SubMenu

DX 200

BSC S10.5 Release Test Cases

NOKIA

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Contents

Summary of revisions

Version	Date	Author	Comments
/1en	18-Jun-2001	P. Hahl	First approved version

1. Purpose

This document includes all the S10 release test cases.

2. Test cases

2.1. Checking required HW and SW versions

2.1.1. RT000TC00001

TEST NAME: Checking HW versions of BSC and TCSM/TCSM2

TEST CASE VERSION: 3.1.0

DESCRIPTION:

Test purpose:

To check that BSC and TCSM/TCSM2 HW versions are according to the document "Hardware Revision List for BSC and TCSM2, System Release S8-S10.5'.

Test execution:

1. Check the acceptable HW versions from the latest document version available.
2. Mark down in test logs the document version used.

Related documents:

Hardware Revision List for BSC and TCSM2, System Release S8-S10.5

2.1.2. RT000TC00002

TEST NAME: Checking SW levels of network elements

TEST CASE VERSION: 3.1.0

DESCRIPTION:

Test purpose:

To check that SW levels of other network elements and firmware versions of BSC are correct.

Test execution:

1. Check the firmware versions from the document 'Pre-processor Programs BSC SW Release S10.5'.
2. Check the versions of other network elements from 'BSC S10.5 Release Test Plan'

Related documents:

- Pre-processor Programs BSC SW Release S10.5
- DX200 BSC S10.5 Release Test Plan

2.2. S10.5 software implementation

2.2.1. RT000SW00001

TEST NAME: Checking Installed Change Notes

TEST CASE VERSION: 3.1.0

DESCRIPTION:

Test purpose:

To check that all accepted S9 Change Deliveries have been installed in the BSC before the S10 upgrade.

Test execution:

1. List the Change Delivery history with the command
ZWNH:NAME=<sw_package_name>:;
2. Compare the information to the requirement mentioned in 'BSC S10.5 Software Implementation Procedure'.

Related documents:

BSC S10.5 Software Implementation Procedure

2.2.2. RT000SW00005

TEST NAME: BSC S10.5 Sofware Upgrade

TEST CASE VERSION: 1.1.0

DESCRIPTION:

Test Execution:

Perform the software upgrade according to the document 'DX 200 BSC S10.5 Software Implementation Procedure'. Write down the document version as well as the HIT upgrade tool and script versions used in the upgrade

Expected Results:

S10.5 software upgrade is successful.

Related documents:

DX 200 BSC S10.5 Software Implementation Procedure.

2.3. Feature implementation

2.3.1. RT000FE00001

TEST NAME: High Capacity Feature Implementation

TEST CASE VERSION: 3.1.0

DESCRIPTION:

Test Execution:

Perform the feature implementation according to the document 'DX 200 BSC S10.5 High Capacity Feature Implementation Procedure'. Write down the document version as well as the HIT upgrade tool and script versions used in implementation.

Expected Results:

The feature implementation is successful.

Related documents:

DX 200 BSC S10.5 High Capacity Feature Implementation Procedure

2.3.2. RT000FE00002

TEST NAME: Large Capacity Feature Implementation

TEST CASE VERSION: 3.1.0

DESCRIPTION:

Test Execution:

Perform the feature implementation according to the document 'DX 200 Large BSC S10.5 Feature Implementation Procedure'. Write down the document version as well as the HIT upgrade tool and script versions used in implementation.

Expected Results:

The feature implementation is successful.

Related documents:

DX 200 Large BSC S10.5 Feature Implementation Procedure

2.3.3. RT000FE00003

TEST NAME: GPRS Feature Implementation

TEST CASE VERSION: 2.2.0

DESCRIPTION:

Test Execution:

Perform the feature implementation according to the document 'BSC S10.5 GPRS/EDGE Hardware Implementation Procedure'. Write down the document version as well as the HIT upgrade tool and script versions used in implementation.

Expected Results:

The feature implementation is successful.

Related documents:

BSC S10.5 GPRS/EDGE Hardware Implementation Procedure

2.3.4. RT000FE00004

TEST NAME: MS Location Feature Implementation

TEST CASE VERSION: 1.1.0

DESCRIPTION:

Test Execution:

Perform the feature implementation according to the document 'BSC S10.5 MS Location Hardware Implementation Procedure'. Write down the document version as well as the HIT upgrade tool and script versions used in implementation.

Expected Results:

The feature implementation is successful.

Related documents:

BSC S10.5 MS Location Hardware Implementation Procedure

2.4. State transitions and restarts

2.4.1. RT000SD00001

TEST NAME: BSC system restart

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test purpose:

To verify that BSC works correctly in case of a system restart, to see that the system and radio network recovers correctly, calls succeed and that the alarm situation in BSC corresponds to that of NMS.

Prerequisites:

- Check the status of the radio network with BSC MML
- Check current alarms in the system

Test execution:

- Make a call from subscriber A to subscriber B
- Verify speech quality
- Execute the system restart with command **`ZUSS:SYM;`**
- Make a new call from subscriber A to subscriber B after the system restart
- Verify speech quality
- Clear the call from the subscriber A's MS.
- Check for any new alarms in BSC and BTS alarm history
- Check that the same alarms have been directed to the line printer and NMS workstation

Expected results:

- All TRXs, BTSs and BCFs are in the operational state WORKING
- The current alarm situation is correct
- Call succeeds after system restart and speech quality is good

2.4.2. RT000SD00002

TEST NAME: Power break in the system

TEST CASE VERSION: 1.1.0

DESCRIPTION:

Test purpose:

To verify that BSC works correctly in case of a power break, to see that the system and radio network recovers correctly, calls succeed and alarm situation in BSC corresponds to that of NMS.

Prerequisites:

- Check the status of the radio network with BSC MML
- Check that the system is stable
- Check current alarms in the system

Test execution:

- Check that BSC has got external syncronization or loop used syncronization input(s)
- Disconnect power from the system, then reconnect it
- Check that the system has started and that it begins to load from the disks
- Monitor that every computer unit starts in the state it was in prior to the power break
- Doubled preprocessor units(i.e CLSs) will independently determine which unit is passive and which is active after the power break
- Output the states of all the units and check that they are in the correct working states

Computer starts are supervised by the service terminal connected to the lower console connector of the central processing unit.
Follow the phase print-outs from the BSC Commissioning Manual.

Expected results:

- All units are in correct working state
- Call succeeds after system restart and speech quality is good

Related document:

BSC Commission Manual

2.4.3. RT000SD00003

TEST NAME: OMU State Change and Diagnostics

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test execution:

1. Check the working state of OMU (WO-EX).
2. Change the state of OMU to TE, SE and back to TE.
3. Run the diagnostics for OMU.
4. Change the state of OMU to WO.

Expected results:

State changes are successful and diagnostic ends up to 'UNIT OK' printout.

2.4.4. RT000SD00004

TEST NAME: BCSU State Change and Diagnostics

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test execution:

1. Check the working states of all BCSUs.
2. Change the state of SP BCSU to TE, SE and back to TE..
3. Run the diagnostics for BCSU.
4. Change the state of BCSU to SP or WO.
5. Repeat the test for all BCSUs.

Expected results:

State changes are successful and diagnostic ends up to 'UNIT OK' printout.

2.4.5. RT000SD00005

TEST NAME: MCMU State Change and Diagnostics

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test execution:

1. Check the working states of MCMUs.
2. Change the state of SP MCMU to TE, SE and back to TE.
3. Run the diagnostics for MCMU.
4. Change the state back to SP and make a switchover.
5. Repeat the test for the other MCMU.

Expected results:

State changes are successful and diagnostic ends up to 'UNIT OK' printout.

2.4.6. RT000SD00006

TEST NAME: MB State Change and Diagnostics

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test execution:

1. Check the status of Message Buses.
2. Change the state SP MB to TE, SE and back to TE.
3. Run the diagnostics.
4. Change the MB state back to SP.
5. Make the switchover and repeat the test for the other MB.

Expected results:

State changes are successful and diagnostic ends up to 'UNIT OK' printout.

2.5. Call cases

2.5.1. RT000CC00001

TEST NAME: Location updating

TEST CASE VERSION: 1.0.0

DESCRIPTION:

Test purpose:

To verify that BSC is working correctly in case of location updating.

Prerequisites:

- Check the status of the signalling network with BSC MML
- Check current alarms in the system

Test execution:

- Supply the PIN to the Mobile Station
- Switch the mobile on
- Check for any new alarms in the system

Expected results:

Mobile Station finds the network and ends in service state.

2.5.2. RT000CC00002

TEST NAME: MS to MS call

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test purpose:

To verify the correct working of the BSC in case of basic call.

Prerequisites:

- Check the status of the signalling network.
- Check current alarms in the system.
- Use single and Dual Band mobiles

Test execution:

- Call from subscriber A to subscriber B.
- Answer the call at the B's MS.
- Verify the speech quality.
- Check that the call is going through the right BTS with command **`ZEEI;`**
- Clear the call from the subscriber A's MS
- Check for new alarms in the system
- Repeat the test several times with different MSs

Expected results:

- Call is successful
- Speech quality is good

2.5.3. RT000CC00003

TEST NAME: MS to PSTN call

TEST CASE VERSION: 1.0.0

DESCRIPTION:

Test purpose:

To verify a basic MS-PSTN call.

Prerequisites:

- Check the status of the signalling network with BSC MML
- Check current alarms in the system

Test execution:

- Call from MS to PSTN
- Answer the call at the PSTN phone
- Verify the speech quality
- Check that the call is going through the right BTS with command **`ZEEI;`**
- Clear the call from the MS
- Check for new alarms in the system
- Repeat the test several times

Expected results:

Calls are established successfully and speech quality is good.

2.5.4. RT000CC00004

TEST NAME: PSTN to MS call

TEST CASE VERSION: 1.0.0

DESCRIPTION:

Test purpose:

To verify a basic PSTN-MS call.

Prerequisites:

- Check the status of the signalling network with BSC MML
- Check current alarms in the system

Test execution:

- Call from PSTN to MS
- Answer the call at the MS
- Verify the speech quality

- Check that the call is going through the right BTS with command **ZEEI;**
- Clear the call from the PSTN phone
- Check any new alarms in the system
- Repeat the test several times

Expected results:

Calls are established successfully and speech quality is good.

2.5.5. RT000CC00005

TEST NAME: Emergency call

TEST CASE VERSION: 1.0.0

DESCRIPTION:

Test purpose:

To verify that emergency calls are set up correctly.

Prerequisites:

- MS with SIM card
- MS without SIM card

Test execution:

- Make an emergency call with the MS, SIM card inserted
- Clear the call and remove the SIM card
- Make an emergency call without the SIM card
- Clear the call

Expected results:

Emergency call is established successfully both with and without a SIM.

2.5.6. RT000CC00006

TEST NAME: Data Call

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test purpose:

To verify the basic data call.

Prerequisites:

PC and MS or data terminal

Test execution:

Make a data call.

Expected results:

The call is established successfully and data transferred.

2.5.7. RT000CC00007

TEST NAME: SMS from MS to MS

TEST CASE VERSION: 1.1.0

DESCRIPTION:

Test purpose:

To verify the basic SMS functionality.

Prerequisites:

Two Mobile Stations supporting SMS

Test execution:

1. Write an SMS message with MS 1
2. Send the message to MS 2

Expected results:

The message is sent from MS 1 and received successfully by MS 2.

2.6. Handovers

2.6.1. RT000HO00001

TEST NAME: Inter Cell Handover

TEST CASE VERSION: 2.0.0

DESCRIPTION:

Test purpose:

To verify that BSC works correctly in case of internal inter cell handover.

Prerequisites:

- The adjacent cell list includes only one cell (BTS2), which belongs to the same BSC as the source cell
- Check the status of the signalling network with BSC MML
- Check current alarms in the system
- Check that there are free TCHs on the BTS

Test execution:

1. Make a handover to subscriber A.
   Parameters are set into database so that inter cell handover will be a result of algorithm. (dl qual < 0.2 %, BTSs are defined as adjacent cells to each others: ho_margin = -24dB)
   ```
   ZEHQ:BTS=1,..    QDR = 0, QDP = 1, QDN = 1
   ZEAM:BTS=1,..    ho_margin_qual = -24dB
   ZEAM:BTS=1,...   enable_ho_margin_lev_qual=Y
   ```
2. Call from subscriber A to B
3. Answer the call at the B's MS
4. Verify speech quality
5. Check for new alarms in the system

Expected results:

- The handover succeeds and speech quality is good the whole time
- The TCH of BTS1 is released

2.6.2. RT000HO00008

TEST NAME: Inter BSC Handover S9 – S10

TEST CASE VERSION:

DESCRIPTION: 1.0.0

Test purpose:

To verify the BSC will function correctly in case of inter cell handover, cells connected to the BSCs with old and new SW release.

Prerequisites:

- The adjacent cell list includes only one cell (BTS2), which belongs to the BSC with previous SW release level.
- Check the status of the signalling network with BSC MML
- Check current alarms in the system
- Check that there are free TCHs on the BTS

Test execution:

1. Set up HO parameters causing both MSs handing over from BTS1 to BTS2 and vice versa continuously: (dl qual < 0.2 %, BTSs are defined as adjacent cells to each others: ho_margin = -24dB)
   ZEHQ:BTS=1,.. QDR = 0, QDP = 1, QDN = 1
   ZEAM:BTS=1,.. ho_margin_qual = -24dB
   ZEAM:BTS=1,...enable_ho_margin_lev_qual=Y
2. Call from subscriber A to B, both are connected to either BTS1 or BTS2.
3. Answer the call at the B's MS
4. Verify speech quality
5. Check for new alarms in the system

Expected results:

- Both MSs are handing over all the time and speech quality is good the whole time

2.6.3. RT000HO00009

TEST NAME: Inter BSC Handover S10 <-> S10

TEST CASE VERSION: 1.0.0

DESCRIPTION:

Test purpose:

To verify the BSC will function correctly in case of inter BSC handover, cells connected to the two BSCs with new SW release.

Prerequisites:

- The adjacent cell list includes only one cell (BTS2), which belongs to the other BSC with the same new SW release level.
- Check the status of the signalling network with BSC MML
- Check current alarms in the system
- Check that there are free TCHs on the BTS

Test execution:

1. Set up HO parameters causing both MSs handing over from BTS1 to BTS2 and vice versa continuously: (dl qual < 0.2 %, BTSs are defined as adjacent cells to each others: ho_margin = -24dB)
   ZEHQ:BTS=1,.. QDR = 0, QDP = 1, QDN = 1
   ZEAM:BTS=1,.. ho_margin_qual = -24dB
   ZEAM:BTS=1,...enable_ho_margin_lev_qual=Y
2. Call from subscriber A to B, both are connected to either BTS1 or BTS2.
3. Answer the call at the B's MS
4. Verify speech quality
5. Check for new alarms in the system

Expected results:

· Both MSs are handing over all the time and speech quality is good the whole time

2.6.4. RT000HO00004

TEST NAME: Radio Resource Queuing in Handover

TEST CASE VERSION: 1.1.0

DESCRIPTION:

Test purpose:

To verify that BSC works correctly when radio resource has to be queued.

Prerequisites:

· Check the status of the signalling network
· Start tracing of A- and Abis- interface with the tracer
· Check current alarms in the system

Test execution:

1. Call from subscriber A to B
2. Answer the call from the B's MS
3. Reserve one TCH with one more MS and block other TCHs
4. Make a handover attempt to subscriber A
5. Release the occupied TCH for the handover attempt
6. Check from the service terminal extension E00 that the call is queued
7. Check for any new alarms in the system

Expected results:

· With the service terminal extension it can be seen that the call was in queue

· The handover succeeds after queuing and the call continues

2.7. GPRS Call

2.7.1. RT000FE00005

TEST NAME: GPRS Call

TEST CASE VERSION: 1.0.0

DESCRIPTION:

Test purpose:

To verify that GPRS Call is working properly.

Prerequisites:

- 2 GPRS mobiles
- Gb-if is created
- GPRS feature is active in one cell at least
- Nethawk in Gb-if
- PCs GPRS connection parameters are correctly configured
- BCSU Gb–if switchover is already done in earlier CD tests, before that it is checked that GPRS works in that BCSU
- Check always PCU logs at least from Gp-interface with commands:
  ZDDS;
  ZRS:<BCSU_id>,90BE
  clog –s
  clog –f <family_id>

Test executions:

1. Attach & PDP Context

- Mobile is not attached to cell or it has not PDP context activated
- Start tracing TRAU in TRXsig, Abis- and Gb-interface
- Connect mobile to PC and activate PDP context
- Stop tracing

2. FTP

- Start tracing Gb-interface
- Activate PDP context
- Start downloading packages from FTP address

- Wait until first packages are received
- Stop tracing

3. HTTP

- Start tracing Gb-interface
- Activate PDP context
- Start downloading packages from HTTP address
- Wait until first packages are received
- Stop tracing

4. 2 mobiles at the same cell

- Start tracing Gb-interface
- Both mobiles activates PDP context in the same cell
- Start downloading packages from FTP/HTTP address
- Check that both mobiles receives some packages
- Stop tracing

5. GENA Y/N

- Start tracing Gb-interface
- Activate PDP context
- Start downloading data from FTP or HTTP address
- Change GENA parameter in the cell to N with command ZEQV:BTS=<BTS_id>:GENA=N;
- Downloading is interrupted
- Try to start downloading again
- After it fails, change GENA parameter again to Y
- Activate PDP context
- Start downloading packages again
- Stop tracing

6. GP-if BCSU swithcover

- Start tracing
- Activate PDP context
- Start downloading packages with either FTP or HTTP
- Make Gb-if BCSU switchover (ZUSC)
- Call is waiting and downloading continues after former spare BCSU is in WO-EX state and NSVCI state is WO-EX, DLCI operative state is AV-EX
- Make a new attachment and check that downloading also succeeds
- Repeat all the steps (1-6)

Expected results:

1. Check from the trace log, that SGSN receives ATTACH REQUEST, ACTIVATE PDP CONTEXT REQUEST messages and sends ATTACH ACCEPT PACKET IMMEDIATE ASSIGNMENT and ACTIVATE PDP CONTEXT ACCEPTmessages. In Abis-if you should find TRAU IMMEDIATE ASSIGNMENT and P-CHANNEL REQUIRED messages.

2. Downloading succeeds

3. Downloading succeeds

4. Downloading succeeds with both mobiles

5. Check from the trace log, that SGSN receives BVC-BLOCKED-ACK and FLOW-CONTROL-BVC messages after GPRS feature is deactivated and BVC-RESET ACK and FLOW-CONTROL-BVC-ACK after it is activated again

6. After the BCSU switchover check that test (1-6, 8) is passed

2.8. Stability tests

2.8.1. RT000ST00006

TEST NAME: 24 h Stability Test with traffic generator

TEST CASE VERSION: 1.1.0

TEST CASE VERSION:

DESCRIPTION:

Traffic administration :

In order to monitor call simulation and stability test, start the following measurements from the MSC:
- Traffic measurement
- Handover measurement
- VLR measurement
- Field reporting

Also start the following measurements from BSC:
- Traffic measurement
- Resource availability measurement
- Resource access measurement
- Handover measurement
- BSC-level clear codes measurement

The length of the measuring period is set as the duration time of the test, and the output interval is one hour.

Test execution:

The test is performed according to the following principles:
- Calls are automatically generated using the traffic generator
- Traffic cases to be generated:
  - incoming call
  - outgoing call
  - handover
  - location updating request
- Dimensioning of calls:
  - 50 per cent from maximum capacity
  - Duration of the test is 24 hours.
  - Duration of calls is 120 seconds

Expected Results:

- Check the TRAFFIC and HANDOVER measurements from NMS/2000
- The PM counters are correct

Examination of the results and analysis:

No serious operating disturbances or unsolved alarms should occur during the test.

The results must meet the following norms:
- Check from the restart results that the units have not performed resets (except for switchovers performed with commands)
- Verify from the alarm listings that neither serious alarms nor spontaneous switchovers occurred in the exchange during the stability test

If the results do not meet the requirements, investigate the failures, repair the faults and re-execute the test. If modifications concerning files were done, remember to update the BSC disk.