19 Channel release after unrecoverable errors

NOTE: It is not possible to explicitly verify the correct functioning of all aspects of the radio link failure algorithm in the MS. Therefore 3 tests are used to implicitly verify correct implementation.

19.1 Channel release after unrecoverable errors -1

19.1.1 Definition and applicability

Channel release after unrecoverable errors is a procedure to abort the call if the radio link has been severely corrupted for some time, according to a link failure criterion.

The requirement and this test apply to all types of GSM 900 and DCS 1 800 MS, except where an application layer is always running which would perform a normal release of the call due to loss of traffic (see PICS/PIXIT).

19.1.2 Conformance requirement

1) If the MS is unable to decode a SACCH message, the radio link counter S is decreased by 1. In the case of a successful reception of a SACCH message S is increased by 2. In any case S shall not exceed the value of RADIO_LINK_TIMEOUT. If S reaches 0 a radio link failure shall be declared.
GSM 05.08, 5.2.

2) The MS shall continue transmitting as normal on the uplink until S reaches 0.
GSM 05.08, 5.2.

3) The algorithm shall start after the assignment of a dedicated channel and S shall be initialized to RADIO_LINK_TIMEOUT.
GSM 05.08, 5.2.

4) (Re-)initialization and start of the algorithm shall be done whenever the MS switches to a new channel (this includes the old channel in assignment and handover failure cases), at the latest when the main signalling link (see GSM 04.08) has been established.
GSM 05.08, 5.2.

19.1.3 Test purpose

1) To verify correct handling of the radio link counter S.

2) To verify that the MS that is transmitting continues to transmit as normal on the uplink until S reaches 0.

3) To verify that the algorithm starts after the assignment of a dedicated channel, with S initialized to RADIO_LINK_TIMEOUT.

4) To verify that the MS declares RADIO_LINK_FAILURE, and clears the RR connection when S = 0.

19.1.4 Method of test

19.1.4.1 Initial conditions

The SS sends a randomly chooses value N for the parameter RADIO_LINK_TIMEOUT on the BCCH. CALL RE-ESTABLISHMENT is not allowed.

19.1.4.2 Procedure

a) A MS originated call is set up according to the generic call set up procedure.

b) The SS sends 32 error free SACCH messages, followed by N SACCH messages that contain unrecoverable errors, and then continuously sends error free SACCH messages.

NOTE: The SS shall continue sending error free SACCH messages for a time that allows the MS to release the RR connection.

c) The SS sets N to a different but randomly chosen value, and broadcasts this on the BCCH. The SS repeats steps a) to b).

19.1.5 Test requirement

After receiving the N SACCH messages with unrecoverable errors, the MS shall abort the RR-connection, i.e. there is no more MS activity on the SACCH channel.

19.2 Channel release after unrecoverable errors - 2

19.2.1 Definition and applicability

Channel release after unrecoverable errors is a procedure to abort the call if the radio link has been severely corrupted for some time, according to a link failure criterion.

The requirement and this test apply to all types of GSM 900 and DCS 1 800 MS, except where an application layer is always running which would perform a normal release of the call due to loss of traffic (see PICS/PIXIT).

19.2.2 Conformance requirement

1) If the MS is unable to decode a SACCH message, the radio link counter S is decreased by 1. In the case of a successful reception of a SACCH message S is increased by 2. In any case S shall not exceed the value of RADIO_LINK_TIMEOUT. If S reaches 0 a radio link failure shall be declared.
GSM 05.08, 5.2.

2) The MS shall continue transmitting as normal on the uplink until S reaches 0.
GSM 05.08, 5.2.

3) The algorithm shall start after the assignment of a dedicated channel and S shall be initialized to RADIO_LINK_TIMEOUT.
GSM 05.08, 5.2.

4) (Re-)initialization and start of the algorithm shall be done whenever the MS switches to a new channel (this includes the old channel in assignment and handover failure cases), at the latest when the main signalling link (see GSM 04.08) has been established.
GSM 05.08, 5.2.

19.2.3 Test purpose

1) To verify correct handling of the radio link counter S.

2) To verify that the MS that is transmitting continues to transmit as normal on the uplink until S reaches 0.

3) To verify that the algorithm starts after the assignment of a dedicated channel, with S initialized to RADIO_LINK_TIMEOUT.

19.2.4 Method of test

19.2.4.1 Initial conditions

The SS sends a randomly chooses value N for the parameter RADIO_LINK_TIMEOUT on the BCCH. CALL RE-ESTABLISHMENT is not allowed.

19.2.4.2 Procedure

a) A MS originated call is set up according to the generic call set up procedure.

b) The SS sends 2 SACCH messages with unrecoverable errors followed by one error free SACCH message. This step is repeated 64 times.

c) The SS sets N to a different but randomly chosen value, and broadcasts this on the BCCH. The SS repeats steps a) to b).

19.2.5 Test requirement

The MS shall not abort the RR-connection.

19.3 Channel release after unrecoverable errors - 3

19.3.1 Definition and applicability

Channel release after unrecoverable errors is a procedure to abort the call if the radio link has been severely corrupted for some time, according to a link failure criterion.

The requirement and this test apply to all types of GSM 900 and DCS 1 800 MS, except where an application layer is always running which would perform a normal release of the call due to loss of traffic (see PICS/PIXIT).

19.3.2 Conformance requirements

1) If the MS is unable to decode a SACCH message, the radio link counter S is decreased by 1. In the case of a successful reception of a SACCH message S is increased by 2. In any case S shall not exceed the value of RADIO_LINK_TIMEOUT. If S reaches 0 a radio link failure shall be declared.
GSM 05.08, 5.2.

2) The MS shall continue transmitting as normal on the uplink until S reaches 0.
GSM 05.08, 5.2.

3) The algorithm shall start after the assignment of a dedicated channel and S shall be initialized to RADIO_LINK_TIMEOUT.
GSM 05.08, 5.2.

4) (Re-)initialization and start of the algorithm shall be done whenever the MS switches to a new channel (this includes the old channel in assignment and handover failure cases), at the latest when the main signalling link (see GSM 04.08) has been established.
GSM 05.08, 5.2.

19.3.3 Test purpose

1) To verify correct handling of the radio link counter S.

2) To verify that the MS that is transmitting continues to transmit as normal on the uplink until S reaches 0.

3) To verify that the algorithm starts after the assignment of a dedicated channel, with S initialized to RADIO_LINK_TIMEOUT.

4) To verify that the MS declares RADIO_LINK_FAILURE, and clears the RR connection when S = 0.

19.3.4 Method of test

19.3.4.1 Initial conditions

The SS sends a randomly chooses value N for the parameter RADIO_LINK_TIMEOUT on the BCCH. CALL RE_ESTABLISHMENT is not allowed.

19.3.4.2 Procedure

a) A MS originated call is set up according to the generic call set up procedure.

b) The SS sends 32 error free SACCH messages, followed by 3 SACCH messages with unrecoverable errors, and the sends 1 error free SACCH message. This step is repeated N - 2 times.

c) The SS shall continuously send error free SACCH messages.

NOTE: The SS shall continue sending error free SACCH messages for a time that allows the MS to release the RR connection.

d) The SS sets N to a different but randomly chosen value, and broadcasts this on the BCCH. The SS repeats steps a) to c).

19.3.5 Test requirement

After receiving the 3 * (N - 2) erroneous SACCH messages the MS shall abort the RR-connection, i.e. there is no more activity on the SACCH channel.