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Fault List RBS 6000

1/006 51-LZA 701 6002 Uen B

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Contents

1 Introduction

This document describes all faults reported from all RBS 6000 RBSs to the BSC and hardware units suspected of causing the fault.

Note: The fault must be verified before returning the faulty unit to the Ericsson repair centre.

Note: Unused fault numbers are not indicated in the fault list.

1.1 Revision Information

Other than editorial changes, this document has been revised as follows:

New faults:

- SO CF I1A: 0, 6, 8, 9, 15, 18, 21, 22
- SO CF I2A: 8, 12, 13, 16, 19, 22–26, 30–31, 33–34, 36–38, 41–43, 45–48, 50–51, 53–54, 57–73, 79–82
- SO CF EC1: 2, 4, 5, 9
- SO CF EC2: 3, 6, 9, 11–13
- SO TRXC I1A: 0–6, 8, 9, 11–14, 19–36
- SO TRXC I1B: 8–10
- SO TRXC I2A: 0, 1, 3, 4, 7, 9–14, 17–21, 23–26, 29, 33, 36, 39, 40, 42, 44–47
- SO TRXC EC1: 4, 5
- SO TRXC EC2: 16–18, 20–22, 24–26, 28–30, 32–34, 36–38, 40–42, 44–46
- AO CON EC1: 8
- AO CON EC2: 8
- AO RX I1B: 0, 1, 3, 5, 6, 8–10, 12, 17, 19–23, 47
- AO RX I2A: 1–8
- AO TF I1A: 0, 1
- AO TF I1B: 2
- AO TF I2A: 0
- AO TF EC1: 0, 1, 6, 7

- AO TF EC2: 0, 1, 7
- AO TS EC1: 3
- AO TX I1A: 2
- AO TX I1B: 4, 6, 8, 9, 11–14, 17, 27, 31, 32, 35, 36, 47
- AO TX I2A: 0, 1

2 Terminology

The following terminology is used throughout this document.

Note: In this document the term RU refers to any replacable unit and is not limited to the radio units RUG, RUS or RRUS.

2.1 Fault Numbers

The fault number is identical to the bit position in the fault map reported over the Abis interface.

2.2 Fault Maps

Internal Fault Map Class 1A (I1A)

Faults reported in this class are faults that affect the MO function. Faulty hardware is part of the signalling MO.

Internal Fault Map Class 1B (I1B)

Faults reported in this class are faults that affect the MO function. The origin of the fault is external to the signalling MO.

Internal Fault Map Class 2A (I2A)

Faults reported in this class are faults that do not affect the MO function. Faulty hardware is part of the signalling MO.

External Condition Map Class 1 (EC1)

Conditions reported in this class are conditions that affect the MO function. The conditions are TG external.

External Condition Map Class 2 (EC2)

Conditions reported in this class are conditions that do not affect the MO function. The conditions are TG external.

Replacement Unit Map (RU Map)

Units reported in this map are hardware units suspected of causing the faults in the internal fault maps described above.

2.3 Logical RU

A logical RU is defined as a replaceable unit that can be referred to but is not a single physical unit. There are four kinds of logical RUs. Logical RUs are pointed out when the analysis fails to give a more detailed localization of the fault. Logical RUs are intended to assist the fault localization process.

- *Buses*. These are often referred to as a single physical unit but are implemented in the backplane of the cabinet or with cables. A bus pointed out in the RU map indicates that the faulty hardware can be any unit connected to the bus or the bus itself. Logical bus RUs:
  - EC bus
  - Timing bus
  - Y link
- *Antenna*. A logical antenna means the whole signal path between the Transmitter/Receiver and the physical antenna.
- *Environment*. This RU records conditions that cannot be affected by the base station. For example, if the temperature in the cabinet is too high or the incoming AC power is out of range, the logical RU Environment is denoted as faulty. Two groups exist under this RU:
  - Power, that handles external power
  - Climate, that handles internal temperature
- *IDB*. The RBS installation database is regarded as a replaceable unit even though it is not a physical unit. It comprises the data in the database only, not the medium in which it resides.

Note: In this document the term RU refers to any replacable unit and is not limited to the radio units RUG, RUS or RRUS.

2.4 Fault Map Overview

Fault codes on the Abis interface are defined per MO. The SO RU map and the I1A/I2A fault maps must be read together. The SO fault map identifies the fault and the RU map denotes where the fault is located.

An AO I1B fault has a corresponding SO I2A fault. So by reading the I2A fault map and the RU map for SO CF or SO TRXC, the hardware that is causing the AO I1B fault can be found. This is the case when BTS internal hardware affects a single AO.

The AO is not allowed to report the hardware itself as this task is assigned to the SO responsible for hardware. This means that the consequence is reported by the AO I1B fault map and the cause is reported by the SO I1A/I2A fault maps and the RU map.

3 SO CF Fault Maps

3.1 SO CF Internal Fault Map Class 1A

3.1.1 SO CF I1A:0 - Reset, Automatic Recovery

Description A DUG reset is triggered by the loss of BSC-RBS contact on the CF link for more than 1 hour.

Note: For information only.

Action If the fault occurs frequently, then investigate the cause of the disturbance between the BSC and RBS, which is probably in the transmission equipment.

Note: This fault alone is not cause to replace the DUG.

3.1.2 SO CF I1A:1 - Reset, Power On

Description The DUG has recovered after power off.

Note: For information only.

3.1.3 SO CF I1A:2 - Reset, Switch

Description The DUG is reset with the DUG Maintenance button or the OMT.

Note: For information only.

3.1.4 SO CF I1A:3 - Reset, Watchdog

Description The software is supposed to reset timers at regular intervals. If the software locks up and does not do this, the DUG is reset.

Action If this fault is recurring, then follow the instructions below until the fault is resolved.

- Print out the RBS log and IDB, using the OMT, and send them together with a trouble report to Ericsson.
- Replace the RBS software.

3.1.5 SO CF I1A:4 - Reset, SW Fault

Description The DUG is reset because of a severe software fault.

Action If this fault is recurring, then follow the instructions below until the fault is resolved.

- Print out the RBS log and IDB, using the OMT, and send them together with a trouble report to Ericsson.
- Replace the RBS software.

3.1.6 SO CF I1A:5 - Reset, RAM Fault

Description The DUG is reset because of an error in the RAM parity check.

Action Follow the instructions below until the fault is resolved.

- If this fault occurs frequently, then replace the RBS software.
- Replace the DUG.

3.1.7 SO CF I1A:6 - Reset, Internal Function Change

Description The RBS is reset after software download in order to activate the new software.

Note: For information only.

3.1.8 SO CF I1A:8 - Timing Unit VCO Fault

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU
Section 3.5 SO CF Replacement Unit Map on page 42

Description The VCO is failing, probably because of a power supply problem or a hardware fault.

If a large number of RBSs raise the alarm, the fault is probably located in the PCM or External References.

Action Follow the instructions below until the fault is resolved.

- Check that the RBS receives the correct synchronization signals according to the configuration.
- Reset the DUG.
- Replace the DUG.

3.1.9 SO CF I1A:9 - Timing Bus Fault

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU
Section 3.5 SO CF Replacement Unit Map on page 42

Description The DUG has internal timing problems.

Action Follow the instructions below until the fault is resolved.

- Reset the DUG.
- Replace the DUG.

3.1.10 SO CF I1A:15 - IDB Corrupted

Related Faults Section 3.1.13 SO CF I1A:18 - Internal Configuration Failed on page 8

Related RUs SO CF RU:34 - IDB Section 3.5 SO CF Replacement Unit Map on page 42

Description The IDB/RBS database is corrupted or cannot be read by the software.

Action Follow the instructions below until the fault is resolved.

- Reinstall the IDB, using the OMT.
- Create and install a new IDB.

3.1.11 SO CF I1A:16 - RU Database Corrupted

Related Faults Section 3.1.13 SO CF I1A:18 - Internal Configuration Failed on page 8

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

Description The DUG database is corrupted or cannot be read by the software.

Action Follow the instructions below until the fault is resolved.

- Reset the DUG.
- Replace the DUG.

3.1.12 SO CF I1A:17 - HW and IDB Inconsistent

Related Faults Section 3.1.13 SO CF I1A:18 - Internal Configuration Failed on page 8

Description The IDB does not match the hardware.

Note: The OMT function Check IDB can be used to identify hardware/IDB inconsistencies.

Action Create a new IDB that applies to the RBS and install it, using the OMT.

3.1.13 SO CF I1A:18 - Internal Configuration Failed

Related Faults Section 3.1.10 SO CF I1A:15 - IDB Corrupted on page 7

Section 3.1.11 SO CF I1A:16 - RU Database Corrupted on page 7

Section 3.1.12 SO CF I1A:17 - HW and IDB Inconsistent on page 7

Description The DUG failed its internal configuration at startup, usually as a consequence of the related faults.

Action Follow the instructions below until the fault is resolved.

- Perform actions for related faults.
- Reset the DUG.
- Reinstall the IDB, using the OMT.
- Replace the DUG.

3.1.14 SO CF I1A:19 - HW and SW Inconsistent

Description The software release does not support hardware board currently in use.

Action Follow the instructions below until the fault is resolved.

- Check the release notes for the software currently running to see the hardware limitation.
- Perform a software download with a different software release, which supports the hardware board in use.

3.1.15 SO CF I1A:21 - HW Fault

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

Description The DUG has an internal hardware fault.

Action Follow the instructions below until the fault is resolved.

- Reset the DUG.
- Replace the DUG.

3.1.16 SO CF I1A:22 - Air Time Counter Lost

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU
Section 3.5 SO CF Replacement Unit Map on page 42

Description The DUG has an internal signalling problem.

Action Follow the instructions below until the fault is resolved.

- Reset the DUG.
- Replace the DUG.

3.1.17 SO CF I1A:24 - Temperature Close to Destructive Limit

Related RUs SO CF RU:31 - Environment
Section 3.5 SO CF Replacement Unit Map on page 42

Description An alarm is raised when the temperature nears the destructive limit for the equipment, which consequently shuts down to avoid damage.

Action Follow the instructions below until the fault is resolved.

- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by high ambient temperature.
- Resolve any external RBS temperature problems.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate problems.
- Replace any faulty external RBS equipment.

3.2 SO CF Internal Fault Map Class 2A

3.2.1 SO CF I2A:8 - VSWR Limits Exceeded

Related Faults Section 5.12.1 AO TX I1B:4 - TX Antenna VSWR Limits Exceeded on page 102

Related RUs SO CF RU:40 - Antenna
Section 3.5 SO CF Replacement Unit Map on page 42

Description *For RUS/RRUS-based configurations:*

The VSWR at the RUS/RRUS output has exceeded the limits defined in the IDB. If the class 1 limit is exceeded, related fault AO TX I1B:4 is also raised and the TX is disabled.

Action Follow the instructions below until the fault is resolved.

- Check the TX cables/feeders, cable connections inside and outside the cabinet and antennas, for example, with Antenna System SWR tests.
- Check the defined VSWR Limits in the IDB for each present antenna.
- Reset the RUS/RRUS.

3.2.2 SO CF I2A:12 - RX Maxgain/Mingain Violated

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description The total RX gain (from antenna to RUG/RUS/RRUS) is outside the recommended range. Probably one or more values for TMA gain or RX cable/feeder loss are wrongly defined in the IDB.

Action Follow the instructions below until the fault is resolved.

- Confirm with the OMT that the IDB is correct regarding installed TMAs. If not, then modify and install a new IDB.
- If applicable, check the defined values for TMA gain, RX cable/feeder loss and HLout/HLin cable loss in the IDB.

  Note: TMA Loss = −TMA Gain
- Reset the RUG/RUS/RRUS.
- Reset the DUG.
- For non-TMA configurations, set the feeder loss value to 0 db.

3.2.3 SO CF I2A:13 - Timing Unit VCO Ageing

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

Description The VCO is ageing. Its control value has drifted outside its authorized range.

Action Follow the instructions below until the fault is resolved.

- Reset the DUG.
- Replace the DUG.

3.2.4 SO CF I2A:16 - Indoor Temp Out of Normal Conditional Range

Related Faults Section 5.12.12 AO TX I1B:32 - TX Low Temperature on page 105

Related RUs SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description The temperature in the cabinet is outside the specified normal conditional range. The alarm ceases when the temperature comes back within the normal conditional range.

Action Follow the instructions below until the fault is resolved.

- If applicable, make sure dummy plates and air guides are correctly installed in the RBS.
- If applicable, inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Inspect the RBS/RRU to ensure that there are no leaks and that nothing is obstructing the airflow in and around the unit raising the alarm. Before inspecting an RRUS, remove the front cover.
- Test the climate system.

3.2.5 SO CF I2A:19 - Power and Climate System in Standalone Mode

Related RUs SO CF RU:33 - EC Bus/EPC Bus/Power Communication Loop Section 3.5 SO CF Replacement Unit Map on page 42

Description The communication between DUG and the Power and Climate System is broken. The likely cause is a fault in the EC bus. The power and climate systems might continue to operate, but they cannot be controlled or supervised by the DUG.

Action Follow the instructions below until the fault is resolved.

- Identify which of the RUs that is faulty.
- Switch off and on the power to all faulty RUs.

- Check the cables and their connections.
- Reset the DUG.

3.2.6 SO CF I2A:22 - Battery Backup Capacity Reduced

Related RUs SO CF RU:14 - Battery Section 3.5 SO CF Replacement Unit Map on page 42

Description The power supply from the batteries is reduced.

Action Follow the instructions below until the fault is resolved.

- Check the batteries and their connection cables to the RBS.
- Check the battery temperature sensor.
- Check that the BFU circuit breaker is on.
- Reset the DUG.
- Replace the batteries.
- Replace the BFU.

3.2.7 SO CF I2A:23 - Climate Capacity Reduced

Related RUs SO CF RU:16 - Heater Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:17 - Heat Exchanger Ext Fan Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:18 - Heat Exchanger Int Fan Section 3.5 SO CF Replacement Unit Map on page 42

Description One or more fan groups are detected as faulty.

Action Follow the instructions below until the fault is resolved.

- If applicable, make sure dummy plates and air guides are correctly installed in the RBS.
- Inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Identify if the communication is broken.
- Check the cables and their connections.
- If applicable, check that the RU circuit breaker or fuse is on or intact.

- Check the RU indicated as faulty.
- Switch off and on the RU indicated as faulty.
- Run a Climate System Test.
- Check the power supply to the climate unit.
- Replace faulty fan or fan group.

Danger!

Electric shock risk. Avoid both direct and indirect contact with parts connected to mains power as this is likely to be fatal. Switch off the mains power before starting work.

Document *RBS Installation Instructions* must be read before starting the procedure.

- Check the AC voltage set on the climate unit.
- If applicable, check that the AC mains connections and straps in the AC mains connection box are in accordance with the AC voltage. See document *RBS Installation Instructions* for more information.

3.2.8 SO CF I2A:24 - HW Fault

Related RUs

SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:7 - PSU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:8 - BFU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:15 - Fan / Fan Group Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:61 - PDU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:62 - SAU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:63 - SCU or SUP Section 3.5 SO CF Replacement Unit Map on page 42

Description

The DUG has an internal hardware fault. Performance might be reduced.

Action

Follow the instructions below until the fault is resolved.

- Identify which of the RUs that is faulty.
- Check that the defined Power System and the defined PSUs in the IDB correspond to the PSUs in the RBS. Otherwise modify the IDB.
- Check the external power supply.
- Check the batteries and their connection cables to the RBS.
- Check the battery temperature sensor.
- Check that the BFU circuit breaker is on.
- Make sure that a fan unit is installed.
- If applicable, make sure dummy plates and air guides are correctly installed in the RBS.
- Inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Check if the communication is broken.
- Check the cables and their connections.
- Run a Climate System Test.
- Check the power supply to the climate unit.
- Switch off and on the power to all faulty RUs.
- Replace faulty fan or fan group.
- Replace the batteries.
- Replace the BFU, PSU, PDU, SAU or SCU/SUP.
- Reset the DUG.
- Replace the DUG.

3.2.9 SO CF I2A:25 - Loadfile Missing in DXU or ECU

Description A software file in the DUG flash card is missing or corrupted. The likely cause is either failed software download or connection of a unit lacking software.

Action Follow the instructions below until the fault is resolved.

- Perform an unconditional software download to the RBS from the BSC or use the OMT to load new software on the flash card.
- Replace the DUG flash card.

3.2.10 SO CF I2A:26 - Climate Sensor Fault

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

Description A temperature sensor is faulty.

3.2.11 SO CF I2A:30 - Bus Fault

Related Faults Section 4.2.1 SO TRXC I1B:8 - Y Link Communication Fault on page 57

Section 4.2.2 SO TRXC I1B:9 - Y Link Communication Lost on page 57

Section 4.2.3 SO TRXC I1B:10 - Timing Reception Fault on page 58

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:3 - Y Link Section 3.5 SO CF Replacement Unit Map on page 42

Description Disturbances present on the Y link interface.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Check that the defined RUGs in the IDB correspond to the RUGs in the RBS. Otherwise modify the IDB.

- Check that the Y link cable between the DUG and RUGs is correctly connected and in good condition.
- Reset the RUG not communicating correctly with the DUG.
- Reset the DUG.
- Replace the DUG.

3.2.12 SO CF I2A:31 - High Frequency of Software Fault

Description Frequent software errors during execution of the RBS software.

Action Follow the instructions below until the fault is resolved.

- Print out the RBS log and IDB, using the OMT, and send them together with a trouble report to Ericsson.
- If this fault occurs frequently, then replace the RBS software.

3.2.13 SO CF I2A:33 - RX Diversity Lost

Related Faults Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description There is an imbalance in signal strength between the receiver paths for one or more TRXs. Depending on which RX path has the lowest signal strength, one or more of the related faults are also raised.

To avoid false alarms, the fault has a long filter time that depends on the traffic load. Therefore, the fault can occur several days after installation. Despite the long filter time, a single mobile might cause an alarm if the call is made when the traffic is low and the call continues for a long time in an area with poor coverage, for example, during nights and behind the antenna. When traffic increases, the alarm normally ceases. To

correct this kind of alarm, the radio cell planning must be revised.

Action Follow the instructions below until the fault is resolved.

Note: Long filter time – do not use reset until all actions have been performed.

Note: If other alarms are raised on the same RX path, this might also be the cause of the RX diversity alarm. If present, then correct such alarms first.

- Use the raised RX I2A faults to identify which RXs, and thereby which RX path, are faulty. The RX path identifies the antenna connection to investigate.
- Check that cables are connected to the correct antennas. The OMT Radio view shows how the IDB is defined regarding the connections.
- Check that the correct RX Diversity mode is defined in the BSC (RX parameter RXD with possible values A, B, AB, and ABCD). See antenna setup in the OMT Radio view for help.
- If applicable, check that ALNA/TMAs are working correctly, for example, by monitoring the ALNA/TMA current power consumption with the OMT and comparing it with expected consumption.
- Check all radio cables, connectors and other passive radio equipment, for example, with Antenna System VSWR tests.
- Check the antennas.

3.2.14 SO CF I2A:34 - Output Voltage Fault

Related Faults Section 5.3.9 AO RX I1B:12 - TMA-CM Output Voltage Fault on page 84

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Related RUs SO CF RU:20 - TMA-CM Section 3.5 SO CF Replacement Unit Map on page 42

Description The ALNA/TMA voltage is outside the allowed range. This can be caused by a hardware failure or a short circuit of the feeder.

Action Follow the instructions below until the fault is resolved.

- If applicable, check the bias injectors.
- Check the jumper and feeder cables, especially that they are connected to the correct ports on the ALNA/TMA.
- Reset the DUG.

3.2.15 SO CF I2A:36 - RU Database Corrupted

Related Faults Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Related RUs SO CF RU:20 - TMA-CM Section 3.5 SO CF Replacement Unit Map on page 42

Description The RU database in a unit is corrupted or cannot be read by the software.

Action Follow the instructions below until the fault is resolved.

- Check the RU map to find out which RU is involved.
- Check that communication to the RU is good.
- If communication is good, then switch off and on the power to the faulty RU and reset the DUG
- Replace the RU and reset the DUG.

3.2.16 SO CF I2A:38 - Default Values Used

Description The DUG is using default parameters for its internal configuration, usually as a consequence of the related faults. Performance can be reduced.

Action Follow the instructions below until the fault is resolved.

- Reset the DUG.
- Create a new IDB and install it, using the OMT.

3.2.17 SO CF I2A:41 - Lost Communication to TRU

Related RUs SO CF RU:3 - Y Link Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

Description The DUG has no contact with one or more TRXs marked as expected in the IDB.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Check that the defined RUG in the IDB corresponds to the RUG in the RBS. Otherwise modify the IDB.
- Check that the Y link cable between the DUG and the RUGs is correctly connected and in good condition.
- Reset the RUG not communicating correctly with the DUG.
- Reset the DUG.
- Replace the RUG not communicating correctly with the DUG.
- Replace the DUG.

3.2.18 SO CF I2A:43 - Internal Configuration Failed

Related Faults Section 4.1.17 SO TRXC I1A:21 - Internal Configuration Failed on page 50

Description One or more TRXs have failed internal configuration.

Action See related fault SO TRXC I1A:21 for more information.

3.2.19 SO CF I2A:45 - High Temperature

Related RUs SO CF RU:14 - Battery Section 3.5 SO CF Replacement Unit Map on page 42

Description The battery temperature is above normal conditional range. The fault ceases when the temperature comes back within the normal conditional range.

Action Follow the instructions below until the fault is resolved.

- Check in the IDB that the battery temperature alarm raise limit is correctly defined.
- Check the battery temperature sensor.

- Check the battery.

3.2.20 SO CF I2A:46 - DB Parameter Fault

Related RUs

SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU
Section 3.5 SO CF Replacement Unit Map on page 42

Description

The IDB or one of the RU databases contains one or more erroneous parameters. The software uses a default value instead and performance might be reduced.

Action

Follow the instructions below until the fault is resolved.

- Check the RU map to find out which database is faulty.

For IDB:

- Create and install a new IDB, using the OMT.

For other RU:

- Check that the communication to the RU is good.
- If the communication is good, then switch off and on the power to the faulty RU and reset the DUG.
- Replace the RU and reset the DUG.

3.2.21 SO CF I2A:47 - Antenna Hopping Failure

Description

For RUG-based configurations:

Antenna hopping is not possible, either because of the configuration received from the BSC or site constraints.

The BSS feature BTS Power Saving might raise this alarm when the traffic load is continuously low. The alarm has a filtering time of one week before the alarm is raised.

To enable antenna hopping, at least one antenna system must include two enabled TXs, connected to separate antennas.

Action

Follow the instructions below until the fault is resolved.

- Check the BSC configuration of Antenna Hopping.
- Read the IDB and use the Radio view in the OMT to check how the IDB is defined regarding the connections.

- Undefine Antenna Hopping with the BSC if not feasible.

Note: Manual definition of Antenna Hopping = On/Off in the IDB is overruled/redefined by the BSC configuration.

3.2.22 SO CF I2A:48 - GPS Synch Fault

Related Faults Section 5.6.1 AO TF I1B:2 - GPS Synch Fault on page 94

Related RUs SO CF RU:48 - GPS Receiver Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:49 - GPS Receiver DXU Cable Section 3.5 SO CF Replacement Unit Map on page 42

Description *For GPS receiver:*

- The defined GPS receiver has a hardware fault. If no backup synchronization source (PCM) is available, fault AO TF I1B:2 is raised.

For GPS receiver DUG cable:

- There is no communication between the DUG and the defined GPS receiver. If no backup synchronization source (PCM) is available, fault AO TF I1B:2 is raised.

Action Follow the instructions below until the fault is resolved.

For GPS receiver:

- Remove the class 1 alarm, if present, by using PCM as backup synchronization source. This is done by defining the TF parameter SYNCSRC = DEFAULT in the BSC.
- Check the GPS receiver and its receiver chain, that is, the antenna and cables.
- Disconnect the power to the GPS receiver, for example, by disconnecting the connector in the OVP module. Wait a few minutes, then reconnect the power.

For GPS receiver DUG cable:

- Remove the class 1 alarm, if present, by using PCM as backup synchronization source. This is done by

defining the TF parameter SYNCSRC = DEFAULT in the BSC.

- Check the connection between the DUG and the GPS receiver.
- Disconnect the power to the GPS receiver, for example, by disconnecting the connector in the OVP module. Wait a few minutes, then reconnect the power.
- Check the power supply to the GPS receiver by checking the DC indicator in the OVP module.
- Check the GPS receiver and its receiver chain, that is, the antenna and cables.
- If no GPS receiver is required, then use Define GPS Parameters in the OMT to set GPS present = No in the IDB.

3.2.23 SO CF I2A:50 - RBS Running on Battery

Description The RBS is running on batteries. Unless external power is restored the RBS eventually turns itself off.

Action Follow the instructions below until the fault is resolved.

- Check the external power supply.
- Check the PSUs.
- Check the defined Power System for each cabinet in the IDB.

3.2.24 SO CF I2A:51 - TMA Supervision/Communications Lost

Related Faults Section 5.3.10 AO RX I1B:17 - TMA Supervision Fault on page 84

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs SO CF RU:54 - IOM Bus Section 3.5 SO CF Replacement Unit Map on page 42

Description The DUG has lost communication with the TMA-CM.

Action Follow the instructions below until the fault is resolved.

- Check that the defined TMA-CMs in the IDB correspond to the TMA-CMs in the RBS. Otherwise modify the IDB.
- Reset the DUG.

3.2.25 SO CF I2A:53 - HW and IDB Inconsistent

Related Faults Section 4.1.16 SO TRXC I1A:20 - HW and IDB Inconsistent on page 50

Related RUs SO CF RU:34 - IDB Section 3.5 SO CF Replacement Unit Map on page 42

Description The IDB does not match the RBS hardware.

Action Follow the instructions below until the fault is resolved.

- If the alarm SO TRXC I1A:20 is present, then see this fault for more information.
- Use the OMT function Check IDB to identify hardware/IDB inconsistencies.
- Check that the defined Power System and the defined BFUs and PSUs in the IDB correspond to the BFUs and PSUs in the RBS. Otherwise modify the IDB.
- Create a new IDB that applies to the RBS hardware and install it, using the OMT.
- Reset the DUG.

3.2.26 SO CF I2A:54 - Timing Bus Fault

Related RUs SO CF RU:0 - DXU, DUG 10, DUG 20, MU or IXU Section 3.5 SO CF Replacement Unit Map on page 42

Description The timing bus driver in the DUG is faulty or one or more TRXs have reported timing reception problems.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- If applicable, check the Y link cable.
- Replace the RUG.
- Reset the DUG.
- Replace the DUG.

3.2.27 SO CF I2A:57 - RX Path Imbalance

Related Faults

Section 5.4.5 AO RX I2A:5 - RX Path A Imbalance on page 92

Section 5.4.6 AO RX I2A:6 - RX Path B Imbalance on page 92

Section 5.4.7 AO RX I2A:7 - RX Path C Imbalance on page 92

Section 5.4.8 AO RX I2A:8 - RX Path D Imbalance on page 93

Section 5.12.13 AO TX I1B:35 - RX Path Imbalance on page 105

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs

SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description

This fault is raised if the difference in signal strength between two antennas in the same antenna system exceeds the limits defined by the Define RX Path Imbalance Parameters in the OMT.

If the class 1 limit is exceeded, related fault AO TX I1B:35 is also raised and the TX disabled.

The supervision of this fault is based on measurements over a long period; hence the fault does not cease as soon as the fault is corrected. The RX imbalance monitor must therefore be used to verify the correction of the fault.

Action Follow the instructions below:

- Check the defined RX path invariance limits using the Define RX Path Imbalance Parameters function in the OMT for the faulty antenna system.
- Check the TX cables/feeders, cable connections inside and outside the cabinet and antennas, for example, with Antenna System SWR tests. For information about how to perform an VSWR test, see document Verifying System Antennas or document Antenna System Tests for the relevant RBS.
- When the fault is corrected, reset the RUG/RUS/RRUS to cease the fault immediately.

Note: If the fault is not resolved, it is reported again as soon as the minimum number of samples is collected.

3.2.28 SO CF I2A:58 - Disconnected

Related RUs SO CF RU:7 - PSU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:8 - BFU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:15 - Fan / Fan Group Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:61 - PDU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:62 - SAU Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:63 - SCU or SUP Section 3.5 SO CF Replacement Unit Map on page 42

Description An alarm is raised if there is no contact with a unit expected to be in the RBS.

The RBS is unable to communicate with or control the unit, which operates in autonomous mode with degraded performance. The severity of the degradation depends on the type of unit.

Action Follow the instructions below until the fault is resolved.

- Check that the RBS is correctly configured and contains all the relevant units. The number of

configured units must equal the total number of units in the RBS.

- Find the disconnected unit and restart it.
- Check that the unit is correctly connected to the EC bus or superior unit.
- Replace the cable between the unit and the EC bus or superior unit.
- Replace the unit.
- Replace the EC bus hub/SHU.

3.2.29 SO CF I2A:59 - Operating Temperature Too High, Main Load Disconnected

Related RUs

SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description

An alarm is raised when the main load is disconnected because the PDU temperature is too high. The likely cause is one of the following:

- A fault in the climate system.
- High ambient temperature.

Power is disconnected from all equipment connected to outputs configured for main load.

Action

Follow the instructions below until the fault is resolved.

- Check that all RUS/RRUS circuit breakers or fuses on the PDU are on or intact.
- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by high ambient temperature.
- Resolve any external RBS temperature problems.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Restart the PDU.
- Replace the PDU.

- If the alarm soon reappears, the PDU is probably not faulty, and the problem is probably a general climate system problem.

3.2.30 SO CF I2A:60 - Operating Temperature Too High, Battery Disconnected

Related RUs

SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description

An alarm is raised when the battery is disconnected because the BFU temperature is too high. The battery is reconnected when the BFU temperature falls. The likely cause is one of the following:

- A fault in the climate system.
- High ambient temperature.
- A BFU fault.

The battery backup system is disconnected, and the RBS is unable to function in the event of an AC power failure.

Action

Follow the instructions below until the fault is resolved.

- Check if the problem is caused by high ambient temperature.
- Resolve any external RBS temperature problems.
- Check if other units in the same cabinet have raised temperature-related alarms, which can indicate high ambient temperature or a fault in the climate system of the cabinet containing the BFU.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Restart the BFU.
- Replace the BFU.
- If the alarm soon reappears, the BFU is probably not faulty, and the problem is probably a general climate system problem.

3.2.31 SO CF I2A:61 - Operating Temperature Too High, Capacity Reduced

Related RUs

SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description

An alarm is raised when the PSU operating temperature is too high and PSU performance deteriorates.

High temperatures can cause reduced PSU output power.

Action

Follow the instructions below until the fault is resolved.

- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by high ambient temperature.
- Resolve any external RBS temperature problems.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Restart the PSU.
- Replace the PSU.
- If the alarm soon reappears, the PSU is probably not faulty, and the problem is probably a general climate system problem.

3.2.32 SO CF I2A:62 - Operating Temperature Too Low, Capacity Reduced

Related RUs

SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description

An alarm is raised when the PSU operating temperature is too low, causing reduced PSU performance.

Low temperatures can cause PSU output power to fall below the minimum level required to power the RBS.

Action

Follow the instructions below until the fault is resolved.

- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by low ambient temperature.
- Resolve any external RBS temperature problems.

- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Restart the PSU.
- Replace the PSU.
- If the alarm soon reappears, the PSU is probably not faulty, and the problem is probably a general climate system problem.

3.2.33 SO CF I2A:63 - Operating Temperature Too High, No Service

Related RUs SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description An alarm is raised when the PSU operating temperature is too high (near the destructive range), causing it to stop supplying power to the RBS.

Power to the RBS is reduced and there is a risk of the RBS ceasing to function.

Action Follow the instructions below until the fault is resolved.

- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by high ambient temperature.
- Resolve any external RBS temperature problems.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Restart the PSU.
- Replace the PSU.
- If the alarm soon reappears, the PSU is probably not faulty, and the problem is probably a general climate system problem.

3.2.34 SO CF I2A:64 - Operating Temperature Too Low, Communication Lost

Related RUs SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description

An alarm is raised before the PSU operating temperature is too low, causing the loss of DU communication.

This can reduce both the performance of RBS power system control functions and the power to the RBS.

Action

Follow the instructions below until the fault is resolved.

- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by low ambient temperature.
- Resolve any RBS external temperature problems.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Restart the PSU.
- Replace the PSU.
- If the alarm soon reappears, the PSU is probably not faulty, and the problem is probably a general climate system problem.

3.2.35 SO CF I2A:65 - Battery Voltage Too Low, Main Load Disconnected

Description

An alarm is raised when the main load is disconnected because of low battery voltage. This is normal when the RBS runs for too long on battery backup after an AC power failure.

All equipment connected to outputs configured for main load is disconnected.

Action

Follow the instructions below until the fault is resolved.

- Check that AC power is available or wait until it is.
- Check that sufficient battery capacity is available or install more if necessary.
- Check that the correct voltage is set for IDB parameter MainLoadUndervoltageDisconnect.
- Check that the battery is connected correctly.
- Check the battery cables and replace any faulty cables.

- Restart the BFU.
- Replace the BFU.
- Check the condition of the battery and replace it if necessary.

3.2.36 SO CF I2A:66 - Battery Voltage Too Low, Prio Load Disconnected

Description

An alarm is raised when the battery is disconnected because of low battery voltage. This is normal when the RBS runs for too long on battery backup after an AC power failure.

All power distribution ceases.

Action

Follow the instructions below until the fault is resolved.

- Check that AC power is available.
- Check that sufficient battery capacity is available or install more if necessary.
- Check that the correct voltage is set for IDB parameter PriorityLoadUndervoltageDisconnect.
- Check that the battery is connected correctly.
- Check the battery cables and replace any faulty cables.
- Restart the BFU.
- Replace the BFU.
- Check the condition of the battery and replace it if necessary.

3.2.37 SO CF I2A:67 - System Undervoltage

Related RUs

SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description

An alarm is raised when the system voltage falls below a set level.

Action

Follow the instructions below until the fault is resolved.

AC/DC rectification or DC/DC conversion power system:

- Check that alarm levels are set correctly.
- Check the incoming power.

- Check that enough PSUs are installed and, install more if necessary.
- Replace any faulty PSUs.

-48 V DC direct power system:

- Check that alarm levels are set correctly.
- Check the incoming power.

3.2.38 SO CF I2A:68 - System Overvoltage

Related RUs SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description An alarm is raised when the system voltage rises above a set limit. If the system voltage continues to rise, services can fail and RBS equipment can be damaged.

AC/DC rectification or DC/DC conversion power system:

- A PSU supplies excessive voltage.

-48 V DC direct power system:

- Voltage of incoming power is too high.

Action Follow the instructions below until the fault is resolved.

AC/DC rectification or DC/DC conversion power system:

- Check that the system voltage is correct by measuring it through the PDU port.
- Replace the PDU if the system voltage is correct and the alarm is suntil raised.
- Replace any faulty PSU.

-48 V DC direct power system:

- Check the incoming power.
- Check that the system voltage is correct by measuring it through the PDU port.
- Replace the PDU if the system voltage is correct and the alarm is suntil raised.

3.2.39 SO CF I2A:69 - Cabinet Product Data Mismatch

Description

The ability to keep a consistent product data view is lost and there is a mismatch between configured data and unit-provided data.

This alarm is raised if the configuration data does not match the cabinet product data, stored internally in the RBS (in the SCU/SUP). The alarm is raised if the SCU is moved from another RBS to this RBS, because the product data, stored in the SCU/SUP, does not match the original data stored in the DU.

Correct cabinet product data (PID) is not available for this RBS. There is a risk that the RBS is not working correctly.

Action

Follow the instructions below until the fault is resolved.

- Add the values stated on the cabinet enclosure label to the IDB description.

3.2.40 SO CF I2A:70 - Battery Missing

Related RUs

SO CF RU:14 - Battery Section 3.5 SO CF Replacement Unit Map on page 42

Description

An alarm is raised if the battery voltage indicates that an expected battery is not present.

The likely cause is one of the following:

- A disconnected or faulty cable between the battery and the BFU.
- A faulty battery.

The battery backup system is disconnected, and the RBS is unable to function in the event of an AC power failure.

Action

Follow the instructions below until the fault is resolved.

- Check that the battery is present.
- Check that the battery is connected correctly.
- Check the battery cables and replace any faulty cables.
- Restart the BFU.
- Replace any faulty BFU.

- Check the condition of the battery and replace it if necessary.

3.2.41 SO CF I2A:71 - Low Battery Capacity

Description

An alarm is raised if the voltage is too low during intermittent charging. The battery voltage reached the set limit while the battery was disconnected during intermittent charging.

Battery capacity is lower than expected. The backup time at the next AC power failure is likely to be shorter than expected.

Action

Follow the instructions below until the fault is resolved.

- Check that the voltage for intermittent charging, IDB parameter IntermittentChargeConnectVoltage, is set correctly.
- Check the battery condition, for example, by performing an on-demand battery test.
- Check the condition of the battery and replace it if necessary.

3.2.42 SO CF I2A:72 - Software Load of RUS Failed

Description

The DUG is unable to download software to one or more RUSs/RRUSs marked as expected in the IDB. The likely cause is either failed software download or incompatible versions of DUG and RUS/RRUS.

Action

Follow the instructions below until the fault is resolved.

- Perform an unconditional software download to RBS from the BSC or use the OMT to load new software on the flash card.
- Change RUS/RRUS to a version supported by GSM.

3.2.43 SO CF I2A:73 - Degraded or Lost Communication to Radio Unit

Related Faults

Section 5.3.13 AO RX I1B:21 - Traffic Lost Uplink on page 84

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Description

The DUG has no contact or degraded communication with one or more RUSs/RRUSs marked as expected in the IDB.

Action

Follow the instructions below until the fault is resolved.

- Check that all RUSs/RRUSs circuit breakers or fuses on the PDU are on or intact.
- Check that all RUSs/RRUSs is powered-on.
- Check that all defined RUSs/RRUSs in the IDB correspond to the RUS/RRUS in the RBS. Otherwise modify the IDB.
- Check that the Radio Interface cable between the DUG and all RUS/RRUS are correctly connected and in good condition.
- Reset the RUS/RRUS not communicating correctly with the DUG.
- Reset the DUG.
- Replace the Radio Interface cable between DUG and the RUS/RRUS.
- Replace the RUS/RRUS not communicating correctly with the DUG.
- Replace the DUG.

3.2.44 SO CF I2A:79 - Configuration Fault of CPRI System

Description

There is a configuration fault of CPRI System.

Action

Follow the instructions below until the fault is resolved.

- Check that the defined DUs correspond to the DUs in the RBS and are connected to the right RI port according to the IDB. Otherwise modify the IDB.
- Check that the TRX to MCTR relationship in the IDB is correctly set up.
- Reset the DUG.
- Replace the DUG.

3.2.45 SO CF I2A:80 - Antenna System DC Power Supply Overloaded

Related Faults

Section 5.3.14 AO RX I1B:22 - Antenna System DC Power Supply Overloaded on page 85

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs

SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description

The DC power supply of the antenna system is overloaded. This can be caused by a hardware failure or a short circuit. Most likely: jumper, feeder or TMA. Less likely: RUS output or other RBS internal RF cables connecting to jumper.

If the RUS output is overloaded, the RUS automatically protects itself by switching the DC output power off.

Action

Follow the instructions below until the fault is resolved.

- Inspect all feeder cables, radio cables, connectors and other passive radio equipment.
- Inspect the antennas.
- Check that ALNA/TMAs are working correctly, for example, by monitoring the ALNA/TMA current power consumption with the OMT and comparing it with expected consumption.
- Inspect the TX cables/feeders, cable connections inside and outside the cabinet and antennas, for example, with Antenna System SWR tests or DC resistance measurements. For information about how to perform an SWR test see documents Verifying System Antennas or Antenna System Tests in the CPI for the relevant RBS.
- Confirm with the OMT that the IDB is correct regarding installed antenna system. If not, then modify and install a new IDB.

- Check that cables are connected to the correct antennas. The OMT Radio view shows how the IDB is defined regarding the connections.
- Reset RUS/RRUS
- Replace the RUS/RRUS.

3.2.46 SO CF I2A:81 - Primary Node Disconnected

Description The DUG has no contact with the primary DU.

Action Follow the instructions below until the fault is resolved.

- Check that the defined primary DU corresponds to the DU in the RBS. Otherwise modify the IDB.
- Check that the EC bus between the DUG and the primary DU is correctly connected and in good condition.
- Reset the DUG.
- Reset the primary DU.

3.2.47 SO CF I2A:82 - Radio Unit Incompatible

Description A Radio Unit is not compatible with GSM. This can for example be caused by connecting to a RUS with a non-GSM compatible frequency band, or connecting to a Radio Unit for another radio access standard.

Action Follow the instructions below until the fault is resolved.

- Replace the Radio Unit with a GSM compatible RUS/RRUS.

3.3 SO CF External Condition Map Class 1

3.3.1 SO CF EC1:2 - LMT (BTS Locally Disconnected)

Description The DUG is in full maintenance mode and cannot be controlled by the BSC.

Action The DUG can be brought into no maintenance mode by pressing the Maintenance button on the DUG or using the function Change Local/Remote State in Local OMT, Remote OMT, or Remote OMT over IP.

3.3.2 SO CF EC1:4 - L/R SWI (BTS in Local Mode)

Description The DUG is in full maintenance mode and cannot be controlled by the BSC.

Action The DUG can be brought into no maintenance mode by pressing the Maintenance button on the DUG or using the function Change Local/Remote State in Local OMT, Remote OMT, or Remote OMT over IP.

3.3.3 SO CF EC1:5 - L/R TI (Local to Remote While Link Lost)

Description The DUG went into no maintenance mode while the CF link was down.

Note: For information only.

3.3.4 SO CF EC1:9 - Smoke Alarm

Related RUs SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description The smoke detector raises this alarm when it detects smoke in the cabinet, which can be caused by a fire.

Action Follow the instructions below until the fault is resolved.

- If a fire is discovered, then follow the relevant firefighting procedure.
- Replace any damaged units.
- If the fault occurs frequently and there is no visible damage, no smoke, and nothing that could trigger the alarm, then replace the smoke detector.

3.4 SO CF External Condition Map Class 2

3.4.1 SO CF EC2:3 - Smoke Alarm Faulty

Related RUs SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description This alarm is raised when the smoke detector hardware is faulty.

Action Follow the instructions below until the fault is resolved.

- Replace the smoke detector and test it.
- If the alarm does not clear, then put back the original smoke detector.

3.4.2 SO CF EC2:6 - O&M Link Disturbed

Description The O&M Link is disturbed and the DUG cannot be controlled by the BSC. This is most likely a fault in the BSC or in the Abis transmission path.

Action For information only, not an RBS fault.

3.4.3 SO CF EC2:9 - RBS DOOR (RBS Cabinet Door Open)

Description This fault indicates that the cabinet door is open. When the door is closed, the alarm will cease within a minute.

Action *If the alarm is suntil active after a minute:*

Follow the instructions below until the fault is resolved.

- Check the door switch, and adjust it if required.
- Replace the door switch.

3.4.4 SO CF EC2:11 - ALNA/TMA Fault

Related Faults Section 5.3.2 AO RX I1B:1 - ALNA/TMA Fault on page 82

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs SO CF RU:12 - ALNA/TMA A Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:13 - ALNA/TMA B Section 3.5 SO CF Replacement Unit Map on page 42

Description The current supplied to the ALNA/TMA is outside the defined limits. The ALNA/TMA current consumption can be monitored, using the OMT.

If all ALNAs/TMAs to an RX are faulty, fault AO RX I1B:1 is raised and the RX disabled (AO RX I2A RX Path Lost on Receiver Side faults are ceased), unless TMA Type = GSM/TDMA bypass is defined. TMA bypass

configurations require that the installed ALNAs/TMAs support the by-pass function.

Action Follow the instructions below until the fault is resolved.

- Check the defined Current Supervision Limits in the IDB for each ALNA/TMA against the supplier's specification.

Note: If TMA Type = Externally Powered is defined, the current supervision is disabled for this ALNA/TMA.

- Switch off the power source to the ALNA/TMA. Wait at least 10 seconds and then switch on the power.

Note: The ALNA/TMA power can be switched off and on by temporarily defining TMA Type = Externally Powered, using the OMT.

- If applicable, check the bias injectors.
- Check all feeders and jumpers.
- Replace the ALNA/TMA.

3.4.5 SO CF EC2:12 - ALNA/TMA Degraded

Related Faults Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs SO CF RU:12 - ALNA/TMA A Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:13 - ALNA/TMA B Section 3.5 SO CF Replacement Unit Map on page 42

Description The current supplied to the ALNA/TMA is outside the defined limits. The ALNA/TMA current consumption can be monitored, using the OMT.

Action Follow the instructions below until the fault is resolved.

- Check the defined Current Supervision Limits in the IDB for each ALNA/TMA against the supplier's specification.

Note: If TMA Type = Externally Powered is defined, the current supervision is disabled for this ALNA/TMA.

- Switch off the power source to the ALNA/TMA. Wait at least 10 seconds and then switch on the power.

Note: The ALNA/TMA power can be switched off and on by temporarily defining the TMA Type = Externally Powered, using the OMT.

- If applicable, check the bias injectors.
- Check that feeders and jumpers are undamaged and correctly connected.
- Replace the ALNA/TMA.

3.4.6 SO CF EC2:13 - Auxiliary Equipment Fault

Related Faults

Section 5.3.16 AO RX I1B:47 - RX Auxiliary Equipment Fault on page 85

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Section 5.12.15 AO TX I1B:47 - TX Auxiliary Equipment Fault on page 106

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs

SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description

An ARAE fault is activated, indicating that a fault has occurred on auxiliary equipment related to a TX and/or RX antenna.

Action

Follow the instructions below until the fault is resolved.

- Use the OMT to identify which ARAE fault is active. Check the definition of the ARAE fault in the IDB.
- Check the ARAE fault cable connection.
- Check the connected auxiliary equipment.

3.5 SO CF Replacement Unit Map

Table 1 SO CF Replacement Unit Map

No	RU
0	DXU, DUG 10, DUG 20, MU or IXU
1	ECU
2	Micro RBS
3	Y Link
4	TIM
5	CDU
6	CCU
7	PSU
8	BFU
9	BDM
10	ACCU
11	Active Cooler
12	ALNA/TMA A
13	ALNA/TMA B
14	Battery
15	Fan / Fan Group
16	Heater
17	Heat Exchanger Ext Fan
18	Heat Exchanger Int Fan
19	Humidity Sensor
20	TMA-CM
21	Temperature Sensor
22	CDU HLOUT HLIN Cable
23	CDU RX IN Cable
24	CU
25	DU

26	FU
27	FU CU PFWD Cable
28	FU CU PREFL Cable
29	CAB HLIN Cable
30	CDU bus
31	Environment
32	Local Bus
33	EC Bus/EPC Bus/Power Communication Loop
34	IDB
36	Timing Bus
37	CDU CXU RXA Cable
38	CDU CXU RXB Cable
39	X bus
40	Antenna
41	PSU DC Cable
42	CXU
43	Flash Card
45	Battery Temp Sensor
46	FCU
47	TMA-CM Cable
48	GPS Receiver
49	GPS Receiver DXU Cable
50	Active Cooler Fan
51	BFU Fuse or Circuit Breaker
52	CDU CDU PFWD Cable
53	CDU CDU PREFL Cable
54	IOM Bus
55	ASU RXA Units or Cables
56	ASU RXB Units or Cables
57	ASU CDU RXA Cable
58	ASU CDU RXB Cable
59	MCPA
60	BSU
61	PDU

62	SAU
63	SCU or SUP

4 SO TRXC Fault Maps

4.1 SO TRXC Internal Fault Map Class 1A

4.1.1 SO TRXC I1A:0 - Reset, Automatic Recovery

Description The TRX is reset for fault recovery reasons, for example, errors in the software, hardware, or logic configuration. This alarm is set only if another fault on the TRX has been reported before the reset.

Note: For information only.

4.1.2 SO TRXC I1A:1 - Reset, Power On

Description The TRX has recovered after power off.

Note: For information only.

4.1.3 SO TRXC I1A:2 - Reset, Switch

Description The TRX is reset with the Maintenance button or using the OMT.

Note: For information only.

4.1.4 SO TRXC I1A:3 - Reset, Watchdog

Description The software is supposed to reset timers at regular intervals. If the software locks up and does not do this, the TRX is reset.

Note: For information only, not a hardware fault

Action *If this fault is recurring:*

Follow the instructions below until the fault is resolved.

- Print out the RBS log and IDB, using the OMT, and send them together with a trouble report to Ericsson.
- Replace the RBS software.

4.1.5 SO TRXC I1A:4 - Reset, SW Fault

Description The TRX is reset because of a severe software fault.

Action *If the fault recurs:*

Follow the instructions below until the fault is resolved.

- Print out the RBS log and IDB, using the OMT, and send them together with a trouble report to Ericsson.
- Replace the RBS software.

4.1.6 SO TRXC I1A:5 - Reset, RAM Fault

Description The TRX is reset because of an error in the RAM parity check.

Action *If this fault occurs frequently:*

Follow the instructions below until the fault is resolved.

- Replace the RBS software.
- *For RUG:* Replace the RUG.
- *For RUS:* Replace the DUG.

4.1.7 SO TRXC I1A:6 - Reset, Internal Function Change

Description The TRX is reset after software download in order to activate the new software.

Note: For information only.

4.1.8 SO TRXC I1A:8 - Timing Reception Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description *For RUS/RRUS-based configurations:*

The DUG has internal timing problems.

For RUG-based configurations:

The RUG has internal timing problems. It could be a fault in the RUG or Y link.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- If applicable, check the Y link cable.
- Replace the RUG.

4.1.9 SO TRXC I1A:9 - Signal Processing Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The TRX has problems with its signal processing.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.1.10 SO TRXC I1A:10 - RX Communication Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The TRX has communication problems on its RX bus.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.1.11 SO TRXC I1A:11 - DSP CPU Communication Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The TRX has communication problems with a DSP.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.

- Replace the RUG.

4.1.12 SO TRXC I1A:12 - Terrestrial Traffic Channel Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description Internal signalling fault

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Reset the RUS/RRUS.
- Replace the DUG.
- Replace the RUS/RRUS.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.1.13 SO TRXC I1A:13 - RF Loop Test Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The RF loop test is used to detect faults on the TX or RX.

Action Follow the instructions below until the fault is resolved.

- Check that the TX cables are correctly connected to the RUG.
- Reset the RUG.
- Replace the RUG.

4.1.14 SO TRXC I1A:14 - RU Database Corrupted

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description *For RUS-based configurations:*

The TRU database in the DUG flash is corrupted or cannot be read by the software.

For RUG-based configurations:

The RU database in RUG flash is corrupted or cannot be read by the software.

Action

Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.1.15 SO TRXC I1A:19 - Reset, DXU Link Lost

Related Faults

Section 3.1.1 SO CF I1A:0 - Reset, Automatic Recovery on page 5

Section 3.1.2 SO CF I1A:1 - Reset, Power On on page 5

Section 3.1.3 SO CF I1A:2 - Reset, Switch on page 5

Section 3.1.4 SO CF I1A:3 - Reset, Watchdog on page 5

Section 3.1.5 SO CF I1A:4 - Reset, SW Fault on page 5

Section 3.1.6 SO CF I1A:5 - Reset, RAM Fault on page 6

Description

Note: For information only.

For RUS-based configurations:

After several DUG resets (see related faults) an internal fault provokes the DUG to reset and raise this alarm.

For RUG-based configurations:

After several DUG resets (see related faults) the RUG loses contact with the DUG, which provokes it to reset and raise this alarm.

4.1.16 SO TRXC I1A:20 - HW and IDB Inconsistent

Related Faults Section 3.2.25 SO CF I2A:53 - HW and IDB Inconsistent on page 23

Description The IDB does not match the RUS/RRUS/RUG hardware, for example, wrong frequency band.

Note: The OMT function Check IDB can be used to identify hardware/IDB inconsistencies.

Action Follow the instructions below until the fault is resolved.

- Check that the correct RUS/RRUS/RUG hardware is installed.
- *For RUS:* Check that each RUS/RRUS is connected to the correct RI port on the DUG.
- *For RUG:* Check that each RUG is connected to the correct Y link.
- Create a new IDB that applies to the RBS hardware and install it, using the OMT.

4.1.17 SO TRXC I1A:21 - Internal Configuration Failed

Related Faults Section 3.2.18 SO CF I2A:43 - Internal Configuration Failed on page 19

Description The TRX failed its internal configuration at startup.

Action Follow the instructions below until the fault is resolved.

- Check that the required RUG/RUS/RRUS in the IDB corresponds to the RUG/RUS/RRUS in the RBS. Otherwise modify the IDB configuration or RBS hardware.
- Check that the correct RUG/RUS/RRUS hardware is installed.
- *For RUS:* Check that each RUS/RRUS is connected to the correct RI port on the DUG.
- *For RUG:* Check that each RUG is connected to the correct Y link.
- Create a new IDB that applies to the RBS hardware and install it, using the OMT.
- Reset the RUG/RUS/RRUS.
- Reset the DUG.

- Replace the RUG/RUS/RRUS.
- Replace the DUG.

4.1.18 SO TRXC I1A:22 - Voltage Supply Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description A problem has occurred with the internal power distribution for this TRX.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Switch off and on the power to the RUG.
- Replace the RUG.

4.1.19 SO TRXC I1A:23 - Air Time Counter Lost

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The TRX has signalling alignment problems.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.1.20 SO TRXC I1A:24 - High Temperature

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The temperature of the RUG/RUS/RRUS is in the non-destruction range. The fault ceases when the temperature comes back within the exceptional-operation range.

In the non-destruction range the RUS/RRUS takes autonomous actions to protect itself from being damaged. No function is guaranteed. When the fault ceases the system restart the RUS to ensure functionality.

In the exceptional operation range the RUS has full functionality and degraded performance.

The likely causes of this fault are as follows:

- If the fault is issued together with a fan fault, then the most likely cause of the fault is a faulty fan unit.
- If the alarm is raised on only one RUG/RUS/RRUS, then it is likely that the unit has developed a fault, in which case it is likely that another fault also has been issued for that unit.
- If several units from different subracks have issued the fault, then the most likely cause is a fault at the site, in the RBS air-conditioning or in the cooling system.

Action

Follow the instructions below until the fault is resolved.

- If applicable, make sure dummy plates and air guides are correctly installed in the RBS.
- If applicable, inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Inspect the RBS/RRU to ensure that there are no leaks and that nothing is obstructing the airflow in and around the unit issuing the alarm. Before inspecting an RRUS, remove the front cover.
- Test the climate system.
- Reset the RUG/RUS/RRUS.
- Replace the RUG/RUS/RRUS.

4.1.21 SO TRXC I1A:25 - TX/RX Communication Fault

Related RUs

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

Problems detected on the internal communication interface between the TX and RX.

Action

Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.

- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.1.22 SO TRXC I1A:26 - Radio Control System Load

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The radio control system has problems caused by system load.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.1.23 SO TRXC I1A:27 - Traffic Lost Downlink

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description Internal TRX fault causes problems on the downlink traffic to the mobile.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.1.24 SO TRXC I1A:28 - Traffic Lost Uplink

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description Internal TRX fault causes problems on the uplink traffic to the RBS.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.1.25 SO TRXC I1A:29 - Y Link Communication HW Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The TRX has internal problems with the Y link.

Action Follow the instructions below until the fault is resolved.

- Check that each RUG is connected to the correct Y link.
- Check the Y link cable.
- Reset the RUG.
- Replace the RUG.

4.1.26 SO TRXC I1A:30 - DSP RAM Soft Error

Description Spontaneous critical errors have occurred in the DSP RAM. A TRX reset usually clears this fault.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG that has the faulty TRX.
- Replace the RUG.

4.1.27 SO TRXC I1A:31 - Memory Fault

Related RUs

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

A memory test of the radio control system has failed.

Action

Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG that has the faulty TRX.
- Replace the RUG.

4.1.28 SO TRXC I1A:32 - UC/HC Switch Card/Cable Missing or Corrupted

Description

The fault involves the UC/HC switch cable on the RUG, and the likely cause is one of the following:

- Corrupted UC/HC switch cable.
- No UC/HC switch cable connected.
- Incorrect cable connected.

Action

Follow the instructions below until the fault is resolved.

- If a UC/HC switch cable is present, then replace it.
- If no UC/HC switch cable is present, then connect a UC/HC switch cable.
- If an incorrect cable is connected, then remove it and insert a UC/HC switch cable.
- If the fault remains, then replace the RUG.

4.1.29 SO TRXC I1A:33 - Low Temperature

Description

The temperature of the RUS/RRUS is below normal conditional range. The fault ceases when the temperature comes back within the normal conditional range.

The likely causes of this fault are as follows:

- If the alarm is raised on only one RUS, than it is likely that the unit has developed a fault, in which case it is likely that another fault also has been issued for that unit.
- If several units from different subracks have issued the fault, then the most likely cause is a fault at the site, in the RBS air-conditioning or in the cooling system.

Action Follow the instructions below until the fault is resolved.

- If applicable, inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Inspect the RBS/RRU to ensure that there are no leaks and that nothing is obstructing the airflow in and around the unit issuing the alarm. Before inspecting an RRUS, remove the front cover.
- If applicable, check the filters and the climate unit
- If applicable, make sure dummy plates and air guides are correctly installed in the RBS
- Test the climate system.
- Reset the RUS/RRUS.
- Replace the RUS/RRUS.

4.1.30 SO TRXC I1A:34 - Radio Unit HW Fault

Related RUs SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

Description A radio unit is faulty and must be replaced.

Action Follow the instructions below until the fault is resolved.

- Reset the RUS/RRUS for which the alarm is raised.
- Replace the RUS/RRUS.

4.1.31 SO TRXC I1A:35 - Radio Unit Fault

Description A radio unit has indicated an unspecified fault situation.

Action Follow the instructions below until the fault is resolved.

- Identify the unit for which the alarm is raised
- Reset the unit

- Replace the unit

4.1.32 SO TRXC I1A:36 - Lost Communication to Radio Unit

Description The DUG has no contact with one or more RUSs/RRUSs that are marked as expected in the IDB.

Action Follow the instructions below until the fault is resolved.

- Check that all RUSs/RRUSs circuit breakers or fuses on the PDU are on or intact.
- Check that all RUSs/RRUSs is powered-on.
- Check that all defined RUSs/RRUSs in the IDB correspond to the RUS/RRUS in the RBS. Otherwise modify the IDB.
- Check that the Radio Interface cable between the DUG and all RUS/RRUS are correctly connected and in good condition.
- Reset the RUS/RRUS not communicating correctly with the DUG.
- Reset the DUG.
- Replace the Radio Interface cable between DUG and the RUS/RRUS.
- Replace the RUS/RRUS not communicating correctly with the DUG.
- Replace the DUG.

4.2 SO TRXC Internal Fault Map Class 1B

4.2.1 SO TRXC I1B:8 - Y Link Communication Fault

Related Faults Section 3.2.11 SO CF I2A:30 - Bus Fault on page 15

Description See related fault.

Action See related fault.

4.2.2 SO TRXC I1B:9 - Y Link Communication Lost

Related Faults Section 3.2.11 SO CF I2A:30 - Bus Fault on page 15

Description See related fault.

Action See related fault.

4.2.3 SO TRXC I1B:10 - Timing Reception Fault

Related Faults Section 3.2.11 SO CF I2A:30 - Bus Fault on page 15

Section 3.2.26 SO CF I2A:54 - Timing Bus Fault on page 23

Description See related faults.

Action See related faults.

4.3 SO TRXC Internal Fault Map Class 2A

4.3.1 SO TRXC I2A:0 - RX Cable Disconnected

Related Faults Section 5.3.7 AO RX I1B:9 - RX Cable Disconnected on page 83

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs SO TRXC RU:26 - RUG to RUG RXA Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:27 - RUG to RUG RXB Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:28 - RUS to RUS RXA Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:29 - RUS to RUS RXB Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

Description An RX cable is disconnected or faulty.

Action Follow the instructions below until the fault is resolved.

- Check the RX cables between RUGs, RUSs, and RRUSs.
- Reconnect the RX cables.
- Replace any faulty RX cables.

4.3.2 SO TRXC I2A:1 - RX EEPROM Checksum Fault

Related Faults Section 5.3.3 AO RX I1B:3 - RX EEPROM Checksum Fault on page 82

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The data stored in the RX database, used by the software for internal configuration, is corrupted.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.3.3 SO TRXC I2A:3 - RX Synthesizer Unlocked

Related Faults Section 5.3.4 AO RX I1B:5 - RX Synthesizer A/B Unlocked on page 82

Section 5.3.5 AO RX I1B:6 - RX Synthesizer C Unlocked on page 83

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description At least one of the radio synthesizers in the RX has failed to lock to the required frequency.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.3.4 SO TRXC I2A:4 - RX Internal Voltage Fault

Related Faults Section 5.3.6 AO RX I1B:8 - RX Internal Voltage Fault on page 83

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The RX internal voltage is not within the expected voltage range.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Switch off and on the power to the RUG.
- Replace the RUG.

4.3.5 SO TRXC I2A:7 - TX EEPROM Checksum Fault

Related Faults Section 5.12.2 AO TX I1B:6 - TX EEPROM Checksum Fault on page 103

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The data stored in the TX database, used by software for internal configuration, is corrupted.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.3.6 SO TRXC I2A:9 - TX Synthesizer Unlocked

Related Faults Section 5.12.3 AO TX I1B:8 - TX Synthesizer A/B Unlocked on page 103

Section 5.12.4 AO TX I1B:9 - TX Synthesizer C Unlocked on page 103

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description At least one of the radio synthesizers in the TX has failed to lock to the required frequency.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.3.7 SO TRXC I2A:10 - TX Internal Voltage Fault

Related Faults

Section 5.12.5 AO TX I1B:11 - TX Internal Voltage Fault on page 103

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

The TX has problems with its internal voltage regulation.

Action

Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Switch off and on the power to the RUG.
- Replace the RUG.

4.3.8 SO TRXC I2A:11 - TX High Temperature

Related Faults

Section 5.12.6 AO TX I1B:12 - TX High Temperature on page 104

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

This alarm indicates a too high temperature in the RUS/RRUS/RUG. The RUS/RRUS/RUG output power can be automatically decreased to prevent hardware damage.

Action

Follow the instructions below until the fault is resolved.

- If applicable, inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Inspect the RBS/RRU to ensure that there are no leaks and that nothing is obstructing the airflow in and around the unit issuing the alarm. Before inspecting an RRUS, remove the front cover.
- If applicable, check the filters and the climate unit.

- If applicable, make sure dummy plates and air guides are correctly installed in the RBS.
- Test the climate system.
- Reset the RUG/RUS/RRUS.
- Replace the RUG/RUS/RRUS.

4.3.9 SO TRXC I2A:12 - TX Output Power Limits Exceeded

Related Faults

Section 5.12.7 AO TX I1B:13 - TX Output Power Limits Exceeded on page 104

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

The difference between actual and expected TX power at RUG output exceeds 2 dB. TX function is degraded, but not lost. TX function is lost when the difference exceeds 4 dB and fault AO TX I1B:13 is raised.

Action

Follow the instructions below until the fault is resolved.

- Check the TX cabling of the RUG.
- Reset the RUG.
- Replace the RUG.
- Check the TX cables/feeders and cable connections inside and outside the cabinet, for example, with Antenna System SWR tests. For information about how to perform a SWR test see document *Installation and Integration Instructions*.

Note: Take the RUGs out of operation before disconnecting any cables.

4.3.10 SO TRXC I2A:13 - TX Saturation

Related Faults

Section 5.12.8 AO TX I1B:14 - TX Saturation on page 104

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The TX power amplifier is saturated.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.3.11 SO TRXC I2A:14 - Voltage Supply Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description A problem has occurred with the power supply to the power amplifier for this TRX.

Action Follow the instructions below until the fault is resolved.

- Switch off and on the power to the faulty RUG.
- Replace the RUG.

4.3.12 SO TRXC I2A:17 - Loadfile Missing in TRU

Description A RUG/RUS/RRUS software file is missing or corrupted. The likely cause is either failed software download or connection of a RUG/RUS/RRUS with incomplete software.

Action Perform an unconditional software download to the RBS from the BSC or use the OMT to load new software on the flash card in the DUG.

4.3.13 SO TRXC I2A:18 - DSP Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description One of the TRX DSPs is faulty.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.3.14 SO TRXC I2A:19 - High Frequency of Software Fault

Description Frequent software errors during execution of application software in the RUS/RRUS/RUG.

Action Follow the instructions below until the fault is resolved.

- Print out the RBS log and IDB, using the OMT, and send them together with a trouble report to Ericsson.
- If frequent, then replace the RBS software.

4.3.15 SO TRXC I2A:20 - RX Initiation Fault

Related Faults Section 5.3.8 AO RX I1B:10 - RX Initiation Fault on page 83

Section 5.3.13 AO RX I1B:21 - Traffic Lost Uplink on page 84

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The RX failed its initiation at startup.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.3.18 SO TRXC I2A:24 - Radio Unit Antenna System Output Voltage Fault

Related Faults

Section 5.3.15 AO RX I1B:23 - Radio Unit Antenna System Output Voltage Fault on page 85

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs

SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

The ALNA/TMA voltage is outside the specified range. This can be caused by a hardware failure in the RUS power supply or some device, that is, a feeder or TMA consuming too much power.

Action

Follow the instructions below until the fault is resolved.

- Check the feeder cables, especially that they are connected to the correct ports on the ALNA/TMA.
- Check that ALNA/TMAs are working correctly, for example, by monitoring the ALNA/TMA current power consumption with the OMT and comparing it with expected consumption.
- Switch off the power to the pinpointed RUS/RRUS. Wait at least 10 seconds and switch on the power.
- Replace the RUS/RRUS.

4.3.19 SO TRXC I2A:25 - TX Max Power Restricted

Related Faults

Section 5.12.10 AO TX I1B:27 - TX Max Power Restricted on page 105

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Description

If raised together with SO TRXC I2A:11, TX high temperature:

- This indicates a high temperature in the TRX. The output power is reduced 2 dB to lower the

temperature. This can be repeated once to give a total reduction of 4 dB. If the high temperature remains, the output power is switched off and one of the AO TX alarms is also raised.

Action Follow the instructions below until the fault is resolved.

- If applicable, inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Inspect the RBS/RRU to ensure that there are no leaks and that nothing is obstructing the airflow in and around the unit issuing the alarm. Before inspecting an RRUS, remove the front cover.
- If applicable, check the filters and the climate unit
- If applicable, make sure dummy plates and air guides are correctly installed in the RBS
- Test the climate system.
- *For RUG:* Reset the RUG.
- *For RUS:* Reset the DUG.

4.3.20 SO TRXC I2A:26 - DB Parameter Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description One or more parameters in the TRX databases are considered erroneous and default values are used instead.

Action Follow the instructions below until the fault is resolved.

For RUS/RRUS-based configurations:

- Reset the DUG.
- Replace the DUG.

For RUG-based configurations:

- Reset the RUG.
- Replace the RUG.

4.3.21 SO TRXC I2A:29 - Power Amplifier Fault

Related Faults Section 5.12.11 AO TX I1B:31 - Power Amplifier Fault on page 105

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The data stored in the TX power amplifier database, used by software for internal configuration, is corrupted.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.3.22 SO TRXC I2A:33 - Inter TRX Communication Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The communication between TRXs has problems or is degraded.

4.3.23 SO TRXC I2A:36 - RX Filter Loadfile Checksum Fault

Related Faults Section 5.3.11 AO RX I1B:19 - RX Filter Loadfile Checksum Fault on page 84

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description Faulty checksum of RX Filter Loadfile.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RBS software.
- Replace the RUG.

4.3.24 SO TRXC I2A:39 - RF Loop Test Fault, Degraded RX

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The RF Loop test is used to detect problems with the TX and RX by sending dummy bursts between them. One RX path is detected as faulty.

Action Follow the instructions below until the fault is resolved.

- Check that the TX cables are correctly connected to the RUG.
- Reset the RUG.
- Replace the RUG.

4.3.25 SO TRXC I2A:40 - Memory Fault

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description A memory test of the radio control system has failed.

Action Follow the instructions below until the fault is resolved.

- Reset the RUG.
- Replace the RUG.

4.3.26 SO TRXC I2A:42 - UC/HC Switch Card/Cable and IDB Inconsistent

Related Faults Section 5.11.1 AO TX I1A:2 - UC/HC Switch Inconsistent with IDB on page 102

Description The switch position of the UC/HC switch cable on the RUG is inconsistent with the IDB, that is, the position is not as indicated by the IDB.

Action Follow the instructions below until the fault is resolved.

- If the IDB matches the RBS configuration, then disconnect the UC/HC switch cable and reconnect it.
- If the switch position is as intended, then create a new IDB that matches the RBS configuration and install it with the OMT.

4.3.27 SO TRXC I2A:44 - TX Low Temperature

Description

The temperature of the RUS/RRUS is below normal conditional range. The fault ceases when the temperature comes back within the normal conditional range.

The likely causes of this fault are as follows:

- If the alarm is raised on only one RUS, then it is likely that the unit has developed a fault, in which case, it is likely that another fault also has been issued for that unit.
- If several units from different subracks have issued the fault, then the most likely cause is a fault at the site, in the RBS air-conditioning or in the cooling system.

Action

Follow the instructions below until the fault is resolved.

- If applicable, inspect the site cooling and heating systems to ensure that they are functioning correctly.
- Inspect the RBS/RRU to ensure that there are no leaks and that nothing is obstructing the airflow in and around the unit issuing the alarm. Before inspecting an RRUS, remove the front cover.
- If applicable, check the filters and the climate unit
- If applicable, make sure dummy plates and air guides are correctly installed in the RBS
- Test the climate system.
- Reset the RUS/RRUS.
- Replace the RUS/RRUS.

4.3.28 SO TRXC I2A:45 - Radio Unit HW Fault

Related Faults

Section 5.3.1 AO RX I1B:0 - RX Internal Amplifier Fault on page 82

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Section 5.12.14 AO TX I1B:36 - Radio Unit HW Fault on page 106

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

Description Internal hardware fault in the RUS/RRUS. The severity of the fault is indicated by the related faults.

Action Replace the RUS/RRUS.

4.3.29 SO TRXC I2A:46 - Traffic Performance Uplink

Related Faults Section 5.3.13 AO RX I1B:21 - Traffic Lost Uplink on page 84

Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Section 5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side on page 89

Section 5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side on page 90

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description Internal TRX fault causes problem on the uplink traffic.

Action *If raised together with SO TRXC RU:0:*

Replace the DUG.

4.3.30 SO TRXC I2A:47 - Internal Configuration Failed

Related Faults Section 5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side on page 86

Section 5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side on page 87

Description The TRX failed its internal configuration and the fault causes problem on one of the RX ways.

Action Follow the instructions below until the fault is resolved.

- Perform Block/Deblock TRX via BSC
- Check that the required RUS/RRUS in the IDB corresponds to the RUS/RRUS in the RBS. Otherwise modify the IDB configuration or RBS hardware.
- Check that the cross connected RUS/RRUS hardware for the affected RX Path is installed.
- Check that each RUS/RRUS is connected to the correct RI port on the DUG.
- Create a new IDB that applies to the RBS hardware and install it, using the OMT.
- Reset the cross connected RUS/RRUS for the affected RX Path.
- Reset the RUS/RRUS that has the TRX which raised the fault.
- Reset the DUG.

4.4 SO TRXC External Condition Map Class 1

4.4.1 SO TRXC EC1:4 - L/R SWI (TRU in Local Mode)

Description The RUG is in full maintenance mode and cannot be controlled by the BSC.

This can happen, for example, after installing a new IDB.

Action To bring the RUG into no maintenance mode, press the Maintenance button on the RUG or use the OMT.

4.4.2 SO TRXC EC1:5 - L/R TI (Local to Remote While Link Lost)

Description The RUG went into no maintenance mode while the link was down.

Note: For information only.

4.5 SO TRXC External Condition Map Class 2

4.5.1 SO TRXC EC2:16 - TS0 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.2 SO TRXC EC2:17 - TS0 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.3 SO TRXC EC2:18 - TS0 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.4 SO TRXC EC2:20 - TS1 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.5 SO TRXC EC2:21 - TS1 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.6 SO TRXC EC2:22 - TS1 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.7 SO TRXC EC2:24 - TS2 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.8 SO TRXC EC2:25 - TS2 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.9 SO TRXC EC2:26 - TS2 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.10 SO TRXC EC2:28 - TS3 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.11 SO TRXC EC2:29 - TS3 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.12 SO TRXC EC2:30 - TS3 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.13 SO TRXC EC2:32 - TS4 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted

This is probably a fault in the Abis transmission path or in the BSC (for example, no TRA allocated, no connection in Group Switch, and so on)

4.5.14 SO TRXC EC2:33 - TS4 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.15 SO TRXC EC2:34 - TS4 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.16 SO TRXC EC2:36 - TS5 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.17 SO TRXC EC2:37 - TS5 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.18 SO TRXC EC2:38 - TS5 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on

4.5.19 SO TRXC EC2:40 - TS6 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.20 SO TRXC EC2:41 - TS6 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.21 SO TRXC EC2:42 - TS6 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.22 SO TRXC EC2:44 - TS7 TRA Lost (TS Mode Is IDLE)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.23 SO TRXC EC2:45 - TS7 TRA Lost (TS Mode Is CS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.5.24 SO TRXC EC2:46 - TS7 PCU Lost (TS Mode Is PS)

Related Faults Section 5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost) on page 100

Description The speech/data frames from the BSC to the TS are missing or corrupted.

This is probably a fault in the Abis transmission path or in the BSC, for example, no TRA allocated, no connection in Group Switch, and so on.

4.6 SO TRXC Replacement Unit Map

Table 2 SO TRXC Replacement Unit Map

No	RU
0	TRU, dTRU, DRU, RUG, RRU or DUG 20
2	Micro RBS
3	CXU TRU RXA Cable
4	CXU TRU RXB Cable
10	CDU to TRU PFWD Cable
11	CDU to TRU PREFL Cable
12	CDU to TRU RXA Cable
13	CDU to TRU RXB Cable
14	CDU to Splitter Cable or Splitter to TRU RXA Cable
15	CDU to Splitter Cable or Splitter to TRU RXB Cable

16	CDU to TRU TX Cable
17	CDU to Splitter Cable or Splitter to CXU RXA Cable
18	CDU to Splitter Cable or Splitter to CXU RXB Cable
19	Splitter to DRU Cable or DRU to Splitter RXA Cable
20	Splitter to DRU Cable or DRU to Splitter RXB Cable
21	DRU to DRU RXA Cable
22	DRU to DRU RXB Cable
23	HCU TRU TX Cable or HCU or CDU HCU TX Cable
24	BSU
25	RUS or RRUS
26	RUG to RUG RXA Cable
27	RUG to RUG RXB Cable
28	RUS to RUS RXA Cable
29	RUS to RUS RXB Cable

5 AO Fault Maps

5.1 AO CON External Condition Map Class 1

5.1.1 AO CON EC1:8 - LAPD Q CG (LAPD Queue Congestion)

Description

The TRX signalling load towards the BSC is too high compared with the signalling bandwidth.

A possible reason is that the signalling load is high and the signalling bandwidth is reduced by using LAPD concentration or LAPD multiplexing.

Action

Follow the instructions below until the fault is resolved.

- Increase the LAPD bandwidth by, for example, reducing the concentration factor.
- Decrease the RBS traffic load by, for example, adding another site.

5.2 AO CON External Condition Map Class 2

5.2.1 AO CON EC2:8 - LAPD Q CG (LAPD Queue Congestion)

Description

The TRX signalling load towards the BSC is high compared with the signalling bandwidth.

A possible reason is that the signalling load is high and the signalling bandwidth is reduced by using LAPD concentration or LAPD multiplexing.

Note: Only a warning, but if the signal load increases, AO CON EC1:8 LAPD Q CG (LAPD queue congestion) might be raised and traffic lost.

Action

Follow the instructions below until the fault is resolved.

- Increase the LAPD bandwidth by, for example, reducing the concentration factor.
- Decrease the RBS traffic load by, for example, adding another site.

5.3 AO RX Internal Fault Map Class 1B

5.3.1 AO RX I1B:0 - RX Internal Amplifier Fault

Related Faults Section 4.3.28 SO TRXC I2A:45 - Radio Unit HW Fault on page 70

Related RUs SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.2 AO RX I1B:1 - ALNA/TMA Fault

Related Faults Section 3.4.4 SO CF EC2:11 - ALNA/TMA Fault on page 39

Related RUs SO CF RU:12 - ALNA/TMA A Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:13 - ALNA/TMA B Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.3.3 AO RX I1B:3 - RX EEPROM Checksum Fault

Related Faults Section 4.3.2 SO TRXC I2A:1 - RX EEPROM Checksum Fault on page 59

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.4 AO RX I1B:5 - RX Synthesizer A/B Unlocked

Related Faults Section 4.3.3 SO TRXC I2A:3 - RX Synthesizer Unlocked on page 59

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.5 AO RX I1B:6 - RX Synthesizer C Unlocked

Related Faults Section 4.3.3 SO TRXC I2A:3 - RX Synthesizer Unlocked on page 59

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.6 AO RX I1B:8 - RX Internal Voltage Fault

Related Faults Section 4.3.4 SO TRXC I2A:4 - RX Internal Voltage Fault on page 59

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.7 AO RX I1B:9 - RX Cable Disconnected

Related Faults Section 4.3.1 SO TRXC I2A:0 - RX Cable Disconnected on page 58

Related RUs SO TRXC RU:26 - RUG to RUG RXA Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:27 - RUG to RUG RXB Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related faults.

Action Check for any related faults, using the OMT. See respective related faults.

5.3.8 AO RX I1B:10 - RX Initiation Fault

Related Faults Section 4.3.15 SO TRXC I2A:20 - RX Initiation Fault on page 64

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.9 AO RX I1B:12 - TMA-CM Output Voltage Fault

Related Faults Section 3.2.14 SO CF I2A:34 - Output Voltage Fault on page 17

Description See related fault.

Action See related fault.

5.3.10 AO RX I1B:17 - TMA Supervision Fault

Related Faults Section 3.2.24 SO CF I2A:51 - TMA Supervision/Communications Lost on page 22

Related RUs SO CF RU:54 - IOM Bus Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.3.11 AO RX I1B:19 - RX Filter Loadfile Checksum Fault

Related Faults Section 4.3.23 SO TRXC I2A:36 - RX Filter Loadfile Checksum Fault on page 68

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.12 AO RX I1B:20 - RX Cable Supervision Lost

Description See related fault.

Action See related fault.

5.3.13 AO RX I1B:21 - Traffic Lost Uplink

Related Faults Section 3.2.43 SO CF I2A:73 - Degraded or Lost Communication to Radio Unit on page 34

Section 4.3.15 SO TRXC I2A:20 - RX Initiation Fault on page 64

Section 4.3.29 SO TRXC I2A:46 - Traffic Performance Uplink on page 71

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.14 AO RX I1B:22 - Antenna System DC Power Supply Overloaded

Related Faults Section 3.2.45 SO CF I2A:80 - Antenna System DC Power Supply Overloaded on page 36

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.3.15 AO RX I1B:23 - Radio Unit Antenna System Output Voltage Fault

Related Faults Section 4.3.18 SO TRXC I2A:24 - Radio Unit Antenna System Output Voltage Fault on page 66

Related RUs SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.3.16 AO RX I1B:47 - RX Auxiliary Equipment Fault

Related Faults Section 3.4.6 SO CF EC2:13 - Auxiliary Equipment Fault on page 41

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.4 AO RX Internal Fault Map Class 2A

5.4.1 AO RX I2A:1 - RX Path Lost on A Receiver Side

Related Faults

Section 3.4.4 SO CF EC2:11 - ALNA/TMA Fault on page 39

Section 3.4.5 SO CF EC2:12 - ALNA/TMA Degraded on page 40

Section 3.4.6 SO CF EC2:13 - Auxiliary Equipment Fault on page 41

Section 3.2.13 SO CF I2A:33 - RX Diversity Lost on page 16

Section 3.2.14 SO CF I2A:34 - Output Voltage Fault on page 17

Section 3.2.15 SO CF I2A:36 - RU Database Corrupted on page 18

Section 3.2.24 SO CF I2A:51 - TMA Supervision/Communications Lost on page 22

Section 4.3.1 SO TRXC I2A:0 - RX Cable Disconnected on page 58

Section 3.2.43 SO CF I2A:73 - Degraded or Lost Communication to Radio Unit on page 34

Section 4.3.15 SO TRXC I2A:20 - RX Initiation Fault on page 64

Section 4.3.28 SO TRXC I2A:45 - Radio Unit HW Fault on page 70

Section 4.3.29 SO TRXC I2A:46 - Traffic Performance Uplink on page 71

Section 4.3.30 SO TRXC I2A:47 - Internal Configuration Failed on page 71

Related RUs

SO CF RU:12 - ALNA/TMA A Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:13 - ALNA/TMA B Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:20 - TMA-CM Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:54 - IOM Bus Section 3.5 SO CF Replacement Unit Map on page 42

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:26 - RUG to RUG RXA Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:27 - RUG to RUG RXB Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

Description The RX path on the A receiver side of the TRX is lost. This alarm is raised if any of the related faults are raised on a TRX configured with RX diversity.

Action Check for any related faults, using the OMT.

See respective related fault.

5.4.2 AO RX I2A:2 - RX Path Lost on B Receiver Side

Related Faults Section 3.4.4 SO CF EC2:11 - ALNA/TMA Fault on page 39

Section 3.4.5 SO CF EC2:12 - ALNA/TMA Degraded on page 40

Section 3.4.6 SO CF EC2:13 - Auxiliary Equipment Fault on page 41

Section 3.2.13 SO CF I2A:33 - RX Diversity Lost on page 16

Section 3.2.14 SO CF I2A:34 - Output Voltage Fault on page 17

Section 3.2.15 SO CF I2A:36 - RU Database Corrupted on page 18

Section 3.2.24 SO CF I2A:51 - TMA Supervision/Communications Lost on page 22

Section 4.3.1 SO TRXC I2A:0 - RX Cable Disconnected on page 58

Section 3.2.43 SO CF I2A:73 - Degraded or Lost Communication to Radio Unit on page 34

Section 4.3.15 SO TRXC I2A:20 - RX Initiation Fault on page 64

Section 4.3.28 SO TRXC I2A:45 - Radio Unit HW Fault on page 70

Section 4.3.29 SO TRXC I2A:46 - Traffic Performance Uplink on page 71

Section 4.3.30 SO TRXC I2A:47 - Internal Configuration Failed on page 71

Related RUs

SO CF RU:12 - ALNA/TMA A Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:13 - ALNA/TMA B Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:20 - TMA-CM Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:54 - IOM Bus Section 3.5 SO CF Replacement Unit Map on page 42

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:26 - RUG to RUG RXA Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:27 - RUG to RUG RXB Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

The RX path on the B receiver side of the TRX is lost. This alarm is raised if any of the related faults are raised on a TRX configured with RX diversity.

Action

Check for any related faults, using the OMT.

See respective related faults.

5.4.3 AO RX I2A:3 - RX Path Lost on C Receiver Side

Related Faults

Section 3.4.4 SO CF EC2:11 - ALNA/TMA Fault on page 39

Section 3.4.5 SO CF EC2:12 - ALNA/TMA Degraded on page 40

Section 3.4.6 SO CF EC2:13 - Auxiliary Equipment Fault on page 41

Section 3.2.13 SO CF I2A:33 - RX Diversity

S4.4(3.)-311.4((3.4.4)-294.5(SO)-407(CF)-320.5(I(Outpuivers5)-3V
page 41 on

SO CF RU:54 - IOM Bus Section 3.5 SO CF Replacement Unit Map on page 42

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:26 - RUG to RUG RXA Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:27 - RUG to RUG RXB Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

Description RX path lost on C receiver side of the TRX is lost. This alarm is raised if any of the related faults are raised on a TRX configured with 4-way RX diversity.

Note: This fault is applicable only when 4-way receiver diversity is activated.

Action Check for possible related faults, using the OMT.

See respective related fault.

5.4.4 AO RX I2A:4 - RX Path Lost on D Receiver Side

Related Faults Section 3.4.4 SO CF EC2:11 - ALNA/TMA Fault on page 39

Section 3.4.5 SO CF EC2:12 - ALNA/TMA Degraded on page 40

Section 3.4.6 SO CF EC2:13 - Auxiliary Equipment Fault on page 41

Section 3.2.13 SO CF I2A:33 - RX Diversity Lost on page 16

Section 3.2.14 SO CF I2A:34 - Output Voltage Fault on page 17

Section 3.2.15 SO CF I2A:36 - RU Database Corrupted on page 18

Section 3.2.24 SO CF I2A:51 - TMA Supervision/Communications Lost on page 22

Section 4.3.1 SO TRXC I2A:0 - RX Cable Disconnected on page 58

Section 3.2.43 SO CF I2A:73 - Degraded or Lost Communication to Radio Unit on page 34

Section 4.3.15 SO TRXC I2A:20 - RX Initiation Fault on page 64

Section 4.3.28 SO TRXC I2A:45 - Radio Unit HW Fault on page 70

Section 4.3.29 SO TRXC I2A:46 - Traffic Performance Uplink on page 71

Section 4.3.30 SO TRXC I2A:47 - Internal Configuration Failed on page 71

Related RUs

SO CF RU:12 - ALNA/TMA A Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:13 - ALNA/TMA B Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:20 - TMA-CM Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:54 - IOM Bus Section 3.5 SO CF Replacement Unit Map on page 42

SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:26 - RUG to RUG RXA Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

SO TRXC RU:27 - RUG to RUG RXB Cable Section 4.6 SO TRXC Replacement Unit Map on page 78

Description

RX path lost on D receiver side of the TRX is lost. This alarm is raised if any of the related faults are raised on a TRX configured with 4-way RX diversity.

Note: This fault is applicable only 4-way receiver diversity is activated.

Action

Check for possible related faults, using the OMT.

See respective related fault.

5.4.5 AO RX I2A:5 - RX Path A Imbalance

Related Faults Section 3.2.27 SO CF I2A:57 - RX Path Imbalance on page 24

Section 5.12.13 AO TX I1B:35 - RX Path Imbalance on page 105

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.4.6 AO RX I2A:6 - RX Path B Imbalance

Related Faults Section 3.2.27 SO CF I2A:57 - RX Path Imbalance on page 24

Section 5.12.13 AO TX I1B:35 - RX Path Imbalance on page 105

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.4.7 AO RX I2A:7 - RX Path C Imbalance

Related Faults Section 3.2.27 SO CF I2A:57 - RX Path Imbalance on page 24

Section 5.12.13 AO TX I1B:35 - RX Path Imbalance on page 105

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.4.8 AO RX I2A:8 - RX Path D Imbalance

Related Faults Section 3.2.27 SO CF I2A:57 - RX Path Imbalance on page 24

Section 5.12.13 AO TX I1B:35 - RX Path Imbalance on page 105

Section 5.13.1 AO TX I2A:0 - TX Diversity Fault on page 106

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.5 AO TF Internal Fault Map Class 1A

5.5.1 AO TF I1A:0 - Temperature Below Operational Limit

Description An alarm is raised if the OVCXO temperature falls below the operational temperature.

The oscillator frequency depends on temperature. Too low an OVCXO temperature causes timing function disturbances.

Action Follow the instructions below until the fault is resolved.

- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by low ambient temperature.
- Resolve any RBS external temperature problems.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Replace any faulty RBS external equipment.

5.5.2 AO TF I1A:1 - Temperature Above Operational Limit

Description An alarm is raised if the OVCXO temperature rises above the operational temperature.

The oscillator frequency depends on temperature. Too high an OVCXO temperature causes timing function disturbances.

Action Follow the instructions below until the fault is resolved.

- Check for other temperature-related alarms from this RBS.
- Check if the problem is caused by high ambient temperature.
- Resolve any external RBS temperature problems.
- Check if the problem is caused by a fault in the RBS climate system.
- Resolve any RBS climate system problems.
- Replace any faulty external RBS equipment.

5.6 AO TF Internal Fault Map Class 1B

5.6.1 AO TF I1B:2 - GPS Synch Fault

Related Faults Section 3.2.22 SO CF I2A:48 - GPS Synch Fault on page 21

Related RUs SO CF RU:48 - GPS Receiver Section 3.5 SO CF Replacement Unit Map on page 42

SO CF RU:49 - GPS Receiver DXU Cable Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.7 AO TF Internal Fault Map Class 2A

5.7.1 AO TF I2A:0 - Frame Start Offset Fault

Description Frame synchronization cannot be maintained for the RBS. If no related faults are present, the frame synchronization will probably recover and the fault cease within two hours.

Action Follow the instructions below until the fault is resolved.

- Block/deblock the TF.

- Check that the GPS antenna is positioned so that it can receive signals from a sufficient number of satellites all the time.
- Check the connection between the DUG and the GPS receiver.
- Check the GPS receiver and its receiver chain, that is, antenna, cables, and so on.

5.8 AO TF External Condition Map Class 1

5.8.1 AO TF EC1:0 - EXT SYNCH (No Usable External Reference)

Description

There are two options:

If TF mode is set to slave (TG parameter TFMODE = S in the BSC):

- The RBS has tried to synchronize with the External Synchronization Bus (ESB) reference, used as TG synchronization source, for 5 minutes but failed.
- TF has been in holdover mode because of failing ESB reference and the ESB did not recover before the holdover timeout.
- The alarm is sometimes raised and almost immediately ceased if the master TG is reset.

Note: The holdover period can be extended from 2 minutes up to 24 hours if TF holdover mode is set to Intercell in the IDB. This requires that no TRXs in the RBS are included in a cell together with TRXs from a different RBS and that, at least, RBS 2000 software release 11A/10E is used.

If TF mode is set to standalone or master (TG parameter TFMODE = SA or M in the BSC):

- The RBS has tried to synchronize with the GPS reference for 5 minutes but failed and no PCM is defined as backup synchronization source.
- TF has been in holdover mode because of failing GPS reference and the GPS reference did not recover before the holdover timeout.

Action

Follow the instructions below until the fault is resolved.

If ESB reference:

- Check that synchronization of the master TG is without faults.
- Check that the master TG has TF mode = master defined (TG parameter TFMODE = M in the BSC).
- Check the hardware of the master TF source, (DXU if RBS 2000, TMCB if RBS 200, DUG if RBS6000).
- Check that the ESB cables between the master TG and slave TG are correctly connected and undamaged. If the cable is damaged, then replace it.
- Check that termination plugs are mounted on all unconnected ESB connectors.

If GPS reference:

- Use PCM as backup synchronization source. This is done by defining the TF parameter SYNCSRC = DEFAULT in the BSC.
- Check the GPS antenna.
- Check the connection between the GPS receiver and the GPS antenna.
- Check that the GPS antenna is placed so that it can receive signals from a sufficient number of satellites all the time. If it is not, move the GPS antenna.

5.8.2 AO TF EC1:1 - PCM SYNCH (No Usable PCM Reference)

Description

The synchronization reference from the PCM network is faulty (for example, too much jitter/wander) or missing. The alarm is raised if:

- TF has been trying to synchronize with the PCM reference for more than 5 minutes.
- TF did not recover before the holdover timeout expired, that is, the alarm AO TF EC2:1 was active for too long.

Note: Only when TF mode is master or stand-alone.

Action

Follow the instructions below until the fault is resolved.

- Check the PCM quality with the BSC printout command DTQUP: DIP.

- Check that the transmission parameters are correctly set in the IDB, for example, transmission interface (E1 or T1), CRC-4, spare bits, synchronization source, receiver sensitivity, or LBO.
- Check that the transmission equipment at the other end is working correctly and all cables are connected correctly.
- Check the transmission cable and replace it if necessary.
- If the RBS is equipped with a DUG that has a GPS interface, then a GPS receiver can be installed and used as an alternative synchronization source.
- Reset the DUG.

5.8.3 AO TF EC1:6 - EXT CFG (Multiple Timing Masters)

Description

Multiple RBSs are configured as timing masters. Only one RBS is allowed to be a timing master in a TG cluster, that is, a set of RBSs connected to the same ESB. This fault is reported by the RBS that is unable to be a timing master and therefore disabled.

This fault is probably caused by the following:

- The BSC is unable to reconfigure an RBS as timing slave because of a link break. The RBS with a link break is reporting this fault.
- Multiple logical TG clusters are defined for a single physical cluster connected to the same ESB. The RBSs that are not allowed to be timing master report this fault.
- The RBS is unable to become a timing master because of an ESB cable fault.

Action

Follow the instructions below until the fault is resolved.

- Check that the CF link between the BSC and RBS is established. If it is not established, then check the PCM line, transmission equipment, and so on.
- Check the configuration of the TG cluster. Identity for the TGs with the BSC printout RXMOP.
- Check the ESB cables.

5.8.4 AO TF EC1:7 - EXT MEAS (ESB Measurement Failure)

Description

The RBS is configured to be a timing slave with intracell holdover mode and the measurement of the ESB distribution delay between the timing master and this timing slave has failed.

If the fault occurs while TF is trying to synchronize, the fault is reported after 5 minutes.

If the fault occurs while TF is synchronized and measuring the ESB delay because of recalculation of the TF compensation value, TF goes into holdover mode. If the measurements do not succeed within the 2-minute holdover timeout period, the alarm is raised and TF is disabled.

The likely causes are as follows:

- The ESB cable is faulty or disconnected.
- A terminator on the ESB is faulty or missing.

Note: Only when TF mode is master or stand-alone.

Action

Check ESB cable and connections.

5.9 AO TF External Condition Map Class 2

5.9.1 AO TF EC2:0 - EXT SYNCH (No Usable External Reference)

Description

There are two options:

If TF mode is set to slave (TG parameter TFMODE = S in the BSC):

- The External Synchronization Bus (ESB) reference, used as TG synchronization source, is unusable and TF is in holdover mode. If the ESB does not recover before holdover timeout, the class 1 fault AO TF EC1:0 is raised.

Note: The holdover period can be extended from 2 minutes to up to 24 hours if TF holdover mode is set to Intercell in the IDB. This requires that no TRXs in the RBS are included in a cell together with TRXs from a different RBS and that at least RBS 2000 software release 11A/10E is used.

If TF mode is set to standalone or master (TG parameter TFMODE = SA or M in the BSC):

- The GPS reference, used as synchronization source, is unusable and TF is in holdover mode. If the GPS reference does not recover before holdover timeout, class 1 fault AO TF EC1:0 is raised.

Action

Follow the instructions below until the fault is resolved.

If ESB reference:

- Check that synchronization of the master TG is without faults.
- Check that the master TG has TF mode = master defined (TG parameter TFMODE = M in the BSC).
- Check the hardware of the master TF source, (DXU if RBS 2000, TMCB if RBS 200, DUG if RBS6000).
- Check that the ESB cables between the master TG and slave TG are correctly connected and undamaged. If the cable is damaged, then replace it.
- Check that termination plugs are mounted on all unconnected ESB connectors.

If GPS reference:

- Check the GPS antenna.
- Check the connection between the GPS receiver and the GPS antenna.
- Check that the GPS antenna is placed so that it can receive signals from a sufficient number of satellites all the time. If it is not, then move the GPS antenna.

5.9.2 AO TF EC2:1 - PCM SYNCH (No Usable PCM Reference)

Description

The synchronization reference from the PCM network is faulty (for example, too much jitter/wander) or missing.

If the PCM reference does not recover before the holdover timeout, class 1 fault AO TF EC1:1 is raised.

Action

Follow the instructions below until the fault is resolved.

- Check the PCM quality with the BSC printout command DTQUP: DIP.
- Check that the transmission parameters are correctly set in the IDB, for example, transmission

interface (E1 or T1), CRC-4, spare bits, synchronization source, receiver sensitivity, or LBO.

- Check that the transmission equipment in the other end is working correctly and all cables are connected correctly.
- Check the transmission cable and replace it if necessary.
- If the RBS is equipped with a DUG with a GPS interface, a GPS receiver can be installed as an alternative synchronization source.
- Reset the DUG.

5.9.3 AO TF EC2:7 - EXT MEAS (ESB Measurement Failure)

Description

The RBS is configured to be a timing slave with intercell holdover mode and the measurement of the ESB distribution delay between the timing master and this timing slave has failed.

If the fault occurs while TF is trying to synchronize, the fault is reported after 5 minutes.

If the fault occurs while TF is synchronized and measuring the ESB delay caused by recalculation of the TF compensation value and the measurement does not succeed, the alarm is raised and TF is not disabled. No class 1 fault is reported when holdover mode is set to intercell.

The likely causes are as follows:

- The ESB cable is faulty or disconnected.
- A terminator on the ESB is faulty or missing.

Action

Check ESB cable and connections.

5.10 AO TS External Condition Map Class 1

5.10.1 AO TS EC1:3 - TRA/PCU (Remote Transcoder/PCU Com. Lost)

Related Faults

Section 4.5.1 SO TRXC EC2:16 - TS0 TRA Lost (TS Mode Is IDLE) on page 73

Section 4.5.2 SO TRXC EC2:17 - TS0 TRA Lost (TS Mode Is CS) on page 73

Section 4.5.21 SO TRXC EC2:42 - TS6 PCU Lost (TS Mode Is PS) on page 77

Section 4.5.22 SO TRXC EC2:44 - TS7 TRA Lost (TS Mode Is IDLE) on page 77

Section 4.5.23 SO TRXC EC2:45 - TS7 TRA Lost (TS Mode Is CS) on page 78

Section 4.5.24 SO TRXC EC2:46 - TS7 PCU Lost (TS Mode Is PS) on page 78

Description The speech/data frames coming from the BSC to the TS are missing or corrupted.

This is most likely a fault in the BSC (for example, no TRA allocated, no connection in Group-Switch, and so on) or in the Abis transmission path.

5.11 AO TX Internal Fault Map Class 1A

5.11.1 AO TX I1A:2 - UC/HC Switch Inconsistent with IDB

Related Faults Section 4.3.26 SO TRXC I2A:42 - UC/HC Switch Card/Cable and IDB Inconsistent on page 69

Description The UC/HC switch cable is incorrectly connected or connected to a port not consistent with the IDB. The cable can also be mismatched or damaged or one of its connectors can be damaged.

Action See related fault.

5.12 AO TX Internal Fault Map Class 1B

5.12.1 AO TX I1B:4 - TX Antenna VSWR Limits Exceeded

Related Faults Section 3.2.1 SO CF I2A:8 - VSWR Limits Exceeded on page 9

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.12.2 AO TX I1B:6 - TX EEPROM Checksum Fault

Related Faults Section 4.3.5 SO TRXC I2A:7 - TX EEPROM Checksum Fault on page 60

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.3 AO TX I1B:8 - TX Synthesizer A/B Unlocked

Related Faults Section 4.3.6 SO TRXC I2A:9 - TX Synthesizer Unlocked on page 60

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.4 AO TX I1B:9 - TX Synthesizer C Unlocked

Related Faults Section 4.3.6 SO TRXC I2A:9 - TX Synthesizer Unlocked on page 60

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.5 AO TX I1B:11 - TX Internal Voltage Fault

Related Faults Section 4.3.7 SO TRXC I2A:10 - TX Internal Voltage Fault on page 61

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.6 AO TX I1B:12 - TX High Temperature

Related Faults Section 4.3.8 SO TRXC I2A:11 - TX High Temperature on page 61

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.7 AO TX I1B:13 - TX Output Power Limits Exceeded

Related Faults Section 4.3.9 SO TRXC I2A:12 - TX Output Power Limits Exceeded on page 62

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.8 AO TX I1B:14 - TX Saturation

Related Faults Section 4.3.10 SO TRXC I2A:13 - TX Saturation on page 62

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.9 AO TX I1B:17 - TX Initiation Fault

Related Faults Section 4.3.16 SO TRXC I2A:21 - TX Initiation Fault on page 65

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.10 AO TX I1B:27 - TX Max Power Restricted

Related Faults Section 4.3.19 SO TRXC I2A:25 - TX Max Power Restricted on page 66

Description See related fault.

Action See related fault.

5.12.11 AO TX I1B:31 - Power Amplifier Fault

Related Faults Section 4.3.21 SO TRXC I2A:29 - Power Amplifier Fault on page 68

Related RUs SO TRXC RU:0 - TRU, dTRU, DRU, RUG, RRU or DUG 20 Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.12 AO TX I1B:32 - TX Low Temperature

Related Faults Section 3.2.4 SO CF I2A:16 - Indoor Temp Out of Normal Conditional Range on page 11

Related RUs SO CF RU:31 - Environment Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.12.13 AO TX I1B:35 - RX Path Imbalance

Related Faults Section 3.2.27 SO CF I2A:57 - RX Path Imbalance on page 24

Section 5.4.5 AO RX I2A:5 - RX Path A Imbalance on page 92

Section 5.4.6 AO RX I2A:6 - RX Path B Imbalance on page 92

Section 5.4.7 AO RX I2A:7 - RX Path C Imbalance on page 92

Section 5.4.8 AO RX I2A:8 - RX Path D Imbalance on page 93

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault

Action See related fault

5.12.14 AO TX I1B:36 - Radio Unit HW Fault

Related Faults Section 4.3.28 SO TRXC I2A:45 - Radio Unit HW Fault on page 70

Related RUs SO TRXC RU:25 - RUS or RRUS Section 4.6 SO TRXC Replacement Unit Map on page 78

Description See related fault.

Action See related fault.

5.12.15 AO TX I1B:47 - TX Auxiliary Equipment Fault

Related Faults Section 3.4.6 SO CF EC2:13 - Auxiliary Equipment Fault on page 41

Related RUs SO CF RU:40 - Antenna Section 3.5 SO CF Replacement Unit Map on page 42

Description See related fault.

Action See related fault.

5.13 AO TX Internal Fault Map Class 2A

5.13.1 AO TX I2A:0 - TX Diversity Fault

Description The TX diversity function (TCC or software power boost) is lost. TX diversity uses two TRXs and one of these is either faulty, not available, or in full maintenance mode.

Action Follow the instructions below until the fault is resolved.

- Check that the second TRX is available and in no maintenance mode.
- Reset the two TRXs used in the TX diversity pair.
- Deactivate TX diversity on the TRX that reports the alarm and correct any alarms present on the two TRXs.

5.13.2 AO TX I2A:1 - Fast Antenna Hopping Failure

Description The transmitter is not included in the antenna hopping set because of either the configuration received from the BSC or site constraints.

To enable fast antenna hopping, at least one antenna system must include two enabled TXs.

If baseband hopping is activated, fast antenna hopping is suspended for all active TXs.

Action

Follow the instructions below until the fault is resolved.

- Check the BSC configuration of the TG.
- Read the IDB and use the Radio view in the OMT to check how the IDB is defined regarding the connections.
- If possible, harmonize capabilities of the transmitters in a cell so they can be included in the antenna hopping set.
- If not feasible, then disable the FFTAD function for the current TG.