
18 Temporary reception gaps

18.1 Temporary reception gaps, single slot

18.1.1 Definition and applicability

A temporary reception gap is a limited period of time in which the RF reception is interrupted. During this gap the MS shall maintain the frequency and timing of its transmission within specifications.

The requirement and this test apply to all types of GSM 400, 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).

18.1.2 Conformance requirement

- 1) During a temporary total loss of signal, of up to 64 SACCH block periods, the MS shall update its timebase with a clock which is accurate to within 0,2 ppm, or to within 0,2 ppm of the signals previously received from the BTS. The MS shall use the same frequency source for both RF frequency generation and clocking the timebase.

GSM 05.10, 6.7; GSM 05.10 6.1.

- 2) The MS shall time its transmissions to the BTS according to signals received from the BTS. The MS transmissions to the BTS, measured at the MS antenna, shall be 3 timeslots - TA behind the transmissions received from the BTS, where TA is the last timing advance received from the current serving BTS.

GSM 05.10, 6.4.

- 3) During a temporary total loss of signal, of up to 64 SACCH block periods, the MS shall update its timebase with a clock which is accurate to within 0,2 ppm, or to within 0,2 ppm of the signals previously received from the BTS.

GSM 05.10, 6.7.

18.1.3 Test purpose

- 1) To verify that, during a temporary total loss of signal of up to 63 SACCH block periods, the MS carrier frequency is accurate to within 0,2 ppm of the signals previously received from the BTS.
- 2) To verify that, the MS transmissions to the BTS, measured at the MS antenna, is 3 timeslots behind the transmissions received from the BTS, with a tolerance of +/-1 bit period.
- 3) To verify that, during a temporary total loss of signal, of up to 63 SACCH block periods, the MS transmission timing may have drifted resulting in an error not greater than +/- 6,048 μ s (0,2 ppm of 63 SACCH blocks).

18.1.4 Method of test

18.1.4.1 Initial conditions

The SS signals RADIO_LINK_TIMEOUT = 64 and "DTX OFF" on the BCCH.

The MS is brought into MM state "idle, updated".

After 10 s, the SS continues to set up a call according to the generic call set up procedure.

18.1.4.2 Procedure

- a) The SS, in a TDMA frame immediately following the transmission of a complete SACCH block, removes the downlink signal for 63 SACCH blocks.

NOTE: This gives the maximum temporary reception gap.

- b) The SS measures the frequency and timing of the MS transmissions immediately before, and at least 5 times at approximately equally spaced intervals during the gap, one of these measurements being at the end of the gap.
- c) The SS resumes transmission for a period sufficient to allow the MS reception of 1 SACCH block.
- d) The SS again removes downlink transmission for a period equal to at least 3 SACCH blocks. The SS measures the frequency and timing of the MS transmissions immediately before and during this second reception gap.

18.1.5 Test requirement

- 1) The MS carrier frequency shall be accurate to within 0,2 ppm compared to signals received from the SS.
- 2) The receive/transmit delay timing shall be 3 timeslots +/- 1 bit.
- 3) During the second reception gap the MS shall maintain transmission for a period up to but not exceeding 3 SACCH blocks.
- 4) During the first, maximum, reception gap the MS transmission timing may have drifted resulting in an error of not greater than +/- 6,048 μ s.

NOTE: The SS determines the error at the start of the reception gap from the first measurement of MS transmission frequency and timing.

18.2 Temporary reception gaps in HSCSD multislots configurations

18.2.1 Definition and applicability

A temporary reception gap is a limited period of time in which the RF reception is interrupted. During this gap the MS shall maintain the frequency and timing of its transmission within specifications.

The requirements and this test apply to all types of GSM 400, GSM 900, DCS 1 800 MS and any multiband MS which are capable of HSCSD multislots operation, 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).

18.2.2 Conformance requirement

- 1) During a temporary total loss of signal, of up to 64 SACCH block periods, the MS shall update its timebase with a clock which is accurate to within 0,2 ppm, or to within 0,2 ppm of the signals previously received from the BTS. The MS shall use the same frequency source for both RF frequency generation and clocking the timebase.

GSM 05.10, 6.7; GSM 05.10 6.1.

- 2) The MS shall time its transmissions to the BTS according to signals received from the BTS. The MS transmissions to the BTS, measured at the MS antenna, shall be 3 timeslots - TA behind the transmissions received from the BTS, where TA is the last timing advance received from the current serving BTS.

GSM 05.10, 6.4.

- 3) During a temporary total loss of signal, of up to 64 SACCH block periods, the MS shall update its timebase with a clock which is accurate to within 0,2 ppm, or to within 0,2 ppm of the signals previously received from the BTS.

GSM 05.10, 6.7.

18.2.3 Test purpose

- 1) To verify that, during a temporary total loss of signal of up to 63 SACCH block periods on the main multislot channel, the MS carrier frequency is accurate to within 0,2 ppm of the signals previously received from the BTS.
- 2) To verify that, the MS transmissions to the BTS, measured at the MS antenna, is 3 timeslots behind the transmissions received from the BTS, with a tolerance of +/-1 bit period.
- 3) To verify that, during a temporary total loss of signal, of up to 63 SACCH block periods on the main multislot channel, the MS transmission timing may have drifted resulting in an error not greater than +/- 6,048 μ s (0,2 ppm of 63 SACCH blocks).
- 4) To verify that, during a temporary loss of more than 64 SACCH block periods on other than the main channel in symmetric configuration, the MS meet the requirements 1, 2 and 3.

18.2.4 Method of test

18.2.4.1 Initial conditions

The SS signals RADIO_LINK_TIMEOUT = 64 and "DTX OFF" on the BCCH.

The MS is brought into MM state "idle, updated".

After 10 s, the SS continues to set up a call according to the generic call set up procedure for multislot HSCSD.

The SS commands the MS to operate in a highest possible asymmetric configuration, with a maximum number of downlink timeslots.

18.2.4.2 Procedure

- a) The SS, in a TDMA frame immediately following the transmission of a complete SACCH block, removes the downlink signal for 63 SACCH blocks of the main channel.
NOTE: This gives the maximum temporary reception gap.
- b) The SS measures the frequency and timing of the MS transmissions immediately before, and at least 5 times at approximately equally spaced intervals during the gap, one of these measurements being at the end of the gap.
- c) The SS resumes transmission for a period sufficient to allow the MS reception of 1 SACCH block.
- d) The SS again removes downlink transmission for a period equal to at least 3 SACCH blocks of the main channel. The SS measures the frequency and timing of the MS transmissions immediately before and during this second reception gap.
- e) SS signals RADIO_LINK_TIMEOUT=64 and commands the MS to operate in a highest possible symmetric multislot configuration, with a maximum number of uplink timeslots.
- f) For a symmetric multislot configuration steps a) and b) are repeated with the exception that a 69 SACCH blocks are removed from a channel other than the main channel.

18.2.5 Test requirement

- 1) The MS carrier frequency shall be accurate to within 0,2 ppm compared to signals received from the SS.
- 2) The receive/transmit delay timing shall be 3 timeslots +/- 1 bit.
- 3) During the second reception gap the MS shall maintain transmission for a period up to but not exceeding 3 SACCH blocks.
- 4) During the first, maximum, reception gap the MS transmission timing may have drifted resulting in an error of not greater than +/- 6,048 μ s.
- 5) During the last reception gap, the MS shall maintain transmission.

NOTE: The SS determines the error at the start of the reception gap from the first measurement of MS transmission frequency and timing.