslot for measurements of ESB delays.
TF Configuration FS offset	CF	Unit: quarter of an air symbol, that is, 923 ns 0..17179934714 (if defined) UNDEFINED (if undefined)	Configured frame start offset.
TF Configuration Master *TG* Instance	CF	0..1023 (if slave RBS) UNDEFINED or -1 (If master RBS; both values means that the monitor is not applicable.)	Displays the configured master transceiver group instance number. Note: If the BSC has no contact with the RBS, the last known value will be displayed.
TF Configuration Master TX Chain Delay	CF	Unit: ns 0..65534 (if defined) UNDEFINED (if undefined)	Displays the configured master transmitter chain delay
TF Configuration – Mode	CF	0 = Master 1 = Stand Alone 2 = Slave 255 = Not defined	Configured synchronization mode
TF Configuration – Synchronization Source	CF	0 = PCM (Synchronized from the Pulse Code Modulation (PCM) transport network) 1 = INTE (Internal clock externally calibrated) 2 = INTI (Internal clock internally calibrated) 3 = DEFAULT (Synchronisation source not controlled by the BSC)	Configured synchronization source
TMA #1 Current (#1 = 0..5) For numbering of	TMA_CM	Unit: mA	Displays the power supply current.

TMAs, see Hardware Reference Manual for relevant cabinet.			
TMA #1 Voltage (#1 = 0..5) For numbering of TMAs, see Hardware Reference Manual for relevant cabinet.	TMA_CM	Unit: mV	Displays the power supply voltage.
TS Channel Combination	TRXC	04 = BCCH, not combined 05 = BCCH, combined 07 = SDCCH 08 = half- or full-rate TCH	The channel combination is displayed per timeslot.
TSSP Configuration for TS#1 (#1 = 0..7)	TRXC		Note: All parameters may not be available.
		0 = No speed 1 = Slow 2 = Normal 3 = Fast	AFC
			AGE_OF_PAGING
			ARFCN
		Unit: hex	BSIC
			BS_AG_BLKS_RES
			BS_PA_MFRMS
		Unit: 480 ms periods	Call Supervision TMO
		0 = No CBCH (false) 1 = CBCH (true)	CBCH Indicator
		0 = No repetition (false) 1 = Repetition (true)	*CCCH* Repeat
		04 = BCCH, not combined 05 = BCCH, combined	Channel combination

	07 = SDCCH 08 = half- or full-rate TCH	
	0 = Extended Range off 1 = Extended Range on	Extended Range Indicator
		Frequency List Length
		HSN ICM Averaging Period
	0 = Full rate basis 1 = Half rate basis, if TS has half-rate capability. Otherwise, full-rate basis	ICM Channel Rate
	Unit: %	DRX_DEV_MAX
	Unit: TDMA frame	FN Offset
	0 = No reporting (false) 1 = Reporting (true)	ICM Indicator
		ICM Interface Level
	0 = False 1 = True	Inhibit Paging Type 3
	0 = Remote mode (false) 1 = Local mode (true)	Local Mode
		MAIO
	Unit: hex	Ny1
	1 = B receiver side 2 = A receiver side 3 = A + B receiver side 4 = A + B + C + D receiver side	Receiver Diversity
	Unit: 10 ms in hex	T3105
	0 = No *TLS* on active channel 1 = TLS on active channel	TLS Active Channel
	Unit: 1/10 s	TLS Filtering Time

		0 = No TLS on Idle Channel 1 = TLS on Idle Channel	TLS Idle Channel
			TN
			TSC
		Unit: 20 ms	*TTC* Time Alignment Control TMO
		Unit: second	TTC Connection Failure TMO
			TX Address
TU Internal State	CF	0 = Establishing synchronization 1 = Synchronized 2 = Holdover	Displays the internal state of the timing unit.
VCO Control Value	CF		Indicates the control value towards the D/A converter that controls the oscillator.
VSWR at TX Antenna	TRXC		Displays ratio of forward/reverse power between the RBS and the antenna system.
RX Path Imballance	TRXC		Reports current values in the Antenna System Monitor function. After the monitor is started, the current supervision values are reported every 5 minutes, see example below: RX imb. superv. values: Supervision window configured time: 75 min Supervision window elapsed time: 10 min Average delta signal strength A-B: -2.0dB Number of samples A-B: 8462 Average delta signal strength C-D: 0.0 dB Number of samples C-D: 8129

Parameters "Average delta signal strength C-D" and "Number of samples C-D" are only applicable for configuration with 4-way diversity. Without 4-way diverstity the following output appears:

RX imb. superv. values:
Supervision window configured time: 75 min
Supervision window elapsed time: 75 min
Average delta signal strength A-B: 2.5 dB
Number of samples A-B: 8462

Note:
Parameters meaning:
Supervision window configured time - the configured supervision window time.
Supervision window elapsed time - the actual time for which the data in the supervision window has been collected.
Average delta signal strength - the average difference in signal strength over the supervision window.
Number of samples - the number of samples included in the supervision window.

5.6 RBS 2000 Configuration Parameters

5.6.1 Define ALNA/TMA Parameters

TMA Type

Dialog	Define ALNA/TMA Parameters
Why	This parameter defines which TMA type is used. The TMA type determines how the TMA is supervised and defines the way faults are reported and whether or not the TMA has bypass functionality.
When	The TMA type parameter needs to be changed when a TMA type other than the GSM (Ericsson standard GSM TMA) or compatible TMA is used.
Valid values	− GSM: Standard Ericsson GSM TMA (or compatible). This is the default TMA type for GSM 800, 900, 1800, and 1900. − TDMA: Standard Ericsson TDMA TMA (or compatible). Typically used in a TDMA co-siting scenario where the TDMA TMA is also used for the GSM RBS. The TDMA TMA reports class 1 and class 2 faults differently from a TMA of type GSM. − GSM Bypass: Standard Ericsson GSM TMA with bypass functionality (or compatible). A bypass TMA bypasses the RX signal (without amplification) when the TMA is broken. A broken bypass TMA therefore only causes a class 2 fault. − TDMA Bypass: Standard Ericsson TDMA TMA with bypass functionality (or compatible). See the description of TDMA TMA above. A bypass TMA bypasses the RX signal (without amplification) when the TMA is broken. A broken bypass TMA therefore only causes a class 2 fault. − Externally powered: The RBS does not supervise the TMA or supply the TMA with power. No current supervision limits can be entered for this type of TMA. The TMA types available depend on the configuration.
Consequence of incorrect setting	The TMA is not supervised properly. No faults or faults with the wrong fault class can be set when the TMA is broken.

TX Group Delay

Dialog	Define ALNA/TMA Parameters
Why	This parameter specifies the TX signal delay in the TMA. TMA TX group delay is part of the total TX path delay in the RBS, which is needed to synchronize the TX burst transmission of all TRXs.
When	The TX group delay parameter must be updated if the value differs from the default value. The value that must be considered in the TMA

	equipment specification is often called the nominal TX group delay.
Valid values	0–1000 ns (default value: 22 ns)
Consequence of incorrect setting	GSM specifications can be violated if transmitters are not synchronized accurately enough.

RX Group Delay

Dialog	Define ALNA/TMA Parameters
Why	This parameter specifies the RX signal delay in the TMA. TMA RX group delay is part of the total RX path delay in the RBS, which is needed to calibrate the timing in the TRX receiver.
When	The RX group delay parameter must be updated if the value differs from the default value. The value that must be considered in the TMA equipment specification is often called the nominal RX group delay.
Valid values	0 – 1000 ns (default value: 101 ns)
Consequence of incorrect setting	GSM specifications can be violated if transmitters are not synchronized accurately enough. Call establishment with an MS that is very close to the RBS or close to the cell border may not be possible.

Loss

Dialog	Define ALNA/TMA Parameters
Why	This parameter specifies the loss of the TMA. Since a TMA actually has a gain instead of a loss, the TMA gain is specified as a negative loss. The TMA loss is part of the total RX path loss in the RBS, which is needed to calibrate the TRX and thereby optimize the RF performance of the RBS. The total RX path loss is also needed to calculate RXLEV at the antenna.
When	The loss parameter must be updated if the TMA loss differs from the default value.
Valid values	−24 dB to +24 dB Default values: −12 dB (GSM 800, GSM 900, GSM 1800) −10.934 dB (GSM 1900)
Consequence of incorrect setting	Reduced RF performance. Reporting an incorrect RXLEV to the BSC can affect MS power regulation, handover decisions, and performance management.

RX Frequency Range

Dialog	Define ALNA/TMA Parameters

Why	This parameter specifies the supported RX frequency range of the TMA. Some TMA types do not support the complete frequency band. BSC configuration requests for the use of frequencies outside the RX frequency range are rejected.
When	Update the parameter if the supported RX frequency range of the TMA is smaller than the default values, that is, the TMA does not support the entire frequency band.
Valid values	824.2–848.8 MHz (GSM 800) 880.2–914.8 MHz (GSM 900) 1710.2–1784.8 MHz (GSM 1800) 1850.2–1909.8 MHz (GSM 1900) These values, which are also the default values for the TMAs for each respective frequency band, cover the entire frequency band range.
Consequence of incorrect setting	If the specified RX frequency range is too wide it is not detected if the TMA equipment is used outside the supported frequency range. Usage of the TMA outside the supported frequency range leads to reduced TMA and RF performance. If the specified RX frequency range is too narrow it is not possible to use the TMA in the entire frequency range that the TMA supports. BSC configuration attempts can be rejected in such cases.

Current Supervision Limits

Dialog	Define ALNA/TMA Parameters
Why	This parameter specifies the limits of TMA current supervision. One type of fault is set if the supply current to the TMA is constantly above the high limit or below the low limit. Another type of fault is set if the TMA repeatedly alters the supply current to above or below the High limit.
When	The parameters must be updated if the TMA current supervision limits for the TMA differ from the default values.
Valid values	0–500 mA. Default values: 33 mA (low), 237 mA (high) for GSM 900 and GSM 800 33 mA (low), 150 mA (high) for GSM 1800 and GSM 1900 (for 2101, 2102 & 2202 147 mA(High) GSM 1800 and GSM 1900)
Consequence of incorrect setting	The TMA is not supervised properly. No faults or faults with the incorrect fault class can be reported when the TMA is broken. A TMA

fault can be reported when no fault is present.

5.6.2 Define Alarm Inlets

Inlet Usage

Dialog	Define Alarm Inlets
Why	The Define Alarm Inlets function is used to enable the supervision of devices connected to the external alarms interface of the RBS. Different devices can be connected to the inlet ports on the external alarms interface on an RBS 2000 for supervision purposes. Devices for External alarms, ARAE faults, and MCPA faults are supported. Each device type is handled differently by the RBS. The type of device connected to the inlet ports must therefore be specified by entering inlet usage. External alarms are reported transparently through the RBS and BSC to the O&M centre. An example is a fire alarm. ARAE faults and MCPA faults are reported on devices that are part of the radio chain, which when faulty, affect the performance/capacity of the RBS. These types of fault are included in the RBS internal fault analysis and handled in the same way as RBS internal faults.
When	The inlet usage must be specified when enabling the RBS supervision of a device that is connected to the external alarms interface.
Valid values	− External alarm − ARAE fault − MCPA fault − Not used (Default)
Consequence of incorrect setting	If inlet usage is not correctly defined, this can result in the following: − An external alarm is sent to the O&M centre when an external alarm device has not indicated an alarm. − No external alarm is sent to the O&M centre when external alarm device has indicated an alarm. − A fault report is sent to the BSC when neither an ARAE nor an MCPA device has indicated a fault. This might mean that the BSC stops using working RBS functionality. − No fault report is sent to the BSC when an ARAE or MCPA device has indicated a fault. This mean the BSC continues to use the faulty functionality, which can damage the RBS hardware.

External Alarms Type

Dialog	Define Alarm Inlets (inlet usage set to External alarm)
Why	The type specifies how an external alarm device indicates an alarm.
When	The type must be specified when enabling the supervision of an external alarm device.
Valid values	− Closing (default; alarm indicated by closing sensor loop) − Breaking (alarm indicated by breaking sensor loop)
Consequence of incorrect setting	No external alarm is sent to the O&M centre when the external alarm device indicates an alarm. If the external alarm is a very important alarm, for example, a fire alarm, the consequences will be major. An external alarm is sent to the O&M centre when the external alarm device does not indicate an alarm.

External Alarms ID

Dialog	Define Alarm Inlets (inlet usage set to External alarm)
Why	The ID parameter uniquely identifies the external alarm equipment. The value of this parameter is sent in external alarm reports to the O&M centre.
When	The ID must be specified when enabling supervision of external alarms equipment.
Valid values	0 – 9, A – F (Default value: 0)
Consequence of incorrect setting	An incorrect ID, that is not the ID that the operator wants to use, is sent in external alarm reports to the O&M centre. If the ID is used to identify the type of alarm, then the incorrect ID may result in the incorrect personnel being sent to the site.

External Alarms Severity

Dialog	Define Alarm Inlets (inlet usage set to External alarm)
Why	This severity parameter indicates the severity of the external alarm. The severity value is sent in external alarm reports to the O&M centre.
When	The severity must be specified when enabling the supervision of external alarms equipment.
Valid values	− Level 1 (Default) − Level 2 The operator determines which of the values above to use for the most serious alarms.

Consequence of incorrect setting	Incorrect severity, that is not the severity that the operator wants to use, is sent in external alarm reports to the O&M centre.

External Alarms Comment

Dialog	Define Alarm Inlets (inlet usage set to External alarm)
Why	The value of this parameter is sent in external alarm reports to the O&M centre. The parameter describes the external alarm in a free text string.
When	The comment is specified when enabling the supervision of an external alarm device.
Valid values	Character string with up to 62 characters. Valid characters are: 0..9 A..Z space ! # $ % & ' ( ) * + , - . / : ; < = > ? _ (default value: an empty character string)
Consequence of incorrect setting	Incorrect comment, that is not the comment that the operator wants to use, is sent in external alarm reports to the O&M centre. If the comment is used to identify the type of alarm, then an incorrect comment can result in that incorrect personnel is being sent to site.

ARAE Fault Type

Dialog	Define Alarm Inlets (inlet usage set to ARAE fault)
Why	The type parameter specifies how the ARAE fault equipment indicates a fault.
When	The type must be specified when enabling the supervision of ARAE equipment.
Valid values	− Closing (default; alarm indicated by closing sensor loop) − Breaking (alarm indicated by breaking sensor loop)
Consequence of incorrect setting	When the ARAE equipment indicates a fault, no fault report is sent to the BSC. This mean the BSC continues to use the faulty functionality, which can damage RBS HW. When the ARAE equipment does not indicate a fault, a fault report is sent to the BSC. This can mean that the BSC stops using working RBS functionality.

ARAE Fault Functionality

Dialog	Define Alarm Inlets (inlet usage set to ARAE fault)
Why	The functionality parameter specifies if the ARAE equipment is part of the receiver path (RX), the transmitter path (TX), or both (RX +

	TX).
When	The functionality must be specified when enabling the supervision of ARAE equipment.
Valid values	− RX (Default) − TX − RX + TX
Consequence of incorrect setting	When the ARAE equipment indicates a fault, an erroneous fault report is sent to the BSC. The erroneous fault report can indicate an RX fault when it should indicate a TX fault, and vice versa. This can mean that the BSC continues to use faulty functionality and stops using working functionality.

ARAE Fault Fault Class

Dialog	Define Alarm Inlets (inlet usage set to ARAE fault)
Why	The fault class parameter specifies the severity of a fault indication from the ARAE equipment.
When	The fault class must be specified when enabling the supervision of ARAE equipment.
Valid values	− Class 1 (Default) − Class 2 A class 1 fault is more serious than a class 2 fault. The BSC does not use RBS functionality with class 1 fault.
Consequence of incorrect setting	When the ARAE equipment indicates a fault, an erroneous fault report is sent to the BSC. The erroneous fault report can indicate a class 1 fault instead of a class 2 fault and vice versa. This can mean that the BSC continues to use functionality with a class 1 fault and stops using working functionality with a class 2 fault.

ARAE Fault Antenna Instance

Dialog	Define Alarm Inlets (inlet usage set to ARAE fault)
Why	The antenna instance parameter specifies which antenna instance is to be specified as faulty when a fault is indicated from the ARAE equipment.
When	The antenna instance must be specified when enabling the supervision of ARAE equipment.
Valid values	0 – 99 (default value: 0)
Consequence of incorrect setting	When the ARAE equipment indicates a fault, an erroneous fault report is sent to the BSC. The erroneous fault report specifies the incorrect MO as

faulty. If the fault is a class 1 fault, this can mean that working RBS functionality is blocked by the BSC and that the BSC still tries to use the RBS functionality that is not working.

MCPA Fault Type

Dialog	Define Alarm Inlets (inlet usage set to MCPA fault)
Why	The type parameter specifies how the MCPA equipment indicates a fault.
When	The type must be specified when enabling the supervision of MCPA equipment.
Valid values	− Breaking (fault indicated by breaking sensor loop)
Consequence of incorrect setting	Incorrect setting is not possible. Only one value can be selected.

MCPA Fault Functionality

Dialog	Define Alarm Inlets (inlet usage set to MCPA fault)
Why	The functionality parameter specifies that the MCPA equipment is part of the transmitter path. The functionality cannot be changed.
When	Never. The value of the functionality parameter cannot be changed.
Valid values	− TX MCPA (default)
Consequence of incorrect setting	Incorrect setting is not possible. Only one value can be selected.

MCPA Fault TX Redundancy

Dialog	Define Alarm Inlets (inlet usage set to MCPA fault)
Why	The TX redundancy specifies if TX redundancy is to be used. TX redundancy means that when an MCPA module is faulty, the TX signal intended for that module is switched to another MCPA module and a class 2 fault report is sent to the BSC. Without TX redundancy, TX signals cannot be switched to another MCPA module when a MCPA module is faulty. A class 1 fault report is then sent to the BSC. Enabling and disabling of TX redundancy is done both via a switch on the RBS HW and using this parameter.
When	The TX redundancy parameter must be specified when enabling the supervision of MCPA equipment.
Valid values	− Enabled (default)

− Disabled

Consequence of incorrect setting	When the MCPA equipment indicates a fault, an erroneous fault report is sent to the BSC. The erroneous fault report can indicate a class 1 fault instead of a class 2 fault and vice versa. This can mean that the BSC continues to use functionality with a class 1 fault and stops using working functionality with a class 2 fault.

MCPA Fault MCPA Instance

Dialog	Define Alarm Inlets (inlet usage set to MCPA fault)
Why	The MCPA instance parameter specifies which MCPA instance is to be specified faulty when a fault is indicated from the equipment connected to the external alarms interface.
When	The MCPA instance must be specified when enabling the supervision of MCPA equipment.
Valid values	0, 1 (default value: 0)
Consequence of incorrect setting	When the MCPA equipment indicates a fault, a fault report is sent to the BSC. The fault report specifies the incorrect MO as faulty. If the fault is a class 1 fault, this can mean that working RBS functionality is blocked by the BSC and that the BSC still tries to use RBS functionality that is not working. This means a complete loss of RBS functionality.

5.6.3 Define RX-Imbalance Supervision Parameters

Class 1 Fault Limit

Dialog	Define Antenna Supervision
Why	This parameter is used to select the threshold for RX path imbalance class 1 faults. The RX path imbalance supervision function supervises the antenna system by measuring the difference in signal strength between RXA and RXB, and RXC and RXD respectively, that is the imbalance between two receiver branches.
When	Typically set during RBS installation, and based on test results from antenna system tests (Standing Wave Ratio or SWR tests) as described in the relevant RBS CPI (see Verifying Antenna Systems or Antenna System Tests, depending on the RBS). Note: Before disconnecting any cables, take the TRUs out of operation.
Valid values	On, 1 to 254. Off, 255. The value range means 0.1 dB to 25.4 dB with increments of 0.1dB. The recommended value range to use is 30 to 120 (3.0 dB to 12.0 dB. Default 255 (off). The value of the class 1 fault limit must be greater than or equal to the class 2 fault limit. If the values of the class 1 fault and the value of class 2 fault limits are equal, only a class 1 fault is reported.
Consequence of incorrect setting	RX path imbalance supervision may not work correctly. A fault may be reported when no fault has occurred. A fault may not be reported when a fault has occurred. A fault may be reported with the incorrect fault class.

Class 2 Fault Limit

Dialog	Define Antenna Supervision
Why	This parameter is used to select the threshold for RX path imbalance class 2 faults. The RX path imbalance supervision function supervises the antenna system by measuring the difference in signal strength between RXA and RXB, and RXC and RXD respectively that is the imbalance between two receiver branches.
When	Typically set during RBS installation, and based on test results from

	antenna system tests (Standing Wave Ratio or SWR tests) as described in the relevant RBS CPI (see Verifying Antenna Systems or Antenna System Tests, depending on the RBS). Note: Before disconnecting any cables, take the TRUs out of operation.
Valid values	On, 1 to 254. Off, 255. The value range means 0.1 dB to 25.4 dB with increments of 0.1dB. The recommended value range to use is 30 to 120 (3.0 dB to 12.0 dB. Default 60 (6dB). The value of the class 1 fault limit must be greater than or equal to the value of the class 2 fault limit. If the values of the class 1 fault and class 2 fault limits are equal, only a class 1 fault is exported.
Consequence of incorrect setting	RX path imbalance supervision may not work correctly. A fault may be reported when no fault has occurred. A fault may not be reported when a fault has occurred. A fault may be reported with the incorrect fault class.

Supervision Window Time

Dialog	Define Antenna Supervision
Why	This parameter is used to specify how long measurement samples are to be part of the RX path imbalance calculation. RX path imbalance is calculated as the mean imbalance for two receiver branches during the specified time. A shorter supervision window time, gives a more rapid fault indication but is also more sensitive to short RX path imbalance disturbances.
When	Typically at RBS installation, or when more rapid and less stable values, or slower and more stable values of the RX path imbalance are needed.
Valid values	5 ─ 3000 minutes or, 5 minutes to 50 hours (default: 1440 minutes, or 24 hours).
Consequence of incorrect setting	RX path imbalance supervision may not work correctly. A fault may be reported when no fault has occurred. A fault may not be reported when a fault has occurred. A fault may be reported with the incorrect fault class.

Minimum Number Of Samples

Dialog	Define Antenna Supervision

Why	This parameter is used to select the minimum number of measurement samples that must be present in the supervision window for any RX path imbalance faults to be reported. This is to prevent false alarms in cells where there are low traffic volumes, as one single phone call could be responsible for most of the samples if there are low number of samples.
When	Typically does not need to be changed.
Valid values	1 ─ 65535 (default: 7000).
Consequence of incorrect setting	RX path imbalance supervision may not work correctly. A fault may be reported when no fault has occurred. A fault may not be reported when a fault has occurred. A fault may be reported with the incorrect fault class.

5.6.4 Define Battery Backup Time Test Parameters

Enable test

Dialog	Define Battery Backup Time Test Parameters
Why	This parameter is used to enable the battery backup time test. Default the test is disabled. The test forces the RBS to run on battery. The time the RBS will run on battery backup is measured and compared to the expected backup time. If the measured backup time is exceeding the defined expected backup time then the test is considered successful.
When	When the battery backup time test function is to be enabled or disabled.
Valid values	− Yes (enable) − No (disable)
Consequence of incorrect setting	The battery backup time test is not run when intended or run when not intended. Note! It is not enough to just enable the test. The other parameters must be checked since the default values cannot be used in all cases.

Start date

Dialog	Define Battery Backup Time Test Parameters
Why	The battery backup time test is a cyclic function and it is therefore necessary to state a start date for the test. The test forces the RBS to run on battery. The time the RBS will run on battery backup is measured and compared to the expected backup time. If the measured backup time is exceeding the expected backup time then the test is considered successful.
When	When the battery backup time test function is to be enabled.
Valid values	YYMMDD
Consequence of incorrect setting	The battery backup time test is not initiated when intended.

Start time

Dialog	Define Battery Backup Time Test Parameters
Why	This parameter defines the time of day when the battery backup time test is performed. The battery backup time depends on the traffic load and this must be considered when choosing a start time for the test. If the backup time is

	expected to support high traffic load the start time must be during peak hours, otherwise the start time should be during low traffic. The test forces the RBS to run on battery. The time the RBS will run on battery backup is measured and compared to the expected backup time. If the measured backup time is exceeding the expected backup time then the test is considered successful.
When	When the battery backup time test function is to be enabled.
Valid values	00:00–23:59 (hh:mm)
Consequence of incorrect setting	The battery backup time test is not initiated when intended.

Voltage level to stop the test

Dialog	Define Battery Backup Time Test Parameters
Why	This parameter defines the voltage level that stops the test. The test must be stopped before the batteries are fully discharged. The test forces the RBS to run on battery. The length of time that the RBS runs on battery backup is measured and compared with the expected backup time. If the measured backup time exceeds the expected backup time, then the test is considered successful.
When	When the battery backup time test function is to be enabled.
Valid values	22.5–23.5 V (default value: 23.0)
Consequence of incorrect setting	If the value is wrong, the test reports an incorrect outcome. A low level means a longer test period, which gives a more reliable test result, but the batteries will be more discharged so more time must elapse before a mains failure can be handled. A high level results in a greater difference between the measured backup time and the true backup time. The disconnect level main parameter defines the true backup time, and the voltage level that stops the test must be at least 0.3 V higher than the disconnect level.

Test interval

Dialog	Define Battery Backup Time Test Parameters
Why	This parameter defines the number of days between the battery backup time tests. The battery backup time test is performed cyclically. The test forces the RBS to run on battery. The time the RBS will run on battery backup is measured and compared to the expected backup time. If the measured backup time is exceeding the expected backup time then the test is considered successful.
When	When the battery backup time test function is to be enabled.

Valid values	60–365 days (default values: 182)
Consequence of incorrect setting	The battery can wear out prematurely if the test is done too frequently. It must also be considered that repeating a test with different load profiles gives a more accurate test result.

Expected backup time

Dialog	Define Battery Backup Time Test Parameters
Why	The expected backup time is compared with the measured backup time and if the expected backup time is shorter than the measured time then the test is passed. The RBS does not know how much backup time to expect. To find out whether the backup time is long enough it is necessary to enter the expected backup time, which is the same as the backup time planned for the site. The test forces the RBS to run on battery. The time the RBS will run on battery backup is measured and compared to the expected backup time. If the measured backup time is exceeding the expected backup time then the test is considered successful.
When	When the battery backup time test function is to be enabled.
Valid values	00:00–23:59 (hh:mm) Note: The default value is 00:00, that is, no backup time, which means that the test will always be successful.
Consequence of incorrect setting	The value must reflect the battery backup time planned for the cabinet. If the value is wrong, the test reports an incorrect outcome.

5.6.5 Define Battery Parameters

Disconnect level prioritized

Dialog	Define Battery Parameters
Why	Prioritized supply is intended for TM equipment. The disconnect level prioritized parameter defines the level at which the batteries are disconnected. This is the low voltage disconnect functionality designed to protect the battery from being overdischarged. Prioritized supply to TM equipment is supported only when the RBS is equipped with BFU-02, BFU-04, BFU-21, BFU-22, or BFU-32.
When	Typically defined during RBS installation.
Valid values	20.0–23.8 V (default value: 20.8 V)
Consequence of incorrect setting	The difference between the disconnect level prioritized parameter and the disconnect main level parameter indicates how much power will be left for the TM equipment if a power failure occurs. If the difference between the parameters is small, the backup time for the TM equipment will be short; if the difference between the parameters is large, the backup time for the RBS will be short.

Disconnect level main

Dialog	Define Battery Parameters
Why	The disconnect level main parameter is the voltage at which the RBS is disconnected from the battery. This level indicates how long the backup time is to be for the RBS. The difference between the disconnect level prioritized parameter and the disconnect main level parameter indicates how much power will be left for the TM equipment if a power failure occurs.
When	Typically defined during RBS installation.
Valid values	20.2–24.0 V (default values: 21.0 V)
Consequence of incorrect setting	A low level results in a long backup time for the RBS although the backup time for the TM equipment will be short.

Reconnect level

Dialog	Define Battery Parameters
Why	The reconnect level parameter defines the system voltage at which

	prioritized supply and batteries are to be reconnected.
When	Typically defined during RBS installation.
Valid values	24.0–26.0 V (default values: 25.5 V)
Consequence of incorrect setting	Battery charging will not start as intended.

Alarm raise limit

Dialog	Define Battery Parameters
Why	The alarm raise limit parameter defines the battery temperature at which a high temperature alarm is to be raised. The batteries will be disconnected when the battery temperature increased 5°C above the alarm raise limit. The battery is reconnected when the temperature drops 5°C below the alarm raise limit. This is the temperature protection for the batteries, and is battery-dependent.
When	Typically defined during RBS installation.
Valid values	55–60°C (default value: 55°C) 55°C is recommended for VRLA batteries. Other battery types could require a different alarm limit.
Consequence of incorrect setting	A high temperature stresses the batteries but a low raise limit could cause the batteries to be disconnected too early in a warm environment.

In service date

Dialog	Define Battery Parameters
Why	The parameter is used by the battery log function. The battery log contains data about the currently installed batteries and for the previously installed batteries. Changing the in service date parameter is an indication that the batteries have been changed and that the data for the currently used batteries will be denoted as data for the previously used batteries. The data for the currently used batteries starts from zero.
When	When a new battery is installed.
Valid values	YYYY-MM-DD
Consequence of incorrect setting	The battery log shows incorrect data. If the parameter is not updated when the batteries are changed, then the data for the currently installed battery will incorrectly be saved together with data for the previously installed battery. If the parameter is updated when the batteries have not been changed, then the data for the previously installed batteries will be lost.

Charging mode

Dialog	Define Battery Parameters
Why	The parameter defines the type of charging algorithm to be used. The battery type and configuration affect the choice. Temperature-compensated charging is recommended for lead acid batteries. Fixed float charging voltage is recommended when using other than lead batteries and when using shared batteries. Temperature compensated charging can be used when using shared batteries if the battery temperature sensors are located in the same position, that is, they have the same measurement point. Temperature compensated charging is used to protect the batteries. It will be high float charging voltages at low battery temperature and low float charging voltages at high temperatures. Boost charging is used to obtain the optimal charging since low charging could reduce the batteries lifetime. The only difference between boost event and boost time is the start time. Boost event is initiated when the battery voltage drops below 22.5 V, while boost time is initiated at midnight when the start date occurs and then at regular intervals. System voltage (define using the Define System Voltage function) must be adapted to the chosen charging algorithm. This is particularly important when using fixed float charging voltages.
When	Typically defined during RBS installation.
Valid values	− Temp. compensated (default) − Fixed voltage − Temp. compensated + Boost event − Temp. compensated + Boost time − Temp. compensated + Boost event/time
Consequence of incorrect setting	Battery life is reduced and the state of charging is also reduced.

Perform first boost charging

Dialog	Define Battery Parameters
Why	The parameter defines the first time boost time charging is to be initiated.
When	When boost time has been chosen as the charging mode.
Valid values	YYYY-MM-DD
Consequence of	Boost time charging is not initiated when intended.

incorrect setting

Days between boost charging

Dialog	Define Battery Parameters
Why	The parameter defines the regular interval at which boost time charging is to be initiated. The battery configuration and available charging capacity affect the choice.
When	When boost time has been chosen as charging mode.
Valid values	30–365 days (default value: 175)
Consequence of incorrect setting	Battery life is reduced owing to overcharging when boost charging is conducted too often. The state of charging is reduced when boost charging is conducted too seldom.

Boost charge time, boost time

Dialog	Define Battery Parameters
Why	The parameter defines the duration of boost time charging. The battery configuration and available charging capacity affect the choice.
When	When boost event has been chosen as charging mode.
Valid values	1–24 hours (default value: 6)
Consequence of incorrect setting	Recharging batteries for too long overcharges them and shortens battery life. Insufficient recharging time reduces battery charge levels.

Boost charge time, boost event

Dialog	Define Battery Parameters
Why	The parameter defines the duration of boost event charging. The battery configuration and available charging capacity affect the choice.
When	When boost event has been chosen as charging mode.
Valid values	1–24 hours (default value: 6)
Consequence of incorrect setting	Recharging batteries for too long overcharges them and shortens battery life. Insufficient recharging time reduces battery charge levels.

5.6.6 Define Climate

Climate name

Dialog	Define Climate
Why	This parameter gives input to the climate unit about how it is to function.
When	The climate name is not CLIM_NORM. To see the defined climate name, run the OMT function Display Information for object RBS_2106.
Valid values	– CLIM_NORM
Consequence of incorrect setting	If the climate name is not CLIM_NORM, the climate unit may not work correctly.

5.6.7 Define Delay

TG Instance

Dialog	Define Delay for ESB list
Why	This parameter is used in a list entry to identify an RBS that can be used as a master RBS in a TG cluster, which consists of a master RBS and one or more slave RBSs connected through an ESB for ESB frame synchronization of the slave RBSs. An ESB delay list entry is a TG instance together with an ESB delay value. If there is a list entry for the current master RBS, the ESB delay value in the list entry overrides an automatically measured ESB delay value.
When	A list entry (TG instance and ESB delay) is added for a possible master RBS, where it is appropriate to override an automatically measured ESB delay value. The ESB delay list is normally left empty.
Valid values	0–1023 (list empty by default) This must match the TG instance setting in the BSC.
Consequence of incorrect setting	If the TG Instance and corresponding ESB value are not defined for an RBS, the automatically measured ESB Delay value is used.

ESB Delay

Dialog	Define Delay for ESB list
Why	This parameter defines the delay of the synchronization signal in the ESB cable from the master RBS to a slave RBS in the same TG Cluster. The ESB delay includes delay in the cable and cable connections. A slave RBS performs automatic ESB delay measurement. If there is a list entry for the current timing of the master RBS, the ESB delay value in the list entry overrides the automatically measured value. A TG cluster is formed by a master RBS and one or more slave RBSs connected through ESB for ESB frame synchronization of the slave RBSs. The ESB delay parameter is used when a new TF compensation value is to be calculated by the RBS. The ESB delay value related to the current master RBS is used in the calculation. The TF compensation value is needed for a slave RBS that together with other RBSs constitutes one or more cells. The TF compensation value is needed because of the GSM requirement stating that the timing difference between different carriers in a cell must be less than a ¼ air symbol period (923 ns) at the antennas.
When	A list entry (TG instance and ESB delay) is added for a possible master RBS where it would be appropriate to override the automatically

	measured ESB delay value. The ESB delay list is normally left empty.
Valid values	0–65 534 ns (list empty by default)
Consequence of incorrect setting	If the ESB delay parameter is incorrectly set, there is a risk of the RBS violating GSM requirements.

Delay for feeder object

Dialog	Define Delay for feeder object
Why	This parameter specifies the RF signal delay in the feeder. The feeder delay is part of the total TX path delay and the total RX path delay in the RBS. The total TX path delay is needed to synchronize the TX burst transmission of all TRXs. The total RX path delay is needed to calibrate the timing in the TRX receiver.
When	The feeder delay parameter must be updated if the delay differs from the default value. How to calculate the total feeder system delay is described as part of antenna system tests in the relevant RBS manual. The total feeder system delay (including jumper delay) must be used.
Valid values	0–10 000 ns. Default value varies between configurations.
Consequence of incorrect setting	GSM specifications can be violated if transmitters are not synchronized accurately enough, and traffic degradation can occur.

5.6.8 Define GPS Parameters

GPS present

Dialog	Define GPS Parameters
Why	This parameter defines whether or not a GPS receiver should be present. A GPS receiver is used as a reference for RF frequency generation and as a reference for the GSM time-base counters. The GPS receiver can be used to achieve a synchronized radio network, which enables lower interference and higher capacity in a GSM radio network when combined with radio network planning adapted for a synchronized radio network.
When	When a GPS receiver is added to the site the GPS receiver HW is automatically detected by the RBS, and the GPS present parameter is automatically changed to yes. The parameter is manually set to no when the GPS receiver is to be removed from the RBS. Comment: When the parameter is manually set to no the automatic detection of GPS HW is stopped until the RBS is restarted.
Valid values	− Yes − No (default)
Consequence of incorrect setting	If GPS present is incorrectly set to yes, the RBS reports that the GPS receiver is missing. It can also cause RBS synchronization to fail, and cause the RBS to be taken out of traffic. If GPS present is incorrectly set to no, there is a risk of the RBS violating GSM requirements, entering holdover mode, and eventually being taken out of traffic.

GPS RX delay

Dialog	Define GPS Parameters
Why	This parameter specifies the delays in the GPS receiver antenna, GPS receiver antenna cables, and the GPS receiver. The delay is relevant when the GPS receiver is used for GPS frame synchronization. GPS frame synchronization is used to achieve a synchronized radio network, which enables lower interference and higher capacity in a GSM radio network when combined with radio network planning adapted for a synchronized radio network.
When	The parameter is changed when a GPS receiver is to be added to the RBS. If the GPS receiver compensates for the RX delay the GPS RX delay parameter is set to 0.

Valid values	0–65 535 ns (default value: 0)
Consequence of incorrect setting	If the RBS is part of a synchronized radio network, an incorrect setting of the delay degrades radio network performance.

GPS RX DXU delay

Dialog	Define GPS Parameters
Why	This parameter specifies the delays in the path from the GPS receiver to the DXU, including delays in the OVP unit. The delay is relevant when the GPS receiver is used for GPS frame synchronization. GPS frame synchronization is used to achieve a synchronized radio network, which enables lower interference and higher capacity in a GSM radio network when combined with radio network planning adapted for a synchronized radio network.
When	The parameter is changed when a GPS receiver is to be added to the RBS.
Valid values	0–65 535 ns (default value: 0)
Consequence of incorrect setting	If the RBS is part of a synchronized radio network, an incorrect setting of the delay degrades radio network performance.

5.6.9 Define Hardware Info

Product No.

Dialog	Define Hardware Info
Why	Product numbers are defined to enable the RBS inventory information, available in the OMT and at the O&M centre, to be more complete. Product number can be defined for the following RUs: – Passive RUs – Cabinets with memory, such as RBS 2106 and RBS 2206. Product numbers for RUs can be displayed using the OMT functions Display Inventory List and Display Information. Product numbers for the cabinet RUs above can also be displayed at the O&M centre.
When	Product numbers for passive RUs are defined if the operator wants to see them in the inventory list in OMT. Product numbers for cabinets with memory are defined when replacing cabinet backplane.
Valid values	The product number is a character string. Valid characters are 0..9, A..Z, space /. The product number, which is normally found on a label attached to the RU, must be written in accordance with the Ericsson product number format. Default values: – Empty character string for passive RUs – Set at production for cabinet RUs
Consequence of incorrect setting	For passive RUs and cabinets with memory: The wrong product number is displayed by the OMT functions Display Inventory List and Display Information. For cabinets with memory: The wrong product number is displayed at the O&M centre.

Serial No.

Dialog	Define Hardware Info
Why	Serial numbers are defined to enable the RBS inventory information, available in the OMT and at the O&M centre, to be more complete.

	Serial number can be defined for the following RUs: – Passive RUs – Cabinets with memory, such as RBS 2106 and RBS 2206. Serial numbers for RUs can be displayed using the OMT functions Display Inventory List and Display Information. Serial numbers for the cabinet RUs above can also be displayed at the O&M centre.
When	Serial numbers for passive RUs are defined if the operator wants to see them in the inventory list in OMT. Serial numbers for cabinets with memory are defined when replacing cabinet backplane.
Valid values	The serial number is a character string with a maximum length of 13 characters. Valid characters are: 0..9 A..Z space ! # $ % & ‘ ( ) * + , − . /: ; < = > ? _. The serial number, which is normally found on a label attached to the RU, must be written in accordance with the Ericsson serial number format. Default values: – Empty character string for passive RUs – Set at production for cabinet RUs
Consequence of incorrect setting	For passive RUs and cabinets with memory: The wrong serial number is displayed by the OMT functions Display Inventory List and Display Information. For cabinet with memory: The wrong serial number is displayed at the O&M centre.

HW Rev.

Dialog	Define Hardware Info
Why	Hardware revisions are defined to enable the RBS inventory information, available in the OMT and at the O&M centre, to be more complete. Hardware revision can be defined for the following RUs: – Passive RUs – Cabinets with memory, such as RBS 2106 and RBS 2206.

	Hardware revisions for RUs can be displayed using the OMT functions Display Inventory List and Display Information. Hardware revisions for the cabinet RUs above can also be displayed at the O&M centre.
When	Hardware revisions for passive RUs are defined if the operator wants to see them in the inventory list in OMT. Hardware revisions for cabinets with memory are defined when replacing cabinet backplane.
Valid values	The hardware revision is a character string with a maximum length of 7 characters. Valid characters are space 0..9, A..Z, space, and /. The hardware revision, which is normally found on a label attached to the hardware object, must be written in accordance with the Ericsson hardware revision format. Default value: – Empty character string for passive RUs – Set at production for cabinet RUs
Consequence of incorrect setting	For passive RUs and cabinet with memory: The wrong hardware revision is displayed by the OMT functions Display Inventory List and Display Information. For cabinet with memory: The wrong hardware revision is displayed at the O&M centre.

Comment

Dialog	Define Hardware Info
Why	This parameter can be used to enter additional information about an RU. Comments are defined to enable the RBS inventory information, available in the OMT and at the O&M centre, to be more complete. Comment can be defined for the following RUs: – Passive RUs – Cabinets with memory, such as RBS 2106 and RBS 2206. Comments for RUs can be displayed using the OMT functions Display Inventory List and Display Information. Comments for the cabinet RUs above can also be displayed at the O&M centre.
When	Comments for passive RUs are defined if the operator wants to see them

	in the inventory list in OMT. Comments for cabinets with memory are defined when replacing cabinet backplane.
Valid values	The comment is a character string with a maximum length of 20 characters. Valid characters are: 0..9, A..Z space ! # $ % & ‘ ( ) * + , − . /: ; < = > ? _. Default value: – Empty character string for passive RUs – Set at production for cabinet RUs
Consequence of incorrect setting	For passive RUs and cabinet with memory: The wrong comment is displayed by the OMT functions Display Inventory List and Display Information. For cabinet with memory: The wrong comment is displayed at the O&M centre.

5.6.10 Define Loss

Loss for feeder object

Dialog	Define Loss
Why	This parameter specifies the loss of a feeder. The loss of feeders used for both RX and TX is part of the total RX path loss in the RBS, which is needed to calibrate the TRX and thereby optimize the RF performance of the RBS. The total RX path loss is also needed to calculate RXLEV at the antenna.
When	The loss parameter must be updated if the feeder loss differs from the default value. The feeder loss (attenuation) is typically measured and calculated as part of antenna system tests as described in the relevant RBS manual. Comment: For some TMA configurations in which there is no IDB available for that specific TMA configuration, it can be necessary to use an IDB for the corresponding non-TMA configuration. In such cases the difference between the actual feeder loss and the (negative) TMA loss must be entered as a feeder loss value. The TMA loss is a negative value in this case because it corresponds to a positive TMA gain.
Valid values	−384 dB to +384 dB Default value is 3.996 dB for TMA configurations. Default value is 0 dB for non-TMA configurations. For non-TMA configurations with RBS 2116/2216 the default value (0 dB) should be kept to avoid false alarms
Consequence of incorrect setting	Reduced RF performance. The wrong RXLEV reporting to the BSC can affect MS power regulation, handover decision, and performance management.

5.6.11 Define Present RUs

Present/Not Present

Dialog	Define Present RUs
Why	The “Present / Not Present” information is defined for RUs when the number of RUs in a specific configuration of an RBS can vary. To function correctly, the RBS needs to know which RUs that should be present. The “Present / Not Present” information ensures that the RBS knows which RUs can be used and can thus detect missing RUs. The Define Present RUs function is used to provide the RBS with this information. The “Present / Not Present” information is entered for RUs that the RBS does not automatically update the information for. These RUs are PSU, BFU, DC/DC converter, TMA CM, EPC Bus, FCU and RUs containing transceiver(s) that is TRU, DRU, RRU and micro RBS.
When	For PSU, BFU, DC/DC converter, TMA CM, and EPC bus: The “Present / Not Present” information is entered during RBS installation and when changing the number of RUs. For transceiver units: The “Present / Not Present” information is entered when removing a transceiver unit from an RBS or when a transceiver unit is faulty. Observe that when the RBS detects a transceiver unit that is marked as not present in the IDB, the RBS automatically marks it as present. This means that Define Present RUs need not be used when adding transceiver units. For FCU: In an RBS 2250 TRX cabinet, one DXU controls the fans via FCU. Normally, this is the DXU located at the bottom left of the cabinet. In the IDB for this DXU, the FCU is marked as present, as the default. In the IDB for the other DXUs, the FCU is marked as not present, as the default. The FCU “Present / Not Present” information need only be changed when the bottom left DXU is not installed in the RBS 2250 cabinet and the FCU is connected to another DXU.
Valid values	− Present − Not present
Consequence of incorrect setting	If “Present / Not Present” information is not correctly defined, it can result in the following: − The OMT displays incorrect “Present / Not Present” information.

− If an RU is defined as present when it is not present, then a fault report is sent to the BSC.

− If an RU is defined as not present when it is present, then a HW and IDB inconsistency fault report is sent to the BSC. The HW and IDB inconsistency are also displayed in the OMT. The RU will not be supervised.

− If the BFU is defined as not present when it is present then the features battery test and battery log cannot be used. Similarly, battery parameters used to provide optimal usage of batteries cannot be set.

− If FCU is not present in any of the IDBs in an RBS 2250 TRX cabinet, then no DXU controls the fans in the cabinet. The fans operate at full speed all the time.

5.6.12 Define RBS Identity

RBS name

Dialog	Define RBS Identity
Why	This parameter is used to specify an operator-defined name for the RBS. This could be used as an extra safeguard when using the Remote OMT or Remote OMT over IP to ensure that the correct RBS is connected.
When	Typically defined during RBS installation.
Valid values	A free text string with a maximum length of 20 characters. Valid characters are: 0..9 A..Z space ! # $ % & ‘ ( ) * + , – . / ; < = > ? _
Consequence of incorrect setting	The RBS is incorrectly identified.

RBS description

Dialog	Define RBS Identity
Why	This parameter enables more information to be entered about the RBS than the RBS name. The extra information could include, for example, the location of the RBS or special information about the RBS that could be of interest.
When	Typically defined during RBS installation.
Valid values	A free text string with a maximum length of 20 characters. Valid characters are: 0..9 A..Z space ! # $ % & ‘ ( ) * + , – . / ; < = > ? _
Consequence of incorrect setting	The RBS is incorrectly described.

5.6.13 Define System Voltage

System_Voltage

Dialog	Define System Voltage
Why	This parameter defines the voltage supplied to the RUs in the RBS. The system voltage is the output voltage from the PSUs. In configurations that include batteries: The system voltage is the voltage with which the batteries are charged. In configurations that do not include batteries: In case there are several RBSes with different power systems connected then all power systems must have the same system voltages in order to work optimally.
When	Typically at RBS installation and the RBS is equipped with PSU-AC or PSU 230 (power source configuration is VAC) when batteries are included or when several RBSes with different power systems are connected to be able to share power resources.
Valid values	24.0–28.5 V (default value: 27.2 V) if the configuration does not include batteries. 25.5–28.5 V (default value: 27.2 V) if the configuration includes batteries and the charging mode (algorithm) is fixed voltage charging. 26.7–27.7 V System voltage at 25°C (default value: 27.2 V) if the configuration includes batteries and the charging mode (algorithm) is temperature-compensated charging.
Consequence of incorrect setting	In a configuration that include batteries: A high system voltage charges the batteries faster but this places more stress on the batteries. A low system voltage results in slower charging. It is not certain if a low system voltage is better for the batteries than a high system voltage. This depends on the type of battery. In a configuration that do not include batteries: If the power systems use different system voltages then the power system with the highest system voltage will be more stressed since that power system will also support the other power systems.

5.6.14 Define TEI

TEI value

Dialog	Define TEI
Why	This parameter is used as a unique identifier for the CMRU of a specific RBS. Communication that takes place over the A-bis interface (between the BSC and RBS) is based on the LAPD protocol standard. In LAPD, a Terminal Endpoint Identifier (TEI) and a Service Access Point Identifier (SAPI) identify a specific link. To be able uniquely to identify the CMRU of a specific RBS connected in a cascade chain, each RBS in the cascade chain must have a different TEI value assigned to its CMRU.
When	The TEI value must be updated when an RBS is connected in a cascade chain with at least one other RBS. For RBSs not connected in a cascade chain, the default TEI value can be used.
Valid values	12–63 (default value: 62) The value must match the value that the BSC uses to identify the CMRU of the RBS.
Consequence of incorrect setting	If the TEI value does not match the TEI value set in the BSC, then the BSC is unable to communicate with that RBS. Remote maintenance using Remote OMT over IP is not possible. If the TEI value is equal to the TEI value set for another RBS in the same cascade chain, then the second RBS (with that TEI value) cannot be reached by the BSC. The first of the conflicting RBSs can be reached by the BSC, but possibly by taking the identity of the second RBS.

5.6.15 Define TF Compensation

Master RBS

Dialog	Define TF Compensation
Why	This parameter is used to define the type of RBS that is the master RBS in the TG Cluster. A TG cluster is made up of a master RBS and one or more slave RBSs, connected via ESB for ESB Frame Synchronization of the slave RBSs. This parameter is used when a new TF compensation value is to be calculated. The TF compensation value is needed for a slave RBS that, together with other RBSs, constitutes one or more cells. The TF compensation value is needed because the GSM requirement that states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	This parameter is used when a new TF compensation value is to be manually calculated, for example, when a new master RBS is to be selected.
Valid values	− RBS 200 − RBS 205 − RBS 2000 The value defined must indicate the type of RBS used as master RBS.
Consequence of incorrect setting	The calculation of the recommended TF compensation value will be incorrect.

Combiner

Dialog	Define TF Compensation (Master RBS set to RBS 200 or RBS 205)
Why	This parameter is used to specify the type of combiner that is used by the master RBS in the TG cluster. A TG cluster is made up of a master RBS and one or more slave RBSs, connected via ESB for ESB frame synchronization of the slave RBSs. This parameter is used when a new TF compensation value is to be calculated. The TF compensation value is needed for a slave RBS that, together with other RBSs, constitutes one or more cells. The TF compensation value is needed because the GSM requirement that states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	This parameter is used when a new TF compensation value is to be manually calculated, for example, when a new master RBS is to be selected. The parameter is used only when the master RBS parameter is set to RBS 200 or RBS 205.

Valid values	− HCOMB − FCOMB The value defined must indicate the type of combiner used in the master RBS.
Consequence of incorrect setting	The calculation of the recommended TF compensation value will be incorrect.

TMA

Dialog	Define TF Compensation (Master RBS set to RBS 200 or RBS 205)
Why	This parameter is used to specify if a TMA is used by the master RBS in the TG cluster. A TG cluster is made up of a master RBS and one or more slave RBSs, connected via ESB for ESB Frame Synchronization of the slave RBSs. This parameter is used when a new TF Compensation value is to be calculated. The TF compensation value is needed for a slave RBS that, together with other RBSs, constitutes one or more cells. The TF compensation value is needed because the GSM requirement that states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	This parameter is used when a new TF compensation value is to be manually calculated, for example, when a new master RBS is to be selected. The parameter is used only when the master RBS parameter is set to RBS 200 or RBS 205.
Valid values	− Yes − No The value defined must reflect the use of TMA in the master RBS.
Consequence of incorrect setting	The calculation of the recommended TF compensation value will be incorrect.

Feeder Delay

Dialog	Define TF Compensation (Master RBS set to RBS 200 or RBS 205)
Why	This parameter is used to specify the feeder delay of the master RBS in the TG cluster. A TG cluster is made up of a master RBS and one or more slave RBSs, connected via ESB for ESB frame synchronization of the slave RBSs. This parameter is used when a new TF compensation value is to be calculated. The TF compensation value is needed for a slave RBS that, together with other RBSs, constitutes one or more cells. The TF

	compensation value is needed because the GSM requirement that states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	This parameter is used when a new TF compensation value is to be manually calculated, for example, when a new master RBS is to be selected. The parameter is used only if the master RBS parameter is set to RBS 200 or RBS 205.
Valid values	0–10 000 ns The value defined must be the feeder delay of the master RBS.
Consequence of incorrect setting	The calculation of recommended TF compensation value will be incorrect.

Master-Slave ESB Delay

Dialog	Define TF Compensation
Why	This parameter is used to specify the ESB delay between the master RBS and a slave RBS in a TG cluster. A TG cluster is made up of a master RBS and one or more slave RBSs, connected via ESB for ESB frame synchronization of the slave RBSs. This parameter is used when a new TF compensation value is to be calculated. The TF compensation constitutes one or more cells. The TF compensation value is needed because the GSM requirement that states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	This parameter is used when a new TF compensation value is to be manually calculated, for example, when a new master RBS is to be selected.
Valid values	0–10 000 ns The value defined must be the ESB delay between the RBS and the master RBS.
Consequence of incorrect setting	The calculation of recommended TF compensation value will be incorrect.

Master Transmitter Chain Delay

Dialog	Define TF Compensation (Master RBS set to RBS 2000)
Why	This parameter is used to specify the master transmitter chain delay of the master RBS in the TG cluster. A TG cluster is made up of a master RBS and one or more slave RBSs, connected via ESB for ESB frame synchronization of the slave RBSs. This parameter is used when a new TF compensation value is to be calculated. The TF compensation value is needed for a slave RBS that,

	together with other RBSs, constitutes one or more cells. The TF compensation value is needed because the GSM requirement that states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	This parameter is used when a new TF compensation value is to be manually calculated, for example, when a new master RBS is to be selected. The parameter is used only if the master RBS parameter is set to RBS 2000.
Valid values	0–65 535 ns The master transmitter chain delay can be retrieved from the master RBS. The transmitter chain delay information can be found by executing the display information operation on the RBS object at the master RBS.
Consequence of incorrect setting	The calculation of recommended TF compensation value will be incorrect.

TF Compensation Value

Dialog	Define TF Compensation
Why	This parameter is used to specify the TF compensation value of a slave RBS in a TG cluster. A TG cluster is made up of a master RBS and one or more slave RBSs, connected via ESB for ESB frame synchronization of the slave RBSs.The TF compensation value is the time adjustment (in nanoseconds) the Slave RBS must make relative to the ESB reference used. TF compensation value is needed for slave RBSs that, together with other RBSs, constitute one or more cells. The TF compensation value is needed because the GSM requirement that states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	A new TF compensation value is typically needed when a new master RBS is to be selected. The BSC can override the manually set TF compensation value. If BSC is stated in field “Source:” in dialog ‘Define TF Compensation’ there is no need to maintain TF Compensation Value.
Valid values	−10 000 ns to +10 000 ns (default value: 0) The recommended TF compensation value calculated by the OMT is normally used. A positive TF compensation value indicates that the internal timing is delayed relative to the ESB frame synchronization on ESB. A negative TF compensation value indicates that the internal timing is advanced relative to the ESB frame synchronization on ESB.

Consequence of incorrect setting	There is a risk that the RBS will violate GSM requirements.

5.6.16 Define TF Holdover Mode

TF holdover mode

Dialog	Define TF Holdover Mode
Why	This parameter makes it possible to specify if an RBS configured as slave, should be in intracell or intercell holdover mode. An RBS internal oscillator provides short-term timing stability. The long-term frequency and timing accuracy of the RBS relies on a synchronization source. For a slave RBS, the frame synchronization received from the ESB serves as the synchronization source. When the RBS loses its synchronization source, it can rely on the internal oscillator for a limited time period, called “holdover”. The length of the holdover time depends on the setting of the TF holdover mode. When the holdover time expires, the RBS is taken out of traffic. In intracell holdover mode, the RBS is used together with other RBSs to constitute one or more cells, which requires that the RBSs are in frame synchronization with each other. In intercell holdover mode, the RBS is not realizing cells together with other RBSs. The GSM requirement states that the timing difference between different carriers within a cell must be less than ¼ air symbol period (923 ns) at the antennas.
When	It may be necessary to change the parameter when the cell structure of the TG cluster is changed, and the change includes cells realized by the RBS.
Valid values	− Intra cell (default value) − Inter cell
Consequence of incorrect setting	If TF holdover mode is incorrectly set to intra cell, then the holdover time will be shorter than necessary and the RBS will be taken out of traffic too soon. If TF holdover mode is incorrectly set to inter cell, then the holdover time will be longer than necessary and with the risk that the RBS will violate GSM requirements.

5.6.17 Define TNOM

TNOM Use

Dialog	Define TNOM
Why	This parameter is used to activate or deactivate DXX support in an RBS. DXX support in RBS 2000 is intended to enable the O&M centre in a DXX network to monitor the transmission performance of the RBS. If the RBS is connected to a DXX transport module, transmission performance can be monitored using the transport module without activating DXX support. DXX is a transmission system that includes O&M and switching functionality, and is used for cellular applications.
When	It may be necessary to update this parameter when DXX support is to be activated or deactivated in an RBS.
Valid values	− On − Off (default value)
Consequence of incorrect setting	If TNOM use is incorrectly set to off, then the O&M centre of the DXX network will be unable to reach the RBS. If TNOM use is incorrectly set to on, then the BSC will be unable to use the timeslot defined by TNOM Timeslot. If the RBS has network topology set to cascade, then signalling to a downstream RBS is affected in the same way. If the RBS is a Macro RBS using DXU 01, DXU 03, or DXU 11, or a Micro RBS of type RBS 2301, RBS 2302, or RBS 2401, then a configuration request from the BSC is rejected if it includes the timeslot defined by TNOM timeslot. For other RBSs, the configuration request is accepted but the timeslot specified by TNOM timeslot is not configured for use by the BSC. If overlap between TNOM configured timeslots and an IS configuration containing super channels is detected at IS_CONFIGURATION_REQUEST, the configuration is discarded and an IS_CONFIGURATION_REJECT is sent.

TNOM Timeslot

Dialog	Define TNOM
Why	This parameter is used to define the 64 kbit/s timeslot on the E1/T1 link that is to be used for DXX support of an RBS. DXX support in RBS 2000 enables the O&M centre in a DXX network to monitor the transmission performance of the RBS. DXX is a transmission system that includes O&M and switching functionality, and is used for cellular applications. Note: The same timeslot is allocated on PCM A and PCM B. If a timeslot is allocated for DXX support, then that timeslot cannot be

	allocated for signalling or for traffic to/from the RBS
When	It can be needed to update this parameter when DXX support is to be activated, or when the timeslot for DXX support is to be changed. The TNOM Timeslot parameter is only of interest if the TNOM Use parameter is set to ON.
Valid values	For transmission type E1: 1–31 (default value: 31) For transmission type T1: 1–24 (default value: 24) The timeslot defined must be the same timeslot defined in the O&M centre of a DXX network.
Consequence of incorrect setting	If TNOM use is incorrectly set to off, then the O&M centre of the DXX network will be unable to reach the RBS. If TNOM use is incorrectly set to on, then the BSC will be unable to use the timeslot defined by TNOM Timeslot. If the RBS has network topology set to cascade, then signalling to a downstream RBS is affected in the same way. If the RBS is a Macro RBS using DXU 01, DXU 03, or DXU 11, or a Micro RBS of type RBS 2301, RBS 2302, or RBS 2401, then a configuration request from the BSC is rejected if it includes the timeslot defined by TNOM timeslot. For other RBSs, the configuration request is accepted but the timeslot specified by TNOM timeslot is not configured for use by the BSC. If overlap between TNOM configured timeslots and an IS configuration containing super channels is detected at IS_CONFIGURATION_REQUEST, the configuration is discarded and an IS_CONFIGURATION_REJECT is sent.

TNOM Node Id

Dialog	Define TNOM
Why	This parameter is used to provide a unique identifier for a node, such as an RBS in a DXX network. DXX is a transmission system for cellular applications that includes O&M and switching functionality. DXX support in RBS 2000 enables the O&M centre in a DXX network to monitor the transmission performance of the RBS.
When	It necessary to update this parameter when DXX support is to be activated or when the TNOM node Id is changed. The TNOM node Id parameter is of interest only if the TNOM use parameter is set to on.
Valid values	1–65 534 (default value: 1) The TNOM node Id defined must be equal to the value set in the O&M centre.
Consequence of incorrect setting	If TNOM node Id is incorrectly set, then the O&M centre of the DXX network will be unable to reach the RBS. If set to the same value as the TNOM node Id for another RBS, then the RBS can be reached by the

O&M Centre but the O&M centre believes that it is communicating with another RBS.

5.6.18 Define Transmission

STN Equipment

Dialog	Define Transmission
Why	This parameter specifies if STN equipment is used between the RBS and the BSC.
When	The STN equipment selection must be done when a new RBS is installed. Note that the STN equipment selection gets its first value when the IDB is created.
Valid values	- No - PSTU - Integrated - Other The selection done must match the transport network used from the BSC to the RBS.
Consequence of incorrect setting	If there is a mismatch in parameter setting and HW configuration for STN equipment, the RBS is likely to misinterpret the status of the incoming sync. This misinterpretation may in the end cause the RBS having problem to carry traffic. Incorrect setting to "PSTU" when it should have been "No" has an additional side affect. RBS configured with STN equipment will only support Abis IWDs 06A and on, not older. The RBS also will report STN equipment as supported functionality to the BSC.

Transmission Interface

Dialog	Define Transmission
Why	This parameter specifies the transmission type to be used between the RBS and the BSC. Most operators use the same transmission type for their entire network.
When	The type of transmission interface must be specified when a new RBS is installed. The transmission interface is normally not changed during the life of an RBS. Note that the transmission interface type gets its first value when the IDB is created.
Valid values	− E1 − T1 − Internal The value defined must match the transport network used.
Consequence of	If the value does not match the transport network used, the BSC cannot communicate with that RBS. Remote maintenance using OMT (Remote

incorrect setting	OMT or Remote OMT over IP) is not possible. If the RBS has network topology set to cascade, communication to all downstream RBSs is lost.

Network Topology

Dialog	Define Transmission
Why	This parameter is used to specify whether an RBS is connected with all its transmission ports towards the BSC or whether it is to be part of a cascade chain. The RBSs in a cascade chain are connected so that each RBS uses port A towards the BSC and port B towards the next downstream RBS. Ports C and D are connected in the same way.
When	The network topology has to be defined for every new RBS. The network topology setting of an RBS can require updating when the network is changed.
Valid values	− Stand alone − Cascade
Consequence of incorrect setting	If network topology is incorrectly set to stand alone the communication between the BSC and the downstream RBSs is lost. If network topology is incorrectly set to cascade the RBS cannot use ports B and D.

Sync Source

Dialog	Define Transmission
Why	This parameter defines which E1/T1 transmission interfaces are available as a synchronization source. The synchronization source is used as a basis for RF frequency generation, clocking the GSM time base counters, and internal synchronization of the RBS. An RBS internal oscillator provides short-term timing stability. Long-term frequency and timing accuracy of the RBS relies on the selected synchronization source. An RBS using the GPS as a synchronization source for RF generation and time base counters uses the incoming transmission interface as a synchronization source for the internal switch function and for the outgoing transmission interface. It can also use an incoming transmission interface as a backup synchronization source if this allowed by the TF configuration.
When	The sync source parameter is set when a new RBS is installed. It can be manually changed to not available if a transmission interface is unusable as a synchronization source. If the transport network is modified it can

	be appropriate to change the setting of the sync source parameter.
Valid values	PCM A – ticked if available (default value: available) PCM B – ticked if available (default value: not available) PCM C – ticked if available (default value: not available) PCM D – ticked if available (default value: not available) For an RBS in network topology cascade, only PCM A and PCM C can be selected as available for synchronization. It is recommended to specify as available only transmission interfaces that are stable enough for use as a synchronization source, but at least one must be specified as available.
Consequence of incorrect setting	If sync source is set incorrectly there is a risk of the RBS violating GSM requirements, entering holdover mode, and eventually being taken out of traffic.

CRC-4

Dialog	Define Transmission
Why	This parameter is used to activate or deactivate CRC 4 handling. The Cyclic Redundancy Check 4 (CRC 4) procedure provides enhanced error-monitoring capability. Most operators use the same CRC 4 setting for their entire network. CRC 4 is only applicable for type E1 transmission interfaces.
When	The correct CRC 4 setting must be set for every new RBS with E1 transmission. The CRC 4 setting is not normally changed.
Valid values	− Activated − Deactivated (default) The value defined must match the CRC 4 setting in the transport network.
Consequence of incorrect setting	If CRC 4 is incorrectly activated, the RBS fails to achieve CRC multiframe alignment, which causes all E1 transmission interfaces to be taken out of service because of Loss of Frame Alignment (LOF). If CRC 4 is incorrectly deactivated, the equipment at the remote end of the E1 transmission interfaces fails to achieve CRC multiframe alignment, which can cause the E1 transmission interface to be taken out of service.

Spare Bits (sa4-sa8)

Dialog	Define Transmission

Why	This parameter is used to specify the setting to be used for E1 spare bits. Spare bits are given fixed values and can be set to comply with national requirements. Most operators use the same spare bit setting for their entire network.
When	The correct spare bit setting must be set for every new RBS with E1 transmission. Spare bit setting is normally not changed. When configured for STN equipment, the S_{a4} is used for a Synchronization Status Message (SSM) and can override any setting done through this parameter.
Valid values	S_{a4} 0 or 1 (Default value: 1) S_{a5} 0 or 1 (Default value: 1) S_{a6} 0 or 1 (Default value: 1) S_{a7} 0 or 1 (Default value: 1) S_{a8} 0 or 1 (Default value: 1)
Consequence of incorrect setting	One consequence is that the RBS does not comply with national requirements; further consequences depend on national rules.

Receiver Sensitivity A/B/C/D

Dialog	Define Transmission
Why	This parameter is used to set the sensitivity of the receiver for an E1 transmission interface. The receiver sensitivity can be used for optimizing RBS performance for various cable lengths of the E1 transmission interface. Short-haul mode has limited receiver sensitivity but can have better noise immunity than long-haul mode. Long-haul mode supports both short and long cable lengths owing to adaptive high receiver sensitivity.
When	Receiver sensitivity is set when a new RBS with E1 transmission is installed. If the transport network is modified it can be necessary to change the receiver sensitivity setting.
Valid values	− Long haul (default) − Short haul The formal loss of signal requirement in ITU-T G.775 is only fulfilled in short-haul mode. The value is set individually for each transmission interface.
Consequence of incorrect setting	If set to short-haul mode when a long cable is used there is a risk of the signal being treated as a lost signal because the RBS cannot detect it. If set to long-haul mode when short-haul mode is applicable the interface has less noise immunity than when the receiver sensitivity is

set to short-haul mode.

LBO A, LBO B, LBO C, and LBO D

Dialog	Define Transmission
Why	An LBO parameter is used to set the transmitter signal level and receiver sensitivity of a T1 transmission interface. The LBO parameters are used to fulfil the T1 transmission interface requirements of the specific interface.
When	An LBO parameter is set when a new RBS with T1 transmission is installed. If the transport network is modified, for example, expanded, then it may be necessary to change the LBO values.
Valid values	− Long h, 0 dB (default) − Long h, −7.5 dB − Long h, −15 dB − Long h, −22.5 dB − Long h, ALBO, 0 dB − Long h, ALBO, −7.5 dB − Long h, ALBO, −15 dB − Long h, ALBO, −22.5 dB − Short h, 0–133 feet − Short h, 133–266 feet − Short h, 266–399 feet − Short h, 399–533 feet − Short h, 533–655 feet If the interface shall comply with the standard defined by ANSI T1.403, then long haul must be used. The long haul output level can be attenuated to four levels to fulfil maximum signal levels at the far end. When using long haul ALBO, the RBS automatically selects a transmitter attenuation that gives a defined maximum level of the signal strength of the receiver at the far end. If the interface shall comply with the standard defined by ANSI T1.102, then short haul must be used. The output level can be amplified in five steps to fulfil the 0 dB signal level at a DSX 1 cross-connection interface. If no standard is defined for the interface, then using long haul 0 dB is appropriate in most cases. Long haul is more adaptable and provides much higher receiver sensitivity than short haul. Short haul can provide

	better noise immunity. The value is set individually for each transmission interface.
Consequence of incorrect setting	If set to short haul in a situation where a long cable is used, there is a risk that the signal is considered as lost because the level of the signalling strength is too low. In other situations, setting an LBO parameter incorrectly means that the outgoing signal strength will not be optimal. This can cause the receiver on the far end to view the signal as disturbed, severely disturbed or, in the worst case, as lost.

FDL Use

Dialog	Define Transmission
Why	This parameter is used to specify if loopbacks can be activated on a T1 transmission in accordance with CSU ANSI. A CSU loopback can be initiated by the use of ANSI bit-patterned messages and loopback commands on the ESF Data Link. The loopbacks are used to verify the operation of the transmission network. This is done by reconnecting the transmission network to test equipment, ordering the loopback, and performing the test.
When	The FDL Use parameter is set to CSU-ANSI when there is a need to set the transmission interfaces in loopback mode. This is set only for RBSs with T1 transmission.
Valid values	− Used only for RAI (default) − CSU-ANSI The recommendation is to use the default value.
Consequence of incorrect setting	If FDL Use is incorrectly set to ‘Used only for RAI’ then it will not be possible to activate CSU ANSI loopback on that RBS. If FDL Use is incorrectly set to CSU-ANSI then the RBS may be set to loopback mode by mistake. For example: If there is an external CSU unit a received loopback command may set both the external CSU and the RBS to loopback mode. This may cause problems for the RBS to recover when a loopback deactivate command is sent.

5.6.19 Define VSWR Limits

VSWR Supervision

Dialog	Define VSWR Limits
Why	This parameter specifies if the limits for VSWR Class 1 and VSWR Class 2 faults are to be set to default values or if the user can define them. The VSWR supervision function supervises the antenna system by measuring the forward and reflected power at the CDU output. The function calculates the VSWR at CDU output by using the power forward and power reflected measurements, and compares the VSWR with the limits defined by the VSWR class 1 and VSWR class 2 parameters.
When	User defined is the preferred setting. VSWR limits that are accurately defined and adjusted to the specific site enable the earlier detection of antenna system-related problems. Examples of problems that can be detected are water in the antennas or feeders, and bad antenna/feeder connections. In configurations with CDU-J, user defined VSWR limits are not supported, only default settings are supported, which means that the VSWR limits values cannot be changed. This parameter is typically set at RBS installation, based on test results from antenna system tests (SWR test) as described in the relevant RBS manual.
Valid values	− Default − User defined • Default: High default values (2.8) are to be used for both the VSWR class 1 and VSWR class 2 parameters. The VSWR class 1 and VSWR class 2 parameter values cannot be changed. This is the predefined setting for TMA configurations. The supervision detects only major faults. • User defined: Values for the VSWR class 1 and VSWR class 2 parameters can be entered manually. This is the predefined setting for non-TMA configurations. In this case, predefined values for the VSWR class 1 and VSWR class 2 parameters are provided.
Consequence of incorrect setting	VSWR supervision may not work correctly. A fault may be reported when no fault has occurred. A fault may not be reported when a fault has occurred. A fault may be reported with the incorrect fault class.

VSWR Class 1

Dialog	Define VSWR Limits

Why	This parameter is used to select the threshold for VSWR class 1 faults. The VSWR supervision function supervises the antenna system by measuring the forward and reflected power at the CDU output. The function calculates the VSWR at CDU output by using the power forward and power reflected measurements and compares the VSWR with the limits defined by the VSWR class 1 and VSWR class 2 parameters.
When	The parameter can be set if the VSWR Supervision parameter is set to user defined. This parameter is typically set at RBS installation, based on test results from antenna system tests (SWR test) as described in the relevant RBS manual. Recommended values can also be found in this manual. The parameter can also be changed when the VSWR supervision parameters need to be updated because of false alarms or other situations in which VSWR supervision is not working correctly. Example of factors that affect the selection of suitable limits defined by the VSWR class 1 and VSWR class 2 parameters: • Short feeder (only a few metres) typically requires higher VSWR limits. • Diplexer (filter) and TMA usage typically requires higher VSWR limits.
Valid values	1.5 1.6 1.7 1.8 2.0 2.2 2.5 2.8 The value of the VSWR class 1 parameter must be greater than or equal to the value of the VSWR class 2 parameter. If the values of the VSWR class 1 and 2 parameters are equal, no class 2 fault will be reported, only a class 1 fault. The predefined value is configuration-dependent.
Consequence of incorrect setting	VSWR supervision may not work correctly. A fault may be reported when no fault has occurred. A fault may not be reported when a fault has occurred. A fault may be reported with the incorrect fault class.

VSWR Class 2

Dialog	Define VSWR Limits
Why	This parameter is used to select the threshold for VSWR class 2 faults. The VSWR supervision function supervises the antenna system by measuring the forward and reflected power at the CDU output. The function calculates the VSWR at CDU output by using the power forward and power reflected measurements and compares the VSWR with the limits defined by the VSWR class 1 and VSWR class 2 parameters.
When	The parameter can be set if the VSWR Supervision parameter is set to user defined. This parameter is typically set at RBS installation, based on test results from antenna system tests (SWR test) as described in the relevant RBS manual. Recommended values can also be found in this manual. The parameter can also be changed when the VSWR supervision parameters need to be updated because of false alarms or other situations in which the VSWR supervision is not working correctly. Example of factors that affect the selection of suitable limits defined by the VSWR class 1 and VSWR class 2 parameters: • Short feeder (only a few metres) typically requires higher VSWR limits. • Diplexer (filter) and TMA usage typically requires higher VSWR limits.
Valid values	1.5 1.6 1.7 1.8 2.0 2.2 2.5 2.8 The value of the VSWR class 2 parameter must be less than or equal to the value of the VSWR class 1 parameter. If the values of the VSWR class 1 and 2 parameters are equal, no class 2 fault will be reported, only a class 1 fault. The predefined value is configuration-dependent.

Consequence of incorrect setting	VSWR supervision may not work correctly. A fault may be reported when no fault has occurred. A fault may not be reported when a fault has occurred. A fault may be reported with the incorrect fault class.

5.7 Terminology

Active RU	Main RU and Sub RU
Central Main RU	DXB, DXU, IXU
Field Configuration	IDB + Short Description File + IDB Description File + Attached Info File
Logical TG Cluster	The TGs that are explicitly connected together with the same defined TG cluster identifier to allow distribution of the master transmitter chain delay from the Master to the Slaves within the same identifier. A Logical TG Cluster contains one Master and multiple Slaves. The TF Compensation Value is calculated automatically by each Slave.
Macro Cabinet	RBS 2101, RBS 2102, RBS 2103, RBS 2106, RBS 2106i, RBS 2107, RBS 2108, RBS 2109, RBS 2111, RBS 2112, RBS 2202, RBS 2206, RBS 2207, RBS 2216, RBS 2250
Main RU	DXU, DXB, ECU, IXU, RRU, DRU, TCB and TRU
Master TG	A TG that derives an Internal Timing Reference from a Synchronisation Source and distributes timing information to other TG in a TG Cluster.
Micro Cabinet	RBS 2301, RBS 2302, RBS 2308, RBS 2309 and RBS 2401
Notional TG Cluster	The TGs that are connected to the same physical ESB, but not explicitly connected together with a defined TG cluster identifier. A Notional TG Cluster contains one Master and multiple Slaves. The TF Compensation Value has to be configured explicitly for each Slave.
Passive RU	All RUs that are not active
Slave TG	A TG that derives an Internal Timing Reference from timing information distributed from a Master.
Sub RU	ACCU_02_DU, BDM, BFU, CCU_01, CDU, CU, CXU, DU, FCU, FU, PSU, RXU, TMA_CM, TXU, RBS_2106, RBS_2106i, RBS_2107, RBS_2112, RBS_2206, RBS_2207, RBS_2250 TRX
Site Specific Data	Activated/Deactivated BFUs, PSUs and DC/DC Converter ALNA/TMA Parameters ARAE Fault Status Available Synch. Source Battery Parameters Cable Loss Climate Name Delay Values for feeders External Alarm settings FDL Use for DS1 (T1) Feeder Loss for Feeder Cables and Feeder Jumpers

GPS Parameters
LBO for DS1 (T1)
Network Topology
Passive RU HW information
RBS Identity
Receiver Sensitivity
Spare bits and CRC-4 for G.703 (E1)
System Voltage
TEI for CMRU DXU
TF Compensation Values and ESB Delay Values
TF holdover mode
TNOM Parameters
Transmission Interface type
STN Equipment
VSWR Limits for Antenna Systems and Supervision

6 Glossary

A

ACCU: Alternating Current Control Unit
ALNA: Antenna Low Noise Amplifier
AO: Application Object
APG: Adjunct Processor (AP) Group
ARAE: Antenna Related Auxiliary Equipment
ARFCN: Absolute Radio Frequency Channel Number
ASU: Antenna Sharing Unit

B

BCC: Base Station Colour Code
BDM: Battery Distribution Module
BFU: Battery Fuse Unit
BSC: Base Station Controller
BSM: Base Station Manager

C

CCCH: Common Control Channel
CCU: Climate Control Unit
CDU: Combining and Distribution Unit
CF: Central Functions
CMRU: Central Main RU
CRC: Cyclic Redundancy Check
CRU: Cable RU
CS: Cable Set
CU: Combiner Unit
CXU: Configuration Switch Unit

D

DP: Digital Path
DRU: Dual Radio Unit
DSP: Digital Signal Processor
DSPP: DSP Platform
dTRU: Double Transceiver Unit
DU: Distribution Unit
DXB: Distribution Switch Board
DXU: Distribution Switch Unit

E

ECU: Energy Control Unit
ENV: Environment
ESB: External Synchronization Bus

F

FCU: Fan Control Unit
FDL: Facility Data Link
FU: Filter Unit

G

GMSK: Gaussian Minimum Shift Keying
GPS: Global Positioning System

H

HCU: Hybrid Combined Unit
HLIN: High Level IN
HLOUT: High Level OUT

I

IDB: Installation Data Base
IP: Internet Protocol
IS: Interface Switch
IXU: Interface and Switching Unit

L

LAPD: Link Access Procedure on the D-channel
LBO: Line Build Out
LOF: Loss of Frame
LOS: Loss of Signal

M

Main RU: DXU, DXB, ECU, IXU, RRU, DRU, TCB and TRU
Master TG: A TG that derives an Internal Timing Reference from a Synchronisation Source and distributes timing information to other TG in a TG Cluster.
MBU: Mounting Base Unit
MCPA: Multi Carrier Power Amplifier
MO: Managed Object

O

OMT: Operation and Maintenance Terminal
OSS: Operating Support System

P

PBC: Power and Battery Cabinet
PCM: Pulse Code Modulation
PCM DP: Pulse Code Modulation Digital Path
PCMCIA: Personnel Computer Memory Card International Association
PFWD: Power Forward
PREF: Power Reflected
PRU: Passive RU

PSA: Power Supply Adapter
PSU: Power Supply Unit

R

RAM: Random Access Memory
RBS: Radio Base Station
RF: Radio Frequency
RRU: Remote Radio Unit
RU: Replaceable Unit
RX: Receiver
RXA: Receiver Channel A
RXB: Receiver Channel B
RXBP: Receiver Band Pass
RXC: Receiver Channel C
RXD: Receiver Channel D
RXU: Receiver Unit

S

SCC: Site Cell Configuration
SO: Service Object
SRU: Sub RU
SSQIU: Subjective Speech Quality Improvements Uplink
STN: Site Transport Node
STOC: Signaling Terminal Open Communication
sTRU: Single Transceiver Unit

T

TCB: Transceiver Control Board
TCP: Transport Control Protocol
TEI: Terminal Endpoint Identifier
TF: Timing Function
TG: Transceiver Group
TIM: Transmission Interface Module
TLS: Terrestrial Link Supervision
TMA: Tower Mounted Amplifier
TMA CM: Tower Mounted Amplifier Control Module
TNOM: Transport Network Operation and Maintenance
TOW: Times of Week
TRU: Transceiver Unit
TRXC: Transceiver Controller
TS: Time Slot
TSSP: Time Slot Sub Part
TTC: Terrestrial Traffic Channel
TX: Transmitter
TXU: Transmitter Unit

V

VCO: Voltage Controlled Oscillator
VSWR: Voltage Standing Wave Ratio

7 Index

A

alarm inlets
define 56
ALNA/TMA
define 88
APG 18

B

battery
battery backup 97, 98, 99
battery change 100
battery log 50
battery parameters 90

C

cabinet view 10
cable list 46
cable specifications 107
calibrate oscillator 87
CDU power supervision 74
change
battery 100
local/remote state 75
check idb 96
Communication Board
E1 ..... 10, 11
Line Termination Modes 10, 11
Switch 10, 11
T1 ..... 10, 11
connect
OMT 16
Remote OMT 17
Remote OMT over IP 18
contents
display information window 108
display status window 111
create IDB 25

D

define
alarm inlets 56
ALNA/TMA 88
Antenna Supervision 58
Battery Backup Time Test Parameters 98
battery parameters 90
climate 72
delay 64
ESB delay list 66
GPS parameters 65
hardware information 61
loss 63
Present RUs 35
RBS Identity 71
system voltage 92
TEI 59
TF compensation 68
TF holdover mode 70
TNOM 85
Transmission 60
VSWR limits 73
Define RX-Imbalance Supervision Parameters 144
define/Antenna Supervision 58
display
Battery Backup Time Test Parameters 97
Battery Backup Time Test Result . 99
battery log 50
cable list 46
Detected HW Information 95
field configuration information 83
information 40
inventory list 47
paging queue status 43
RBS software download 48
RX/TX Antenna Mapping 101
site specific data 39
software information 45
status 42
TEI values 44
TNOM values 86
display information window 108
display status window 111
displaying commands 39, 40, 42, 43, 44, 45, 46, 47, 48, 50, 52, 80, 86, 95

E

E1 ..... 10, 11
exit from OMT 14
export
site specific data 36

F

Fault Limit *144*

faulty RUS
find *80*

field configuration information
attach *84*
display *83*
open *82*
save *81*

find
faulty RUs *80*

flash card
load *93*

G

GPS parameters
define *65*

H

hardware information
define *61*

help *105*

I

IDB
check *96*
create *25*
install *23*
open *22*
read *21*
save *24*

import
site specific data *37*

information
display *40*
monitor *52*

Installation
OMT software from floppy disks *8*
Remote OMT software *8*

inventory list
display *47*

L

Line Termination Mode
E1 ..... *10, 11*
T1 ..... *10, 11*

load
flash card *93*

local/remote state
change *75*

M

main menus *5*

main window
OMT *1*

measurement reports on/off
set *78*

menu
configuration *5*
edit *5*
help *5*
maintenance *5*
RBS 2000 ..... *5*
tools *5*
view *5*
window *5*

Minimum Number Of Samples *144*

Monitor Description *116*

monitor information *52*

O

object *3*

Object view *12*

OMT *6*
main window *1*
states *6*

omt exit *14*

on/off measurements reports
set *78*

on/off ssqiu
set *79*

open
field configuration information *82*

operation sequence *102*

operations
IDB-related21, 22, 23, 24, 25, 35, 36, 37

Options - local OMT *103*

Options Remote OMT *104*

oscillator
calibrate *87*

P

parameters
GPS define 65
parameters battery
define 90
permanent changes
make 15

R

radio view 11
RBS identity 71
RBS software download 48
relations
state 7
remote OMT 104
Remote OMT 6
remote OMT over IP 104
Remote OMT over IP 6
remote/local state 75
requirements 106
reset 76
RUs 35
RUs faulty
find 80
RUs faulty 80

S

save
field configuration information 81
save IDB 24
select
object 3
set
CDU Power Supervision 74
measurement reports on/off 78
ssqiu on/off 79
site specific data
display 39
export 36
import 37
software information
display 45
software information 45
ssqiu
set on/off 79
start OMT 13
state
connected 6
connected local IDB 6
connected no IDB 6
init 6
local IDB 6
OMT 6
relations 7
state local/remote
change 75
state local/remote 75
status
display 42
status 42
Supervision Window Time 144
Switch
Configuration of Communication Board 10, 11
System software and hardware requirements 106
system view 9
system voltage
define 92

T

T1 ..... 10, 11
TEI values
define 59
display 44
TEI values 59
terminology 188
TF compensation
define 68
TF compensation 68
TF holdover mode
define 70
TNOM
define 85
display 86
Transmission
define 60

U

Uninstall OMT 11

V

view
cabinet 10
Object view 12
radio view 11
system view 9
VSWR limits
define 73

W

wizards 102