



P008162A

Ericsson GSM System

RBS 2206 Maintenance Manual

Doc nr: 3/001 59-EN/LZT 720 0011 Uen

Rev A

ERICSSON 

ERICSSON 

Ericsson GSM System

EN/LZT 720 0011 R1A

ERICSSON 

RBS 2206

Maintenance Manual

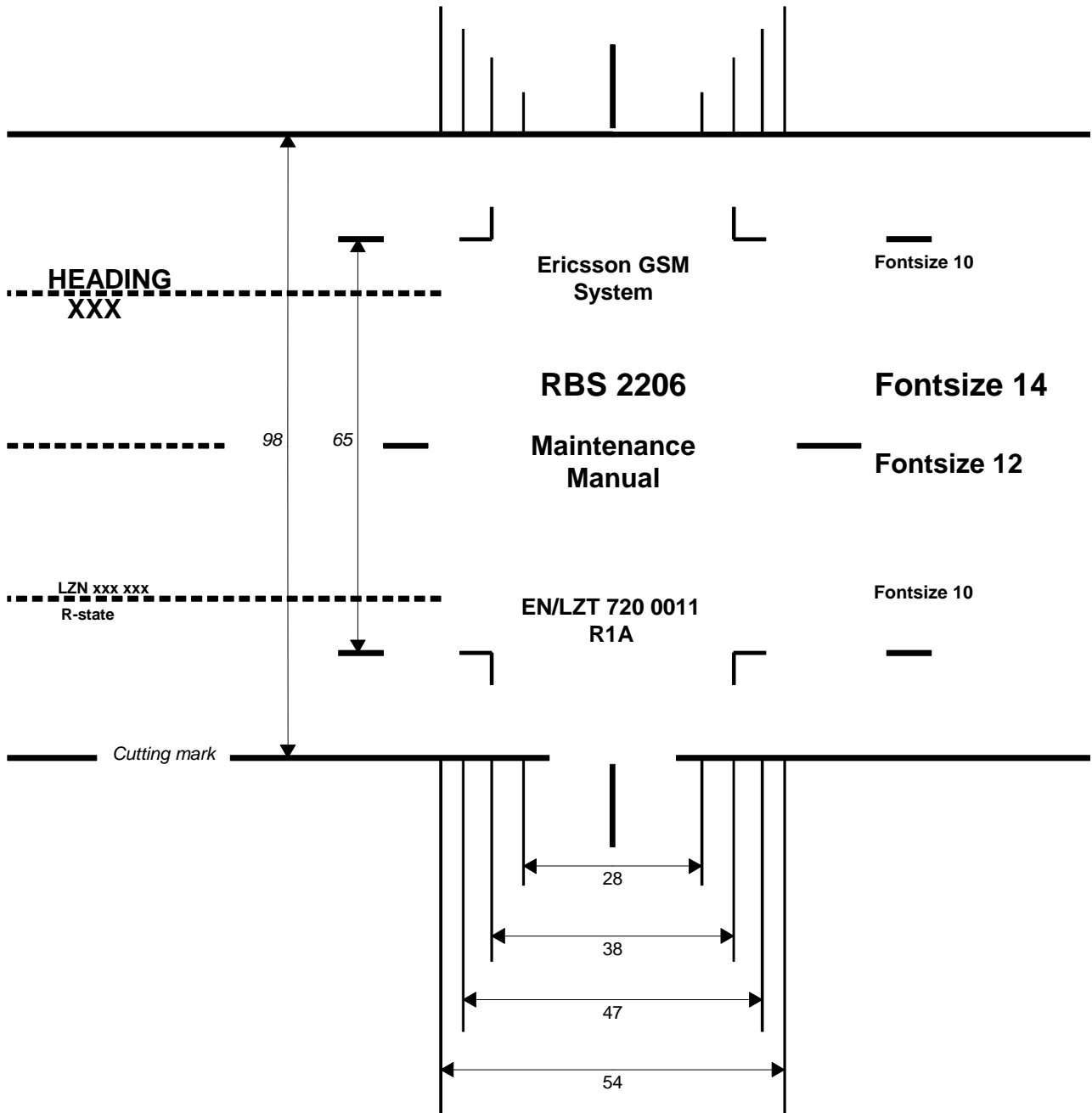
ERICSSON 

ERICSSON 

ERICSSON 

ERICSSON 

Uppgjord (även faktaansvarig om annan) - Prepared (also subject responsible if other)		Nr - No.	
SG/ERA/SRB/ZP Per Olof Höglund		4/001 59-EN/LZT 720 0011 Uen	
Dokansv/Godkänd - Doc respons/Approved	Kontr - Checked	Datum - Date	Rev
ERA/SRB/Z		2001-06-29	A
		File	



CAPTION LIST

Document No. 2/001 59-EN/LZT 720 0011	
RBS 2206 Maintenance Manual	
Date 2001-06-29	Rev A

Introduction	1
Safety Instructions	2
Tools and Instruments	3
Fault Localisation	4
RBS Field Repair	5
Test after Repair	6
Concluding Routines	7
Optical Indicators and Switches	8
Preventive Maintenance	9
Cable Connections	10
CDU Connections	11
Glossary	12
Appendix Spare Parts Catalogue	13
	14
	15
	16
	17
	18
	19
	20

RBS 2206 Maintenance Manual

© Ericsson Radio Systems AB — All Rights Reserved —

Contents

1	Introduction	7
1.1	Product Overview	7
1.2	RBS 2000 Library Overview	7
1.3	Target Group	8
1.4	Maintenance Process Overview	9
1.5	How to Use this Manual	14
1.6	Release History	15
2	Safety Instructions	17
2.1	Warnings	17
2.2	Notes	18
2.3	Beryllium Oxide (BeO)	19
2.4	Electrical Hazards	21
2.5	Batteries	24
2.6	Working at Heights	26
2.7	Radio Frequency Radiation	28
2.8	Other Hazards	29
3	Tools and Instruments	31
3.1	Test Equipment	31
3.2	OMT Kit	31
3.3	Personal Tool Kit	33
3.4	References	35
4	Fault Localisation	37
4.1	Introduction	37
4.2	Fault Lists	38
4.3	ALNA/TMA A and ALNA/TMA B	40
4.4	Antenna	41
4.5	Battery	45
4.6	Battery Temp Sensor	47
4.7	BDM or BFU	47
4.8	CDU	50

4.9	CDU Bus/IOM bus.....	52
4.10	CDU CXU RXA Cable and CDU CXU RXB Cable.....	52
4.11	CDU RX in Cable.....	55
4.12	CXU.....	58
4.13	CXU DC Cable.....	58
4.14	CXU dTRU RXA Cable and CXU dTRU RXB Cable.....	60
4.15	DXU.....	64
4.16	Environment.....	66
4.17	EOM Bus.....	66
4.18	EPC Bus/Power Communication Loop.....	66
4.19	External Alarms.....	70
4.20	Fan.....	70
4.21	FCU.....	72
4.22	Flash Card.....	74
4.23	PSU.....	76
4.24	PSU DC Cable.....	78
4.25	RBS DB.....	81
4.26	TMA CM.....	83
4.27	TMA CM Cable.....	85
4.28	TRU, dTRU or ATRU.....	85
4.29	Y Link.....	89
5	RBS Field Repair.....	93
5.1	Local/remote Mode.....	93
5.2	ACCU.....	95
5.3	Antenna Feeder.....	98
5.4	Bias Injector.....	99
5.5	CDU.....	100
5.6	CDU Bus.....	102
5.7	CDU-CXU and the TRU-CXU RX Cables.....	104
5.8	CDU-TRU TX Cables.....	105
5.9	CNU.....	106

5.10	CXU	107
5.11	DCCU.....	108
5.12	DC Filter.....	109
5.13	dTRU.....	111
5.14	DXU	111
5.15	DXU Backplane	112
5.16	ESB Cable.....	114
5.17	Fans.....	115
5.18	FCU.....	116
5.19	Flash Card.....	117
5.20	IDB.....	117
5.21	IDM.....	118
5.22	PSU.....	119
5.23	PSU DC Cable.....	120
5.24	RX Antenna Feeder.....	121
5.25	TMA CM.....	122
5.26	TRU.....	123
5.27	TRU Backplane.....	124
5.28	TX Antenna Feeder	125
6	Test after Repair.....	127
6.1	Preconditions	127
6.2	Test Call.....	127
7	Concluding Routines.....	131
7.1	Before Leaving the Site.....	131
7.2	Report of Finished Work.....	131
7.3	Repair Delivery Note – “Blue Tag”.....	132
7.4	Handling of Replaced Parts and RUs.....	132
7.5	Transport of a Repairable Unit.....	134
7.6	Trouble Report on Equipment or on this Manual.....	134
8	Optical Indicators and Switches	139
8.1	Indicator Types.....	139

8.2	Units with optical indicators and switches	139
8.3	ACCU.....	139
8.4	CDU-F.....	140
8.5	CDU-G.....	140
8.6	CXU.....	141
8.7	DCCU.....	142
8.8	dTRU.....	143
8.9	DXU.....	144
8.10	FCU.....	146
8.11	IDM.....	146
8.12	PSU.....	147
8.13	RBS Status Panel.....	148
8.14	TMA CM.....	149
9	Preventive Maintenance.....	149
9.1	Preventive Maintenance Process.....	151
9.2	Determining Preventive Maintenance Intervals	151
9.3	Maintaining Antenna Systems	152
9.4	Maintaining Batteries	153
9.5	Replacing Fans	155
9.6	Replacing Door Filter	155
9.7	Performing Concluding Routines.....	156
10	Cable Connections.....	157
10.1	Power Cables.....	157
10.2	Opto Cables.....	157
10.3	Backplane Cables.....	159
11	CDU Connections.....	164
11.1	Inserting and Extracting RUs.....	165
11.2	CDU to Connection Field - General.....	167
11.3	CDU to Connection Field RBS 2206.....	167
11.4	CDU Antenna Connection Field RBS 2206.....	173
12	Glossary.....	187

1 Introduction

This Maintenance Manual is valid for the radio base station RBS 2206 for Ericsson GSM System release R8.

The purpose of the manual is to provide the information necessary for first line maintenance. First line maintenance includes the following activities:

- Repairs that entail replacement on site. Only Replaceable Units (RUs) are handled.
- Preventive maintenance.

The instructions apply only to the Radio Base Station (RBS) connected to a Base Station Controller (BSC), and it is assumed that the RBS is installed and in operation.

The instructions in this manual presuppose that the replaced units are always put into operation.

1.1 Product Overview

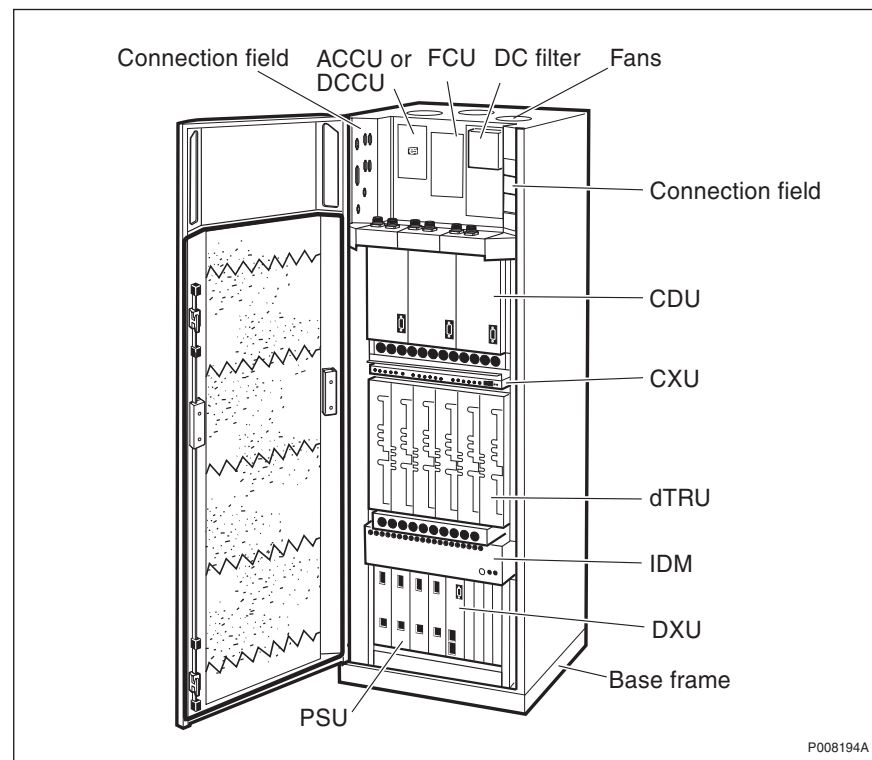


Figure 1 RBS 2206 cabinet overview

This is a brief overview of the RBS 2206. For further information about the RBS 2206, see:



Reference Manual

EN/LZT 720 0008

The RBS 2206 is a member of the RBS 2000 family of indoor and outdoor RBSs operating in the GSM 900, GSM 1800 and GSM 1900 frequency bands.

The RBS 2206 is designed for indoor installation. It consists of a radio cabinet mounted on a base frame.

Cable entries for feeders, transmission and power cables are concentrated to the upper part of the cabinet on connection fields, which are covered by the cabinet door.

1.2 RBS 2000 Library Overview

The user documentation for all RBS 2000 models consists of customer manuals divided to suit different process events. The *Library Overview* contains the following information for each manual:

- A short description
- The recommended target group
- The product number



Library Overview

LZN 302 73

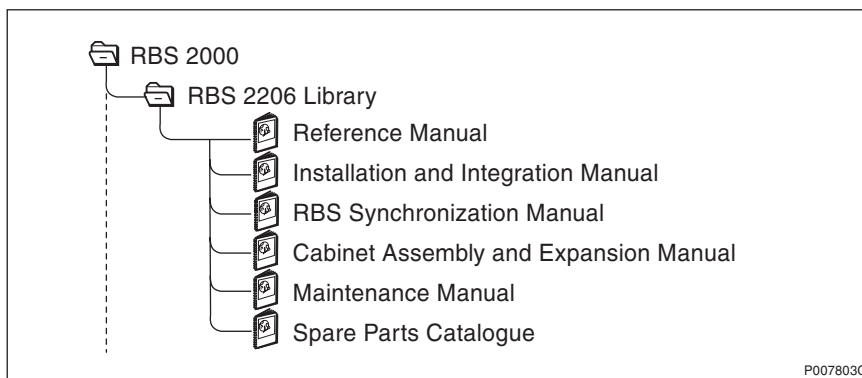


Figure 2 RBS customer documentation library

This manual is part of the RBS customer documentation library shown in the figure above.

1.3 Target Group

This manual is written for RBS 2000 field technicians. The sub-section *Fault Analysis from OMC* in the section *Maintenance Process Overview* is written for the Operation and Maintenance Centre (OMC) operators.

Local safety regulations may require that all work (installation, repair, revision, and so on) with high-voltage equipment must be done by a qualified or certified electrician only.

The field technician is expected to

- be experienced in radio and mobile communications.
- have good understanding of technical English.

The required knowledge of the equipment can be acquired by following the Ericsson GSM System training path for RBS 2000 field technicians

1.4 Maintenance Process Overview

The purpose of this chapter is to provide an overview of the maintenance process and describe how to perform the correct maintenance procedures.

1.4.1 General

RBS 2000 radio base stations are administered and controlled by the BSC. There is a master/slave relationship between the BSC and the RBS, and the BSC has an overview of the status of the radio network and its resources.

The BSC manages the O&M of the RBS across the Abis Interface. The RBS equipment is seen as an MO by the BSC. This is a way of describing the RBS, in a functional way and as a logical model, in the BSC. All O&M actions are based on this logical model structure created in the BSC. An MO does not necessarily have a one-to-one relationship with a physical unit in the RBS.

The MO, describing RBS 2000 (G12), is divided into two sub-classes: AO and SO. The SO is the abstract sub-class of the MO that owns the hardware. The AO only handles functions.

The RBS can be set in local or remote mode. Local mode means that the RBS has been disconnected and isolated from the BSC, while in remote mode the RBS is controlled by the BSC.

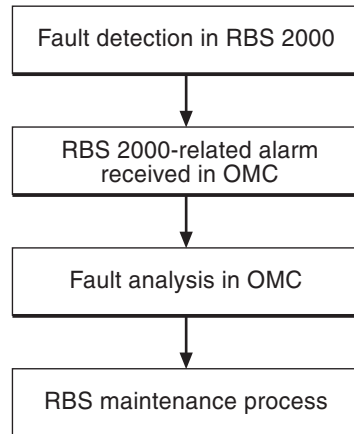
When the RBS is in remote mode, the BSC acts as a master in the BSC-RBS relationship and all RBS maintenance actions are ordered by the BSC. Faults in the RBS are reported to the BSC on an MO basis. All faults reported by the MOs in the RBS are stored in the BSC error log.

Tests on MOs with RBS hardware can be ordered by a BSC operator in order to check the status of the RBS. The operator can also test the connection between the BSC and a TRU in the RBS by ordering a loop test. A test pattern is passed through the loop created between the BSC and one specific time slot in a specified TRU.

The RBS contains test and supervision functions that detect malfunctions and report them to the BSC. Tests and supervision are performed on an MO basis, which means that the different MOs supervise their own equipment.

Statistics are collected on an MO basis in the BSC, for example, the number of call setup attempts, or the number of abnormally terminated calls.

1.4.2 Fault Handling Workflow



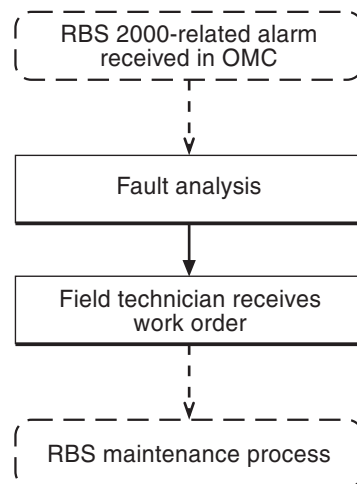
P008400A

Figure 3 Fault handling workflow

Steps one and two are automatically performed by the BSS. Step three is performed at the OMC by an operator who handles the RBS alarm with support from OPI. By analysing the fault situation, the OMC operator will be able to choose the appropriate action. At the RBS site, step four is performed by a field technician, who follows the instructions in this manual.

1.4.3 Fault Analysis from OMC

This section very briefly describes a typical fault analysis process, performed from an OMC. It describes procedures that have to be done before sending a field technician to the site.



P008399A

Figure 4 Fault analysis from OMC

Fault analysis

The fault is given in plain text at the BSC. The faults are divided into class 1 and class 2 alarms. Some of the alarms also indicate the suspected faulty HW unit in a, so called, RU map.

Field technician receives work order

Before writing the work order, the following questions are asked to optimise the site visit:

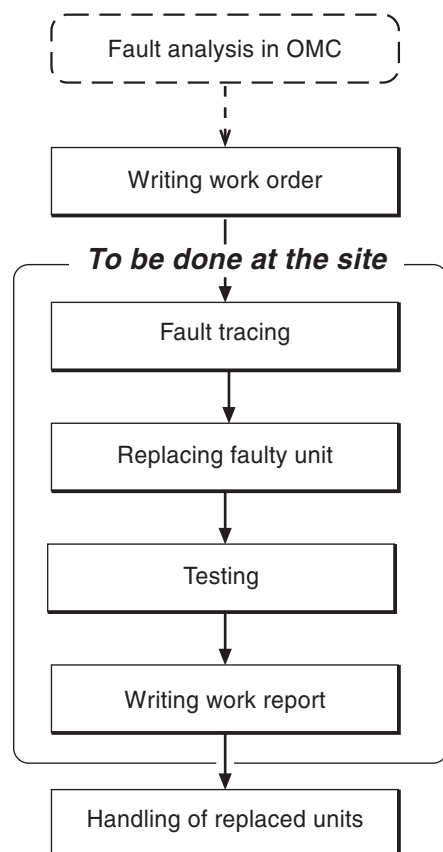
- Is preventive maintenance scheduled at this site in the near future?
- Are there any other faults at this site that have been postponed?
- Are there any other reasons for sending a field technician to the site?

The work order must include information about the following:

- Site location
- How to get to the site
- Cabinet identity
- The suspected RU
- The error log must be included, if a logical RU is suspected to be faulty
- If the fault situation is unclear, site history must be included; for example, whether the same type of fault has been detected and repaired a few weeks earlier

With the information above, the field technician carries out the maintenance work at the site. When the maintenance work is completed, the field technician sends a report back to the MSC.

1.4.4 RBS Maintenance Process



P004806C

Figure 5 The RBS Maintenance Process

Preparatory Actions

Writing work order

As a result of the fault analysis a work order is written. The work order includes information about site location, how to get to the site, cabinet identity, the suspected RU and site history. An error log is included if the fault is defined as logical.

Note: The chapter *Safety Instructions* must be read through to ensure knowledge of potential risks prior to beginning work on the RBS equipment.

The work order is analysed before personnel are sent to the site. The flowchart(s) in the chapter *Fault Localisation* that concern the faulty unit(s) is read. This provides information on:

- Selecting the spare parts and tools required at the RBS site.
- Informing the OMC operator if the site visit requires taking the RBS out of traffic or reduces RBS functions.

To Be Done at the Site

Fault tracing

The chapter *Fault Localisation* provides methods for finding the faulty unit in the RBS that causes the alarm reported to the BSC. For example, when the work order denotes that a TRU is faulty, fault localisation will point out the position of the faulty TRU.

All alarms given in the RU maps correspond to a section in the chapter *Fault Localisation*.

Replacing faulty unit

The chapter *RBS Field Repair* describes how to replace a faulty unit.

Testing

The RBS is tested before the field technician leaves the site. The chapter *Test after Repair* describes how to verify that the RBS is functioning properly.

Writing work report

The chapter *Concluding Routines* provides information on the different administrative routines that must be performed before leaving the site.

After Maintenance

Handling of replaced units

The chapter *Concluding Routines* describes which units are repairable and which are disposable and the different administrative routines connected to both.

1.4.5 Fault Cases

The purpose of this section is to explain the different fault cases that can arise in the RBS 2000. This forms the basis for choosing between different methods when localising a detected fault.

- Unambiguous indication with an indicator and an RU map.
- Unambiguous indication with an RU map only.
- Unit that is unambiguously indicated, but consists of several replaceable parts.
- Logical RU indicated.

Note that the BSS only pinpoints one RU in the RU Map.

Indication with an indicator and an RU Map

Examples of units DXU, dTRU, CXU, PSU and CDU

Method of localisation The work order states which unit is affected. When the cabinet is opened, a red Fault indicator will be on in the faulty unit. If this indicator should be defective, only an RBS fault indicator will be on. In this case, the OMT is used to localise the faulty unit.

Indication with an RU Map

Examples of units	RX cables
Method of localisation	The work order states the unit concerned. The Maintenance Manual is used to find out where the unit is located.

Indication of Units that Consist of Several Replaceable Parts

Examples of units	Fan unit
Method of localisation	The work order states which unit is affected. The OMT is used to identify which parts are faulty, for example, which fan is faulty.

Logical RU Indicated

The logical RU is identified when it is not obvious which physical RU is faulty. For example, EPC bus can be indicated, which means that anything connected to it can be faulty.

Examples of units	CDU bus, EOM bus, EPC bus, Y link and Environment.
Method of localisation	A systematic order of replacement is used to determine the unit that has generated the fault.

The following applies to the logical RU Environment

This logical RU records conditions that cannot be affected from the RBS. The RU is divided into two parts:

- External Power and Climate (condensation, air humidity and temperature). When this RU is identified, the OMC Operator must analyse the fault to determine possible RBS repairs. The OMC Operator must be able to determine whether the reported fault requires maintenance personnel to respond or not.
- In the case of the fault message "Indoor temperature out of safe range", the trouble may cease when local weather conditions change, that is, the sun sets or the temperature changes. Alternatively, in the case of *External Power Fault* it is necessary to determine whether or not the cause of the fault is a commercial power failure, prior to dispatching maintenance. If a technician is sent, the work order must include the fault history for the RBS.

1.5 How to Use this Manual

Detailed information about the use of this manual and how to perform maintenance in the correct order, is found in the section *Maintenance Process Overview* in this chapter. A brief description of the contents of each chapter of this manual is given below.

Chapter	Brief description
1. Introduction	Introduces this manual.
2. Safety Instructions	Describes the risks involved when working with RBS equipment.
3. Tools and Instruments	Specifies recommended equipment.
4. Fault Localisation	Recommends actions for each suggested RU. The purpose is to find the faulty unit so it can be replaced.
5. RBS Field Repair	Describes actions to be performed as soon as the suspected unit has been localised.
6. Test after Repair	Describes verification procedures for the RBS.
7. Concluding Routines	Describes administrative routines resulting from maintenance activity.
8. Optical Indicators and Switches	Describes optical indicators and switches on all RUs in the RBS.
9. Preventive Maintenance	Describes recommendations for preventive maintenance activities.
10. Cable Connections	Provides information about internal cabling in the RBS.
11. CDU Connections	Provides information about antenna connections and RX/TX cabling in the RBS.
12. Glossary	Explains terms and abbreviations.
Appendix Spare Parts Catalogue	Catalogue of all spare parts of the RBS.

1.6 Release History

This is the first release of the *Maintenance Manual* EN/LZT 720 0011.

This page is intentionally left blank

2 Safety Instructions

This chapter shows the system used for presenting safety information.

Note: Reduce the risk of accidents by studying all the instructions carefully before starting work. If questions arise regarding the safety instructions, contact the supervisor or the local Ericsson company.

Where local regulations exist, these are to be followed. The safety information in this manual is a supplement to local regulations.

It is the responsibility of the local project manager to make certain that local regulations are known and followed.

The relevant manual (including this safety information) and specific instructions supplied by Ericsson must be followed in any work performed on the Ericsson products or systems. A sufficient knowledge of English or of any of the other languages in which the manuals or instructions are printed is necessary.

The safety information in the relevant manuals presupposes that any person performing work on Ericsson products or systems has the necessary education, training and competence required in order to perform that work correctly. For certain work, additional training or special training may be required. For more precise information on the amount and content of the general and/or special training required for work on Ericsson products or systems, please contact the supervisor or the local Ericsson company.

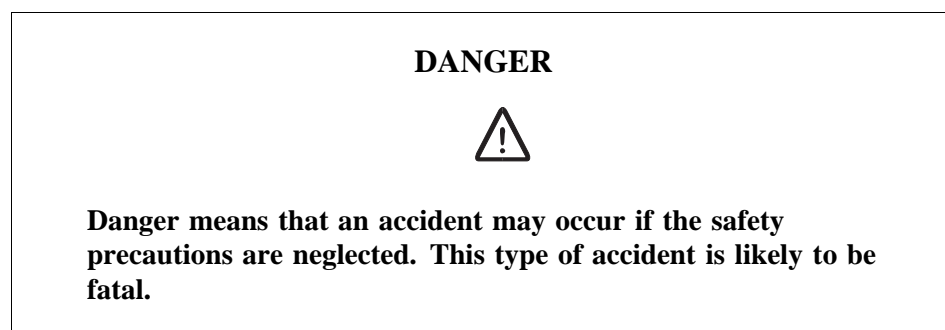
2.1 Warnings

Warnings are used to indicate hazardous activities. The warnings are preceded by the common hazard symbol.



Figure 6 Hazard symbol

The following three warning levels, shown here in order of urgency, are used:



WARNING



Warning means that an accident may occur if the safety precautions are neglected. This type of accident may be fatal or cause serious injury. It may also damage the product.

CAUTION



Caution means that an accident may occur if the safety precautions are neglected. This type of accident may cause injury or damage the product.

The following special symbols are used to indicate the risk of radio frequency radiation, electrical hazards and electrostatic discharge:



Figure 7 Radio frequency radiation



Figure 8 Electrical hazard



Figure 9 Electrostatic discharge

Warnings are used throughout this manual to alert the reader to special instructions concerning a particular task or operation that may be hazardous if performed incorrectly or carelessly. Therefore, read the instructions carefully.

Strict compliance with the special instructions while performing a task is the best way of preventing accidents.

2.2

Notes

Note: Notes are used to call the reader's attention to key points that might otherwise be overlooked.

2.3 Beryllium Oxide (BeO)

WARNING



Do not handle transistors and components without protection. Beryllium Oxide is highly toxic and may be found in transistors, and other components.

Hazard

Beryllium Oxide dust is created by chafing, filing or breakage. It is very dangerous if inhaled, even for only a few seconds. It can cause injury to skin or mucous membranes severe enough to endanger life or cause permanent injury. Particles penetrating the skin through wounds or abrasions are liable to cause chronic ulcerations.

Symptoms of Poisoning

Symptoms of Beryllium poisoning are respiratory troubles or cyanosis (grey-blue discoloration of the skin). These symptoms may develop within a week, or after a period of several years.

First Aid

- A suspected inhalation of Beryllium Oxide should be treated immediately by a doctor at a hospital.
- Wash the area thoroughly if it is suspected that Beryllium Oxide has been in contact with the skin or entered the skin through cuts or abrasions. This should be followed by a medical examination.

Components Containing Beryllium Oxide

Do not store components and washers loose. Do not file or machine them in any way. Do not apply heat except when the components are clamped in a heat sink application.

Power Transistors, Diodes and Thyristors

WARNING



Do not carry loose components in pockets, bags or containers, or tamper with them in any way that could cause them to break or disintegrate. Do not apply excessive heat during soldering. Do not break open components for inspection.

Components containing Beryllium Oxide are clearly marked in the manufacturer's packing, and identified by attached information.

- Store components in their original packing and do not mix them with other components.
- Ensure that they do not become mechanically damaged. Use care when replacing defective components.
- Beryllium Oxide is encapsulated and components are safe to handle for normal replacement purposes.

Heat Sink Washers

Note: Not all heat sink washers contain Beryllium. Heat sinks containing Beryllium, are individually packed when new.

WARNING



Do not store washers loose. Do not file or machine them in any way. Do not apply heat, except when the components are clamped in a heat sink.

- Handle with gloves or cloth when removing heat sink washers from packaging and mounting them into place in the equipment.

Cathode Ray Tubes (CRTs) and Ceramic Applications

WARNING



Do not handle broken glass with bare fingers. Do not blow on exposed surfaces due to the danger of Beryllium Oxide.

Ceramic cylinders or formers containing Beryllium are marked by blue colorations or black lines. They are safe to handle provided they are not damaged. If they are damaged, take precautions as with other components containing Beryllium.

Disposal

Dispose of defective and/or broken Beryllium components in approved containers. Mark them clearly on the outside of the wrapping “COMPONENTS CONTAIN BERYLLIUM”

WARNING



Never send defective and/or broken components containing Beryllium Oxide through the mail. Instead, return them to the nearest depot by hand.

2.4 Electrical Hazards

High Voltage

DANGER



High voltage is used in the operation of this equipment. Both direct contact with the mains power and indirect contact via damp items or moisture can be fatal.

- The AC installation must be carried out according to local regulations. These regulations may require the work to be carried out by a qualified and authorized electrician.
- Remove wrist watches, rings, bracelets, etc.
- Switch off the power if the cabinet is damp inside.

- Prevent damp entering the equipment during work in bad weather conditions.

DANGER



Improper electrical installation may cause fire or electrical shock. Approved circuit breakers for the AC mains and the cable's cross sectional areas must always be selected in accordance with local laws and regulations. Only a qualified and authorized electrician is permitted to install or modify the electrical installation.

Cable Markings

CAUTION



Verify that the cable markings correspond before connecting cables.

Faulty Electric Tools

WARNING



Do not repair a faulty electric tool yourself. Hand it over to your supervisor in exchange for a functioning tool.

Drilling

WARNING



Do not drill holes in the Radio Base Station. The drill bit may come into contact with live wires.

- Always use insulated protective gloves, such as the LYB 1032, when drilling where live wires might be hidden.
- Always use eye protectors (goggles) when drilling. Flying chips and dust may get into your eyes.

Thunderstorms

DANGER



Avoid working on electrical installations or towers/masts during thunderstorms.

Thunderstorms create strong electric fields. For that reason, and to avoid direct strokes of lightning, it is essential that the equipment is properly earthed for thunderstorm conditions.

2.4.1 Electrostatic Discharge, ESD

CAUTION



Sensitive components such as Integrated Circuits (IC) can be damaged by discharges of static electricity.

Electrical charges are generated by friction when a body moves, rubs against clothes, slides against a chair, when shoes rub against the floor, and when you handle ordinary plastics, etc. Such charges may remain for a considerable period of time.

Handling of printed board assemblies and IC components

Always use an approved antistatic bracelet to avoid damage to components mounted on printed board assemblies. The ESD wrist strap contains a resistor with an ohmic value greater than 1 M Ω in the cable to protect the operator. The resistance value is low enough to discharge the electrostatic voltage. Never replace the cable with any other cable. The ESD wrist strap must be connected to earth. Ericsson recommends wrist strap LYB 250 01/14.

Storing and Transporting printed board assemblies and IC Components

Use the original packaging. If this is not available, use a conductive material, or a special IC carrier that either short-circuits or insulates all leads of the components.

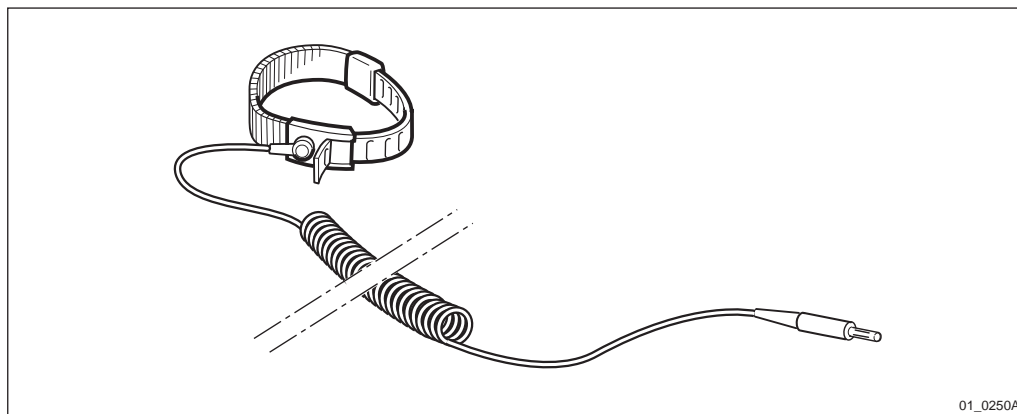



Figure 10 ESD wrist strap LYB 250 01/14

DANGER




To avoid potentially fatal circuits through the body to earth, wrist strap connections must include a resistor of at least 1 M Ω . Test the wrist strap regularly.

2.5 Batteries

Batteries can be hazardous if improperly handled. Special care must be used to prevent short-circuiting batteries, or loss of electrolyte. Electrolyte contains potentially hazardous material.

Work

DANGER



Read Safety Instructions regarding handling and connecting batteries.

General Precautions

When working with batteries:

- Remove wrist watches, rings, bracelets, etc.
- Use insulated tools.
- Make sure that eye wash facilities, or portable eye wash equipment, is available prior to starting work.

Use all the required PPE (Personal Protective Equipment) such as:

- Rubber gloves and aprons.

- Eye protection (goggles or a face shield).

Short-Circuiting of Batteries

CAUTION



Short circuits can cause injury or damage. Although the battery voltage may be low, the released power can be extremely high.

It is necessary to ensure that no metal object, such as a tool, short-circuits the batteries. If necessary, disconnect or remove the batteries before beginning work.

Explosive Gases

Batteries may give off explosive gases. All battery areas must be adequately ventilated and protected from fire.

CAUTION



Do not use open cell-lead acid batteries. They give off hazardous gases that may cause an explosion or corrosion of the equipment. The battery must be suitable for horizontal operation.

Overheated Batteries

CAUTION



Excessive heat can cause the battery casings to become soft and to warp, allowing acid to escape.

If the internal temperature of the cabinet exceeds + 60 °C (140 °F), take the following precautions:

- Check that the batteries have not leaked.
- If the batteries have leaked, see the section Hazardous Waste Material from Leaks.

Hazardous Waste Material from Leaks

Ensure that there are sufficient absorbers or neutralizing materials available on site, in case of spillage of hazardous substances. There is a danger of spillage occurring when installing, removing, replacing or servicing batteries. The absorbers and neutralizing materials must be suitable for the hazardous substances involved.


Table 1 Typical Neutralizers

Typical neutralisers	
Baking soda (bicarbonate)	NaHCO ₃
Sal soda	Na ₂ CO ₃ ·10H ₂ O
Soda ash	Na ₂ CO ₃

Consult the battery manufacturers for specific details of absorbers and neutralizing materials. Absorbers and neutralizing products will vary, depending on country and manufacturer.

2.6 Working at Heights

WARNING



Some working areas involve the risk of accidents caused by falling objects.

For example, when working on a mast, tower or a roof, the following precautions must be taken:

- Personnel working at heights must have the appropriate training and medical certificate.
- Full body safety harness and safety helmet must be used.
- Adequate protective clothing is essential in cold weather.
- All lifting devices must be tested and approved.
- During work on a mast, all personnel in the area must wear helmets.

2.6.1 Rules and Advice for the Safe Use of Ladders

- Make sure that the ladder is undamaged and has been approved for use.
- Do not overload the ladder.

The following types of ladders must be guyed or otherwise secured

- Leaning ladder longer than 5m.

- Free-standing ladder with a platform and knee-support, and with over 2 meters height to the platform.
- Any other free-standing ladder longer than 3m.

Positioning the ladder

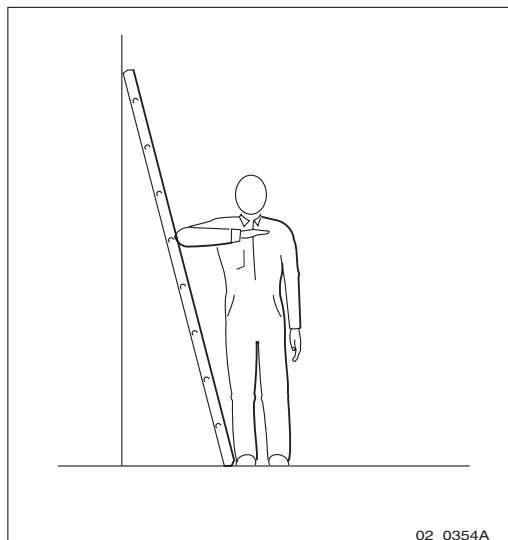


Figure 11 Checking the angle

- The ladder's inclination should be approximately 1:4 (75°). Position the ladder according to its gradation indicator (if there is one) or check the angle with your elbow.
- Use the ladder foot or a ladder support to reduce the risk of tipping over sideways.
- Always attach extension legs to a ladder that is to be used on a sloping base. Never prop up a ladder with boxes, stones or the like.
- Extend the ladder completely.
- Check that all four anti-slipping treads are firmly positioned on the base.

Climbing and using the ladder

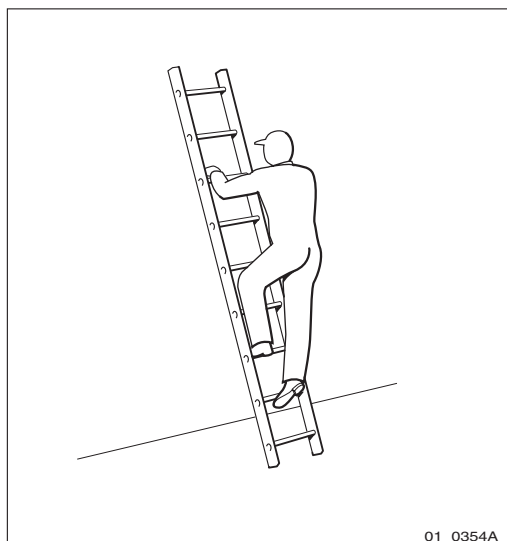


Figure 12 Climbing the ladder

- Climb the ladder facing it.
- When you lean sideways, outward from the ladder, your navel should never be outside the edge of the ladder's frame.
- Always keep 3 points of contact (two feet and one hand, two hands one foot) with the ladder when working on it. This will reduce the risk of falling.
- Never climb the topmost four rungs of a ladder. If you have to climb up on a roof, the ladder should extend at least one meter above the eaves.

2.7 Radio Frequency Radiation

CAUTION



Radio frequency (RF) radiation from antenna systems can endanger your health.

Co-ordinate with all mast users to switch off the transmitters when working with, or near, antennas.

2.8 Other Hazards

Handling Heavy Goods

WARNING



Read the Safety chapter regarding handling of heavy goods.

- Use tested and approved lifting devices only. They must only be used by trained personnel.
- Always check that all parts of the lifting devices are intact.
- Make sure that all lifting devices are properly stabilised or attached to fixed objects such as walls or buildings before lifting.
- Give clear and consistent command signals, for example
 - lift
 - lower
 - stop
- Make sure that there is never an angle of more than 90° between the straps at the point where they are attached to the lifting hook.

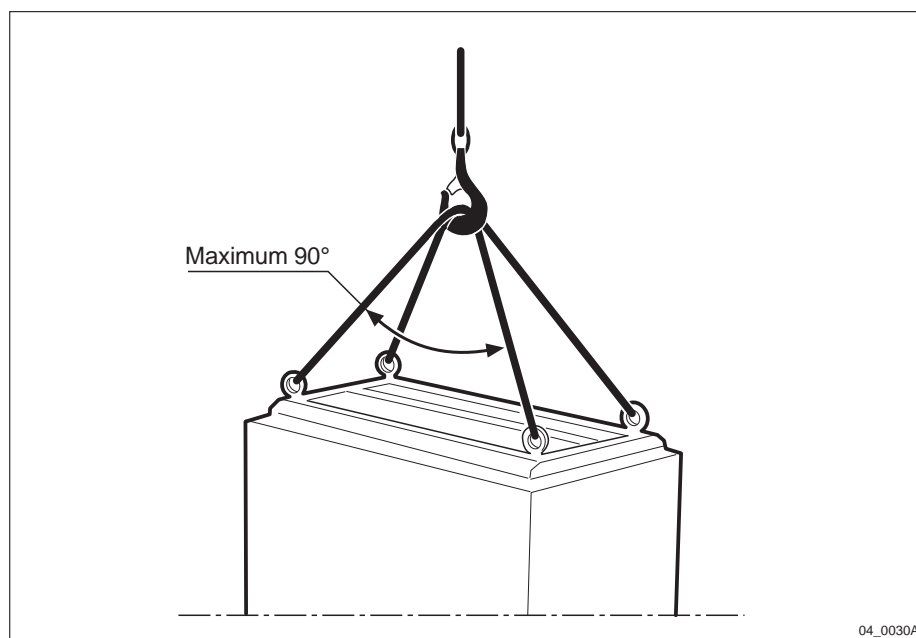


Figure 13 Use long straps

- Too large an angle between the lifting straps increases the strain on them and may cause them to snap. Overloading, or wrong use of lifting devices in other ways, can have catastrophic consequences.

- Never walk under hoisted loads.
- Follow local regulations for safety clothing and safety equipment for hoisting and moving goods.
- Unsecured cabinets have a high centre of gravity. They can easily tip over and harm personnel.

WARNING



There is a danger of the assembly toppling over, which could cause injury to personnel or damage to the equipment.

Fire

WARNING



Fire may spread to neighbouring rooms. When working on a radio base station you may have to open cable ducts, channels and access holes, thereby interfering with the fire sectioning of the building.

- Close the cable ducts and fire doors (if applicable) as soon as possible.
- After completing work on cables, seal the cable ducts according to the regulations for the building.
- Minimize the amount of inflammable material.
- Avoid storing empty packaging material on the site.
- Use a powder or carbon dioxide type of fire extinguisher due to the electric nature of the equipment inside the Radio Base Station.

Sharp Edges

WARNING



Wear protective gloves when handling the equipment. There may be sharp metal edges.

3 Tools and Instruments

This chapter describes tools and instruments required for maintenance activities.

3.1 Test Equipment

Table 2 Test equipment

Product No.	Description	Specification / Remark
FAB 801 0187	TEMS SW TEMS cable User's manual TEMS R320 for both 900 and 1800 MHz (Dual Band) Antenna adapter Click-in-holder, Car kit	TEMS
FAB 801 0194	TEMS SW TEMS cable User's manual TEMS T28 World for both 900 and 1900 MHz Antenna adapter Click-in-holder, Car kit	TEMS
LPK 102 024/2	Digital multimeter	Fluke 79 III

3.2 OMT Kit

The OMT is used for installation, testing, site acceptance and maintenance of the RBS 2000 system.

Table 3 OMT Kit

Product No.	Description
NTM 201 2289/1	OMT Kit

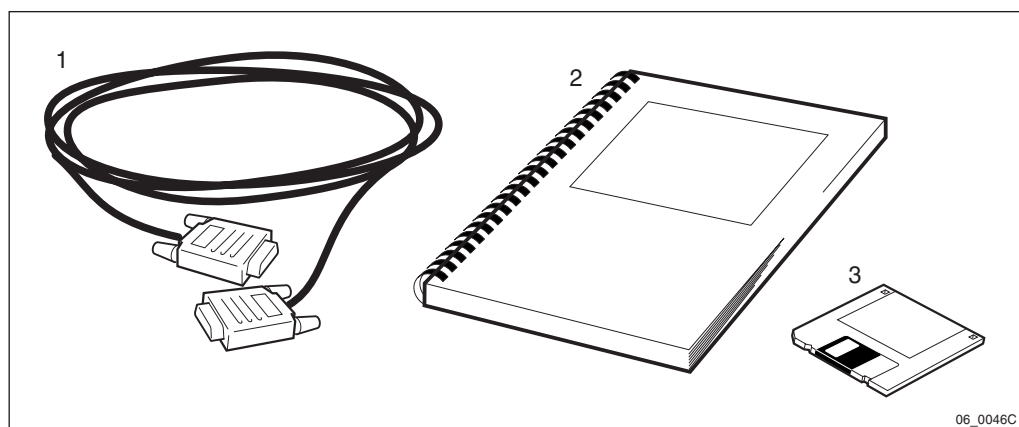


Figure 14 OMT Kit

Table 4 OMT kit specification

Item	Description	Qty	Product No.
1	C1, 9 pin D-sub connector male to female	1	RPM 113 463
2	OMT User's Manual	1	LZN 302 01
3	OMT SW	1	

Note: The OMT require a PC with operating system Win 95, NT 4.0 or later.

3.3 Personal Tool Kit

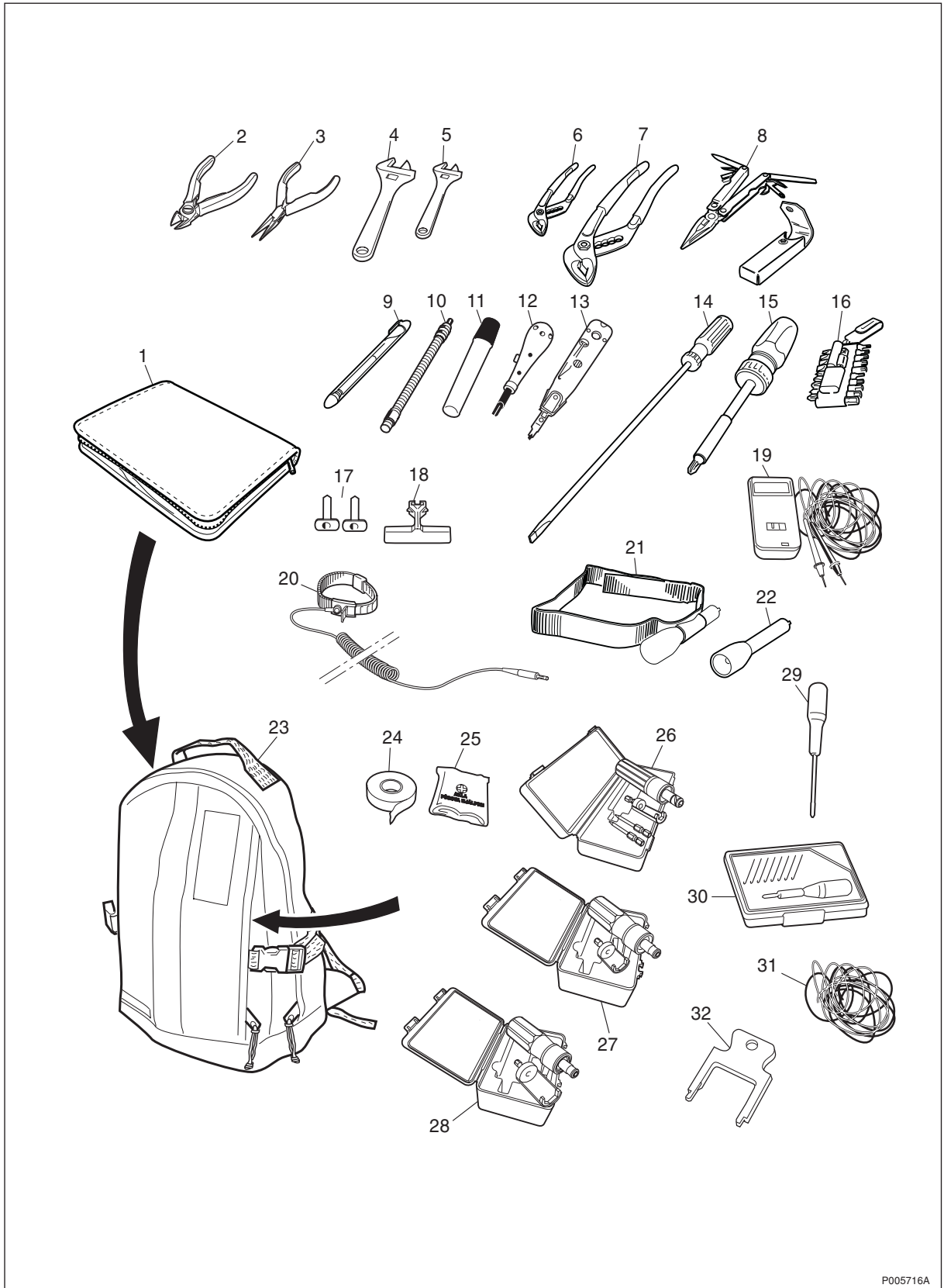


Figure 15 Tool Set, Maintenance Tools

Note: The contents of this kit may be subject to change without notice.

Table 5 Tool Set, Maintenance Tools

Product No.	Description
LTT 601 107/1	Tool Set, Maintenance Tools

Table 6 Tool Set, Maintenance Tools specifications

Pos.	Description	Qty
1	Tool case	1
2	Side cutting pliers	1
3	Snip nose pliers	1
4	Adjustable spanner l=160 mm	1
5	Adjustable spanner l=100 mm	1
6	Slip joint pliers l=125 mm	1
7	Slip joint pliers l= 245 mm	1
8	Pocket survival tool	1
9	Marking pen, gold colour	1
10	Flexible shaft 1/4"	1
11	Marking pen	1
12 ¹⁾	Termination tool LSY 138 252, supplier: Ericsson	1
13	Termination tool, supplier: Krone	1
14	Screwdriver l=200 mm	1
15	Universal bit holder	1
16	Bits kit	1
17 ¹⁾	RU-extractor, button 35 mm LTD 117 13	2
18 ¹⁾	RU-extractor, handle LTD 117 02	1
19	Voltage tester	1
20 ¹⁾	Static control wrist strap LYB 250 01/14	1
21	Head band for lamp holding	1
22	Penlight, mini	1
23	Tool rucksack	1
24	Electrical tape, white	2
25	First aid kit	1
26 ¹⁾	Torque wrench kit 0.8 Nm LTT 601 83	1
27 ¹⁾	Torque wrench kit 1.7 Nm LTT 601 93	1
28 ¹⁾	Torque wrench kit 2.8 Nm LTT 601 94	1
29	Screwdriver, Torx T8	1
30	Precision screwdriver set	1
31	Jumper wire (2x0.5 mm) l=10 m	1
32	Extractor tool for overvoltage protector covers	1

Note: ¹⁾This part of the set can be ordered separately.

3.4 References

For information about general cable connections, see *Cabinet Assembly and Extension Manual*.

For product numbers of replaceable units and other spare parts, see *Spare Parts Catalogue*.

Table 7 Product numbers of the *Cabinet Assembly and Extension Manual* and the *Spare Parts Catalogue*

Product No.	Description
EN/LZT 720 00 10	Cabinet Assembly and Expansion Manual for RBS 2206
EN/LZT 720 00 12	Spare Parts Catalogue for RBS 2206

This page is intentionally left blank

4 Fault Localisation

4.1 Introduction

The instructions in this chapter describe to handle fault situations that arise in the RBS.

The flowcharts in this chapter are for reference only. The text accompanying each flowchart contains more detailed instructions. Maintenance personnel should therefore only use the charts to locate the information in the text.

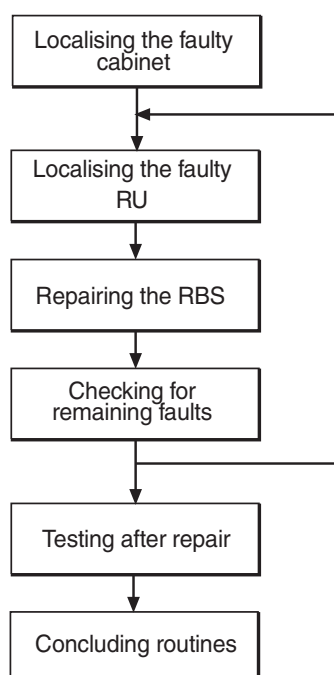
All subsequent sections provide instructions on how to localise faults in the RBS. Each title of a section corresponds to a fault code in either the SO CF RU map or the SO TRXC RU map. These sections appear in alphabetical order.

4.1.1 Preconditions

Information from the replacement unit map is required as input when reading this chapter.

4.1.2 Work Process for Fault Localisation

The work process for fault localisation is shown below and described in brief.



P008272A

Figure 16 Work process for fault localisation

Localising the faulty cabinet

The work order from the OMC operator must include information stating which RBS cabinet is faulty. The faulty cabinet is also identified

by the yellow RBS fault indicator, which is on when there is a fault. The RBS fault indicator is located at the left edge of the cabinet door.

Localising the faulty RU

The work order from the OMC operator also includes information stating which RU is faulty. The sections below describe the fault localisation processes relating to each faulty RU that is indicated in the fault lists. *See Section 4.2 on page 38.* Most RUs are equipped with a red Fault indicator. This indicator is on if a fault has been detected in the RU. RUs that do not have a Fault indicator, can, if faulty, only be localised by means of the OMT.

Note: Always check for a released circuit breaker on the IDM, where applicable. The very first action must always be to reset a circuit breaker, that has released. If the circuit breaker releases again, the fault localisation procedure shall continue. *See chapter Optical Indicators and Switches* for the positions of all circuit breakers on the IDM.

Repairing the RBS

When the faulty RU has been identified, it shall be handled according to specified procedures. *See chapter RBS Field Repair.*

Checking for remaining faults

When the faulty RU is replaced and the reported fault has ceased, the field technician has to check that there are no faults remaining in the RBS.

If any faults remain in the RBS, these faults have to be localised and rectified. See the sections below in this chapter.

Testing after repair

When all faults in the RBS have been cleared, the RBS has to be tested in order to verify that it is fully functional. *See chapter Test after Repair.*

Concluding routines

Before leaving the site, the field technician has to go through a checklist and fill in the repair delivery note, “Blue tag”. The routines also define how the faulty, replaced RUs shall be treated. *See chapter Concluding Routines.*

4.2 Fault Lists

The tables below give all faults that are treated in this chapter. These faults are indicating that a fault is found in HW.

Note: Faults that can not be related to the RBS 2206 are excluded.

4.2.1 Faults in the SO CF RU map

Fault No.	Fault designation
0	DXU
3	Y link
5	CDU
7	PSU
9	BDM or BFU
12	ALNA/TMA A
13	ALNA/TMA B
14	Battery
15	Fan
20	TMA CM
23	CDU RX in cable
30	CDU bus/IOM bus
31	Environment
33	EPC bus/Power communication loop
34	RBS DB
35	EOM bus
37	CDU CXU RXA cable
38	CDU CXU RXB cable
40	Antenna
41	PSU DC cable
43	Flash card
45	Battery temp sensor
46	FCU
47	TMA CM cable

4.2.2 Faults in the SO TRXC RU map

Fault No.	Fault designation
0	TRU, dTRU or ATRU
3	CXU TRU RXA cable
4	CXU TRU RXB cable

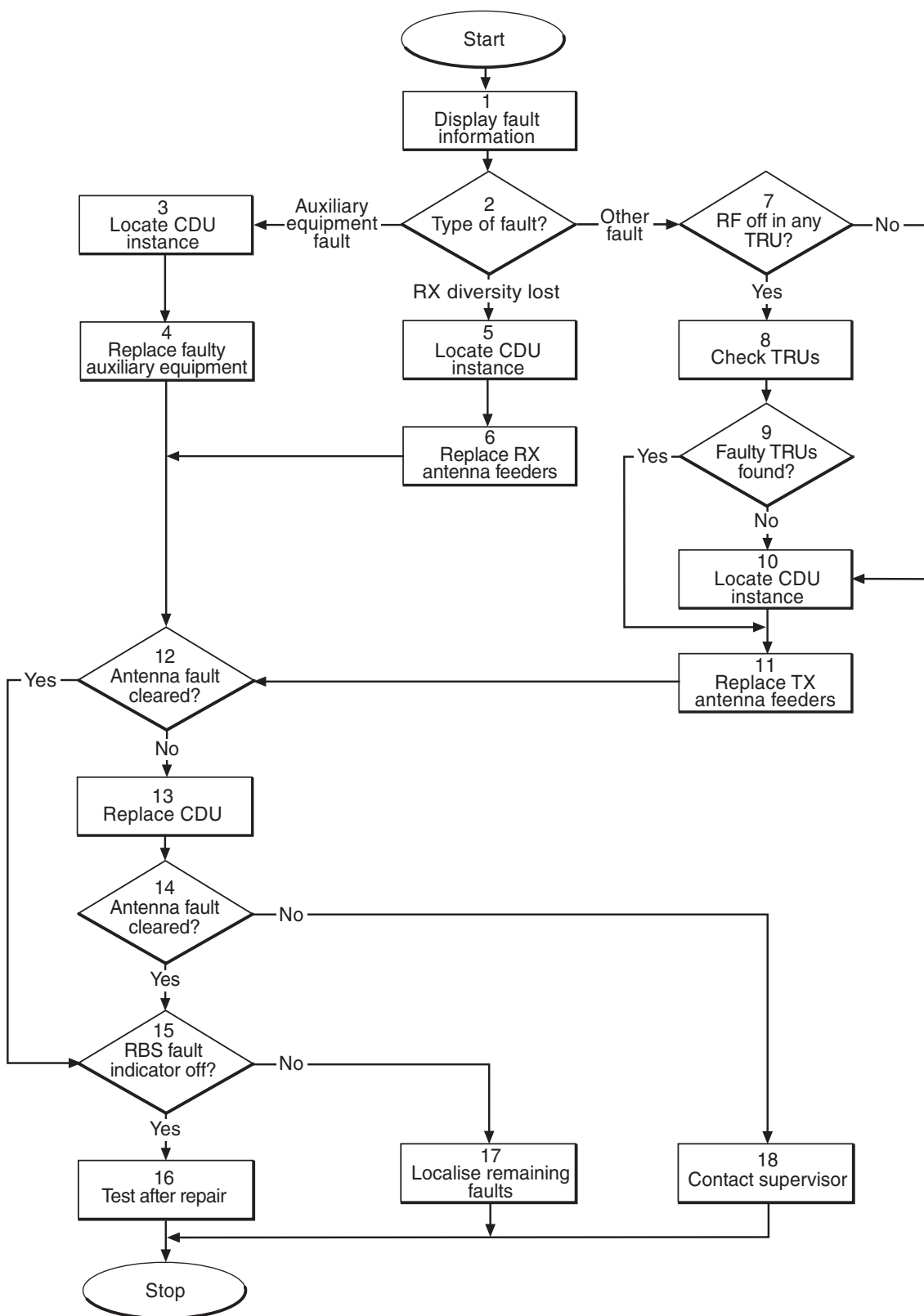
4.2.3 All HW faults in alphabetical order

Fault designation	Fault No.
ALNA/TMA A	SO CF RU:12
ALNA/TMA B	SO CF RU:13
Antenna	SO CF RU:40
Battery	SO CF RU:14
Battery temp sensor	SO CF RU:45
BDM or BFU	SO CF RU:9
CDU	SO CF RU:5
CDU bus/IOM bus	SO CF RU:30
CDU CXU RXA cable	SO CF RU:37
CDU CXU RXB cable	SO CF RU:38
CDU RX in cable	SO CF RU:23
CXU TRU RXA cable	SO TRXC RU:3
CXU TRU RXB cable	SO TRXC RU:4
DXU	SO CF RU:0
Environment	SO CF RU:31
EOM bus	SO CF RU:35
EPC bus/Power communication loop	SO CF RU:33
Fan	SO CF RU:15
FCU	SO CF RU:46
Flash card	SO CF RU:43
PSU	SO CF RU:7
PSU DC cable	SO CF RU:41
RBS DB	SO CF RU:34
TMA CM	SO CF RU:20
TMA CM cable	SO CF RU:47
TRU, dTRU or ATRU	SO TRXC RU:0
Y link	SO CF RU:3

4.3 ALNA/TMA A and ALNA/TMA B

Note: *This section will be included in the next release.*

4.4 Antenna



P008271A

Figure 17 Antenna fault

(1) Display fault information

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Display the type of fault: Go to the **Operation** menu and select **Monitor** . In the RBS Monitor Setup window, select **Fault Status** and click the **Start Monitor** button.

(2) Type of fault?

1. Check the **Start Monitor** in the OMT as described above in stage **(1)**.

Which type of fault was found in stage **(1)**?

Answer	Action
Auxilliary Equipment fault.	Proceed to stage (3)
RX diversity lost.	Proceed to stage (5)
Other fault.	Proceed to stage (7)

(3) Locate CDU instance

1. Select **Hardware view** in the OMT.
2. Tick the **Faults** check box.
3. Look for a red line between a CDU object and an antenna object.
4. When the faulty antenna instance is found, check which CDU it is connected to. This information indicates which auxilliary equipment to replace in stage **(4)**.

(4) Replace faulty auxilliary equipment

1. Replace or repair the faulty auxilliary equipment.
2. Proceed to stage **(12)**.

(5) Locate CDU instance

1. Select **Hardware view** in the OMT.
2. Tick the **Faults** check box.
3. Look for a red line between a CDU object and an antenna object.
4. When the faulty antenna instance is found, check which CDU it is connected to. This information indicates which RX antenna feeder to replace in stage **(6)**.

(6) Replace RX antenna feeders

1. Replace the RXA or RXB feeder according to instructions in section *RX Antenna Feeder* in chapter *RBS Field Repair*.
2. Proceed to stage **(12)**.

(7) RF off in any TRU?

1. Check all TRUs in the cabinet.

Are any of the **RF off** indicators on?

Answer	Comment	Action
Yes	One or more RF off indicators are on	Proceed to stage (8)
No	No RF off indicator is on	Proceed to stage (10)

(8) Check TRUs

1. In the OMT, select **System view** and the object RBS 2000. Go to the **Operation** menu and select **Monitor**.
2. In the RBS Monitor Setup window, select **Fault Status** and click the **Start Monitor** button.
3. Look for the alarm **TX antenna VSWR limits exceeded** in the AOTX map. This will point to the TRU(s) generating the alarm. Note that the indicated TRU(s) should match those indicated in stage **(7)** above.

(9) Faulty TRUs found?

1. Check the red Fault and the green Operational indicators on the CDU.

Could the faulty TRUs be found by the OMT?

Answer	Comment	Action
Yes	One or more faulty TRUs could be found.	Proceed to stage (11)
No	No faulty TRU could be found.	Proceed to stage (10)

(10) Locate CDU instance

1. Select **Hardware view** in the OMT.
2. Tick the **Faults** check box.
3. Look for a red line between a CDU object and an antenna object.
4. When the faulty antenna instance is found, check which CDU it is connected to. This information indicates which TX antenna feeder to replace in stage **(11)**.

(11) Replace the TX antenna feeders

1. Replace all the TX feeders in the cell according to instructions in section *TX Antenna Feeder* in chapter *RBS Field Repair*.

(12) Antenna fault cleared?

1. Use the OMT to display the type of fault: Go to the **Operation** menu and select **Monitor**.

2. In the RBS Monitor Setup window, select **Fault Status** and click the **Start Monitor** button.

- If the fault was "RX Diversity Lost", it will take at least 1 h 40 min for the fault in the RBS to cease.
- If the fault was "VSWR Limits Exceeded", the TX has to be re-initiated from the BSC.

For further information, see section *RX and TX Antenna Feeder* in chapter *RBS Field Repair*.

3. Has the antenna found to be OK in step (2) above?

Answer	Comment	Action
Yes	The Antenna fault is cleared.	Proceed to stage (15)
No	There is still an Antenna fault.	Proceed to stage (13)

(13) Replace CDU

1. Replace the CDU according to instructions in section *CDU* in chapter *RBS Field Repair*.

(14) Antenna fault cleared?

1. Use the OMT to display the type of fault: Go to the **Operation** menu and select **Monitor**.
2. In the RBS Monitor Setup window, select **Fault Status** and click the **Start Monitor** button.

- If the fault was "RX Diversity Lost", it will take at least 1 h 40 min for the fault in the RBS to cease.
- If the fault was "VSWR Limits Exceeded", the TX has to be re-initiated from the BSC.

For further information, see section *RX and TX Antenna Feeder* in chapter *RBS Field Repair*.

3. Has the antenna found to be OK in step (2) above?

Answer	Comment	Action
Yes	The Antenna fault is cleared.	Proceed to stage (15)
No	There is still an Antenna fault.	Proceed to stage (18)

(15) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (16)
No	There is still one or more faults in the RBS.	Proceed to stage (17)

(16) Test after repair

1. (After replacing a CDU only) Make a test call according to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(17) Localise remaining faults

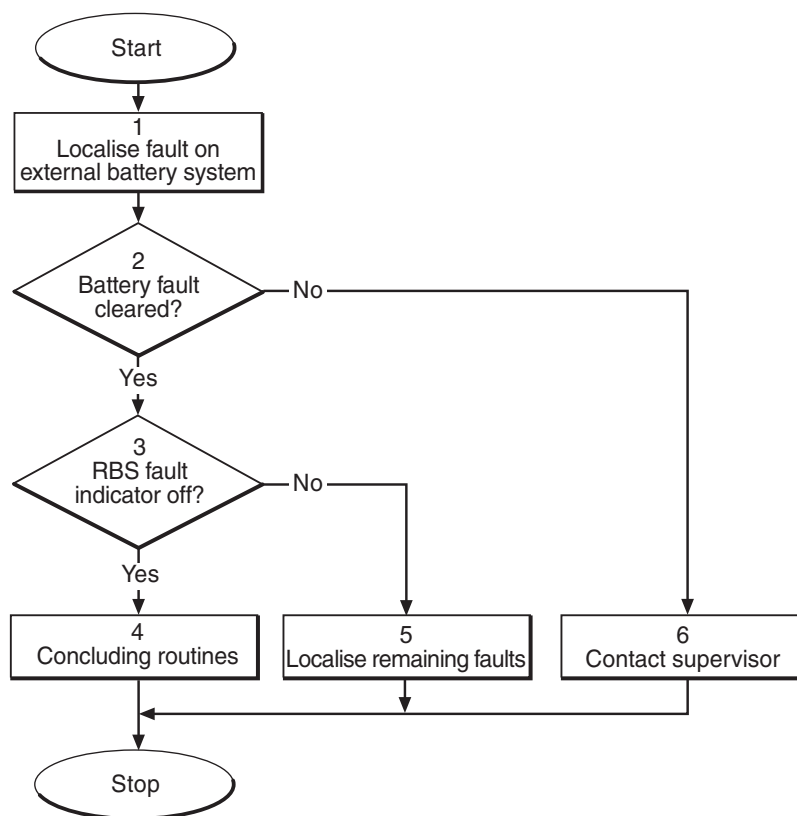
1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(18) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.5 Battery

The Battery fault only arises when the external battery back-up system, specifically BBS 2000, is connected to the RBS.



P008038A

Figure 18 Battery fault, external batteries

(1) Localise fault on external battery system

1. Check that the battery cable is properly connected to the RBS.
2. Check the battery cable from the external battery system to the RBS. Replace if needed.
3. Refer to manufacturer’s documentation to perform fault localisation on the external battery system.

(2) Battery fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the Battery fault disappeared?

Answer	Comment	Action
Yes	The Battery fault is cleared.	Proceed to stage (3)
No	There is still a Battery fault.	Proceed to stage (6)

(3) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (4)
No	There is still one or more faults in the RBS.	Proceed to stage (5)

(4) Concluding routines

1. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(5) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(6) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

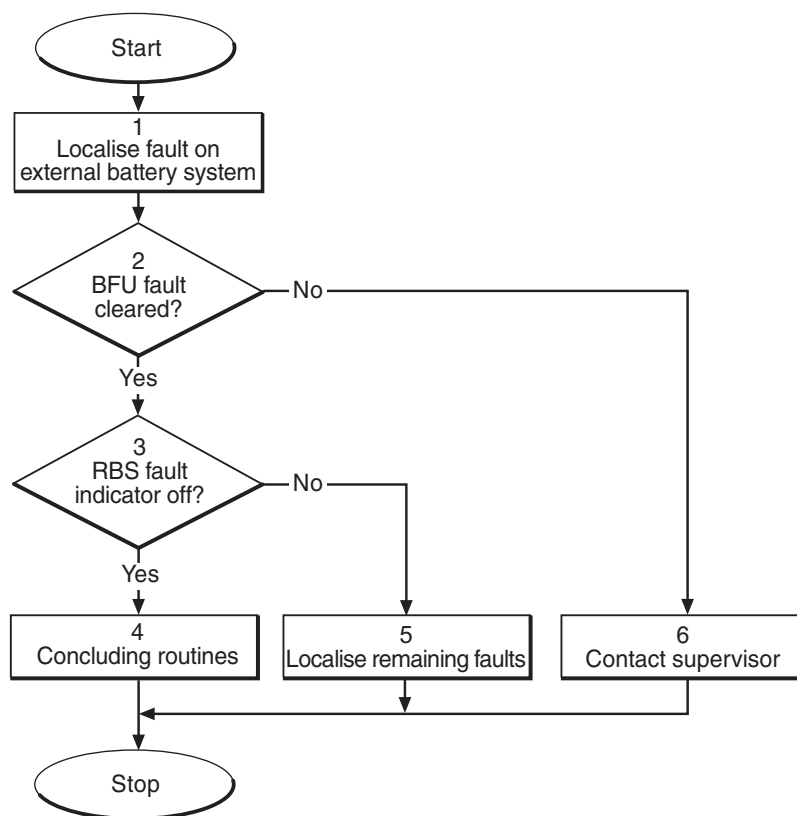
4.6 Battery Temp Sensor

Note: *This section will be included in the next release.*

4.7 BDM or BFU

The BDM or BFU fault only arises when the external battery back-up system, specifically BBS 2000, is connected to the RBS.

Note: The fault text is always *BDM or BFU*. As there is no BDM in the RBS 2206, the expression *BFU fault* is used in the procedure below.



P008153A

Figure 19 BDM or BFU fault

(1) Localise fault on external battery system

1. Check that the battery cable is properly connected to the RBS.
2. Check the battery cable from the external battery system to the RBS. Replace if needed.
3. Refer to manufacturer’s documentation to perform fault localisation on the external battery system.

(2) BFU fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the BFU fault disappeared?

Answer	Comment	Action
Yes	The BFU fault is cleared.	Proceed to stage (3)
No	There is still a BFU fault.	Proceed to stage (6)

(3) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (4)
No	There is still one or more faults in the RBS.	Proceed to stage (5)

(4) Concluding routines

1. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

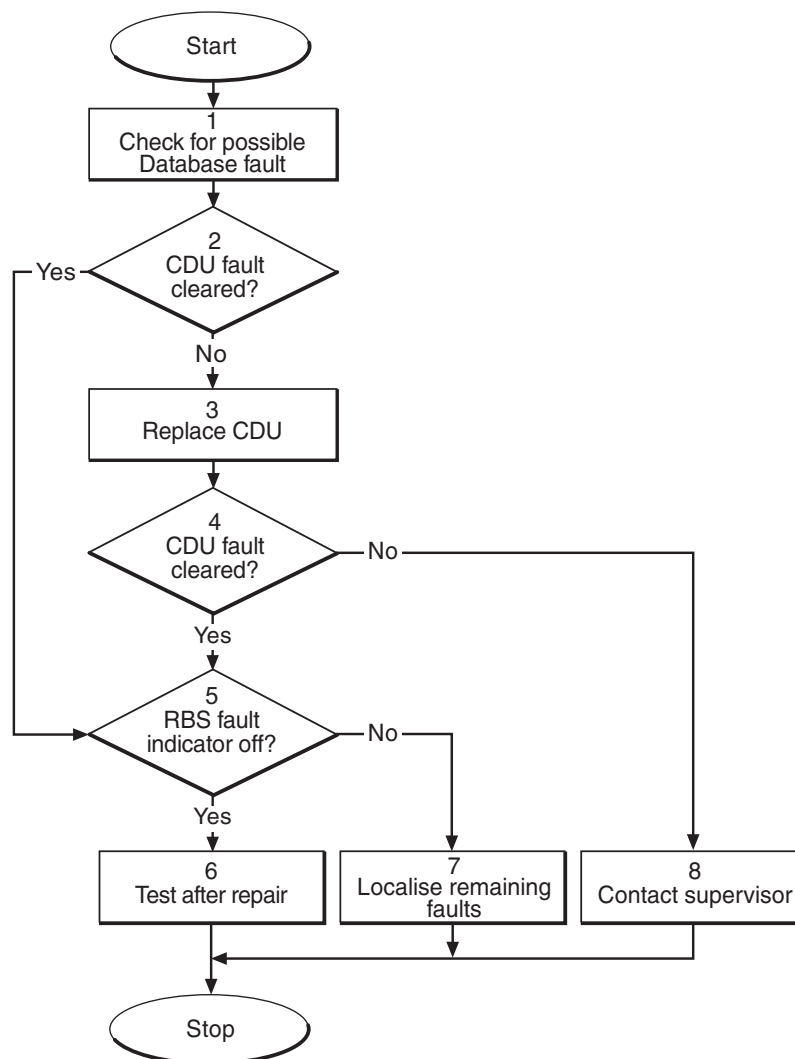
(5) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(6) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.8 CDU



P008202A

Figure 20 CDU fault

(1) Check for possible Database fault

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Check for the presence of any of the following faults:
 - SO CF I1A:17 – HW and IDB inconsistent
 - SO CF I2A:36 – RU database corrupted
 - SO CF I2A:46 – DB parameter fault
3. If any of the faults listed in step 2 above are found, reload the faulty database. See instructions in section *IDB* in chapter *RBS Field Repair*.

Then proceed to stage (2) below.

4. If none of the faults listed in step 2 above are found, proceed to stage (2) below.

(2) CDU fault cleared?

1. Check the red Fault and the green Operational indicators on the CDU.

Is the Fault indicator off and the Operational indicator on on the CDU?

Answer	Comment	Action
Yes	The CDU fault is cleared.	Proceed to stage (5)
No	There is still a CDU fault.	Proceed to stage (3)

Note that the status of the CDU can also be checked with the OMT.

(3) Replace CDU

1. Replace the faulty CDU. See instructions in section *CDU* in chapter *RBS Field Repair*.

(4) CDU fault cleared?

1. Check the red Fault and the green Operational indicators on the CDU.

Is the Fault indicator off and the Operational indicator on on the CDU?

Answer	Comment	Action
Yes	The CDU fault is cleared.	Proceed to stage (5)
No	There is still a CDU fault.	Proceed to stage (8)

Note that the status of the CDU can also be checked with the OMT.

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Test after repair

1. Make a test call over the CDU concerned. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

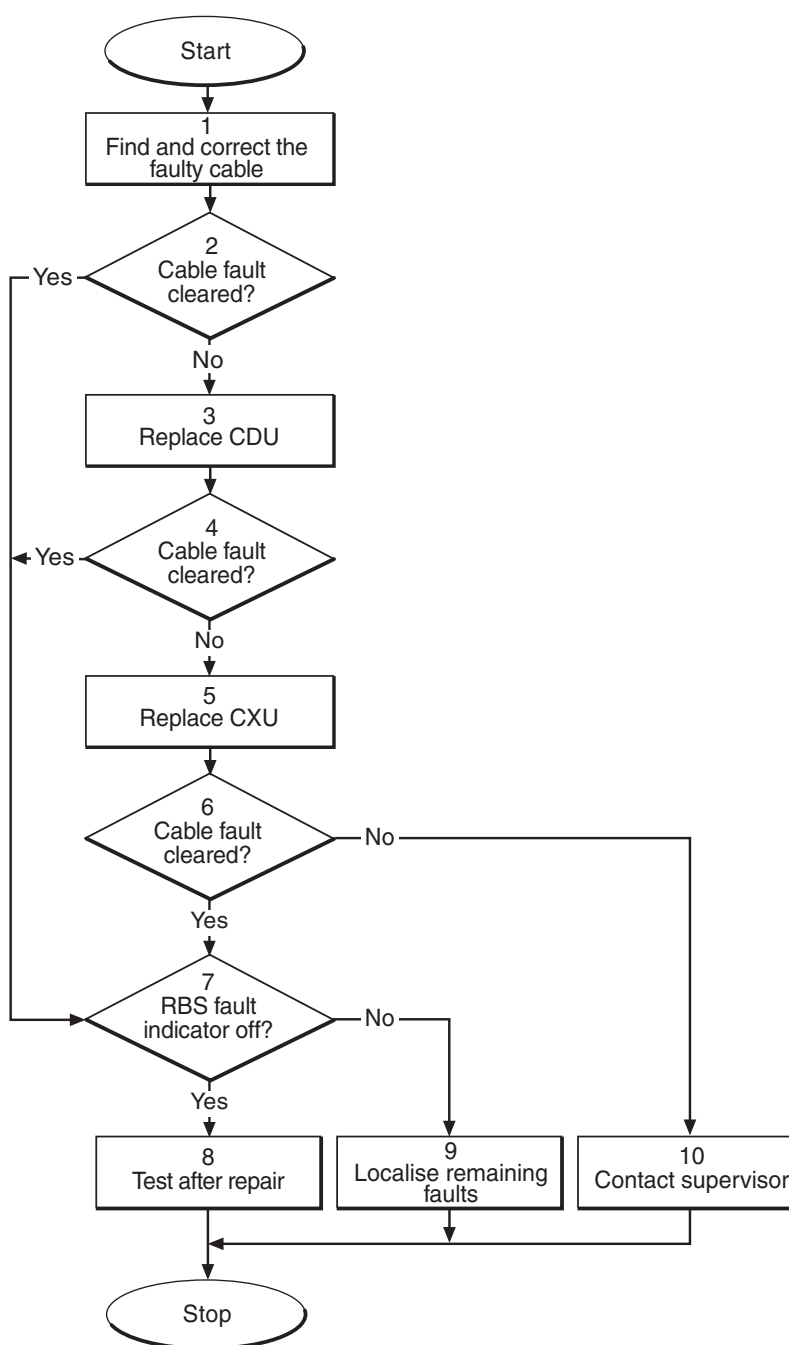
1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.9 CDU Bus/IOM bus

Note: *This section will be included in the next release.*

4.10 CDU CXU RXA Cable and CDU CXU RXB Cable

Note: The fault text is always *CDU CXU RXA cable and CDU CXU RXB cable*. For simplicity reasons, the expression *Cable fault* is used in the procedure below.



P008204A

Figure 21 CDU CXU RXA cable and CDU CXU RXB cable fault

(1) Find and correct the faulty cable

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faulty RX cable.
3. Check that the cable is correctly connected at both ends. *See section CDU to Connection Field RBS 2206 in chapter CDU Connections.*

4. Check that the cable connectors are correctly inserted into the mating connectors in the CDU and the CXU.
5. If the fault does not disappear, replace the faulty cable.

(2) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CDU CXU RXA cable or CDU CXU RXB cable been cleared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (7)
No	There is still a cable fault.	Proceed to stage (3)

(3) Replace CDU

1. Replace the CDU connected to the suspected cable. See instructions in section *CDU* in chapter *RBS Field Repair*.

(4) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CDU CXU RXA cable or CDU CXU RXB cable been cleared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (7)
No	There is still a cable fault.	Proceed to stage (5)

(5) Replace CXU

1. Replace the CXU connected to the suspected cable. See instructions in section *CXU* in chapter *RBS Field Repair*.

(6) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CDU CXU RXA cable or CDU CXU RXB cable been cleared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (7)
No	There is still a cable fault.	Proceed to stage (10)

(7) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (8)
No	There is still one or more faults in the RBS.	Proceed to stage (9)

Note that the status of the RBS can also be checked with the OMT.

(8) Test after repair

1. Make a test call over the CDU concerned. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(9) Localise remaining faults

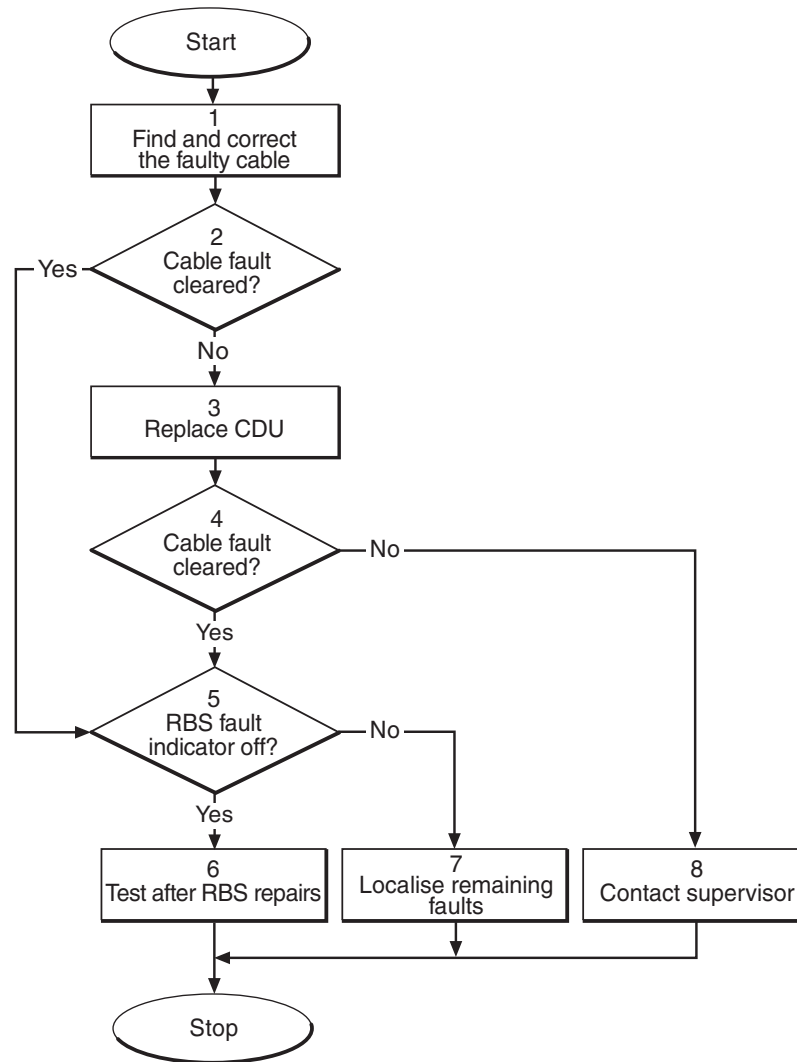
1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(10) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.11 CDU RX in Cable

Note: The fault text is always *CDU RX in cable*. For simplicity reasons, the expression *Cable fault* is used in the procedure below.



P008304A

Figure 22 CDU RX in cable fault

(1) Find and correct the faulty cable

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Look for "Fault Status CDU RX IN #1". For example, if CDU RX IN CABLE 2 is faulty, it means that the faulty cable is located on CDU 2.
3. Check that the correct cable is connected to the CDU. *See section CDU Antenna Connection Field RBS 2206 in chapter CDU Connections.*
4. Check that the cable connector is correctly inserted into the connector on the CDU.
5. If the fault does not disappear, replace the faulty cable.

(2) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CDU RX in cable disappeared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (5)
No	There is still a cable fault.	Proceed to stage (3)

(3) Replace CDU

1. Replace the CDU connected to the suspected cable. See instructions in section *CDU* in chapter *RBS Field Repair*.

(4) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CDU RX in cable disappeared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (5)
No	There is still a cable fault.	Proceed to stage (8)

(5) RBS fault indicator off?

1. Check that there are no remaining faults in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Test after repair

1. Make a test call over the CDU concerned. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

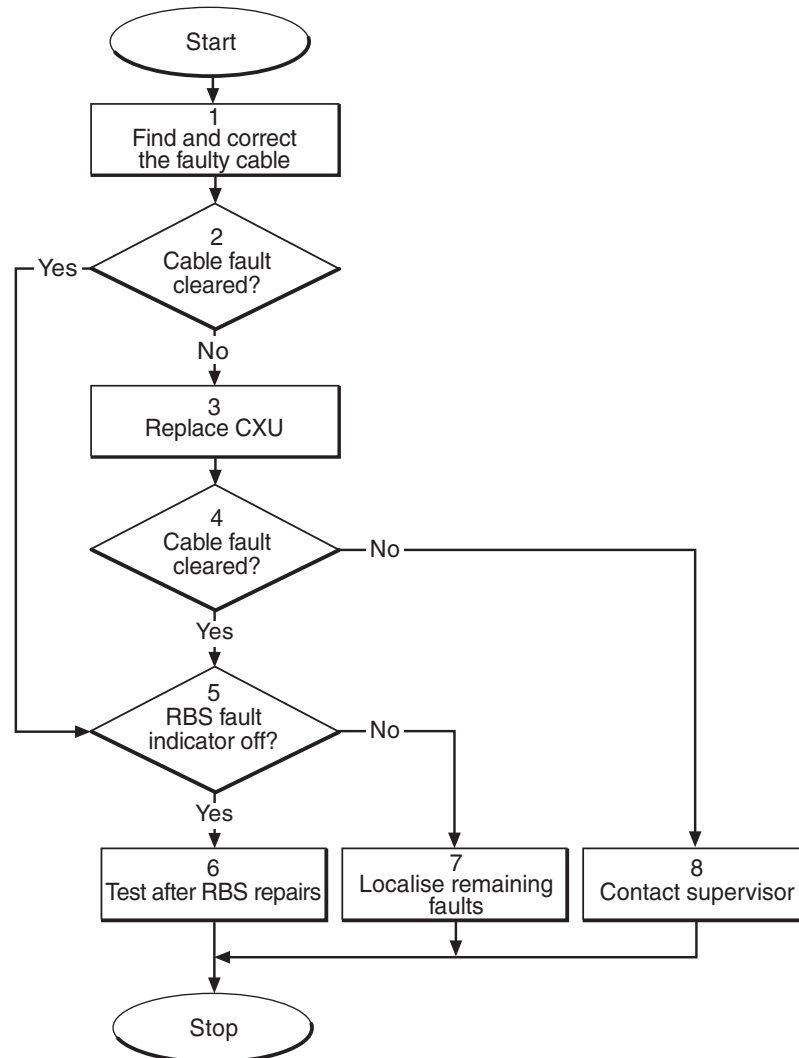
1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.12 CXU

Note: The CXU is currently not supervised by RBS SW.

4.13 CXU DC Cable

Note: The fault text is always *CXU DC in cable*. For simplicity reasons, the expression *Cable fault* is used in the procedure below.



P008303A

Figure 23 CXU DC cable fault

(1) Find and correct the faulty cable

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faulty CXU DC cable.
3. Check that the cable is correctly connected at both ends. *See section Backplane Cables in chapter Cable Connections.*
4. Check that the cable connector as well as the corresponding connector in the CXU are not burned or mechanically damaged.
5. Check that the cable connector is correctly inserted into the mating connector in the CXU.
6. If the fault does not disappear, replace the faulty cable.

(2) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CXU DC cable disappeared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (5)
No	There is still a cable fault.	Proceed to stage (3)

(3) Replace CXU

1. Replace the CXU connected to the suspected cable. *See instructions in section CXU in chapter RBS Field Repair.*

(4) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CXU DC cable disappeared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (5)
No	There is still a cable fault.	Proceed to stage (8)

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Test after repair

1. Make test calls over all TRUs. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(7) Localise remaining faults

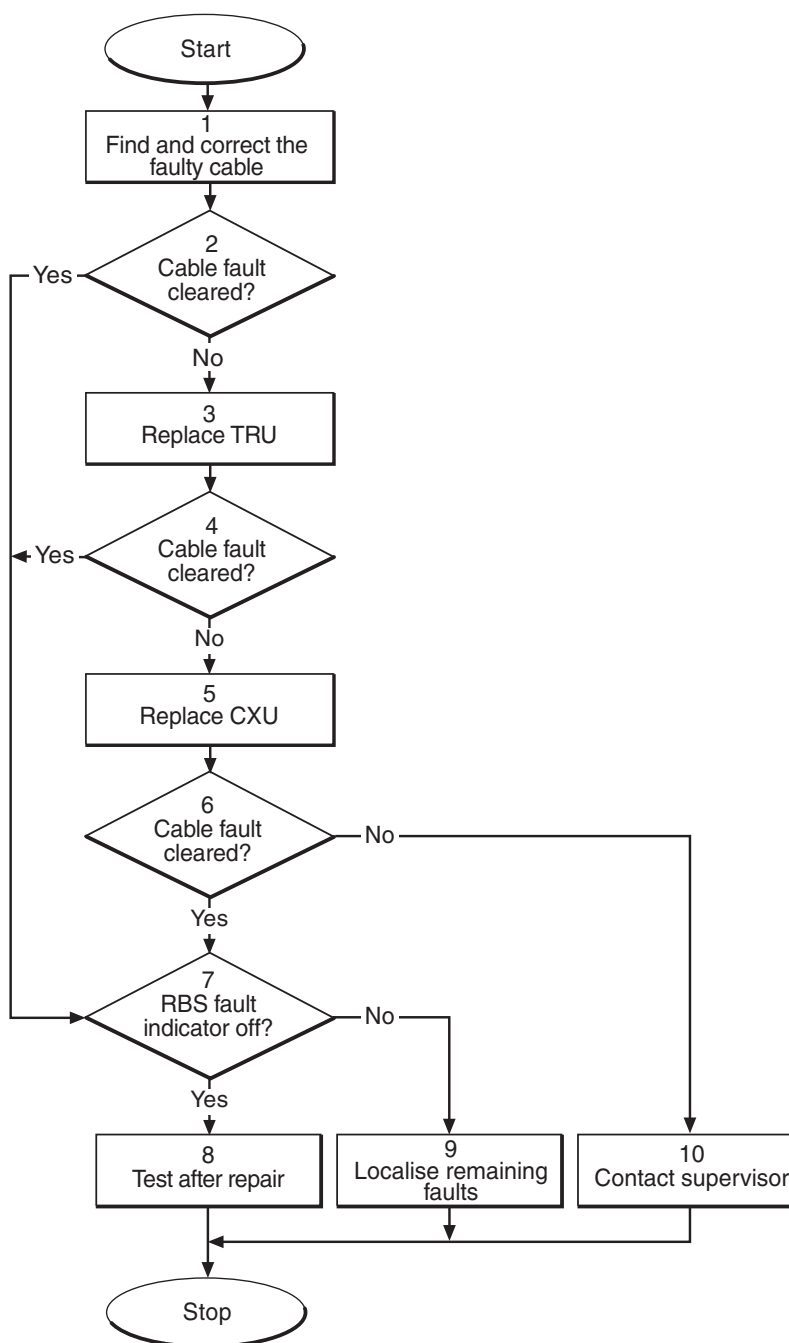
1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.14 CXU dTRU RXA Cable and CXU dTRU RXB Cable

Note: The fault text is always *CXU dTRU RXA cable and CXU dTRU RXB cable*. For simplicity reasons, the expression *Cable fault* is used in the procedure below.



P008382A

Figure 24 CXU dTRU RXA cable and CXU dTRU RXB cable fault

(1) Find and correct the faulty cable

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faulty RX cable.
3. Check that the cable is correctly connected in both ends. *See section CDU to Connection Field RBS 2206 in chapter CDU Connections.*

4. Check that the cable connectors are correctly inserted into the mating connectors in the dTRU and the CXU.
5. If the fault does not disappear, replace the faulty cable.

(2) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CXU dTRU RXA cable or CXU dTRU RXB cable been cleared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (7)
No	There is still a cable fault.	Proceed to stage (3)

(3) Replace TRU

1. Replace the TRU (dTRU) connected to the suspected cable. See instructions in section *TRU* in chapter *RBS Field Repair*.

(4) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CXU dTRU RXA cable or CXU dTRU RXB cable been cleared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (7)
No	There is still a cable fault.	Proceed to stage (5)

(5) Replace CXU

1. Replace the CXU connected to the suspected cable. See instructions in section *CXU* in chapter *RBS Field Repair*.

(6) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault CXU dTRU RXA cable or CXU dTRU RXB cable been cleared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (7)
No	There is still a cable fault.	Proceed to stage (10)

(7) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (8)
No	There is still one or more faults in the RBS.	Proceed to stage (9)

Note that the status of the RBS can also be checked with the OMT.

(8) Test after repair

1. Make a test call over the CDU concerned. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

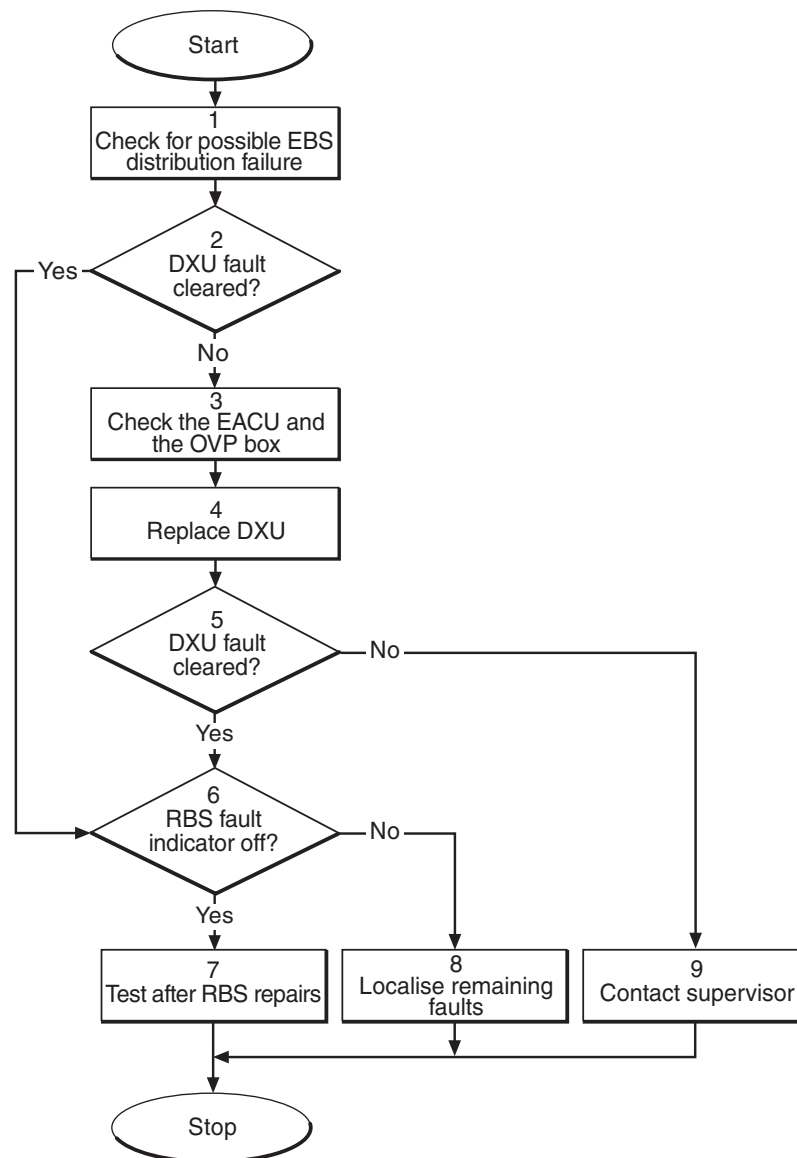
(9) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(10) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.15 DXU



P008203A

Figure 25 DXU fault

(1) Check for possible ESB distribution failure

1. Is TG synchronisation used to connect the RBS 2206 to another RBS via an ESB cable?

If there is no such connection, proceed directly to stage (2) below. Otherwise, continue below.

2. Use the OMT to check for the presence of the following fault:
 - SO CF I2A:44 – ESB distribution failure
3. If the fault indicated in step 2 above is found, do the following:
 - Check all connectors and cables in the connection between ESB connectors on the DXUs in the two cabinets.

- If the external ESB cable is suspected to be faulty, replace the cable. See instructions in section *ESB cable* in chapter *RBS Field Repair*.

(2) DXU fault cleared?

1. Check the red Fault and the green Operational indicators on the DXU.

Is the Fault indicator off and the Operational indicator on on the DXU?

Answer	Comment	Action
Yes	The DXU fault is cleared.	Proceed to stage (6)
No	There is still a DXU fault.	Proceed to stage (3)

Note that the status of the DXU can also be checked with the OMT.

(3) Check the EACU and the OVP box

Note: When a fault is suspected in the DXU, the overvoltage arrestors in the EACU and the OVP functions of the DF must be replaced. If the DXU is faulty, due to surges caused by lightning, then the overvoltage arrestors in the EACU and the OVP functions of the DF are likely to be faulty.

1. Replace the overvoltage arrestors in the EACU functions of the DF.
2. If the PCM connection or ESB cable is routed via the DF, then the overvoltage arrestors in the OVP functions of the DF must be replaced.

(4) Replace DXU

1. Replace the faulty DXU according to instructions in section *DXU* in chapter *RBS Field Repair*.

(5) DXU fault cleared?

1. Check the red Fault and the green Operational indicators on the DXU.

Is the Fault indicator off and the Operational indicator on on the DXU?

Answer	Comment	Action
Yes	The DXU fault is cleared.	Proceed to stage (6)
No	There is still a DXU fault.	Proceed to stage (9)

Note that the status of the DXU can also be checked with the OMT.

(6) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (7)
No	There is still one or more faults in the RBS.	Proceed to stage (8)

Note that the status of the RBS can also be checked with the OMT.

(7) Test after repair

1. Make a test call over all TRUs. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(8) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(9) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.16 Environment

Note: *This section will be included in the next release.*

4.17 EOM Bus

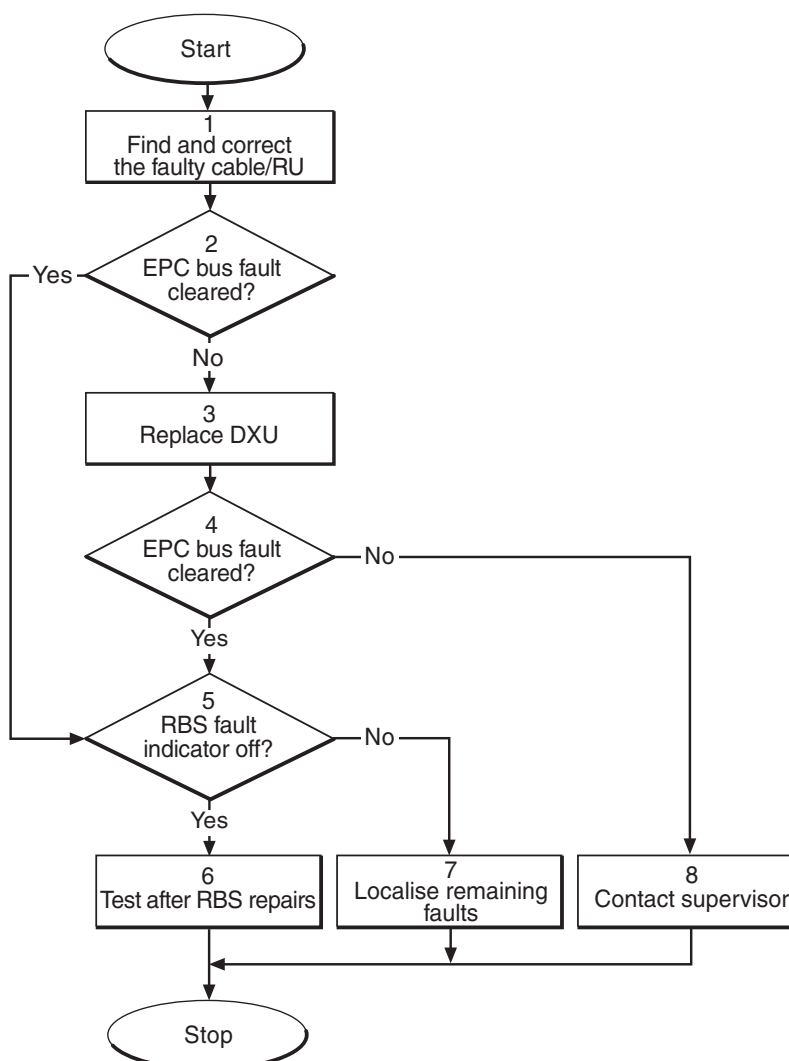
Note: *This section will be included in the next release.*

4.18 EPC Bus/Power Communication Loop

The EPC bus is a fibre optic loop used for control and supervision of the power system. When the loop is opened, the power system switches to stand alone mode and the fault EPC bus/Power Communication Loop is set in the RU map.

Possible faults are a faulty RU or a faulty fibre optic cable. The indicator EPC bus fault will be lit on the DXU and on those RUs that have lost communication with the EPC function of the DXU.

Note: The fault text is always *EPC bus/Power communication loop*. For simplicity reasons, the expression *EPC bus fault* is used in the procedure below.



P008305A

Figure 26 EPC bus/Power communication loop fault

(1) Find and correct the faulty cable/RU

1. Locate the fault, by using bypassing of the suspected faulty units in order to get a closed loop. When the loop is closed, the EPC bus fault indicators on all RUs within the loop will be extinguished.

Bypassing means that, for example, the opto bus cable from TD output on PSU 1 goes directly to RD input on PSU 3.

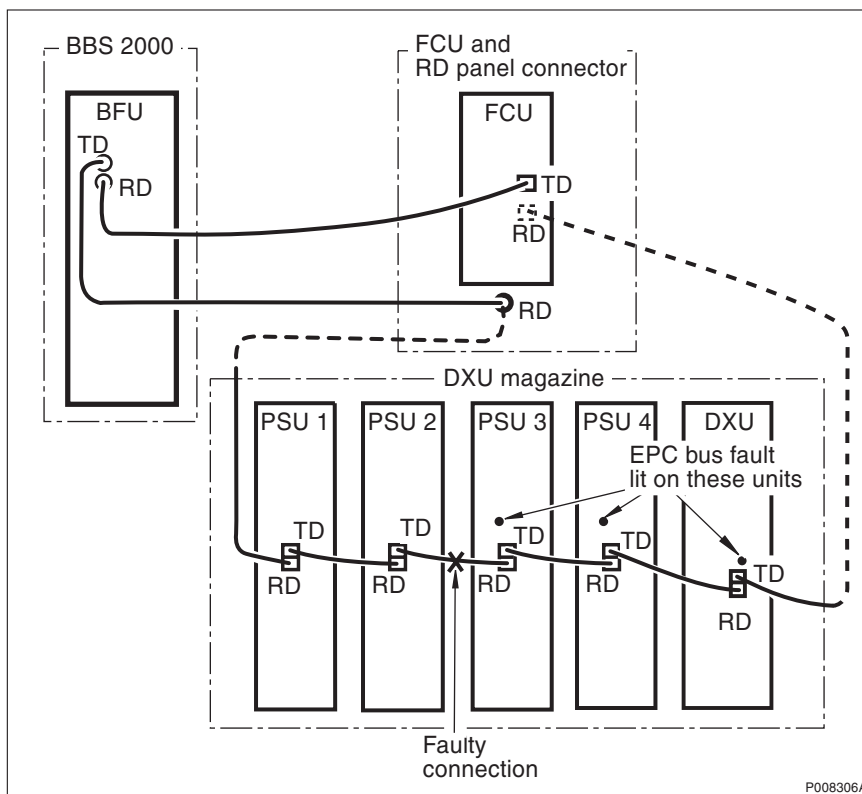


Figure 27 Example of a fault situation in the power communication loop

2. Repeat the bypass until the faulty RU or cable is identified.
3.
 - If found to be faulty, replace the EPC bus cable.
 - If found to be faulty, replace any faulty RU in the RBS cabinet according to instructions in section *PSU*, *FCU* or *DXU* in chapter *RBS Field Repair*.
 - If found to be faulty, replace the BFU in the external battery system. See manufacturer’s documentation.

Note: The opto bus cables must have a bending radius of at least 35 mm.

(2) EPC bus fault cleared?

1. Check the yellow indicator EPC bus fault on each RU connected to the EPC bus.

Is the indicator EPC bus fault off on each RU connected to the EPC bus?

Answer	Comment	Action
Yes	The EPC bus fault is cleared.	Proceed to stage (5)
No	There is still an EPC bus fault.	Proceed to stage (3)

Note that the status of the EPC bus can also be checked with the OMT.

(3) Replace DXU

1. Replace the faulty DXU according to instructions in section *DXU* in chapter *RBS Field Repair*.

(4) EPC bus fault cleared?

1. Check the yellow indicator EPC bus fault on all RUs connected to the EPC bus.

Is the indicator EPC bus fault off on all RUs connected to the EPC bus?

Answer	Comment	Action
Yes	The EPC bus fault is cleared.	Proceed to stage (5)
No	There is still an EPC bus fault.	Proceed to stage (8)

Note that the status of the EPC bus can also be checked with the OMT.

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Test after repair

1. (Only if the DXU has been replaced) Make test calls over all TRUs. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

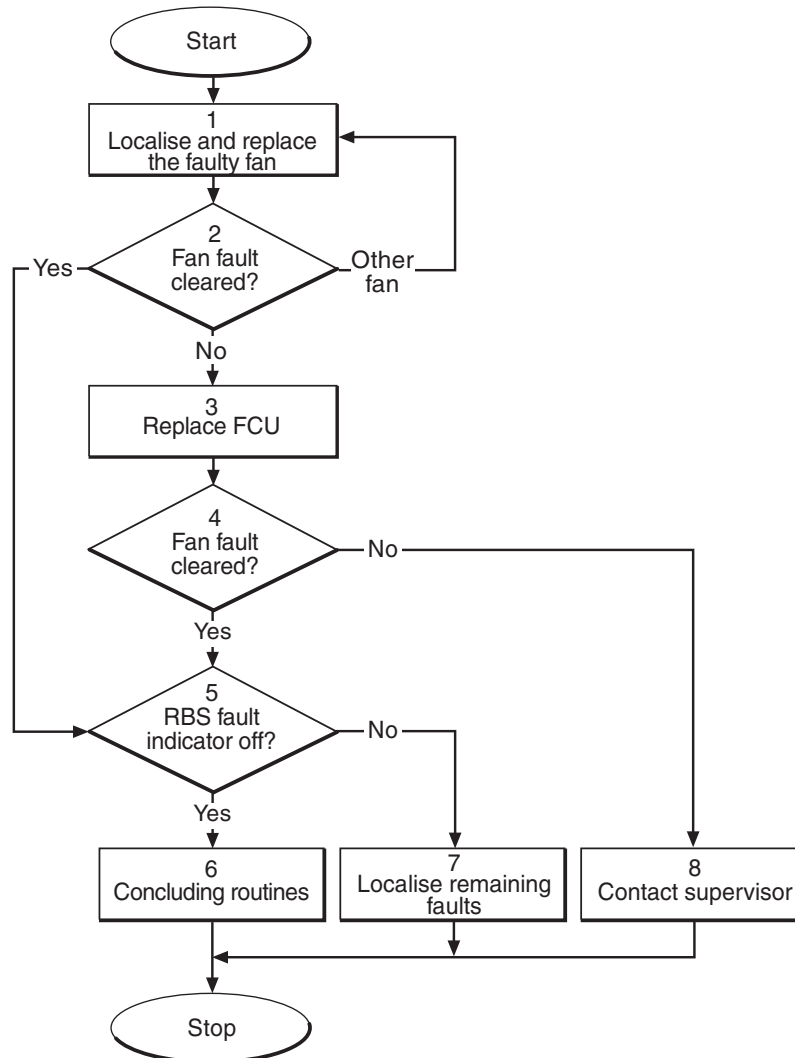
(8) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.19 External Alarms

Note: *This section will be included in the next release.*

4.20 Fan



P008332A

Figure 28 Fan fault

(1) Localise and replace the faulty fan

1. Check the FCU to find which fan is indicated as faulty
2. Replace the faulty fan. See instructions in section *Fan* in chapter *RBS Field Repair*.

(2) Fan fault cleared?

1. Check the red Fan Fault indicators on the FCU.
Are the Fan Fault indicators off on the FCU?

Answer	Comment	Action
Yes	The Fan fault is cleared.	Proceed to stage (5)
No	The same fan is indicated as faulty.	Proceed to stage (3)
Other fan	Another fan is indicated as faulty.	Go back to stage (1)

Note that the status of the fans can also be checked with the OMT.

(3) Replace FCU

1. Replace the FCU according to instructions in section *FCU* in chapter *RBS Field Repair*.

(4) Fan fault cleared?

1. Check the red Fan Fault indicators on the FCU.
Are the Fan Fault indicators off on the FCU?

Answer	Comment	Action
Yes	The Fan fault is cleared.	Proceed to stage (5)
No	There is still a Fan fault.	Proceed to stage (8)

Note that the status of the fans can also be checked with the OMT.

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.
Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Concluding routines

1. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

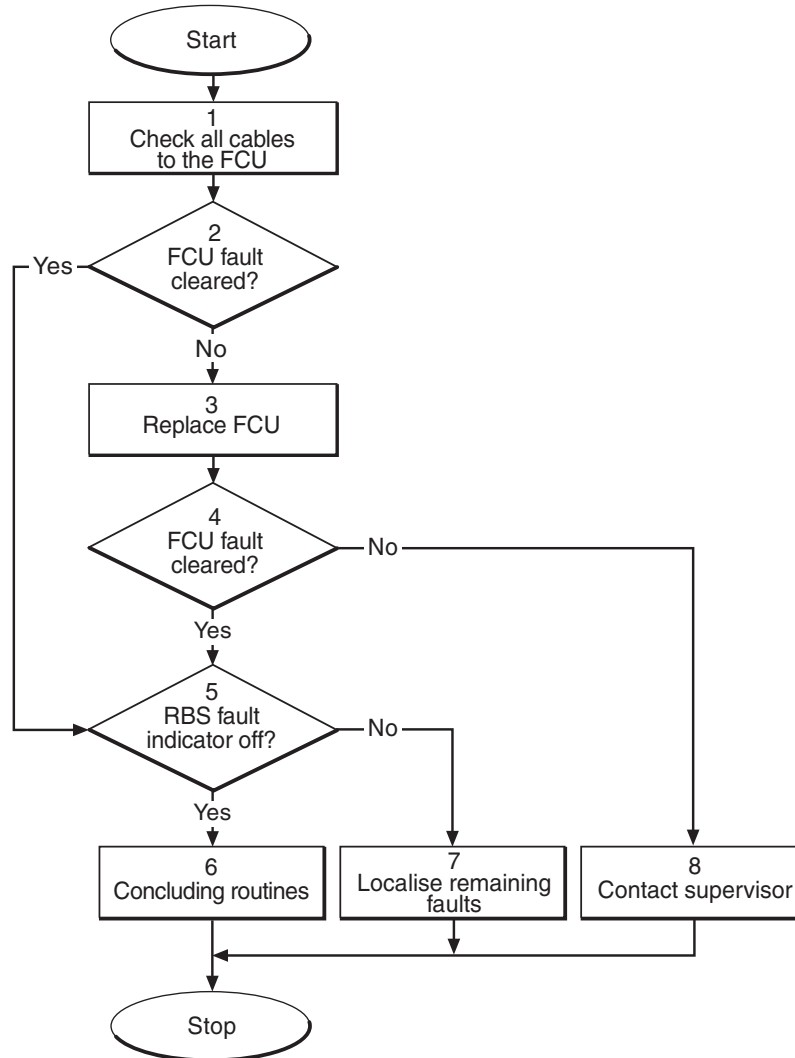
(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.21 FCU



P008331A

Figure 29 FCU fault

(1) Check all cables to the FCU

1. Check that all cables to the FCU are correctly connected and free from damages.
2. Replace any faulty cable to the FCU.

(2) FCU fault cleared?

1. Check the red Fault indicators on the FCU.
Are the Fault indicators off on the FCU?

Answer	Comment	Action
Yes	The FCU fault is cleared.	Proceed to stage (5)
No	There is still an FCU fault.	Proceed to stage (3)

Note that the status of the fans can also be checked with the OMT.

(3) Replace FCU

1. Replace the FCU according to instructions in section *FCU* in chapter *RBS Field Repair*.

(4) Fan fault cleared?

1. Check the red Fan Fault indicators on the FCU.

Are the Fan Fault indicators off on the FCU?

Answer	Comment	Action
Yes	The FCU fault is cleared.	Proceed to stage (5)
No	There is still an FCU fault.	Proceed to stage (8)

Note that the status of the fans can also be checked with the OMT.

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Concluding routines

1. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

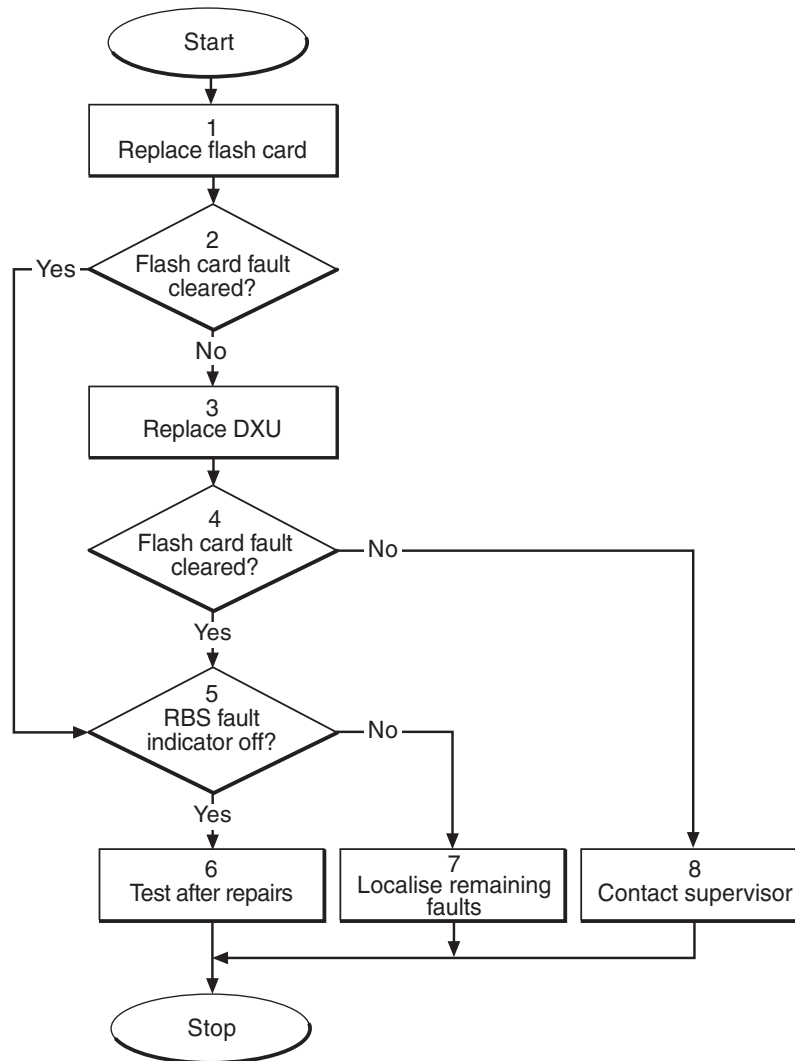
(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.22 Flash Card



P008205A

Figure 30 Flash card fault

(1) Replace flash card

1. Replace the flash card with a flash card containing the correct IDB. See instructions in section *Flash Card* in chapter *RBS Field Repair*.

(2) Flash card fault cleared?

1. Check with the OMT if the Flash card fault is cleared.
Is the fault cleared?

Answer	Comment	Action
Yes	The Flash card fault is cleared..	Proceed to stage (5)
No	There is still a Flash card fault.	Proceed to stage (3)

(3) Replace DXU

Replace the DXU. See instructions in section *DXU* in chapter *RBS Field Repair*.

(4) Flash card fault cleared?

1. Check with the OMT if the Flash card fault is cleared.

Is the fault cleared?

Answer	Comment	Action
Yes	The Flash card fault is cleared.	Proceed to stage (5)
No	There is still a Flash card fault.	Proceed to stage (8)

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Test after repair

1. Make a test calls over all TRUs. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

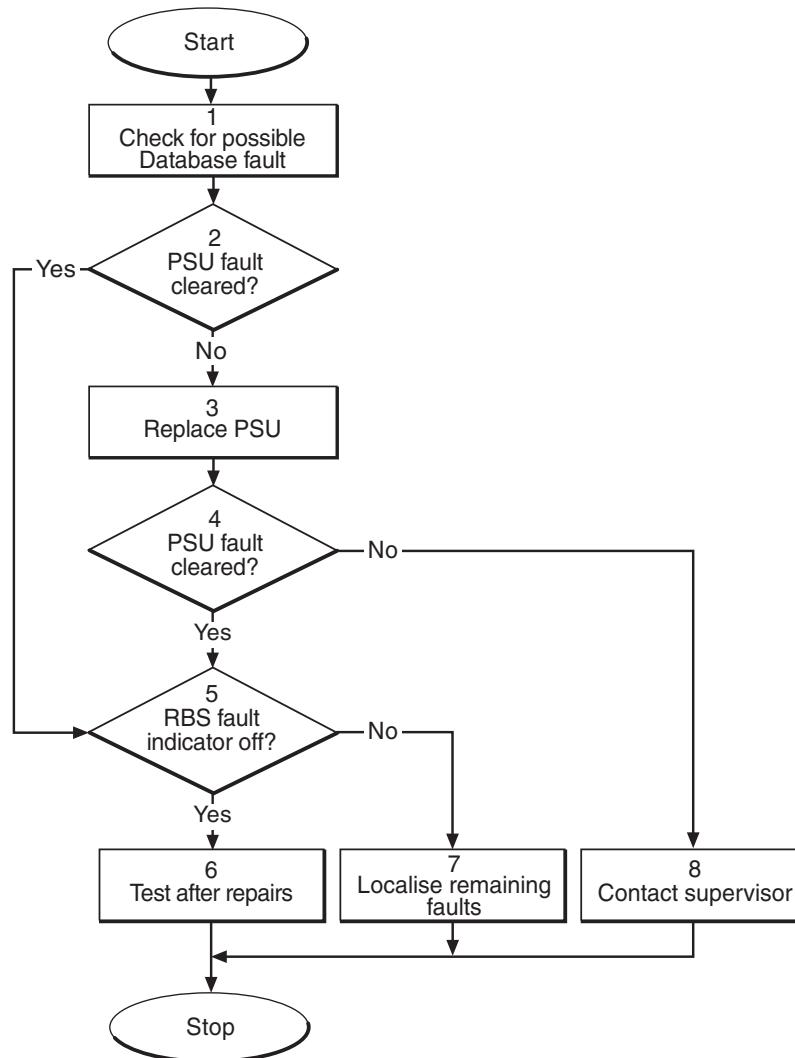
(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.23 PSU



P008206A

Figure 31 PSU fault

(1) Check for possible Database fault

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Check for the presence of any of the following faults:
 - SO CF I2A:36 – RU data base corrupted
 - SO CF I2A:46 – DB parameter fault
3. If any of the faults listed in step 2 above are found, reload the faulty database. See instructions in section *IDB* in chapter *RBS Field Repair*.

(2) PSU fault cleared?

1. Check the red Fault and the green Operational indicators on the PSU.

Is the Fault indicator off and the Operational indicator on on the PSU?

Answer	Comment	Action
Yes	The PSU fault is cleared.	Proceed to stage (5)
No	There is still a PSU fault.	Proceed to stage (3)

Note that the status of the PSU can also be checked with the OMT.

(3) Replace PSU

1. Replace the faulty PSU. See instructions in section *PSU* in chapter *RBS Field Repair*.

(4) PSU fault cleared?

1. Check the red Fault and the green Operational indicators on the PSU.

Is the Fault indicator off and the Operational indicator on on the PSU?

Answer	Comment	Action
Yes	The PSU fault is cleared.	Proceed to stage (5)
No	There is still a PSU fault.	Proceed to stage (8)

Note that the status of the PSU can also be checked with the OMT.

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Test after repair

1. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(7) Localise remaining faults

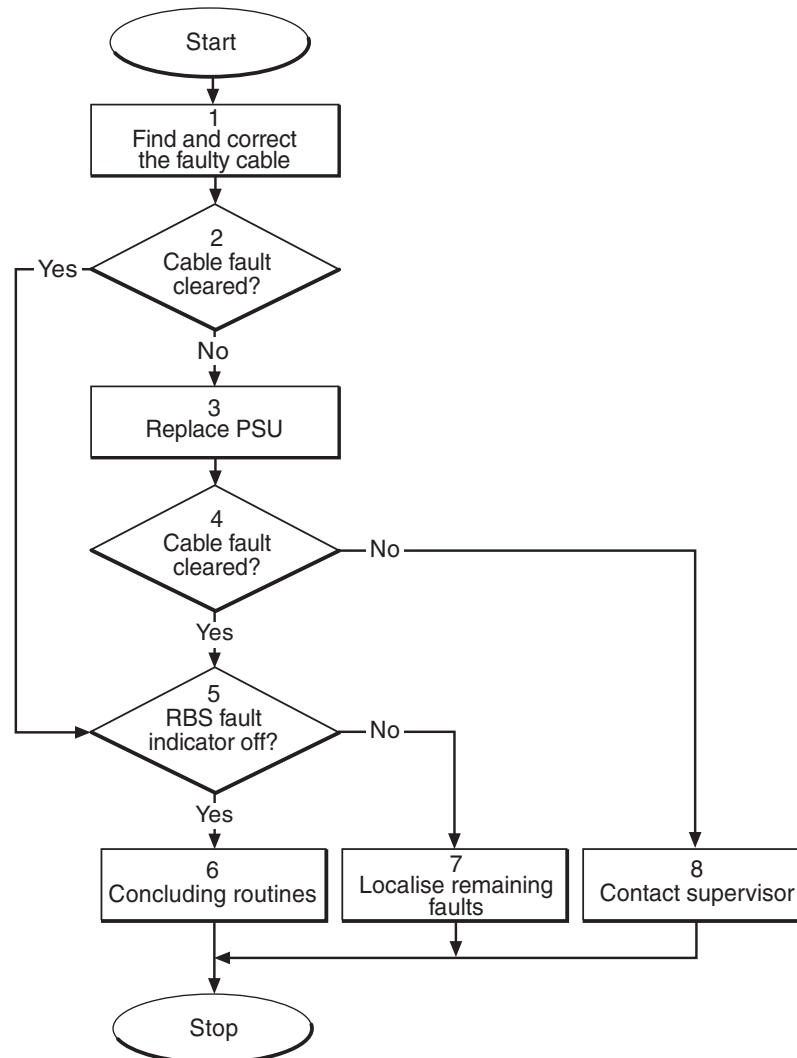
1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.24 PSU DC Cable

Note: The fault text is always *PSU DC cable*. For simplicity reasons, the expression *Cable fault* is used in the procedure below.



P008390A

Figure 32 PSU DC cable fault

(1) Find and correct the faulty cable

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faulty PSU DC cable.
3. Check that the cable is correctly connected at both ends. *See section Power Cables in chapter Cable Connections.*
4. Check that the cable connector as well as the corresponding connector in the PSU are not burned or mechanically damaged.
5. Check that the cable connector is correctly inserted into the connector in the PSU.
6. If the fault does not disappear, replace the faulty cable.

(2) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault PSU DC cable disappeared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (5)
No	There is still a cable fault.	Proceed to stage (3)

(3) Replace PSU

1. Replace the PSU connected to the suspected cable. *See instructions in section PSU in chapter RBS Field Repair.*

(4) Cable fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the fault PSU DC cable disappeared?

Answer	Comment	Action
Yes	The cable fault is cleared.	Proceed to stage (5)
No	There is still a cable fault.	Proceed to stage (8)

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Concluding routines

1. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

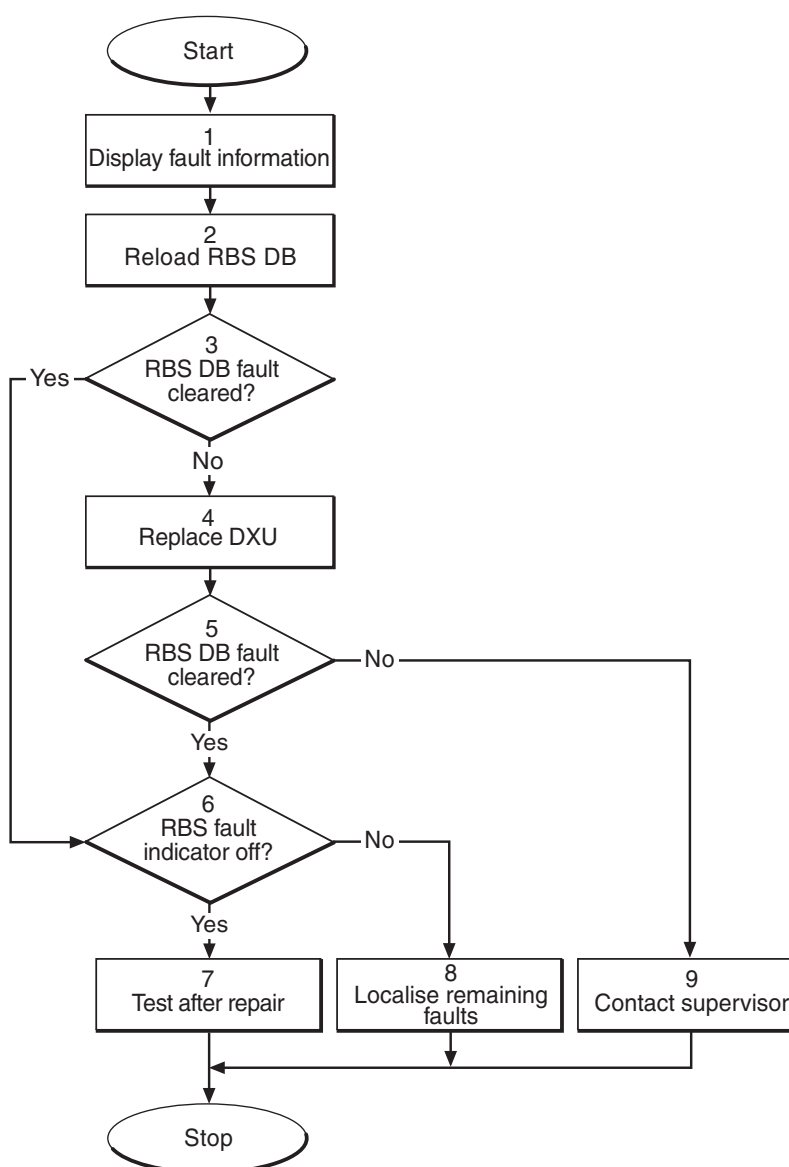
(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.25 RBS DB



P008330A

Figure 33 RBS DB fault

(1) Display fault information

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Check for the fault RBS DB.

(2) Reload RBS DB

1. Reload the faulty database according to instructions in section *IDB* in chapter *RBS Field Repair*.

(3) RBS DB fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Check for the fault RBS DB.

Is the RBS DB fault cleared?

Answer	Comment	Action
Yes	The RBS DB fault is cleared.	Proceed to stage (6)
No	There is still a RBS DB fault.	Proceed to stage (4)

(4) Replace DXU

1. Replace the faulty DXU according to instructions in section *DXU* in chapter *RBS Field Repair*.

(5) RBS DB fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Check for the fault RBS DB.

Is the RBS DB fault cleared?

Answer	Comment	Action
Yes	The RBS DB fault is cleared.	Proceed to stage (6)
No	There is still a RBS DB fault.	Proceed to stage (9)

(6) RBS fault indicator status?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (7)
No	There is still one or more faults in the RBS.	Proceed to stage (8)

Note that the status of the RBS can also be checked with the OMT.

(7) Test after repair

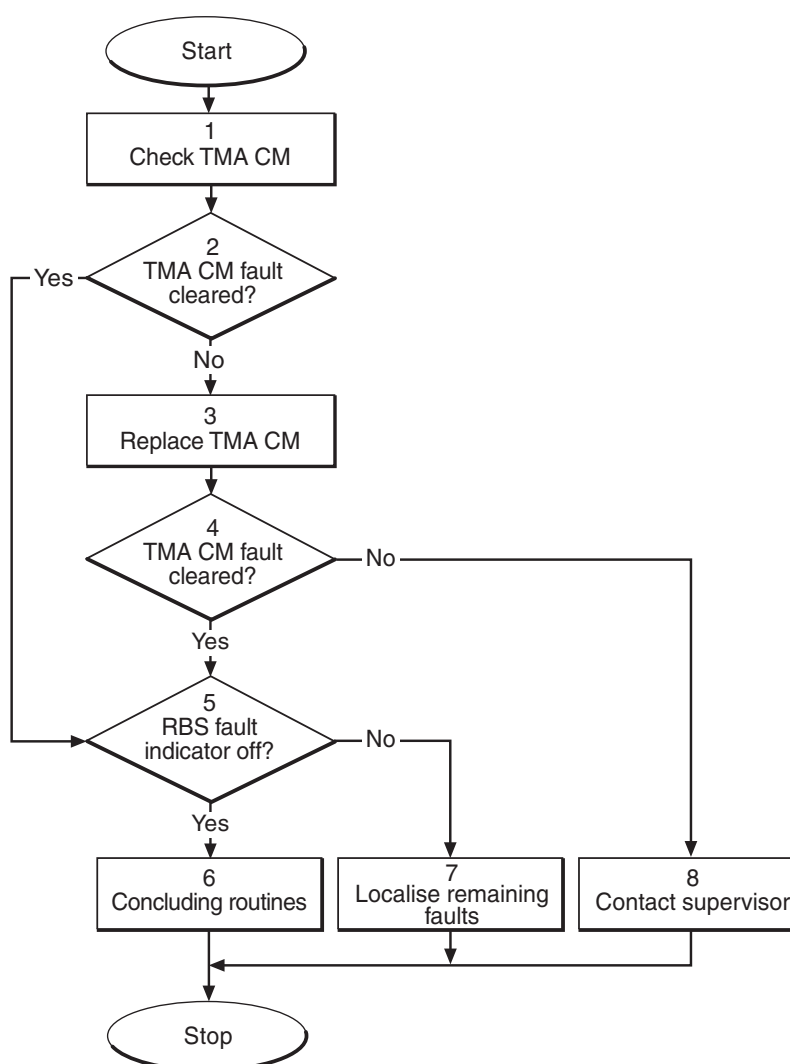
1. Proceed to section *Before Leaving the Site* in chapter *Test after Repair*.

(8) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(9) Contact the supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.26 TMA CM

P008336A

Figure 34 TMA CM fault

(1) Check TMA CM

1. Check that the TMA CM is correctly inserted and fastened into the sub-rack in the correct position.

2. Check that the TMA power connector is correctly connected to the TMA CM.

(2) TMA CM fault cleared?

1. Check the red Fault and the green Operational indicators on the TMA CM.

Is the Fault indicator off and the Operational indicator on on the TMA CM?

Answer	Comment	Action
Yes	The TMA CM fault is cleared.	Proceed to stage (5)
No	There is still a TMA CM fault.	Proceed to stage (3)

Note that the status of the TMA CM can also be checked with the OMT.

(3) Replace TMA CM

1. Replace the faulty TMA CM. See instructions in section *TMA CM* in chapter *RBS Field Repair*.

(4) TMA CM fault cleared?

1. Check the red Fault and the green Operational indicators on the TMA CM.

Is the Fault indicator off and the Operational indicator on on the TMA CM?

Answer	Comment	Action
Yes	The TMA CM fault is cleared.	Proceed to stage (5)
No	There is still a TMA CM fault.	Proceed to stage (8)

Note that the status of the TMA CM can also be checked with the OMT.

(5) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (6)
No	There is still one or more faults in the RBS.	Proceed to stage (7)

Note that the status of the RBS can also be checked with the OMT.

(6) Test after repair

1. Make test calls over all TRUs. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(7) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(8) Contact supervisor

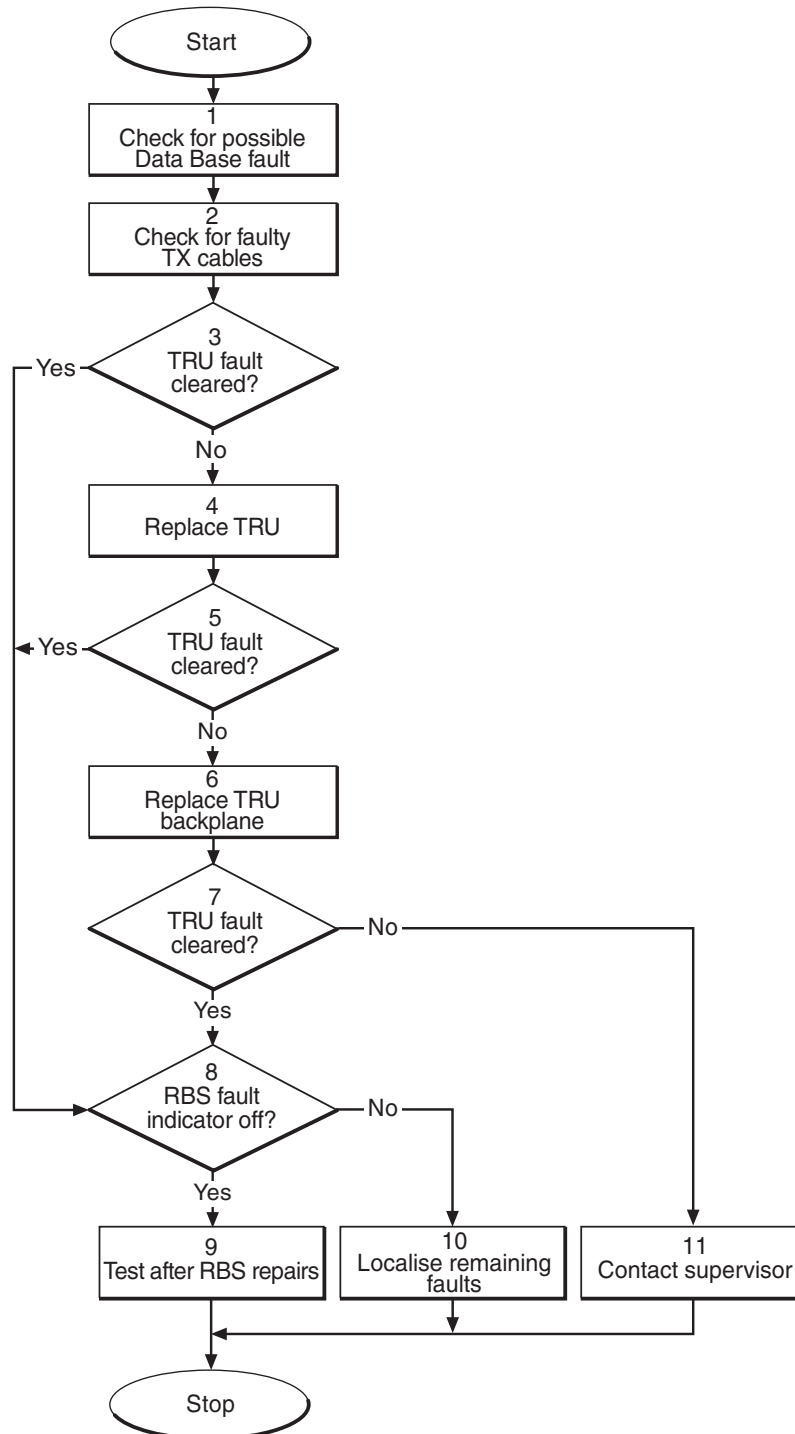
1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.27 TMA CM Cable

Note: *This section will be included in the next release.*

4.28 TRU, dTRU or ATRU

Note: The fault text is always *TRU*, *dTRU* or *ATRU*. For simplicity reasons, the expression *TRU* is used in the procedure below.



P008201A

Figure 35 TRU, dTRU or ATRU fault

(1) Check for possible database fault

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Check for the presence of any of the following faults:
 - SO TRXC I1A:14 – RU database corrupted

- SO TRXC I2A:26 – DB parameter fault
3. If any of the faults listed in step 2 above is found, reload the faulty database. See instructions in section *IDB* in chapter *RBS Field Repair*.
 4. Proceed to stage (2) below..

(2) Check for faulty TX cables

1. Replace one or both CDU-TRU TX cables according to instructions in section *CDU-TRU TX Cables* in chapter *RBS Field Repair*.

(3) TRU fault cleared?

1. Check the red Fault and the green Operational indicators on the TRU.

Is the Fault indicator off and the Operational indicator on on the TRU?

Answer	Comment	Action
Yes	The TRU fault is cleared.	Proceed to stage (8)
No	There is still a TRU fault.	Proceed to stage (4)

Note that the status of the TRU can also be checked with the OMT.

(4) Replace TRU

1. Replace the faulty TRU according to instructions in section *TRU* in chapter *RBS Field Repair*.

(5) TRU fault cleared?

1. Check the red Fault and the green Operational indicators on the TRU.

Is the Fault indicator off and the Operational indicator on on the TRU?

Answer	Comment	Action
Yes	The TRU fault is cleared.	Proceed to stage (8)
No	There is still a TRU fault.	Proceed to stage (6)

Note that the status of the TRU can also be checked with the OMT.

(6) Replace TRU backplane

The fault is probably located in the backplane.

1. Replace the TRU backplane according to section *TRU backplane* in chapter *RBS Field Repair*.

(7) TRU fault cleared?

1. Check the red Fault and the green Operational indicators on the TRU.

Is the Fault indicator off and the Operational indicator on on the TRU?

Answer	Comment	Action
Yes	The TRU fault is cleared.	Proceed to stage (8)
No	There is still a TRU fault.	Proceed to stage (11)

Note that the status of the TRU can also be checked with the OMT.

(8) RBS fault indicator status?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (9)
No	There is still one or more faults in the RBS.	Proceed to stage (10)

Note that the status of the RBS can also be checked with the OMT.

(9) Test after repair

1. Make a test call:
 - If a TRU was replaced, make a test call over that specific TRU according to section *Test Call* in chapter *Test after Repair*.
 - If the TRU backplane was replaced, make test calls over all TRUs according to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

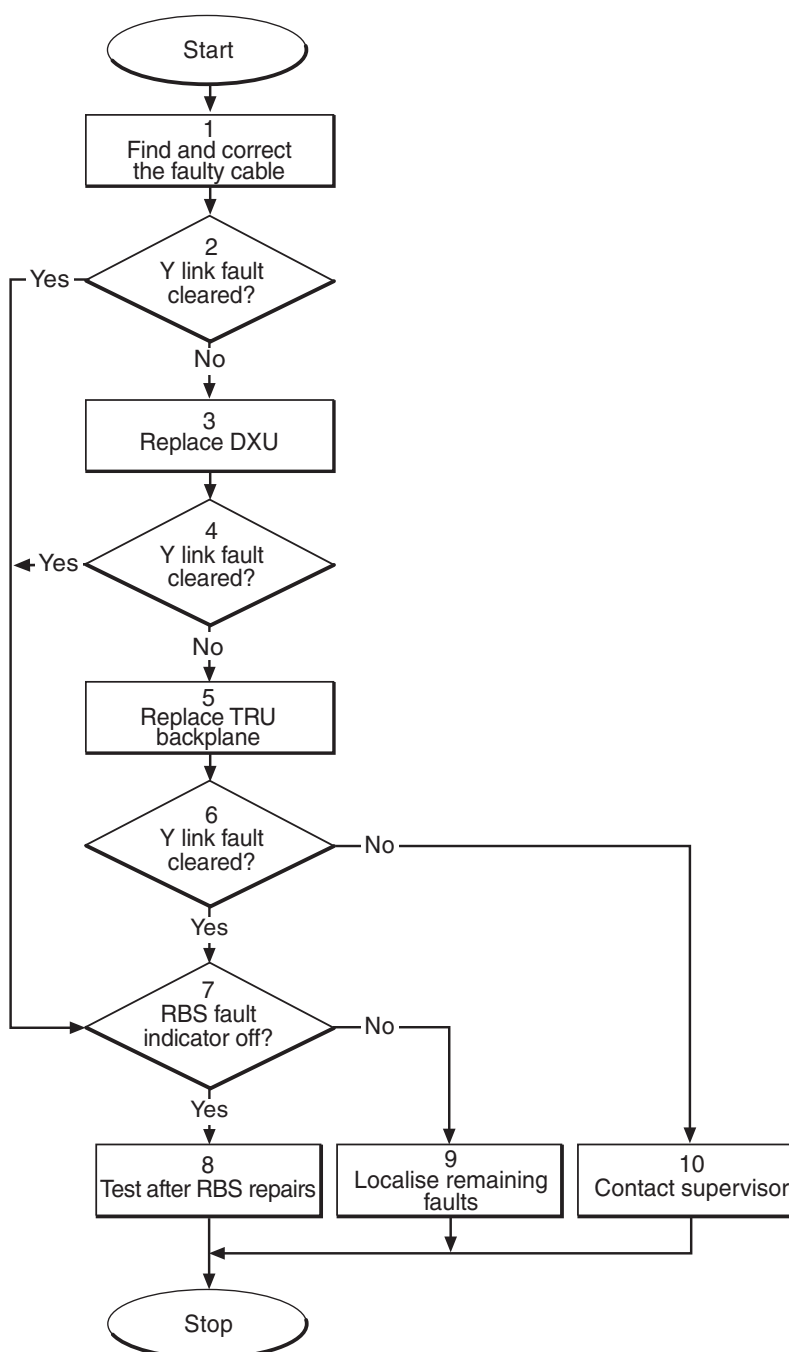
(10) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(11) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

4.29 Y Link



P008329A

Figure 36 Y link fault

(1) Find and correct the faulty cable

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faulty Y link cable.
3. Check that the cable is correctly connected at each end. *See section Backplane Cables in chapter Cable Connections.*

4. Check that the cable connectors are correctly inserted into the connectors in the DXU and the TRU backplane.
5. If the fault does not disappear, replace the faulty cable.

(2) Y link fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the Y link fault been cleared?

Answer	Comment	Action
Yes	The Y link fault is cleared.	Proceed to stage (7)
No	There is still a Y link fault.	Proceed to stage (3)

Note that the status of the Y link can also be checked with the OMT.

(3) Replace DXU

1. Replace the DXU according to instructions in section *DXU* in chapter *RBS Field Repair*.

(4) Y link fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the Y link fault been cleared?

Answer	Comment	Action
Yes	The Y link fault is cleared.	Proceed to stage (7)
No	There is still a Y link fault.	Proceed to stage (5)

Note that the status of the Y link can also be checked with the OMT.

(5) Replace TRU backplane

1. Replace the TRU backplane. See instructions in section *TRU backplane* in chapter *RBS Field Repair*.

(6) Y link fault cleared?

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.

Has the Y link fault been cleared?

Answer	Comment	Action
Yes	The Y link fault is cleared.	Proceed to stage (7)
No	There is still a Y link fault.	Proceed to stage (10)

Note that the status of the Y link can also be checked with the OMT.

(7) RBS fault indicator off?

1. Check that there are no faults remaining in the RBS. The yellow RBS fault indicator is located on the RBS Status Panel as well as on the DXU.

Is the RBS fault indicator off?

Answer	Comment	Action
Yes	There are no faults in the RBS.	Proceed to stage (8)
No	There is still one or more faults in the RBS.	Proceed to stage (9)

Note that the status of the RBS can also be checked with the OMT.

(8) Test after repair

1. Make test calls over all dTRUs. Proceed to section *Test Call* in chapter *Test after Repair*.
2. Proceed to section *Before Leaving the Site* in chapter *Concluding Routines*.

(9) Localise remaining faults

1. Use the monitor **Display Faulty RUs** in the OMT to list all RUs that are faulty.
2. Localise the faults that are listed by the OMT. See respective RU section in chapter *Fault Localisation*.

(10) Contact supervisor

1. Contact the supervisor, or manager, who will take further action, for example, to consult an FSC.

This page is intentionally left blank

5 RBS Field Repair

The instructions in this chapter describe the replacement of RUs and how to put the RBS into operation after a fault has been localised in the RBS.

5.1 Local/remote Mode

The Local/remote button can change RU mode between local and remote control. A Local/remote button is located on the DXU and the dTRUs. RUs in local mode do not have communication with the BSC via the Abis interface and are therefore isolated from the BSC.

The Local/remote button is used to isolate the unit from the BSC, for example, when exchanging faulty units in the RBS.

RUs cannot be changed to remote mode until the data base has been downloaded to the DXU.

Below is a brief description of the two different changes of state and how to stop a change of mode to remote.

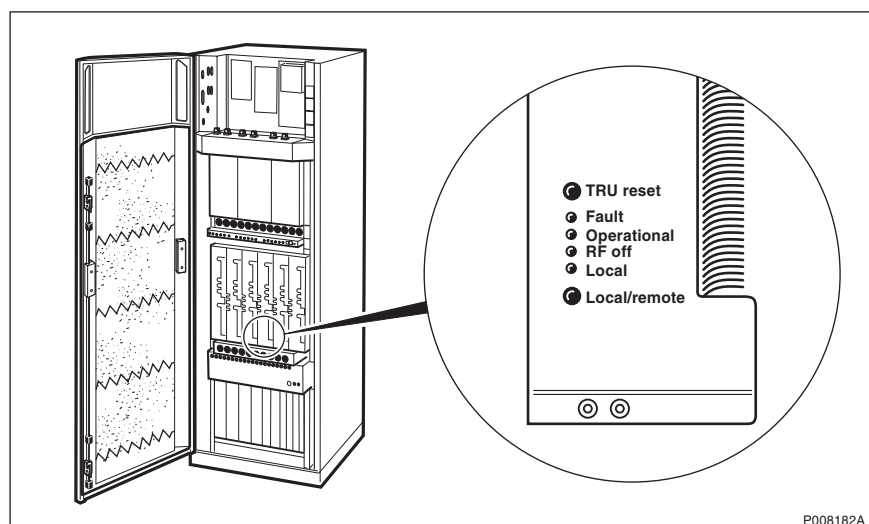


Figure 37 Control panel on dTRU

5.1.1 Changing RU Mode from Remote to Local

- The Local/remote button is pressed.
- The system disables the Local/remote button in order to prevent mistakes.
- The Local mode indicator starts flashing to indicate that a change of RU mode to local is in progress.
- The Operational indicator turns off in order to indicate that the RU has been taken out of operation.
- A fault report message is sent to the BSC via the Abis interface. This means that an external condition class 1 alarm will arise in the BSC.
- The communication link on the Abis interface is disconnected and the RU mode is changed to local.

- The indicators RF off and Local mode both turn on. The Operational indicator is also turned on, if the RU is free from class 1 faults, in order to indicate that the RU is in local operation.
- The system enables the Local/remote button again.

5.1.2 Changing RU Mode from Local to Remote

- The Local/remote button is pressed.
- The Local mode indicator starts flashing to indicate that a change of RU mode to remote is in progress.
- The Operational indicator turns off in order to indicate that the RU has been taken out of operation.
- The communication link on the Abis interface is established by order from the BSC. The RU is changed to remote mode immediately after the link towards the BSC has been established.
- The indicators RF off and Local mode both turn off.
- In order to indicate that the RU is ready to carry traffic, the Operational indicator turns on. Note that this will only happen if the RU is considered as operational by the BSC. (For example, the unit may be blocked from the BSC.)

5.1.3 Stopping a Change of RU Mode from Local to Remote

If the Local/remote button is pushed while the Local mode indicator is flashing, the change of RU mode to remote is interrupted.

Note: This function is only valid during a change of RU mode from local to remote.

- The Local/remote button is pressed.
- The attempt to enable a connection with the BSC will stop.
- The RU will then remain in local mode with the communication link disconnected and the indicators RF off and Local mode both remain on.

5.2 ACCU

The instructions in this section describe the replacement of the entire ACCU.

DANGER



High voltage is used in the operation of this equipment. Both direct contact with the mains power and indirect contact via damp items or moisture can be fatal.

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. (If supplied) Isolate the RBS cabinet from battery power in the external battery cabinet.
5. Switch off the mains power in the ACCU.
6. Switch off the mains supply to the RBS cabinet.
7. Disconnect the cables from the left connection plate.
8. Remove the left connection plate.
9. (If no bias injectors are mounted) Remove the antenna feeder cables to the left.
10. Disconnect the DC cable connected to the bias injector (if mounted).
11. Remove the two bias injectors to the left (if mounted).

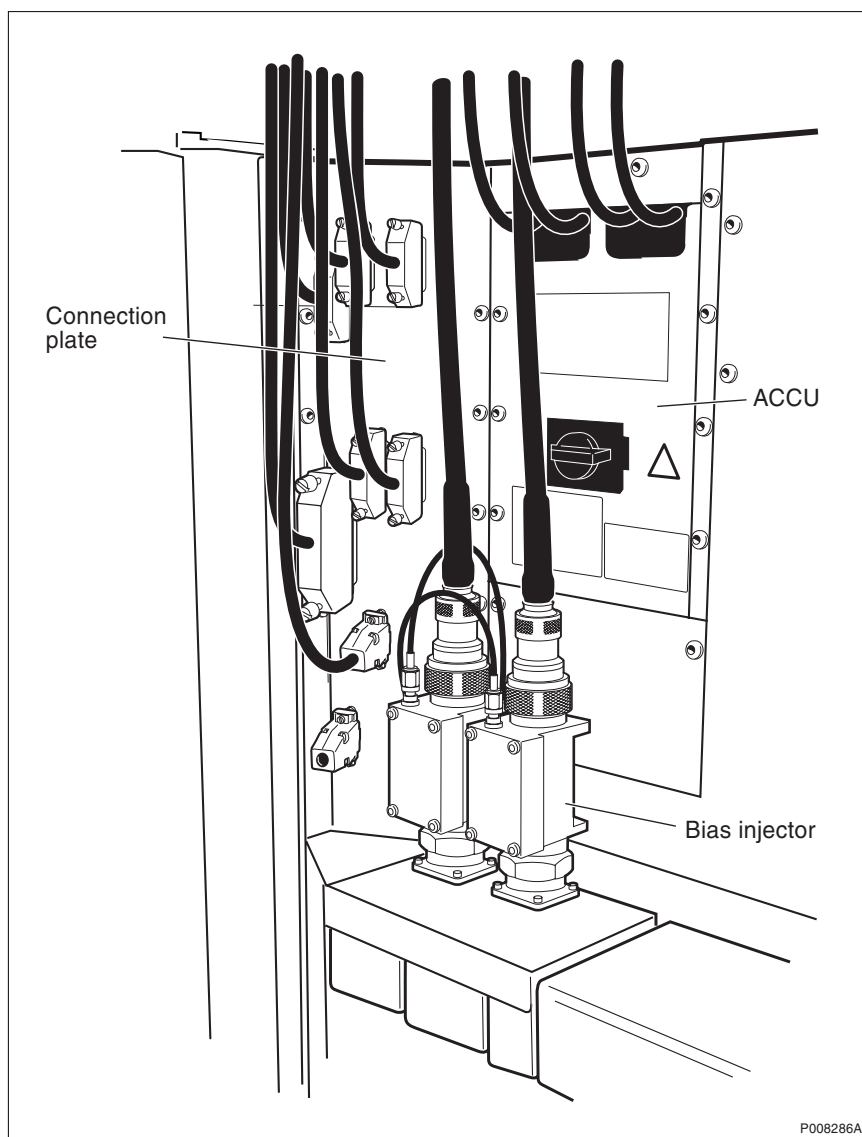


Figure 38 Cables, connection plate and ACCU

12. Remove the ACCU cover plate.
13. Disconnect the AC mains cables from the top of the AC mains switch.

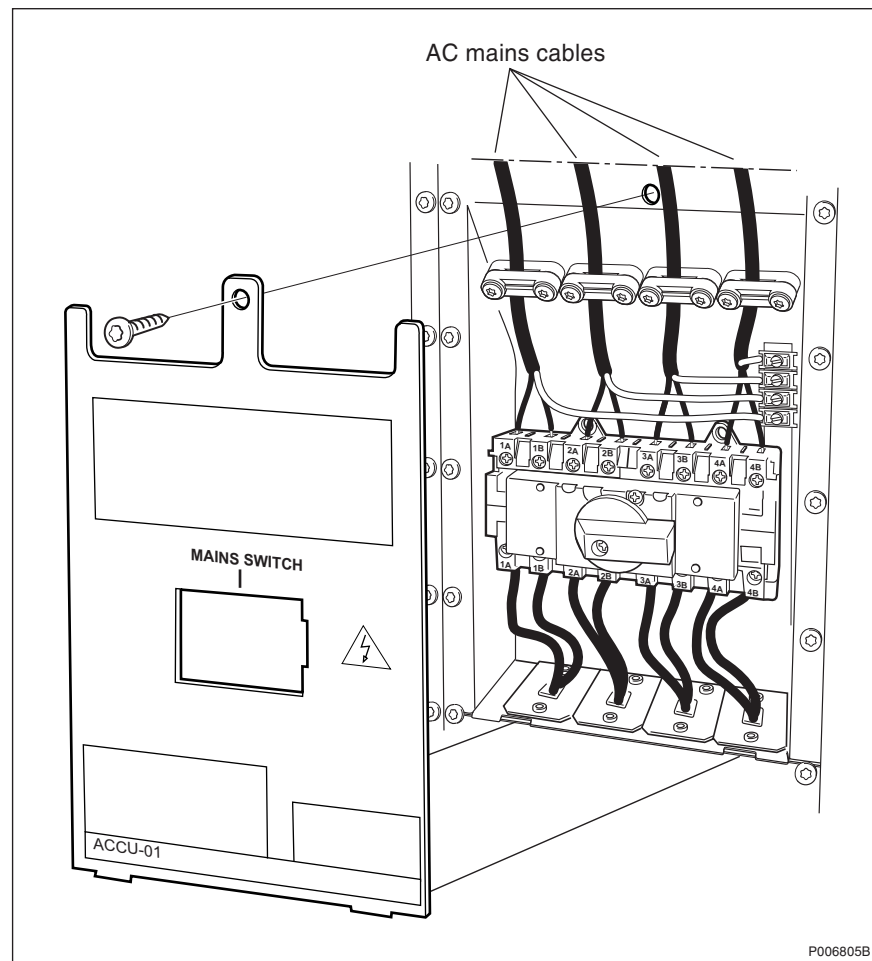


Figure 39 ACCU

14. Remove the ACCU.
15. Disconnect the ACCU cables connected to the PSUs.
16. Connect the new ACCUs cables to the PSUs.
17. Mount the ACCU.
18. Reconnect the AC mains cables to the top of the AC mains switch.
19. Reattach the ACCU cover plate.
20. Remount the bias injectors (if mounted).
21. Reconnect the DC cable connected to the bias injector (if mounted).
22. (If no bias injectors are mounted) Reconnect the antenna feeder cables.
23. Reattach the left connection plate and reconnect the cables.
24. Switch on the mains supply to the RBS cabinet.
25. Switch on the mains power in the ACCU.
26. (If supplied) Connect the external battery cabinet to the RBS cabinet.

27. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off the DXU is in remote mode.

Note: Unless under contractual warranty, after replacement, the ACCU shall be repaired locally at the RBS site or in a local repair shop. If the ACCU is irreparable, it shall be disposed of locally by the customer. Do not return the ACCU to Ericsson for replacement, repair or disposal.

5.3 Antenna Feeder

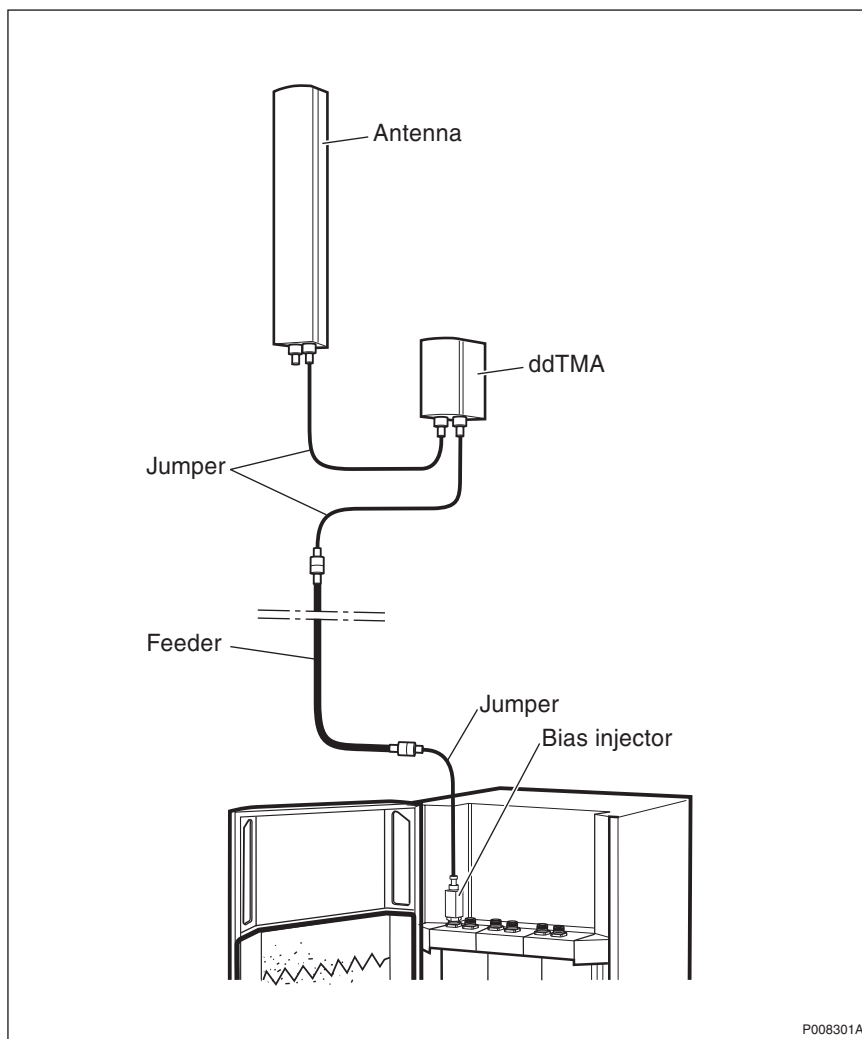


Figure 40 Antenna feeder

Note: Care must be taken when disconnecting and connecting the antenna feeder cable at the top of the bias injector to avoid damaging the bias injector's DC connector.

Note: When mounting the antenna feeder cable, a tightening torque, as specified by the feeder manufacturer, must be used. Exceeding the maximum torque may damage the feeder connector, and thus breaching the antenna feeder cable guarantee.

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the dTRU(s). The Local mode indicator will start flashing.
3. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU(s) is in local mode.
4. (Without bias injector) Disconnect the antenna feeder cable from the CDU.
(With bias injector) Disconnect the antenna feeder cable from the bias injector.
5. Disconnect the antenna feeder cable from the antenna.
6. Connect the new antenna feeder cable to the antenna.
7. (Without bias injector) Connect the new antenna feeder cable to the CDU.
(With bias injector) Connect the new antenna feeder cable to the bias injector.
8. Press the Local/remote button on the dTRU(s). The Local mode indicator will start flashing and when it turns off, the dTRU(s) is in remote mode.

5.4 Bias Injector

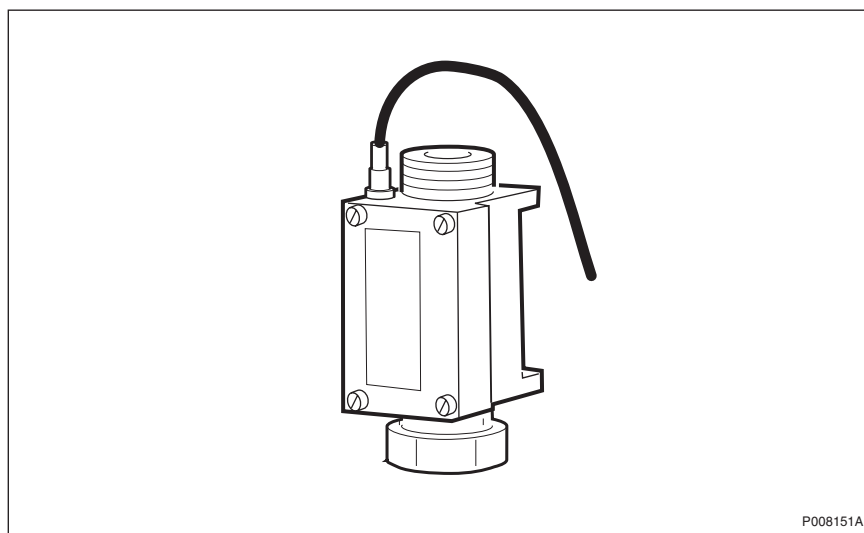


Figure 41 Bias injector

Note: Care must be taken when disconnecting and connecting the antenna feeder cable at the top of the bias injector to avoid damaging the bias injector's DC connector.

Note: When mounting the antenna feeder cable, a tightening torque, as specified by the feeder manufacturer, must be used. Exceeding the maximum torque may damage the

feeder connector, and thus breaching the antenna feeder cable guarantee.

1. Inform the OMC operator that a bias injector will be replaced.
2. Press the Local/remote button on the dTRUs that are connected to the faulty bias injector. The Local mode indicator will start flashing.
3. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRUs are in local mode.
4. Disconnect the DC cable connected to the bias injector.
5. Disconnect the antenna feeder cable connected to the bias injector.
6. Replace the faulty bias injector.
7. Reconnect the antenna feeder cable to the new bias injector.
8. Reconnect the DC cable to the bias injector.
9. Press the Local/remote button on the dTRUs. The Local mode indicator will start flashing and when it turns off the dTRUs are in remote mode.

5.5 CDU

Note: CDUs are marked on the front with a label showing the frequency. Make sure that the appropriate CDU is available.

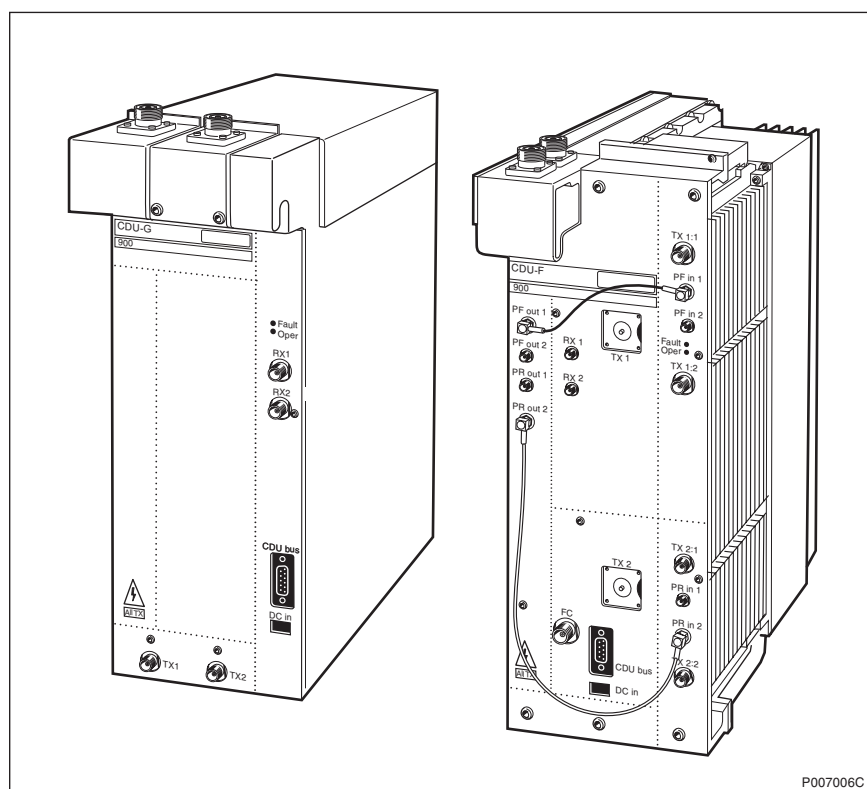


Figure 42 CDU-G and CDU-F

CAUTION



Radio frequency (RF) radiation from antenna systems can endanger your health.

Note: Care must be taken when disconnecting and connecting the antenna feeder cable at the top of the bias injector to avoid damaging the bias injector's DC connector.

Note: When mounting the antenna feeder cable, a tightening torque, as specified by the feeder manufacturer, must be used. Exceeding the maximum torque may damage the feeder connector, and thus breaching the antenna feeder cable guarantee.

1. Inform the OMC operator that the CDU will be replaced.
2. Press the Local/remote button on the dTRUs that are connected to the faulty CDU. The Local mode indicator will start flashing.

Note: In certain configurations, three CDU-Fs are connected. In these cases, all dTRUs connected to the CDU-Fs connected to the faulty CDU-F must be set in local mode.

3. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU(s) is in local mode.

4. Switch off the circuit breaker CDU 1, CDU 2 or CDU 3.
- Note:** To prevent damage to TRUs and exposure to RF radiation, be sure that the indicators RF off and Local mode on the TRUs, that are connected to the faulty CDU, all have a fixed yellow light before taking any further actions.
5. (With bias injectors) Remove the bias injectors connected to the faulty CDU. See *Section 5.4 Bias Injector on page 99*.
(Without bias injectors) Remove the antenna feeder cables.
 6. Disconnect all cables connected to the faulty CDU.
 7. If the CDU is equipped with a CNU, move the CNU to the new CDU. See instructions in *Section 5.9 CNU on page 106*.
 8. Replace the CDU.
 9. (With bias injectors) Reattach the bias injectors.
(Without bias injectors) Reconnect the antenna feeder cables.
 10. Reconnect all cables.
 11. Switch on the circuit breaker CDU 1, CDU 2 or CDU 3.
 12. Press DXU Reset on the DXU. The RU information from the new CDU will then be loaded into the RBS data base.
 13. Press the Local/remote buttons on both dTRUs that are connected to the new CDU. The Local mode indicator will start flashing and when it turns off the dTRUs are in remote mode.
- Note:** If baseband hopping is used, the hopping sequence can only be re-initiated by the BSC/MSC. After placing a dTRU in remote mode, contact the BSC/MSC and request they take the required action.
- Note:** After replacement, the CDU must be returned to Ericsson for repair. Maintenance personnel must attach a repair delivery note, LZF 084 64 (Blue Tag), to the CDU. The repair delivery note must include a clear description of the fault found. See the chapter *Concluding Routines* for instructions on completing a repair deliver note.

5.6 CDU Bus

1. Press the Local/remote button on the dTRU(s). The Local mode indicator will start flashing.
2. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU(s) is in local mode.
3. Disconnect the CDU Bus cable attached to the CDU.
4. Connect the new CDU Bus cable to the CDU.
5. Remove the IDM.
6. Remove the dTRU.

5.7 CDU-CXU and the TRU-CXU RX Cables

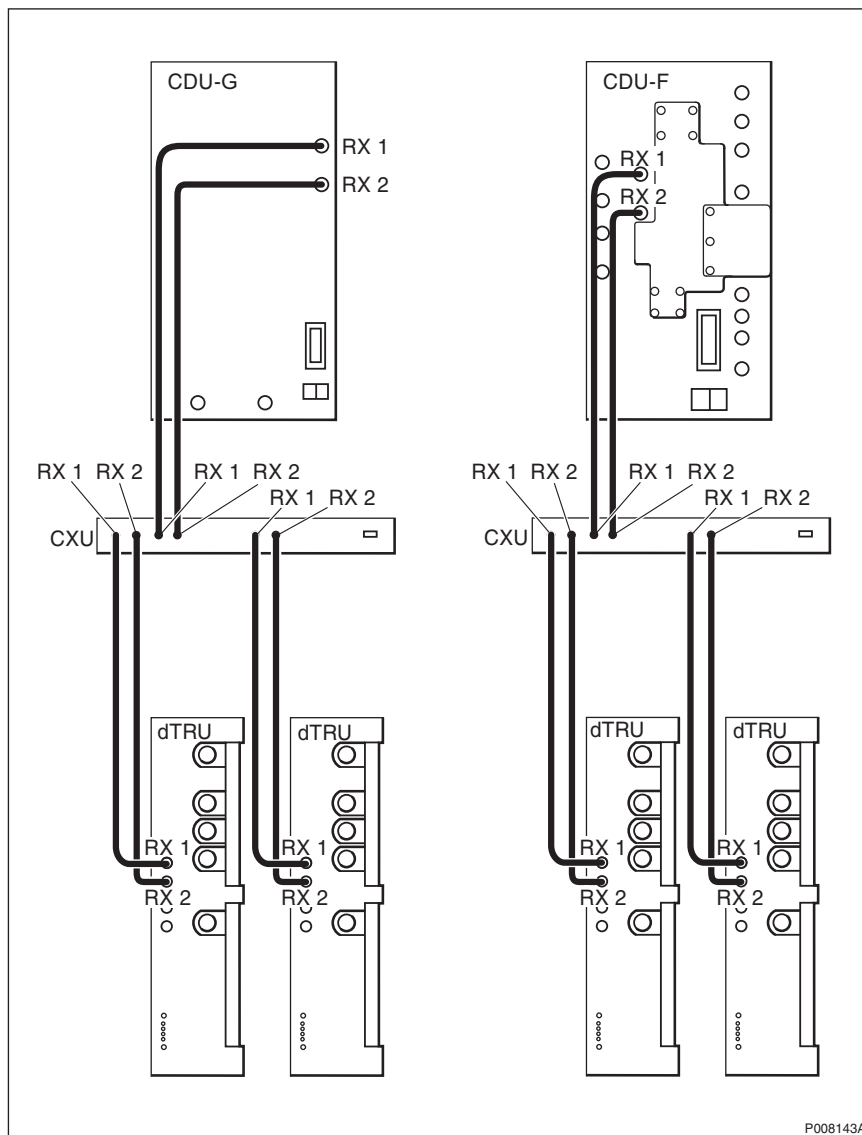


Figure 43 CDU-CXU and TRU-CXU RX cables

CAUTION



Radio frequency (RF) radiation from antenna systems can endanger your health.

1. Press the Local/remote button on the dTRU that is connected to the faulty cable. The Local mode indicator will start flashing.
2. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU is in local mode.

Note: To prevent damage to dTRUs and exposure to RF radiation, ensure that the Local mode indicator on the dTRU that is

connected to the faulty CDU-TRU RX cable has a fixed yellow light before taking any further action.

3. Replace both the RX1 and RX2 cables.
4. Press the TRU reset button on the dTRU.
5. Press the Local/remote button on the dTRU that is connected to the new cable(s). The Local mode indicator will start flashing and when it turns off the dTRU is in remote mode.

Note: Unless under contractual warranty, after replacement, the cables shall be disposed of locally. Do not return the cables to Ericsson for replacement, repair or disposal.

5.8 CDU-TRU TX Cables

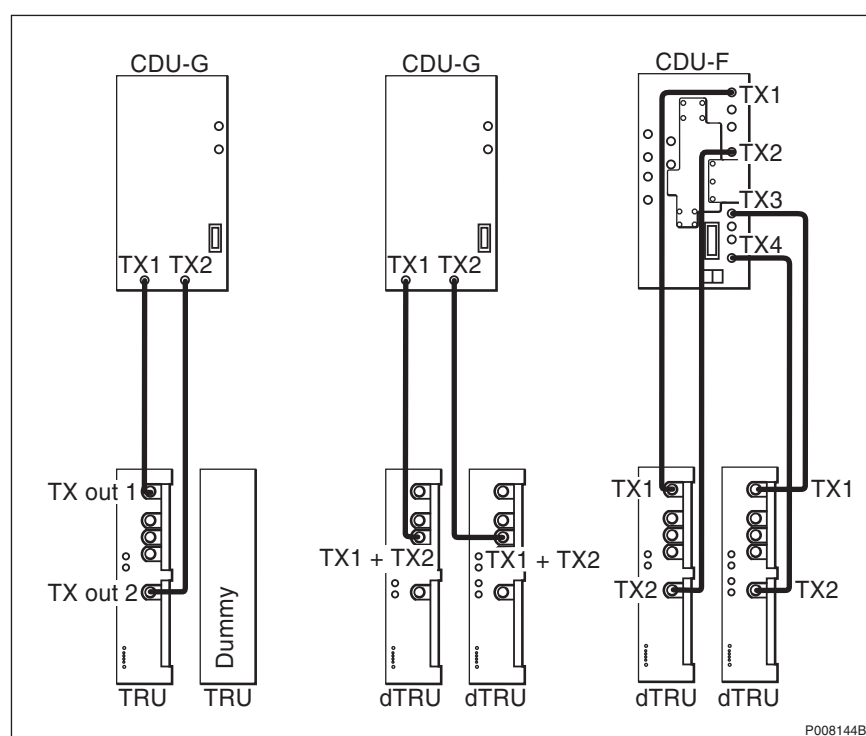


Figure 44 CDU-TRU TX cables

CAUTION



Radio frequency (RF) radiation from antenna systems can endanger your health.

1. Press the Local/remote button on the dTRU that is connected to the faulty cable. The Local mode indicator will start flashing.
2. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU is in local mode.

Note: To prevent damage to dTRUs and exposure to RF radiation, ensure that the Local mode indicator on the dTRU that is connected to the faulty CDU-TRU TX cable has a fixed yellow light before taking any further action.

3. Replace the cable.
4. Press the TRU reset button on the dTRU.
5. Press the Local/remote button on the dTRU that is connected to the new cable(s). The Local mode indicator will start flashing and when it turns off the dTRU is in remote mode.

Note: Unless under contractual warranty, after replacement, the cables shall be disposed of locally. Do not return the cables to Ericsson for replacement, repair or disposal.

5.9 CNU

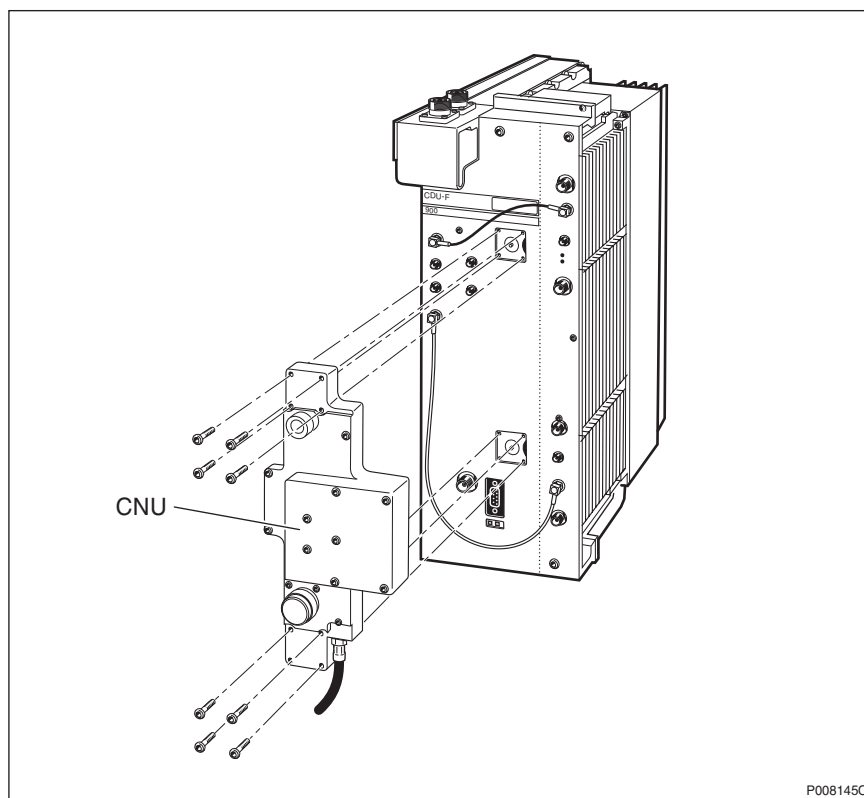


Figure 45 CNU

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the dTRU(s). The Local mode indicator will start flashing.
3. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU(s) is in local mode.
4. Switch off circuit breaker CDU 1, CDU 2 or CDU 3 on the IDM.
5. Disconnect the cable from the CNU.

6. Remove the CNU by unscrewing the eight screws. See figure above.
7. Attach the new CNU to the CDU-F and tighten the eight screws.
8. Connect the cable from the CNU to the CDU.
9. Switch on circuit breaker CDU 1, CDU 2 or CDU 3 on the IDM.
10. Press the Local/remote button on the dTRU(s). The Local mode indicator will start flashing and when it turns off, the dTRU(s) is in remote mode.

5.10 CXU

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. Switch off circuit breaker CXU1–2 on the IDM.
5. Remove all cables connected to the CXU.
6. Replace the CXU and reconnect the disconnected cables.
7. Switch on circuit breaker CXU1–2 on the IDM.
8. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
9. When the Local mode indicator is turned off, the DXU is in remote mode.
10. Check that the RBS fault indicator (DXU) is off. This means that there are no active faults in the RBS.

5.11 DCCU

The instructions in this section describe the replacement of the entire DCCU.

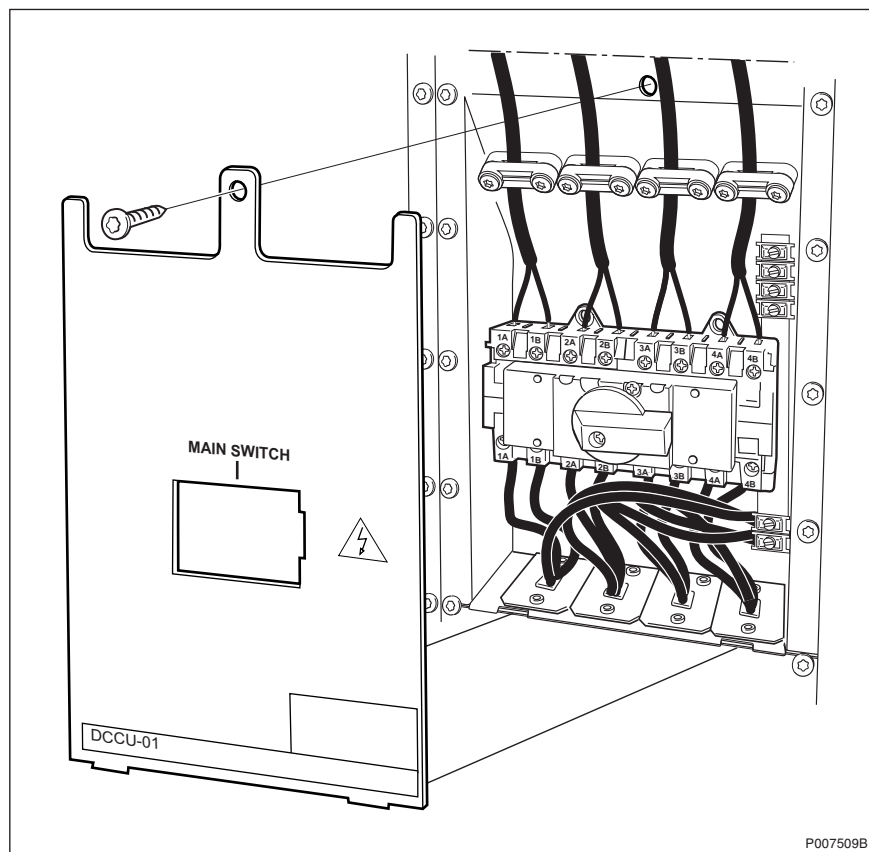
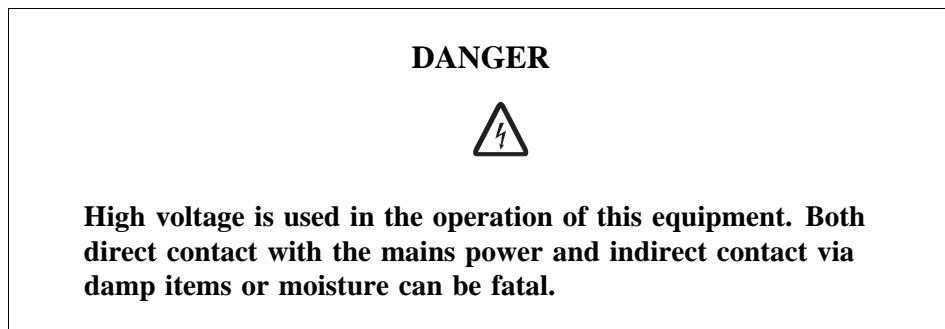


Figure 46 DCCU

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. (If supplied) Isolate the RBS cabinet from battery power in the external battery cabinet.
5. Switch off the main power in the DCCU.

6. Switch off the mains supply to the RBS cabinet.
7. Disconnect the cables from the left connection plate.
8. Remove the connection plate.
9. (If no bias injectors are mounted) Remove the antenna feeder cables to the left.
10. Disconnect the DC cable connected to the bias injector (if mounted).
11. Remove the two bias injectors to the left (if mounted).
12. Remove the DCCU cover plate.
13. Disconnect the DC supply cables from the top of the DC main switch.
14. Remove the DCCU.
15. Disconnect the DCCU cables connected to the PSUs.
16. Connect the new DCCUs cables to the PSUs.
17. Mount the new DCCU.
18. Reconnect the DC supply cables to the top of the DC main switch.
19. Reattach the DCCU cover plate.
20. Remount the bias injectors (if mounted).
21. Reconnect the DC cable connected to the bias injector (if mounted).
22. (If no bias injectors are mounted) Reconnect the antenna feeder cables.
23. Reattach the connection plate and reconnect the cables.
24. Switch on the mains supply to the RBS cabinet.
25. Switch on the main power in the DCCU.
26. (If supplied) Connect the external battery cabinet to the RBS cabinet.
27. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off the DXU is in remote mode.

5.12 DC Filter

Note: These instructions are valid only for cabinets equipped with external batteries.

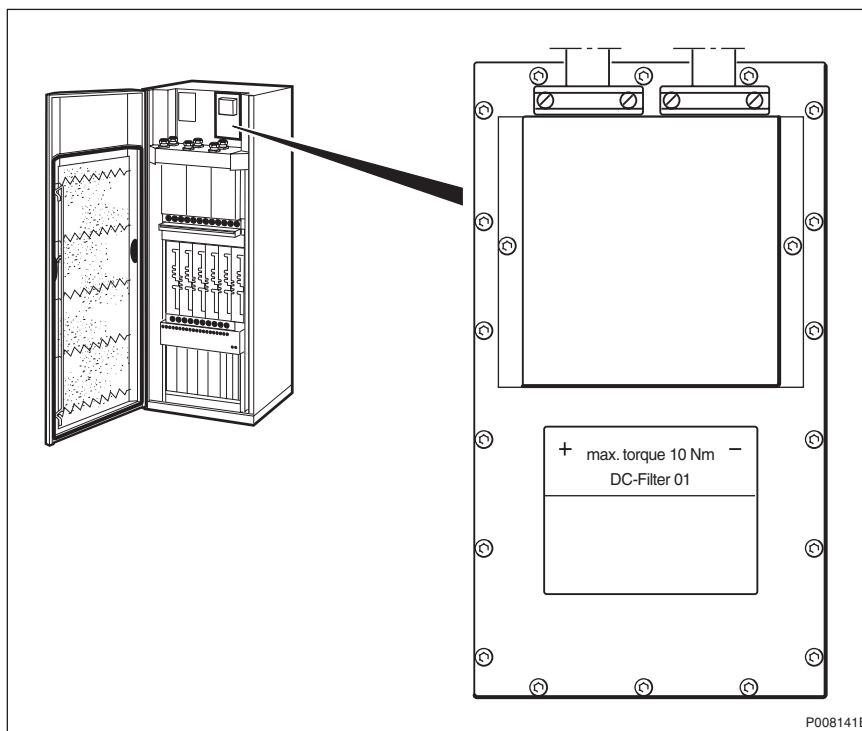


Figure 47 DC filter

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. (If supplied) Isolate the RBS cabinet from battery power in the external battery cabinet.
5. Switch off the main power in the ACCU or DCCU.
6. Remove the bias injectors.
7. Remove the DCCU cover.
8. Disconnect the DC cables connected to the DC filter.
9. Remove the connection plate to the right.
10. Remove the DC filter.
11. Remove the IDM front panel.
12. Disconnect the DC cables connected to the IDM.
13. Connect the DC cables from the DC filter to the IDM and reattach the IDM front panel.
14. Mount the replacement DC filter.
15. Reconnect the DC cables to the DC filter, mount the DCCU cover, the connection plate to the right and the bias injectors.

16. Switch on the main power in the ACCU or DCCU.
17. (If supplied) Connect the external battery cabinet to the RBS cabinet.
18. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off the DXU is in remote mode.

Note: Unless under contractual warranty, after replacement, the DC filter shall be disposed of locally. Do not return the DC filter to Ericsson for replacement, repair or disposal.

5.13 dTRU

See Section 5.26 TRU on page 123.

5.14 DXU

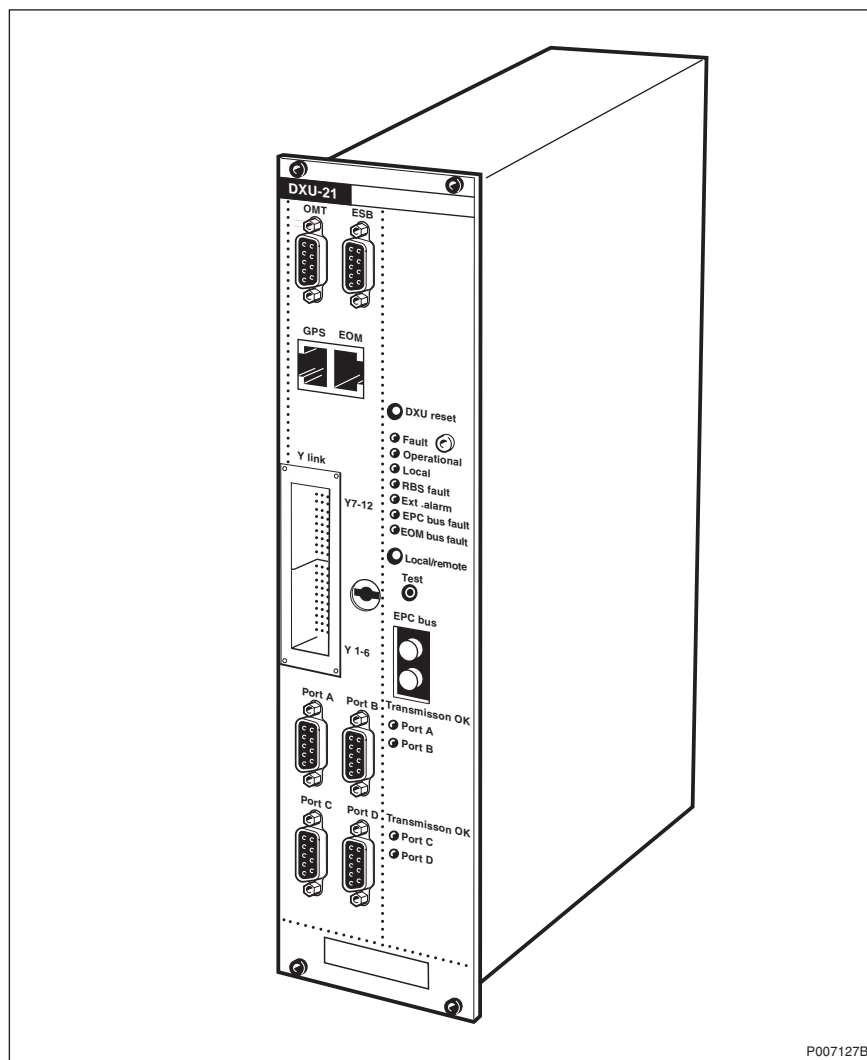


Figure 48 DXU-21

1. Inform the OMC operator that the RBS will be removed from service temporarily.

2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. Switch off circuit breaker DXU/Sys.volt.sens on the IDM.
5. Remove all cables connected to the DXU.
6. Remove the Flash Card from DXU and place it in the new DXU before sending the DXU to the Repair Centre.

Note: If the Flash Card is faulty, reload the IDB. See *Section 5.19 Flash Card on page 117*.

7. Replace the DXU and reconnect the disconnected cables.
8. Switch on circuit breaker DXU/Sys.volt.sens on the IDM.
9. Press the DXU reset button on the DXU. This will distribute the IDB to the RUs.
10. Wait until the Operational indicator on the new DXU has a fixed green light.
11. Press the Local/remote button on the new DXU. The Local/remote button will start flashing and when it turns off, the DXU is in remote mode.
12. Make a request to the OMC operator to check that all MOs are operational.

Note: After replacement, the DXU must be returned to Ericsson for repair. Maintenance personnel must attach a repair delivery note, LZF 084 64 (Blue Tag), to the DXU. The repair delivery note must include a clear description of the fault found. See chapter *Concluding Routines* for instructions on completing a repair delivery note.

5.15 DXU Backplane

Note: When changing the DXU backplane, see chapter *Cable Connections*. Note the position of RUs within the original sub-rack, so that they can be replaced into the correct position without changing the IDB.

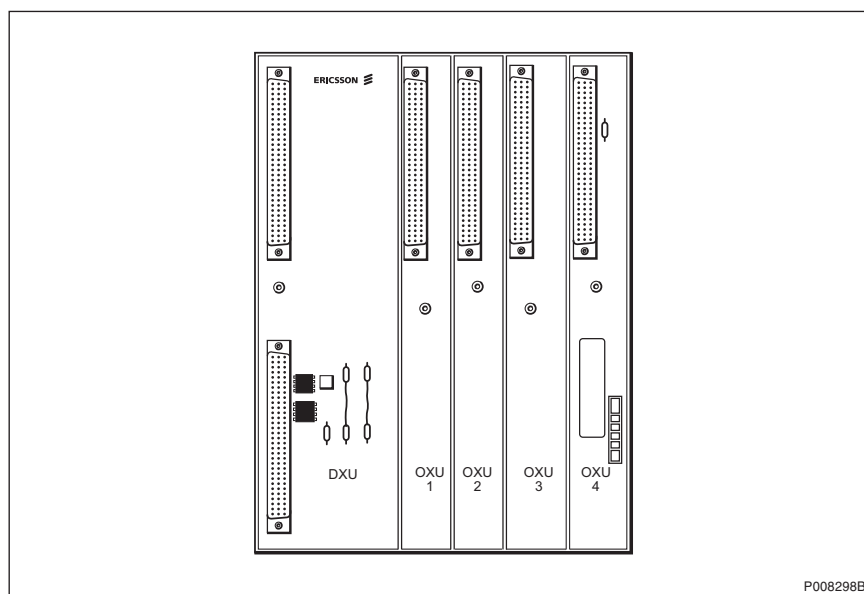


Figure 49 DXU backplane

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. (If supplied) Isolate the RBS cabinet from battery power in the external battery cabinet.
5. Switch off the main power in the ACCU or DCCU.
6. Disconnect all the cables to the PSUs, DXU and TMA CM.
7. Take out the PSUs, TMA CM and DXU.
8. Remove the DXU sub-rack.
9. Disconnect all the cables to the DXU backplane.
10. Remove the DXU backplane from the DXU sub-rack.
11. Mount a new DXU backplane to the DXU sub-rack.
12. Connect all the cables to the DXU backplane and insert the DXU sub-rack.
13. Remount the PSUs, TMA CM and DXU.
14. Connect the cables to the RUs.
15. Reconnect the cabinet to the external power source (either AC or DC).
16. Switch on the main power in the ACCU or DCCU.
17. (If supplied) Connect the external battery cabinet to the RBS cabinet.

18. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off, the DXU is in remote mode.

Note: Unless under contractual warranty, after replacement, the DXU backplane shall be disposed of locally. Do not return the DXU backplane to Ericsson for replacement, repair or disposal.

5.16 ESB Cable

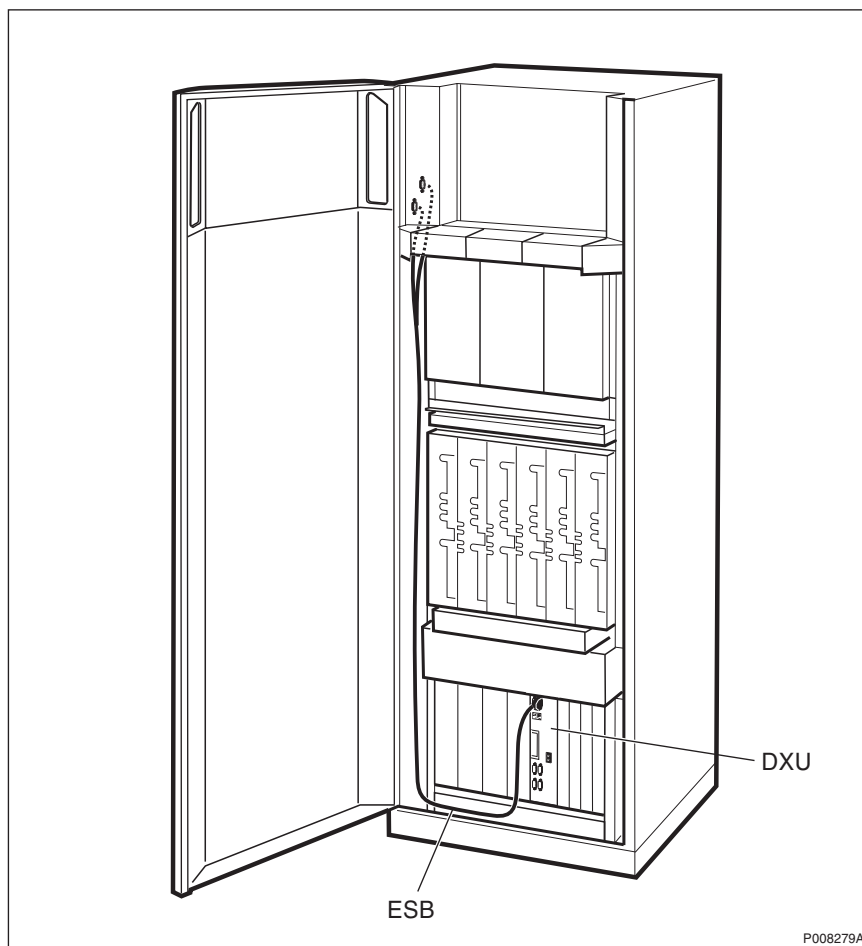


Figure 50 ESB cable

1. Remove the ESB cable from the DXU.
2. Remove the left connection plate and disconnect the ESB cable.
3. Connect the new ESB cable to the connection plate and remount the connection plate.
4. Connect the new ESB cable to the DXU.

5.17 Fans

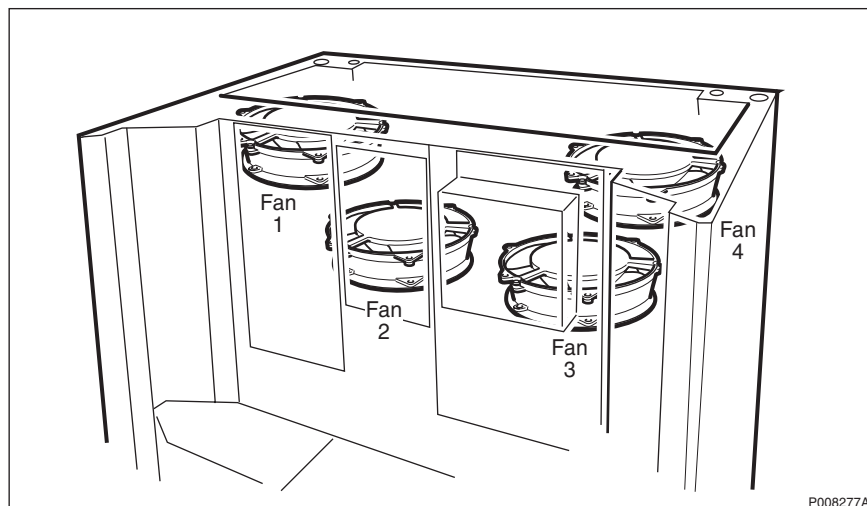


Figure 51 Fans

1. Switch off circuit breaker Fan 1, Fan 2, Fan 3 or Fan 4 on the IDM.
2. Remove the cover plate, on top of the cabinet, protecting the fans.
3. Pull out the faulty fan.

Note: Remove fan 1 before replacing fan 2. Remove fan 4 before replacing fan 3.

4. Disconnect the cable.
5. Reconnect the cable to the new fan.
6. Mount the new fan.
7. Reattach the cover plate.
8. Switch on circuit breaker Fan 1, Fan 2, Fan 3 or Fan 4 on the IDM.

5.18 FCU

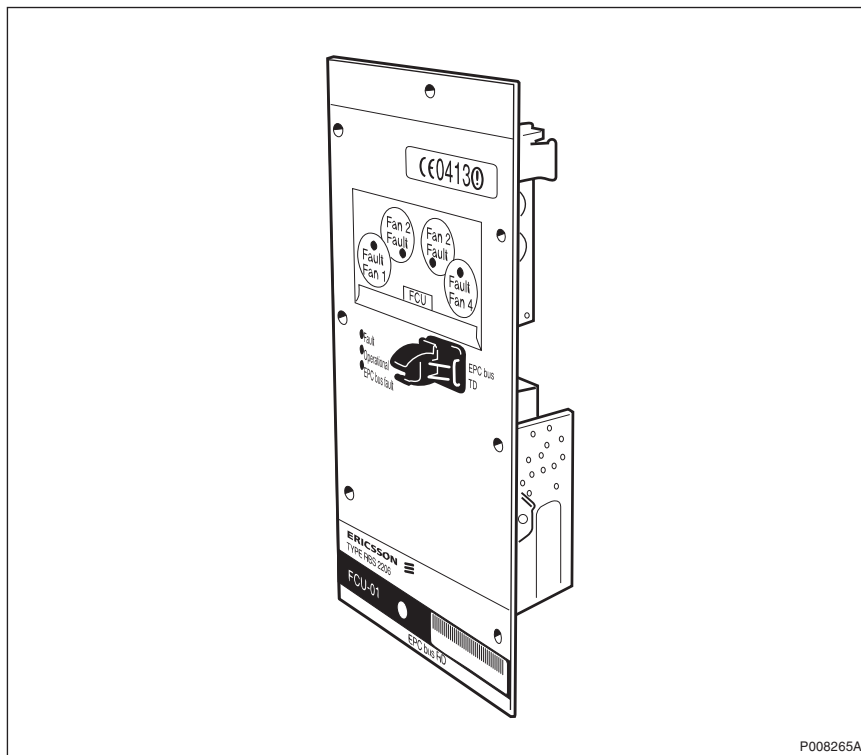


Figure 52 FCU

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. Disconnect the EPC bus cable attached to the front of the FCU.
5. Remove the screws holding the FCU and pull it out.
6. Disconnect the cables.
7. Connect the cables to the new FCU and push it into place.
8. Tighten the screws holding the FCU.
9. Connect the EPC bus cable to the front of the FCU.
10. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off, the DXU is in remote mode.

5.19 Flash Card

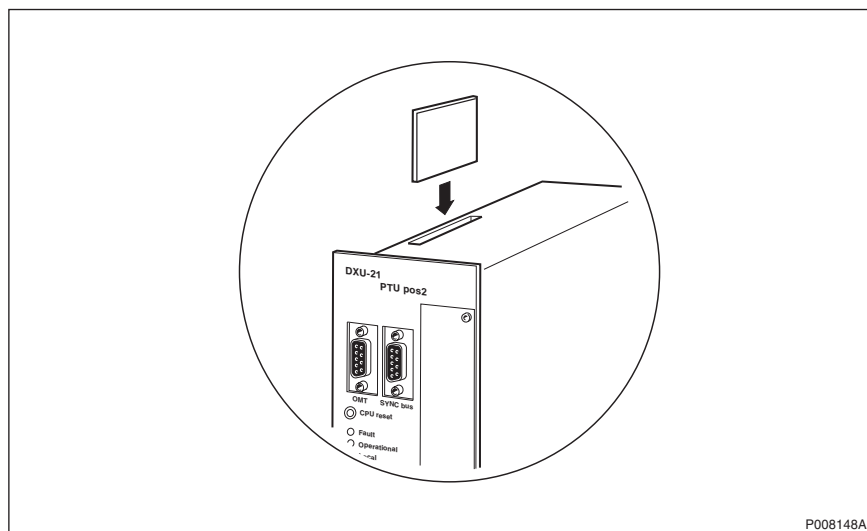


Figure 53 Flash card position in the DXU

1. Remove the DXU. See *Section 5.14 DXU on page 111* for further information.
2. Press the button on top of the DXU.
3. Replace the flash card.
4. Mount the DXU. See *Section 5.14 DXU on page 111* for further information.
5. Connect the OMT and download the original RBS IDB into the DXU. There are two alternative databases that can be used:
 - Use the database that was acquired when reading the RBS data base.
 - Create a new database.

5.20 IDB

Use the OMT to install a new IDB. For further information on the use of the OMT, see:



OMT User's Manual

LZN 302 01

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. Connect and establish a link between the OMT and the RBS.
5. Install the IDB into the RBS.

6. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off, the DXU is in remote mode.

5.21 IDM

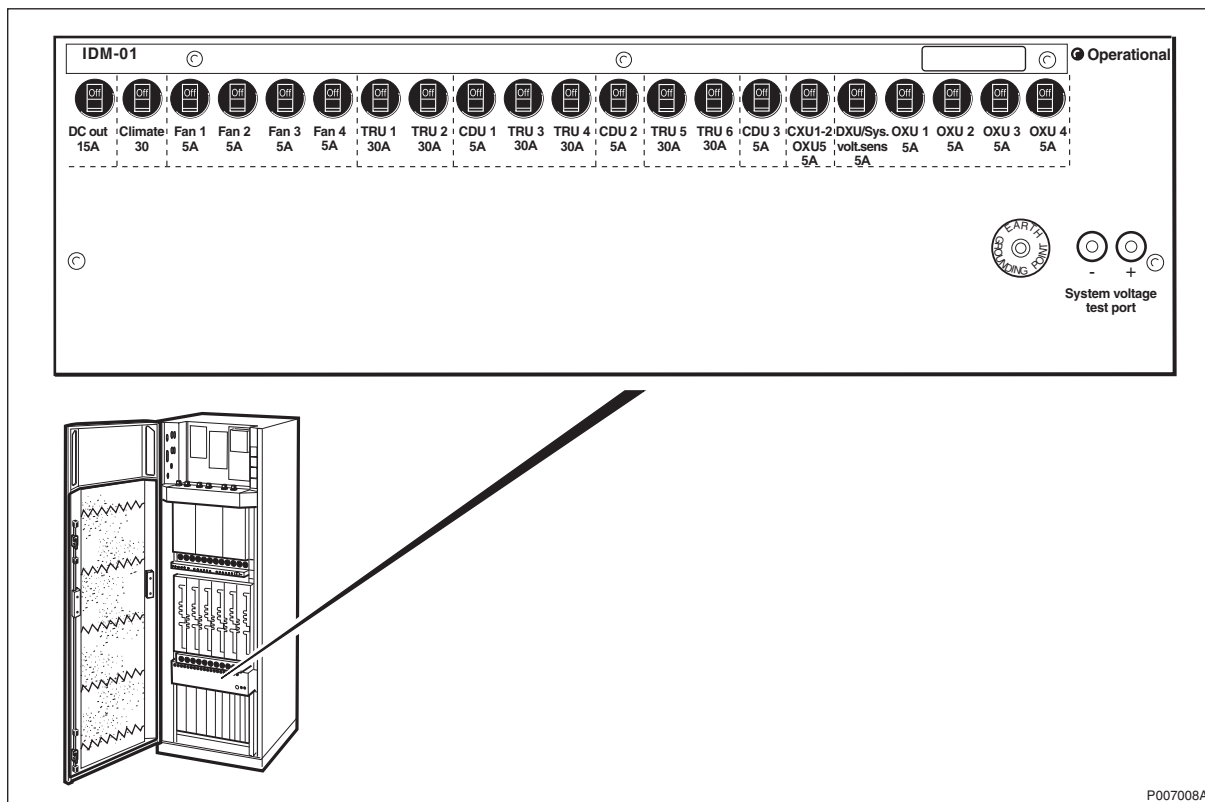


Figure 54 IDM

Note: Care must be taken when replacing the IDM to prevent damage to the main DC power cables to the right side and the DC power distribution cables at the back of the IDM.

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. (If supplied) Isolate the RBS cabinet from battery power in the external battery cabinet.
5. Switch off the main power in the ACCU or DCCU.
6. Remove the IDM front plate.
7. Disconnect all cables.
8. Replace the IDM.
9. Connect all cables and reattach the IDM front plate.

10. Switch on the main power in the ACCU or DCCU.
11. (If supplied) Connect the external battery cabinet to the RBS cabinet.
12. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off, the DXU is in remote mode.

Note: Unless under contractual warranty, after replacement, the IDM shall be disposed of locally. Do not return the IDM to Ericsson for replacement, repair or disposal.

5.22 PSU



Figure 55 PSU-AC and PSU-DC

Note: The opto bus cables for the power communication loop must have a bend radius of at least 35 mm.

Note: If the cabinet, from which the PSU is being removed, has external battery back-up, the DC cable will be live when disconnecting it from the PSU.

1. Disconnect all cables connected to the PSU.
2. Replace the faulty PSU.

3. Connect all cables to the PSU.

Note: After replacement, the PSU must be returned to Ericsson for repair. Maintenance personnel must attach a repair delivery note, LZF 084 64 (Blue Tag), to the PSU. The repair delivery note must include a clear description of the fault found. See chapter *Concluding Routines* for instructions on completing a repair delivery note.

5.23 PSU DC Cable

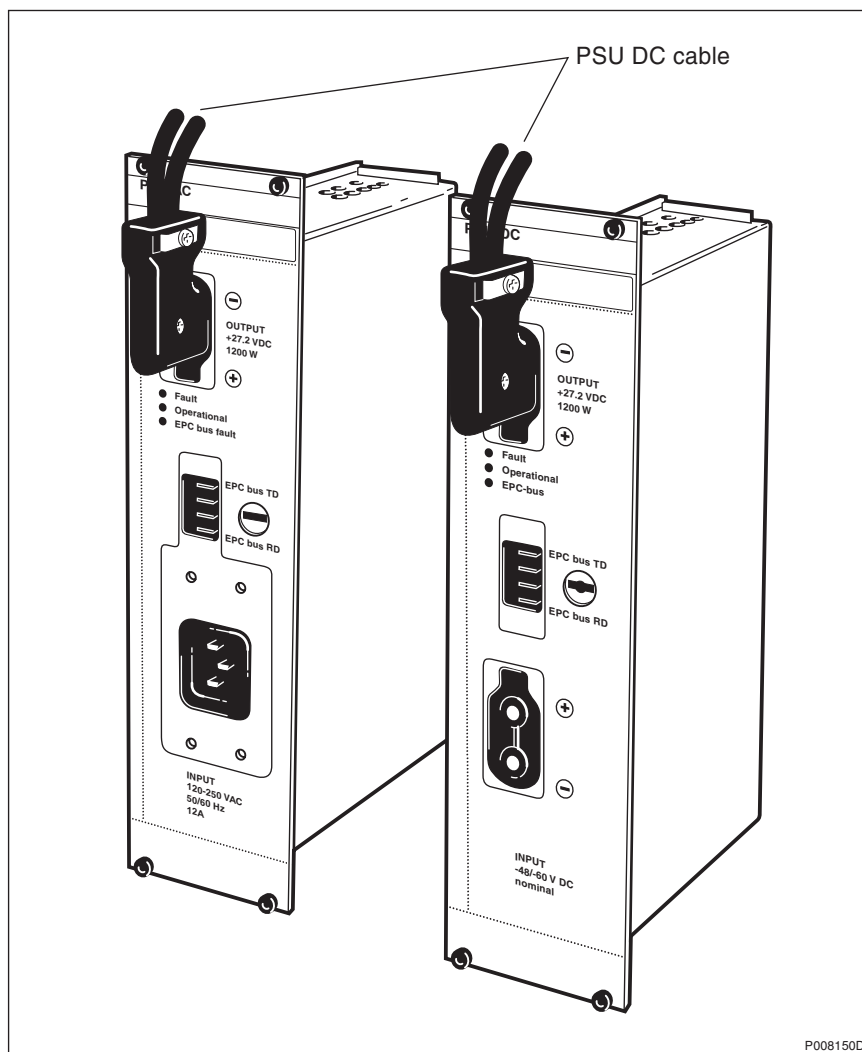


Figure 56 PSU DC cable

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. (If supplied) Isolate the RBS cabinet from battery power in the external battery cabinet.

5. Switch off the main power in the ACCU or DCCU.
6. Disconnect the DC cable connected to the PSU.
7. Remove the IDM.
8. Disconnect the DC cable connected to the back of the IDM.
9. Connect the new DC cable to the IDM.
10. Mount the IDM.
11. Connect the DC cable to the PSU.
12. Switch on the main power in the ACCU or DCCU.
13. (If supplied) Connect the external battery cabinet to the RBS cabinet.
14. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off, the DXU is in remote mode.

5.24 RX Antenna Feeder

See *Section 5.3 Antenna Feeder on page 98*.

5.25 TMA CM

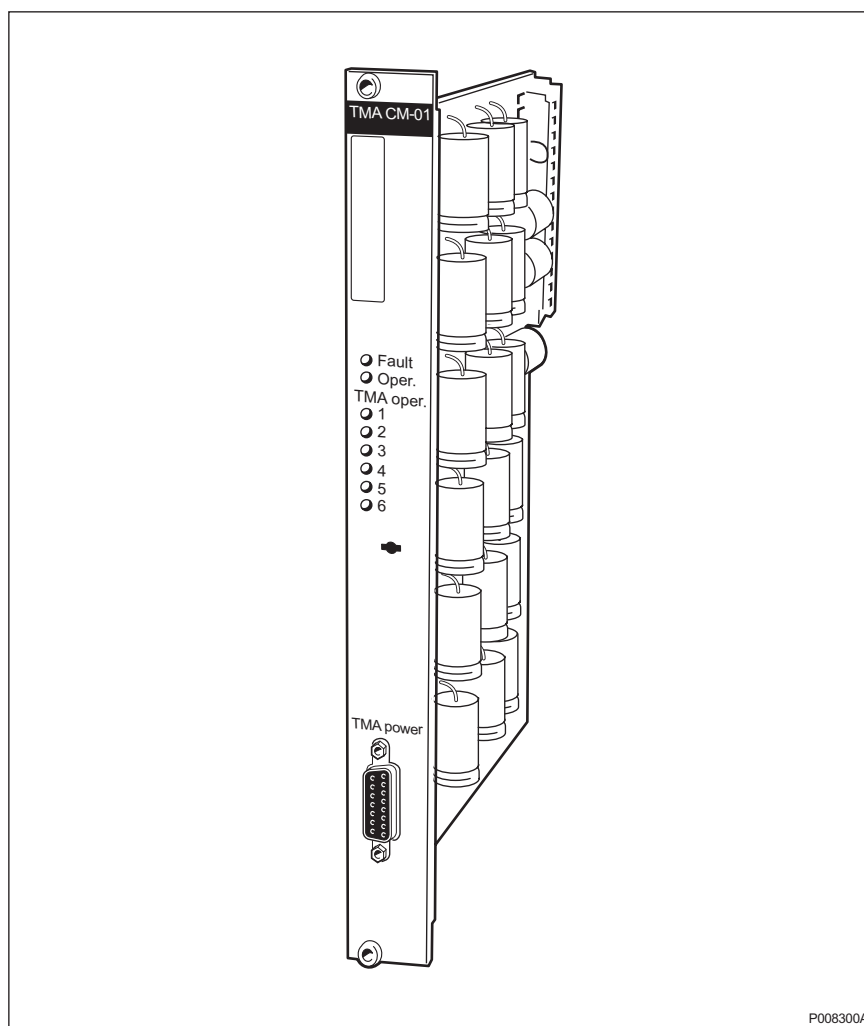


Figure 57 TMA CM

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the Local mode indicator has a fixed yellow light, indicating that the DXU is in local mode.
4. Switch off circuit breaker OXU 1 or OXU 2 on the IDM.
5. Remove the cable connected to the TMA CM.
6. Replace the TMA CM.
7. Reconnect the disconnected cable.
8. Switch on circuit breaker OXU 1 or OXU 2 on the IDM.
9. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off, the DXU is in remote mode.

Note: After replacement, the TMA CM must be returned to Ericsson for repair. Maintenance personnel must attach a repair delivery note, LZF 084 64 (Blue Tag), to the TMA CM. The repair delivery note must include a clear description of the fault found. Refer to the chapter *Concluding Routines* for instructions on completing a repair delivery note.

5.26 TRU

Note: TRUs are marked on the front with a label showing frequency. Ensure that the appropriate TRU is available.

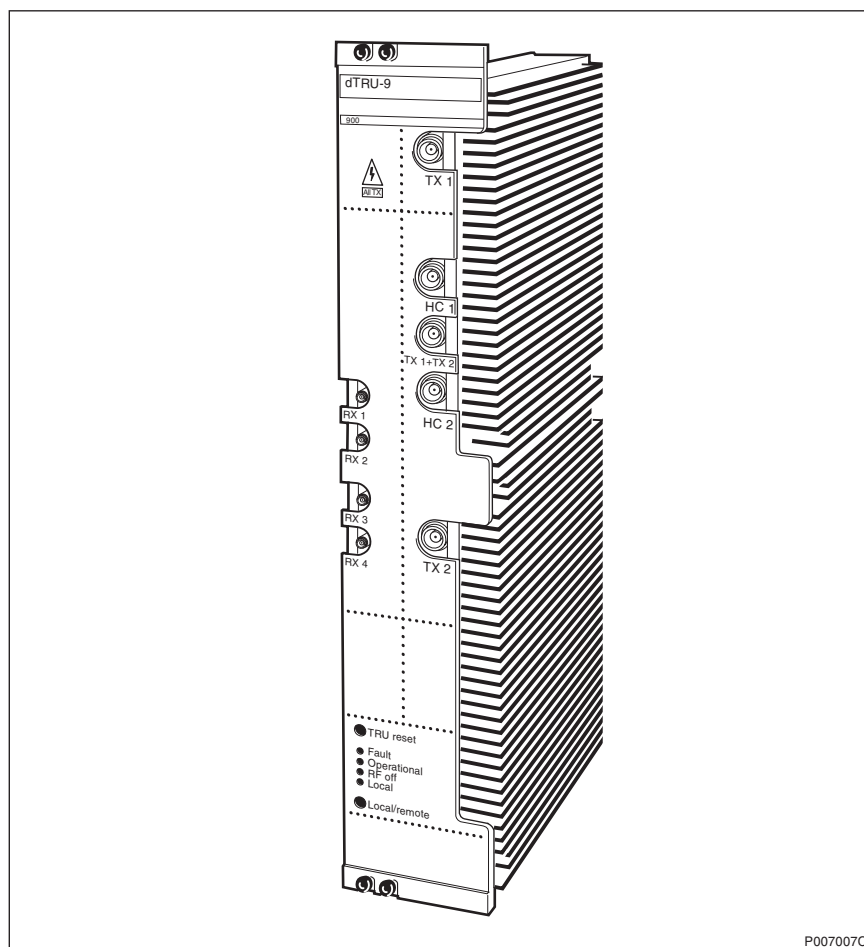


Figure 58 dTRU

1. Press the Local/remote button on the TRU. The Local mode indicator will start flashing.
2. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU is in local mode.
3. Switch off circuit breaker TRU 1, TRU 2, TRU 3, TRU 4, TRU 5 or TRU 6 on the IDM.
4. Remove all cables connected to the TRU.
5. Replace the TRU.

6. Reconnect the disconnected cables.
7. Switch on circuit breaker TRU 1, TRU 2, TRU 3, TRU 4, TRU 5 or TRU 6 on the IDM.
8. Wait until the Operational indicator has a fixed green light. If the new TRU contains an old software version, the DXU will automatically download the correct version. The software download procedure is indicated by a flashing Operational indicator and may take some time (up to 10 minutes).
9. Press the Local/remote button on the new TRU. The Local mode indicator will start flashing and when it is turned off, the TRU is in remote mode.

Note: After replacement, the TRU must be returned to Ericsson for repair. Maintenance personnel must attach a repair delivery note, LZF 084 64 (Blue Tag), to the TRU. The repair delivery note must include a clear description of the fault found. See the chapter *Concluding Routines* for instructions on completing a repair delivery note.

5.27 TRU Backplane

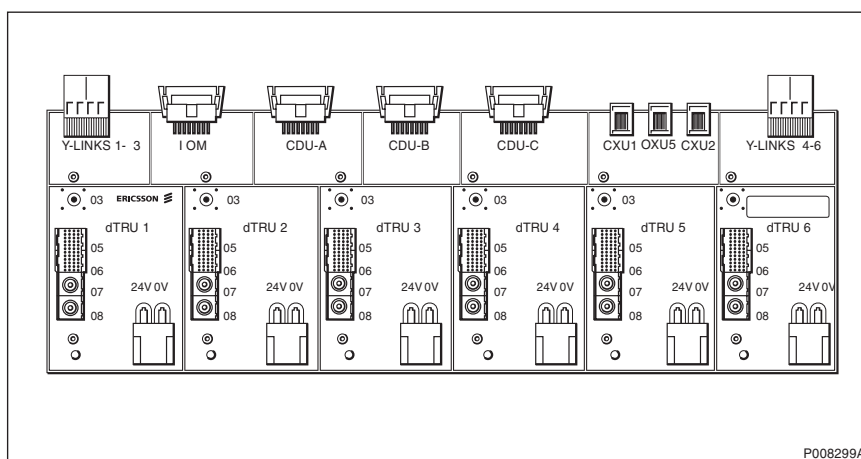


Figure 59 TRU backplane (Note that there is a newer version of the TRU backplane)

1. Inform the OMC operator that the RBS will be removed from service temporarily.
2. Press the Local/remote button on the DXU. The Local mode indicator will start flashing.
3. Wait until the indicators RF off and Local mode both have a fixed yellow light, indicating that the dTRU is in local mode.
4. (If supplied) Isolate the RBS cabinet from battery power in the external battery cabinet.
5. Switch off the main power in the ACCU or DCCU.
6. Disconnect all cables connected to the dTRUs.
7. Remove the dTRUs.

8. Disconnect all cables connected to the TRU backplane.
9. Replace the TRU backplane.
10. Connect all the cables to the TRU backplane.
11. Mount all the dTRUs and connect all cables.
12. Switch on the main power in the ACCU or DCCU.
13. (If supplied) Connect the external battery cabinet to the RBS cabinet.
14. Press the Local/remote button on the DXU. The Local mode indicator will start flashing and when it turns off, the DXU is in remote mode.

Note: Unless under contractual warranty, after replacement, the TRU backplane shall be disposed of locally. Do not return the TRU backplane to Ericsson for replacement, repair or disposal.

5.28 TX Antenna Feeder

See *Section 5.3 Antenna Feeder on page 98*.

This page is intentionally left blank

6 Test after Repair

This chapter describes the methods for verifying the RBS. The intention is to verify that the problem has been solved and that the RBS is fully functional.

Note: All known faults must be cleared before performing the tests.

6.1 Preconditions

Test calls should be performed with a TEMS using the TEMS Software.

6.2 Test Call

Test calls must be made when a CXU, TRU or CDU has been replaced to ensure that the replaced units carry traffic.

If the technician is required to make a test call on a specific RU, information is needed on the ARFCN(s) for each TRU. Contact the BSC personnel for information on ARFCN(s).

The test procedure is divided into two parts, that are done in sequence. The first test sequence of the downlink connection is monitored by the TEMS. The second test sequence of the uplink connection is monitored by the OMT.

Note: Before starting the test call, the Operational indicators on the DXU and TRUs must be on. Set all units to remote mode.

Monitoring the Dedicated channel with a TEMS

1. Connect the TEMS to the PC serial port.
2. Start the TEMS program in the Windows environment.
3. Select **Enable Connections** in the **Externals** menu and specify the serial port for the TEMS.
4. Contact the BSC personnel to find out which ARFCN and TS that a test call should be performed on.

The BSC personnel can use the printout command:

```
RXCDP:MO=RXOTG-tg;
```

Note: The RXCDP gives, for the TG specified, the ARFCN and TN (timeslot number on the air interface) that corresponds to the equipment TS. The TS and TN are normally the same, but there are exceptions. Therefore always check the TN with RXCDP).

5. Choose **Cell Selection** in the **Control** menu.
6. Choose **Target frequency** and select the ARFCN for the TRU that is to be tested. Mark the frequency in the list.
7. Disable the Handover button in the **Cell Selection** menu.
8. Select **Status information** in the **Monitor** menu.
9. Choose Dedicated channel.

10. Make a call from the TEMS.
11. Monitor the Dedicated channel in TEMS and verify the downlink (DL) by checking that the targeted ARFCN and TN appear in the monitor.
12. Make repeated calls until the desired information appears in the monitor, *see the figure below*.

Dedicated channel	
Channel number (ARFCN):	11
Timeslot number (TN):	2
Channel type and TDMA offset:	Bm + ACCHs
Channel mode:	Speech full rate
Subchannel number:	
Hopping channel:	No
Mobile Allocation Index Offset (MAIO):	
Hopping sequence number (HSN):	

06_0178A

Figure 60 TEMS Dedicated channel monitor

Supervising the traffic channel with the OMT

1. Connect the OMT cable between the OMT connector on the DXU and the PC serial port.
2. Start the OMT program in the Windows environment.
3. Select **Connect** in the Connection menu.
4. Select the **Read IDB** function in the **File** menu.
5. Change view mode to **MO view**.
6. Select the appropriate TRXC object.
7. Choose **Operation Monitor**.
8. In the Monitor Setup dialogue box, scroll down the list and select the desired TCH-TS to monitor.
9. Make a call on the TEMS.
10. While a call is in progress in the correct timeslot, select the **Start monitor** button.
11. Check the **RX-LEV full** and **RX-LEV sub** values, *see the figure below*.

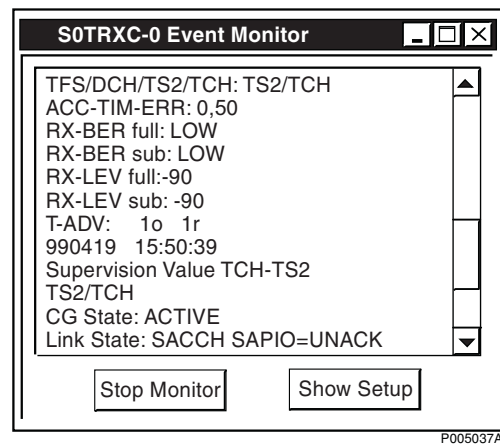


Figure 61 Example of OMT Supervision value TCH-TS 2

12. Repeat the procedure above for additional TN values as well as other TRUs.
13. Compare the RX-LEV values. Note that the values should be in the same range for all TRUs.
14. Proceed to *chapter Concluding Routines* and complete the checklist.

This page is intentionally left blank

7 Concluding Routines

The following is a description of the different administrative routines that must be carried out as a result of a maintenance procedure.

7.1 Before Leaving the Site

The following checklist is strongly recommended. Local procedures and safety regulations must be evaluated and incorporated into this checklist.

If the answer to any of the items is NO, do not depart from the site until the problem/fault has been cleared or investigated.

Table 8 Recommended checklist, Before leaving the site. N/A means not applicable

ITEM	N/A	YES	NO
1 Is the RBS fault indicator off?			
2 Are the red fault indicators off?			
3 Are all operational green indicators on?			
4 Is the RBS in "remote" mode? (Yellow "local" indicator on DXU is off)			
5 Are all other yellow indicators off?			
6 Are all the warning signs fixed and located correctly in the cabinet?			
7 Is the cabinet dry with no water in it?			
8 Is the inside and outside of the cabinet free from mechanical damage or rust?			
9 Is the back-up copy of the RBS IDB saved on a disk?			
10 Are all tools accounted for?			
11 Is the cabinet door locked?			
12 Is the external air intake free from obstructions?			
13 Is the defective part packed for shipment, including repair delivery note?			
14 Are all other necessary paper work completed?			
15 Are the hazard lights on the antenna operational?			
16 Do the antennas, towers, and RF cables appear in operational order?			
17 Is the OMC notified and alarms ceased?			
Signature:			
Date:			

7.2 Report of Finished Work

When a maintenance procedure has been completed, a report will be written including a detailed description of actions taken, all observations made in accordance with local routines for work orders, site log-book, etc.

7.3 Repair Delivery Note – “Blue Tag”

When a faulty unit is returned, it must be accompanied by a repair delivery note. When the note has been completed it is attached to the faulty unit with a string, before sending it for repair. Tape can only be used to attach the note to the sides of the unit. *Do not tape it to the control panel.*

The repair delivery note LZF 084 84 can be ordered from the local FSC. A description of how to fill in a repair delivery note follows below.

ERICSSON		REPAIR DELIVERY NOTE	
1) Prepared Eric Ericsson		2) Telephone No. +46 8 757 3285	
3) Failure date (yyyy-mm-dd) 1999-08-16		4) Failure Suspected <input type="checkbox"/> Verified <input checked="" type="checkbox"/>	
5) Country code SE	6) Exchange code	7) State code H|W|S	8) Consecutive No.
9) Cellsite No.		10) Sector No.	
11) Product No. KRC 123 456/1		12) R-state R1A	
13) Channel No.		14) Software application LZY 213 938/1 R7/1	
15) Function description		16) Fault code SO TRXC RU0, SO TRXC I1A10	
17) Factory code A5304AQ41B		18) Serial No. 9714	
19) Manufact. (year, week)		20) Description of fault Fault indicated 2 hours after power on	
21) Superior product No. RBS 2102		22) R-state	
23) Serial No.		24) Sender MMO/EDD/EDDERER	
25) Receiver		26) Remarks/special instructions Installed 1998-10-15, logfiles on paper included	
27) Reference No.		28) Received	
29) Date (yyyy-mm-dd)			

Instructions on reverse side

LZF 084 84/1 EN R1A

The following fields are mandatory. Use block letters.

1 Prepared	Service technician's name
2 Telephone	Service technician's telephone number
3 Failure date	
4 Failure	Mark with an X if failure is Suspected or Verified
5 Country code	Two letter country code
7 State code	Hardware (HW) status when failure occurred: S = Unit in service when failure occurred (Repair) T = New unit failed during installation or test (Claim) R = Repaired unit failed during installation or test (Claim or Repair)
11 Product No.	Faulty unit
12 R-state	Faulty unit
14 Software application	RBS load, product number and R-state
16 Fault code	Check OMT or work order
18 Serial No.	Faulty unit
19 Manufact. (year week)	
20 Description of fault	Observations and external factors
21 Superior product No.	RBS type
24 Sender	Customer, Company, Corporate ID
26 Remarks/special instructions	Information about installation date, logfiles and modification requirements

P005537C

Figure 62 The “Blue tag”

The above explanations to the Repair delivery note are also given on its reverse side.

7.4 Handling of Replaced Parts and RUs

Replaced parts and RUs are divided into three categories:

- Customer disposable
- Customer repairable

- Depot repairable

The definitions of these categories as well as explanations how to treat the parts is given below.

Customer disposable

Customer disposable parts are consumable parts, which have no lower sub-assembly or component that can be used to repair them.

These items are identified in the appropriate RBS *Spare Parts Catalogue* as "Recommended spare parts for customer stock (not repairable)" or "Other available parts".



Spare Parts Catalogue

Examples of these parts are:

- Cables and wiring
- Connectors
- Fuses, circuit breakers, varistors and overvoltage arresters
- Fans, compressors and heaters
- Printed circuit board assemblies (circuit cards, backplanes, temperature sensors and humidity sensors)
- Batteries
- Antennas
- Transformers
- Capacitors
- Mechanical hardware (doors, hinges, plates, locks, seals, gaskets, brackets and other parts of the RBS cabinet)

Unless under contractual warranty, after replacement, these parts shall be disposed of locally. Do not return these parts to Ericsson for replacement, repair or disposal.

Customer repairable

Customer repairable parts are such parts, which have a lower sub-assembly or component that can be used to repair them.

These items are identified in the appropriate RBS *Spare Parts Catalogue* as "Recommended spare parts for customer stock (not repairable)" or "Other available parts".



Spare Parts Catalogue

Examples of these parts are:

- IDMs

Unless under contractual warranty, after replacement, these parts shall be repaired locally at the RBS site or in a local repair shop.

Depot repairable

Depot repairable parts are for direct one to one replacement at the RBS site.

These items are identified in the appropriate RBS *Spare Parts Catalogue* as "Recommended spare parts for customer stock (repairable)".



Spare Parts Catalogue

Examples of these parts are:

- CDUs
- DXU
- PSUs
- TRUs
- CXU

After replacement, these parts must be returned to Ericsson for repair. Maintenance personnel must attach a repair delivery note, LZP 084 64 (Blue Tag), to the returned part. The repair delivery note shall include a clear description of the fault found. Refer to the section "Repair Delivery Note – 'Blue Tag'" for instructions on completing a repair delivery note.

7.5 Transport of a Repairable Unit

The repairable unit must be protected against ESD and damage due to transport. Therefore the repairable unit must be packed in an ESD-insulated plastic bag and transported in a shock-absorbing box. This must be done by re-using the same packing material as the spare unit was delivered in. Refer to the appropriate *Spare Parts Catalogue* to determine which repairable units should be returned for repair.



Spare Parts Catalogue

7.6 Trouble Report on Equipment or on this Manual

A trouble report should be written when system components are not operating as expected or when disturbances occur repeatedly. It should not be written for occasional hardware failures. A trouble report should also be written when a fault is found in this manual. Any comments on this manual can be submitted in a similar way.

When writing a trouble report, always include as much information as possible. Write the trouble report as soon as possible, preferably at the RBS site. The next pages contain an example of a filled-in trouble report and a blank trouble report.

The trouble report should be sent to the nearest FSC for resolution and registration in the Ericsson trouble report system MHS (Modification Handling System). The FSC should forward the trouble report via the node MHO ERA BTS.

7.6.1 Special Explanations

Product number	The product number can be found on the label of the unit. For example KRC 131 47/01
R-state	Revision state, found on the label of the unit after the product number. For example R1A
Site status	Can be “Installation Test” or “Operation”

7.6.2 Example of Filled-in Trouble Report

Trouble Report		
Company: <i>World-Wide Telecom</i>	Date: <i>27 April 1995</i>	
Issued by: <i>Jane Doe</i>	Phone no: <i>+01 419 555 1212</i>	
Address <i>501 Montgomery Avenue Mansfield, Ohio USA</i>	Memo id: <i>DOE@WW7.OHIO.US</i>	
	Telefax no: <i>+01 419 555 1212</i>	
Heading: <i>TRXC (TRU) is reporting wrong fault code</i>		
Product number or Document number: <i>KRC 131 47/01</i>		R-state <i>R 1A</i>
Site name: <i>Hillfield, Ohio</i>	Site id: <i>EOA 043</i>	Site status: <i>Operation</i>
Trouble symptoms: <i>TRXC is reporting a fault code after CPU reset.</i>		
Trouble Description: <i>After you have pressed the CPU reset the TRU starts to send fault reports constantly. The code is: Internal Fault Class 1A fault no. 33 This fault code cannot be found in the fault list.</i>		
Comments: <i>The TRU fault indicator is not lit.</i>		

03_0179B

Figure 63 Example of filled-in trouble report

7.6.3 Trouble Report, Blank

Trouble Report

Company:		Date:	
Issued by:		Phone No:	
Address:		Memo Id:	
		Telefax No:	

Heading:		
Product number or Document number:		R-state:
Site Name:	Site Id:	Site status:
Trouble Symptoms:		
Trouble Description:		
Comments:		

02_0179B

Figure 64 Trouble report, blank

This page is intentionally left blank

8 Optical Indicators and Switches

8.1 Indicator Types

RBS 2000 optical indicators are either red, green or yellow. The indicators can be on, off or flashing. Their general functions are:

- Red, fault
- Green, operational
- Yellow, status

8.1.1 Self test of indicators

On the RUs DXU and TRU, there is a self test of indicators performed at startup or restart. All indicators are switched on and remain switched on until the BTS software is started.

8.2 Units with optical indicators and switches

The CDU-F, CDU-G, CXU, dTRU, DXU, FCU, IDM, PSU, TMA-CM and RBS Status Panel units in the cabinet are equipped with indicators.

The ACCU, DCCU, dTRU, DXU and IDM units in the cabinet are equipped with switches.

8.3 ACCU

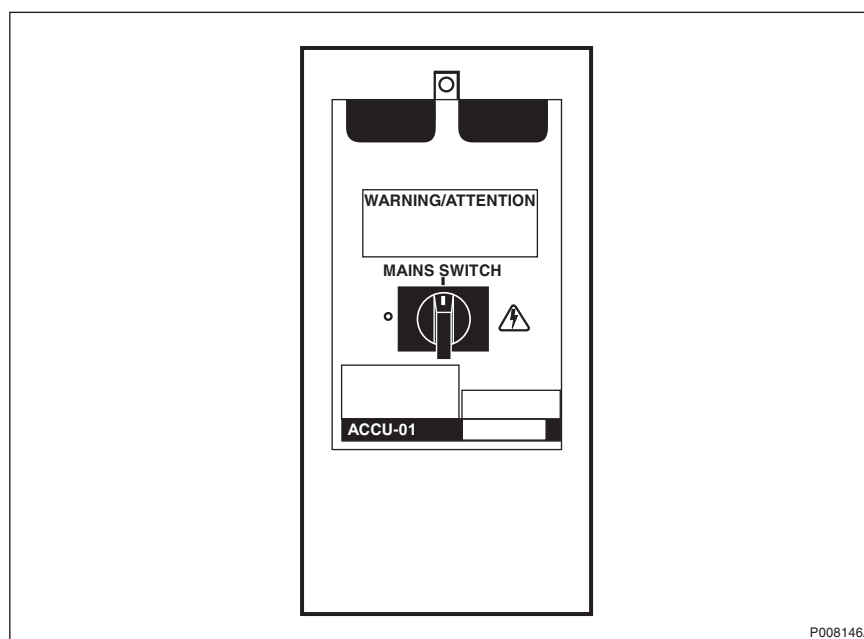


Figure 65 ACCU-01

Table 9 Switches on ACCU-01

Label	Position	Function
Mains switch	1	Mains power connected
	0	Mains power disconnected

8.4 CDU-F

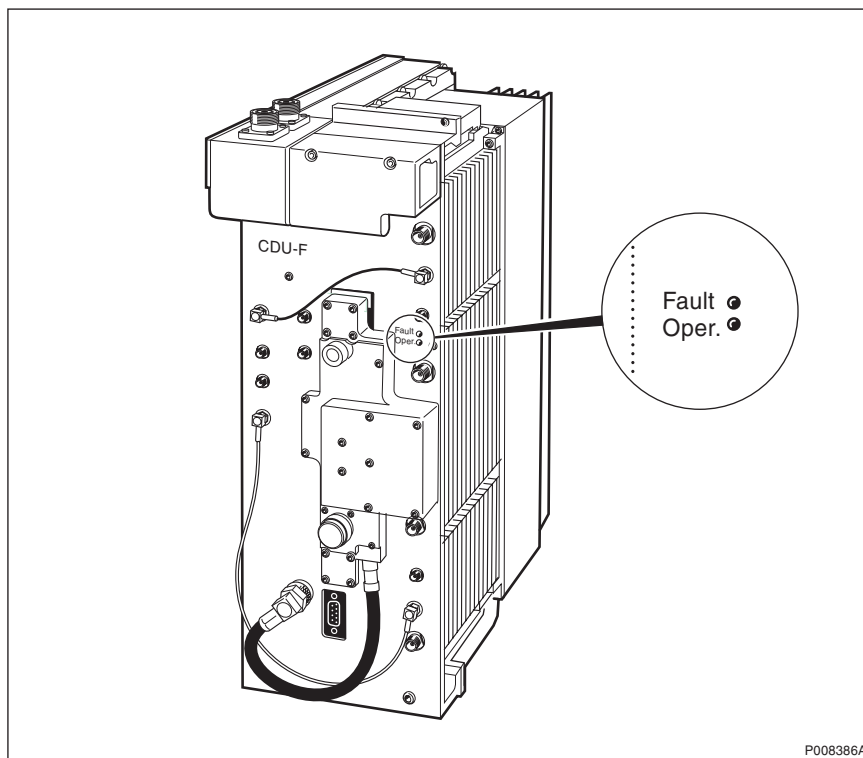


Figure 66 CDU-F

Table 10 Optical indicators on CDU-F

Label	Colour	Mode	Indication
Fault	Red	Off	No fault is detected in CDU-F
		On	A fault is detected in CDU-F
Oper.	Green	Off	CDU-F not operational
		On	CDU-F operational

8.5 CDU-G

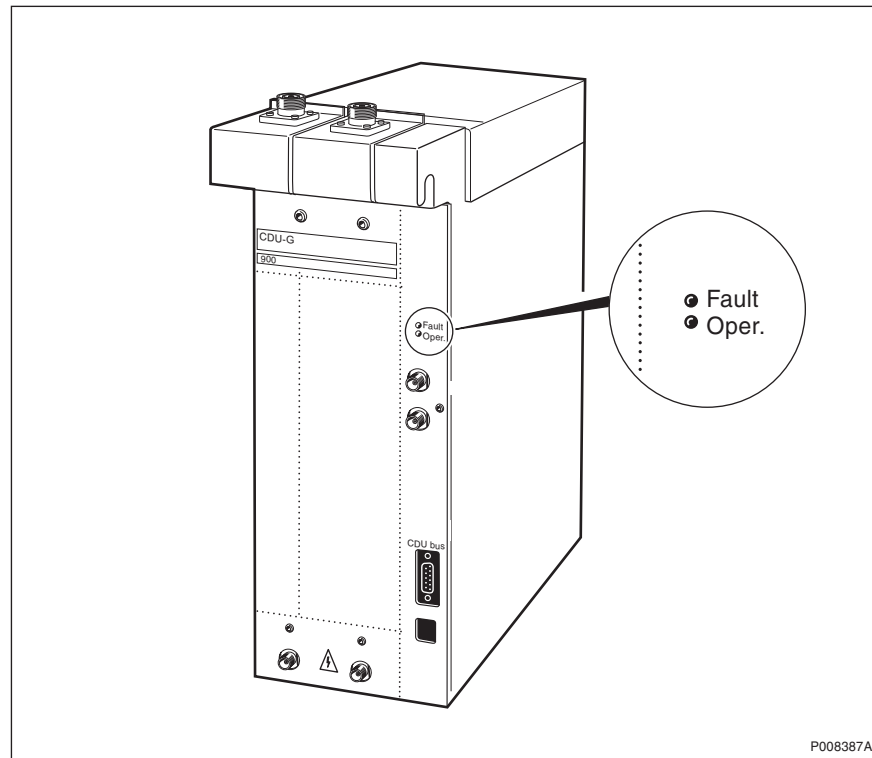


Figure 67 CDU-G

Table 11 Optical indicators on CDU-G

Label	Colour	Mode	Indication
Fault	Red	Off	No fault is detected in CDU-G
		On	A fault is detected in CDU-G
Oper.	Green	Off	CDU-G not operational
		On	CDU-G operational

8.6 CXU

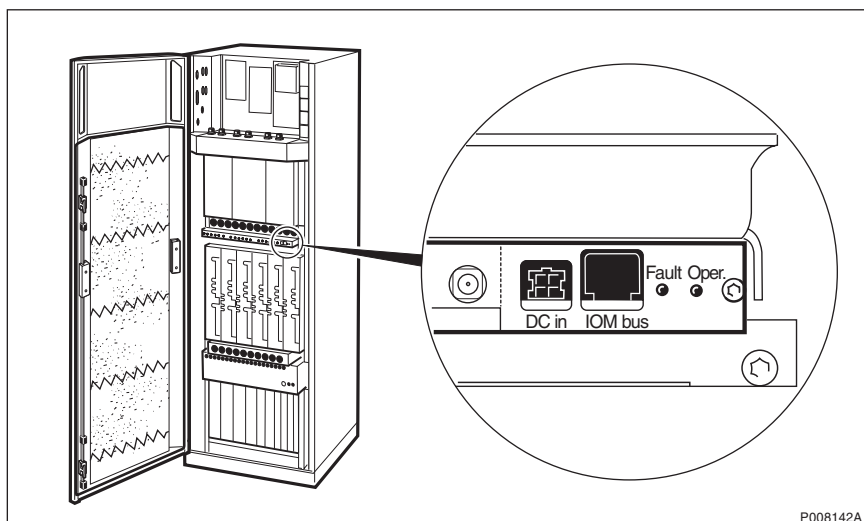


Figure 68 CXU

Table 12 Optical indicators on CXU

Label	Colour	Mode	Indication
Fault	Red	Off	No fault is detected in CXU
		On	A fault is detected in CXU
Oper.	Green	Off	CXU not operational
		On	CXU operational

8.7 DCCU

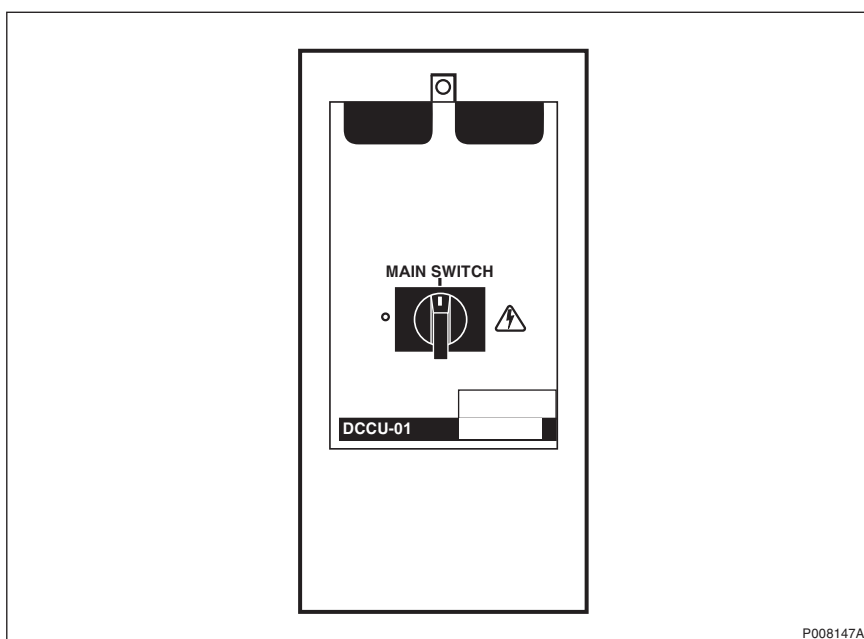


Figure 69 DCCU-01

Table 13 Switches on DCCU-01

Label	Position	Function
Main switch	1	-48 V DC power is connected
	0	-48 V DC power is disconnected

8.8 dTRU

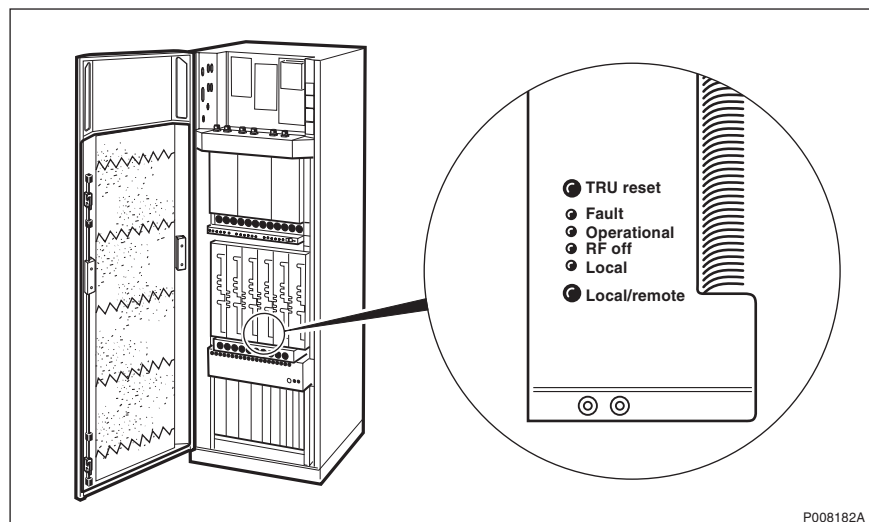


Figure 70 dTRU

Table 14 Optical indicators on dTRU

Label	Colour	Mode	Indication
Fault	Red	Off	No fault is detected in dTRU
		On	A fault is detected in dTRU
Operational	Green	Off	dTRU is not operational
		On	dTRU is operational
		Flashing	One of the following applies:
			<ul style="list-style-type: none"> • Software being downloaded • Configuration activity in progress which may take longer than 10 seconds to complete • Restart by BSC pending
RF off	Yellow	Off	TX enabled
		On	TX not enabled
Local	Yellow	Off	dTRU in remote mode. dTRU controlled by BSC
		On	dTRU in local mode. dTRU controlled by RBS
		Flashing	Change of dTRU mode (from local mode to remote mode, or from remote mode to local mode) in progress. Link between BSC and RBS being established or released

Table 15 Switches on dTRU

Label	Function
TRU reset	When pushed, resets the dTRU and all units subordinated to the dTRU
Local/remote	When pushed, changes the dTRU mode between local and remote

8.9 DXU

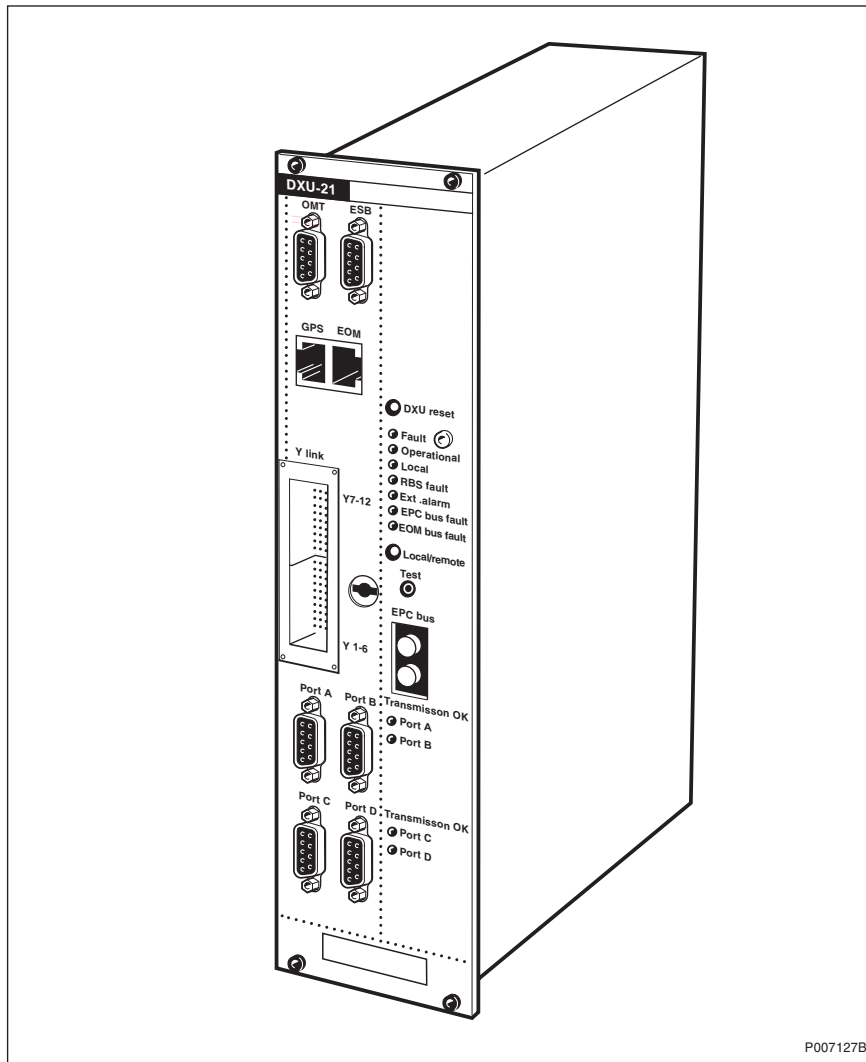


Figure 71 DXU-21

Table 16 Optical indicators on DXU-21

Label	Colour	Mode	Indication
Fault	Red	Off	No fault is detected in DXU
		On	A fault is detected in DXU

Operational	Green	Off	DXU is not operational	
		On	DXU is operational	
		Flashing	One of the following applies:	
			<ul style="list-style-type: none"> • Software is being received • Configuration activity in progress which may take longer than 10 seconds to complete • Restart by BSC pending 	
Local	Yellow	Off	DXU is in remote mode. DXU is controlled by the BSC	
		On	DXU is in local mode. DXU has no established link to the BSC	
		Flashing	A change of DXU mode (from local mode to remote mode or from remote mode to local mode) is in progress. The link between BSC and RBS is being established or released	
RBS fault	Yellow	Off	No faults are detected in the RBS	
		On	One or more faults are detected in the RBS	
Ext. alarm	Yellow	Off	No external alarms are active	
		On	One or more external alarms are active	
EPC bus fault	Yellow	Off	There is no communication fault on the EPC bus	
		On	A communication fault on the EPC bus is detected	
EOM bus fault	Yellow		For future use	
Transmission OK	Port A	Yellow	Off	Loss of Signal or Loss of Frame Alignment detected on Port A
			On	Transmission OK on Port A
	Port B	Yellow	Off	Loss of Signal or Loss of Frame Alignment detected on Port B
			On	Transmission OK on Port B
	Port C	Yellow	Off	Loss of Signal or Loss of Frame Alignment detected on Port C
			On	Transmission OK on Port C
	Port D	Yellow	Off	Loss of Signal or Loss of Frame Alignment detected on Port D
			On	Transmission OK on Port D

Table 17 Switches on DXU-21

Label	Function
DXU reset	When pushed, resets DXU and TRUs
Local/remote	When pushed, changes DXU mode between local and remote

8.10 FCU

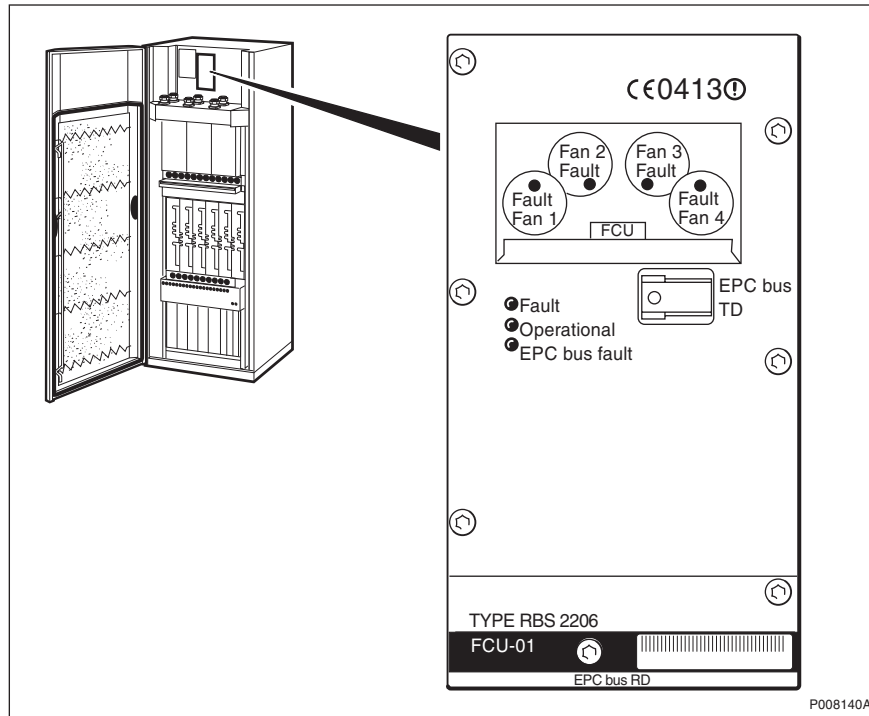


Figure 72 FCU-01

Table 18 Optical indicators on FCU-01

Label	Colour	Mode	Indication
Fault	Red	Off	No fault is detected in FCU
		On	A fault is detected in FCU
Operational	Green	Off	FCU not operational
		On	FCU operational
EPC bus fault	Yellow	Off	FCU has communication with DXU
		On	FCU has no communication with DXU
Fault Fan 1	Red	Off	No faults have been detected in Fan 1
		On	One or more faults have been detected in Fan 1
Fan 2 Fault	Red	Off	No faults have been detected in Fan 2
		On	One or more faults have been detected in Fan 2
Fan 3 Fault	Red	Off	No faults have been detected in Fan 3
		On	One or more faults have been detected in Fan 3
Fault Fan 4	Red	Off	No faults have been detected in Fan 4
		On	One or more faults have been detected in Fan 4

8.11 IDM

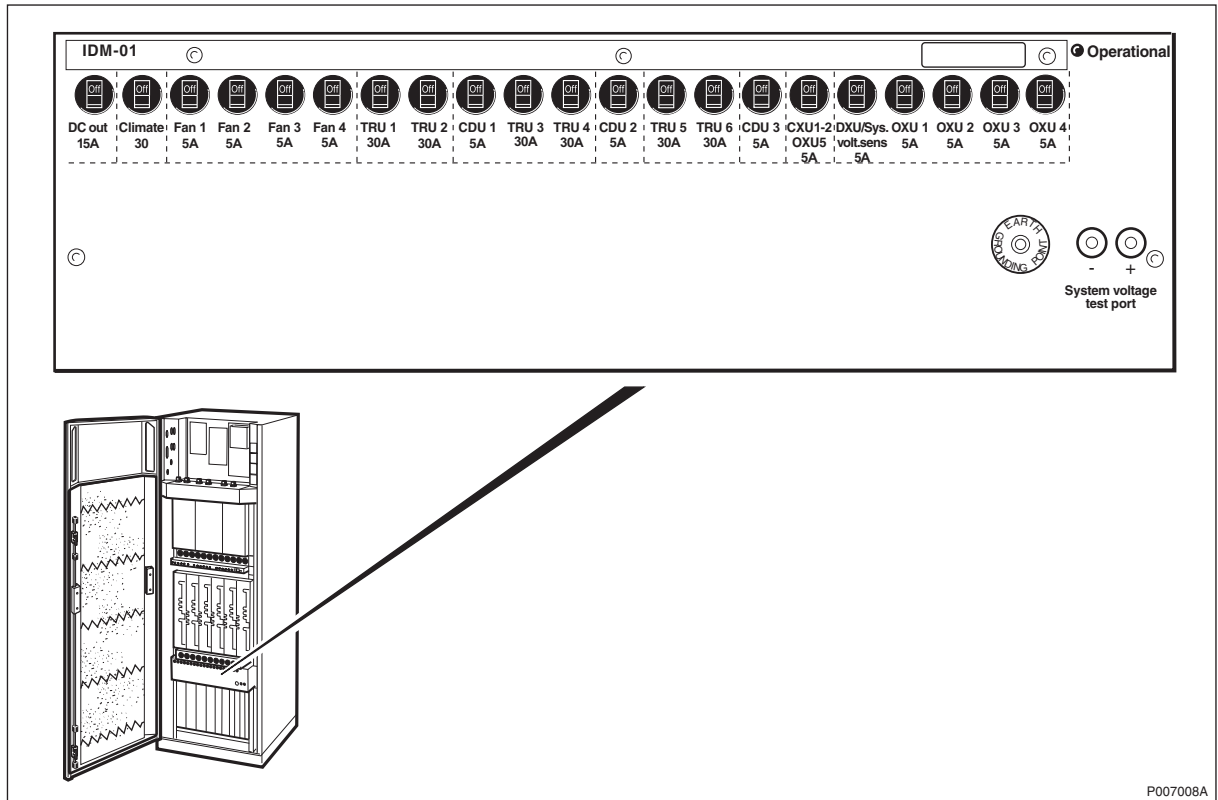


Figure 73 IDM-01

Table 19 Optical indicator on IDM-01

Label	Colour	Mode	Indication
Operational	Green	Off	IDM is not operational
		On	IDM is operational

The circuit breakers on the IDM provides +24 V DC to the different units. All circuit breakers can either be in an on or off position. The circuit breakers turn off automatically when a fault is detected, they can also be switched off manually.

8.12 PSU

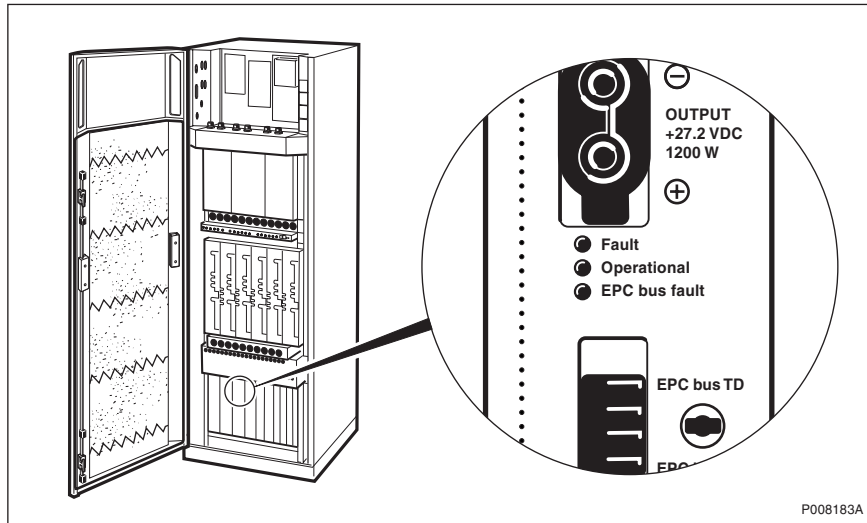


Figure 74 PSU

Table 20 Optical indicators on PSU

Label	Colour	Mode	Indication
Fault	Red	Off	No fault is detected in PSU
		On	A fault is detected in PSU
Operational	Green	Off	PSU is not operational
		On	PSU is operational
EPC bus fault	Yellow	Off	PSU has communication with DXU
		On	PSU has no communication with DXU

8.13 RBS Status Panel

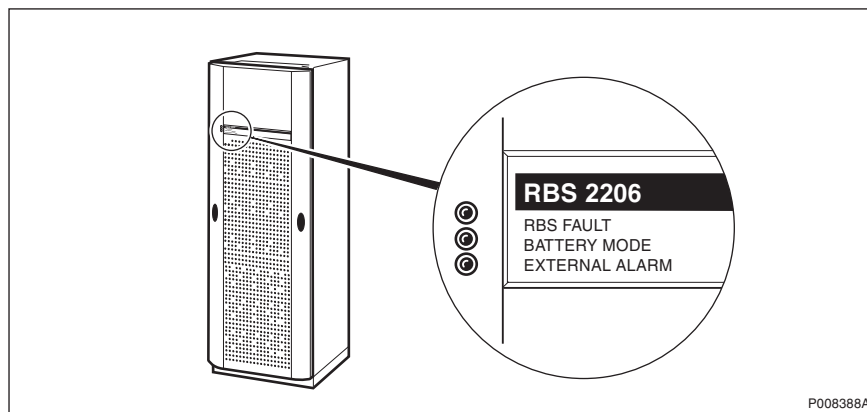


Figure 75 RBS Status Panel

Table 21 Optical indicators on RBS Status Panel

Label	Colour	Mode	Indication
RBS fault	Yellow	Off	No faults are detected in RBS
		On	One or more faults are detected in RBS

External alarm	Yellow	Off	No external alarms are active
		On	One or more external alarms are active
Battery mode	Yellow	Off	No battery power used
		On	Battery power supply fully or partly used

8.14 TMA CM

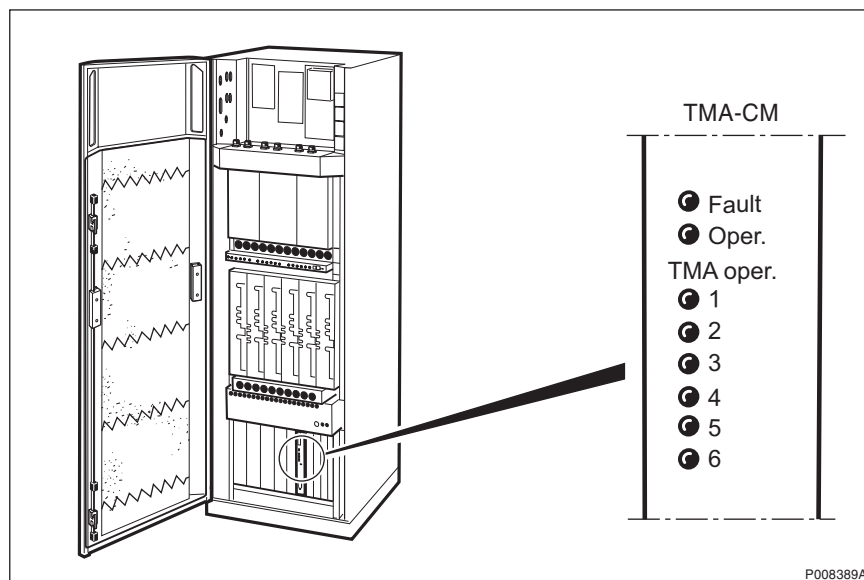


Figure 76 TMA CM

Table 22 Optical Indicators on TMA CM

Label		Colour	Mode	Indication
Fault		Red	Off	No fault is detected in TMA CM
			On	A fault is detected in TMA CM
Operational		Green	Off	TMA CM is not operational
			On	TMA CM is operational
TMA oper.	1	Green	Off	TMA 1 is not operational
			On	TMA 1 is operational
	2	Green	Off	TMA 2 is not operational
			On	TMA 2 is operational
	3	Green	Off	TMA 3 is not operational
			On	TMA 3 is operational
	4	Green	Off	TMA 4 is not operational
			On	TMA 4 is operational
	5	Green	Off	TMA 5 is not operational
			On	TMA 5 is operational
	6	Green	Off	TMA 6 is not operational
			On	TMA 6 is operational

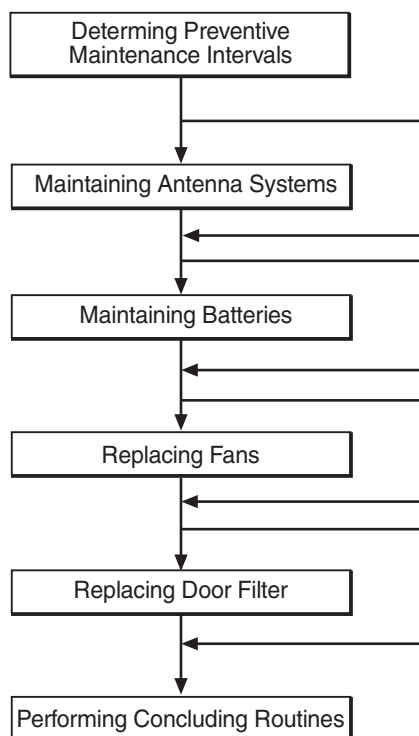
This page is intentionally left blank

9 Preventive Maintenance

During normal use, parts of the RBS become dirty or worn. To prevent a fault within the RBS, regularly scheduled cleaning or replacement of parts is necessary.

This chapter gives the information needed to perform preventive maintenance. The process causes a minimum of interruption to operation of the RBS.

9.1 Preventive Maintenance Process



P008067A

Figure 77 Preventive Maintenance Process

9.2 Determining Preventive Maintenance Intervals

Use the table that follows to determine which routines must be performed. Always perform the routines in the same order as they appear in the table.

The interval between inspections at each RBS site may vary depending upon the environmental conditions found there.

Table 23 Preventive maintenance intervals

Action	Period
Antenna system maintenance	Once a year
Battery maintenance ⁽¹⁾	Every five years
Replace batteries ^{(1) (2)}	Every five years
Replace fans	Every ten years
Replace door filter ⁽³⁾	Every five years
Checklist "Before Leaving the Site"	Every site visit

(1) It is recommended that batteries be purchased locally. Refer to information supplied by the manufacturer for the correct inspection and replacement interval.

(2) This procedure is included in the "Battery maintenance procedure"

(3) Inspect the door filter every site visit.


9.3 Maintaining Antenna Systems

The checklist that follows is designed for a visual inspection of the antenna system.

Except for the checklist provided, there are no preventive maintenance routines for the antenna system.

There is no performance check for the antenna system.

WARNING



Some working areas involve the risk of accidents caused by falling objects.

Note: Local safety regulations may require that any maintenance on antennas, or antenna towers, be performed by an individual who has been certified to climb antenna poles and masts.

Antenna access

1. Open the RBS cabinet to inspect the RF cables.
2. Go to the checklist.

Antenna checklist

The answer to all 19 questions must be "yes". When the checklist has been completed proceed to the section *Correct Faults* if the answer to any question is "no".

Table 24 Antenna checklist

ITEM	N/A ¹	Yes	No
1 Are poles in safe condition, that is, free of cracks, not bent or loose?			
2 Is lightning protection secure and functional?			
3 Is the TMA firmly mounted and in good condition?			
4 Do all cables have markers?			
5 Are cables secured to poles (approximately once every 0.6 meters)?			
6 Are the cable seals at the entry point into the cabinet in good condition?			
7 Are all cables free from abrasions, cuts and cracks?			
8 Are all cable connector seals in good condition?			
9 Are all cable ducts dry and the seals in good condition?			
10 Are antenna towers and legs free of corrosion?			
11 Are antenna towers free of bows or bends?			
12 Are hazard lights operational ?			
13 Are support pedestals free of signs of wear and/or cracks?			
14 Are the guy wires relatively free of corrosion?			
15 Are the guy wires free of signs of slipping?			
16 Are the guy wires free of broken strands?			
17 Are the antennas correctly orientated?			
18 Are the antennas firmly mounted?			
19 Is the RBS transmission path free of obstructions? (No new buildings, towers, and so on blocking it since installation.)			
Signature:			
Date:			

¹ N/A stands for not applicable.

Correct faults

1. Only tighten loose connections, or replace RF cables in the cabinet.
2. Contact the supervisor to inform them of any other faults found when performing the checklist as further repair activities may require field technicians trained and certified to climb towers.

9.4 Maintaining Batteries

This section describes how to access the batteries, both internal and external when used. There is also a battery checklist and instructions on how to correct faults at the end of the section.

There is no specific performance check for the battery system for first line maintenance.

DANGER



Read Safety Instructions regarding handling and connecting batteries.

Note: It is recommended that batteries are purchased locally. Refer to information supplied by the manufacturer for the correct inspection and replacement interval.

CAUTION



Short circuits can cause injury or damage. Although the battery voltage may be low, the released power can be extremely high.

Battery access

1. Inspect the batteries located in the BBS 2000.
2. Go to the checklist.

Battery checklist

The answer to all six questions must be "yes". When the checklist has been completed proceed to the section *Corret Faults* if any answer to question is "no".

Table 25 Battery checklist

Item	N/A ¹	Yes	No
1 Are the batteries and battery box free of dirt, excessive grease, oxidation and corrosion?			
2 Are all cables firmly connected and in good condition?			
3 Are the battery casings free from discoloration and deformities?			
4 Are the battery terminals unbent and free from excessive cuts or slices?			
5 Are the batteries still within their replacement date?			
6 Are any batteries leaking (acid)?			
Signature:			
Date:			

¹N/A stands for not applicable.

Correct faults

1. Clean dirt and grease off the batteries and battery box with a mild detergent, a soft bristle brush and rags.

Note: All cleaning items should be purchased locally. Treat all corrosion or oxidation in accordance with local procedures.

2. Tighten any loose cables found, or replace them if necessary.
3. If a discolored or deformed battery is found during the inspection, replace all batteries in the same battery box at the same time. *See Manufacturing documentation.*
4. If the battery poles show signs of excessive damage, replace both batteries in the same battery box at the same time. *See Manufacturing documentation.*
5. If the expiry date on a battery has passed, replace all batteries in the battery box at the same time. *See Manufacturing documentation.*
6. If the batteries have leaked acid (or are leaking), replace the batteries. *See Manufacturing documentation.*

9.5 Replacing Fans

Note: The only preventive maintenance included in this procedure is replacement.

1. When replacement is necessary for preventive maintenance, replace all four fans:

see Section Fans in the chapter RBS Field Repair

9.6 Replacing Door Filter

Note: The only preventive maintenance included in this procedure is replacement.

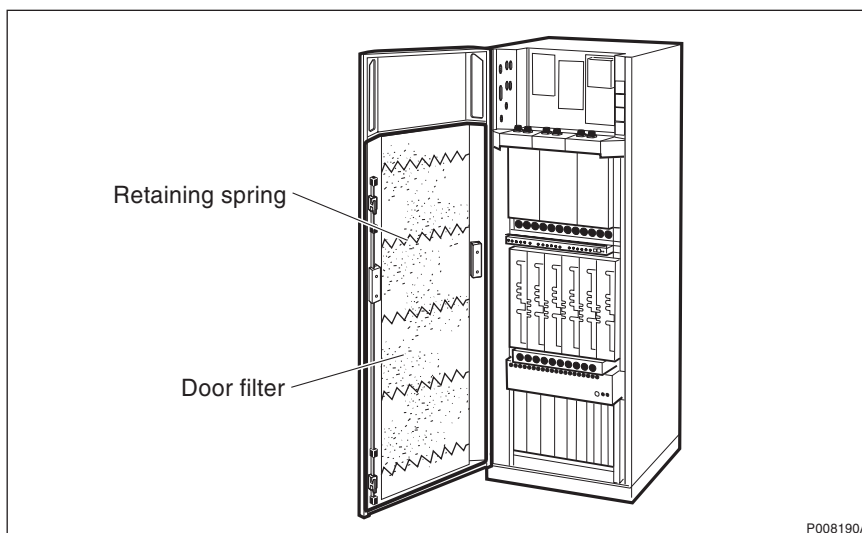


Figure 78 Location of the door filter and retaining springs

1. Open the cabinet door and release one side of the four retaining springs holding the filter in place.
2. Replace the door filter. Attach the retaining springs and close the cabinet door.

9.7

Performing Concluding Routines

1. Before leaving the site, proceed to *chapter Concluding Routines* and complete the checklist.

10 Cable Connections

The cabinet cables are grouped into three cable groups:

- Power cables
- Opto cables
- Backplane cables

10.1 Power Cables

There are no power cables for the maintenance personnel to connect if the +24 V DC option is selected. 24 V power cables are factory connected.

230 V AC and -48 V DC power cables are pre-mounted to the cabinet. Connection of the power cables to the PSUs is shown in figure below.

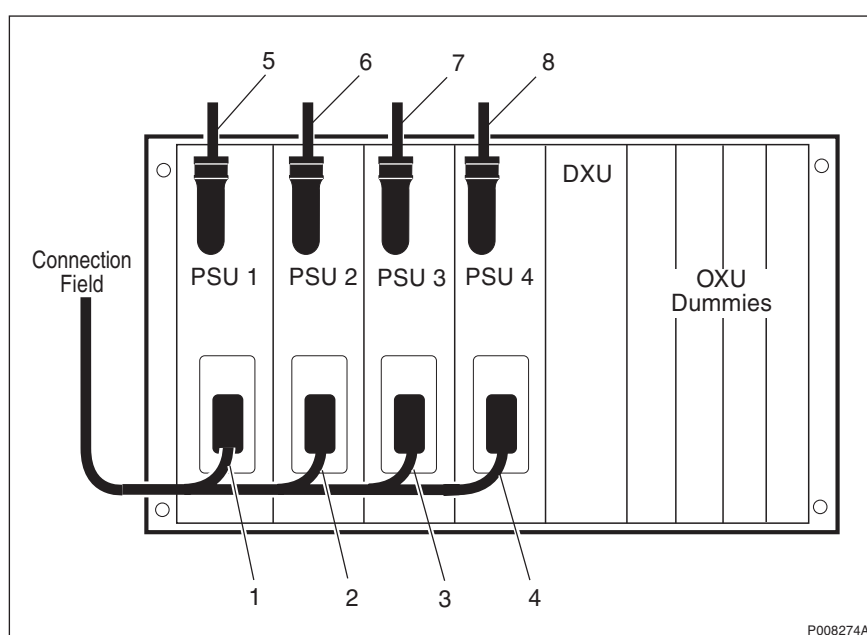


Figure 79 230 V AC and -48 V DC power cables

Table 26 PSU power

Connector No.	Product No.	Connects to
1 to 4	—	ACCU/DCCU connection field
5 to 8	—	IDM panel

230 V AC power cable RPM 513 1341/02250 may substitute for the 230 V AC power cable RPM 513 1178/02250 in some cabinet variants.

10.2 Opto Cables

Cables from the Cable set Basic are connected as shown in figure below.

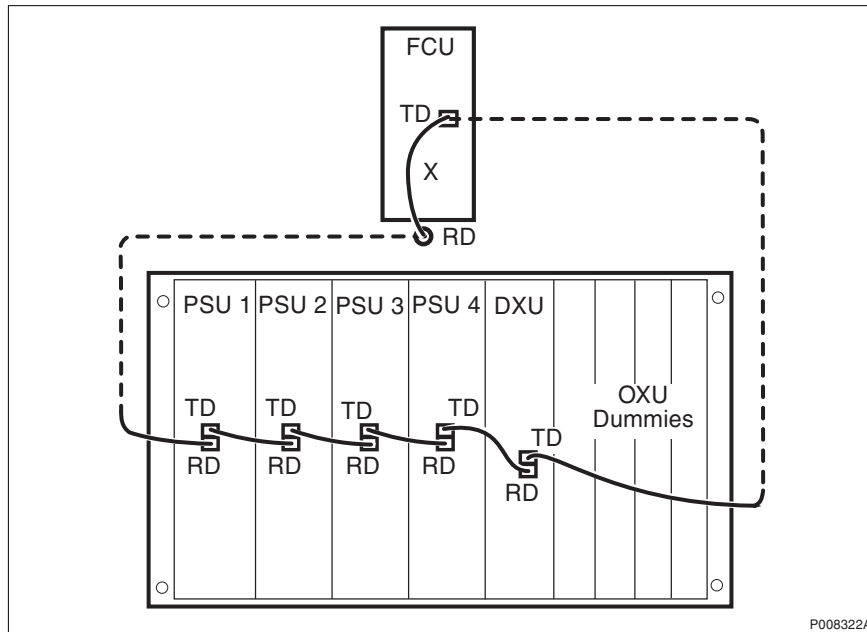


Figure 80 Opto cables (batteries not fitted)

Cable numbers 1 - 3 should only have a single label in the centre listing the product number.

The Opto cables are fitted to the PSUs, DXU and FCU in the above configuration as the factory default.

Two additional Opto cables are connected to the cabinet from the connection field. These additional cables are only used when external batteries are used. For possible future use, the cables have to be neatly secured.

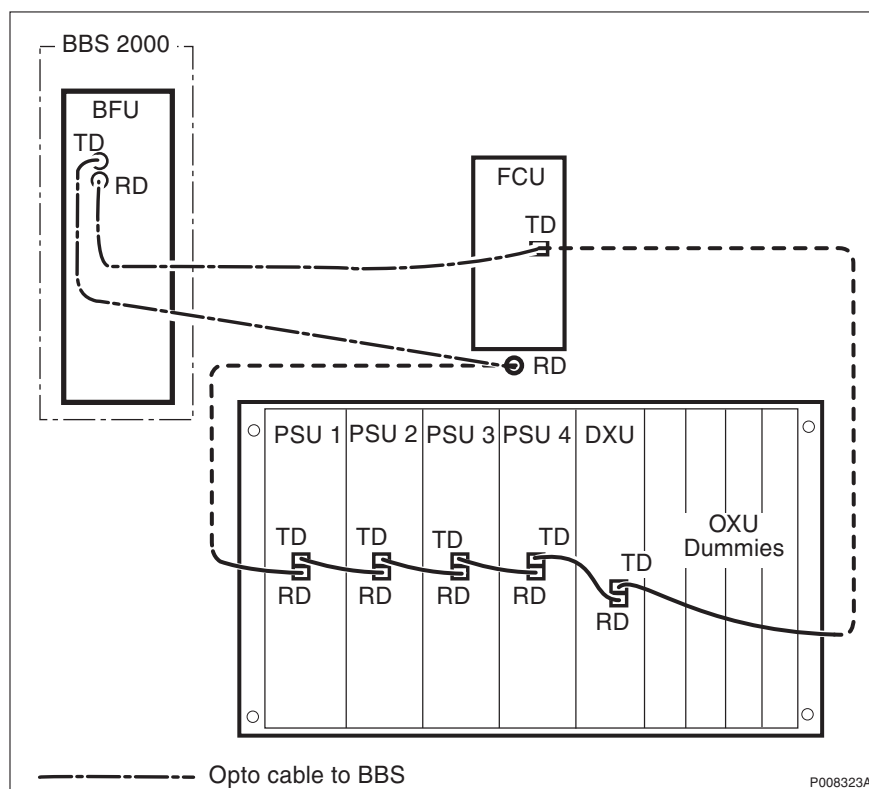


Figure 81 Opto cables (external batteries fitted)

The Opto cables are fitted to the PSUs and DXU in the "without batteries" configuration as the factory default. If batteries are to be used then a change will be needed from the factory default cabling.

10.3 Backplane Cables

The backplane cables can be either signal (bus) or power cables.

To reach the backplane cables the RUs have to be removed, for example to reach the TRU backplane the TRUs have to be removed so the TRU magazine can be removed. Some cables have connection to the backplane and to the front of the RUs.

Cabinet Left Connection Field

The internal cabling to the left connector plate is routed from behind the connector plate. The connector plate must be removed to access the internal connectors and cables.

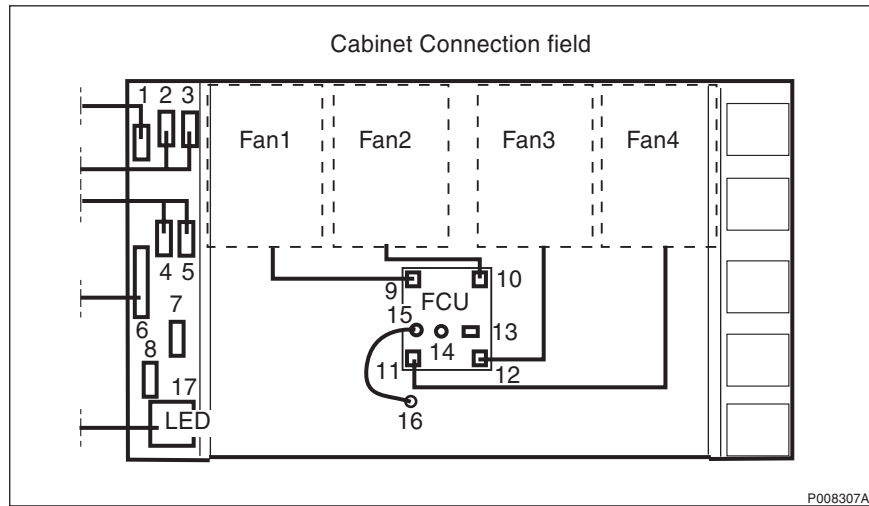


Figure 82 Left connector plate at the cabinet top

Table 27 The internal cables are connected from behind

Connector No.	Cable Product No.	Connects to
1	RPM 513 1110/01700	IDM backplane: DC out
2-5	RPM 513 870/02250	DXU front: Port A to D
6	RPM 513 1108/02660	DXU backplane: Ext alarm
7 and 8		DXU front: ESB
9 to 12	RPM 513 1811/00850	Fan 1-4
13	RPM 513 1138/01700	IDM backplane: Fan 1-4
14	RPM 513 1409/02500	DXU front: opto TD
15	RPM 982 02/200	Connector 16
16	RPM 982 02/200	Connector 15
17	RPM 513 1116/02500	DXU backplane: LED

CDU Cables (Power and Signal Cable)

The CDU magazine do not have any backplane cabling. The power and signal bus are located at the front of the CDUs. The Power and Bus cable to the CDU are the same for CDU-F and CDU-G.

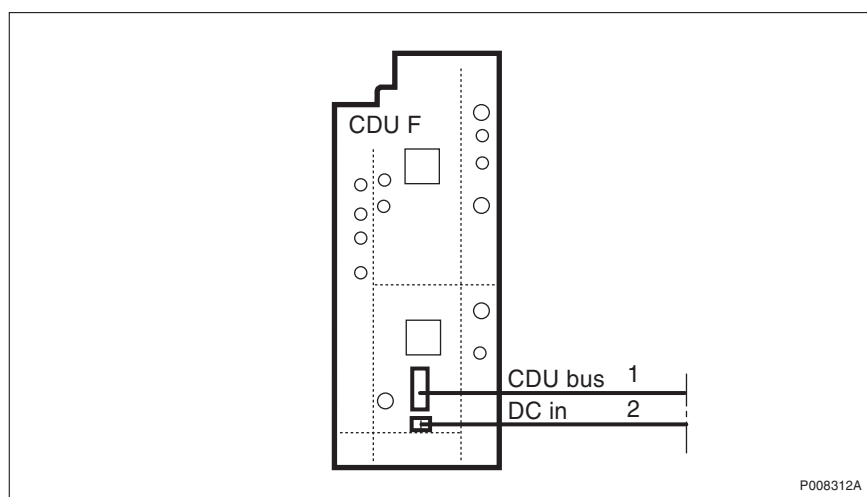


Figure 83 CDU-F cables

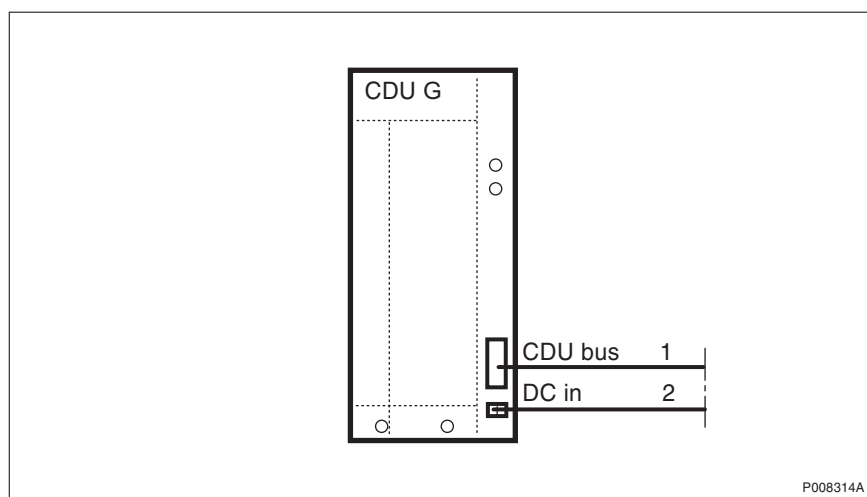


Figure 84 CDU-G cables

Note: This figure only shows one CDU, the table describes all the CDU power and bus cables.

Table 28 CDU cables

Connector No	Product No.	Connects to
1	RPM 513 1118/ 02130 x3	TRU backplane: CDU 1 to 3
2	RPM 513 718/01400 x3	IDM backplane. CDU 1 to 3

CXU Cables (Power and Signal Cable)

The CXU have a number of RF cables, those are described in *chapter CDU connections*.

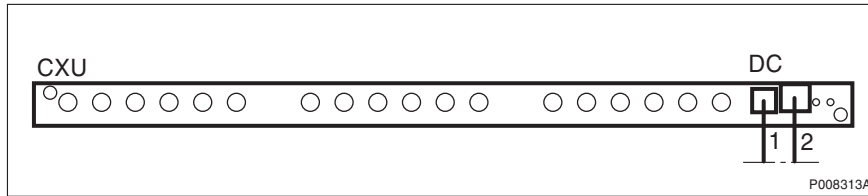


Figure 85 CXU cabling

Table 29 CXU cables

Connector No.	Product No.	Connects to
1	RPM 513 1162/ 01000	IDM backplane: CXU 1 DC in
2	RPM 513 1178/ 01650	TRU backplane: CXU 1

TRU Backplane Cables (Power and Signal Cable)

To access the TRU backplane all 6 TRUs and the magazine have to be removed.

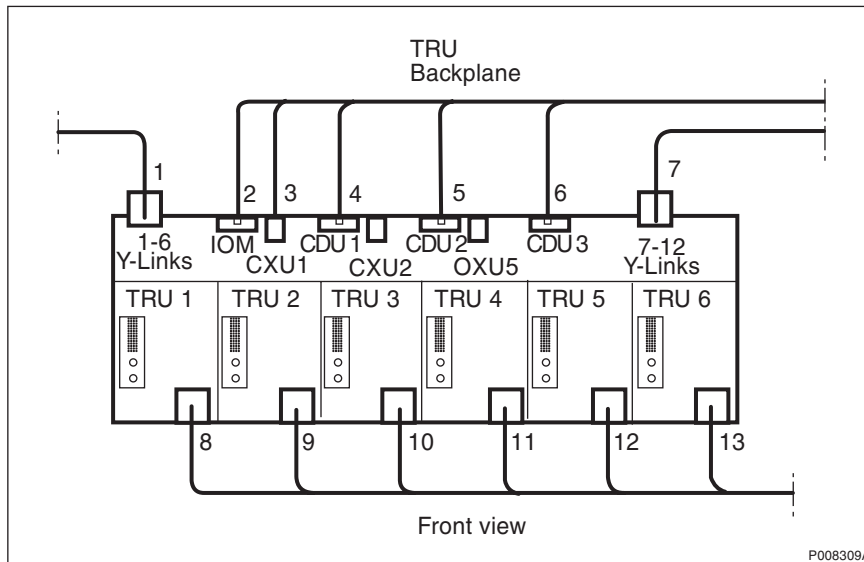


Figure 86 TRU backplane cables

Table 30 TRU backplane

Connector No.	Product No.	Connects to
1	RPM 513 1781/02000	DXU front:Y-Links 1-6
2	RPM 513 1117/02130	DXU backplane: IOM
3	RPM 513 1903/01650	CXU front: IOM bus
4-6	RPM 513 1118/02130 x3	CDU front: CDU Bus 1-3
7	RPM 513 1781/2000	DXU front:Y-Links 7-12
8-13	RPM 513 1120/00700 x6	IDM backplane: TRU 1- 6

IDM Backplane Cables (Power Cables)

To access the IDM cables the front plate have to be removed. There are two connectors to the front plate, remove them carefully.

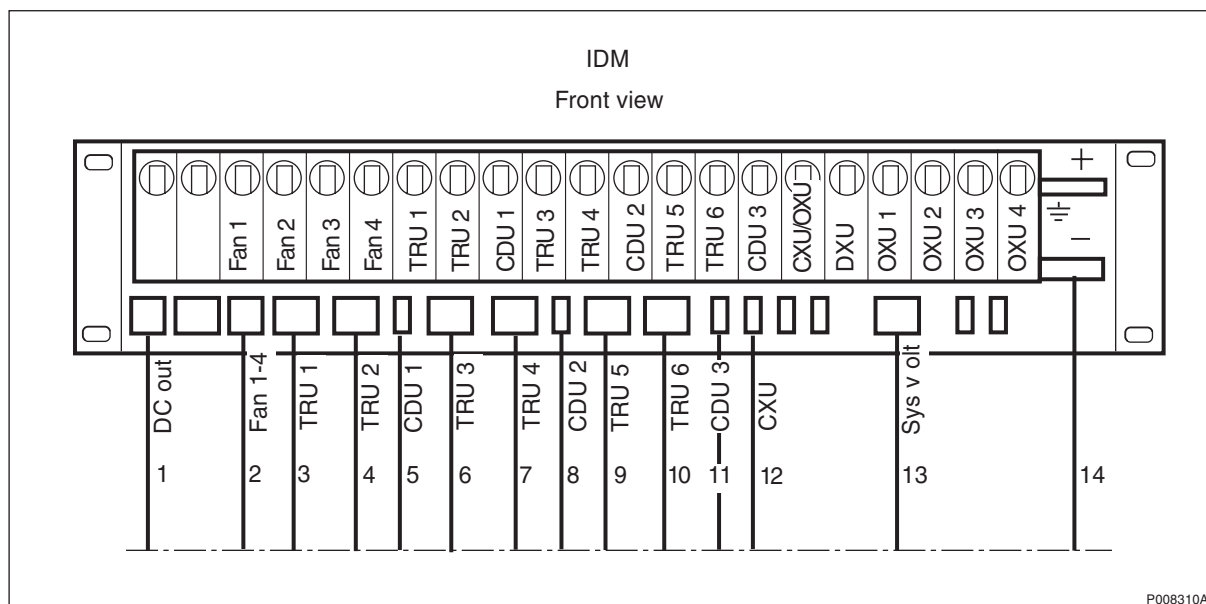


Figure 87 IDM cables

Table 31 TRU backplane

Connector No.	Product No.	Connects to
1	RPM 513 1110/01700	Cabinet connector plate: DC out
2	RPM 513 1138/01700	FCU card: Fan 1-4
3 and 4	RPM 513 1120/00700 x2	TRU backplane: TRU 1-2 DC in
5	RPM 513 718/01400	CDU front: CDU1 Bus
6 and 7	RPM 513 1120/00700 x2	TRU backplane: TRU 3-4 DC in
8	RPM 513 718/01400	CDU front: CDU2 Bus
9 and 10	RPM 513 1120/00700 x2	TRU backplane: TRU 5-6 DC in
11	RPM 513 718/01400	CDU front: CDU3 Bus
12	RPM 513 1162/01000	OXU front: DC in
13	RPM 513 1845/01600	DXU backplane: +24V
14	RPM 513 1114/01400	system earthing

DXU Backplane Cables (Power and Signal Cable)

To access the DXU cables the OXU dummies, DXU and PSUs must be removed.

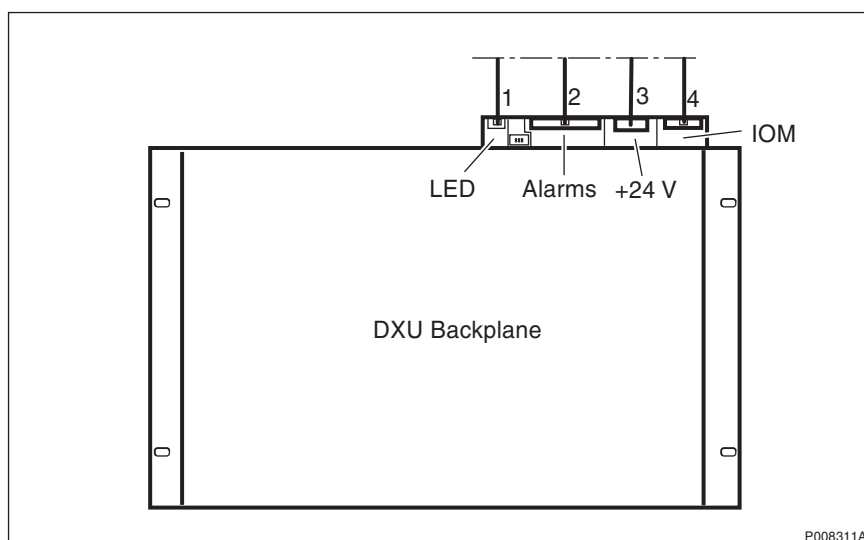


Figure 88 DXU backplane cables

Table 32 DXU backplane

Connector No.	Product No.	Connects to
1	RPM 513 1116/ 02500	Cabinet connection plate: LED
2	RPM 513 1108/ 02660	Cabinet connection plate: Ext alarms
3	RPM 513 1845/ 01600	IDM backplane: sys. volt
4	RPM 513 1117/ 02130	TRU backplane: IOM

11 CDU Connections

The cabinet cables are grouped into cable sets and provided as a cable pack. These packs provide all the cables for the following functions:

- Opto - Opto cables between PSUs, FCU, DXU and BFUs
- Power - All cables related to the main input power
- CDU - All cables related to dTRU, CXU and CDU

Note: All connectors, including attenuators and dummy loads, are to be tightened using torque wrench. See chapter *Tools*.

The new Cable Set Modules contain all cables for any one cell, see chapter *Introduction* for details. Cables, not involving RUs, are factory fitted to the cabinet.

All unused output ports on the CXUs are to be terminated with 50 Ω terminators. All input ports not in used (for example, transmitter ports) on the CDUs are terminated with the plastic protective sleeves. These terminators and protective sleeves are supplied with the CXU.

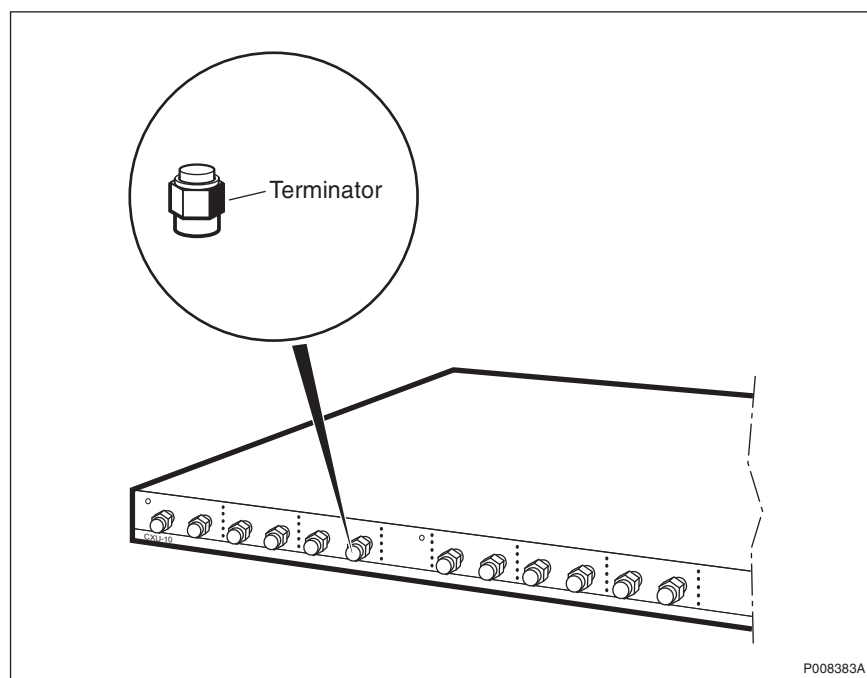


Figure 89 Terminating unused ports on CXU

11.1 Inserting and Extracting RUs

At the rear of each RU there are up to two connectors which are inserted into connectors in the magazine backplane. CDUs and TRUs also have locating pins to assist alignment.

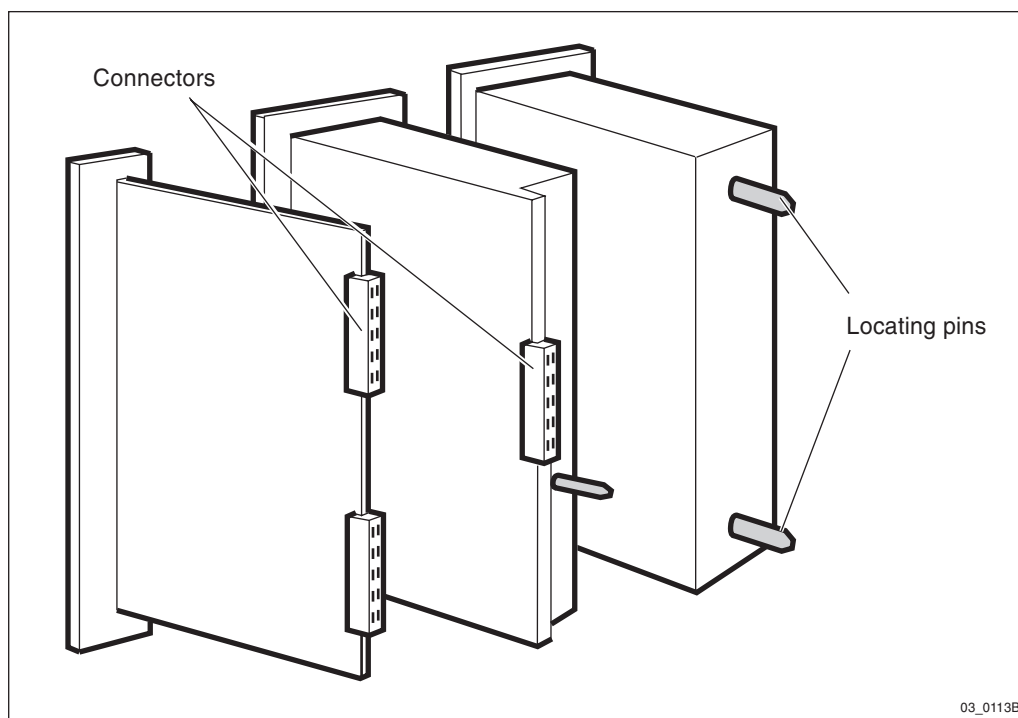


Figure 90 RUs with connectors and locating pins

To insert an RU:

1. Hold the unit by the upper and lower edges of the front plate and insert into the magazine.
2. Install each RU by aligning the edges with the magazine rails and gently push the unit fully into the magazine.
3. Secure the RU in position with the captive screws.

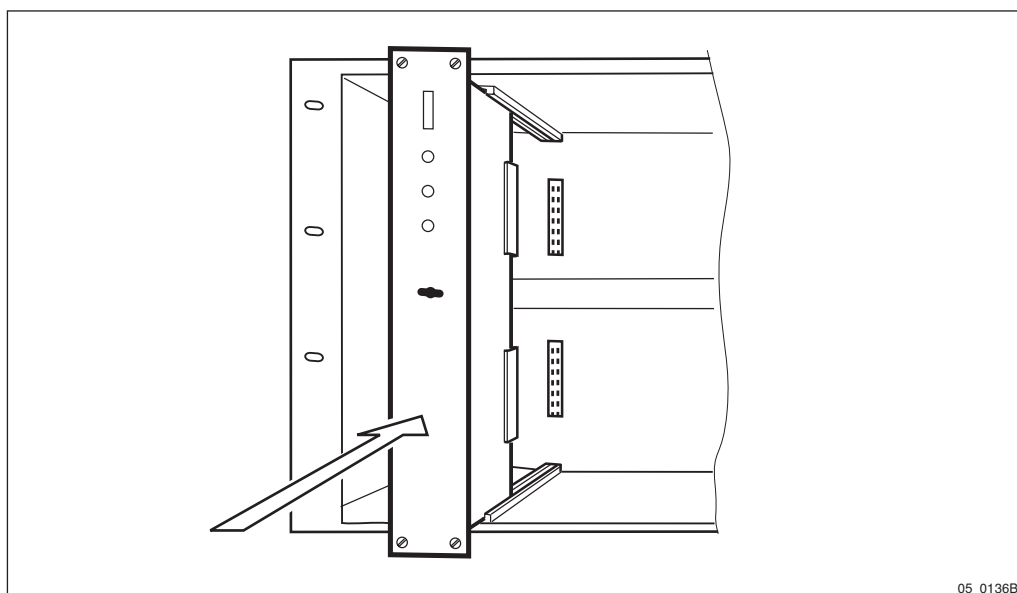
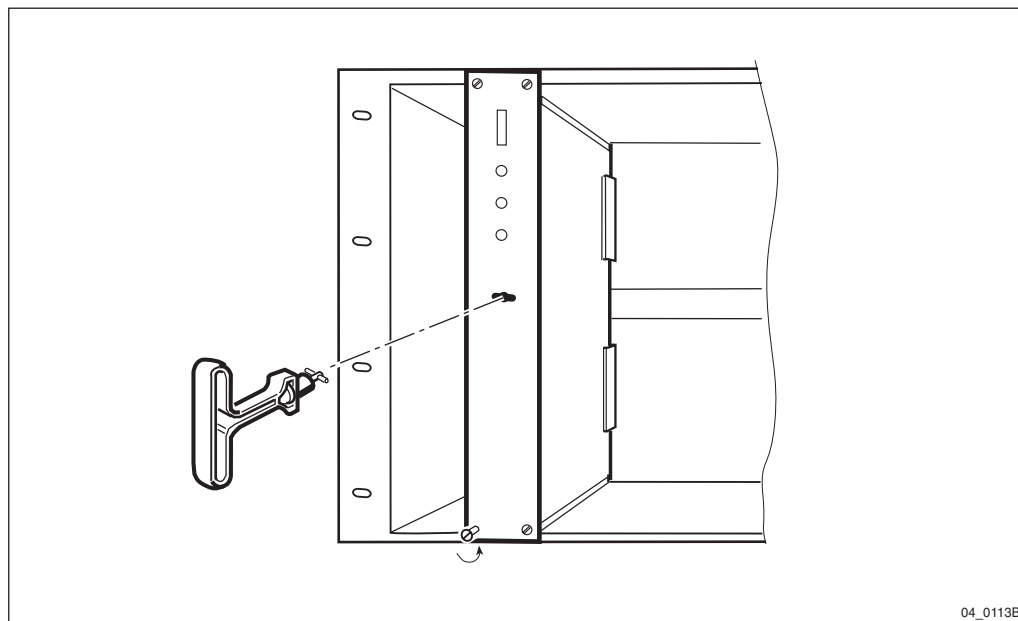


Figure 91 Inserting RUs

To remove an RU:

1. Loosen the captive screws.

2. Insert the extraction tool into the slot on the unit front and turn the tool 90° on either direction.
3. Carefully pull the unit forward and remove it.



04_0113B

Figure 92 Removing RUs

11.2 CDU to Connection Field - General

Each CDU is connected to antenna sockets situated in the connection field of the cabinet. The connection field is situated on the top of the cabinet:

- RBS 2206 - RX and TX connectors to the antenna are directly connected to the CDU.

The antenna ends of these cables are connected to RF sockets in the base or roof of the cabinet for connection to antennas. The following information describes the connection field sockets and the CDU connections to which they are connected. CDUs are numbered one to three (left to right) as they appear in the cabinet.

This manual does not list all RBS 2000 configurations, for a complete list, *see*:



Reference Manual LN/LZT 720 0008

11.3 CDU to Connection Field RBS 2206

The antenna connection fields are located on top of CDU-F and CDU-G.

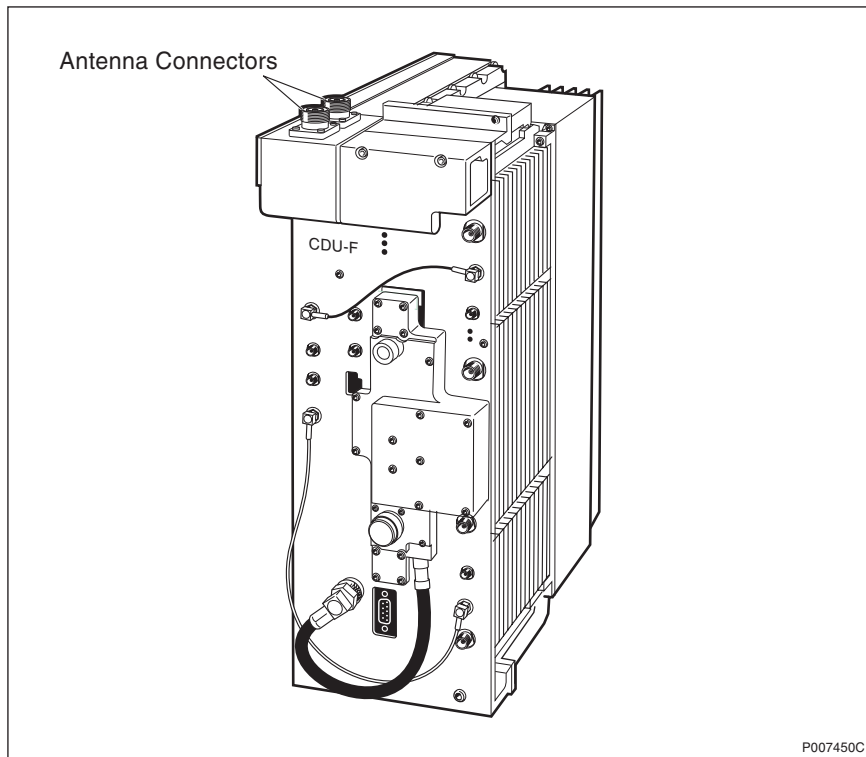


Figure 93 CDU-F layout

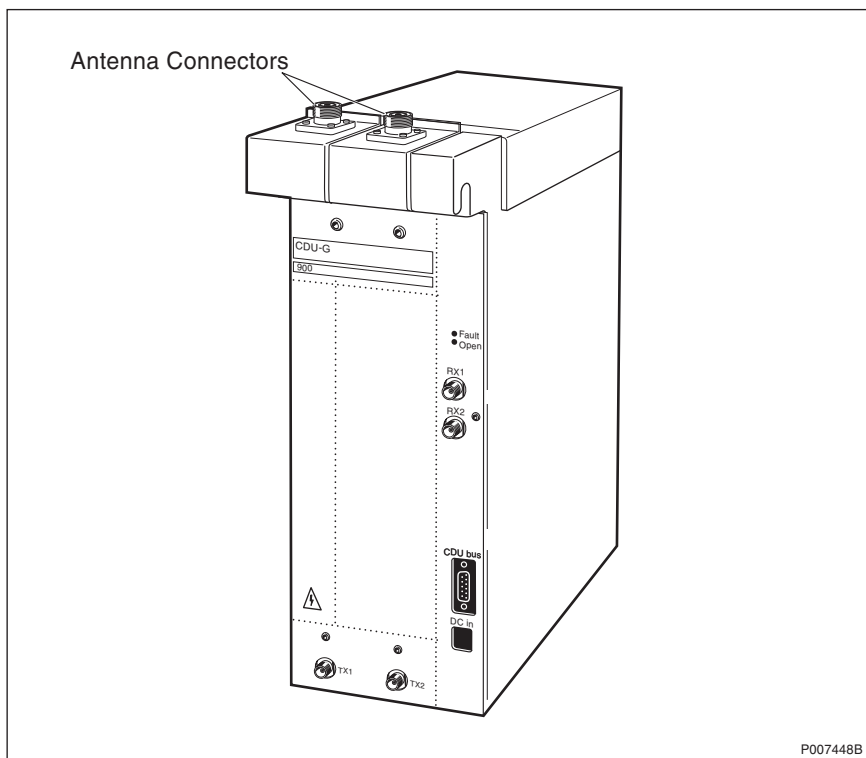


Figure 94 CDU-G layout

11.3.1 Cable Set Module Wiring CDU-F

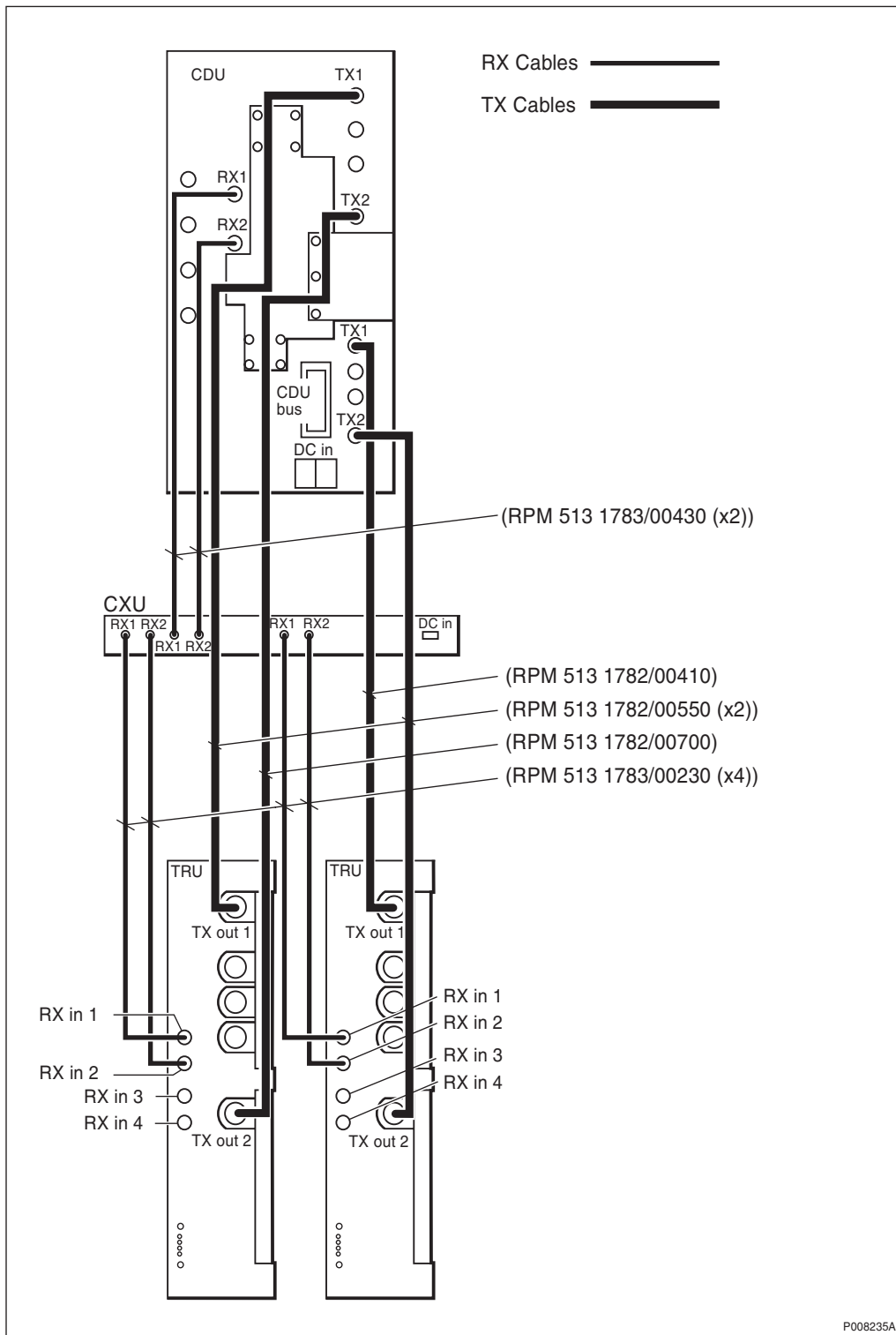


Figure 95 CDU-F connection to CXU and TRU

Cable kit no: NTM 201 2826/1

11.3.2 Cable Set Module Wiring CDU-G with Hybrid Combiner

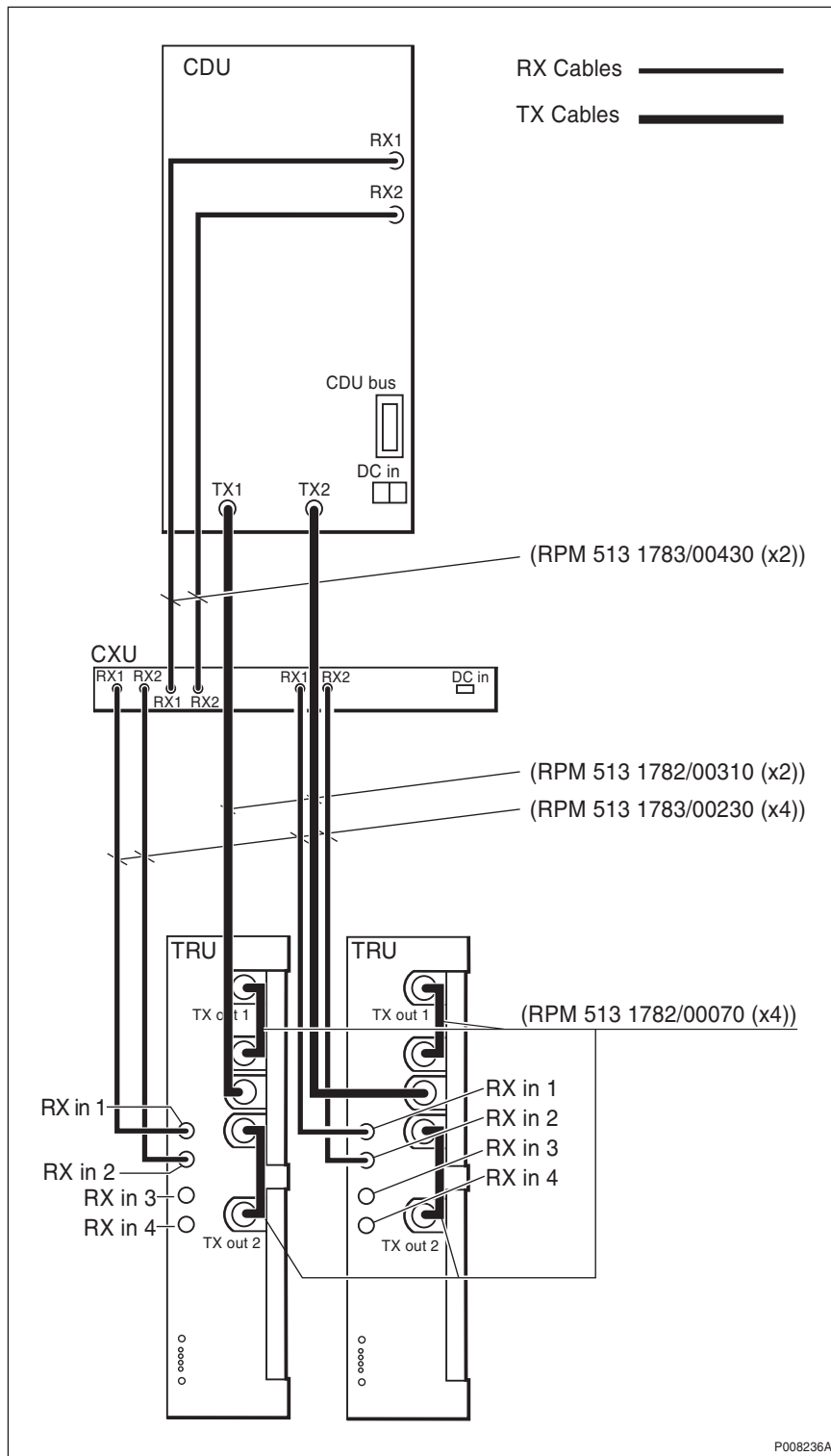


Figure 96 CDU-G connection to CXU and TRU with hybrid combiner
Cable kit no:NTM 201 2825/1.

11.3.3 Cable Set Module Wiring CDU-G without Hybrid Combiner

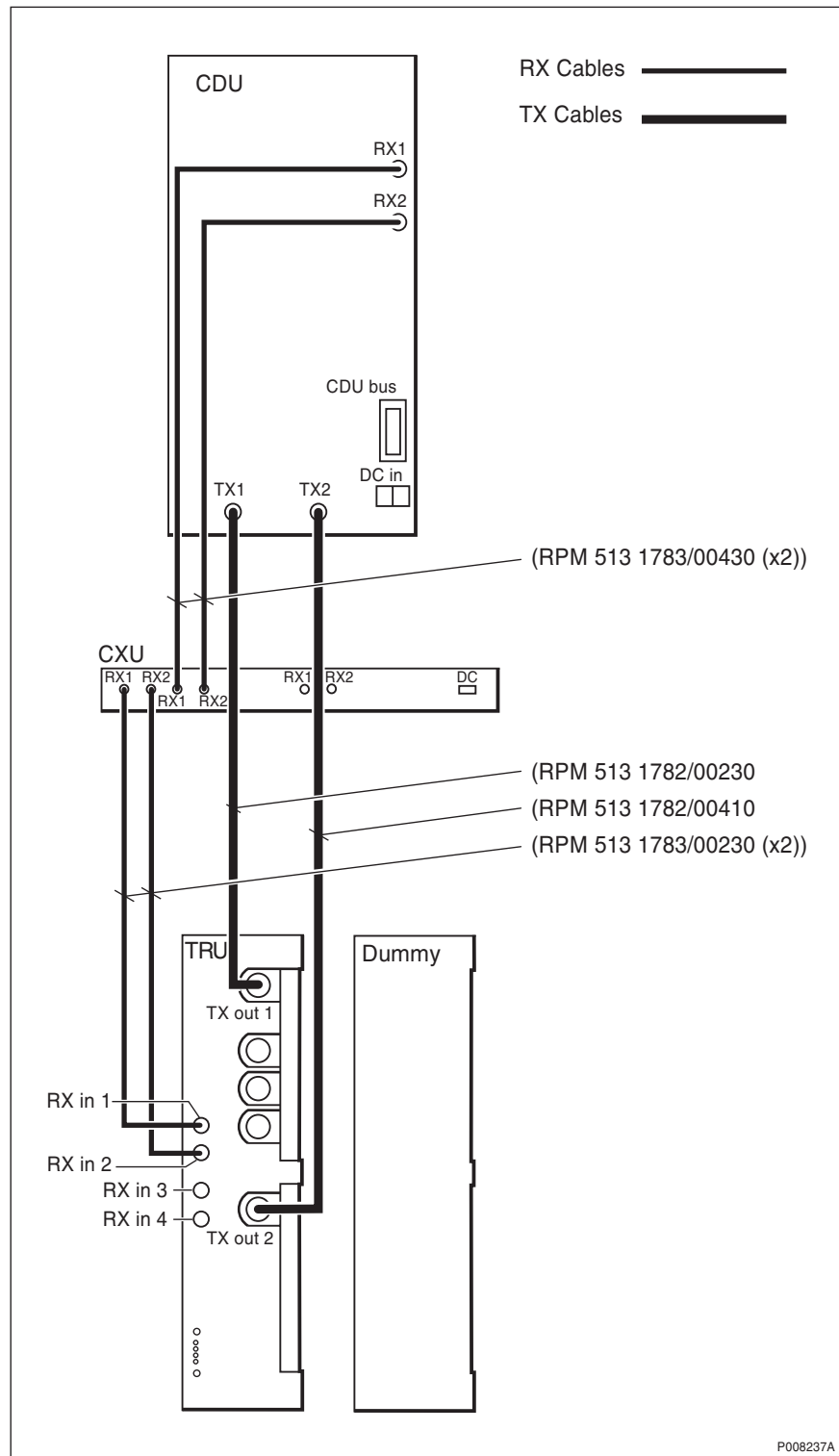
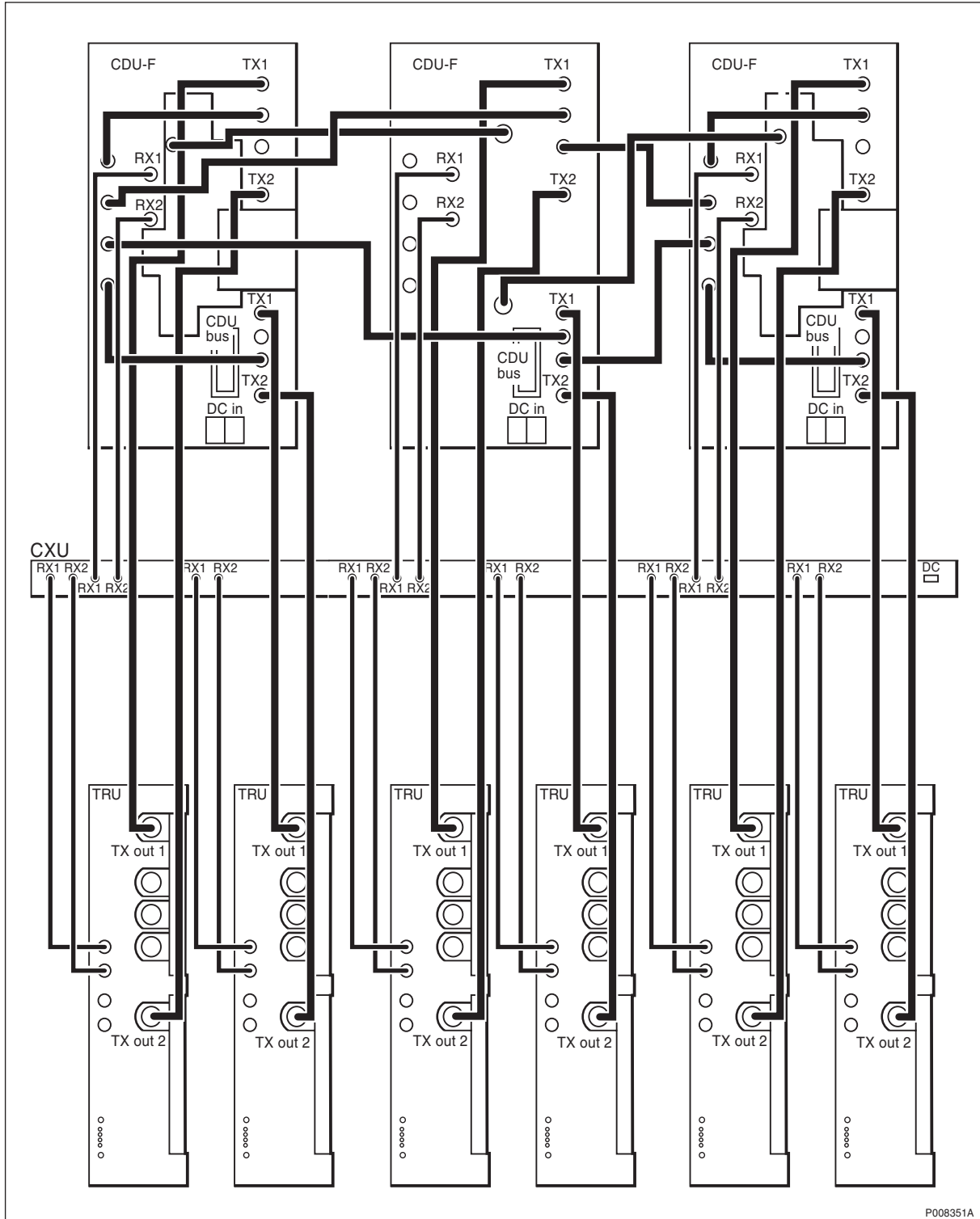


Figure 97 CDU-G connection to CXU and TRU without hybrid combiner
Cable kit no: NTM 201 2824/1.

11.3.4 Internal CDU Connections



P008351A

Figure 98 Connections between CDUs

11.4 CDU Antenna Connection Field RBS 2206

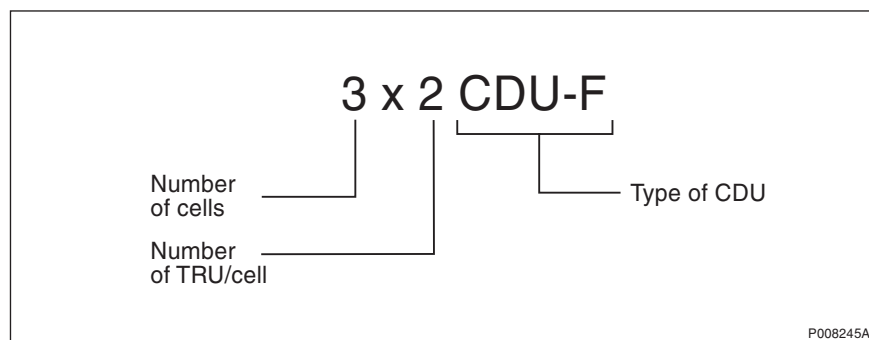


Figure 99 CDU configuration key

The various configurations available for cabinets are described using the following system:

In the example above, the cabinet is fitted with 3 CDUs, each connected to 2 TRUs; so there is a total of 6 TRUs in this case. The CDU is type CDU-F.

The RF cables between each CDU and its associated TRUs are standardized and do not normally change. Each CDU uses a set of standard RF wiring patterns for connection between each CDU and the cabinet Connection Field.

In the figures and tables in the sections that follow, the cabinets shown are fully equipped. Configurations consisting of a part of the fully equipped cabinet are also possible to extract from the following figures and tables.

11.4.1 CDU-F Antenna Connection

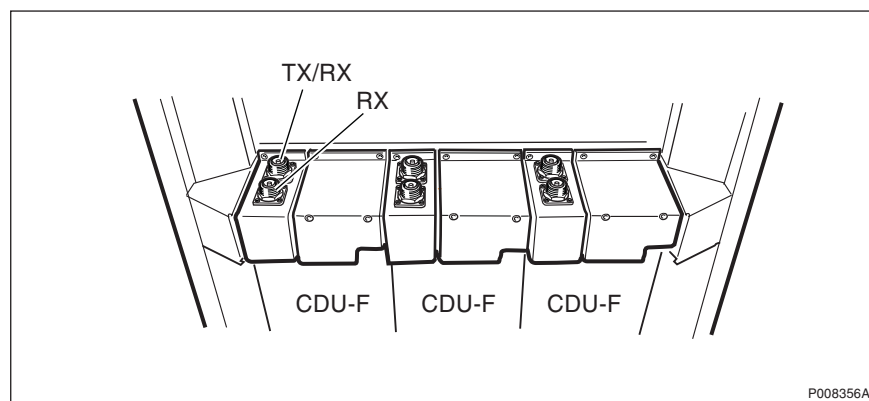


Figure 100 CDU-F antenna feeder connectors, RBS 2206

11.4.2 900/1800 CDU-F Configurations

3x2 CDU-F and 3x4 CDU-F

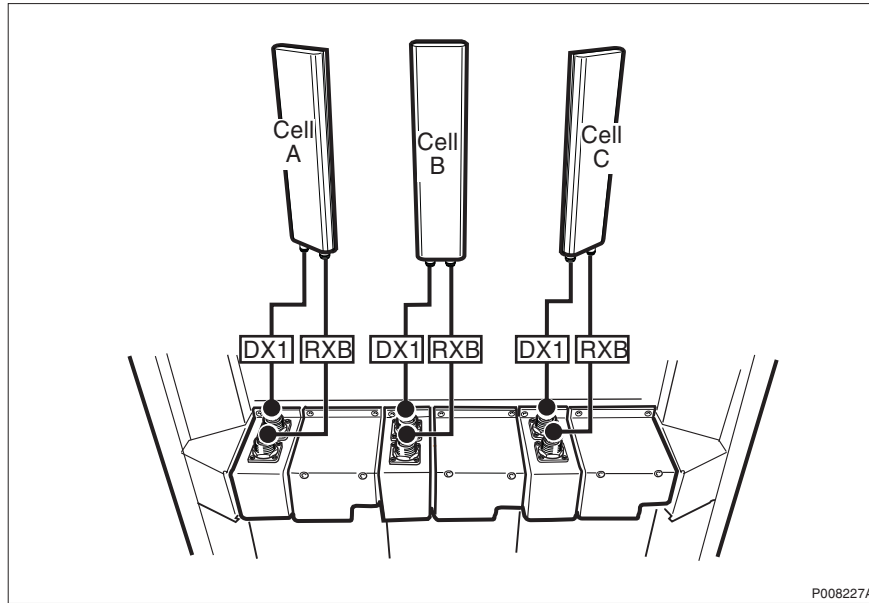


Figure 101 Configuration scheme without TMA

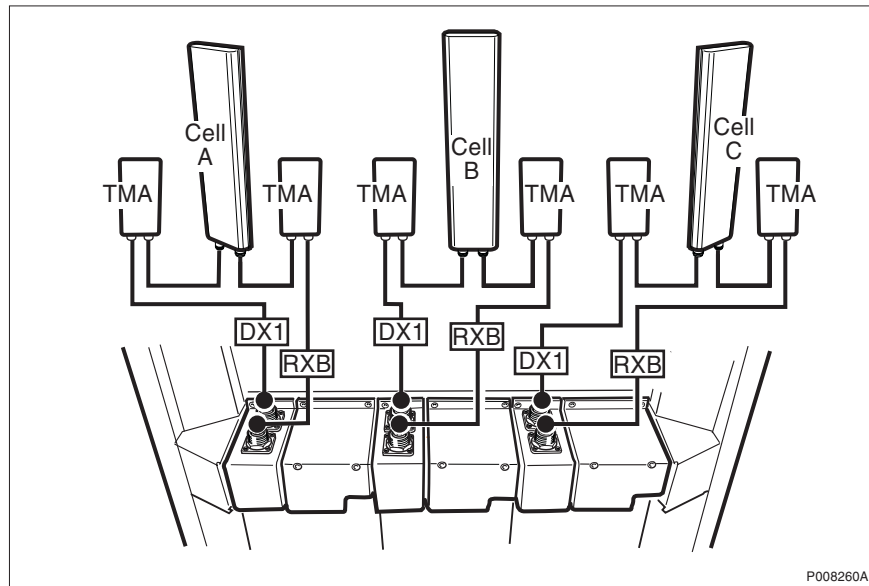


Figure 102 Configuration scheme with TMA

Table 33 3x2 CDU-F and 3x4 CDU-F

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX	TX/RX	CellA: DX1
		RX	RX	CellA: RXB
B	2	TX/RX	TX/RX	CellB: DX1
		RX	RX	CellB: RXB
C	2	TX/RX	TX/RX	CellC: DX1
		RX	RX	CellC: RXB

From the configuration scheme in figures above, the following configurations can be derived:

- 1x2 CDU-F
- 2x2 CDU-F
- 1x4 CDU-F
- 2x4 CDU-F

1x8 CDU-F

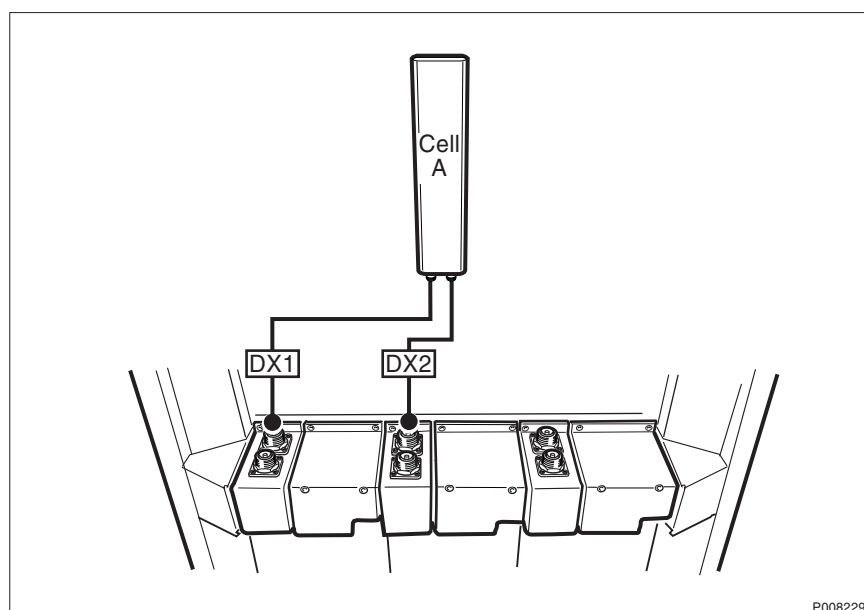


Figure 103 Configuration scheme without TMA

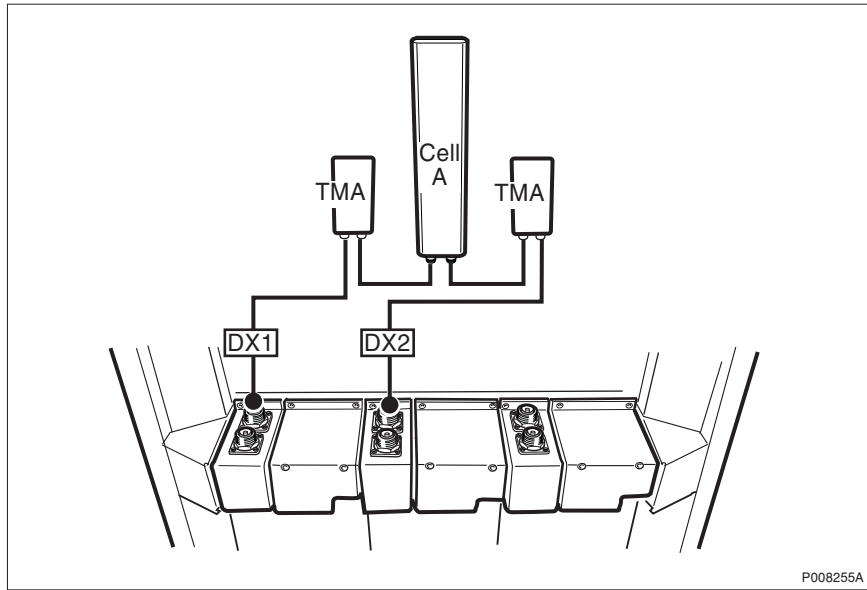


Figure 104 Configuration scheme with TMA

Table 34 1x8 CDU-F

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX	TX/RX	CellA: DX1
	2	TX/RX	TX/RX	CellA: DX2

1x12 CDU-F

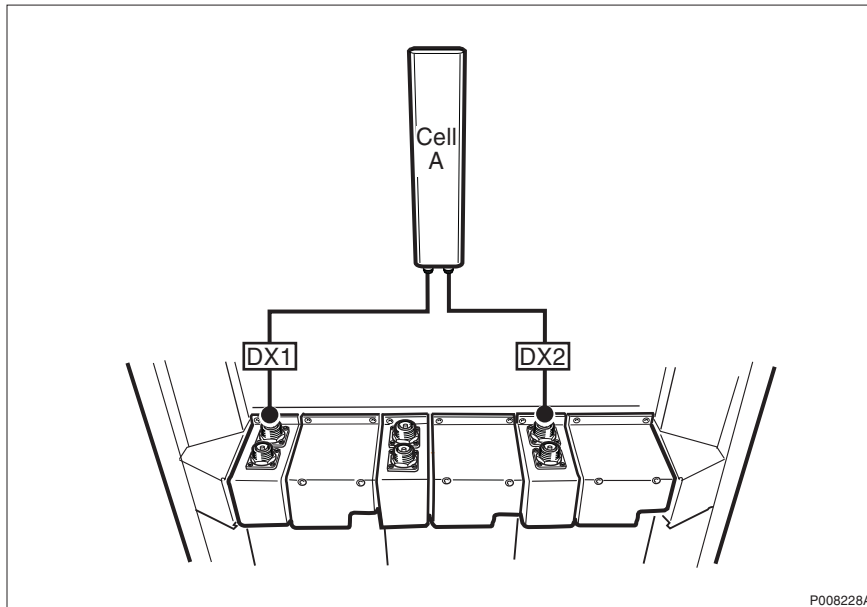


Figure 105 Configuration scheme without TMA

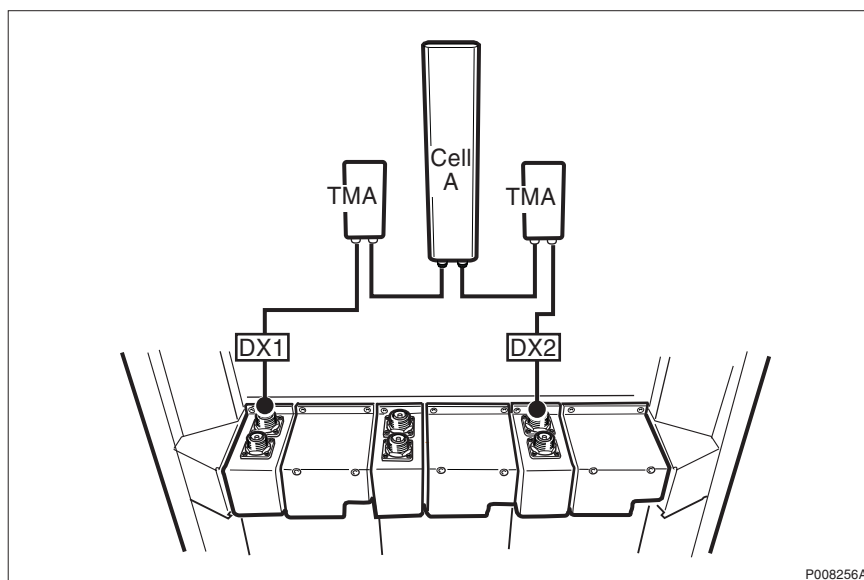


Figure 106 Configuration scheme with TMA

Table 35 1x12 CDU-F

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX	TX/RX	CellA: DX1
	3	TX/RX	TX/RX	CellA: DX2

2x6 CDU-F

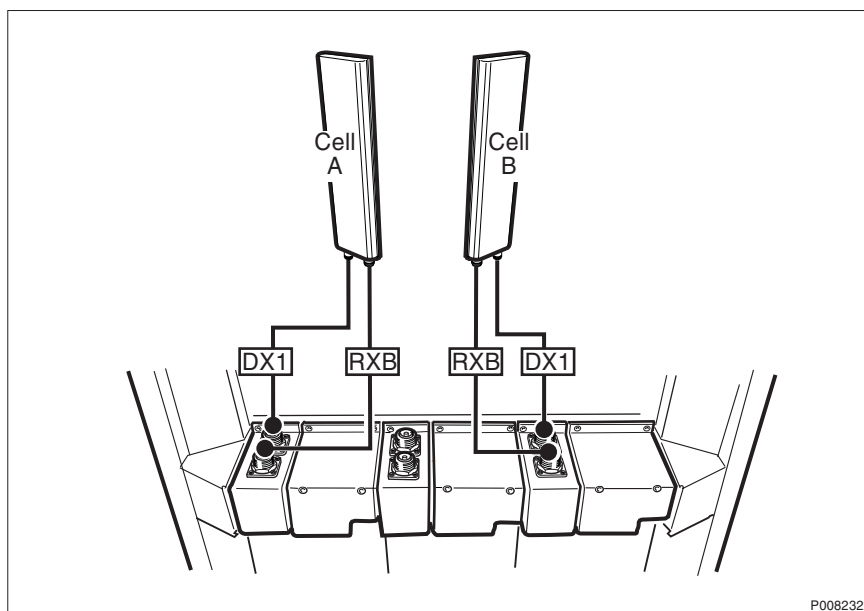


Figure 107 Configuration scheme without TMA

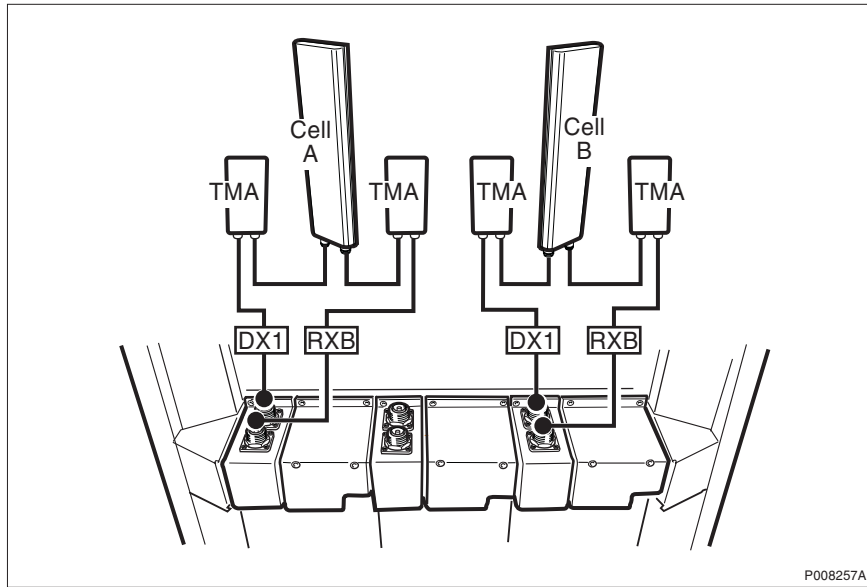


Figure 108 Configuration scheme with TMA

Table 36 2x6 CDU-F

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX	TX/RX	CellA: DX1
		RX	RX	CellA: RXB
B	3	TX/RX	TX/RX	CellB: DX1
		RX	RX	CellB: RXB

1x4 + 1x8 CDU-F

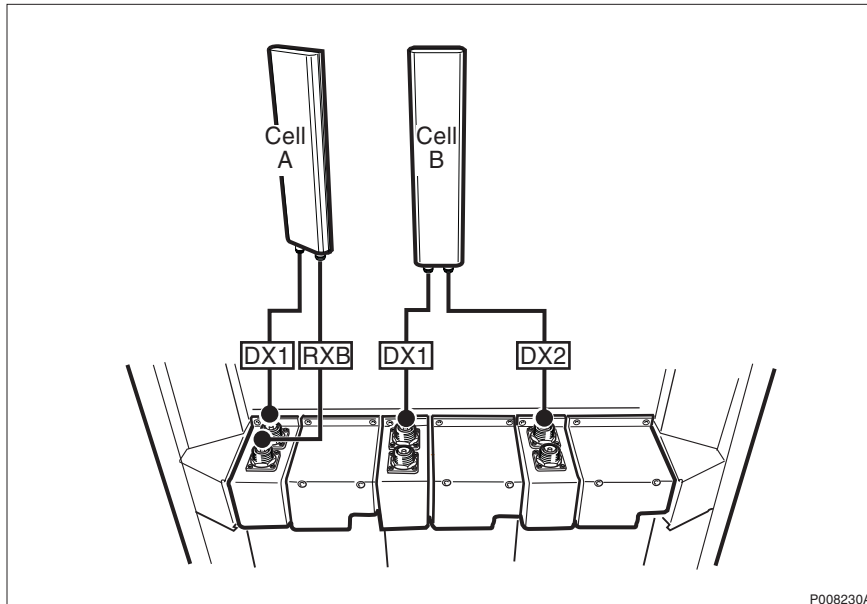


Figure 109 Configuration scheme without TMA

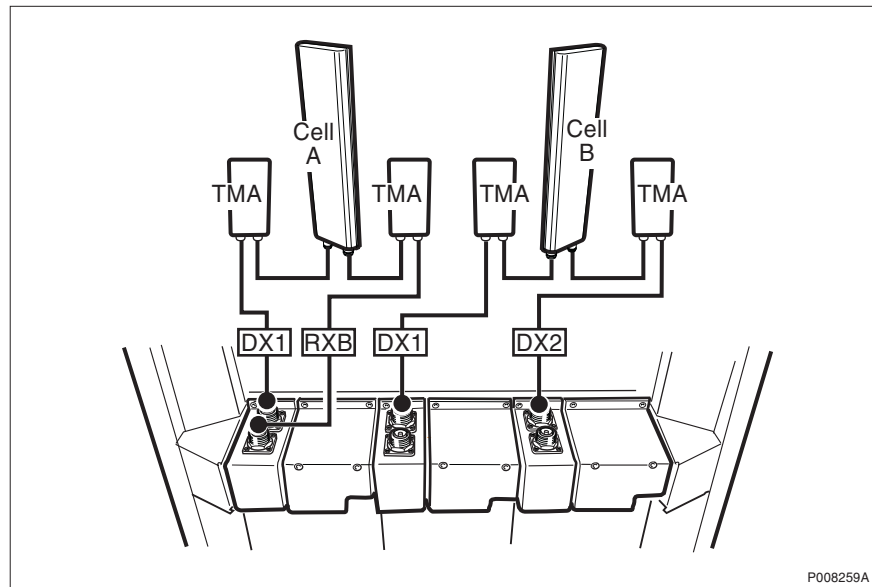


Figure 110 Configuration scheme with TMA

Table 37 1x4+1x8 CDU-F

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX	TX/RX	CellA: DX1
		RX	RX	CellA: RXB
B	2	TX/RX	TX/RX	CellB: DX1
	3	TX/RX	TX/RX	CellB: DX2

1x8 + 1x4 CDU-F

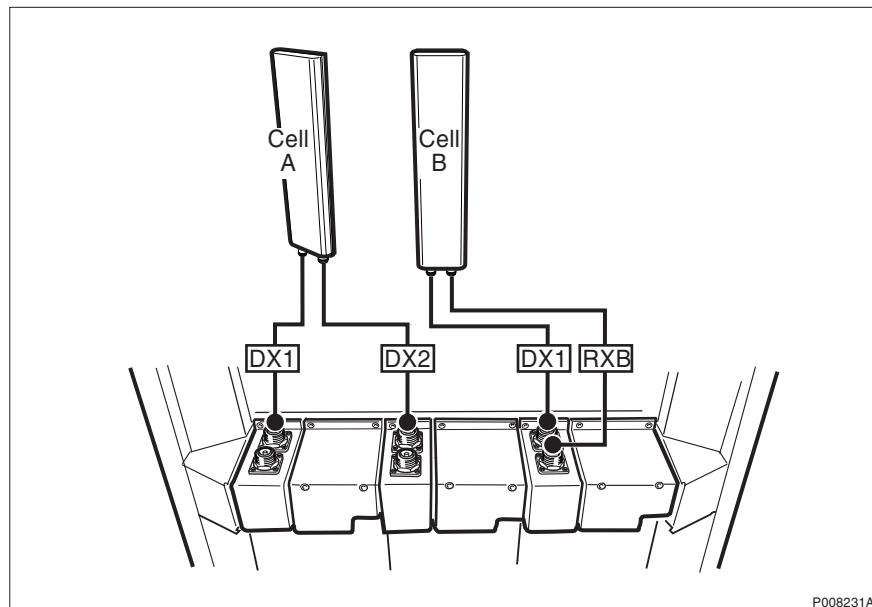


Figure 111 Configuration scheme without TMA

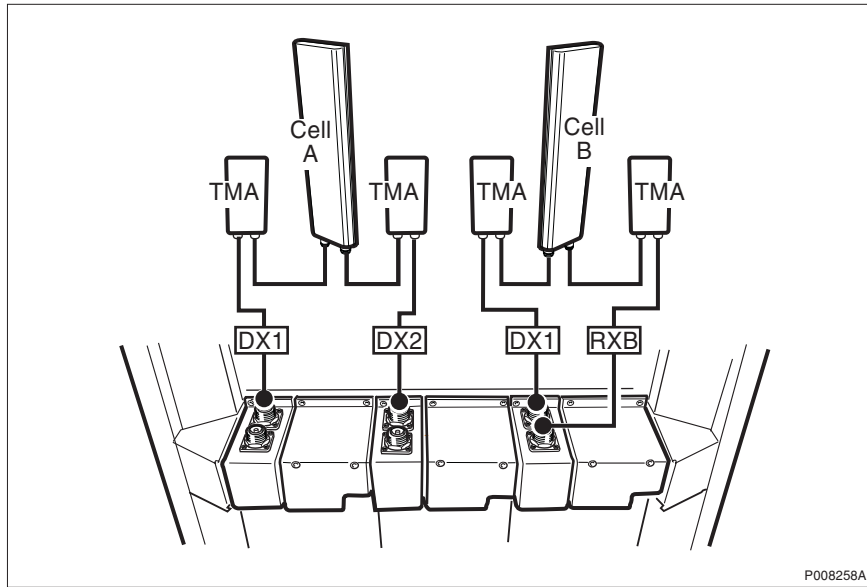


Figure 112 Configuration scheme with TMA

Table 38 1x8+1x4 CDU-F

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX	TX/RX	CellA: DX1
	2	TX/RX	TX/RX	CellA: DX2
B	3	TX/RX	TX/RX	CellB: DX1
		RX	RX	CellB: RXB

11.4.3 CDU-G Antenna Connection

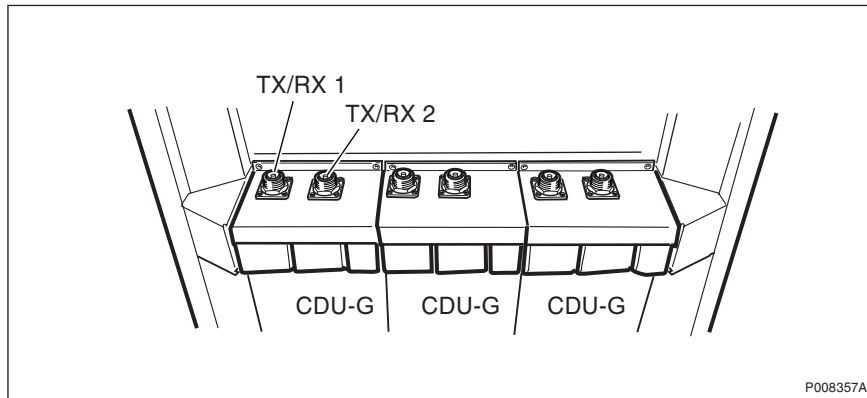


Figure 113 CDU-G antenna feeder connectors, RBS 2206

11.4.4 900/1800 CDU-G Configurations

3x2 CDU-G and 3x4 CDU-G

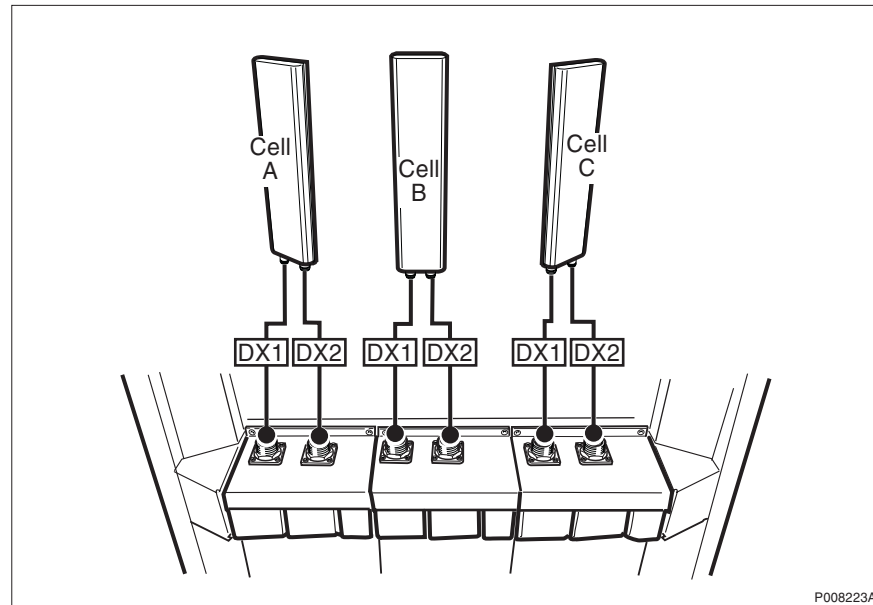


Figure 114 Configuration scheme without TMA

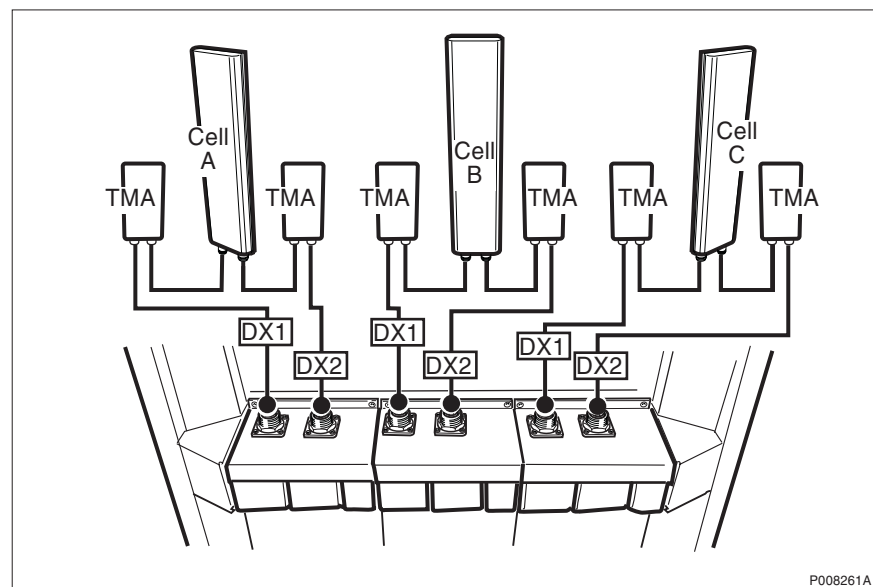


Figure 115 Configuration scheme with TMA

Table 39 3x2 CDU-G and 3x4 CDU-G

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX1	TX/RX	CellA: DX1
		TX/RX2	TX/RX	CellA: DX2
B	2	TX/RX1	TX/RX	CellB: DX1
		TX/RX2	TX/RX	CellB: DX2
C	3	TX/RX1	TX/RX	CellC: DX1
		TX/RX2	TX/RX	CellC: DX2

From the configuration in the figure above, the following configurations can be derived:

- 1x2 CDU-G
- 2x2 CDU-G
- 1x4 CDU-G
- 2x4 CDU-G

1x8 CDU-G

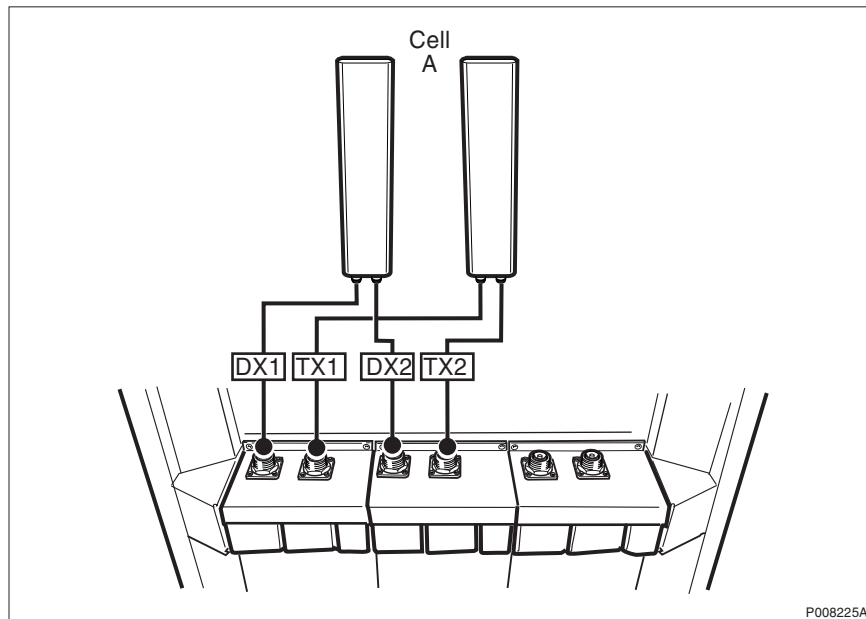


Figure 116 Configuration scheme without TMA

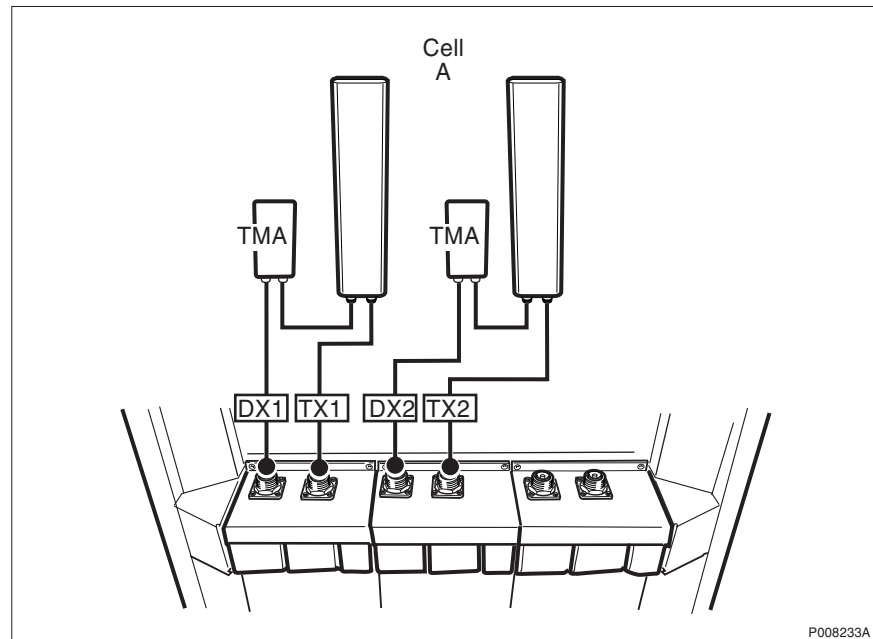


Figure 117 Configuration scheme with TMA

Table 40 1x8 CDU-G

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX1	TX/RX	CellA: DX1
		TX/RX2	TX	CellA: TX1
	2	TX/RX1	TX/RX	CellA: DX2
		TX/RX2	TX	CellA: TX2

1x12 CDU-G

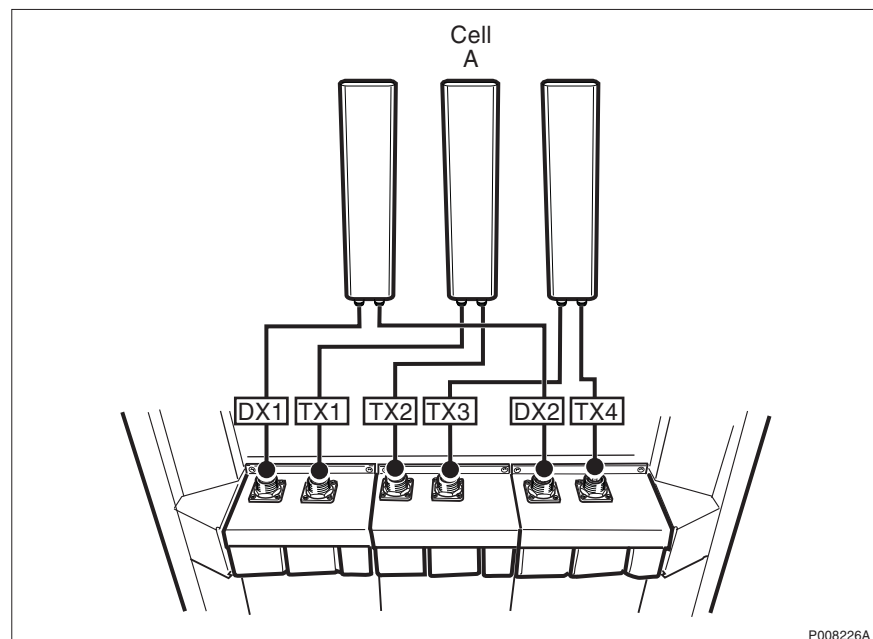


Figure 118 Configuration scheme without TMA

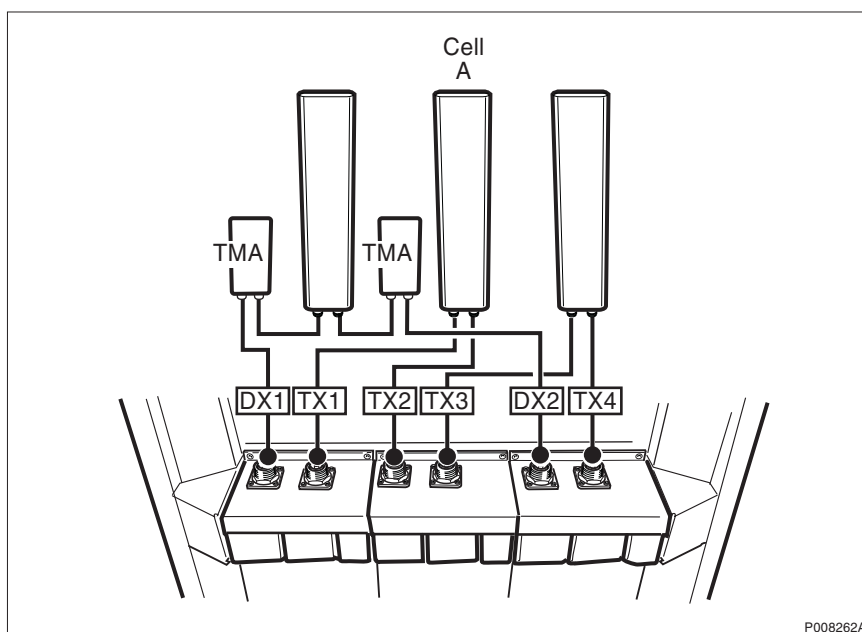


Figure 119 Configuration scheme with TMA

Table 41 1x12 CDU-G

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX1	TX/RX	CellA: DX1
		TX/RX2	TX	CellA: TX1
	2	TX/RX1	TX	CellA: TX2
		TX/RX2	TX	CellA: TX3
	3	TX/RX1	TX/RX	CellA: DX2
		TX/RX2	TX	CellA: TX4

2x6 CDU-G

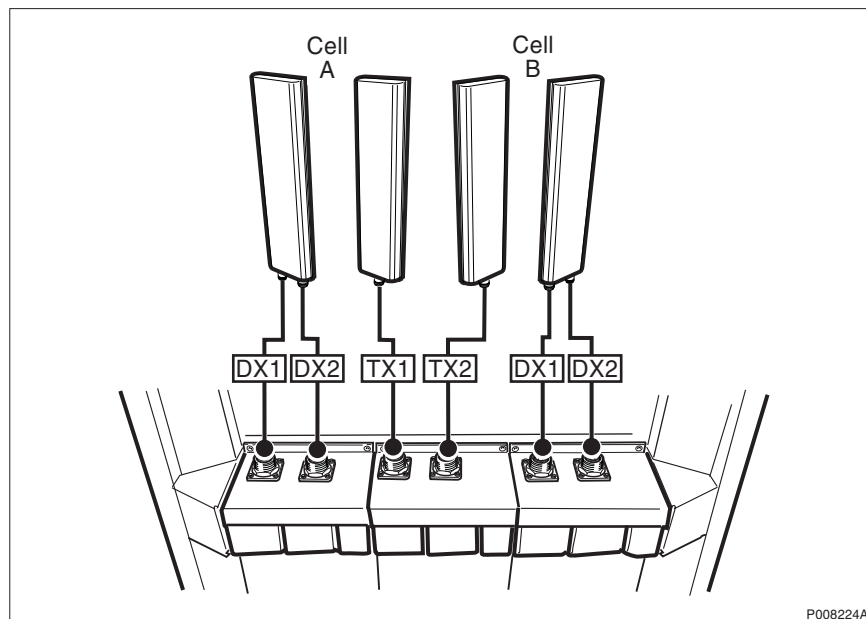


Figure 120 Configuration scheme without TMA

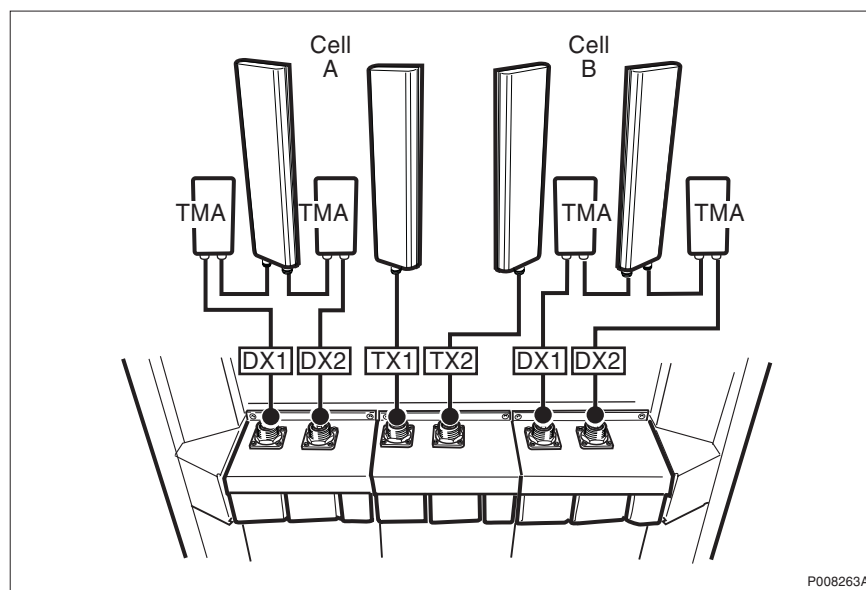


Figure 121 Configuration scheme with TMA

Table 42 2x6 CDU-G

Cell	CDU	Connection	Signal	Labelling
A	1	TX/RX1	TX/RX	CellA: DX1
		TX/RX2	TX/RX	CellA: DX2
B	2	TX/RX1	TX	CellA: TX1
		TX/RX2	TX	CellA: TX2
B	3	TX/RX1	TX/RX	CellA: DX1
		TX/RX2	TX/RX	CellA: DX2

This page is intentionally left blank

12 Glossary

This glossary lists abbreviations and acronyms used in texts dealing with RBS 2000. Some basic terms and acronyms needed for cross-references are included in the list.

In the RBS manuals, terminology defined by GSM is used together with terms related to Ericsson GSM system products.

Terms and Abbreviations

An arrow -> is used to indicate a reference to another entry in this list.

Abis	GSM interface standard defining attributes of the communication between BSC and BTS
AC	Alternating Current
ACB	Alarm Collection Board
ACCU	Alternating Current Connection Unit
A/D converter	Analog to Digital converter
Air conditioner	One version of the climate unit (Active cooler)
AIS	Alarm Indication Signal
ALNA	Antenna Low Noise Amplifier
AO	Application Object
ARAE	Antenna Related Auxiliary Equipment
ARFCN	Absolute Radio Frequency Channel Number
ARU	Active Replaceable Unit
ASIC	Application Specific Integrated Circuit
Astra	ASIC in the TRU
AT	Alphanumeric Terminal
ATRU	Adaptive Transceiver Unit
ATSR	Air Time Slot Resource
BALUN	BALance and UNbalance transformer
Batt	Battery
BB	Battery Box
BBS	Battery Backup Stand

BCCH	Broadcast Control CHannel Downlink only broadcast channel for broadcast of general information at a base station, on a base station basis.
BDM	Battery Distribution Module The BDM is an IDM with a battery and a local processor.
BER	Bit Error Rate
BFU	Battery Fuse Unit
BIAS-IC	BIAS Injector
Bm	Denotes a full rate traffic channel
BPC	Basic Physical Channel Denotes the air interface transport vehicle formed by repetition of one time slot on one or more radio frequency channels.
BS	Base Station
BSC	Base Station Controller GSM network node for control of one or more BTSs.
BSCSim	Base Station Controller Simulator
BSS	Base Station System GSM network logical unit comprising one BSC and one or more BTSs.
BTS	Base Transceiver Station GSM network unit operating on a set of radio frequency channels in one cell.
Burst	A portion of digital information, the physical content, that is transferred within the time interval of one time slot.
Cabinet	The physical housing of a base station
CBCH	Cell Broadcast CHannel This is a downlink only channel used by the GSM defined SMSCB function.
CCCH	Common Control CHannel Channel combining the following common control channels:

	PCH Paging CHannel
	RACH Random Access CHannel
	AGCH Access Grant CHannel
CCU	Climate Control Unit
CDU	Combining and Distribution Unit
CE	Conformité Européenne
Cell	An area of radio coverage identified by the GSM network by means of the cell identity
CF	Central Functions
Channel	The common term channel denotes the virtual connection, consisting of physical and logical channels between BSS and MS, during a call in progress. -> Logical Channel -> Physical Channel
Channel Combination	A physical channel on an air interface carries a defined set of logical channels.
Channel group	A channel group is a group of dedicated logical channels to a specific MS.
CM	Control Module (for TMA)
CMD	Digital Radio Communication Tester
CMRU	Central Main Replaceable Unit. Main RU. The RBS is physically connected to the Base Station Controller (BSC) via the CMRU. There is only one CMRU in each RBS.
CNU	Combining Network Unit
Compr	Compressor
CON	LAPD concentrator LAPD concentration is used to reduce the number of required physical links between the BSC and BTS.
Config	Configuration
Co-siting	Co-siting is to operate the radio base station in GSM together with the radio base station in Total Access Communication System (TACS) or Nordic

	Mobile Telephone system (NMT) on the same site by sharing common equipment.
CPU	Central Processing Unit
CSA	Canadian Standards Association
CSES	Consecutive Severely Errored Second
CSU	Channel Service Unit
CU	Combining Unit (RU in CDU_D)
CXU	Configuration Switch Unit
Dannie	ASIC in the TRU
DB	DataBase
DC	Direct Current
DCCH	Dedicated Control CHannel Dedicated control channels carry signalling data.
DCCU	DC Connection Unit
ddTMA	Dual Duplex Tower Mounted Amplifier This type needs only one combined TX/RX feeder from the BTS to the TMA. ->dTMA ->rTMA ->TMA ->BTS
DF	Distribution Frame
DFU	Distribution and Fuse Unit
DIP	DIGital Path The name of the function used for supervision of the connected PCM lines.
Dixie	ASIC in the TRU
DM	Degraded Minute
DM	Distribution Module
DMRU	Distributed Main Replaceable Unit If a Main RU is subordinated to the CMRU, it is said to be distributed.
Downlink	Signalling direction from the system to the MS
DP	Digital Path
DPX	Duplexer

DS1	Digital Signal level 1 (1544 kbit/s)
DSP	Digital Signal Processor
DT	Data Transcript
dTMA	Duplex TMA dTMA is similar to the old ALNA except for different characteristics. ->ddTMA ->rTMA ->TMA
dTRU	double Transceiver Unit
DU	Distribution Unit (RU in CDU-D)
DX	Direct Exchange
DXC	Digital Cross Connector
DXU	Distribution Switch Unit
DXX	Ericsson Cellular Transmission System including NMS
E1	Short for G.703 2048 kbit/s PCM link
E-GSM	Extended GSM
EACU	External Alarm Connection Unit
ECU	Energy Control Unit
EC1	External Condition Map Class 1
EC2	External Condition Map Class 2
EDGE	Enhanced Data rate for Global Evolution
EDT	Electrical Down Tilt
EEPROM	Electrically Erasable Programmable Read-Only Memory
EMC	Electro Magnetic Compatibility
EMF	ElectroMotive Force
EMI	Electromagnetic Interference
ENV	Environmental
ES	Errored Second
ESB	External Synchronization Bus
ESD	ElectroStatic Discharge
ESO	Ericsson Support Office

EXT	External
FACCH	Fast Associated Control CHannel Main signalling channel in association with a TCH.
FCC	Federal Communications Commission
FCCH	Frequency Correction CHannel
FCOMB	Filter COMBiner
FCU	Fan Control Unit
FDL	Facility Data Link
FER	Frame Erasure Ratio
FIU	Fan Interface Unit
FS	Function Specification
FSC	Field Support Centre
FU	Filter Unit (RU in CDU-D)
FUD	Filter Unit with duplexer (RU in CDU-D)
FXU	Future Expansion Unit
G01	MO model for RBS 200
G12	MO model for RBS 2000
G.703	CCITT Standard for transmission
GPRS	General Packet Radio Services
GSM	Global System for Mobile communications International standard for a TDMA digital mobile communication system. Originally, GSM was an abbreviation for Group Special Mobile, which is a European mobile telecommunication interest group, established in 1982.
HCOMB	Hybrid COMBiner
HDLC	High level Data Link Control
HDSL	High bit rate Digital Subscriber Line
Heat Exchanger	One version of the climate unit
HEU	Heat Exchanger Unit
HLIN	High Level IN

HLOUT	High Level OUT
HMS	Heat Management System
Hum	Humidity
HW	HardWare
HWU	Hardware Unit
	An HWU consists of one or more SEs. An HWU is a functional unit within the RBS. The HWU is either active (equipped with a processor) or passive (without processor).
IC	Integrated Circuit
ID	IDentification
IDB	Installation Data Base
IDM	Internal Distribution Module
IEC	International Electric Commission
IMSI	International Mobile Subscriber Identity
INIT	Initial
INT	Internal
IOG	Input/Output Group
IOM	Internal Operation and Maintenance bus
IR	InfraRed
IS	Interface Switch
IWD	InterWork Description
I1A	Internal Fault Map Class 1A
I1B	Internal Fault Map Class 1B
I2A	Internal Fault Map Class 2A
JTC	Joint Technical Committee
LAPD	Link Access Procedures on D-channel
	LAPD is the data link layer (layer 2) protocol used for communication between the BSC and the BTS on the Abis interface.
	Abis layer 2 is sometimes used synonymously with LAPD.

LBO	Line Build Out
LED	Light Emitting Diode
LLB	Line Loop Back
LNA	Low Noise Amplifier
Local bus	The local bus offers communication between a central main RU (DXU) and distributed main RUs (TRU and ECU).
Local mode	When the RU is in RU mode Local it is not prepared for BSC communication.
Local/Remote switch	Using the Local/Remote switch, an operator orders the RU to enter Local or Remote mode.
LOF	Loss Of Frame
Logical Channel	<p>A logical channel represents a specified portion of the information carrying capacity of a physical channel.</p> <p>GSM defines two major categories of logical channels:</p> <p>TCHs Traffic CHannels, for speech or user data</p> <p>CCHs Control CHannels, for control signalling.</p> <p>-> Physical Channel -> Channel Combination</p>
Logical RU	<p>A unit which can be referred to, but is not a single physical unit. There are three different kinds of logical RUs:</p> <ol style="list-style-type: none">1. Buses2. Antennas3. Environment
LOS	Loss Of Signal
MAC	Medium Access Controller
Magazine	A magazine is a reserved space in the cabinet, which may hold one or more RUs.
Main RU	A main replaceable unit is a replaceable unit that contains one or more processors, to which software can be downloaded from the BSC.
MHS	Modification Handling System

	Ericsson trouble report database
MMI	Man-Machine Interface
MO	Managed Object
MR	Measurement Receiver
MS	Mobile Station
MSC	Mobile services Switching Centre
	GSM network unit for switching, routing and controlling calls to and from the Public Switched Telephone Network (PSTN) and other networks.
MSTP	Mobile Station Test Point
Multidrop	Two or more RBSs are connected in a chain to the same transmission system. All the relevant timeslots are dropped out by each RBS. (This function is sometime called cascading.)
NEBS	Network Equipment Building System
NMS	Ericsson Network Management System in DXX
Nominal Power	The nominal power is the power level defined when configuring the transceiver.
N terminal	Neutral terminal in a AC mains connection
O&M	Operation and Maintenance General term for activities such as configuration, utilization of channels (frequency bands), cell planning, system supervision, hardware and software maintenance, subscriber administration, and so forth.
OMC	Operation and Maintenance Centre
OML	Operation and Maintenance Link Layer 2 communication link for operation and maintenance services on Abis.
OMT	Operation and Maintenance Terminal The OMT is a terminal that supports functions for handling the RBS on site. The terminal can be a portable PC.
Operation	Operation is the normal, everyday running of the RBS with full functionality.

OPI	Operational Instructions
OVP	OverVoltage Protection
OXU	Space for Optional Expansion
P-GSM	Primary GSM
Passive RU	A passive replaceable unit has a very low level of intelligence and is independent of the processor system.
PCAT	Product CATalogue A web-based ordering system in Ericsson's intranet.
PCH	Paging CHannel Downlink only subchannel of CCCH for system paging of MSs. -> CCCH
PCM	Pulse Code Modulation
PCU	Packet Control Unit
PE terminal	Protective Earth terminal in a AC mains connection
PFWD	Power Forward
Physical Channel	An air interface physical channel carries one or more logical channels. A physical channel uses a combination of frequency and time division multiplexing and is defined as a sequence of radio frequency channels and time slots. -> TDMA frame -> Logical channel
PIN	Personal Identification Number
PLB	Payload Loop Back
PLMN	Public Land Mobile Network A network, established and operated by an administration or its licensed operator(s), for the specific purpose of providing land mobile communication services to the public. It provides communication possibilities for mobile users. For communication between mobile and fixed users, interworking with a fixed network is necessary.
PPE	Personal Protective Equipment

PREFL	Power Reflected
PSU	Power Supply Unit
PWU	Power Unit
RACH	Random Access CHannel Uplink only subchannel of CCCH for MS request for allocation of a dedicated channel. -> CCCH
RAI	Remote Alarm Indication
RAM	Random Access Memory
RBER	Radio Bit Error Ratio
RBS	Radio Base Station All equipment forming one or more Ericsson base stations. ->BTS
RCB	Radio Connection Box
RD	Receive Data
Remote mode	When the RU is in RU mode Remote, a link is established between the BCS and the central main RU.
RF	Radio Frequency
RFCH	Radio Frequency CHannel A radio frequency carrier with its associated bandwidth.
RFTL	Radio Frequency Test Loop
RLC	Repair Logistic Centre
R-state	Release state
RS232	American standard for term/MODEM interconnection
rTMA	Receiver TMA rTMA has no duplexers. It is used for amplification of the RX signal. ->ddTMA ->dTMA ->TMA
RU	Replacement Unit

	An RU consists of one or more HWUs. An RU may be replaced by another RU of the same type. The RU is the smallest unit that can be handled on site.
RX	Receiver
RX1	Receiver antenna branch 1
RX2	Receiver antenna branch 2
RXA	Receiver antenna branch A
RXB	Receiver antenna branch B
RXD	Receiver Divider
RXDA	Receiver Divider Amplifier
RXLEV	Measure of signal strength as defined in GSM 05.08:8.1.4
RXQUAL	Measure of signal quality as defined in GSM 05.08:8.2.4
SACCH	Slow Associated Control CHannel
SCH	Synchronization CHannel
SDCCH	Stand alone Dedicated Control CHannel Main dedicated signalling channel on the air interface, mainly used for call locating and establishment.
SCU	Switching and Combining Unit
SE	Supervised Entity
SES	Severely Errored Second
SIG	Signalling
SIM	Subscriber Identity Module
SMS	Short Message Service (point to point) A short message, up to 160 alphanumeric characters long, can be sent to or from an MS (point to point).
SO	Service Object
SS	Swedish Standard
Sub-RU	A sub-replaceable unit is always connected to a superior Main RU. This connection is used for example for

	retrieval of the RU identity. A sub-RU normally does not have a processor. Note that an RU with a processor, which cannot be loaded, is classified as a sub-RU.
SVS	System Voltage Sensor
SW	SoftWare
SWR	Standing Wave Ratio
SYNC	Synchronous
T1	Transmission facility for DS1 (1544 kbit/s)
TA	Timing Advance
	A signal sent by the BTS to the MS which the MS uses to advance its timing of transmissions to the BTS to compensate for propagation delay.
TC	Transaction Capabilities
TCH	Traffic CHannel
	The traffic channels carry either encoded speech or user data.
TCH SIG	Traffic CHannel Signalling
TD	Transmit Data
TDMA	Time Division Multiple Access
	Multiplexing of several channels in a common frequency band. Each channel is assigned a certain time division, a time slot.
TDMA frame	GSM air interface time frame comprising eight time slots
TDR	Time Domain Reflectometer
TEI	Terminal Endpoint Identifier
	TEI is an identification code carried by a LAPD frame as a terminal connection endpoint within a Service Access Point (SAP).
TEMS	TEst Mobile Station
TF	Timing Function
TG	Transceiver Group

Timing bus	The timing bus carries air timing information from the timing unit in the DXU to the TRUs.
TM	Transport Module The Transport module is non-RBS equipment belonging to the transport network.
TMA	Tower Mounted Amplifier There are three types of TMAs: dTMA, rTMA and ddTMA. ->dTMA ->rTMA ->ddTMA
TMA CM	Tower Mounted Amplifier Control Module
TN	Timeslot Number
TN O&M	Transport Network operation and Maintenance (in general)
Tora	ASIC in the TRU
TRA	Transcoder Rate Adapter The TRA Unit performs transcoding of speech information and rate adaption of data information.
Tracy	ASIC in the TRU
TRS	Transceiver System
TRU	Transceiver Unit
TRX	Transceiver
TRXC	Transceiver Controller
TS	Time Slot A 0.577 ms period (TDMA frame subunit) corresponding to 156.25 raw bits of information. The eight time slots of each TDMA frame are numbered 0...7. -> Burst
TT	Total Time
TU	Timing Unit
TX	Transmitter
TXA	Transmitter Antenna A
TXB	Transmitter Antenna B

TXBP	Transmitter BandPass filter
UAS	Unavailable Seconds
UL	Underwriter Laboratories
Uplink	Signalling direction from the MS to the system
UPS	Uninterrupted Power Supply
VCO	Voltage Controlled Oscillator
VSWR	Voltage Standing Wave Ratio RF signal measure. The quotient between transmitted and reflected voltage.
X-bus	The X-bus carries transmit air data frames between transceivers.
Y-link	The interface between the DXU and each DSP System in Core based TRUs



P007831A

Ericsson GSM System

RBS 2206

Spare Parts Catalogue

Ericsson GSM System

RBS 2206

Spare Parts Catalogue

This page is intentionally left blank

Spare Parts Catalogue

© Ericsson Radio Systems AB - All Rights Reserved -

Due to continued progress in methodology, design and manufacturing the contents of this document are subject to revision without notice.

Contents

Preface	7
Release History	8
Spare Parts Philosophy for RBS 2000	9
General Information	9
Recommended (Repairable) Spare Parts for Customer Stock . . . . .	.11
Basic Units . . . . .	.13
900 MHz Units . . . . .	.15
1800 MHz Units . . . . .	.17
1900 MHz Units . . . . .	.19
Recommended (Not Repairable) Spare Parts for Customer Stock . . . . .	.21
Basic Units . . . . .	.23
Cabinet Parts . . . . .	.25
Common Cables . . . . .	.27
Other Available Parts . . . . .	.29
Miscellaneous Parts . . . . .	.31
ACCU/DCCU/VDC-filter . . . . .	.33
Cabinet Parts . . . . .	.35
CNU connections. . . . .	.37
Cables. . . . .	.39
Coaxial Cables CDU-G without hybrid . . . . .	.43
Coaxial Cables CDU-G with hybrid . . . . .	.45
Coaxial Cables CDU-F. . . . .	.47
Dummies . . . . .	.49
Packing . . . . .	.51
Replaced and Withdrawn Parts . . . . .	.53
Numerical Index . . . . .	.57

This page is intentionally left blank

Preface

This catalogue is a complement to the Maintenance Manual and provides the information necessary to order replaceable parts. This information is useful for the general planning of a maintenance organisation and in building up a spare parts stock.

The main target groups are:

- Field Technicians
- Technical Administrators

Customer Documentation Library

The user documentation for the RBS 2206 consists of customer manuals divided up to suit different process events. The *Library Overview* contains the following information for each manual:

- Short description
- Recommended target group
- Product number

For more information about the RBS 2000 customer documentation library, see:



RBS 2000 Library Overview

LZN 302 73

Release History

In addition to editorial changes, such as corrections of spelling, grammar and layout, the following changes have been made for each release. Only the three last R-states are listed below.

Spare Parts Philosophy for RBS 2000

The specifying and classifying of spare parts is done during the service preparation process which is a part of the industrialization process. The result is a spare part list containing three classes of spare parts:

- Recommended for customer stock. Intended to be replaced on site and intended to be repaired at Ericsson Repair Center or by the Local Service Organisation (code = U)
- Recommended for customer stock. Intended to be replaced on site or at local shop and intended to be disposed after consumption (code = R).
- Not recommended for customer stock. The parts are available when needed (code = A).

The spare parts catalogue is adapted to this structure.

The dimensioning and recommendation of spare parts will not follow the principle one-of-each-board-in-use unless the customer expressly so insists.

The dimensioning and recommendation of spare part stocks is and will be done with a computer-based calculation model for BTS equipment.

The tool is working with the parameters:

- Product reliability (MTBF)
- Spare part delivery lead time or repair turn around time.
- Chosen service level (Spare Part Management).
- The spare part structure.
- Quantity of each unit in operation to be supported by the specific stock.
- The probability of shortage.

General Information

The catalogue is divided into separate chapters, depending on recommendations (classifications).

Position numbers put in brackets () are associated parts, not necessary shown in illustrations. Position numbers with letters, like 3A, 3B are alternative products. New products are indicated by a #-sign in front of the position number.

Parts without Product number may be shown on illustrations, but are not recommended for customer stock, or may be included in a Spare Parts Set (and not separate orderable). If a reference to another chapter is given, more information will be found there.

Spare Parts Ordering Address:

Please use the Regional Ericsson Company, else:

Ericsson Radio Systems AB

SG/ERA/GV/DP

Customer Support Services, Strategic Supply Management

S-164 80 Stockholm

FAX: +46 8 751 4176

Repair Delivery Address:

Please use the Regional Logistics Center specified in the System Services Contract with the local Ericsson Company.

Catalogue Ordering:

Use the product no. seen at the bottom of this page.

External users can order Spare Parts Catalogues (or other manuals according to the Library Overview), from the same address as for Spare Parts, above.

Internal users (within the Ericsson Company) can always find the latest version of the Catalogue on the Intranet address:

<http://cpistore.ericsson.se/>

Remarks

External user's comments or questions regarding information in this catalogue should be addressed to:

Spare Parts Documentation, Telefax: **+46 8 757 1388**

or as e-mail to **hws.support@era.ericsson.se**

Internal Ericsson users can make a MHS Trouble Report on the catalogue's Product No. and R-state seen at the bottom of this page.

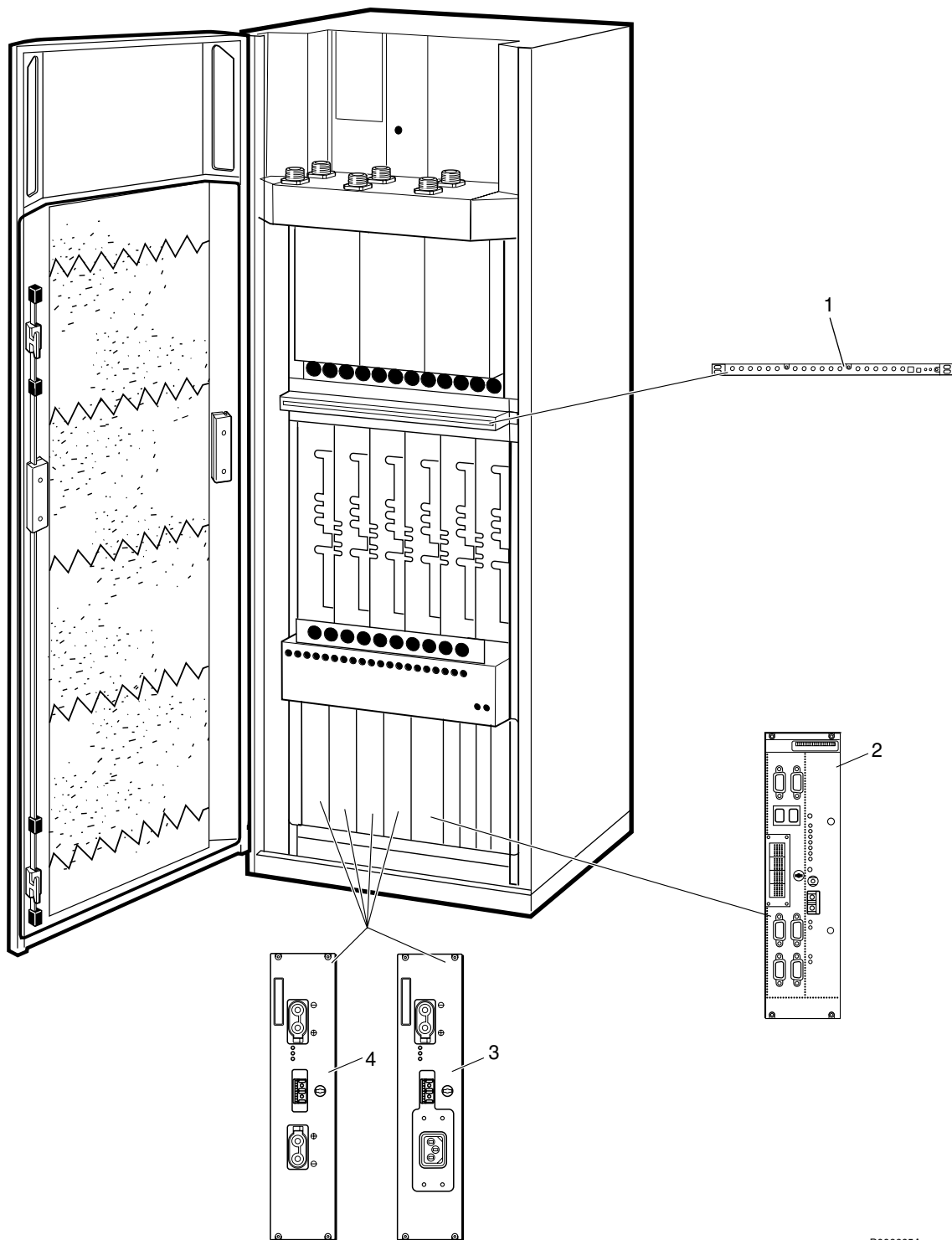
Recommended (Repairable) Spare Parts for Customer Stock

About this chapter

All parts in this chapter have the internal code = U. These parts recommended for Customer stock, are intended to be replaced on site and intended to be repaired at an Ericsson Repair Centre or by the Local Service Organisation

It is only possible to order new repairable parts as long as serial production continues. When production ceases these parts can only be sent for repair.

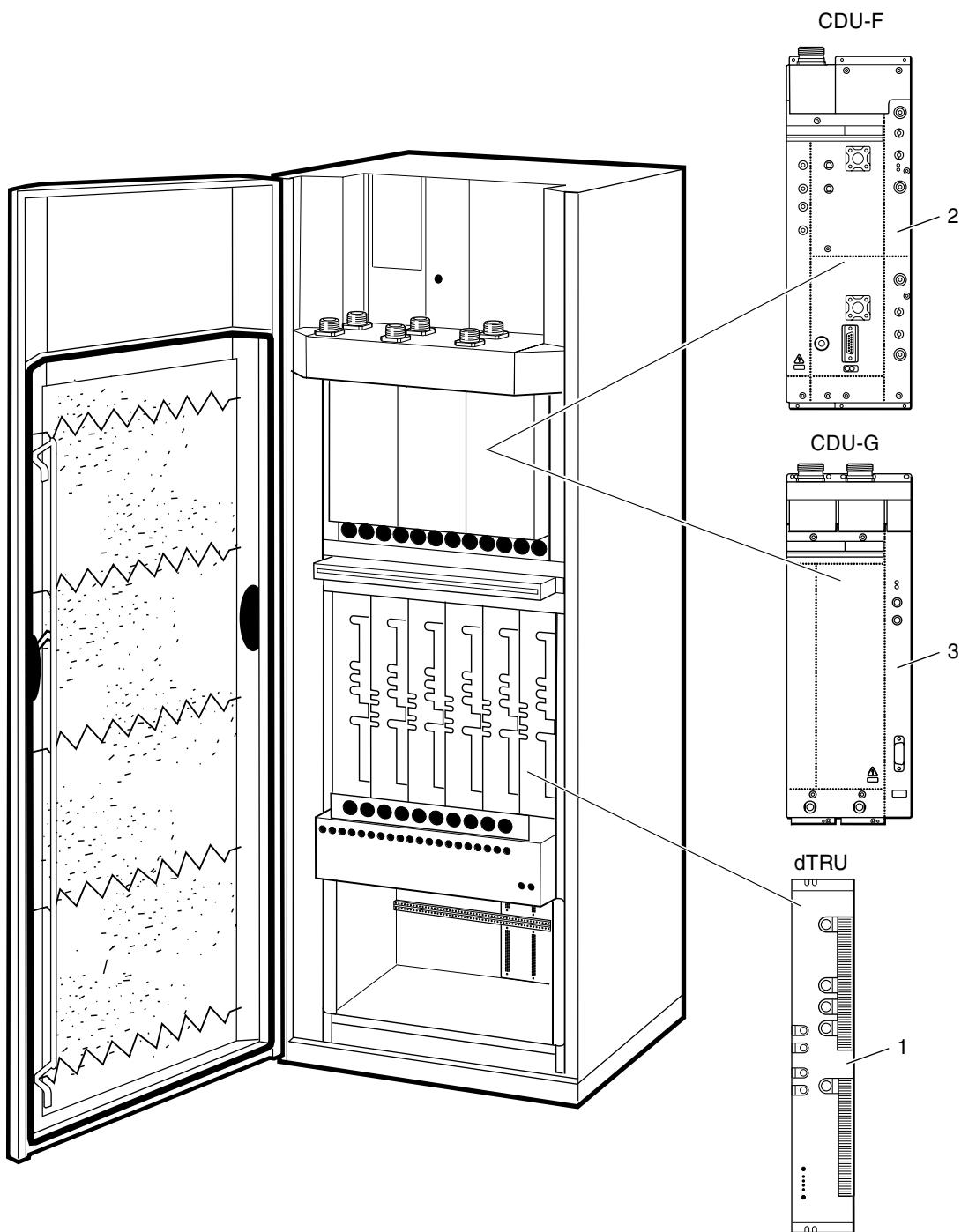
Recommended (Repairable) Spare Parts for Customer Stock



P006605A

Basic Units

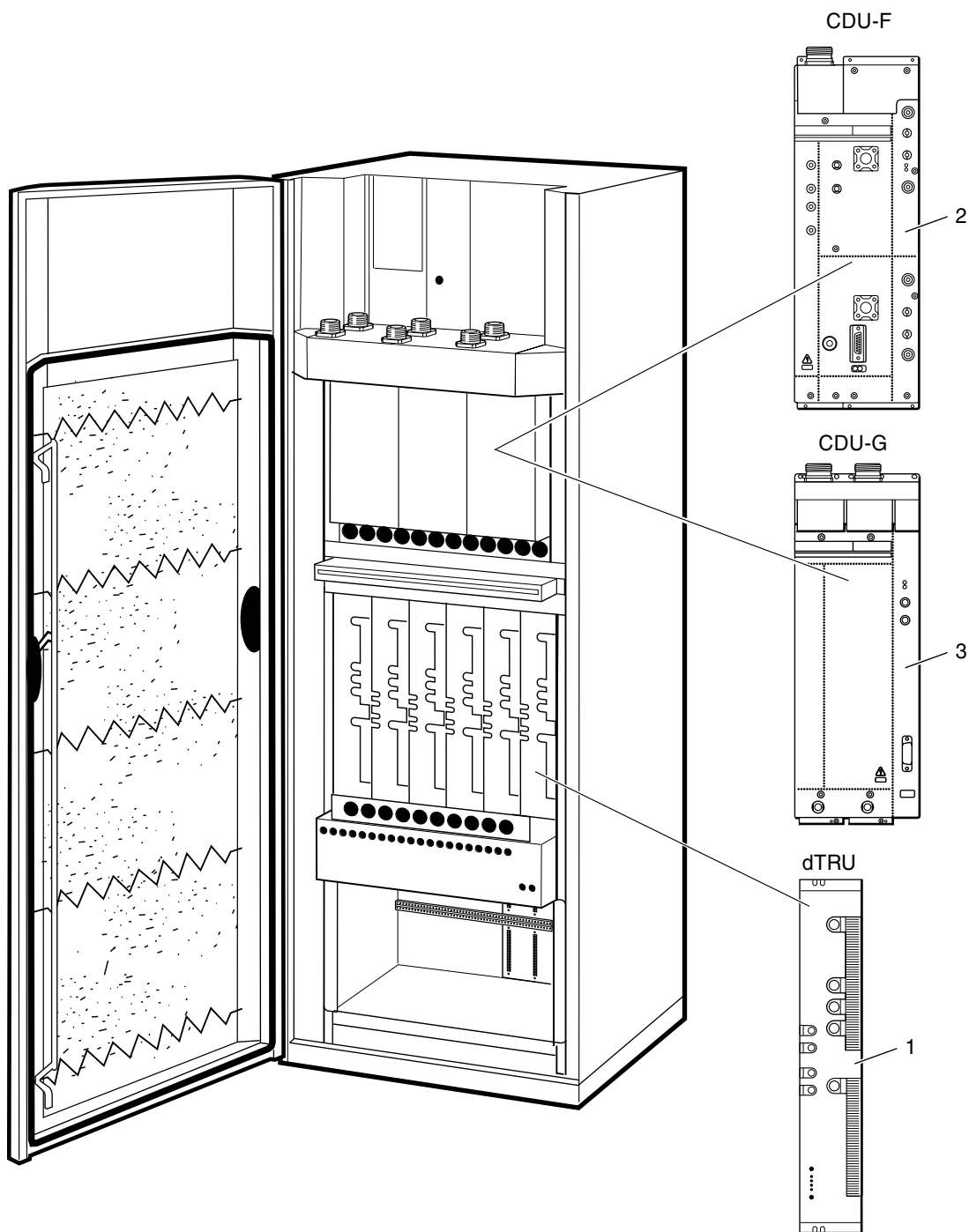
Pos	Product Number	Product Name	Description
1	KRY 101 1856/1	Unit	CXU 900/1800MHz
2	BOE 602 14/1	Functional unit	DXU-21
3	BML 231 202/1	Power supply unit	PSU230 1000W +24VDC FC OPTO
4	BMR 960 014/1	Dc/dc-converter	PSU48 1200W, -48/+24VDC FC



P006606A

900 MHz Units

Pos	Product Number	Product Name	Description
1	KRC 131 1002/1	Transceiver	dTRU; GMSK
2	BFL 119 147/1	Combiner unit	CDU-F
3	BFL 119 142/1	Combiner unit	E-GSM / CDU-G

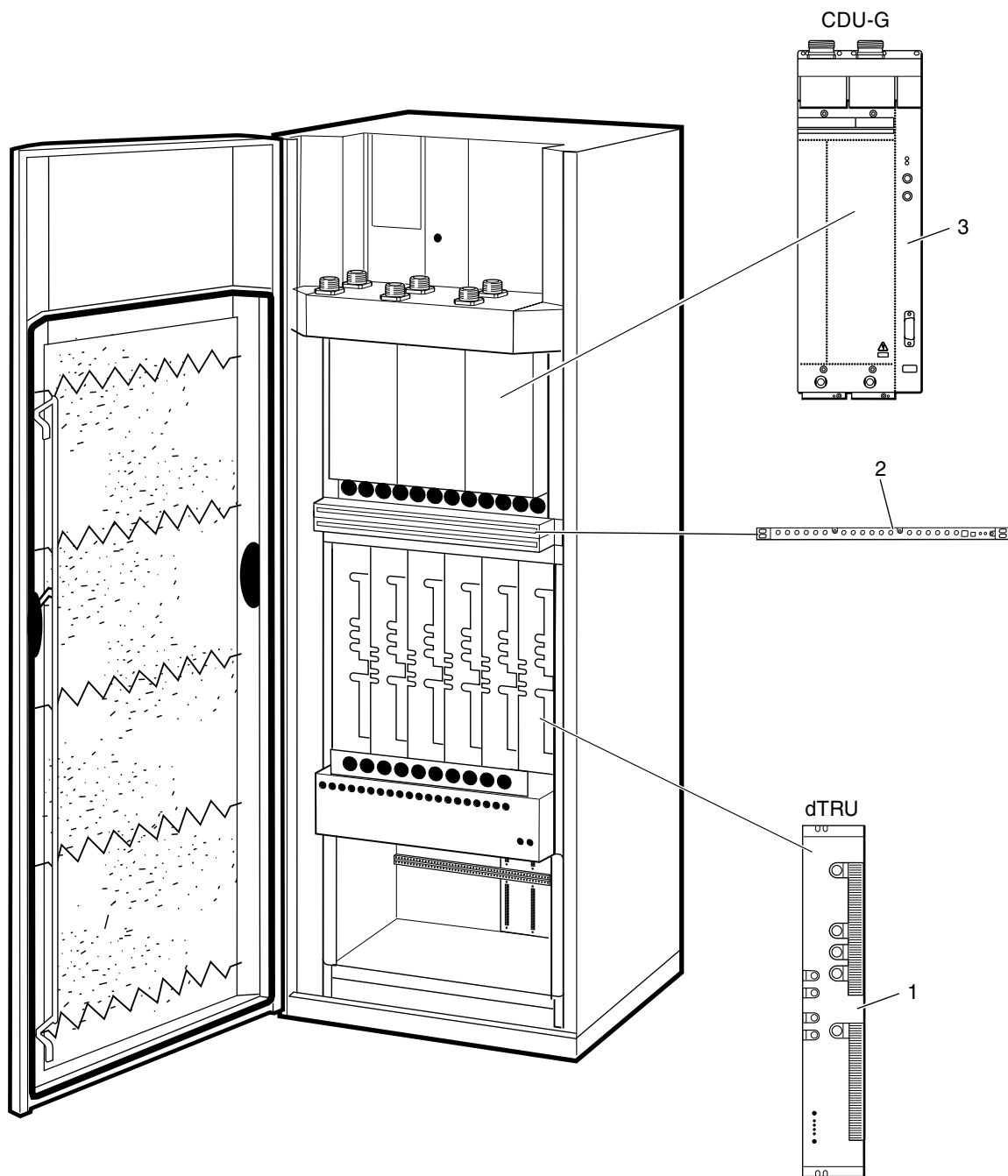


P007295A

1800 MHz Units

Pos	Product Number	Product Name	Description
1	KRC 131 1003/1	Transceiver	dTRU; GMSK
2	BFL 119 149/1	Combiner unit	CDU-F
3	BFL 119 143/1	Combiner unit	CDU-G

Recommended (Repairable) Spare Parts for Customer Stock



P007912A

1900 MHz Units

Pos	Product Number	Product Name	Description
1	KRC 131 1004/1	Transceiver	dTRU; GMSK
2	KRY 112 54/1	Damper	ASU
3	BFL 119 153/1	Combiner unit	CDU-G

This page is intentionally left blank

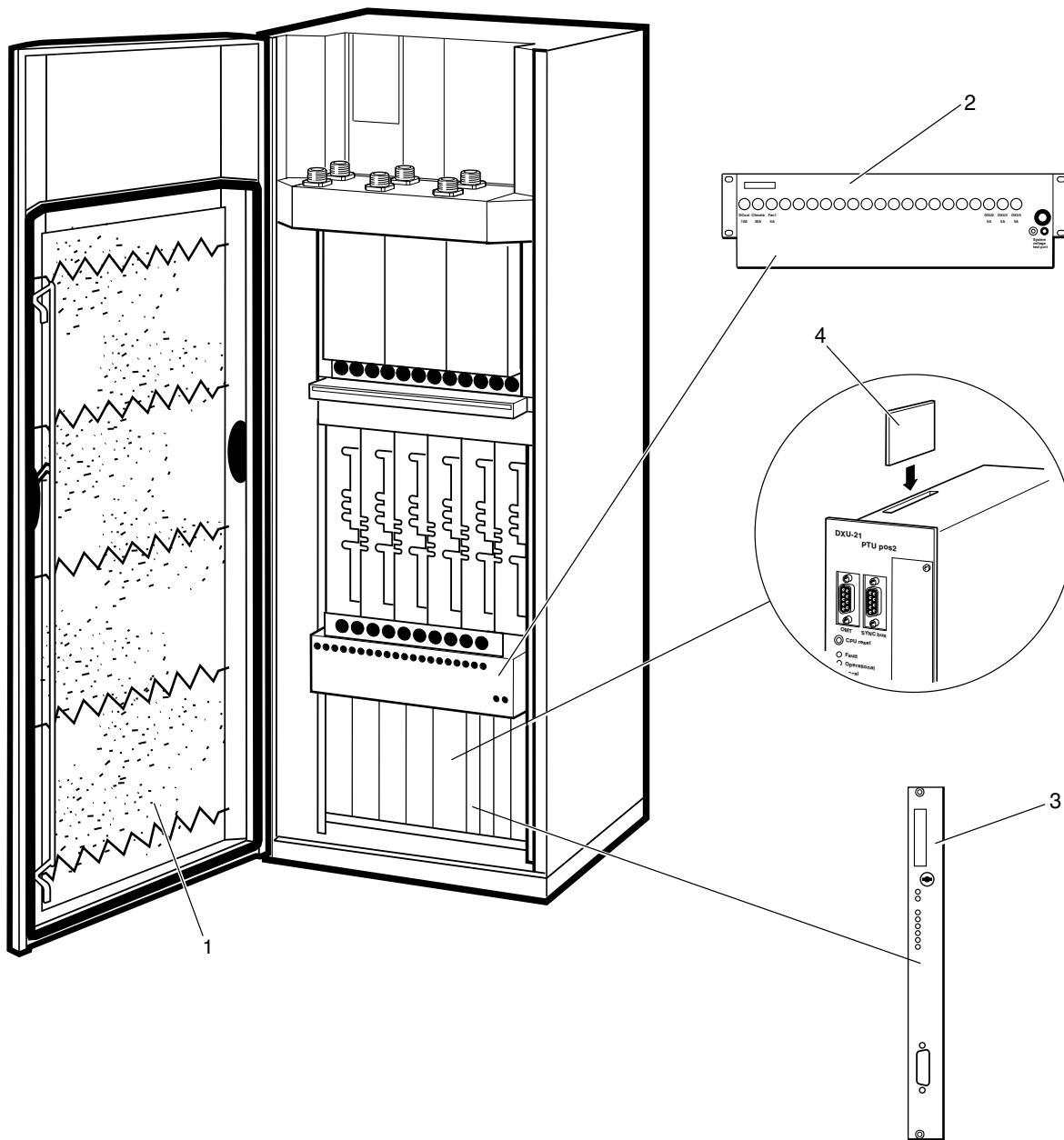
Recommended (Not Repairable) Spare Parts for Customer Stock

About this chapter

All parts in this chapter have the internal code = R.

These parts are recommended for customer stock, and are intended to be replaced on site, or at a local shop and are intended to be disposed of after consumption.

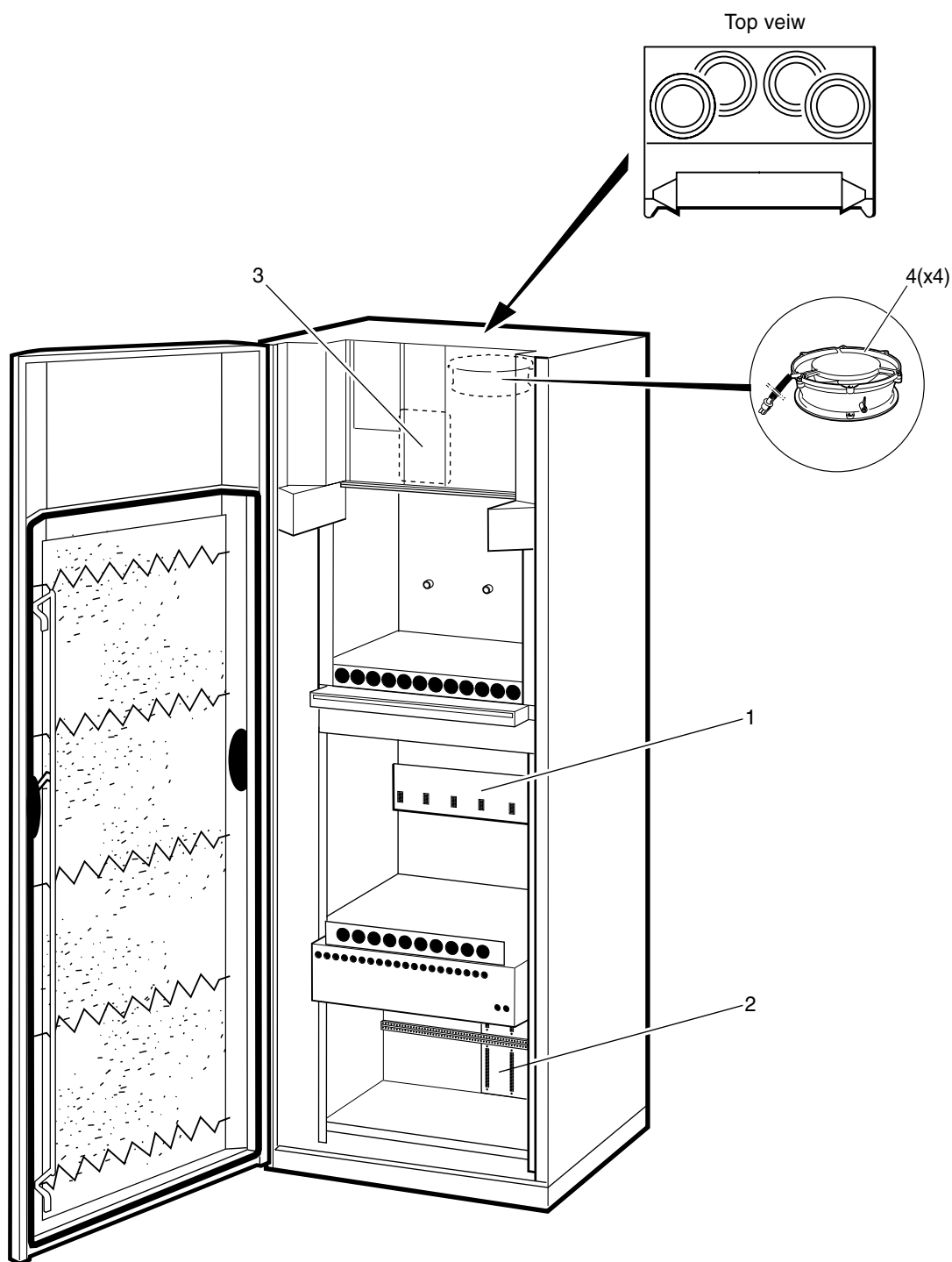
Recommended (Not Repairable) Spare Parts for Customer Stock



P007296A

Basic Units

Pos	Product Number	Product Name	Description
1	SXA 134 331/1	Filter set	Complete Package.
2	BMG 980 06/1	Distribution unit	IDM unit including PSU cables
3	SDK 107 881/1	Printed board	TMA-CM 01
4	KDR 109 61/964	Microcircuit	FLASH ATA 64.2M 5.5V 3.3V I

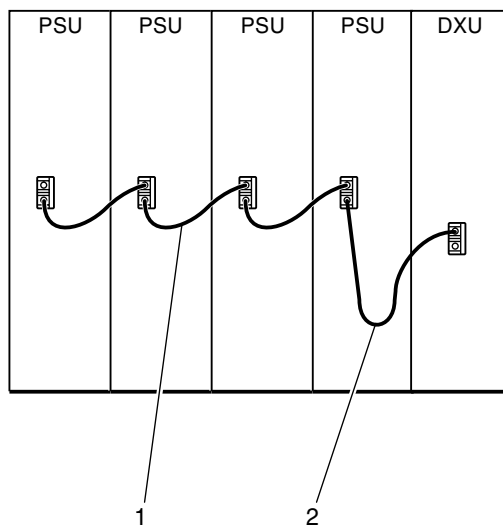
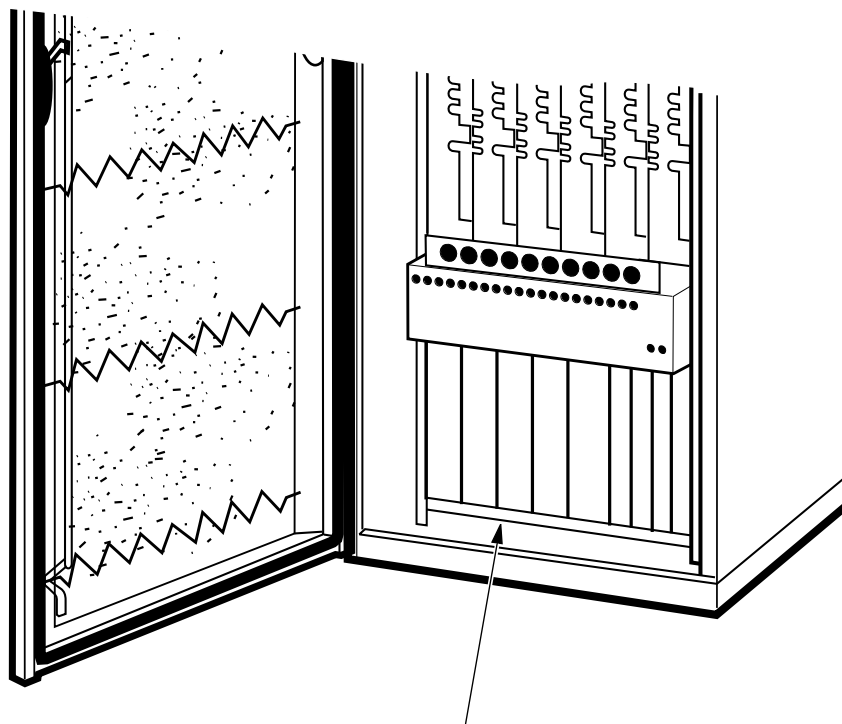


P007735A

Cabinet Parts

Pos	Product Number	Product Name	Description
1	ROA 219 5313/1	Printed board assemb	TRU BACKPLANE
2	ROA 219 5314/1	Printed board assemb	DXU BACKPLANE
3	ROA 117 8126/2	Printed board assemb	FCU 4 FAN
4	BKV 301 216/77	Fan	Diagonal,dia. 171,5*51 24 VDC

Recommended (Not Repairable) Spare Parts for Customer Stock



P007783A

Common Cables

Pos	Product Number	Product Name	Description
1	RPM 513 852/00160	Connection cable	OPTO
2	RPM 513 852/00250	Connection cable	OPTO

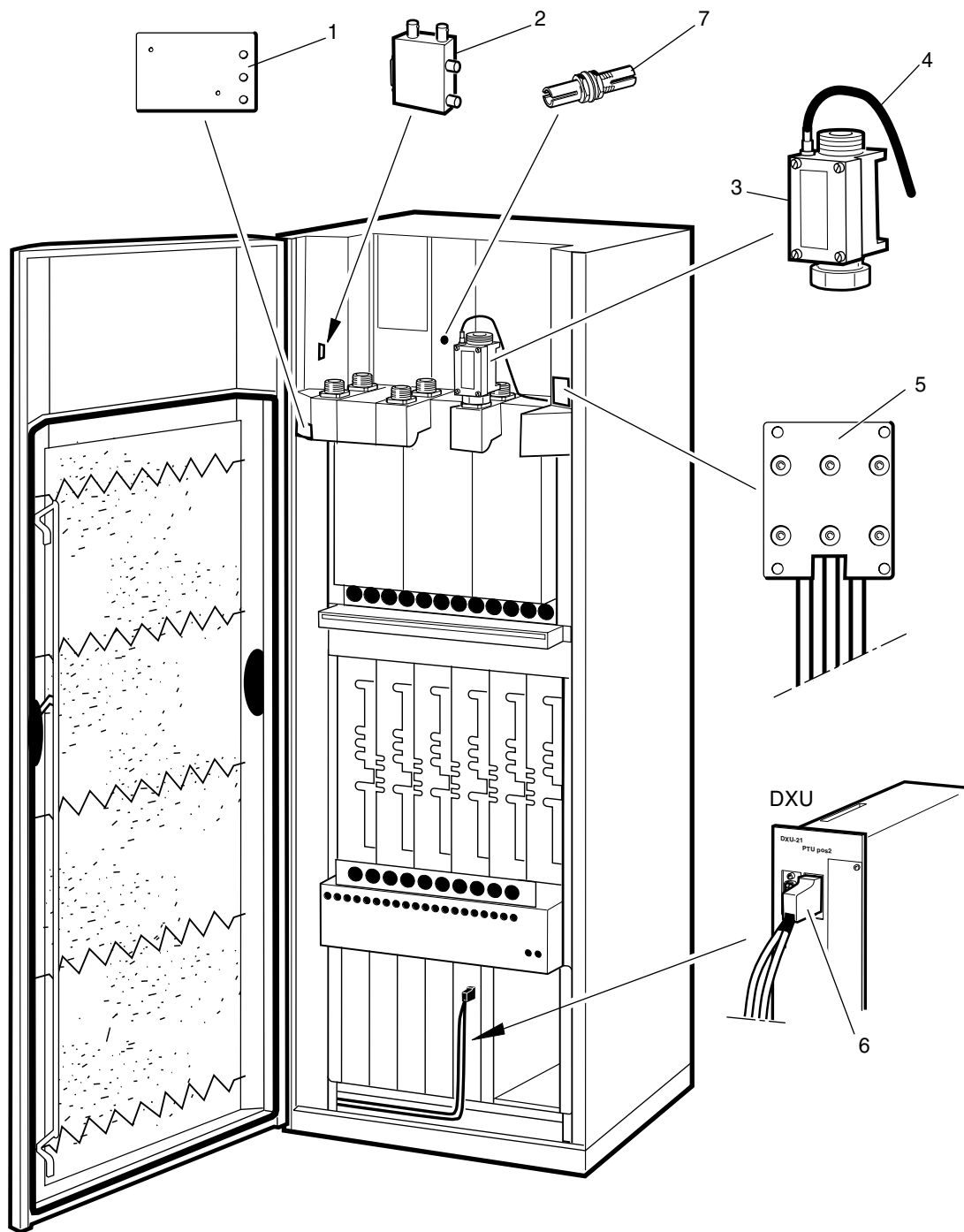
This page is intentionally left blank

Other Available Parts

About this chapter

All parts in this chapter have the internal code = A.

These parts are not recommended for customer stock. The parts are available upon request and the lead time may be longer.

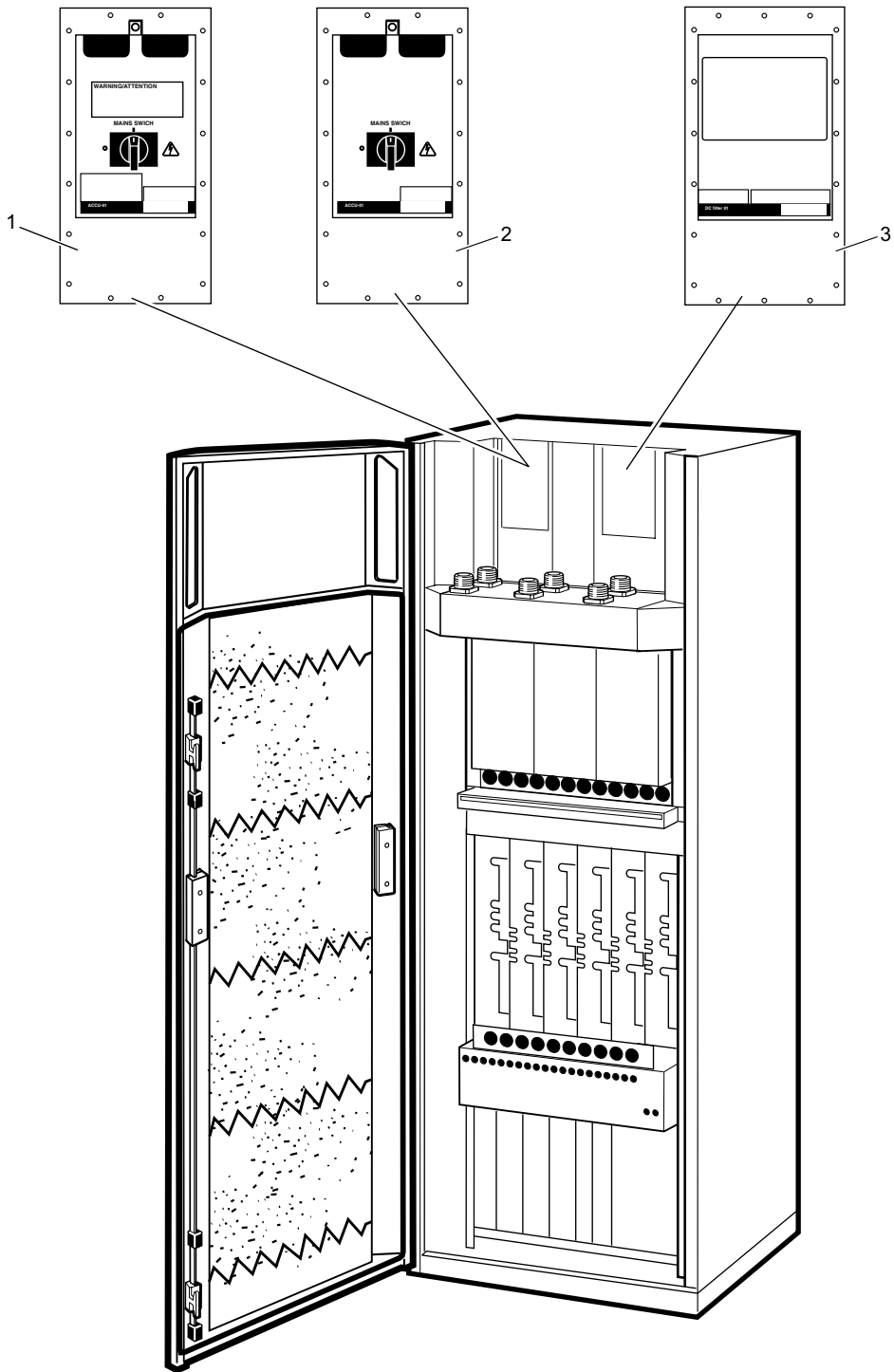


P007808A

Miscellaneous Parts

Pos	Product Number	Product Name	Description
1	ROA 117 2966/1	Printed board assemb	LED-IB
2	KTY 901 05/1	Accessories	Transmission Adapter
3	KRY 101 1587/1	Accessories	BIAS INJECTOR 900/1800 MHz
4	RPM 113 5445/1	Cable with connector	Bias Cable
5	RPM 113 5447/1	Cable with connector	Connection plate included
6	RPM 513 904/02160	Cable	SIGNAL ESB
7	NTZ 112 85/AT01	Spare parts set	ADAPTER KIT

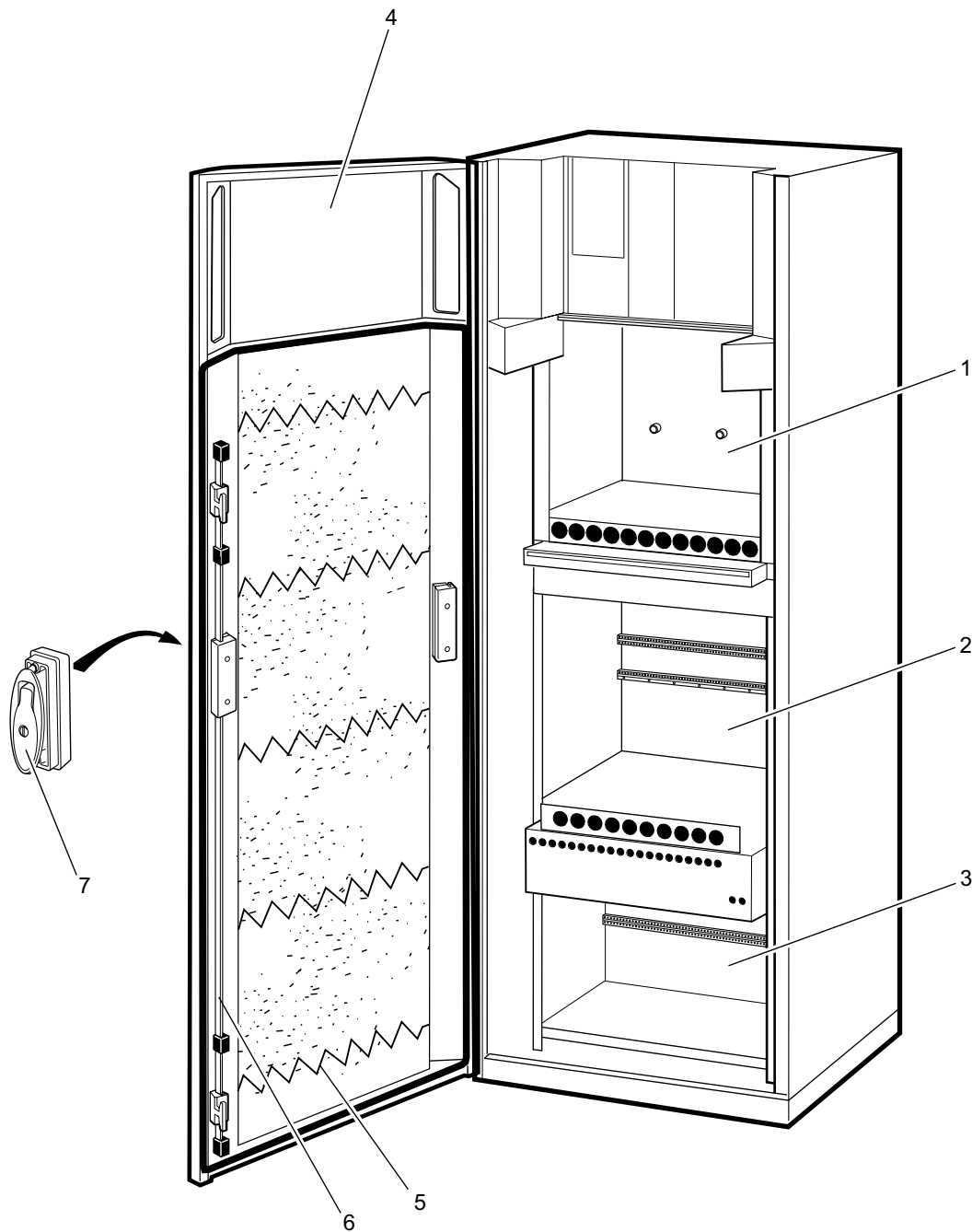
Other Available Parts



P007298A

ACCU/DCCU/VDC-filter

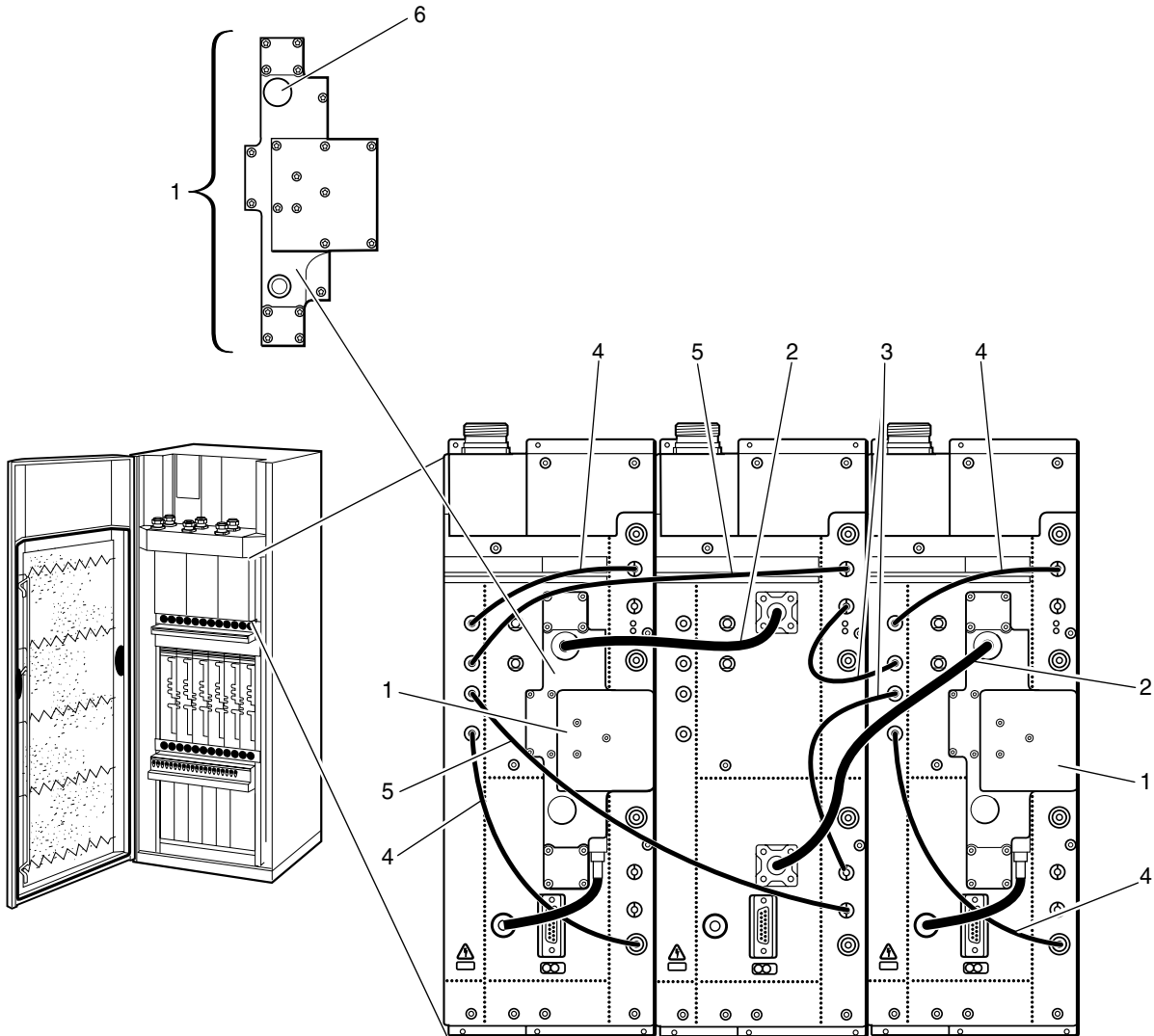
Pos	Product Number	Product Name	Description
1	BMG 980 07/1	Accu	Cables to PSU included
2	BMG 980 07/2	Dccu	Cables to PSU included
3	KFE 101 1145/1	Filter unit	Cables to IDM included



P007299A

Cabinet Parts

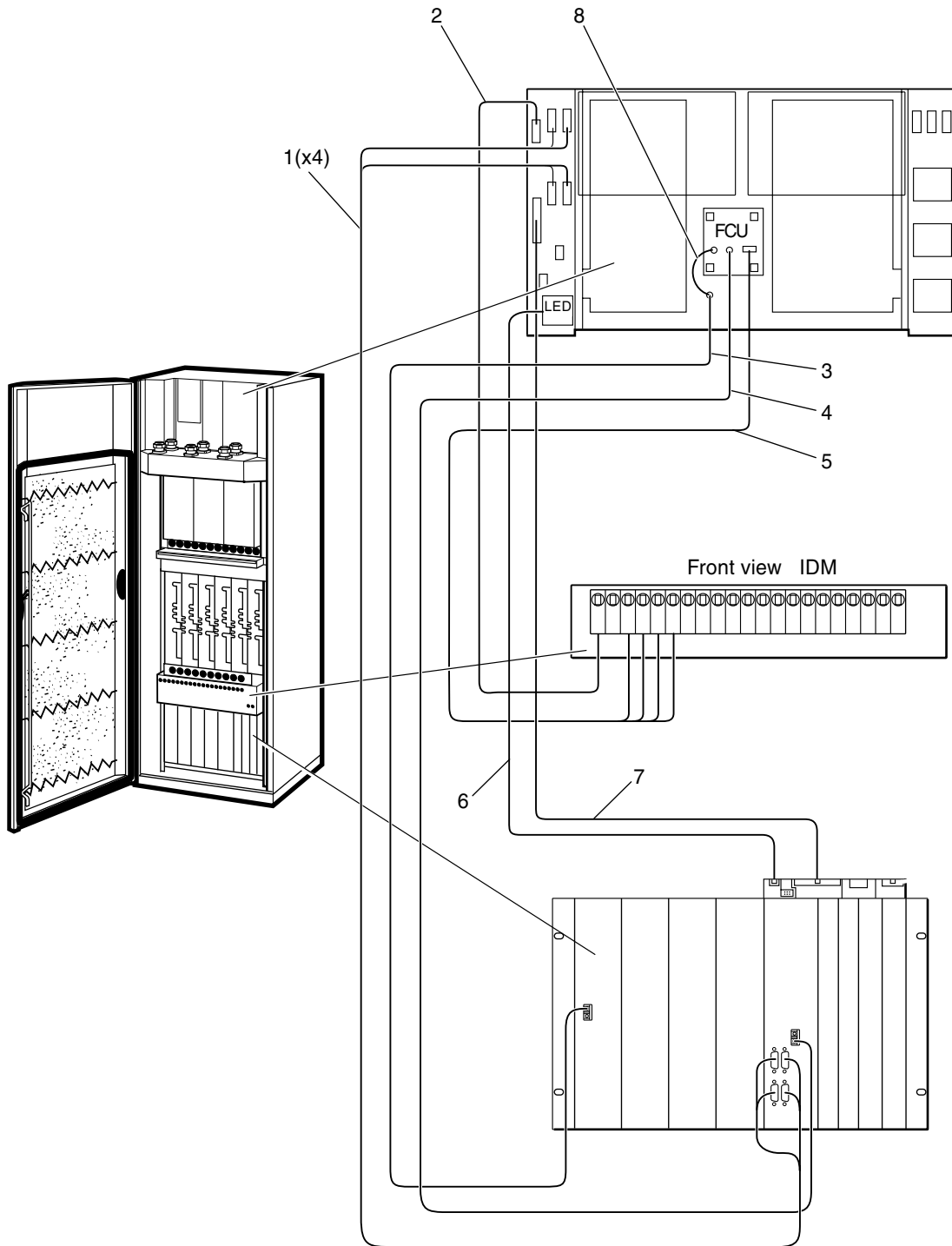
Pos	Product Number	Product Name	Description
1	BFL 119 406/1	Subrack	SUBRACK CDU
2	BFL 119 407/1	Subrack	SUBRACK TRU
3	BFL 119 408/1	Subrack	SUBRACK DXU
4	SXK 107 8304/1	Door	DOOR GSM
5	SXA 134 216/1	Spring	FILTER SPRING
6	SXK 107 5063/1	Lock	LOCK SYSTEM DOOR
7	SXK 107 8759/1	Lock	LOCK ASSEMBLY



P007806A

CNU connections

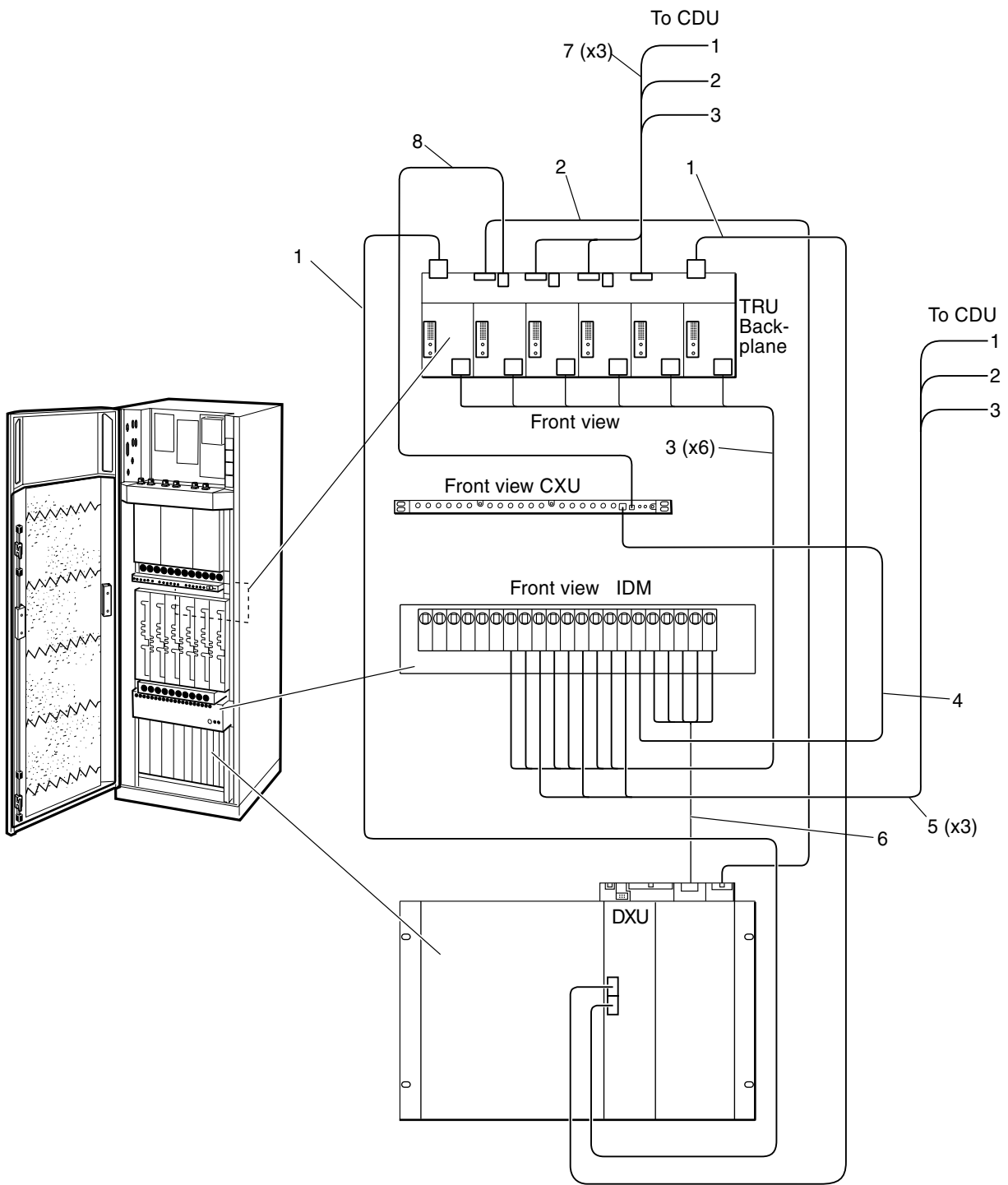
Pos	Product Number	Product Name	Description
1A	KRY 101 1829/1	Cnu	900MHz
1B	KRY 101 1830/1	Cnu	1800MHz
2A	RPM 213 1013/1	Cable with connector	
2B	RPM 213 1025/1	Cable with connector	
3	RPM 213 1033/1	Cable with connector	
4	RPM 213 1034/1	Cable with connector	
5	RPM 213 1035/1	Cable with connector	
6A	RNY 101 23/01	Accessories	N-coax cover 900MHz
6B	KRY 101 1883/1	Accessories	N-coax cover 1800MHz



P007785A

Cables

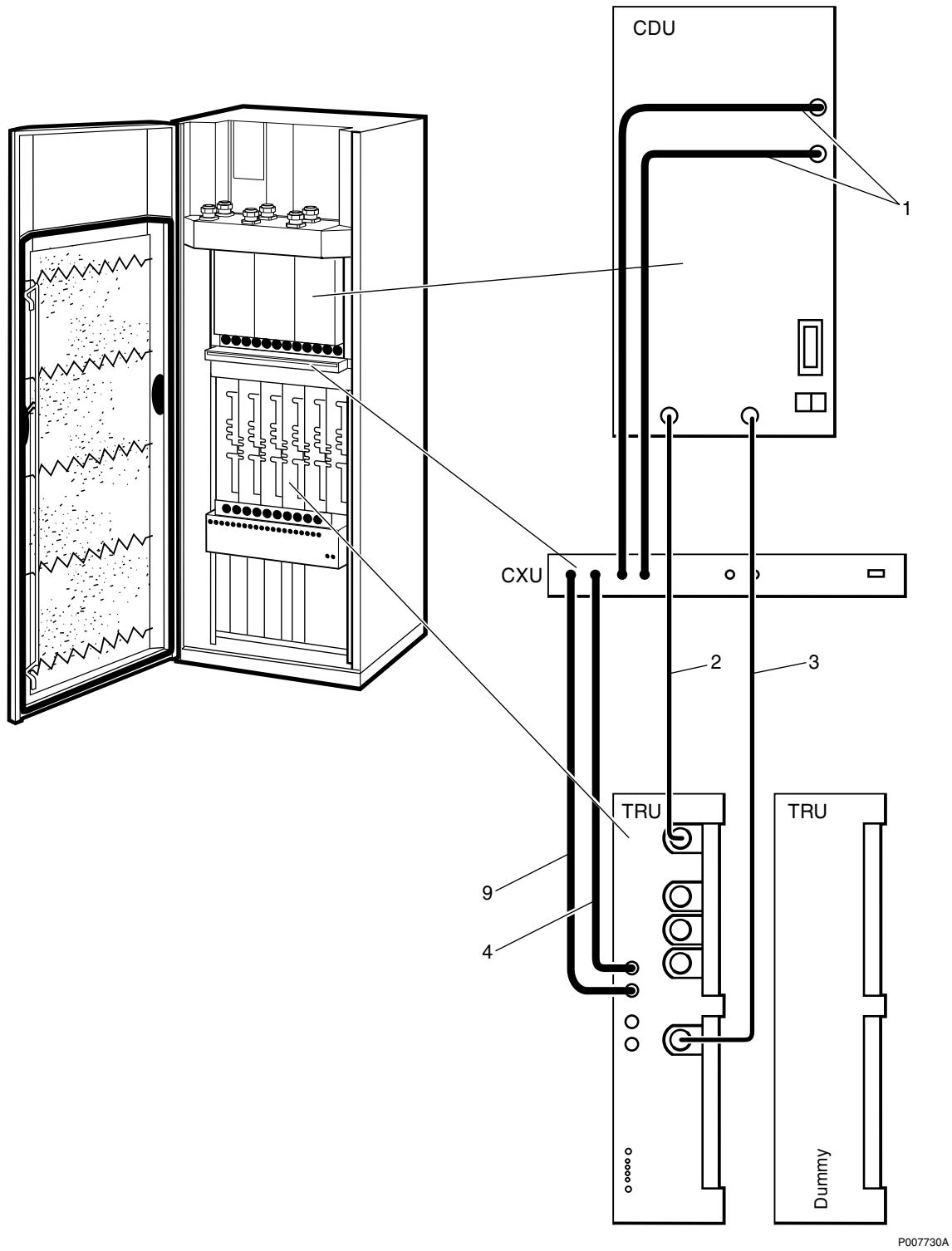
Pos	Product Number	Product Name	Description
1	RPM 513 870/02250	Cable with connector	120 ohm/L=2.25 m/Bus G703/DXU11
2	RPM 513 1110/01700	Connection cable	Connect.Cable +24V
3	RPM 513 1410/02500	Optical fibre cable	OPTICAL FIBRE CABLE
4	RPM 513 1409/02500	Optical fibre cable	OPTICAL FIBRE CABLE
5	RPM 513 1138/01700	Power cable	POWER CABLE
6	RPM 513 1116/02500	Signalling cable	LED-CABLE GSM SYST
7	RPM 513 1108/02660	Connection cable	EXT-LARM GSM SYST
8	RPM 982 02/200	Opt.cable w. connect	L=200 MM



P007784A

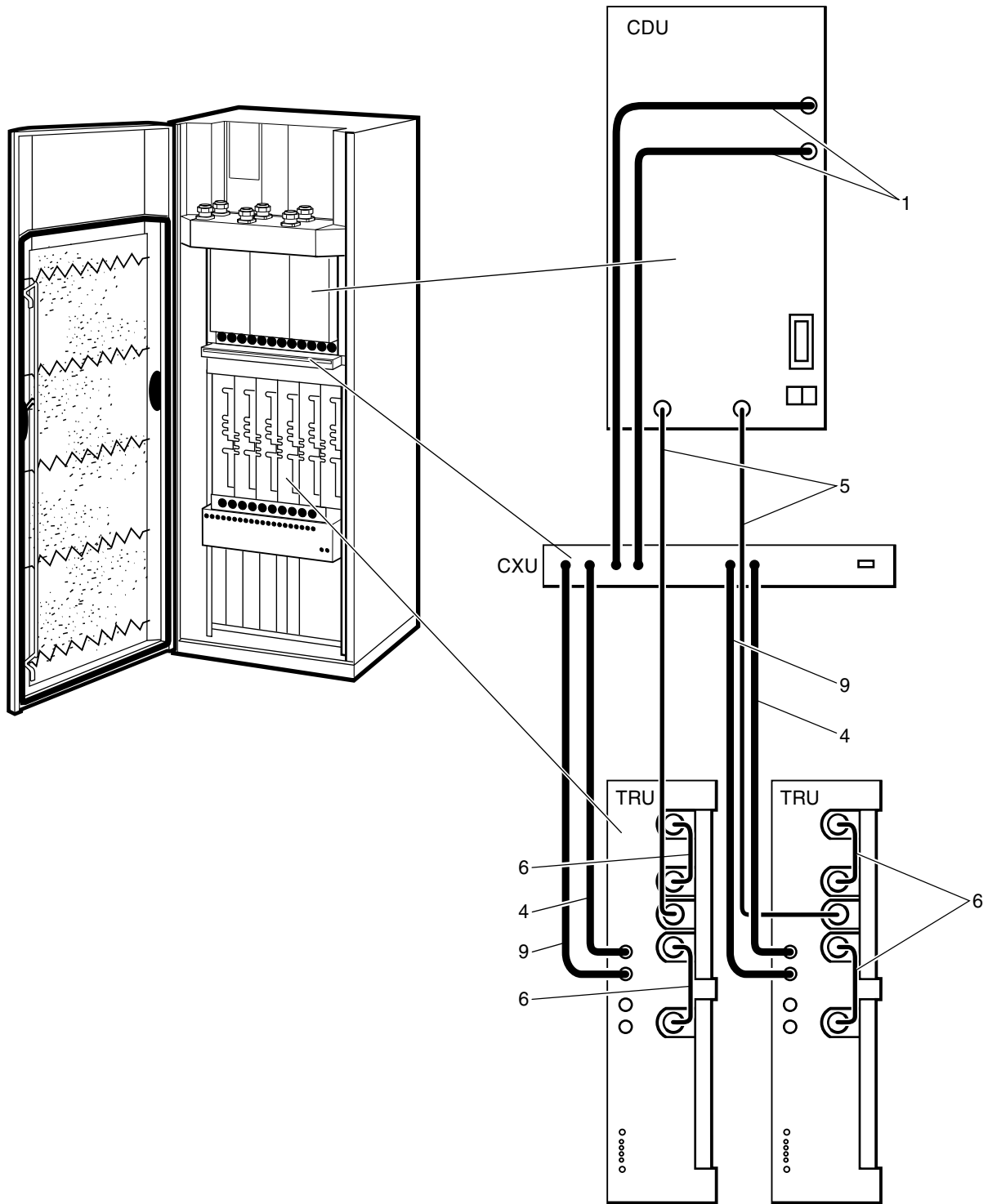
(Continuation)

Pos	Product Number	Product Name	Description
1	RPM 513 1781/02000	Cable with connector	Y-LINK CABLE GSM SYST
2	RPM 513 1117/02130	Signalling cable	IOM-BUS GSM SYST
3	RPM 513 1120/00700	Power cable	+24V GSM SYST TRU IDM
4	RPM 513 1162/01000	Power cable	POWER CABLE
5	RPM 513 718/01400	Power cable	POWER CABLE +24V
6	RPM 513 1845/01600	Cable with connector	+24V IDM FXU 1,2,3,4
7	RPM 513 1118/02130	Signalling cable	CDU-BUS CABLE
8	RPM 513 1178/01650	Power cable	POWER CABLE



Coaxial Cables CDU-G without hybrid

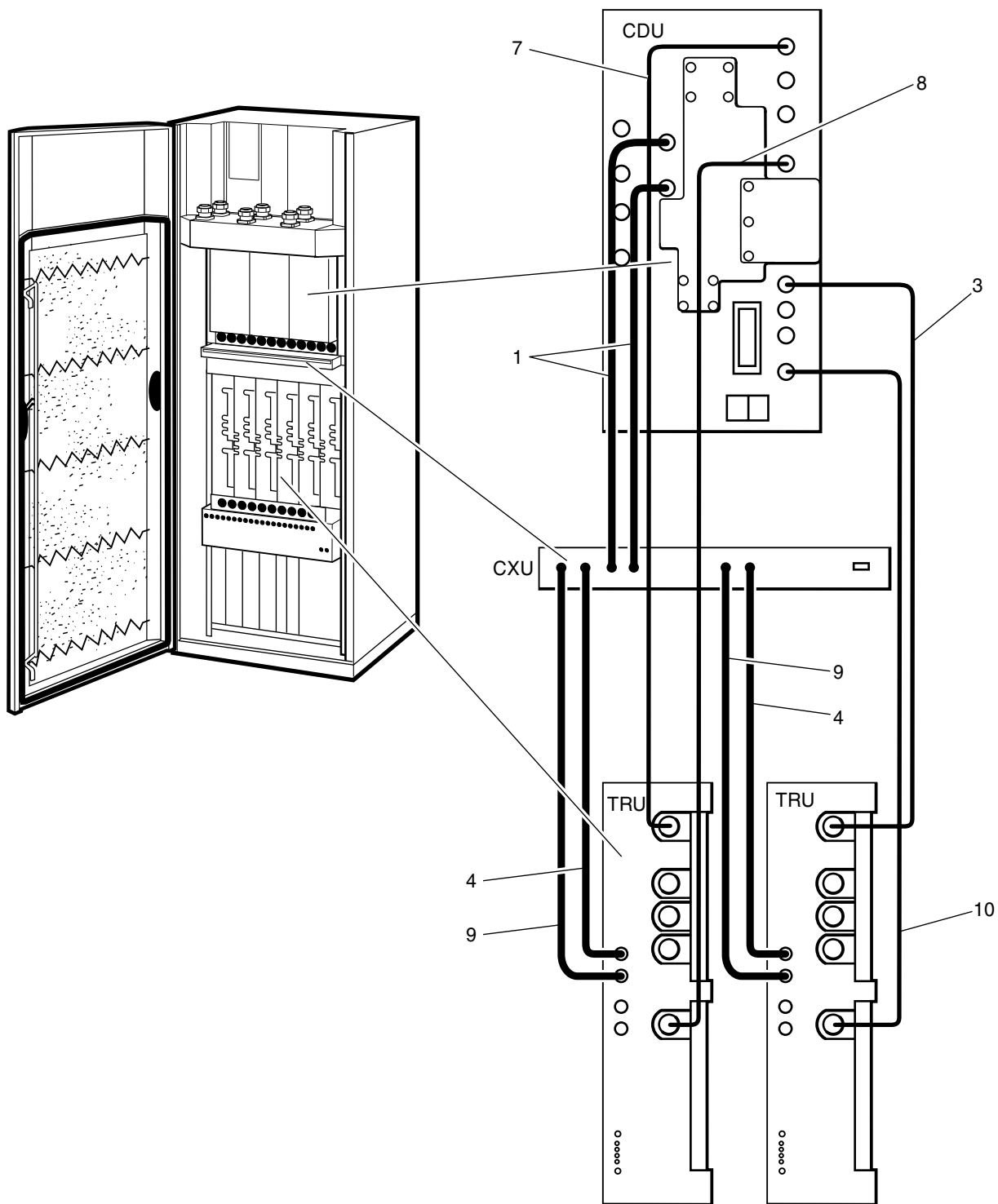
Pos	Product Number	Product Name	Description
1	RPM 513 1783/00390	Coaxial cable	Coax.Cable CDU-TRU/RXA
2	RPM 513 1782/00230	Coaxial cable	COAXIAL CABLE
3	RPM 513 1782/00410	Coaxial cable	COAXIAL CABLE
4	RPM 513 1783/00210	Coaxial cable	Coax.Cable CDU-TRU/RXA
9	RPM 513 1783/00230	Coaxial cable	Coax.Cable CDU-TRU/RXA



P007731A

Coaxial Cables CDU-G with hybrid

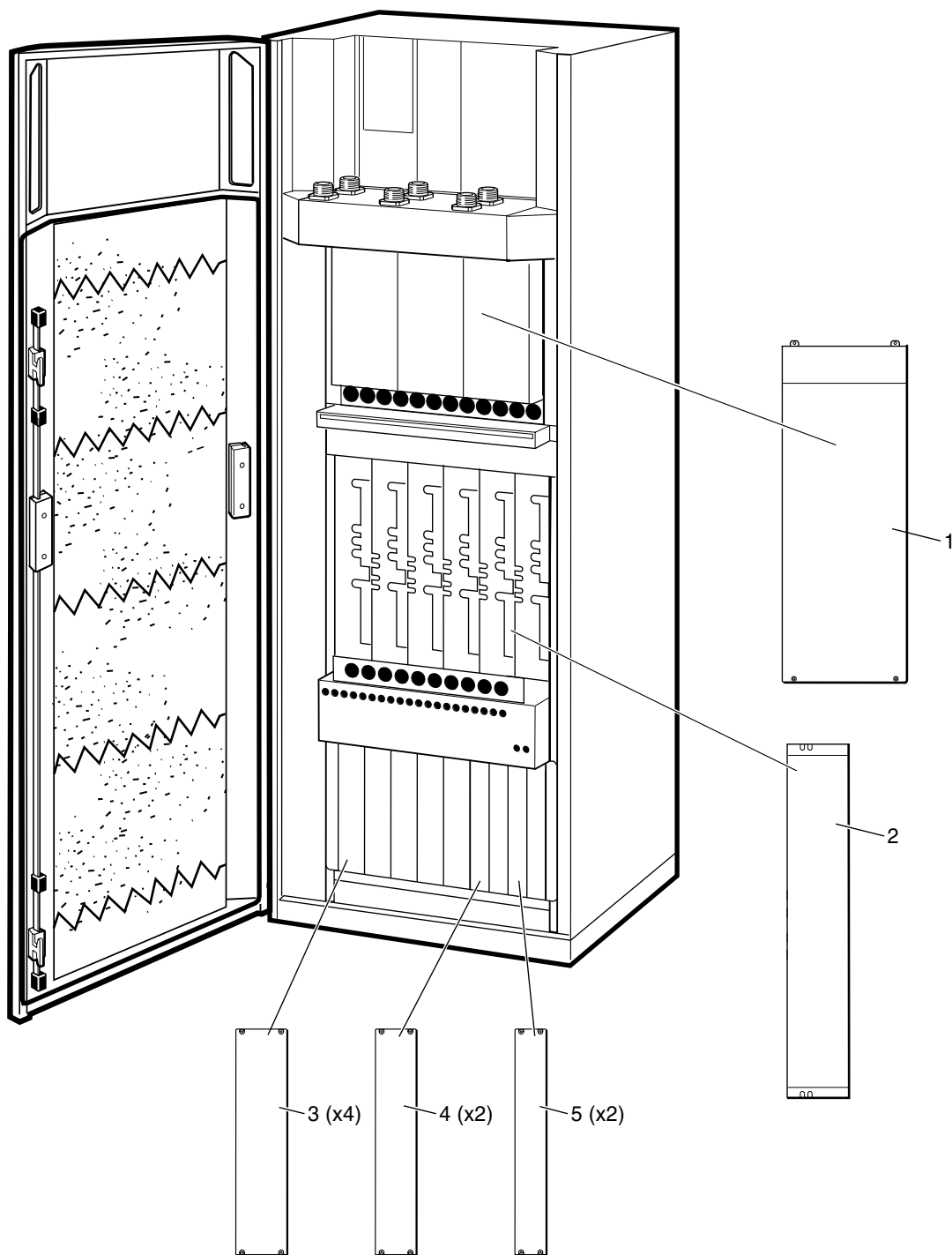
Pos	Product Number	Product Name	Description
1	RPM 513 1783/00390	Coaxial cable	Coax.Cable CDU-TRU/RXA
4	RPM 513 1783/00210	Coaxial cable	Coax.Cable CDU-TRU/RXA
5	RPM 513 1782/00310	Coaxial cable	COAXIAL CABLE
6	RPM 513 1782/00070	Coaxial cable	COAXIAL CABLE
9	RPM 513 1783/00230	Coaxial cable	Coax.Cable CDU-TRU/RXA



P007732A

Coaxial Cables CDU-F

Pos	Product Number	Product Name	Description
1	RPM 513 1783/00390	Coaxial cable	Coax.Cable CDU-TRU/RXA
3	RPM 513 1782/00410	Coaxial cable	COAXIAL CABLE
4	RPM 513 1783/00210	Coaxial cable	Coax.Cable CDU-TRU/RXA
7	RPM 513 1782/00550	Coaxial cable	COAXIAL CABLE
8	RPM 513 1782/00700	Coaxial cable	COAXIAL CABLE
9	RPM 513 1783/00230	Coaxial cable	Coax.Cable CDU-TRU/RXA
10	RPM 513 1782/00460	Coaxial cable	COAXIAL CABLE



P007297A

Dummies

Pos	Product Number	Product Name	Description
1	SXK 107 5047/1	Dummy unit	CDU-DUMMY
2	SXK 107 9163/1	Dummy unit	TRU DUMMY
3	SXK 107 9314/1	Dummy unit	PSU-DUMMY
4	SXK 107 5030/1	Dummy unit	OXU 6 TE GSM
5	SXK 107 5029/1	Dummy unit	OXU 5 TE GSM

This page is intentionally left blank

Packing

Pos	Product Number	Product Name	Description
	RTK 993 5265/2	Packing set	DXU
	RTK 993 5519	Packing set	DTRU
	RTK/BFL 119 142/1	Packing set	CDU-G
	RTK/BFL 119 147/1	Packing set	CDU-F
	RTK/KRY 101 1856/1	Packing set	CXU
	RTK/BML 231 201	Packing set	PSU

This page is intentionally left blank

Replaced and Withdrawn Parts

About this chapter

This chapter shows replaced or withdrawn products

Due to continuous improvement in design and production methods, some parts are changed.

This is the only place in this catalogue release where you still can find Product Numbers shown in previous catalogues. In this way we manage to keep the Numerical Index as a list of orderable Spare Parts.

This page is intentionally left blank

Old Product

Revision Information

New Product

This page is intentionally left blank

Numerical Index

BFL 119 142/1	15
BFL 119 143/1	17
BFL 119 147/1	15
BFL 119 149/1	17
BFL 119 153/1	19
BFL 119 406/1	35
BFL 119 407/1	35
BFL 119 408/1	35
BKV 301 216/77	25
BMG 980 06/1	23
BMG 980 07/1	33
BMG 980 07/2	33
BML 231 202/1	13
BMR 960 014/1	13
BOE 602 14/1	13
KDR 109 61/964	23
KFE 101 1145/1	33
KRC 131 1002/1	15
KRC 131 1003/1	17
KRC 131 1004/1	19
KRY 101 1587/1	31
KRY 101 1829/1	37
KRY 101 1830/1	37
KRY 101 1856/1	13
KRY 101 1883/1	37
KRY 112 54/1	19
KTY 901 05/1	31
NTZ 112 85/AT01	31
RNY 101 23/01	37
ROA 117 2966/1	31
ROA 117 8126/2	25
ROA 219 5313/1	25
ROA 219 5314/1	25
RPM 113 5445/1	31
RPM 113 5447/1	31
RPM 213 1013/1	37
RPM 213 1025/1	37
RPM 213 1033/1	37
RPM 213 1034/1	37
RPM 213 1035/1	37

Numerical Index

RPM 513 1108/02660.	39
RPM 513 1110/01700.	39
RPM 513 1116/02500.	39
RPM 513 1117/02130.	41
RPM 513 1118/02130.	41
RPM 513 1120/00700.	41
RPM 513 1138/01700.	39
RPM 513 1162/01000.	41
RPM 513 1178/01650.	41
RPM 513 1409/02500.	39
RPM 513 1410/02500.	39
RPM 513 1781/02000.	41
RPM 513 1782/00070.	45
RPM 513 1782/00230.	43
RPM 513 1782/00310.	45
RPM 513 1782/00410.	43
RPM 513 1782/00410.	47
RPM 513 1782/00460.	47
RPM 513 1782/00550.	47
RPM 513 1782/00700.	47
RPM 513 1783/00210.	45
RPM 513 1783/00210.	43
RPM 513 1783/00210.	47
RPM 513 1783/00230.	45
RPM 513 1783/00230.	47
RPM 513 1783/00230.	43
RPM 513 1783/00390.	43
RPM 513 1783/00390.	45
RPM 513 1783/00390.	47
RPM 513 1845/01600.	41
RPM 513 718/01400	41
RPM 513 852/00160	27
RPM 513 852/00250	27
RPM 513 870/02250	39
RPM 513 904/02160	31
RPM 982 02/200	39
RTK 993 5265/2.	51
RTK 993 5519.	51
RTK/BFL 119 142/1	51

RTK/BFL 119 147/1	51
RTK/BML 231 201	51
RTK/KRY 101 1856/1	51
SDK 107 881/1	23
SXA 134 216/1	35
SXA 134 331/1	23
SXK 107 5029/1	49
SXK 107 5030/1	49
SXK 107 5047/1	49
SXK 107 5063/1	35
SXK 107 8304/1	35
SXK 107 8759/1	35
SXK 107 9163/1	49
SXK 107 9314/1	49

