31 Test of supplementary services

The general aspects of the specification of supplementary services at the layer 3 radio interface are given in 3GPP TS 04.10.

The formats and coding are given in 3GPP TS 04.80. If the value of a parameter of an uplink message (MS to network) is specified in a test, the implicit meaning is that it has to be checked; if the value is not specified, it is not to be checked unless otherwise stated.

Unless otherwise stated, the MS shall be in the idle updated state at the beginning of each test (including repetition of a test).

In each test, before the MS sends the first REGISTER message, a MM connection is established.

3GPP TS 04.81 to 3GPP TS 04.88 give the procedures used at the radio interface for normal operation, registration, erasure, activation, deactivation, invocation and interrogation of supplementary services.

The supplementary services are described in 3GPP TS 02.04 and 3GPP TS 02.81 to 3GPP TS 02.88.

Whenever activation via the standard MMI is mentioned, if the MS does not support it but supports a different procedure, this different procedure is used. In the supplementary services tests, only the applicable (see 3GPP TS 02.8x series) MMI service code groups (3GPP TS 02.30 annex 4), of the basic service code in 3GPP TS 09.02, which are supported by the MAP, will be used.

31.1 Number identification supplementary services

31.1.1 CLIP

31.1.1.1 Normal operation

Conformance requirement:

3GPP TS 04.81 subclause 1.1.

Purpose:

To test that the MS presents to the user the calling number presented to it in an incoming SETUP message.

Specific PICS Statements

- Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

- Description of display for CLIP.

- Support of displaying the calling party subaddress.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The SIM in the MS under test has CLIP enabled.

Foreseen final state of the MS

State U7

Maximum duration of test

30 s.

Procedure:

Set up an MT call to the MS under test. The SETUP message shall include a calling party BCD number information element and a calling party subaddress information element.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	SS sends paging
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	(SDCCH)
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	
8	MS -> SS	CIPHERING MODE COMPLETE	
9	SS -> MS	SETUP	Shall include a valid calling party BCD number and calling party subaddress
10	MS -> SS	CALL CONFIRMED	
11	MS -> SS	ALERTING	
12	MS		Depending on the PICS, the MS shall display the calling party BCD number and calling party subaddress

31.1.1.2   Interrogation

31.1.1.2.1   Interrogation accepted

Conformance requirement:

3GPP TS 04.81 subclause 1.2.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of successful interrogation.

Initial conditions

> System Simulator:

>> 1 cell, default parameters.

> Mobile Station:

>> The MS is "idle updated".

Specific PICS Statements

> -

PIXIT Statements

> - Description of the user's commands and of display of the answers from the network for interrogation of CLIP.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CLIP for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS operation.

The SS transaction is released and the dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation of CLIP (all)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	

Specific message content

    step 6 - CLIP

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

    invoke = Interrogation

        Supplementary service code = CLIP.

        Basic service code: no Bearer Service present, no teleservice present.

31.1.1.2.2 Interrogation rejected

Conformance requirement

3GPP TS 04.81 subclause 1.2.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of an error response and an invoke problem.

Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of CLIP.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CLIP for all basic service groups.

Upon receipt of the operation (in a REGISTER message),the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of CLIP for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject(invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation for CLIP (all)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate an interrogation of CLIP (all)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

step 4, 11 - CLIP

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation

Supplementary service code = CLIP.

Basic service code:no Bearer Service present, no teleservice present.

step 5 - CLIP

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

    return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

step 12 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

    reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.1.2 CLIR

31.1.2.1 Normal operation - requesting presentation of CLI

Conformance requirement:

3GPP TS 04.81 subclause 2.2.

Test Purpose

To test that when the CLIR presentation mode is temporary (presentation restricted), it is possible for the subscriber to present his CLI on a per call basis.

Method of test

Specific PICS Statements

- Supported MO circuit switched basic services (TSPC_AddInfo_MOsvc)

PIXIT Statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The SIM in the MS under test has CLIR enabled with CLIR presentation mode "temporary (presentation restricted)".

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U0.1 by using table 26.8.1.2/1.

Foreseen final state of the MS

U1, call initiated.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Using MMI commands, the MS is made to initiate an outgoing call with CLI presented. When the MS is requesting a MM-connection, the SS will indicate acceptance by sending a CM SERVICE ACCEPT message. The MS shall respond with SETUP. The SETUP message shall contain the CLIR suppression information element.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CM SERVICE ACCEPT	
2	MS -> SS	SETUP	with CLIR suppression information element

31.1.2.2 Normal operation - requesting restriction of CLI presentation

Conformance requirement:

3GPP TS 04.81 subclause 2.3.

Test Purpose

To test that when the CLIR presentation mode is temporary (presentation allowed), it is possible for the subscriber to present his CLI on a per call basis.

Procedure

Using MMI commands, the MS is made to initiate an outgoing call with CLI restricted.

Requirements:

The SETUP message sent by the MS shall include the CLIR invocation information element.

Method of test

Specific PICS Statements

- Supported MO circuit switched basic services (TSPC_AddInfo_MOsvc)

PIXIT Statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The SIM in the MS under test has CLIR enabled with CLIR presentation mode "temporary (presentation allowed)".

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

The MS is brought into the state U0.1 by using table 26.8.1.2/1.

Foreseen final state of the MS

U1, call initiated.

Maximum duration of test

30 s.

Test procedure

An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Using MMI commands, the MS is made to initiate an outgoing call with CLI restricted. When the MS is requesting a MM-connection, the SS will indicate acceptance by sending a CM SERVICE ACCEPT message. The MS shall respond with SETUP. The SETUP message sent by the MS shall include the CLIR invocation information element.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	CM SERVICE ACCEPT	
2	MS -> SS	SETUP	with CLIR invocation information element

31.1.2.3 Interrogation

31.1.2.3.1 Interrogation accepted

Conformance requirement:

3GPP TS 04.81 subclause 2.4.

Applicability

MS supporting the CLIR supplementary service.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of successful interrogation.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of CLIR.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CLIR for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS operation.

The SS transaction is released and the dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation of CLIR (all)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - CLIR

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = CLIR.

Basic service code: no Bearer Service present, no teleservice present.

31.1.2.3.2 Interrogation rejected

Conformance requirement

3GPP TS 04.81 subclause 2.4.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of an error response and an invoke problem.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of CLIR.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CLIR for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of CLIR for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject(invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation for CLIR (all)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate an interrogation of CLIR (all)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

step 4, 11 - CLIR

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = CLIR.

Basic service code: no Bearer Service present, no teleservice present.

step 5 - CLIR

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

     return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

   step 12 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

     reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.1.3   COLP

31.1.3.1   Normal operation

Conformance requirement:

3GPP TS 04.81 subclause 3.1.

Purpose:

To test that the MS displays the connected number presented to it in an incoming CONNECT message.

Method of test

Specific PICS Statements

- Supported MO circuit switched basic services (TSPC_AddInfo_MOsvc)

PIXIT Statements

- Description of display for COLP.

Initial conditions

   System Simulator:

     1 cell, default parameters.

   Mobile Station:

     The SIM in the MS under test has COLP enabled.

     The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

     The MS is brought into the state U1 by using table 26.8.1.2/4.

Foreseen final state of the MS

U10, call active.

Maximum duration of test

30 s.

Test procedure

1. An MO circuit switched basic service is selected that is supported by the MS; if the MS supports MO telephony, the selected basic service is telephony. If necessary, the MS is configured for that basic service. Then, the MS is made to initiate a call. The CC entity of the MS is brought to the state U4. The SS sends a CONNECT message to the MS containing a connected number information element and a connected party subaddress information element. The MS shall respond by sending a CONNECT ACKNOWLEDGE message. The MS shall correctly display the connected line information.

Expected sequence, procedure 1

Step	Direction	Message	Comments
1	SS -> MS	CONNECT	See specific message contents
2	MS -> SS	CONNECT ACKNOWLEDGE	
3	MS		The MS shall correctly display the connected line information

Specific message contents

CONNECT

Connected number information element	
Presentation indicator	Presentation allowed
Screening indicator	User provided, not screened
Connected subaddress	Any valid subaddress

31.1.3.2   Interrogation

31.1.3.2.1   Interrogation accepted

Conformance requirement:

3GPP TS 04.81 subclause 3.2.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of successful interrogation.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of COLP.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of COLP for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS operation.

The SS transaction is released and the dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation of COLP (all)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - COLP

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = COLP.

Basic service code: no Bearer Service present, no teleservice present.

31.1.3.2.2 Interrogation rejected

Conformance requirement

3GPP TS 04.81 subclause 3.2.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of an error response and an invoke problem.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of COLP.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of COLP for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of COLP for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject(invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation for COLP (all)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate an interrogation of COLP (all)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

step 4, 11 - COLP

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = COLP.

Basic service code:no Bearer Service present, no teleservice present.

step 5 - COLP

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

step 12 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.1.4 COLR

31.1.4.1 Interrogation

31.1.4.1.1 Interrogation accepted

Conformance requirement:

3GPP TS 04.81 subclause 4.2.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of successful interrogation.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of COLR.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of COLR for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS operation.

The SS transaction is released and the dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation of COLR (all)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - COLR

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = COLR.

Basic service code: no Bearer Service present, no teleservice present.

31.1.4.1.2 Interrogation rejected

Conformance requirement

3GPP TS 04.81 subclause 4.2.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of an error response and an invoke problem.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of COLR.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of COLR for all basic service groups.

Upon receipt of the operation (in a REGISTER message),the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of COLR for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject(invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation for COLR (all)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate a interrogation of COLR (all)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

    step 4, 11 - COLR

       -   protocol discriminator: non call related SS message.

       -   message type: REGISTER.

       -   facility:

         invoke = Interrogation:

            Supplementary service code = COLR.

            Basic service code:no Bearer Service present, no teleservice present.

    step 5 - COLR

       -   protocol discriminator: non call related SS message.

       -   transaction identifier: same TI as previous REGISTER message.

       -   message type: RELEASE COMPLETE.

       -   facility:

            return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

    step 12 -

       -   protocol discriminator: non call related SS message.

       -   transaction identifier: same TI as previous REGISTER message.

       -   message type: RELEASE COMPLETE.

       -   facility:

            reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.1.4.2 Void

31.1.5 CNAP

31.1.5.1.1 Normal Operation – Name indication contained in Setup message

Conformance requirements

3GPP TS 24.096 subclause 4.1

Purpose

To test that the MS presents to the user the name information of the calling party to the called party at call setup time for all incoming calls.

Specific PICS Statements

    -   Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

    -   Description of display for CNAP.

Initial Conditions

System Simulator:

1 cell, default parameters

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN

Foreseen final state of the MS

Stae U7

Maximum Duration of Test

3 minutes.

Procedure

Set up an MT Call to the MS under test. The SS sends the Name Indication in the Facilty IE of the CC Setup

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	SS sends paging
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	(SDCCH)
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	
8	MS -> SS	CIPHERING MODE COMPLETE	
9	SS -> MS	SETUP	Shall include Facility (Invoke = NotifySS (CNAP, nameIndicator)) Signal IE included
10	MS -> SS	CALL CONFIRMED	
11	MS -> SS	ALERTING	
12	MS		Depending on the PICS, the MS shall display the calling nameIndicator

Specific message content

step 9 – CNAP nameIndicator settings:

- namePresentationAllowed

- NameSet: "TESTNAME"

31.1.5.1.2 Normal Operation – Name indication contained in Facility message

Conformance requirements

3GPP TS 24.096 subclause 4.1

Purpose

To test that the MS presents to the user the name information of the calling party to the called party at call setup time for all incoming calls.

Specific PICS Statements

- Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

- Description of display for CNAP.

Initial Conditions

System Simulator:

1 cell, default parameters

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN

Foreseen final state of the MS

Stae U7

Maximum Duration of Test

3 minutes.

Procedure

Set up an MT Call to the MS under test. The SS sends the Name Indication in a Facilty message

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	SS sends paging
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	(SDCCH)
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	
7	SS -> MS	CIPHERING MODE COMMAND	
8	MS -> SS	CIPHERING MODE COMPLETE	
9	SS -> MS	SETUP	Signal IE included
10	MS -> SS	CALL CONFIRMED	
11	MS -> SS	ALERTING	
12	SS -> MS	FACILITY	Facility (Invoke=NotifiSS (CNAP, nameIndicator))
13	MS		Depending on the PICS, the MS shall display the calling nameIndicator

Specific message content

step 10 – CNAP nameIndicator settings:

- namePresentationAllowed

- NameSet: "TESTNAME"

31.1.5.2.1   Interrogation accepted

Conformance requirements

3GPP TS 24.096 subclause 4.2

Purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of successful interrogation

Initial Conditions

System Simulator:

1 cell, default parameters

Mobile Station:

The MS is "Idle Updated"

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of CNAP.

Forseen final state of the MS

The MS is Idle Updated

Maximum Duration of Test

3 minutes.

Procedure

By mean´s of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the users requests interrogation of CNAP for all basic service groups.

Upon receipt of the operation (in a register message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogtaeSS operation .

The SS transaction is released and the dedicated channel is released

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation of CNAP (all)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can
			be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	Facility (Invoke = InterrogateSS (CNAP))
7	SS -> MS	RELEASE COMPLETE	Facility (Return Result = InterrogateSS (ss-status))
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - CNAP

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation

Supplementary service code = CNAP.

Basic service code: no Bearer Service present, no teleservice present.

31.1.5.2.2 Interrogation rejected

Conformance requirements

3GPP TS 24.096 subclause 4.2

Purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of an error response and an invoke problem.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for interrogation of CNAP.

Initial Conditions

System Simulator:

1 cell, default parameters

Mobile Station:

The MS is in CC state U10

Maximum Duration of Test

3 minutes.

Procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CNAP for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error (error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of CNAP for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject (invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation for CNAP (all)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate an interrogation of CNAP (all)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

step 4, 11 - CNAP

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

  invoke = Interrogation

  Supplementary service code = CNAP.

  Basic service code:no Bearer Service present, no teleservice present.

step 5 - CNAP

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

  return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

step 12 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

  reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.2 Call offering supplementary services

The following abbreviations are used:

CF:	Call Forwarding (common name for CFU, CFB, CFNRy and CFNRc).
CFB:	Call Forwarding on mobile subscriber Busy
CFC:	Call Forwarding Conditional (common name for CFB, CFNRy and CFNRc)
CFNRc:	Call Forwarding on mobile subscriber Not Reachable
CFNRy:	Call Forwarding on No Reply
CFU:	Call Forwarding Unconditional

NOTE: These abbreviations are also used to represent the corresponding SS-Code; e.g. CFC is the SS-Code for all conditional forwarding services.

31.2.1 Call forwarding supplementary services

31.2.1.1 Registration

31.2.1.1.1 Registration accepted

31.2.1.1.1.1 Conformance requirements

For registration of any type of call forwarding with any parameters, the MS shall transmit successively:

1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

3) and then the REGISTER message containing a facility IE that includes an invoke of the RegisterSS operation with parameter values according to the user's request (MMI action);

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82, 3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.1.1.2　　　　Test purpose

1) To check that the MS correctly requests a supplementary service transaction for registration of call forwarding in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for registration of call forwarding in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the RegisterSS operation with the expected parameter values for registration of call forwarding.

4) To check that upon receipt of the result of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

These checks are done for:

a) CFNRy, for basic service group speech.

b) CFU, for basic service group all facsimile.

31.2.1.1.1.3　　　　Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests registration of CFNRy for Speech, to a number arbitrarily selected and with a no reply time value arbitrarily selected.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the RegisterSS operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests registration of CFU for all facsimile, to a number arbitrarily selected.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the RegisterSS operation.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of call forwarding service for CFNRy (Speech)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	CNFRySS operation Return_result
8	MS		provide correct MMI user indication
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate a registration of call forwarding service for CFU (all facsimile)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	RegisterSS operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - CFNRy

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

    invoke = Registration:

        Supplementary service code = CFNRy.

        Forwarded to number: as selected.

        No reply condition time: as selected.

        Basic service code: TeleService AllSpeechTransmissionServices (TS10) or Telephony (TS 11), no Bearerservice present.

step 7 - CFU

- protocol discriminator: non call related SS message.

- transaction identifier: same as at step 6.

- message type: RELEASE COMPLETE.

- facility:

Return Result = Registration:

Supplementary service code = CFNRy.

Forwarded to number.

No Reply condition time.

Basic service code: TeleService AllSpeechTransmissionServices (TS10) or Telephony (TS 11), no Bearerservice present.

step 15 - CFU

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Registration:

Supplementary service code = CFU.

Forwarded to number: as selected.

Basic service code: no bearer service present, teleservice (all facsimile).

step 16 - CFU

- protocol discriminator: non call related SS message.

- transaction identifier: same as at step 15.

- message type: RELEASE COMPLETE.

- facility:

Return Result = Registration:

Supplementary service code = CFU.

Forwarded to number.

Basic service code: TeleService (all facsimile), no Bearerservice present.

31.2.1.1.2 Registration rejected

31.2.1.1.2.1 Conformance requirements

1) A transaction of any kind being already established, for registration of any type of call forwarding with any parameters, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the RegisterSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82, 3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.1.2.2 Test purpose

1) To check that the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of registration of call forwarding, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the RegisterSS operation with the expected parameter values for registration of call forwarding.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

These checks are performed with a call transaction already established for:

a) CFB, for all asynchronous services, the RELEASE COMPLETE message being sent with a facility IE containing a return_error(error) where error is "Bearer Service not provisioned".

b) CF, for all facsimile, the RELEASE COMPLETE message being sent with a facility IE containing a reject(invoke_problem) where invoke_problem is "resource limitation".

31.2.1.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests registration of CFB for all asynchronous services, to a number arbitrarily selected.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: Bearer Service not provisioned) of the RegisterSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests registration of CF for all facsimile, to a number arbitrarily selected.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing a reject(invoke_problem: resource limitation) of the RegisterSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of call forwarding service for CFB (all asynchronous services)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	RegisterSS operation Return_error
6	MS		provide correct MMI user indication
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	STATUS	CC state U10
9	MS		The MS is made to initiate a registration of call forwarding service for CF (all facsimile)
10	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
11	SS -> MS	CM SERVICE ACCEPT	
12	MS -> SS	REGISTER	
13	SS -> MS	RELEASE COMPLETE	RegisterSS operation Reject
14	MS		provide correct MMI user indication
15	SS -> MS	STATUS ENQUIRY	
16	MS -> SS	STATUS	CC state U10

Specific message content

step 4 - CFB

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Registration:

Supplementary service code = CFB.

Forwarded to number: as selected.

Basic service code: Bearer Service (all asynchronous services), no teleservice present.

step 5 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

    return error code: BearerService not provisioned.

For the return error the invoke ID must be the same as in the invoke of the RegisterSS operation.

step 11 - CF

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

    invoke = Registration:

        Supplementary service code = CF.

        Forwarded to number: as selected.

        Basic service code: no bearer service present, teleservice (all facsimile)).

step 12 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

    reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the Register SS operation.

31.2.1.2   Erasure by the subscriber

31.2.1.2.1   Erasure accepted

31.2.1.2.1.1   Conformance requirements

For erasure of any type of call forwarding, the MS shall transmit successively:

1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

3) and then the REGISTER message containing a facility that includes an invoke of the EraseSS operation with the expected parameter values according to the user request (MMI action);

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82, 3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.2.1.2 Test purpose

1) To check that the MS correctly requests supplementary service transaction for erasure of call forwarding in CHANNEL REQUEST message.

2) To check that the MS correctly requests supplementary service transaction for erasure of call forwarding in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the EraseSS operation with the expected parameter values for erasure of call forwarding.

4) To check that upon receipt of the result of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

These checks are done for:

a) CFC, for basic service group all facsimile.

b) CFNRc, for all basic service groups.

31.2.1.2.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests erasure of CFC for all facsimile.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the facility information element containing a return result of the EraseSS operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests erasure of CFNRc for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the EraseSS operation.

The dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate erasure of call forwarding for CFC (all facsimile)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	EraseSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate a erasure of call forwarding service for CFNRc (all basic services)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	EraseSS operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - CFC

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Erasure:

Supplementary service code = CFC.

Basic service code: no Bearer Service, teleservice (all facsimile).

step 15 - CFNRc

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Erasure:

Supplementary service code = CFNRc.

Basic service code: no bearer service present, no teleservice present.

31.2.1.2.2 Erasure rejected

31.2.1.2.2.1 Conformance requirements

1) A transaction of any kind being already established, for erasure of any type of call forwarding with any parameters, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the EraseSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82,
3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.2.2.2 Test purpose

1) To check that the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of erasure of call forwarding, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the EraseSS operation with the expected parameter values for erasure of call forwarding.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

These checks are performed with a call transaction already established for:

a) CFU, for Speech, the RELEASE COMPLETE message being sent with a facility IE containing a return_error(error) where error is "Teleservice not provisioned".

b) CFNRy, for all facsimile, the RELEASE COMPLETE message being sent with a facility IE containing a reject(invoke_problem) where invoke_problem is "resource limitation".

31.2.1.2.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests erasure of CFU for Speech.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: TeleService not provisioned) of the EraseSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests erasure of CFNRy for all facsimile.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing a reject(invoke_problem: resource limitation) of the EraseSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a erasure of call forwarding service for CFU (speech)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	EraseSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate a erasure of call forwarding service for CFNRy (all facsimile)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	EraseSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

    step 4 - CFU

        - protocol discriminator: non call related SS message.

        - message type: REGISTER.

        - facility:

        invoke = Erasure:

            Supplementary service code = CFU.

            Basic service code: Tele Service AllSpeechTransmissionServices (TS10) or Telephony (TS 11), no Bearer service present.

    step 5 -

        - protocol discriminator: non call related SS message.

        - transaction identifier: same TI as previous REGISTER message.

        - message type: RELEASE COMPLETE.

        - facility:

            return error code: TeleService not provisioned.

For the return error the invoke ID must be the same as in the invoke of the EraseSS operation.

    step 11 - CFNRy

        - protocol discriminator: non call related SS message.

        - message type: REGISTER.

        - facility:

        invoke = Erasure:

            Supplementary service code = CFNRy.

            Basic service code: no bearer service present, teleservice (all facsimile)).

    step 12 -

        - protocol discriminator: non call related SS message.

        - transaction identifier: same TI as previous REGISTER message.

        - message type: RELEASE COMPLETE.

        - facility:

            reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the EraseSS operation.

31.2.1.3 Activation

31.2.1.3.1 Conformance requirements

For activation of any type of call forwarding with any parameters, the MS shall transmit successively

    1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

    2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

3) and then the REGISTER message containing a facility IE that includes an invoke of the ActivateSS operation with parameter values according to the user's request (MMI action);

4) upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82,
   3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.3.2 Test purpose

1) To check that the MS correctly requests a supplementary service transaction for activation of call forwarding in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for activation of call forwarding in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the ActivateSS operation with the expected parameter values for activation of call forwarding.

4) To check that upon receipt of the result of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

These checks are done for:

a) CF, for basic service group "all synchronous services".

b) CFU, for all basic service groups.

31.2.1.3.3 Method of test

Initial conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS is "idle updated".

Specific PICS Statements

   -

PIXIT Statements

   - Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests activation of CF for all synchronous services.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the FACILITY message with the Facility information element containing the return result of the ActivateSS operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests activation of CFU for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the ActivateSS operation.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a activation of call forwarding service for CF (all synchronous services)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate a activation of call forwarding service for CFU (all basic service groups)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	

Specific message contents:

step 6 - CF

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Activation:

Supplementary service code = CF.

Basic service code: Bearer Service (all synchronous services), no teleservice present.

step 15 - CFU

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

    invoke = Activation:

        Supplementary service code = CFU.

        Basic service code: no bearer service present, no teleservice present.

31.2.1.4 Deactivation

31.2.1.4.1 Conformance requirements

For deactivation of any type of call forwarding with any parameters, the MS shall transmit successively:

1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

3) and then the REGISTER message containing a facility IE that includes an invoke of the DeactivateSS operation with parameter values according to the user's request (MMI action);

4) upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82,
   3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.4.2 Test purpose

1) To check that the MS correctly requests a supplementary service transaction for deactivation of call forwarding in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for deactivation of call forwarding in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the DeactivateSS operation with the expected parameter values for deactivation of call forwarding.

4) To check that upon receipt of the result of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

These checks are done for:

a) CFC, for basic service group speech.

b) CFNRc, for basic service group all facsimile.

31.2.1.4.3 Method of test

Initial conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests deactivation of CFC for speech.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the DeactivateSS operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests deactivation of CFNRc for all facsimile.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the DeactivateSS operation.

The dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a deactivation of call forwarding service for CFC (speech)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate a deactivation of call forwarding service for CFNRc (all facsimile)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - CFC

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Deactivation:

Supplementary service code = CFC.

Basic service code: no bearer service , teleservice (All Speech Transmission Services).

step 15 - CFNRc

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Deactivation:

Supplementary service code = CFNRc.

Basic service code: no bearer service present, teleservice (all facsimile).

31.2.1.5 Invocation

Invocation is not applicable to the MS and causes no signalling on the radio path.

31.2.1.6 Interrogation

31.2.1.6.1 Interrogation accepted

31.2.1.6.1.1 Conformance requirements

For interrogation of any specific call forwarding service (not applicable to a group of services) with any parameters, the MS shall transmit successively:

1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

3) and then the REGISTER message containing a facility IE that includes an invoke of the InterrogateSS operation with parameter values according to the user's request (MMI action);

4) upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82,
   3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.6.1.2 Test purpose

1) To check that the MS correctly requests a supplementary service transaction for interrogation of a specific call forwarding in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for interrogation of call forwarding in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the InterrogateSS operation with the expected parameter values for interrogation of call forwarding.

4) To check that upon receipt of the result of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

These checks are done for:

a) CFB, for all basic service groups.

b) CFNRy, for basic service group speech.

31.2.1.6.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

- Speech supported for Full rate version 1 (TSPC_AddInfo_Full_rate_version_1)

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CFB for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of CFNRy for speech.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS operation.

The dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of call forwarding service for CFB (all)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	
9A			Steps 10 to 19 are applicable if MS supports speech (TSPC_AddInfo_Full_rate_version_1).
10	MS		The MS is made to initiate a registration of call forwarding service for CFNRy(speech)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
16	MS -> SS	REGISTER	
17	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return result
18	MS		provide correct MMI user indication
19	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 - CFB

-   protocol discriminator: non call related SS message.

-   message type: REGISTER.

-   facility:

   invoke = Interrogation:

      Supplementary service code = CFB.

      Basic service code: no Bearer Service present, no teleservice present.

step 15 - CFNRy

-   protocol discriminator: non call related SS message.

-   message type: REGISTER.

-   facility:

   invoke = Interrogation:

      Supplementary service code = CFNRy.

      Basic service code: no bearer service present, teleservice (speech).

31.2.1.6.2 Interrogation rejected

31.2.1.6.2.1 Conformance requirements

1) A transaction of any kind being already established, for interrogation of any specific call forwarding service with any parameters, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the InterrogateSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.82,
   3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.2.1.6.2.2 Test purpose

1) To check that the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of interrogation of a specific call forwarding service, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the InterrogateSS operation with the expected parameter values for interrogation of call forwarding.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

These checks are performed with a call transaction already established for:

a) CFNRc, for all basic service group, the RELEASE COMPLETE message being sent with a facility IE containing a return_error(error) where error is "SS not available".

b) CFB, for all facsimile, the RELEASE COMPLETE message being sent with a facility IE containing a reject(invoke_problem) where invoke_problem is "resource limitation".

31.2.1.6.2.3 Method of test

Initial conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS is in CC state U10.

Specific PICS Statements

   -

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CFNRc for all basic service groups.

Upon receipt of the operation (in a REGISTER message),the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of CFB for all facsimile.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject(invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of call forwarding service for CFNRc (all)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate a interrogation of call forwarding service for CFB (all facsimile)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

   step 4 - CFNRc

   - protocol discriminator: non call related SS message.

   - message type: REGISTER.

   - facility:

   invoke = Interrogation:

      Supplementary service code = CFNRc.

      Basic service code:no Bearer Service present, no teleservice present.

   step 5 -

   - protocol discriminator: non call related SS message.

   - transaction identifier: same TI as previous REGISTER message.

   - message type: RELEASE COMPLETE.

   - facility:

      return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

   step 11 - CFB

   - protocol discriminator: non call related SS message.

   - message type: REGISTER.

   - facility:

   invoke = Interrogation:

      Supplementary service code = CFB.

      Basic service code: no bearer service present, teleservice (all facsimile)).

   step 12 -

   - protocol discriminator: non call related SS message.

   - transaction identifier: same TI as previous REGISTER message.

   - message type: RELEASE COMPLETE.

   - facility:

      reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.2.1.7   Normal operation

31.2.1.7.1   Served mobile subscriber side

31.2.1.7.1.1   Notification during an incoming call

This subscription option is only applicable to CFB and CFNRy.

31.2.1.7.1.1.1   Conformance requirements

1) During a call transaction, call establishment or not, upon receipt of a FACILITY message notifying an incoming call, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

2) If a call transaction is being established or is already established when the notification of incoming call is received, the receipt of the notification has no effect on its state.

References

1) 3GPP TS 02.30 subclause 4.5.

2) 3GPP TS 04.82 clause 1.

31.2.1.7.1.1.2   Test purpose

1) To check that, in state U7 or U10, upon receipt of a FACILITY message notifying an incoming call, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

2) To check that when the notification of incoming call is received while the MS is in CC state U7 and U10 of another incoming call, it has no effect on its state.

These checks are performed in the case of CFB.

31.2.1.7.1.1.3   Method of test

Initial conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

    The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

The MS is brought to the call state U7 of an incoming call.

The system simulator transmits a FACILITY message with the facility information element containing an invoke of the NotifySS operation for CFB.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U7.

The MS is brought into the call state U10 of an incoming call.

The system simulator transmits a FACILITY message with the facility information element containing an invoke of the NotifySS operation for CFB.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

The transaction and the channel are released by the SS.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING	
2	MS -> SS	CHANNEL REQUEST	with establishment cause "answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	SETUP	
6	MS -> SS	CALL CONFIRMED	
7	SS -> MS	ASSIGNMENT COMMAND	
8	MS -> SS	ASSIGNMENT COMPLETE	
9	MS -> SS	ALERTING	
10	SS -> MS	FACILITY	(invoke NotifySS)
11	SS -> MS	STATUS ENQUIRY	
12	MS -> SS	STATUS	(U7)
13	MS -> SS	CONNECT	MS off hook
14	SS -> MS	CONNECT ACKNOWLEDGE	
15	SS -> MS	FACILITY	(invoke NotifySS)
16	SS -> MS	STATUS ENQUIRY	
17	MS -> SS	STATUS	(U10)
18	SS -> MS	RELEASE COMPLETE	
19	SS -> MS	CHANNEL RELEASE	

Specific message contents

Steps 10 and 15

- protocol discriminator: CC.

- transaction identifier: same as for the call transaction already established.

- message type: FACILITY.

- facility:

invoke = notification:

Supplementary service code = CFB.

SS notification = incoming call is forwarded.

(call is forwarded indication to B subscriber).

31.2.1.7.1.2   Notification during an outgoing call

31.2.1.7.1.2.1   Conformance requirements

1) As an outgoing call is being established, if the ALERTING message is received with the facility information element containing an SS notification (for CFU or CFC), the MS shall correctly reach CC state U4.

2) As an outgoing call is being established, if the ALERTING message is received with the facility information element containing an SS notification (for CFU or CFC), the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

3) As an outgoing call is being established, if the CONNECT message is received with the facility information element containing an SS notification (for CFU or CFC), the MS shall normally send a CONNECT ACKNOWLEDGE message and enter CC state U10.

4) As an outgoing call is being established, if the CONNECT message is received with the facility information element containing an SS notification (for CFU or CFC), the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.82,
3GPP TS 04.80 subclause 3.6.

2) 3GPP TS 04.82 TBS,
3GPP TS 04.80 subclause 3.6.

31.2.1.7.1.2.2 Test purpose

1) To check that when an outgoing call is being established, if the ALERTING message is received with the facility information element containing an SS notification, the MS correctly reaches CC state U4. This is tested for CFU.

2) As an outgoing call is being established, if the ALERTING message is received with the facility information element containing an SS notification, the MS provides the appropriate user indication (which is to be described by the manufacturer). This is tested for CFU.

3) As an outgoing call is being established, if the CONNECT message is received with the facility information element containing an SS notification, the MS normally sends a CONNECT ACKNOWLEDGE message and enter CC state U10. This is tested for CFC.

4) As an outgoing call is being established, if the CONNECT message is received with the facility information element containing an SS notification (for CFU or CFC), the MS provides the appropriate user indication (which is to be described by the manufacturer). This is tested for CFC.

31.2.1.7.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

The MS is made to place an outgoing call.

After having received a SETUP message and sent a CALL PROCEEDING message and after a TCH has been allocated the system simulator transmits an ALERTING message with the facility information element containing a notification.

The system simulator send then a STATUS ENQUIRY message. On receipt of the STATUS ENQUIRY message the MS shall send a STATUS message with CC-state U4.

After that, the system simulator transmits a CONNECT with the facility information element containing a notification.

After reception of a CONNECT ACKNOWLEDGE message the system simulator sends a STATUS ENQUIRY message.

The MS shall respond with a STATUS message indicating CC-state U10.

The transaction and the channel are released by the SS.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	
2	SS -> MS	IMMEDIATE ASSIGNMENT	
3	MS -> SS	CM SERVICE REQUEST	"mobile originating call establishment"
4	SS -> MS	CM SERVICE ACCEPT	
5	MS -> SS	SETUP	
6	SS -> MS	CALL PROCEEDING	
7	SS -> MS	ASSIGNMENT COMMAND	
8	MS -> SS	ASSIGNMENT COMPLETE	
9	SS -> MS	ALERTING	containing facility IE
10	SS -> MS	STATUS ENQUIRY	
11	MS -> SS	STATUS	(U4)
12	SS -> MS	CONNECT	containing facility IE
13	MS -> SS	CONNECT ACKNOWLEDGE	
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	(U10)
16	SS -> MS	RELEASE COMPLETE	
17	SS -> MS	CHANNEL RELEASE	

Specific message contents

At step 9 -

Facility invoke = notification:

- SS-Code (CFU).

- SS-Status (indicating:

    Provisioned, registered and active).

At step 12 -

Facility invoke = notification:

- SS-Code (CFC).

- SS-Status (indicating:

    Provisioned, registered and active).

31.2.1.7.2 Forwarded-to mobile subscriber side

31.2.1.7.2.1 Conformance requirements

1) Upon receipt of the SETUP message containing a notification indication that the call is a forwarded one (with any SS code except CFC), the MS shall correctly continue call establishment and enter CC state U6.

2) Upon receipt of the SETUP message containing a notification indication that the call is a forwarded one, or after sending CALL CONFIRMED, or after sending ALERTING, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.82.

2) 3GPP TS 02.30 subclause 4.5.

31.2.1.7.2.2   Test purpose

1) To check that, upon receipt of the SETUP message containing a notification indication that the call is a forwarded one, the MS correctly continues call establishment and enters CC state U6.

2) To check that upon receipt of the SETUP message containing a notification indication that the call is a forwarded one, or after sending CALL CONFIRMED, or after sending ALERTING, the MS provides the appropriate user indication (which is to be described by the manufacturer).

31.2.1.7.2.3   Method of test

Initial conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS is "idle updated".

Specific PICS Statements

   -

PIXIT Statements

   -   Description of the user's commands and of display of the answers from the network for call forwarding.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

An incoming call is given to the MS with the SETUP message with the facility information element containing an invoke of the NotifySS operation with the indication that the call is forwarded.

After the MS was brought to CC state U7, the SS sends a STATUS ENQUIRY message. The MS responds indicating CC state U7 (implying that it has travelled through CC state U6).

The transaction and the channel are released by the SS.

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING	
2	MS -> SS	CHANNEL REQUEST	with establishment cause "answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	SETUP	containing the notification that the call is a forwarded one
6	MS -> SS	CALL CONFIRMED	
7	SS -> MS	ASSIGNMENT COMMAND	
8	MS -> SS	ASSIGNMENT COMPLETE	
9	MS -> SS	ALERTING	Ringing and user indication that the incoming call is forwarded
10	SS -> MS	STATUS ENQUIRY	
11	MS -> SS	STATUS	(U7)
12	SS -> MS	RELEASE COMPLETE	
13	SS -> MS	CHANNEL RELEASE	

Specific message contents

at step 5 -

- protocol discriminator: CC.

- transaction identifier.

- message type: SETUP.

- facility.

    invoke = notification:

    - SS-Code (CFU, CFB, CFNRy, CFNRc or CF).

    - SS-Notification (indicating: call is forwarded i.e.:

        Call is forwarded indication to C-subscriber.

31.2.2 Call transfer and mobile access hunting supplementary services

(Reserved).

31.3 Call completion supplementary services

NOTE: In this subclause, Subscriber B is the MS under test, and subscribers A, C and D are distant parties to the calls made during the tests.

31.3.1 Call Waiting

31.3.1.1 Waiting call indication and confirmation

Conformance requirement

3GPP TS 04.83 subclause 1.1.

Test purpose

With an active call, an MS receiving an MT call shall include Cause #17 "user busy" in the CALL CONFIRMED message sent to the SS, and indicate the waiting call to the subscriber.

Method of test

Specific PICS Statements

- Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

- Method of indicating a waiting call to the user.

Initial conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

    The MS has a call ("Call A-B") of a basic service supported by the MS and applicable to Call Waiting as described in 3GPP TS 02.04 table A.1 in the active state. The SIM in the MS under test has Call Waiting enabled.

Foreseen final state of the MS

Call A-B, state U10. Call C-B, state U7.

Maximum duration of test

30 s.

Procedure

The SS shall initiate Call C-B by sending a SETUP message to the MS. The MS shall respond with a CALL CONFIRMED message including cause #17 "user busy", followed by an ALERTING message.

The MS shall remain in state U10 in respect of the Call A-B, and enter state U7 "Call received" in respect of Call C-B. The MS shall indicate the existence of the waiting call to the user by a method defined by the manufacturer. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	SETUP	Transaction identifier different from that of Call A-B
2	MS -> SS	CALL CONFIRMED	cause #17 "user busy".
3	MS -> SS	ALERTING	
4	MS		A waiting call indication as defined in a PICS/PIXIT statement is given by the MS.
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
6	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call C-B
8	MS -> SS	STATUS	Transaction identifier of Call C-B, state U7

31.3.1.2 Normal operation with successful outcome

31.3.1.2.1 Waiting call accepted; existing call released

Conformance requirement

3GPP TS 04.83 subclause 1.2.1.

Test purpose

The MS shall release the active call using the call clearing procedures of 3GPP TS 04.08 / 3GPP TS 24.008, and then accept the waiting call.

Method of test

Specific PICS Statements

- Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

- Method of clearing an active call and answering a waiting call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has Call A-B of a basic service supported by the MS and applicable to Call Waiting as described in 3GPP TS 02.04 table A.1 in the state U10 "Active" and Call C-B in the state U7 "Call Received".

Foreseen final state of the MS

Call A-B, state U0. Call C-B, state U10.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall clear Call A-B, and then answer Call C-B.

The MS shall send a DISCONNECT message with the transaction identifier Call A-B, and then respond to a RELEASE message from the SS with a RELEASE COMPLETE message, and then enter state U0 "Null" in respect of this call.

The MS shall then send a CONNECT in respect of Call C-B, and enter state U10 "Active" on receipt of a CONNECT ACKNOWLEDGE message. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call A-B and a STATUS message indicating the appropriate call state for Call C-B.

Expected sequence

Step	Direction	Message	Comments
1	MS		Call A-B is cleared using MMI commands
2	MS -> SS	DISCONNECT	Transaction identifier of Call A-B
3	SS -> MS	RELEASE	Transaction identifier of Call A-B
4	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
5	MS		Call C-B is answered using MMI commands
6	MS -> SS	CONNECT	Transaction identifier of Call C-B
7	SS -> MS	CONNECT ACKNOWLEDGE	Transaction identifier of Call C-B
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call C-B
11	MS -> SS	STATUS	Transaction identifier of Call C-B, state U10

31.3.1.2.2 Waiting call accepted; existing call on hold

31.3.1.2.2.1 Waiting call accepted; existing call on hold, no additional calls

Conformance requirement

3GPP TS 04.83 subclause 1.2.2.

Test purpose

With one active call and one waiting call, the MS shall place the active call on hold, and then accept the waiting call.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of placing an active call on hold and answering a waiting call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

- The MS has Call A-B of a basic service supported by the MS and applicable to Call Waiting as described in 3GPP TS 02.04 table A.1 in the state U10 "Active" and Call C-B in the state U7 "Call Received".

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call held". Call C-B, state U10.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall place Call A-B on hold, and then answer Call C-B.

The MS shall send a HOLD message to the SS using the transaction identifier of Call A-B and enter state U10 "Active" with auxiliary state "Call held". On receipt of a HOLD ACKNOWLEDGE from the SS the MS shall enter state U10 "Active" with auxiliary state "Call held".

The MS shall then send a CONNECT message to the SS, using the transaction identifier of Call C-B, and on receipt of a CONNECT ACKNOWLEDGE message, shall enter state U10 "Active". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Call A-B is placed on hold using MMI commands
2	MS -> SS	HOLD	Transaction identifier of Call A-B
3	SS -> MS	HOLD ACKNOWLEDGE	Transaction identifier of Call A-B
4	MS		Call C-B is answered using MMI commands
5	MS -> SS	CONNECT	Transaction identifier of Call C-B
6	SS -> MS	CONNECT ACKNOWLEDGE	Transaction identifier of Call C-B
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
8	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call Held"
9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call C-B
10	MS -> SS	STATUS	Transaction identifier of Call C-B, state U10

31.3.1.2.3 Existing call released by user A; waiting call accepted

Conformance requirement

3GPP TS 04.83 subclause 1.2.3.

Test purpose

The MS, on receipt of a DISCONNECT message from the active call, shall complete the clearance of the active call, and accept the waiting call.

Method of test

Specific PICS Statements

- Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

- Method of clearing an active call and answering a waiting call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has Call A-B of a basic service supported by the MS and applicable to Call Waiting as described in 3GPP TS 02.04 table A.1 in the state U10 "Active" and Call C-B in the state U7 "Call Received".

Foreseen final state of the MS

Call A-B, state U0. Call C-B, state U10.

Maximum duration of test

30 s.

Procedure

On receipt of a DISCONNECT message using the transaction identifier of Call A-B, the MS shall respond with a RELEASE message. On receipt of a RELEASE COMPLETE message, the MS shall enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

If necessary, MMI commands shall be entered to accept call C-B. The MS shall then send a CONNECT message using the transaction identifier of Call C-B, and on receipt of a CONNECT ACKNOWLEDGE message, shall enter state U10 "Active". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call A-B and a STATUS message indicating the appropriate call state for Call C-B.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	Transaction identifier of Call A-B
2	MS -> SS	RELEASE	Transaction identifier of Call A-B
3	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-B
4	MS		If necessary, call C-B is answered using MMI commands
5	MS -> SS	CONNECT	Transaction identifier of Call C-B
6	SS -> MS	CONNECT ACKNOWLEDGE	Transaction identifier of Call C-B
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
8	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call C-B
10	MS -> SS	STATUS	Transaction identifier of Call C-B, state U10

31.3.1.3 Normal operation with unsuccessful outcome

31.3.1.3.1 Waiting call released by subscriber B

Conformance requirement

3GPP TS 04.83 subclause 1.3.1.

Test purpose

To test that, using MMI commands, the MS shall clear the waiting call.

Method of test

Specific PICS Statements

- Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

- Method of clearing a waiting call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has Call A-B of a basic service supported by the MS and applicable to Call Waiting as described in 3GPP TS 02.04 table A.1 in the state U10 "Active" and Call C-B in the state U7 "Call Received".

Foreseen final state of the MS

Call A-B, state U10. Call C-B, state U0.

Maximum duration of test

30 s.

Procedure

Using appropriate MMI commands, the MS shall clear Call C-B.

The MS shall send a DISCONNECT message with the transaction identifier of Call B, and on receipt of a RELEASE message from the network, shall send a RELEASE COMPLETE and enter state U0 "Null". The call states shall be verified by the SS sending a a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call C-B and STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call C-B and a STATUS message indicating the appropriate call state for Call A-B.

Expected sequence

Step	Direction	Message	Comments
1	MS		Call C-B is cleared using MMI commands
2	MS -> SS	DISCONNECT	Transaction identifier of Call C-B
3	SS -> MS	RELEASE	Transaction identifier of Call C-B
4	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call C-B
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
6	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call C-B
8	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call C-B, with cause #81 "invalid transaction identifier value"

31.3.1.3.2 Waiting call released by calling user C

Conformance requirement

3GPP TS 04.83 subclause 1.3.2.

Test purpose

To test that the MS responds correctly to the receipt of a clearing message from the waiting call.

Method of test

Specific PICS Statements

- Supported MT circuit switched basic services (TSPC_AddInfo_MTsvc)

PIXIT Statements

-

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS has Call A-B of a basic service supported by the MS and applicable to Call Waiting as described in 3GPP TS 02.04 table A.1 in the state U10 "Active" and Call C-B in the state U7 "Call Received".

Foreseen final state of the MS

Call A-B, state U10. Call C-B, state U0.

Maximum duration of test

30 s.

Procedure

On receipt of a DISCONNECT message using the transaction identifier of Call C-B, the MS shall respond with a RELEASE message. On receipt of a RELEASE COMPLETE message, the MS shall enter state U0 "Null". Call A-B shall remain in state U10. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call C-B and STATUS message indicating the appropriate call state for Call A-B.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	Transaction identifier of Call C-B
2	MS -> SS	RELEASE	Transaction identifier of Call C-B
3	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call C-B
4	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
5	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10
6	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call C-B
7	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call C-B, with cause #81 "invalid transaction identifier value"

31.3.1.4 Activation

Conformance requirement

3GPP TS 04.83 subclause 1.4.

Test purpose

To test the correct operation of the activation procedure, and correctly display of the response from the SS in the following cases.

1) Successful activation.

2) Error response (reject).

3) Activation reject (Invoke problem).

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for activation of call waiting.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests activation of CW for a basic service group supported by the MS.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the ActivateSS operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests activation of CW for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the ActivateSS operation.

The SS transaction is released and the dedicated channel is released.

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests activation of CW for a basic service group supported by the MS.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing a Return Error component with Error code:SS not available.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests activation of CW for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing a Return Error component with Error code:SS not available.

The SS transaction is released and the dedicated channel is released.

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests activation of CW for a basic service group supported by the MS.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing a Reject component with Invoke problem (Resource limitation).

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests activation of CW for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing A Reject component with Invoke problem (Resource limitation).

Maximum duration of test

9 minutes

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate activation of CW for a basic service group supported by the MS
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"

Step	Direction	Message	Comments
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate a activation of CW (all basic service groups)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	
19	MS		The MS is made to initiate activation of CW for a basic service group supported by the MS
20	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
21	SS -> MS	IMMEDIATE ASSIGNMENT	
22	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
23	SS -> MS	CM SERVICE ACCEPT	
24	MS -> SS	REGISTER	
25	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return Error
26	MS		provide user MMI indication
27	SS -> MS	CHANNEL RELEASE	
28	MS		The MS is made to initiate a activation of CW (all basic service groups)
29	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
30	SS -> MS	IMMEDIATE ASSIGNMENT	
31	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
32	SS -> MS	CM SERVICE ACCEPT	
33	MS -> SS	REGISTER	
34	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return Error
35	MS		provide correct MMI user indication
36	SS -> MS	CHANNEL RELEASE	
37	MS		The MS is made to initiate activation of CW for a basic service group supported by the MS
38	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
39	SS -> MS	IMMEDIATE ASSIGNMENT	
40	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
41	SS -> MS	CM SERVICE ACCEPT	
42	MS -> SS	REGISTER	
43	SS -> MS	RELEASE COMPLETE	ActivateSS operation Reject
44	MS		provide user MMI indication
45	SS -> MS	CHANNEL RELEASE	
46	MS		The MS is made to initiate a activation of CW (all basic service groups)
47	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
48	SS -> MS	IMMEDIATE ASSIGNMENT	
49	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
50	SS -> MS	CM SERVICE ACCEPT	
51	MS -> SS	REGISTER	
52	SS -> MS	RELEASE COMPLETE	ActivateSS operation Reject
53	MS		provide correct MMI user indication
54	SS -> MS	CHANNEL RELEASE	

Specific message contents:

step 6, 24, 42 - CW

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

    invoke = Activation:

        Supplementary service code = CW.

        Basic service code: the selected basic service group.

step 15, 33, 51 - CW

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

    invoke = Activation:

        Supplementary service code = CW.

        Basic service code: no bearer service present, no teleservice present.

31.3.1.5   Deactivation

Conformance requirement

3GPP TS 04.83 subclause 1.5.

Test purpose

To test the correct operation of the deactivation procedure, and correct display of the response from the SS in the following cases.

1) Successful deactivation.

2) Error response (reject).

3) Activation reject (Invoke problem).

Initial conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

    The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for deactivation of call waiting.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests deactivation of CW for a basic service group supported by the MS.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the DeactivateSS operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests deactivation of CW for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the DeactivateSS operation.

The SS transaction is released and the dedicated channel is released.

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests deactivation of CW for a basic service group supported by the MS.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing a Return Error component with Error code:SS not available.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests deactivation of CW for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing a Return Error component with Error code:SS not available.

The SS transaction is released and the dedicated channel is released.

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests deactivation of CW for a basic service group supported by the MS.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing A Reject component with Invoke problem (Resource limitation).

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests deactivation of CW for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing A Reject component with Invoke problem (Resource limitation).

Maximum duration of test

9 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a deactivation of CW for a basic service group supported by the MS
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return_result
8	MS		provide user MMI indication

Step	Direction	Message	Comments
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate a deactivation of CW (all basic services)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	
19	MS		TThe MS is made to initiate a deactivation of CW for a basic service group supported by the MShe MS is made to initiate a deactivation of call forwarding service for CW for the selected basic service group
20	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
21	SS -> MS	IMMEDIATE ASSIGNMENT	
22	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
23	SS -> MS	CM SERVICE ACCEPT	
24	MS -> SS	REGISTER	
25	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return Error
26	MS		provide user MMI indication
27	SS -> MS	CHANNEL RELEASE	
28	MS		The MS is made to initiate a deactivation of CW (all basic service groups)
29	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
30	SS -> MS	IMMEDIATE ASSIGNMENT	
31	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
32	SS -> MS	CM SERVICE ACCEPT	
33	MS -> SS	REGISTER	
34	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return Error
35	MS		provide correct MMI user indication
36	SS -> MS	CHANNEL RELEASE	
37	MS		The MS is made to initiate a deactivation of CW for a basic service group supported by the MS
38	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
39	SS -> MS	IMMEDIATE ASSIGNMENT	
40	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
41	SS -> MS	CM SERVICE ACCEPT	
42	MS -> SS	REGISTER	
43	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Reject
44	MS		provide user MMI indication
45	SS -> MS	CHANNEL RELEASE	
46	MS		The MS is made to initiate a deactivation of CW (all basic service groups)
47	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
48	SS -> MS	IMMEDIATE ASSIGNMENT	
49	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
50	SS -> MS	CM SERVICE ACCEPT	
51	MS -> SS	REGISTER	
52	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Reject
53	MS		provide correct MMI user indication
54	SS -> MS	CHANNEL RELEASE	

Specific message content

    step 6, 24, 42 - CW

        - protocol discriminator: non call related SS message.

        - message type: REGISTER.

        - facility:

        invoke = Deactivation:

            Supplementary service code = CW.

            Basic service code: the selected basic service group.

    step 15, 33, 51 - CW

        - protocol discriminator: non call related SS message.

        - message type: REGISTER.

        - facility:

        invoke = Deactivation:

            Supplementary service code = CW.

            Basic service code: no bearer service present

31.3.1.6 Interrogation

31.3.1.6.1 Interrogation accepted

Conformance requirement

3GPP TS 04.83 subclause 1.6.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of successful interrogation.

Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS is "idle updated".

Specific PICS Statements

    -

PIXIT Statements

    - Description of the user's commands and of display of the answers from the network for interrogation of call waiting.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CW for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS (BasicServiceCode(s)) operation.

The SS transaction is released and the dedicated channel is released.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of CW for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS (SS-Status) operation.

The dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation of CW (all)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	InterrogateSS (BasicServiceCode(s)) operation Return_result
8	MS		provide user MMI indication
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate an interrogation of CW (all)
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	InterrogateSS (SS-Status) operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6, 15 - CW

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = CW.

Basic service code: no Bearer Service present, no teleservice present.

31.3.1.6.2 Interrogation rejected

Conformance requirement

3GPP TS 04.83 subclause 1.6.

Test purpose

To test the correct operation of the interrogation procedure, and correct display of the response from the SS in the case of an error response and an invoke problem

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call waiting.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of CW for all basic service groups.

Upon receipt of the operation (in a REGISTER message),the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Then again, by means of appropriate MMI functions as defined by the basic public MMI described in 3GPP TS 02.30, the user requests interrogation of CW for all basic service groups.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject(invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate an interrogation of CW (all)
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	CC state U10
8	MS		The MS is made to initiate an interrogation of CW for (all)
9	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
10	SS -> MS	CM SERVICE ACCEPT	
11	MS -> SS	REGISTER	
12	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Reject
13	MS		provide correct MMI user indication
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	CC state U10

Specific message content

step 4, 11 - CW

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = CW.

Basic service code:no Bearer Service present, no teleservice present.

step 5 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

step 12 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.3.2 Call Hold

31.3.2.1 Hold invocation

Conformance requirement

3GPP TS 04.83 subclause 2.1.2.

Test purpose

To test the correct operation of the Hold procedure, and the MS reaction to the following messages sent in response to the HOLD message.

1. HOLD REJECT.

2. HOLD ACKNOWLEDGE.

Method of test

Specific PICS Statements

    -

PIXIT Statements

- Method of placing a call on hold.

Initial conditions

    System Simulator:

        1 cell, default parameters.

    Mobile Station:

        The MS shall have a call of a basic service supported by the MS and applicable to Call Hold as described in 3GPP TS 02.04 table A.1 in state U10 "Active"

Foreseen final state of the MS

State U10, Auxiliary state "Call Held".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall request that the call is placed on hold. The MS shall send a HOLD message and enter auxiliary state "hold request". On receipt of a HOLD REJECT message from the SS shall return to state U10 "Active". The call state shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of the call, and receiving a STATUS message indicating the appropriate call state and auxiliary state.

Using suitable MMI commands, the MS shall again request that the call is placed on hold. The MS shall send a HOLD message and enter auxiliary state "hold request". On receipt of a HOLD ACKNOWLEDGE message from the SS shall enter to state U10 "Active " with auxiliary state "Call held". The call state shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of call, and receiving a STATUS message indicating the appropriate call state and auxiliary state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, the MS places the call on hold
2	MS -> SS	HOLD	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	State U10, auxiliary state "Hold request"
5	SS -> MS	HOLD REJECT	
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	State U10, no auxiliary state
8	SS		Check that the TCH is through-connected
9	MS		Using MMI commands, the MS places the call on hold
10	MS -> SS	HOLD	
11	SS -> MS	STATUS ENQUIRY	
12	MS -> SS	STATUS	State U10, auxiliary state "Hold request"
13	SS -> MS	HOLD ACKNOWLEDGE	
14	SS -> MS	STATUS ENQUIRY	
15	MS -> SS	STATUS	State U10, auxiliary state "Call held"

31.3.2.2 Retrieve procedure

Conformance requirement

3GPP TS 04.83 subclause 2.1.3.

Applicability

MS supporting the Call Hold supplementary service.

Test purpose

To test the correct operation of the retrieve procedure, and the MS reaction to the following messages sent in response to the RETRIEVE message.

1) RETRIEVE REJECT.

2) RETRIEVE ACKNOWLEDGE.

Initial conditions

The MS shall have a call of a basic service supported by the MS and applicable to Call Hold as described in 3GPP TS 02.04 table A.1 in state U10 "Active" with auxiliary state "Call held".

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of retrieving a held call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a call of a basic service supported by the MS and applicable to Call Hold as described in 3GPP TS 02.04 table A.1 in state U10 "Active" with auxiliary state "Call held".

Foreseen final state of the MS

State U10, no auxiliary state.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall request that the call is placed on RETRIEVE. The MS shall send a RETRIEVE message and enter auxiliary state "retrieve request". On receipt of a RETRIEVE REJECT message from the SS, the MS shall return to state U10 "Active" with auxiliary state "Call held". The call state shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of call, and receiving a STATUS message indicating the appropriate call state and auxiliary state.

Using suitable MMI commands, the MS shall again request that the call is placed on RETRIEVE. The MS shall send a RETRIEVE message and enter auxiliary state "retrieve request". On receipt of a RETRIEVE ACKNOWLEDGE message from the SS, the MS shall enter state U10 "Active".The call state shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of call, and receiving a STATUS message indicating the appropriate call state and auxiliary state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, the MS retrieves the held call
2	MS -> SS	RETRIEVE	
3	SS -> MS	STATUS ENQUIRY	
4	MS -> SS	STATUS	State U10, auxiliary state "Retrieve request"
5	SS -> MS	RETRIEVE REJECT	
6	SS -> MS	STATUS ENQUIRY	
7	MS -> SS	STATUS	State U10, auxiliary state "Call held"
8	MS		Using MMI commands, the MS retrieves the held call
9	MS -> SS	RETRIEVE	
10	SS -> MS	STATUS ENQUIRY	
11	MS -> SS	STATUS	State U10, auxiliary state "Retrieve request"
12	SS -> MS	RETRIEVE ACKNOWLEDGE	
13	SS -> MS	STATUS ENQUIRY	
14	MS -> SS	STATUS	State U10, no auxiliary state
15	SS		Check that the TCH is through-connected

31.3.2.3 Alternate from one call to the other

Conformance requirement

3GPP TS 04.83 subclause 2.1.4.

Test purpose

To test that the MS correctly alternates between one call and the other, by placing the active call on hold, and retrieving the previously held call.

To test that the MS correctly returns to the original call states in the event of receipt of a HOLD REJECT or RETRIEVE REJECT.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of alternating between an active call and a held call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active", and Call C-B in state U10 "Active" with auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and applicable to Call Hold as described in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B: State U10, Auxiliary State "Call Held".

Call C-B: State U10, No Auxiliary State.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall alternate between Call A-B and Call C-B. The MS shall send a HOLD message with the transaction identifier for Call A-B and enter auxiliary state "hold request", and send a RETRIEVE message with the transaction identifier for Call C-B and enter auxiliary state "retrieve request". On receipt of a HOLD ACKNOWLEDGE and RETRIEVE ACKNOWLEDGE message, the MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held", and Call C-B in state U10 "Active". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state and auxiliary state.

Using suitable MMI commands, the MS shall alternate between Call A-B and Call C-B. The MS shall send a HOLD message with the transaction identifier for Call C-B and enter auxiliary state "hold request", and send a RETRIEVE message with the transaction identifier for Call A-B and enter auxiliary state "retrieve request". On receipt of a HOLD REJECT and RETRIEVE REJECT message, the MS shall have Call A-B remain in state U10 "Active" with auxiliary state "Call held", and Call C-B in state U10 "Active". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state and auxiliary state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, the MS changes from call A-B to call C-B
2	MS -> SS	HOLD	Transaction identifier for call A-B
3	MS -> SS	RETRIEVE	Transaction identifier for call C-B
4	SS -> MS	STATUS ENQUIRY	Transaction identifier for call A-B
5	MS -> SS	STATUS	Transaction identifier for call A-B, State U10, auxiliary state "Hold request"
6	SS -> MS	STATUS ENQUIRY	Transaction identifier for call C-B
7	MS -> SS	STATUS	Transaction identifier for call C-B, State U10, auxiliary state "Retrieve request"
8	SS -> MS	HOLD ACKNOWLEDGE	Transaction identifier for call A-B
9	SS -> MS	RETRIEVE ACKNOWLEDGE	Transaction identifier for call C-B
10	SS -> MS	STATUS ENQUIRY	Transaction identifier for call A-B
11	MS -> SS	STATUS	Transaction identifier for call A-B, state U10, auxiliary state "Call Held"
12	SS -> MS	STATUS ENQUIRY	Transaction identifier for call C-B
13	MS -> SS	STATUS	Transaction identifier for call C-B, state U10, no auxiliary state
14	SS		Check that the TCH is through-connected
15	MS		Using MMI commands, the MS changes from call C-B to call A-B
16	MS -> SS	HOLD	Transaction identifier for call C-B
17	MS -> SS	RETRIEVE	Transaction identifier for call A-B
18	SS -> MS	STATUS ENQUIRY	Transaction identifier for call C-B
19	MS -> SS	STATUS	Transaction identifier for call C-B, State U10, auxiliary state "Hold request"
20	SS -> MS	STATUS ENQUIRY	Transaction identifier for call A-B
21	MS -> SS	STATUS	Transaction identifier for call A-B, State U10, auxiliary state "Retrieve request"
22	SS -> MS	HOLD REJECT	Transaction identifier for call C-B
23	SS -> MS	RETRIEVE REJECT	Transaction identifier for call A-B
24	SS -> MS	STATUS ENQUIRY	Transaction identifier for call C-B
25	MS -> SS	STATUS	Transaction identifier for call C-B, state U10, no auxiliary state
26	SS -> MS	STATUS ENQUIRY	Transaction identifier for call A-B
27	MS -> SS	STATUS	Transaction identifier for call A-B, state U10, auxiliary state "Call Held"
28	SS		Check that the TCH is through-connected

31.4 Multi-party supplementary services

NOTE: In this subclause, subscriber A is the MS under test, and subscribers B to G are distant parties in the calls used in the tests.

31.4.1 Beginning the MultiParty service

31.4.1.1 Beginning the MultiParty service, successful case

Conformance requirement

3GPP TS 04.84 subclause 1.1.

Test purpose

To test that the MS correctly starts the MultiParty service when it has an active call and a held call, and reacts correctly to a response from the SS indicating success.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of joining two calls into a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" and Call A-C in state U10 "Active" with Auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall join the two calls in a MultiParty call. The MS shall send a FACILITY message containing an invoke component set to BuildMPTY, and with the transaction identifier for either Call A-B or Call A-C. Both calls shall enter auxiliary state "MPTY request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message including a Return Result component, the MS shall enter the state U10 "Active" with auxiliary state "Call in MPTY". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, join the two calls
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, BuildMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "MPTY request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "MPTY request, call held"
7	SS -> MS	FACILITY	Same TI as step 2, Return Result component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
12	SS		Check that the TCH is through-connected

31.4.1.2 Beginning the MultiParty service, unsuccessful case

Conformance requirement

3GPP TS 04.84 subclause 1.1.

Test purpose

To test that the MS correctly starts the MultiParty service when it has an active call and a held call, and reacts correctly to the following responses from the SS.

1) Return error.

2) Reject.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of joining two calls into a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

- The MS shall have Call A-B in state U10 "Active" and Call A-C in state U10 "Active" with Auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U10, no auxiliary state. Call A-C, state U10, auxiliary state "Call Held".

Maximum duration of test

45 s.

Procedure

Using suitable MMI commands, the MS shall initiate a MultiParty call. The MS shall send a FACILITY message containing an invoke component set to BuildMPTY, and with the transaction identifier for either Call A-B or Call A-C. Both calls shall enter auxiliary state "MPTY request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message including a Return Error component, the MS shall return both calls to their original call states. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Using suitable MMI commands, the MS shall initiate a MultiParty call. The MS shall send a FACILITY message containing an invoke component set to BuildMPTY, and with the transaction identifier for boeither Call A-B or Call A-C. Both calls shall enter auxiliary state "MPTY request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message including a Reject component, the MS shall return both calls to their original call states. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, set up a MultiParty call
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, BuildMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "MPTY request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "MPTY request, call held"
7	SS -> MS	FACILITY	Same TI as step 2, Return Error component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, no auxiliary state
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call Held"
12	MS		Using MMI commands, set up a MultiParty call
13	MS -> SS	FACILITY	TI for Call A-B or Call A-C, BuildMPTY Invoke component
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
15	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "MPTY request"
16	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
17	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "MPTY request, call held"
18	SS -> MS	FACILITY	Same TI as step 13, Reject component
19	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
20	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, no auxiliary state
21	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
22	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call Held"

31.4.1.3   Beginning the MultiParty service, expiry of timer T(BuildMPTY)

Conformance requirement

3GPP TS 04.84 subclause 1.1.

Test purpose

To test that the MS correctly starts the MultiParty service when it has an active call and a held call, and on expiry of timer T(BuildMPTY) returns both calls to their original states.

Method of test

Specific PICS Statements

-

PIXIT Statements

-    Method of joining two calls into a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" and Call A-C in state U10 "Active" with Auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Branch A - Call A-B, state U10, no auxiliary state. Call A-C, state U10, auxiliary state "Call Held".

Branch B - Call A-B, state U10, auxiliary state "MPTY Request". Call A-C, state U10, auxiliary state "MPTY Request".

Maximum duration of test

45 s.

Procedure

Using suitable MMI commands, the MS shall initiate a MultiParty call. The MS shall send a FACILITY message containing an invoke component set to BuildMPTY, and with the transaction identifier for either Call A-B or Call A-C. Both calls shall enter auxiliary state "MPTY request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Not less than 5s and not more than 30s after sending the FACILITY message, one of the following shall have occurred:

- both calls shall be in their original call states and the MS shall have indicated the failure to the user; or

- the MS shall have sent another FACILITY message with the same contents.

The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, set up a MultiParty call
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, BuildMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "MPTY request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "MPTY request, call held"
7	SS		Wait 30 s from receiving FACILITY message
A8	SS -> MS	STATUS ENQUIRY	Take this branch if no message is received within 30 s Transaction identifier of Call A-B
A9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, no auxiliary state
A10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
A11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call Held"
B8	MS -> SS	FACILITY	Take this branch if a message is received within 30 s Same as Step 2. Message shall not be received less than 5 s after the first FACILITY message
B9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
B10	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "MPTY request"
B11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
B12	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "MPTY request, call held"

31.4.2 Managing an active MultiParty call

31.4.2.1 Served mobile subscriber

31.4.2.1.1 Put the MultiParty call on hold

31.4.2.1.1.1 Put the MultiParty call on hold, successful case

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.1.

Test purpose

To test that the MS correctly places an active MultiParty call on hold, and reacts correctly to a response from the SS indicating success.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of placing a MultiParty call on hold.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY, call held". Call A-C, state U10, auxiliary state "Call in MPTY, call held".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall place the MultiParty call on hold. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component HoldMPTY. Both calls shall enter the auxiliary state "Call in MPTY, hold request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message with the same transaction identifier and containing a return result component, the MS shall enter the state U10 "Active" with auxiliary state "Call in MPTY, call held" for both transaction identifiers. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, put the MultiParty call on hold
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, HoldMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, hold request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, hold request"
7	SS -> MS	FACILITY	Same TI as step 2, Return Result component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"

31.4.2.1.1.2   Put the MultiParty call on hold, unsuccessful case

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.1.

Test purpose

To test that the MS correctly places an active MultiParty call on hold, and reacts correctly to a response from the SS indicating an error or a reject condition.

Method of test

Specific PICS Statements

-

PIXIT Statements

-    Method of placing a MultiParty call on hold.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY".

Maximum duration of test

45 s.

Procedure

Using suitable MMI commands, the MS shall place the MultiParty call on hold. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component HoldMPTY. Both calls shall enter the auxiliary state "Call in MPTY, hold request". The call states shall be verified by the SS sending a

STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message with the same transaction identifier and containing a return error component, the MS shall return to the original states for both transaction identifiers. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Using suitable MMI commands, the MS shall place the MultiParty call on hold. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component HoldMPTY. Both calls shall enter the auxiliary state "Call in MPTY, hold request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message with the same transaction identifier and containing a Reject component, the MS shall return to the original states for both transaction identifiers. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, put the MultiParty call on hold
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, HoldMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, hold request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, hold request"
7	SS -> MS	FACILITY	Same TI as step 2, Return Error component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
12	MS		Using MMI commands, place the MultiParty call on hold
13	MS -> SS	FACILITY	TI for Call A-B or Call A-C, HoldMPTY Invoke component
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
15	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, hold request"
16	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
17	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, hold request"
18	SS -> MS	FACILITY	Same TI as step 13, Reject component
19	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
20	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
21	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
22	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"

31.4.2.1.1.3   Put the MultiParty call on hold, expiry of timer T(HoldMPTY)

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.1.

Test purpose

To test that the MS correctly places an active MultiParty call on hold, and on expiry of T(HoldMPTY) returns the MultiParty call to the auxiliary state "Call in MPTY".

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of placing a MultiParty call on hold.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Branch A, Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY".

Branch B, Call A-B, state U10, auxiliary state "Call in MPTY, hold request". Call A-C, state U10, auxiliary state "Call in MPTY, hold request".

Maximum duration of test

45 s.

Procedure

Using suitable MMI commands, the MS shall place the MultiParty call on hold. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component HoldMPTY. Both calls shall enter the auxiliary state "Call in MPTY, hold request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Not less than 5s and not more than 30s after sending the FACILITY message, one of the following shall have occurred:

- both calls shall be in their original call states and the MS shall have indicated the failure to the user; or

- the MS shall have sent another FACILITY message with the same contents.

The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, put the MultiParty call on hold
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, HoldMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, hold request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, hold request"
7	SS		Wait 30 s from receiving FACILITY message
A8	SS -> MS	STATUS ENQUIRY	Take this branch if no message is received within 30 s Transaction identifier of Call A-B
A9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
A10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
A11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
B8	MS -> SS	FACILITY	Take this branch if a message is received within 30 s Same as Step 2. Message shall not be received less than 5 s after the first FACILITY message
B9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
B10	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, hold request"
B11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
B12	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, hold request"

31.4.2.1.2 Create a private communication with one of the remote parties

31.4.2.1.2.1 Create a private communication with one of the remote parties, successful case

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.2.

Test purpose

To test that the MS correctly splits an active MultiParty call, and reacts correctly to a response from the SS indicating success.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of creating a private communication with one party of a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U10, no auxiliary state. Call A-C, state U10, auxiliary state "Call Held".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall request a private communication with Call A-B. The MS shall send a FACILITY message containing the transaction identifier for Call A-B and an invoke component SplitMPTY. Call A-B shall enter the auxiliary state "split request" and call A-C shall remain in state "Call in MPTY". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message containing the same transaction identifier and a return result component, Call A-B shall enter the state U10 "Active", and Call A-C shall enter the state U10 "Active" with auxiliary state "Call held". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, request a private communication with Call A-B
2	MS -> SS	FACILITY	TI for Call A-B, SplitMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Split request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
7	SS -> MS	FACILITY	Return Result component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, no auxiliary state
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call held"
12	SS		Check that the TCH is through-connected

31.4.2.1.2.2   Create a private communication with one of the remote parties, unsuccessful case

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.2.

Test purpose

To test that the MS correctly splits an active MultiParty call, and reacts correctly to a response from the SS indicating an error or reject condition.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of creating a private communication with one party of a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall request a private communication with Call A-B. The MS shall send a FACILITY message containing the transaction identifier for Call A-B and an invoke component SplitMPTY. Call A-B shall enter the auxiliary state "Split request" and call A-C shall remain in state "Call in MPTY". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message containing the same transaction identifier and a return error component, both calls shall return to their initial states. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Using suitable MMI commands, the MS shall request a private communication with Call A-B. The MS shall send a FACILITY message containing the transaction identifier for Call A-B and an invoke component SplitMPTY. Call A-B shall enter the auxiliary state "Split request" and call A-C shall remain in state "Call in MPTY". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message containing the same transaction identifier and a Reject component, both calls shall return to their initial states. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, create a private communication for Call A-B
2	MS -> SS	FACILITY	TI for Call A-B, SplitMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Split request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
7	SS -> MS	FACILITY	Return Error component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
12	MS		Using MMI commands, create a private communication for Call A-B
13	MS -> SS	FACILITY	TI for Call A-B, SplitMPTY Invoke component
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
15	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Split request"
16	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
17	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
18	SS -> MS	FACILITY	Reject component
19	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
20	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
21	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
22	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"

31.4.2.1.2.3   Create a private communication with one of the remote parties, expiry of timer T(SplitMPTY)

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.2.

Test purpose

To test that the MS correctly splits an active MultiParty call, and on expiry of T(SplitMPTY) returns the call to the auxiliary state "Call in MPTY".

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of creating a private communication with one party of a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Branch A, Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY".

Branch B, Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall request a private communication with Call A-B. The MS shall send a FACILITY message containing the transaction identifier for Call A-B and an invoke component SplitMPTY. Call A-B shall enter the auxiliary state "Split request" and call A-C shall remain in state "Call in MPTY". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

After not less than 5s and not more than 30s, the MS shall either:

- return both calls to their original states; or

- send another FACILITY message with the same contents.

The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, request a private communication with Call A-B
2	MS -> SS	FACILITY	TI for Call A-B, SplitMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Split request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
7	SS		Wait 30 s from receiving FACILITY message
			Take this branch if no message is received within 30 s
A8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
A9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
A10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
A11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
			Take this branch if a message is received within 30 s
B8	MS -> SS	FACILITY	Same as Step 2. Message shall not be received less than 5 s after the first FACILITY message
B9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
B10	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Split request"
B11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
B12	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"

31.4.2.1.3 Terminate the entire MultiParty call

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.3.

Test purpose

To test that the MS correctly terminates an entire MultiParty call by implementing the call clearance procedure for each call in turn.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of terminating a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall initiate a clearance of the entire MultiParty call. The MS shall send a DISCONNECT message in respect of each of the transaction identifiers of the call. On receipt of a RELEASE message in respect of each transaction identifier, the MS shall respond with a RELEASE COMPLETE message, and enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value".

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, terminate the entire MultiParty call
2	MS -> SS	DISCONNECT	Steps 2 and 3 may occur in any order Transaction identifier of Call A-B
3	MS -> SS	DISCONNECT	Transaction identifier of Call A-C
4	SS -> MS	RELEASE	Transaction identifier of Call A-B
5	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
6	SS -> MS	RELEASE	Transaction identifier of Call A-C
7	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"

31.4.2.1.4 Explicitly disconnect a remote party

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.4.

Test purpose

To test that the MS correctly disconnects a single remote party by implementing the call clearance procedure for that party.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of disconnecting one party of a MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U10, with auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall initiate a clearance of the Call A-B. The MS shall send a DISCONNECT message containing the transaction identifier of Call A-B. On receipt of a RELEASE message the MS shall respond with a RELEASE COMPLETE message, and enter state U0 "Null" for Call A-B. Call A-C shall enter state U10 "Active" with, auxiliary state "Call in MPTY". The call states shall be verified by the SS sending a STATUS

ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating state U10, with auxiliary state "Call in MPTY" for Call A-C, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call A-B.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, clear call A-B
2	MS -> SS	DISCONNECT	Transaction identifier of Call A-B
3	SS -> MS	RELEASE	Transaction identifier of Call A-B
4	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
6	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
8	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, with auxilliary state "Call in MPTY"

31.4.2.2   Remote parties

31.4.2.2.1   Release from the MultiParty call

Conformance requirement

3GPP TS 04.84 subclause 1.2.1.4.

Test purpose

To test that the MS responds correctly to a call clearance from one of the remote parties.

Method of test

Specific PICS Statements

   -

PIXIT Statements

   -

Initial conditions

   System Simulator:

       1 cell, default parameters.

   Mobile Station:

       The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

   NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U10, with auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

On receipt of a DISCONNECT message containing the transaction identifier of Call A-B, the MS shall send a RELEASE message. On receipt of a RELEASE COMPLETE message the MS shall enter state U0 "Null" for Call A-B. Call A-C shall enter state U10 "Active", with auxiliary state "Call in MPTY". The call states shall be verified by the SS

sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating state U10, with auxiliary state "Call in MPTY" for Call A-C, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call A-B.

Expected sequence

Step	Direction	Message	Comments
1	SS -> MS	DISCONNECT	Transaction identifier of Call A-B
2	MS -> SS	RELEASE	Transaction identifier of Call A-B
3	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-B
4	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
5	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
6	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
7	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, with auxiliary state "Call in MPTY"

31.4.3　Managing a held MultiParty call

31.4.3.1　Retrieve the held MultiParty call

31.4.3.1.1　Retrieve the held MultiParty call, successful case

Conformance requirement

3GPP TS 04.84 subclause 1.3.1.1.

Test purpose

To test that the MS correctly retrieves a held MultiParty call, and reacts correctly to a response from the SS indicating success.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of retrieving a held MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a held MultiParty call to two destinations (Call A-B and Call A-C). Both call states shall be U10 "Active" with auxiliary state "Call in MPTY, call held". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE:　The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall retrieve the MultiParty call. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component RetrieveMPTY. Both calls shall enter the auxiliary state "Call in MPTY, retrieve request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message with the same transaction identifier and containing a return result component, the MS shall enter the state U10 "Active" with auxiliary state "Call in MPTY" for both transaction identifiers. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, retrieve the MultiParty call
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, RetrieveMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, Retrieve request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, Retrieve request"
7	SS -> MS	FACILITY	Same TI as step 2, Return Result component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
12	SS		Check that the TCH is through-connected

31.4.3.1.2 Retrieve the held MultiParty call, unsuccessful case

Conformance requirement

3GPP TS 04.84 subclause 1.3.1.1.

Test purpose

To test that the MS correctly retrieves a held MultiParty call, and reacts correctly to a response from the SS indicating an error or a reject condition.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of retrieving a held MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a held MultiParty call to two destinations (Call A-B and Call A-C). Both call states shall be U10 "Active" with auxiliary state "Call in MPTY, call held". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY, call held". Call A-C, state U10, auxiliary state "Call in MPTY, call held".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall retrieve the MultiParty call. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component RetrieveMPTY. Both calls shall enter the auxiliary state "Call in MPTY, retrieve request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message with the same transaction identifier and containing a return error component, the MS shall return to the original states for both transaction identifiers. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Using suitable MMI commands, the MS shall retrieve the MultiParty call. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component RetrieveMPTY. Both calls shall enter the auxiliary state "Call in MPTY, retrieve request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message with the same transaction identifier and containing a reject component, the MS shall return to the original states for both transaction identifiers. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, retrieve the held MultiParty call
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, RetrieveMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, retrieve request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, retrieve request"
7	SS -> MS	FACILITY	Same TI as step 2, Return Error component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"
12	MS		Using MMI commands, retrieve the held MultiParty call
13	MS -> SS	FACILITY	TI for Call A-B or Call A-C, RetrieveMPTY Invoke component
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
15	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, retrieve request"
16	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
17	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, retrieve request"
18	SS -> MS	FACILITY	Same TI as step 13, Reject component
19	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
20	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
21	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
22	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"

31.4.3.1.3 Retrieve the held MultiParty call, expiry of timer T(RetrieveMPTY)

Conformance requirement

3GPP TS 04.84 subclause 1.3.1.1.

Test purpose

To test that the MS correctly retrieves a MultiParty call on hold, and on expiry of T(RetrieveMPTY) returns the MultiParty call to the auxiliary state "Call in MPTY, call held".

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of retrieving a held MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a held MultiParty call to two destinations (Call A-B and Call A-C). Both call states shall be U10 "Active" with auxiliary state "Call in MPTY, call held". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.1.

Foreseen final state of the MS

Branch A, Call A-B, state U10, auxiliary state "Call in MPTY, call held". Call A-C, state U10, auxiliary state "Call in MPTY, call held".

Branch B, Call A-B, state U10, auxiliary state "Call in MPTY, retrieve request". Call A-C, state U10, auxiliary state "Call in MPTY, retrieve request".

Maximum duration of test

45 s.

Procedure

Using suitable MMI commands, the MS shall retrieve the MultiParty call. The MS shall send a FACILITY message containing one of the transaction identifiers of the call, and containing an invoke component RetrieveMPTY. Both calls shall enter the auxiliary state "Call in MPTY, retrieve request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Not less than 5s and not more than 30s after sending the FACILITY message, one of the following shall have occurred:

- both calls shall be in their original call states and the MS shall have indicated the failure to the user; or

- the MS shall have sent another FACILITY message with the same contents.

The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, retrieve the held MultiParty call
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, RetrieveMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, retrieve request"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, retrieve request"
7	SS		Wait 30 s from receiving FACILITY message
A8	SS -> MS	STATUS ENQUIRY	Take this branch if no message is received within 30 s Transaction identifier of Call A-B
A9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
A10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
A11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"
B8	MS -> SS	FACILITY	Take this branch if a message is received within 30 s Same as Step 2. Message shall not be received less than 5 s after the first FACILITY message
B9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
B10	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, retrieve request"
B11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
B12	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, retrieve request"

31.4.3.2   Initiate a new call

Conformance requirement

3GPP TS 04.84 subclause 1.3.1.2.

Test purpose

To test that the MS can set up a new outgoing call with a held MultiParty call.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of making a new outgoing call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a held MultiParty call to two destinations (Call A-B and Call A-C). Both call states shall be U10 "Active" with auxiliary state "Call in MPTY, call held". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY, call held". Call A-C, state U10, auxiliary state "Call in MPTY, call held". Call A-D State U10.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall initiate a new outgoing call A-D. The MS shall send a SETUP message with a new transaction identifier and enter state U1 "Call initiated". On receipt of an ALERTING message followed by a CONNECT message, the MS shall send a CONNECT ACKNOWLEDGE message and enter state U10 "Active". The call state of the MultiParty call shall not be affected. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, make a new call
2	MS -> SS	CM SERVICE REQUEST	
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	SETUP	TI different from Call A-B or Call A-C (new Call A-D)
5	SS -> MS	ALERTING	Transaction identifier of Call A-D
6	SS -> MS	CONNECT	Transaction identifier of Call A-D
7	MS -> SS	CONNECT ACKNOWLEDGE	Transaction identifier of Call A-D
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"
12	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
13	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, no auxiliary state.

31.4.3.3 Process a call waiting request

Conformance requirement

3GPP TS 04.84 subclause 1.3.1.3.

Test purpose

To test that the MS can correctly process a Call Waiting request with a held MultiParty call.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of answering a waiting call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both calls states shall be U10 "Active" with auxiliary state "Call in MPTY". The MS shall also have a Call A-D in state U7 "Call received". The Multiparty call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY, call held". Call A-C, state U10, auxiliary state "Call in MPTY, call held". Call A-D State U10.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall place the MultiParty on hold, and answer Call A-D.

The MS shall send a FACILITY message to the SS using any one of the transaction identifiers of the MultiParty call and containing an invoke component HoldMPTY, and shall enter state U10 "Active", with auxiliary state "call in MPTY, hold request" in respect of each of the transaction identifiers.

On receipt of a FACILITY message using the same transaction identifier and containing a return result component, the MS shall enter state U10 "Active" with auxiliary state "Call in MPTY, call held" for each of the transaction identifiers.

The MS shall then send a CONNECT message to the SS, using the transaction identifier of Call A-D, and on receipt of a CONNECT ACKNOWLEDGE message, shall enter state U10 "Active". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, place the multiparty call on hold and answer the waiting call
2	MS -> SS	FACILITY	Transaction identifier of Call A-B or A-C, HoldMPTY invoke component
3	SS -> MS	FACILITY	Same transaction identifier as step 2
4	MS -> SS	CONNECT	Transaction identifier of Call A-D
5	SS -> MS	CONNECT ACKNOWLEDGE	Transaction identifier of Call A-D
6	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
7	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
9	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
11	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, no auxiliary state.

31.4.3.4   Terminate the held MultiParty call

Conformance requirement

3GPP TS 04.84 subclause 1.3.1.4.

Test purpose

To test that the MS correctly terminates a held MultiParty call by initiating call clearance for each party in turn.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of terminating a held MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a held MultiParty call to two destinations (Call A-B and Call A-C). Both call states shall be U10 "Active" with auxiliary state "Call in MPTY, call held". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall initiate a clearance of the entire held MultiParty call. The MS shall send a DISCONNECT message in respect of each of the transaction identifiers of the call. On receipt of a RELEASE message in respect of each transaction identifier, the MS shall respond with a RELEASE COMPLETE message, and enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for each call.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, terminate the entire MultiParty call
2	MS -> SS	DISCONNECT	Steps 2 and 3 may occur in any order Transaction identifier of Call A-B
3	MS -> SS	DISCONNECT	Transaction identifier of Call A-C
4	SS -> MS	RELEASE	Transaction identifier of Call A-B
5	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
6	SS -> MS	RELEASE	Transaction identifier of Call A-C
7	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"

31.4.4   Managing a single call and a MultiParty call

31.4.4.1   Served mobile subscriber

31.4.4.1.1   Disconnect the single call

31.4.4.1.1.1   Disconnect active single call

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.1.

Test purpose

To test that the MS correctly clears the single call when the single call is active and the MultiParty call is held.

Initial conditions

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY, call held". The MS shall have in addition a single call (A-D) in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.2.

Method of test

Specific PICS Statements

    -

PIXIT Statements

- Method of clearing the single call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY, call held". The MS shall have in addition a single call (A-D) in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.2.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY, call held". Call A-C, state U10, auxiliary state "Call in MPTY, call held". Call A-D State U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall clear Call A-D. The MS shall send a DISCONNECT message with the transaction identifier for Call A-D. On receipt of a RELEASE message the SM shall send a RELEASE COMPLETE message and enter state U0 "Null" for Call A-D.

Within 5 s of sending the RELEASE COMPLETE message, the MS may send a FACILITY message to retrieve the Held Call. The SS must reject this request. The call state and auxiliary state for Call A-B and Call A-C shall not change. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state for Calls A-B and A-C, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call A-D.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, clear call A-D
2	MS -> SS	DISCONNECT	Transaction identifier of Call A-D
3	SS -> MS	RELEASE	Transaction identifier of Call A-D
4	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-D
5	SS		Wait 5 s from receiving a RELEASE COMPLETE
A1	SS -> MS	STATUS ENQUIRY	Take this branch if no message is received within 5s
			Transaction identifier of Call A-B
A2	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
A3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
A4	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"
A5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
A6	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-D, with cause #81 "invalid transaction identifier value"
B1	MS -> SS	FACILITY	Take this branch if a message is received within 5s
			TI for Call A-B, Retrieve MPTY Invoke component
B2	SS -> MS	FACILITY	TI for Call A-B, Reject component
B3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
B4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, call held"
B5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
B6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, call held"
B7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
B8	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-D, with cause #81 "invalid transaction identifier value"

31.4.4.1.1.2   Disconnect held single call

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.1.

Test purpose

To test that the MS correctly clears the single call when the single call is held and the MultiParty call is active.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of clearing the held single call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY". The MS shall have in addition a single call (A-D) in state U10 "Active" with auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY". Call A-D State U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall clear Call A-D. The MS shall send a DISCONNECT message with the transaction identifier for Call A-D. On receipt of a RELEASE message the MS shall send a RELEASE COMPLETE message and enter state U0 "Null" for Call A-D. The call state and auxiliary state for Call A-B and Call A-C shall not change. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state for Calls A-B and A-C, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Call A-D.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, clear call A-D
2	MS -> SS	DISCONNECT	Transaction identifier of Call A-D
3	SS -> MS	RELEASE	Transaction identifier of Call A-D
4	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-D
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
6	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
8	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
10	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-D, with cause #81 "invalid transaction identifier value"

31.4.4.1.2   Disconnect the MultiParty call

31.4.4.1.2.1   Void

31.4.4.1.2.2   Void

31.4.4.1.2.3   Clear all parties of held MultiParty call

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.2.

Test purpose

To test that the MS correctly clears the MultiParty call by clearing all remote parties to a held MultiParty call.

Initial conditions

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY, Call held". The MS shall have in addition a single call (A-D) in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

  NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.2.1.1.2.

Method of test

Specific PICS Statements

  -

PIXIT Statements

- Method of clearing a held MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY, Call held". The MS shall have in addition a single call (A-D) in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0. Call A-D State U10, no auxiliary state.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall clear the MultiParty call. The MS shall send DISCONNECT messages with the transaction identifier for Call A-B and A-C. On receipt of a RELEASE message to each DISCONNECT the MS shall send a RELEASE COMPLETE message and enter state U0 "Null. Call A-B and Call A-C shall enter state U0 "Null". The call state and auxiliary state for Call A-D shall not change. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state for Call A-D, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Calls A-B and A-C.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, terminate the entire MultiParty call
			Steps 2 and and 3 may occur in any order
2	MS -> SS	DISCONNECT	Transaction identifier of Call A-B
3	MS -> SS	DISCONNECT	Transaction identifier of Call A-C
4	SS -> MS	RELEASE	Transaction identifier of Call A-B
5	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
6	SS -> MS	RELEASE	Transaction identifier of Call A-C
7	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"
12	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
13	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10

31.4.4.1.2.4   Clear all parties of active MultiParty call

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.2.

Test purpose

To test that the MS correctly clears the MultiParty call by clearing all remote parties to an active MultiParty call.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of clearing an active MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY". The MS shall have in addition a single call (A-D) in state U10 "Active" with auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0. Call A-D State U10, auxiliary state "Call Held".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall clear the MultiParty call. The MS shall send DISCONNECT messages with the transaction identifier for Call A-B and A-C. On receipt of a RELEASE message to each DISCONNECT the MS shall send a RELEASE COMPLETE message and enter state U0 "Null. Call A-B and Call A-C shall enter state U0 "Null". Within 5 s of sending the RELEASE COMPLETE message, the MS may send a RETRIEVE message to retrieve the Held Call. The SS shall reject this request. The call state and auxiliary state for Call A-D shall not change. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state. for Call A-D, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for Calls A-B and A-C.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, terminate the entire MultiParty call
2	MS -> SS	DISCONNECT	Steps 2 and and 3 may occur in any order Transaction identifier of Call A-B
3	MS -> SS	DISCONNECT	Transaction identifier of Call A-C
4	SS -> MS	RELEASE	Transaction identifier of Call A-B
5	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
6	SS -> MS	RELEASE	Transaction identifier of Call A-C
7	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C
8	SS		Wait 5 s from receiving a RELEASE COMPLETE
A9	SS -> MS	STATUS ENQUIRY	Take this branch if no message is received within 5s Transaction identifier of Call A-B
A10	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
A11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
A12	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"
A13	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
A14	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Call Held"
B9	MS -> SS	RETRIEVE	Take this branch if a message is received within 5s Transaction identifier of Call A-D
B10	SS -> MS	RETRIEVE REJECT	
B11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
B12	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
B13	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
B14	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"
B15	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
B16	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Call Held"

31.4.4.2 Disconnect all calls

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.3.

Test purpose

To test the MS correctly clears all active calls, by clearing in turn each connected party.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of clearing all active calls.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY". The MS shall have in addition a single call (A-D) in state U10 "Active" with auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0. Call A-D state U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall clear all calls. The MS shall send DISCONNECT messages with the transaction identifier for Call A-B, Call A-C and Call A-D. On receipt of a RELEASE message to each DISCONNECT the MS shall send a RELEASE COMPLETE message and enter state U0 "Null". Call A-B, Call A-C Call A-D shall enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value" for each call.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, terminate the entire MultiParty call
			The DISCONNECT messages (steps 2a, 3a, and 4a) may occur in any order. SS shall respond to each DISCONNECT independantly as soon as it is received. The step sequences 2a-2c, 3a-3c and 4a-4c may overlap
2a	MS -> SS	DISCONNECT	Transaction identifier of Call A-B
2b	SS -> MS	RELEASE	Transaction identifier of Call A-B
2c	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
3a	MS -> SS	DISCONNECT	Transaction identifier of Call A-C
3b	SS -> MS	RELEASE	Transaction identifier of Call A-C
3c	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C
4a	MS -> SS	DISCONNECT	Transaction identifier of Call A-D
4b	SS -> MS	RELEASE	Transaction identifier of Call A-D
4c	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-D
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
6	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
8	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"
9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
10	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-D, with cause #81 "invalid transaction identifier value"

31.4.4.3 Add the single call to the MPTY

31.4.4.3.1 Add the single call to the MPTY, successful case

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.4.

Test purpose

To test that the MS correctly adds a single held call to an active MultiParty call, and reacts correctly to a response from the SS indicating success.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of adding the single call to the MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY". The MS shall have in addition a single call (A-D) in state U10 "Active" with auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

NOTE: The MultiParty call may be set up using the procedures of subclause 31.4.1.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY". Call A-D state U10, auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall add the single call to the MultiParty call. The MS shall send a FACILITY message containing one of the transaction identifiers A-B, A-C or A-D and containing a BuildMPTY invoke component. Calls A-B and A-C shall remain in state U10 "Active" with auxiliary state "Call in MPTY". Call A-D shall enter state U10 "Active" with auxiliary state "MPTY request, call held". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message containing a return result component, all calls shall enter state U10 "Active" with auxiliary state "Call in MPTY". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, join the single call to the MultiParty call
2	MS -> SS	FACILITY	TI for Call A-B, Call A-C or call A-D, BuildMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
8	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "MPTY request, Call held"
9	SS -> MS	FACILITY	TI same as step 2, Return Result component
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
11	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
12	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
13	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
15	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Call in MPTY"
16	SS		Check that the TCH is through-connected

31.4.4.3.2 Add the single call to the MPTY, maximum number of participants exceeded

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.4.

Test purpose

To test that the MS correctly adds a single held call to an active MultiParty call, and reacts correctly to a response from the SS indicating maximum number of participants exceeded.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of adding the single call to the MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to five destinations (A-B, A-C and A-D) all in state U10 "Active" with auxiliary state "Call in MPTY". The MS shall have in addition a single call (A-E) in state U10 "Active" with auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY". Call A-D state U10, auxiliary state "Call in MPTY", Call A-E state U10, auxiliary state "Call Held".

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall add the single call to the MultiParty call. The MS shall send a FACILITY message containing any one of the transaction identifiers and containing a BuildMPTY invoke component. Calls A-B to A-D shall remain in state U10 "Active" with auxiliary state "Call in MPTY". Call A-E shall enter state U10 "Active" with auxiliary state "MPTY request, call held". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message containing a return error component "MaxNumberOfMPTY-ParticipantsExceeded", then all calls shall return to their original states. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, join the single call to the MultiParty call
2	MS -> SS	FACILITY	TI for Call A-B, Call A-C, Call A-D or Call A-E, BuildMPTY Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state " Call in MPTY"
7	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
8	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state " Call in MPTY"
9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-E
10	MS -> SS	STATUS	Transaction identifier of Call A-E, state U10, auxiliary state "MPTY request, Call held"
11	SS -> MS	FACILITY	Same TI as step 2, Return error component "MaxNumberOfMPTY-ParticipantsExceeded"
12	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
13	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
15	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
16	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
17	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Call in MPTY"
18	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-E
19	MS -> SS	STATUS	Transaction identifier of Call A-E, state U10, auxiliary state "Call Held"

31.4.4.4   Alternate between the MPTY call and the single call

Conformance requirement

3GPP TS 04.84 subclause 1.4.1.5.

Test purpose

To test that the MS correctly alternates between the single call and the MultiParty call, by proper use of the hold and retrieve procedures.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of alternating between the single call to the MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (A-B and A-C) both in state U10 "Active" with auxiliary state "Call in MPTY". The MS shall have in addition a single call (A-D) in state U10 "Active" with auxiliary state "Call held". Both calls shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY". Call A-D state U10, auxiliary state "Call Held",

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall alternate between the single call and the MultiParty call. The MS shall send a FACILITY message containing one of the transaction identifiers of the MultiParty call, and containing an invoke component HoldMPTY. The MS shall then send a RETRIEVE message with the transaction identifier for Call A-D. Call A-B and Call A-C shall enter the auxiliary state "Call in MPTY, hold request". Call A-D shall enter auxiliary state "retrieve request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

The SS shall send a FACILITY message with a return result component and then send a RETRIEVE ACKNOWLEDGE message. On receipt of these messages, Calls A-B and A-C shall enter auxiliary state "Call in MPTY, call held", and Call A-D shall enter state U10 "Active" with no auxiliary state. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Using suitable MMI commands, the MS shall again alternate between the single call and the MultiParty call. The MS shall send a FACILITY message containing one of the transaction identifiers of the MultiParty call, and containing an invoke component RetrieveMPTY. The MS shall also send a HOLD message with the transaction identifier for Call A-D. Call A-B and Call A-C shall enter the auxiliary state "Call in MPTY, retrieve request". Call A-D shall enter auxiliary state "hold request". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

The SS shall send a FACILITY message with a return result component and shall also send a HOLD ACKNOWLEDGE message. On receipt of these messages, Call A-B and A-C shall enter auxiliary state "Call in MPTY", and Call A-D shall enter state U10 "Active" with auxiliary state "Call held". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, alternate between the active and held calls
2	MS -> SS	FACILITY	TI for Call A-B or call A-C, HoldMPTY Invoke component
3	MS -> SS	RETRIEVE	Transaction identifier of Call A-D
4	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
5	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, Hold request"
6	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
7	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, Hold request
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
9	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Retrieve request"
10	SS -> MS	FACILITY	Same TI as step 2, Return result component
11	SS -> MS	RETRIEVE ACKNOWLEDGE	Transaction identifier of Call A-D
12	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
13	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, Call held"
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
15	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, Call held"
16	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
17	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, no auxiliary state
21	SS		Check that the TCH is through-connected
18	MS		Using MMI commands, alternate between the active and held calls
19	MS -> SS	HOLD	Transaction identifier of Call A-D
20	MS -> SS	FACILITY	TI for Call A-B or call A-C, RetrieveMPTY Invoke component
21	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
22	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY, Retrieve request"
23	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
24	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY, Retrieve request
25	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
26	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Holdrequest"
27	SS -> MS	HOLD ACKNOWLEDGE	Transaction identifier of Call A-D
28	SS -> MS	FACILITY	Same TI as step 20, Return result component
29	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
30	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
31	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
32	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
33	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
34	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Call Held"
35	SS		Check that the TCH is through-connected

31.4.5 Adding extra remote parties

Conformance requirement

3GPP TS 04.84 subclause 1.5.

Test purpose

To test that the MS adds extra remote parties to the MultiParty call.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of alternating between the single call to the MultiParty call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have a MultiParty call to two destinations (Call A-B and Call A-C) active. Both call states shall be U10 "Active" with auxiliary state "Call in MPTY". The call shall be of a basic service supported by the MS and relevant to the MultiParty supplementary service as stated in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call in MPTY". Call A-C, state U10, auxiliary state "Call in MPTY". Call A-D state U10, auxiliary state "Call in MPTY".

Maximum duration of test

30 s.

Procedure

The procedure of test 34.4.2.1.1.1 "Put the MultiParty call on hold, successful case" shall be performed followed by the procedure of 34.4.3.2 "Initiate a new call", followed by the procedure of 31.4.4.3.1 " Add the single call to the MPTY, successful case".

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, put the MultiParty call on Hold
2	MS -> SS	FACILITY	TI for Call A-B or call A-C, HoldMPTY Invoke component
3	SS -> MS	FACILITY	Same TI as step 2, Return Result component
4	MS -> SS	SETUP	TI different from Call A-B or Call A-C (new Call A-D)
5	SS -> MS	ALERTING	Transaction identifier of Call A-D
6	SS -> MS	CONNECT	Transaction identifier of Call A-D
7	MS -> SS	CONNECT ACKNOWLEDGE	Transaction identifier of Call A-D
8	MS -> SS	FACILITY	TI for Call A-B, Call A-C or call A-D, BuildMPTY Invoke component
9	SS -> MS	FACILITY	TI same as step 8, Return Result component
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
11	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call in MPTY"
12	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
13	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, auxiliary state "Call in MPTY"
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-D
15	MS -> SS	STATUS	Transaction identifier of Call A-D, state U10, auxiliary state "Call in MPTY"
16	SS		Check that the TCH is through-connected

31.5   Community of interest supplementary services

(Reserved).

31.6   Charging supplementary services

The following Advice of Charge abbreviations are used in this subclause:

AoC	Advice of Charge
AoCC	Advice of Charge Charging
AoCI	Advice of Charge Information
ACM	Accumulated Charge Meter
ACMmax	Accumulated Charge Meter Maximum
CCM	Current Call Meter
CAI	Charge Advice Information
CDUR	Chargeable Duration

The following other abbreviations are used:

IE	Information Element
FIE	Facility Information Element
TCH	Traffic CHannel

General on Advice of Charge.

The purpose of these tests is to verify that the MS under test correctly performs procedures related to the AoC supplementary service.

The reasons for these test purposes are:

- One example of a possible use for AoCC is in applications where the subscriber hires out a GSM ME and SIM to a user and bills the user according to the charge stored on the SIM at the end of the hire period. If a mobile station claims to support AoCC but does so incorrectly or not at all, this may cause the subscriber to mischarge the user of the hire phone. Hence an MS claiming to support AoCC must be shown to be reliable in that context.

- Since AoCC offers the use of telecommunication services according to the charge stored independently in the MS, the AoCC service must not be susceptible to fraud at the MS end.

- To ensure that a mobile station **not** claiming to support AoCC does not respond with a signal to the network indicating that it does. This could cause the network to allow the call to be placed without any charge being inserted on to the SIM.

Mobile originating and terminating speech AoC calls are tested and if supported, Call Hold and Multi-party calls. The type testing of data calls (i.e. those calls with a volume related charging component) will not be specified at the phase 2 stage but will be deferred to phase 2+ since the interaction of AoC with packet services is not yet defined in 3GPP TS 09.06 and 3GPP TS 09.07.

Tests are made on the ME-SIM interface to ensure that call charges are being correctly stored in the ACM field of the SIM in several situations. The AoC ACMmax function is also tested for incoming and outgoing calls.

Basic service verification tests for the AoCC, Call Hold, and Multi-party supplementary services which have direct relevance to the testing of AoC have been added to 3GPP TS 11.10, subclauses 11.3, 11.4 and 11.5 respectively.

31.6.1   Advice of Charge Charging

31.6.1.1   AoCC time related charging / MS originated call

Purpose:

1) To verify that when the MS receives the AoCC parameters in a Facility IE which is contained in the CONNECT message and when a TCH has already been assigned, the MS returns a FACILITY message containing the acknowledgement within 1 s.

2) To verify that when the MS receives the AoCC parameters in a Facility IE which is contained in a CONNECT message and when a TCH has already been assigned, the MS stores the correct value in the ACM field of the SIM.

3) To verify that the when the call has no volume related component the MS ignores non-zero AoCC e5, e6 parameters sent to it.

Conformance Requirement(s):

1) When the MS receives the AoCC parameters in a Facility IE which is contained in a CONNECT message and when a TCH has already been assigned, the MS shall return a FACILITY message containing the acknowledgement within 1 s.

2) When the MS receives the AoCC parameters in a Facility IE which is contained in a CONNECT or FACILITY message and when a TCH has already been assigned, the MS shall store the correct value in the ACM field of the SIM.

3) When the call has no volume related component the MS shall ignore non-zero AoC e5 and e6 parameters sent to it.

Reference(s):

Conformance requirement 1:   3GPP TS 03.86, 3GPP TS 04.13, 3GPP TS 04.86.

Conformance requirement 2:   3GPP TS 02.24.

Conformance requirement 3:   3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCC acknowledgement within 1 s of the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent by the MS before or after the CONNECT ACKNOWLEDGE.

The SS sends the DISCONNECT y seconds after sending the CONNECT message containing the CAI. The MS shall have stored the correct amount on the SIM according to the e-parameters sent. The test is repeated for several different sets of e-parameters as defined below.

Maximum Duration of Test:

30 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,...,5.

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either A or B branch is taken
A12	MS -> SS	CONNECT ACKNOWLEDGE	
A13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B13	MS -> SS	CONNECT ACKNOWLEDGE	
14			call duration y seconds after CAI information sent by SS
15	SS -> MS	DISCONNECT	
16	MS -> SS	RELEASE	
17	SS -> MS	RELEASE COMPLETE	
18	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
19	MS		SIM contents checked (either via MMI or by removing the SIM and using SIM reader). ACM shall have been incremented correctly.

NOTE: The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

y is set to a constant value of 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

k-value	e-parameter							CCM Total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
1	6	14	1	25	0	0	60	43	43
2	0	0	1	100	0	0	0	100	143
3	250	16	2	500	0	0	60	2 000	2 143
4	1	1	1	0	10	10	1	89 or 90	2 232 or 2 233
5	12,5	30	1	25	10	10	30	50 or 62,5	2 295, 2 296, 2 282 or 2 283

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

The ASN.1 description for each e-parameter allows integers in the range 0 to 8191 to be transmitted but some e-parameters have different actual ranges (e.g. e1 can take any value 0..819,1 with 0,1 resolution). The MS knows how to

interpret the received parameter (e.g. received e1 refers to 10 times actual e1, see 3GPP TS 04.80 subclause 4.4.3). Therefore e1=12,5 would be sent to the MS as 125. The MS knows the value sent is 10 times the "real" e1 and hence interprets the value as 12,5.

The non-zero e5 and e6 values for the k=4 and k=5 execution of the test are to check that the MS ignores the volume related parameters when carrying out time only related charging.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.1.2   AoCC time related charging / MS terminated call

Purpose:

1) To verify that when the MS receives certain AoCC e-parameters in a Facility IE which is contained in a FACILITY message sent after the CONNECT message and when a TCH has already been assigned, the MS returns a FACILITY message containing the acknowledgement within 1 s.

2) To verify that when the MS receives the AoCC parameters in a Facility IE which is contained in a FACILITY message and when a TCH has already been assigned, the MS stores the correct value in the ACM field of the SIM.

Conformance Requirement(s):

1) When the MS receives the AoCC parameters in a Facility IE which is contained in a FACILITY message sent after the CONNECT message and when a TCH has already been assigned, the MS shall return a Facility message containing the acknowledgement within 1 s.

2) When the MS receives the AoCC parameters in a Facility IE which is contained in a FACILITY message and when a TCH has already been assigned, the MS shall store the correct value in the ACM field of the SIM.

Reference(s):

Conformance requirement 1:   3GPP TS 03.86, 3GPP TS 04.13, 3GPP TS 04.86.

Conformance requirement 2:   3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The SS is made to initiate a call. The call is established and certain AoCC e-parameters are sent to the MS in a Facility IE contained within a FACILITY message. The MS shall return the AoCC acknowledgement within 1 s of the

FACILITY message. It is an implementation option whether the AoCC e-parameters and the AoCC acknowledge are sent before or after the CONNECT ACKNOWLEDGE.

The SS sends the DISCONNECT y seconds after sending the FACILITY message. The MS shall have stored the correct amount on the SIM according to the e-parameters sent. The test is repeated for several different sets of e-parameters as defined below.

Maximum Duration of Test:

30 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,...,5.

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	SS		The SS is made to initiate a call
2	SS -> MS	PAGING REQUEST	
3	MS -> SS	CHANNEL REQUEST	
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	PAGING RESPONSE	
6	SS -> MS	SETUP	
7	MS -> SS	CALL CONFIRMED	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	MS -> SS	ALERTING	
11	MS -> SS	CONNECT	
12	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
			Either A or B branch is taken
A13	SS -> MS	CONNECT ACKNOWLEDGE	
A14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B14	SS -> MS	CONNECT ACKNOWLEDGE	
15			call duration y seconds after CAI information sent by SS
16	SS -> MS	DISCONNECT	
17	MS -> SS	RELEASE	
18	SS -> MS	RELEASE COMPLETE	
19	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
20	MS		SIM contents checked (either via MMI or by removing the SIM and using SIM reader) ACM shall have been incremented correctly.

NOTE: The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

y is set to a constant value of 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
1	0	0	0	0	0	0	0	0	0
2	0	0	1	100	0	0	0	100	100
3	6	14	1	25	0	0	60	43	143
4	1	1	1	0	0	0	1	89 or 90	233 or 232
5	12,5	30	1	25	0	0	30	50 or 62,5	296, 295, 282 or 283

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.1.3 AoCC volume related charging / MS originated call

Future addition at GSM Phase 2+ stage.

31.6.1.4 AoCC volume related charging / MS terminated call

Future addition at GSM Phase 2+ stage.

31.6.1.5 Change in charging information during a call

Purpose:

1) To verify that when the MS receives new AoCC parameters mid-way through a call in a Facility IE which is contained within a FACILITY message the MS returns a FACILITY message containing the acknowledgement within 1 s.

2) To verify that when the MS receives new charging information mid-way through a call in the form of a Facility IE contained within a FACILITY message the MS correctly indicates the total charge considering both sets of charging information.

Conformance Requirement(s):

1) When the MS receives new AoCC parameters mid-way through a call in a Facility IE which is contained within a FACILITY message the MS shall return a FACILITY message containing the acknowledgement within 1 s.

2) When the MS receives new charging information mid-way through a call in the form of a Facility IE contained within a FACILITY message the MS correctly indicates the total charge considering both sets of charging information.

Reference(s):

Conformance requirement 1:   3GPP TS 03.86, 3GPP TS 04.13, 3GPP TS 04.86.

Conformance requirement 2:   3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc)

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in a FACILITY message sent after the CONNECT message. The MS shall return the AoCC acknowledgement within 1 s of the FACILITY message. x seconds after sending the original CAI, new (and different) e-parameters are sent to the MS in a Facility IE contained within a FACILITY message. The MS shall return the AoCC acknowledge within 1 s of the FACILITY message.

The SS sends the DISCONNECT y seconds after sending the first CAI in the FACILITY message. The MS shall have stored the correct amount on the SIM according to the two sets of e-parameters sent and the times for the two parts of the call.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	
			Either A, B or C branch is taken
A12	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
A13	MS -> SS	CONNECT ACKNOWLEDGE	
A14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	MS -> SS	CONNECT ACKNOWLEDGE	
B13	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
B14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
C12	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
C13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
C14	MS-> SS	CONNECT ACKNOWLEDGE	
15	SS -> MS	FACILITY	Second CAI sent x sec after first CAI As default message except contains Facility IE with contents as indicated in iii below
16	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below New CAI held in abeyance until CDUR has timed out present e2 value
17			Call duration y seconds after first CAI information sent by SS
18	SS -> MS	DISCONNECT	
19	MS -> SS	RELEASE	
20	SS -> MS	RELEASE COMPLETE	
21	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
22	MS		SIM contents checked (either via MMI or by removing the SIM and using SIM reader) ACM shall have been incremented correctly

NOTE   The values of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x, y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as defined below:

e-parameter							CCM total at call end increased by	Step 0 ACM value
1	2	3	4	5	6	7		
10	28	1	10	0	0	60	(30)	(30)

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

iii) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x is set to a constant value of 80 s.

y is set to a constant value of 180 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

e-parameter							CCM total at call end increased by	Step 0 ACM value
1	2	3	4	5	6	7		
10	14	1	5	0	0	60	65	65

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

31.6.1.6   Different formats of charging information

Purpose:

1) To verify that when the MS receives a Facility IE in which certain e-parameters are set to zero the total charge accumulated is the same as that when the same e-parameters are completely omitted from the Facility IE.

2) To verify the operation of a shortened channel release procedure where the SS does not send DISCONNECT but only the RELEASE COMPLETE and CHANNEL RELEASE messages or just the CHANNEL RELEASE message.

Conformance Requirement(s):

1) When the MS receives a Facility IE in which certain e-parameters are set to zero the total charge accumulated shall be the same as that when the same e-parameters are completely omitted from the Facility IE.

2) The channel shall be correctly released when a shortened channel release procedure is used - the SS does not send DISCONNECT but only the RELEASE COMPLETE and CHANNEL RELEASE messages or just the CHANNEL RELEASE message.

Reference(s):

Conformance requirement 1:   3GPP TS 02.24.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 44.018.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

Part 1:

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in a FACILITY message sent before the CONNECT message.

The SS sends the DISCONNECT y seconds after sending the FACILITY message containing the e-parameters. The MS shall have stored the correct amount on the SIM according to the e-parameters sent.

Part 2:

Part 1 is repeated twice with the e-parameters that were set to zero above now omitted completely from the Facility IE. The shortened release procedures are used. The MS shall have stored the correct amount on the SIM.

The results of parts 1 and 2 are compared. The value for the charge calculated by the MS shall be identical for parts 1 and 2.

Maximum Duration of Test:

20 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,..3.

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
			Either A, B or C branch is taken
A12	SS -> MS	CONNECT	
A13	MS -> SS	CONNECT ACKNOWLEDGE	
A14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	SS -> MS	CONNECT	
B13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B14	MS -> SS	CONNECT ACKNOWLEDGE	
C12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
C13	SS -> MS	CONNECT	
C14	MS -> SS	CONNECT ACKNOWLEDGE	
15			call duration y seconds after CAI information sent by SS
			Branch D, E and F shall be taken for k= 1,2 and 3 respectively
D16	SS -> MS	DISCONNECT	
D17	MS -> SS	RELEASE	
D18	SS -> MS	RELEASE COMPLETE	
D19	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
E16	SS -> MS	RELEASE COMPLETE	Shortened channel release procedure
E17	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
F16	SS -> MS	CHANNEL RELEASE	
20	MS		SIM contents checked (either via MMI or by removing the SIM and using SIM reader) ACM shall have been incremented correctly.

NOTE   The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

y is set to a constant value of 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
1	10	40	1	0	0	0	0	20	20
2	10	40	1	--------omitted--------				20	40
3	10	40	1	--------omitted--------				20	60

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.1.7   AoCC on a Call Hold call

Purpose:

1) To verify that when the MS invokes a Call Hold call and hence receives Facility IEs containing AoCC e-parameters for each chargeable call the MS returns a FACILITY message containing the AoCC acknowledgement within 1 s of transmission of each set of e-parameters.

2) To verify that when the MS invokes a Call Hold call and hence receives Facility IEs containing CAI elements for each chargeable call the CCM records the sum of all the charges for the services currently being used and hence that the ME inserts the correct charge in the ACM field of the SIM.

Conformance Requirement(s)

1) When the MS invokes a Call Hold call and hence receives Facility IEs containing AoCC e-parameters for each chargeable call the MS shall return a FACILITY message containing the AoCC acknowledgement within 1 s of receiving each set of e-parameters.

2) When the MS invokes a Call Hold call and hence receives Facility IEs containing CAI elements for each chargeable call the CCM shall record the sum of all the charges for the services currently being used and hence the ME shall insert the correct charge in the ACM field of the SIM.

Reference(s):

Conformance requirement 1:   3GPP TS 04.13.

Conformance requirement 2:   3GPP TS 02.24, 3GPP TS 04.83, 3GPP TS 04.84, 3GPP TS 04.86.

Specific PICS Statements

-    Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

-    Method of reading ACM from the SIM via the ME.

-    Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCC acknowledgement within 1 s of transmission of the CONNECT message.

The call (call B) is then put on hold by sending a HOLD message from the MS to the SS. The SS shall reply with a HOLD ACKNOWLEDGE. The traffic channel is now available to originate another call.

The MS is made to initiate a second call (call C). The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCC acknowledgement in a FACILITY message within 1 s of transmission of the CONNECT message.

The SS sends the DISCONNECT to the MS for call B x seconds after sending the call B CAI in the CONNECT/FACILITY message and the DISCONNECT for call C y seconds after sending the call C CAI in the CONNECT/FACILITY message. The MS shall have stored the correct amount on the SIM according to the two sets of e-parameters sent and call times x and y.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either D or E branch is taken
D12	MS -> SS	CONNECT ACKNOWLEDGE	
D13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E13	MS -> SS	CONNECT ACKNOWLEDGE	
14	MS		The MS is made to initiate a second call, and the first call is placed on hold. DTMF signalling may occur, when MMI keys are depressed
15	MS -> SS	HOLD	
16	SS -> MS	HOLD ACKNOWLEDGE	
17	MS -> SS	CM SERVICE REQUEST	
18	SS -> MS	CM SERVICE ACCEPT	
19	MS -> SS	SETUP	TI arbitrary but different from existing TI
20	SS -> MS	CALL PROCEEDING	
21	SS -> MS	ALERTING	
22	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either F or G branch is taken
F23	MS -> SS	CONNECT ACKNOWLEDGE	
F24	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G23	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G24	MS -> SS	CONNECT ACKNOWLEDGE	
25			Call durations x and y seconds after respective CAI information sent by SS
			Branch H and I branch are taken, the sequence depending on the durations x and y
H26	SS -> MS	DISCONNECT	For call C y seconds after call C CAI sent
H27	MS -> SS	RELEASE	
H28	SS -> MS	RELEASE COMPLETE	
I26	SS -> MS	DISCONNECT	For call B x seconds after call B CAI sent
I27	MS -> SS	RELEASE	
I28	SS -> MS	RELEASE COMPLETE	
29	SS -> MS	CHANNEL RELEASE	The main signalling link is released
30	MS		SIM contents checked (either via MMI or by removing the SIM and using SIM reader) ACM shall have been incremented correctly.

NOTE   The value of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x,y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x set to 180 s, y is set to 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

Call	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	**2**	**3**	**4**	**5**	**6**	**7**		
B(time x)	7	40	1	0	0	0	0		
C(time y)	13	40	1	0	0	0	0	54	54

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.1.8   AoCC on a Multi-party call

Purpose:

1) To verify that when the MS invokes a Multi-party call and hence receives Facility IEs containing AoCC e-parameters for each chargeable call the MS returns a FACILITY message containing the AoCC acknowledgement within 1 s of transmission of each set of e-parameters.

2) To verify that when the MS originates a Multi-party call and hence receives Facility IEs containing CAI elements for each chargeable call the CCM records the sum of all the charges for the services currently being used and hence the ME inserts the correct charge in the ACM field of the SIM.

Conformance Requirement(s):

1) When the MS invokes a Multi-party call and hence receives Facility IEs containing AoCC e-parameters for each chargeable call the MS shall return a FACILITY message containing the AoCC acknowledgement within 1 s of receiving each set of e-parameters.

2) When the MS originates a Multi-party call and hence receives Facility IEs containing CAI elements for each chargeable call the CCM shall record the sum of all the charges for the services currently being used and hence the ME shall insert the correct charge in the ACM field of the SIM.

Reference(s):

Conformance requirement 1:   3GPP TS 04.13.

Conformance requirement 2:   3GPP TS 02.24, 3GPP TS 04.83, 3GPP TS 04.84, 3GPP TS 04.86.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCC acknowledgement within 1 s of transmission of the CONNECT message.

The call (call B) is then put on hold by sending a HOLD message from the MS to the SS. The SS shall reply with a HOLD ACKNOWLEDGE. The traffic channel is now available to originate another call.

The MS is made to initiate a second call (call C). The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCC acknowledgement within 1 s of transmission of the CONNECT message.

The MS invokes the multi-party service by sending a FACILITY message to the SS containing the BuildMPTY request.

The SS accepts the request and connects the MS with the other existing connections (active call C and held call B) and confirms with a FACILITY message.

The SS sends the DISCONNECT to the MS for call B x seconds after sending the call B CAI in the CONNECT message and the DISCONNECT for call C y seconds after sending the call C CAI in the CONNECT message. The MS shall have stored the correct amount on the SIM according to the two sets of e-parameters sent and call times x and y.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either D or E branch is taken
D12	MS -> SS	CONNECT ACKNOWLEDGE	
D13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E13	MS -> SS	CONNECT ACKNOWLEDGE	
14	MS -> SS	HOLD	The MS is made to initiate a second call and the first call (call B) is placed on hold. DTMF signalling may occur, when MMI keys are depressed
15	MS->SS	HOLD	
16	SS -> MS	HOLD ACKNOWLEDGE	
17	MS -> SS	CM SERVICE REQUEST	
18	SS -> MS	CM SERVICE ACCEPT	

Step	Direction	Message	Comments
19	MS -> SS	SETUP	TI arbitrary but different from existing TI
20	SS -> MS	CALL PROCEEDING	
21	SS -> MS	ALERTING	
22	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either F or G branch is taken
F23	MS -> SS	CONNECT ACKNOWLEDGE	
F24	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G23	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G24	MS -> SS	CONNECT ACKNOWLEDGE	
25	MS -> SS	FACILITY (TI A-B/A-C)	The MS is made to build a multi-party call. DTMF signalling may occur, when MMI keys are depressed. As default message except contains Facility IE with contents as indicated in iii below
26	SS -> MS	FACILITY (TI A-B/A-C)	As default message except contains Facility IE with contents as indicated in iv, below
27			Call durations x and y seconds after respective CAI information sent by SS
			Branch H and branch I are taken, the sequence depending on the durations x and y
H28	SS -> MS	DISCONNECT	For call C y seconds after call C CAI sent
H29	MS -> SS	RELEASE	
H30	SS -> MS	RELEASE COMPLETE	
I28	SS -> MS	DISCONNECT	For call B x seconds after call B CAI sent
I29	MS -> SS	RELEASE	
I30	SS -> MS	RELEASE COMPLETE	
31	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
32	MS		SIM contents checked (either via MMI or by removing the SIM and using SIM reader) ACM shall have been incremented correctly.

NOTE: A-B/A-C indicates a choice. the transaction identifier (TI) used must be that of the active call or the held call (ref. 3GPP TS 04.84).

The values of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x,y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x set to 180 s, y set to 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

Call	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
B(time x)	19	40	1	0	0	0	0		
C(time y)	29	40	1	0	0	0	0	134	134

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

iii) FACILITY Information Element with Invoke = BuildMPTY component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

The following abbreviations are used in the descriptions below:

    U   Universal tag class.

    CS   Context Specific tag class.

    P   Primitive tag form.

    C   Constructed tag form.

    FIE   Facility Information Element.

Contents Facility IE Identifier	Value/remark As 3GPP TS 04.80	Coding 00011100
Length of FIE contents	8	00001000
Component type tag	CS/C/tag=1	10100001
Component length	6	00000110
Invoke ID tag	U/P/tag=2	00000010
Invoke ID length	1	00000001
Invoke ID	Arbitrary (1 octet)	(00000000)
Op-Code tag	From 3GPP TS 04.80	00000010
Op-Code length	1	00000001
Op-Code	Build Multi-party operation (local value 124)	00000001

ii) FACILITY Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents Facility IE Identifier	Value/remark As 3GPP TS 04.80	Coding 00111100
Length of FIE contents	5	00001001
Component type tag	CS/C/tag=2	10100010
Component length	3	00000011
Invoke ID tag	U/P/Integer	00000010
Invoke ID length	1	00000001
Invoke ID	Same as used as Invoke ID in Invoke FIE	(00000000)

31.6.2 Charge Storage

31.6.2.1 Removal of SIM during an active call

Purpose:

1) To verify that when the SIM is removed from the ME during an active AoCC call the ME immediately terminates the call.

2) To verify that when the SIM is removed during an active AoCC call the ME has written the total charge up to that point in the call to the ACM field of the SIM.

Conformance Requirement(s):

1) When the SIM is removed from the ME during an active AoCC call the ME shall immediately terminate the call.

2) When the SIM is removed during an active AoCC call midway through an AoC charging time interval (e7 or e2) the ME shall have written the total charge up to the point in the call where the charging time interval last expired to the ACM field of the SIM.

Reference(s):

Conformance requirement 1: 3GPP TS 02.17.

Conformance requirement 1: 3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

This test is only performed if it is possible to remove SIM without disconnecting the power supply. If the battery pack must be removed to get at the SIM see subclause 31.6.2.2.

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent before or after the CONNECT ACKNOWLEDGE.

If possible, without removing the power supply, the SIM is removed from the ME y seconds after the SS sends the CAI in the CONNECT/FACILITY message. The call shall be terminated immediately by the MS and the MS shall have stored the correct amount on the SIM according to the e-parameters sent.

Maximum Duration of Test:

5 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either A or B branch is taken
A12	MS -> SS	CONNECT ACKNOWLEDGE	
A13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B13	MS -> SS	CONNECT ACKNOWLEDGE	
14			SIM removed y seconds after CAI information sent by SS.
			Either C, D, E or F branch is taken
C15	MS -> SS	DISCONNECT	
C16	SS -> MS	RELEASE	
C17	MS -> SS	RELEASE COMPLETE	
C18	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
D15	MS -> SS	RELEASE COMPLETE	
D16	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
E15	MS -> SS	Layer 2 DISC	
E16	SS -> MS	UA	
F15			No further messages are sent
19			SIM contents checked (by removing the SIM and using SIM reader). ACM shall have been incremented correctly.

NOTE: The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

The SIM is removed after approximately y=90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
	10	55	1	10	0	0	10	30	30

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.2.2 Interruption of power supply during an active call

Purpose:

To verify that when the power supply of the MS is removed during an active AoCC call the ME has written the total charge up to that point in the call to the ACM field of the SIM.

Conformance Requirement(s):

When the power supply of the MS is removed during an active AoCC call midway through an AoC charging time interval (e7 or e2) the ME shall have written the total charge up to the point in the call where the charging time interval last expired to the ACM field of the SIM.

Reference(s):

Conformance requirement 1:   3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of removing power supply.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is switched off.

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent before or after the CONNECT ACKNOWLEDGE.

The ME power is switched off by pressing power button on MMI during the active call. The call shall be terminated immediately and the MS shall have stored the correct amount on the SIM according to the e-parameters sent.

The test is repeated for ME power being lost by removal of battery pack. The call shall be terminated immediately and the MS shall have stored the correct amount on the SIM according to the e-parameters sent.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,2.

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either A or B branch is taken
A12	MS -> SS	CONNECT ACKNOWLEDGE	
A13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B13	MS -> SS	CONNECT ACKNOWLEDGE	
14			ME power interrupted y seconds after CAI information sent by SS by: MMI power switch (for k=1) Removing battery pack (for k=2) Depending on the value of k C or D branch is taken
15			SIM contents checked (by removing the SIM and using SIM reader). ACM shall have been incremented correctly.

NOTE: The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

The ME power is removed after approximately y = 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
	10	55	1	10	0	0	10	30	30

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.2.3   MS going out of coverage during an active AoCC call

NOTE: At present the core recommendations for AoCC in the case where the radio link is lost during an active call are vague. Does the mobile go on charging for a fixed period after radio link loss and continue as usual if radio link reestablishment occurs, or does charging stop? Input from people involved in charging for GSM is required.

Hence this test will be enhanced in the future when the requirements become clearer.

Purpose:

To verify that when the MS goes out of radio coverage area and an active call is dropped the ME has written the total charge up to that point in the call to the ACM field of the SIM.

Conformance Requirement(s):

When the MS goes out of radio coverage area during an active AoCC call midway through an AoC charging time interval (e7 or e2) and the call is dropped the ME shall have written the total charge up to the point in the call where the charging time interval last expired to the ACM field of the SIM.

Reference(s):

Conformance requirement 1: 3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCC e-parameters sent in a Facility IE in the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent before or after the CONNECT ACKNOWLEDGE.

The cell simulated by the system simulator is then switched off to model the MS losing radio coverage. The MS shall have stored the correct amount on the SIM according to the e-parameters sent. [What happens on call reestablishment?]

Maximum Duration of Test:

5 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either A or B branch is taken
A12	MS -> SS	CONNECT ACKNOWLEDGE	
A13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B13	MS -> SS	CONNECT ACKNOWLEDGE	
14			SS cell switched off y seconds after CAI information sent by SS Failure of radio path, end of call (CEND) occurs and MS stops charging (ref. 3GPP TS 02.24 sec 2)
15			SIM contents checked (either via MMI or by removing the SIM and using SIM reader). ACM shall have been incremented correctly.

NOTE: The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

The cell being simulated by the SS is switched off after approximately y=90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	**2**	**3**	**4**	**5**	**6**	**7**		
	10	55	1	10	0	0	10	30	30

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.2.4   ACMmax operation / Mobile Originating

Purpose:

1) To verify that when the value stored in the ACM becomes equal to or exceeds its maximum value, the ACMmax, any outgoing calls in progress for which a non-zero CAI exists are terminated by the ME, with cause value #68 once the chargeable interval determined by the CAI has elapsed, with an appropriate indication given to the user.

2) To verify that when the value stored in the ACM becomes equal to or exceeds its maximum limit, the ACMmax, the making of non-emergency calls is inhibited.

3) To verify that when the value stored in the ACM becomes equal to or exceeds its maximum limit, the ACMmax, the making of emergency calls is uninhibited.

Conformance Requirement(s):

1) When the value stored in the ACM becomes equal to or exceeds its maximum value, the ACMmax, any outgoing calls in progress for which a non-zero CAI exists shall be terminated by the ME with cause value #68, once the chargeable interval determined by the CAI has elapsed, with an appropriate indication given to the user.

2) When the value stored in the ACM becomes equal to or exceeds its maximum limit, the ACMmax, the making of further non-emergency calls shall be inhibited.

3) When the value stored in the ACM becomes equal to or exceeds its maximum limit, the ACMmax, the making of emergency calls shall be uninhibited.

Reference(s):

Conformance requirement 1:   3GPP TS 02.24,
3GPP TS 04.86 subclause 2.3.

Conformance requirement 2:   3GPP TS 02.24.

Conformance requirement 3:   3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Type of user indication when ACMmax exceeded.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

PIN 2 is entered into the MS allowing modification of both the ACM and ACMmax fields on the SIM. The ACM is reset to zero and the ACMmax is set to 2 units.

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCC non-zero e-parameters sent in a Facility IE in the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent before or after the CONNECT ACKNOWLEDGE.

After the ACM has been incremented to 2 units (60 s) the call shall be terminated by the MS once an additional chargeable interval of 30 s has elapsed, and an indication given to the user. The call duration is recorded and the ACM is checked to ensure it has been incremented to 2 units.

The MS is then made to attempt to originate an ordinary call to the MS for which a non-zero CAI exists for the calling party and shall be unsuccessful. The MS shall not send a CHANNEL REQUEST for that call.

The MS is then made to attempt to originate an emergency call and shall be successful.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM (it shall be zero)
A1	MS		For k= 1 The MS is made to initiate an ordinary call
A2	MS -> SS	CHANNEL REQUEST	
A3	SS -> MS	IMMEDIATE ASSIGNMENT	
A4	MS -> SS	CM SERVICE REQUEST	
A5	SS -> MS	CM SERVICE ACCEPT	
A6	MS -> SS	SETUP	
A7	SS -> MS	CALL PROCEEDING	
A8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
A9	MS -> SS	ASSIGNMENT COMPLETE	
A10	SS -> MS	ALERTING	
A11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in I below
B1	MS		For k = 3 The MS is made to initiate an emergency call Establishment cause is emergency call establishment
B2	MS -> SS	CHANNEL REQUEST	
B3	SS -> MS	IMMEDIATE ASSIGNMENT	
B4	MS -> SS	CM SERVICE REQUEST	CM service type IE indicates "emergency call establishment"
B5	SS -> MS	CM SERVICE ACCEPT	
B6	MS -> SS	EMERGENCY SETUP	
B7	SS -> MS	CALL PROCEEDING	
B8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
B9	MS -> SS	ASSIGNMENT COMPLETE	
B10	SS -> MS	ALERTING	
B11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below For k=1 or 3 either branch C or D is taken
C12	MS -> SS	CONNECT ACKNOWLEDGE	
C13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
D12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
D13	MS -> SS	CONNECT ACKNOWLEDGE	
L14			For k=1 Record call duration, x seconds, after CAI information sent by SS until call is terminated by the ME
L15	MS -> SS	DISCONNECT	Cause value #68
L16	SS -> MS	RELEASE	
L17	MS -> SS	RELEASE COMPLETE	
L18	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
L19			ACM checked (shall be 2 units)
M14			For k=3 Call duration y seconds after CAI information sent by SS
M15	MS -> SS	DISCONNECT	
M16	SS -> MS	RELEASE	
M17	MS -> SS	RELEASE COMPLETE	
M18	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
M19			ACM checked (shall be 2 units)

k=1 - Non zero CAI call attempted by MS and should succeed.

k=2 - Non zero CAI call attempted by MS and should fail.

k=3 - Emergency call attempted by MS and should succeed.

NOTE: The values of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x,y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x shall be 90 ± 2 s.

y shall be set to 120 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
1	1	30	1	0	0	0	0	2	2
2	1	30	1	0	0	0	0	0	2
3	0	0	0	0	0	0	0	0	2

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.2.5   ACMmax operation / Mobile Terminating

Purpose:

1) To verify that when the value stored in the ACM becomes equal to or exceeds its maximum value, the ACMmax, any mobile terminating calls in progress for which a non-zero CAI exists are terminated by the ME with cause value #68, once the chargeable interval determined by the CAI has elapsed, with an appropriate indication given to the user.

2) To verify that when the value stored in the ACM becomes equal to or exceeds its maximum value, the ACMmax, and an incoming call is received for which subsequently a non-zero CAI is received, then the call is terminated by the ME using cause value #68 with an appropriate indication given to the user.

3) To verify that when the value stored in the ACM becomes equal to or exceeds its maximum limit, the ACMmax, the receiving of calls for which the CAI is zero is uninhibited.

Conformance Requirement(s):

1) When the value stored in the ACM becomes equal to or exceeds its maximum value, the ACMmax, any mobile terminating calls in progress for which a non-zero CAI exists shall be terminated by the ME with cause value #68, once the chargeable interval determined by the CAI has elapsed, with an appropriate indication given to the user.

2) When the value stored in the ACM becomes equal to or exceeds its maximum value, the ACMmax, and an incoming call is received for which subsequently a non-zero CAI is received, the call shall be terminated by the ME using cause value #68 with an appropriate indication given to the user.

3) When the value stored in the ACM becomes equal to or exceeds its maximum limit, the ACMmax, the receiving of calls for which the CAI is zero shall be uninhibited.

Reference(s):

Conformance requirement 1:   3GPP TS 02.24,
3GPP TS 04.86 subclause 2.3.

Conformance requirement 2:   3GPP TS 02.24,
3GPP TS 04.86 subclause 2.3.

Conformance requirement 2:   3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Method of reading ACM from the SIM via the ME.

- Type of user indication when ACMmax exceeded.

- Support for active state of the call control protocol (U10).

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

PIN 2 is entered into the MS allowing modification of both the ACM and ACMmax fields on the SIM. The ACM is reset to zero and the ACMmax is set to 2 units.

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The SS is made to initiate a call. The call is established with certain non-zero AoCC e-parameters sent in a Facility IE contained in a FACILITY message sent before the CONNECT message. It is an implementation option whether the AoCC e-parameters and AoCC acknowledge are sent before or after the CONNECT ACKNOWLEDGE.

After the ACM has been incremented to 2 units (60s) the call shall be terminated by the MS once an additional chargeable interval of 30s has elapsed and an indication given to the user. The ACM shall be checked to ensure that it has been incremented to 2 units.

The SS is then made to attempt to make an ordinary call to the MS for which a non-zero CAI exists for the called party and shall be unsuccessful. The MS shall terminate the call with a DISCONNECT message.

The SS is then made to attempt to make an ordinary call to the MS for which a zero CAI exists for the called party and shall be successful.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,...,3..

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	SS		The SS is made to initiate a call
2	SS -> MS	PAGING REQUEST	
3	MS -> SS	CHANNEL REQUEST	
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	PAGING RESPONSE	
6	SS -> MS	SETUP	
7	MS -> SS	CALL CONFIRMED	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	MS -> SS	ALERTING	
11	MS -> SS	CONNECT	
12	SS -> MS	CONNECT ACKNOWLEDGE	
			For k=1 or 3 branch A is taken
A13	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
A14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
			For k=2 branch B, and then either branch C, D or E is taken
B13	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
C13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
C14	MS -> SS	DISCONNECT	MS terminates call with cause value #68
D13	MS -> SS	DISCONNECT	MS terminates call with cause value #68
D14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E13	MS -> SS	DISCONNECT	MS terminates call with cause value #68. DISCONNECT may or may not contain Facility IE with contents as indicated in ii below
			For k= 1, 2 and 3, F, G and branch shall be taken respectively
F15			For k=1 Record call duration, x seconds, after CAI information sent by SS until call is terminated by the ME
F16	MS -> SS	DISCONNECT	MS terminates call with cause value #68
F17	SS -> MS	RELEASE	
F18	MS -> SS	RELEASE COMPLETE	
F19	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
G15	SS -> MS	RELEASE	For k=2
G16	MS -> SS	RELEASE COMPLETE	RELEASE COMPLETE may or may not contain Facility IE with contents as indicated in ii below
G17	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
H15			For k=3 Call duration y seconds after CAI information sent by SS
H16	MS -> SS	DISCONNECT	MS terminates call
H17	SS -> MS	RELEASE	
H18	MS -> SS	RELEASE COMPLETE	
H19	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
20			ACM checked (should be 2 units)

k=1 - Non zero CAI call attempted to MS and should succeed.

k=2 - Non zero CAI call attempted to MS and should fail.

k=3 - Zero CAI call attempted to MS and should succeed.

NOTE: The values of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x,y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x shall be 90 ± 2 s.

y shall be set to 120 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
1	1	30	1	0	0	0	0	2	2
2	1	30	1	0	0	0	0	0	2
3	0	0	0	0	0	0	0	0	2

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.3 Advice of Charge Information

31.6.3.1 AoCI time related charging / MS originated call

Purpose:

1) To verify that when the MS receives the AoCI parameters in a Facility IE which is contained in the CONNECT message and when a TCH has already been assigned, the MS returns a FACILITY message containing the acknowledgement within 1 s.

2) To verify that the when the call has no volume related component the MS ignores non-zero AoCI e5, e6 parameters sent to it.

Conformance Requirement(s):

1) When the MS receives the AoCI parameters in a Facility IE which is contained in a CONNECT message and when a TCH has already been assigned, the MS shall return a FACILITY message containing the acknowledgement within 1 s.

2) When the call has no volume related component the MS shall ignore non-zero AoC e5 and e6 parameters sent to it.

Reference(s):

Conformance requirement 1: 3GPP TS 03.86,
3GPP TS 04.13,
3GPP TS 04.86.

Conformance requirement 2: 3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Support for active state of the call control protocol (U10).

- MMI method of reading the AoCI information.

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCI e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCI acknowledgement within 1 s of the CONNECT message. It is an implementation option whether the AoCI acknowledge is sent by the MS before or after the CONNECT ACKNOWLEDGE.

The SS sends the DISCONNECT y seconds after sending the CONNECT message containing the CAI. The test is repeated for several different sets of e-parameters as defined below.

Maximum Duration of Test:

30 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,...,5.

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either A or B branch is taken
A12	MS -> SS	CONNECT ACKNOWLEDGE	
A13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B13	MS -> SS	CONNECT ACKNOWLEDGE	
14			call duration y seconds after CAI information sent by SS
15	SS -> MS	DISCONNECT	
16	MS -> SS	RELEASE	
17	SS -> MS	RELEASE COMPLETE	
18	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
19	MS		MS display is checked to determine whether the correct call charge has been indicated

NOTE: The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

y is set to a constant value of 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
1	6	14	1	25	0	0	60	43	43
2	0	0	1	100	0	0	0	100	143
3	250	16	2	500	0	0	60	2 000	2 143
4	1	1	1	0	10	10	1	89 or 90	2 232 or 2 233
5	12,5	30	1	25	10	10	30	50 or 62,5	2 295, 2 296, 2 282 or 2 283

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

The ASN.1 description for each e-parameter allows integers in the range 0 to 8 191 to be transmitted but some e-parameters have different actual ranges (e.g. e1 can take any value 0..819,1 with 0,1 resolution). The MS knows how to interpret the received parameter (e.g. received e1 refers to 10 times actual e1, see 3GPP TS 04.80 subclause 4.4.3). Therefore e1=12,5 would be sent to the MS as 125. The MS knows the value sent is 10 times the "real" e1 and hence interprets the value as 12,5.

The non-zero e5 and e6 values for the k=4 and k=5 execution of the test are to check that the MS ignores the volume related parameters when carrying out time only related charging.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.3.2   AoCI time related charging / MS terminated call

Purpose:

1) To verify that when the MS receives certain AoCI e-parameters in a Facility IE which is contained in a FACILITY message sent after the CONNECT message and when a TCH has already been assigned, the MS returns a FACILITY message containing the acknowledgement within 1 s.

Conformance Requirement(s):

1) When the MS receives the AoCI parameters in a Facility IE which is contained in a FACILITY message sent after the CONNECT message and when a TCH has already been assigned, the MS shall return a Facility message containing the acknowledgement within 1 s.

Reference(s):

Conformance requirement 1:   3GPP TS 03.86,
3GPP TS 04.13,
3GPP TS 04.86.

Conformance requirement 2:   3GPP TS 02.24.

Specific PICS Statements

-    Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Support for active state of the call control protocol (U10).

- MMI method of reading the AoCI information.

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The SS is made to initiate a call. The call is established and certain AoCI e-parameters are sent to the MS in a Facility IE contained within a FACILITY message. The MS shall return the AoCI acknowledgement within 1 s of the FACILITY message. It is an implementation option whether the AoCI e-parameters and the AoCI acknowledge are sent before or after the CONNECT ACKNOWLEDGE.

The SS sends the DISCONNECT y seconds after sending the FACILITY message. The test is repeated for several different sets of e-parameters as defined below.

Maximum Duration of Test:

30 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,...,5.

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	SS		The SS is made to initiate a call
2	SS -> MS	PAGING REQUEST	
3	MS -> SS	CHANNEL REQUEST	
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	PAGING RESPONSE	
6	SS -> MS	SETUP	
7	MS -> SS	CALL CONFIRMED	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	MS -> SS	ALERTING	
11	MS -> SS	CONNECT	
12	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
			Either A or B branch is taken
A13	SS -> MS	CONNECT ACKNOWLEDGE	
A14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B14	SS -> MS	CONNECT ACKNOWLEDGE	
15			call duration y seconds after CAI information sent by SS
16	SS -> MS	DISCONNECT	
17	MS -> SS	RELEASE	
18	SS -> MS	RELEASE COMPLETE	
19	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
20	MS		MS display is checked to determine whether the correct call charge has been indicated

NOTE: The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

y is set to a constant value of 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	**2**	**3**	**4**	**5**	**6**	**7**		
1	0	0	0	0	0	0	0	0	0
2	0	0	1	100	0	0	0	100	100
3	6	14	1	25	0	0	60	43	143
4	1	1	1	0	0	0	1	89 or 90	233 or 232
5	12,5	30	1	25	0	0	30	50 or 62,5	296, 295, 282 or 283

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.3.3   AoCI volume related charging / MS originated call

Future addition at GSM Phase 2+ stage.

31.6.3.4   AoCI volume related charging / MS terminated call

Future addition at GSM Phase 2+ stage.

31.6.3.5   Change in charging information during a call

Purpose:

1) To verify that when the MS receives new AoCI parameters mid-way through a call in a Facility IE which is contained within a FACILITY message the MS returns a FACILITY message containing the acknowledgement within 1 s.

2) To verify that when the MS receives new charging information mid-way through a call in the form of a Facility IE contained within a FACILITY message the MS correctly indicates the total charge considering both sets of charging information.

Conformance Requirement(s):

1) When the MS receives new AoCI parameters mid-way through a call in a Facility IE which is contained within a FACILITY message the MS shall return a FACILITY message containing the acknowledgement within 1 s.

2) When the MS receives new charging information mid-way through a call in the form of a Facility IE contained within a FACILITY message the MS correctly indicates the total charge considering both sets of charging information.

Reference(s):

Conformance requirement 1:   3GPP TS 03.86, 3GPP TS 04.13, 3GPP TS 04.86.

Conformance requirement 2:   3GPP TS 02.24.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Support for active state of the call control protocol (U10).

- MMI method of reading the AoCI information.

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCI e-parameters sent in a Facility IE in a FACILITY message sent after the CONNECT message. The MS shall return the AoCI acknowledgement within 1 s of the FACILITY message. x seconds after sending the original CAI, new (and different) e-parameters are sent to the MS in a Facility IE contained within a FACILITY message. The MS shall return the AoCI acknowledge within 1 s of the FACILITY message.

The SS sends the DISCONNECT y seconds after sending the first CAI in the FACILITY message.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	
			Either A, B or C branch is taken
A12	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
A13	MS -> SS	CONNECT ACKNOWLEDGE	
A14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	MS -> SS	CONNECT ACKNOWLEDGE	
B13	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
B14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
C12	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
C13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
C14	MS-> SS	CONNECT ACKNOWLEDGE	
15	SS -> MS	FACILITY	Second CAI sent x sec after first CAI As default message except contains Facility IE with contents as indicated in iii below
16	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below New CAI held in abeyance until CDUR has timed out present e2 value
17			Call duration y seconds after first CAI information sent by SS
18	SS -> MS	DISCONNECT	
19	MS -> SS	RELEASE	
20	SS -> MS	RELEASE COMPLETE	
21	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
22	MS		MS display is checked to determine whether the correct call charge has been indicated

NOTE   The values of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x, y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined
                              in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as defined
below:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
	10	28	1	10	0	0	60	(30)	(30)

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80
                              subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

iii) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined
                              in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x is set to a constant value of 80 s.

y is set to a constant value of 180 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
	10	14	1	5	0	0	60	65	65

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

31.6.3.6   Different formats of charging information

Purpose:

1) To verify that when the MS receives a Facility IE in which certain e-parameters are set to zero the total charge
   accumulated is the same as that when the same e-parameters are completely omitted from the Facility IE.

2) To verify the operation of a shortened channel release procedure where the SS does not send DISCONNECT but
   only the RELEASE COMPLETE and CHANNEL RELEASE messages or just the CHANNEL RELEASE
   message.

Conformance Requirement(s):

1) When the MS receives a Facility IE in which certain e-parameters are set to zero the total charge accumulated
   shall be the same as that when the same e-parameters are completely omitted from the Facility IE.

2) The channel shall be correctly released when a shortened channel release procedure is used - the SS does not
   send DISCONNECT but only the RELEASE COMPLETE and CHANNEL RELEASE messages or just the
   CHANNEL RELEASE message.

Reference(s):

Conformance requirement 1:   3GPP TS 02.24.

Conformance requirement 2:   3GPP TS 04.08 / 3GPP TS 44.018.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Support for active state of the call control protocol (U10).

- MMI method of reading the AoCI information.

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

Part 1:

The MS is made to initiate a call. The call is established with certain AoCI e-parameters sent in a Facility IE in a FACILITY message sent before the CONNECT message.

The SS sends the DISCONNECT y seconds after sending the FACILITY message containing the e-parameters. The MS shall have stored the correct amount on the SIM according to the e-parameters sent.

Part 2:

Part 1 is repeated twice with the e-parameters that were set to zero above now omitted completely from the Facility IE. The shortened release procedures are used. The MS shall have stored the correct amount on the SIM.

The results of parts 1 and 2 are compared. The value for the charge calculated by the MS shall be identical for parts 1 and 2.

Maximum Duration of Test:

20 minutes.

Expected Sequence:

The sequence step 1-20 is executed for execution counter k = 1,..3.

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	FACILITY	As default message except contains Facility IE with contents as indicated in i below
			Either A, B or C branch is taken
A12	SS -> MS	CONNECT	
A13	MS -> SS	CONNECT ACKNOWLEDGE	
A14	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B12	SS -> MS	CONNECT	
B13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
B14	MS -> SS	CONNECT ACKNOWLEDGE	
C12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
C13	SS -> MS	CONNECT	
C14	MS -> SS	CONNECT ACKNOWLEDGE	
15			call duration y seconds after CAI information sent by SS
			Branch D, E and F shall be taken for k= 1,2 and 3 respectively
D16	SS -> MS	DISCONNECT	
D17	MS -> SS	RELEASE	
D18	SS -> MS	RELEASE COMPLETE	
D19	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
E16	SS -> MS	RELEASE COMPLETE	Shortened channel release procedure
E17	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
F16	SS -> MS	CHANNEL RELEASE	
20	MS		MS display is checked to determine whether the correct call charge has been indicated

NOTE   The value of y is given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

y is set to a constant value of 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

k-value	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
1	10	40	1	0	0	0	0	20	20
2	10	40	1	---------omitted---------				20	40
3	10	40	1	---------omitted---------				20	60

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.3.7 AoCI on a Call Hold call

Purpose:

1) To verify that when the MS invokes a Call Hold call and hence receives Facility IEs containing AoCI e-parameters for each chargeable call the MS returns a FACILITY message containing the AoCI acknowledgement within 1 s of transmission of each set of e-parameters.

Conformance Requirement(s):

1) When the MS invokes a Call Hold call and hence receives Facility IEs containing AoCI e-parameters for each chargeable call the MS shall return a FACILITY message containing the AoCI acknowledgement within 1 s of receiving each set of e-parameters.

Reference(s):

Conformance requirement 1: 3GPP TS 04.13.

Conformance requirement 2: 3GPP TS 02.24, 3GPP TS 04.83, 3GPP TS 04.84, 3GPP TS 04.86.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Support for active state of the call control protocol (U10).

- MMI method of reading the AoCI information.

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCI e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCI acknowledgement within 1 s of transmission of the CONNECT message.

The call (call B) is then put on hold by sending a HOLD message from the MS to the SS. The SS shall reply with a HOLD ACKNOWLEDGE. The traffic channel is now available to originate another call.

The MS is made to initiate a second call (call C). The call is established with certain AoCI e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCI acknowledgement in a FACILITY message within 1 s of transmission of the CONNECT message.

The SS sends the DISCONNECT to the MS for call B x seconds after sending the call B CAI in the CONNECT/FACILITY message and the DISCONNECT for call C y seconds after sending the call C CAI in the CONNECT/FACILITY message.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either D or E branch is taken
D12	MS -> SS	CONNECT ACKNOWLEDGE	
D13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E13	MS -> SS	CONNECT ACKNOWLEDGE	
14	MS		The MS is made to initiate a second call, and the first call is placed on hold. DTMF signalling may occur, when MMI keys are depressed
15	MS -> SS	HOLD	
16	SS -> MS	HOLD ACKNOWLEDGE	
17	MS -> SS	CM SERVICE REQUEST	
18	SS -> MS	CM SERVICE ACCEPT	
19	MS -> SS	SETUP	TI arbitrary but different from existing TI
20	SS -> MS	CALL PROCEEDING	
21	SS -> MS	ALERTING	
22	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either F or G branch is taken
F23	MS -> SS	CONNECT ACKNOWLEDGE	
F24	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G23	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G24	MS -> SS	CONNECT ACKNOWLEDGE	
25			Call durations x and y seconds after respective CAI information sent by SS
			Branch H and I branch are taken, the sequence depending on the durations x and y
H26	SS -> MS	DISCONNECT	For call C y seconds after call C CAI sent
H27	MS -> SS	RELEASE	
H28	SS -> MS	RELEASE COMPLETE	
I26	SS -> MS	DISCONNECT	For call B x seconds after call B CAI sent
I27	MS -> SS	RELEASE	
I28	SS -> MS	RELEASE COMPLETE	
29	SS -> MS	CHANNEL RELEASE	The main signalling link is released
30	MS		MS display is checked to determine whether the correct call charge has been indicated

NOTE   The value of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x,y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x set to 180 s, y is set to 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

Call	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	2	3	4	5	6	7		
B(time x)	7	40	1	0	0	0	0		
C(time y)	13	40	1	0	0	0	0	54	54

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

31.6.3.8 AoCI on a Multi-party call

Purpose:

1) To verify that when the MS invokes a Multi-party call and hence receives Facility IEs containing AoCI e-parameters for each chargeable call the MS returns a FACILITY message containing the AoCI acknowledgement within 1 s of transmission of each set of e-parameters.

2) To verify that when the MS originates a Multi-party call and hence receives Facility IEs containing CAI elements for each chargeable call the CCM records the sum of all the charges for the services currently being used and hence the ME inserts the correct charge in the ACM field of the SIM.

Conformance Requirement(s):

1) When the MS invokes a Multi-party call and hence receives Facility IEs containing AoCI e-parameters for each chargeable call the MS shall return a FACILITY message containing the AoCI acknowledgement within 1 s of receiving each set of e-parameters.

2) When the MS originates a Multi-party call and hence receives Facility IEs containing CAI elements for each chargeable call the CCM shall record the sum of all the charges for the services currently being used and hence the ME shall insert the correct charge in the ACM field of the SIM.

Reference(s):

Conformance requirement 1:   3GPP TS 04.13.

Conformance requirement 2:   3GPP TS 02.24, 3GPP TS 04.83, 3GPP TS 04.84, 3GPP TS 04.86.

Specific PICS Statements

- Supported teleservices (TSPC_AddInfo_TeleSvc).

PIXIT Statements

- Support for active state of the call control protocol (U10).

- MMI method of reading the AoCI information.

Initial Conditions:

System Simulator:

1 cell, default parameters, IMSI attach/detach disabled.

Mobile Station:

The MS is in MM-state "idle, updated".

Foreseen Final State of the MS:

The MS is in MM-state "idle, updated".

Method of Test:

The MS is made to initiate a call. The call is established with certain AoCI e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCI acknowledgement within 1 s of transmission of the CONNECT message.

The call (call B) is then put on hold by sending a HOLD message from the MS to the SS. The SS shall reply with a HOLD ACKNOWLEDGE. The traffic channel is now available to originate another call.

The MS is made to initiate a second call (call C). The call is established with certain AoCI e-parameters sent in a Facility IE in the CONNECT message. The MS shall return the AoCI acknowledgement within 1 s of transmission of the CONNECT message.

The MS invokes the multi-party service by sending a FACILITY message to the SS containing the BuildMPTY request.

The SS accepts the request and connects the MS with the other existing connections (active call C and held call B) and confirms with a FACILITY message.

The SS sends the DISCONNECT to the MS for call B x seconds after sending the call B CAI in the CONNECT message and the DISCONNECT for call C y seconds after sending the call C CAI in the CONNECT message. The MS shall have stored the correct amount on the SIM according to the two sets of e-parameters sent and call times x and y.

Maximum Duration of Test:

10 minutes.

Expected Sequence:

Step	Direction	Message	Comments
0			At start of test only, read and note value of ACM on SIM
1	MS		The MS is made to initiate a call
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	
7	SS -> MS	CALL PROCEEDING	
8	SS -> MS	ASSIGNMENT COMMAND	to a supported channel type
9	MS -> SS	ASSIGNMENT COMPLETE	
10	SS -> MS	ALERTING	
11	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either D or E branch is taken
D12	MS -> SS	CONNECT ACKNOWLEDGE	
D13	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E12	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
E13	MS -> SS	CONNECT ACKNOWLEDGE	
14	MS -> SS	HOLD	The MS is made to initiate a second call and the first call (call B) is placed on hold. DTMF signalling may occur, when MMI keys are depressed
15	MS->SS	HOLD	
16	SS -> MS	HOLD ACKNOWLEDGE	
17	MS -> SS	CM SERVICE REQUEST	
18	SS -> MS	CM SERVICE ACCEPT	

Step	Direction	Message	Comments
19	MS -> SS	SETUP	TI arbitrary but different from existing TI
20	SS -> MS	CALL PROCEEDING	
21	SS -> MS	ALERTING	
22	SS -> MS	CONNECT	As default message except contains Facility IE with contents as indicated in i below
			Either F or G branch is taken
F23	MS -> SS	CONNECT ACKNOWLEDGE	
F24	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G23	MS -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii below
G24	MS -> SS	CONNECT ACKNOWLEDGE	
25	MS -> SS	FACILITY (TI A-B/A-C)	The MS is made to build a multi-party call. DTMF signalling may occur, when MMI keys are depressed. As default message except contains Facility IE with contents as indicated in iii below
26	SS -> MS	FACILITY (TI A-B/A-C)	As default message except contains Facility IE with contents as indicated in iv, below
27			Call durations x and y seconds after respective CAI information sent by SS
			Branch H and branch I are taken, the sequence depending on the durations x and y
H28	SS -> MS	DISCONNECT	For call C y seconds after call C CAI sent
H29	MS -> SS	RELEASE	
H30	SS -> MS	RELEASE COMPLETE	
I28	SS -> MS	DISCONNECT	For call B x seconds after call B CAI sent
I29	MS -> SS	RELEASE	
I30	SS -> MS	RELEASE COMPLETE	
31	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
32	MS		MS display is checked to determine whether the correct call charge has been indicated

NOTE: A-B/A-C indicates a choice. the transaction identifier (TI) used must be that of the active call or the held call (ref. 3GPP TS 04.84).

The values of x and y are given below.

The correct value of the ACM is found from the general AoC formula given in 3GPP TS 02.24 clause 4 with CDUR = x,y seconds and e parameters as defined below.

Specific Message Contents:

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For ASN.1 description see default message contents in subclause 31.6.4.

x set to 180 s, y set to 90 s.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set to:

Call	e-parameter							CCM total at call end increased by	Step 0 ACM value
	1	**2**	**3**	**4**	**5**	**6**	**7**		
B(time x)	19	40	1	0	0	0	0		
C(time y)	29	40	1	0	0	0	0	134	134

Values shown in table are in the format and have units as in 3GPP TS 02.24 clause 3.

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

For ASN.1 description see default message contents in subclause 31.6.4.

iii) FACILITY   Information Element with Invoke = BuildMPTY component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

The following abbreviations are used in the descriptions below:

U   Universal tag class.

CS   Context Specific tag class.

P   Primitive tag form.

C   Constructed tag form.

FIE   Facility Information Element.

Contents Facility IE Identifier	Value/remark As 3GPP TS 04.80	Coding 00011100
Length of FIE contents	8	00001000
Component type tag	CS/C/tag=1	10100001
Component length	6	00000110
Invoke ID tag	U/P/tag=2	00000010
Invoke ID length	1	00000001
Invoke ID	Arbitrary (1 octet)	(00000000)
Op-Code tag	From 3GPP TS 04.80	00000010
Op-Code length	1	00000001
Op-Code	Build Multi-party operation (local value 124)	00000001

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents Facility IE Identifier	Value/remark As 3GPP TS 04.80	Coding 00111100
Length of FIE contents	5	00001001
Component type tag	CS/C/tag=2	10100010
Component length	3	00000011
Invoke ID tag	U/P/Integer	00000010
Invoke ID length	1	00000001
Invoke ID	Same as used as Invoke ID in Invoke FIE	(00000000)

31.6.4   Default contents of messages

As default message contents in 3GPP TS 11.10 subclause 26.8. These messages shall not contain SS version IEs.

Where indicated in specific tests CONNECT and FACILITY messages have Facility Information Elements as defined below.

Default contents of ForwardChargeAdvice Facility Information Elements

The following abbreviations are used in the descriptions below:

U   Universal tag class.

CS   Context Specific tag class.

P   Primitive tag form.

C   Constructed tag form.

FIE   Facility Information Element.

i) FACILITY   Information Element with Invoke = ForwardChargeAdvice component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

Contents	Value/remark	Coding
Facility IE Identifier	As 3GPP TS 04.80	00011100
Length of FIE contents	43	00101011
Component type tag	CS/C/tag=1	10100001
Component length	41	00101001
Invoke ID tag	U/P/tag=2	00000010
Invoke ID length	1	00000001
Invoke ID	Arbitrary	(00000000) (1 octet)
Op-Code tag	From 3GPP TS 04.80	00000010
Op-Code length	1	00000001
Op-Code	Forward Charge	01111101
	Advice operation	(local value 125)
Sequence Identifier	U/C/tag=16	00110000 from CCITT X.208
Length Indicator	33	00100001
SS-Code Identifier	CS/P/tag=0	10000000
Length Indicator	1	00000001
SS-Code	AoCC SS-Code	01110010
	(for AoCC tests)	
	AoCI SS-Code	01110001
	(for AoCI tests)	
Charging Info. identifier	CS/C/tag=1	10100001
Length Indicator	28	00011100
e1 Identifier	CS/P/tag=1	10000001
Length Indicator	2	00000010
e1	(2 Octets)	See e-parameter table in relevant test
e2 Identifier	CS/P/tag=2	10000010
Length Indicator	2	00000010
e2	(2 Octets)	See e-parameter table in relevant test
.	.	.
.	.	.
.	.	.
e7 Identifier	CS/P/tag=7	10000111
Length Indicator	2	00000010
e7	(2 Octets)	See e-parameter table in relevant test

ii) FACILITY   Information Element with Return Result component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents	Value/remark	Coding
Facility IE Identifier	As 3GPP TS 04.80	00111100
Length of FIE contents	5	00001001
Component type tag	CS/C/tag=2	10100010
Component length	3	00000011
Invoke ID tag	U/P/Integer	00000010
Invoke ID length	1	00000001
Invoke ID	Same as used as	(00000000)
Invoke ID in Invoke FIE		

31.7   Additional information transfer supplementary services

(Reserved).

31.8 Call restriction supplementary services

The following abbreviations are used:

BO:	Barring of Outgoing calls.
BAOC:	Barring of All Outgoing Calls.
BOIC:	Barring of Outgoing International Calls.
BOICExHC:	Barring of Outgoing International Call EXcept those directed to the Home PLMN country.
BI:	Barring of Incoming calls.
BAIC:	Barring of All Incoming calls.
BICRoam:	Barring of Incoming when Roaming outside the home PLMN country.
B:	Barring (common name for BAOC, BOIC, BOICExHC, BAIC and BICRoam).

These abbreviations are also used to represent the corresponding SS-Code; e.g. B is the SS-Code for all barring services.

NOTE: The password(s) to be used during tests of this subclause 31.8 may be randomly chosen - unless otherwise stated - in accordance with 3GPP TS 02.04 subclause 5.2.

31.8.1 Registration of a password

31.8.1.1 Registration accepted

31.8.1.1.1 Conformance requirements

1) For registration of a password for all barring services, the MS shall transmit successively:

   1.1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

   1.2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

   1.3) and then the REGISTER message containing a facility IE that includes an invoke of the RegisterPassword operation with parameter values according to the user's request (MMI action).

2) When the mobile subscriber wants to register a new password, the old password, the new password and the repeat of the new password shall be entered into the MS. Then the MS sends to the network an invoke component of the operation "register password".

3) The MS shall be able to send a password by sending a FACILITY message in accordance to the user request (MMI actions).

4) Upon receipt of the result of the procedure, contained in RELEASE COMPLETE or FACILITY message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

   1.1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

   1.2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

   1.3) 3GPP TS 04.88, 3GPP TS 04.80 subclauses 2.3 and 3.6.

   2) 3GPP TS 04.10 subclause 4.2.

   3) 3GPP TS 04.80.

   4) 3GPP TS 02.30.

31.8.1.1.2 Test purpose

1) To check that the MS correctly requests a supplementary service transaction for registration of a password for all barring services in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for registration of a password for all barring services in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the RegisterPassword operation with the expected parameter values for registration of a password for all barring services.

4) To check that when the mobile subscriber wants to register a new password, the old password, the new password and the repeat of the new password shall be entered into the MS before the MS sends to the network a CHANNEL REQUEST.

5) To check that the MS is able to send a password by sending a FACILITY message in accordance to the user request (MMI actions).

6) To check that upon receipt of the result of the procedure, contained in RELEASE COMPLETE or FACILITY message, the MS provides the appropriate user indication (as described by the manufacturer).

These checks are done for:

- All barring services, the result of the operation being sent in a RELEASE COMPLETE message.

31.8.1.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests registration of a new password for all barring services by entering the old password, new password and a repeat of the old password.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the old password.

Upon receipt of the FACILITY message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring a new password.

Upon receipt of the FACILITY message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring again the new password.

Upon receipt of the FACILITY message, the system simulator answers with the RELEASE COMPLETE message with the Facility information element containing the return result of the RegisterPassword operation.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of a password for all call barring services. The old password, the new password and a repeat of the new password are entered.
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	FACILITY	Invoke = GetPassword (password)
8	MS -> SS	FACILITY	GetPassword operation ReturnResult
9	SS -> MS	FACILITY	Invoke = GetPassword (new password)
10	MS -> SS	FACILITY	GetPassword operation ReturnResult
11	SS -> MS	FACILITY	Invoke = GetPassword (new password again)
12	MS -> SS	FACILITY	GetPassword operation ReturnResult
13	SS -> MS	RELEASE COMPLETE	RegisterPassword operation ReturnResult
14	SS -> MS	CHANNEL RELEASE	

Specific message content

step 6 -

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

  invoke = RegisterPassword:

    Supplementary service code = B.

steps 7, 9, and 11 -

- protocol discriminator: non call related SS message.

- message type: FACILITY.

- facility:

  invoke = GetPassword:

    Guidance info: Password (step 7), new password (step 9), new password again (step 11).

The linked ID must be the same as the invoke ID in the invoke of the RegisterPassword operation.

31.8.1.2 Registration rejected

31.8.1.2.1 Rejection after invoke of the RegisterPassword operation

31.8.1.2.1.1 Conformance requirements

1) A transaction of any kind being already established, for registration of a password for all call restriction services, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation",

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the RegisterPassword operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.8.1.2.1.2 Test purpose

1) To check that, when a call transaction is already established, the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of registration of a password for all call restriction services, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the RegisterPassword operation with the expected parameter values for registration of a password for all call restriction services.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

Those checks are performed with a call transaction already established for:

- all call restriction services, the RELEASE COMPLETE message being sent at the beginning of the procedure with a facility IE containing a return_error(error) where error is "SS subscription violation".

31.8.1.2.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests registration of a new password for all call restriction services by entering the old password, the new password and a repeat of the new password.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE (PD and TI of the SS transaction) message with the Facility information element containing a Return_error(error: SS subscription violation) of the RegisterPassword operation.

Upon receipt of the FACILITY message, the system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

2 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of a new password for all call restriction services. The old password, the new password and a repeat of the new password are entered.
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	RegisterPassword operation Return_error
6	MS		provide correct MMI user indication
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	STATUS	CC staTE U10

Specific message content

> step 4 -

>> - protocol discriminator: non call related SS message.

>> - message type: REGISTER.

>> - facility:

>> invoke = RegisterPassword:

>>> Supplementary service code = all call restrictions.

> step 5 -

>> - protocol discriminator: non call related SS message.

>> - transaction identifier: same TI as previous REGISTER message.

>> - message type: RELEASE COMPLETE.

>> - facility:

>>> return error code: SS subscription violation.

For the return error the invoke ID must be the same as in the invoke of the RegisterPassword operation.

31.8.1.2.2 Rejection after password check with negative result

31.8.1.2.2.1 Conformance requirements

1) A transaction of any kind being already established, for registration of a password for all call restriction services, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the RegisterPassword operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
   3GPP TS 04.80 subclauses 2.3 and 3.6,
   3GPP TS 04.10 subclause 4.2.2,
   3GPP TS 03.11 clause 3.

4) 3GPP TS 02.30 subclause 4.5.

31.8.1.2.2.2 Test purpose

1) To check that, when a call transaction is already established, the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of registration of a password for all call restriction services, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the RegisterPassword operation with the expected parameter values for registration of a password for all call restriction services.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

Those checks are performed with a call transaction already established for:

- all call restriction services, the RELEASE COMPLETE message being sent at the end of the procedure with a facility IE containing a return_error(error) where error is "NegativePasswordCheck".

31.8.1.2.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

WPA > 3.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests registration of a new password for all call restriction services. By means of appropriate MMI functions the user enters the old and new passwords.

Upon receipt of the REGISTER message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the old password.

Upon receipt of the FACILITY message, the system simulator answers with the RELEASE COMPLETE message (PD and TI of the SS transaction) with the Facility information element containing a Return_error(error: NegativePasswordCheck) of the RegisterPassword operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of a new password for all call restriction services. The old and new passwords are entered.
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	FACILITY	Invoke = GetPassword (password)
6	SS -> MS	RELEASE COMPLETE	Register Password operation ReturnError
7	MS		provide correct MMI user indication
8	SS -> MS	STATUS ENQUIRY	
9	MS -> SS	STATUS	CC staTE U10

Specific message content

step 4 -

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = RegisterPassword:

Supplementary service code = B.

step 6 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

error code: NegativePasswordCheck.

For the reject the invoke ID must be the same as in the invoke of the Registerpassword operation.

step 5 -

- protocol discriminator: non call related SS message.

- transaction identifier: in FACILITY same as previous REGISTER message.

- message type: FACILITY.

- facility:

invoke = GetPassword:

Guidance info: Password (step 1).

31.8.1.2.3 Rejection after new password mismatch

31.8.1.2.3.1 Conformance requirements

1) A transaction of any kind being already established, for registration of a password for all call restriction services, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the RegisterPassword operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

5) 3GPP TS 04.10 subclause 4.2.

31.8.1.2.3.2 Test purpose

1) To check that, when a call transaction is already established, the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of registration of a password for all call restriction services, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the RegisterPassword operation with the expected parameter values for registration of a password for all call restriction services.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

Those checks are performed with a call transaction already established for:

- all call restriction services, the RELEASE COMPLETE message being sent at the end of the procedure with a facility IE containing a return_error(error) where error is "PasswordRegistrationFailure" with diagnostic "new password mismatch".

31.8.1.2.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests registration of a new password for all call restriction services by entering the old password, the new password and a repeat of the new password.

Upon receipt of the REGISTER message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the old password.

Upon receipt of the FACILITY message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the new password.

Upon receipt of the FACILITY message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring again the new password.

Upon receipt of the FACILITY message, the system simulator answers with the RELEASE COMPLETE message (PD and TI of the SS transaction) with the Facility information element containing a Return_error(error: PasswordRegistrationFailure, parameter: NewPasswordMismatch) of the RegisterPassword operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of a new password for all call restriction services. The old password, new password and a repeat of the new password are entered.
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	FACILITY	Invoke = GetPassword (password)
6	MS -> SS	FACILITY	GetPassword operation ReturnResult
7	SS -> MS	FACILITY	Invoke = GetPassword (new password)
8	MS -> SS	FACILITY	GetPassword operation ReturnResult
9	SS -> MS	FACILITY	Invoke = GetPassword (new password again)
10	MS -> SS	FACILITY	GetPassword operation ReturnResult
11	SS -> MS	RELEASE COMPLETE	Register Password operation ReturnError
12	MS		provide correct MMI user indication
13	SS -> MS	STATUS ENQUIRY	
14	MS -> SS	STATUS	CC staTE U10

Specific message content

step 4 -

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = RegisterPassword:

Supplementary service code = B.

step 11 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

    error code: PasswordRegistrationFailure.

    parameter: NewPasswordMismatch.

For the reject the invoke ID must be the same as in the invoke of the Registerpassword operation.

steps 5, 7, and 8 -

- protocol discriminator: non call related SS message.

- transaction identifier: in FACILITY same as previous REGISTER message.

- message type: FACILITY.

- facility:

    invoke = GetPassword:

    Supplementary service code = B.

    Guidance info: Password (step 5), new password (step 7), new password again (step 8).

31.8.2 Erasure

Not applicable.

31.8.3 Activation

31.8.3.1 Activation accepted

31.8.3.1.1 Conformance requirements

1) For activation of any specific call restriction service with any parameters, the MS shall transmit successively

    1.1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

    1.2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

    1.3) and then the REGISTER message containing a facility IE that includes an invoke of the ActivateSS operation with parameter values according to the user's request (MMI action).

2) Upon receipt of FACILITY message requiring the password, the MS shall be able to send a password by sending a FACILITY message.

3) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.2.9.

2) 3GPP TS 04.88,
   3GPP TS 04.80 subclauses 2.3 and 3.6.

3) 3GPP TS 02.30 subclause 4.5.

31.8.3.1.2 Test purpose

1) To check that the MS correctly requests a supplementary service transaction for activation of a specific call restriction service in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for activation of call restriction service in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the ActivateSS operation with the expected parameter values for activation of a specific call restriction service.

4) To check that upon receipt of FACILITY message requiring the password, the MS is able to send a password by sending a FACILITY.

5) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (which is to be described by the manufacturer).

These checks are done for:

a) BAOC, for basic service group "all synchronous services".

b) BICRoam, for all basic service groups.

31.8.3.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests activation of BAOC, for basic service group "all synchronous services".

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the current password.

If the manufacturer defined MMI has been used to request the activation of BAOC, then the MS may, by means of appropriate manufacturer defined MMI functions, prompt the user to give a password, depending on the implementation of the manufacturer defined MMI functions.

Upon receipt of the FACILITY message, the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the Return_result of the ActivateSS operation.

The SS transaction and the dedicated channel are released.

Then again, by means of appropriate MMI functions, the user requests activation of BICRoam, for all basic service groups.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the current password.

If the manufacturer defined MMI has been used to request the activation of BICRoam, then the MS may, by means of appropriate manufacturer defined MMI functions, prompt the user to give a password, depending on the implementation of the manufacturer defined MMI functions.

Upon receipt of the FACILITY message, the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the Return_result of the ActivateSS operation.

The dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a activation of BAOC(all synchronous services)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	FACILITY	GetPassword
8	MS -> SS	FACILITY	Getpassword operation Return Result
9	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return_result
10	MS		provide user MMI indication
11	SS -> MS	CHANNEL RELEASE	
12	MS		The MS is made to initiate an activation of BICRoam(all basic service groups),
13	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
14	SS -> MS	IMMEDIATE ASSIGNMENT	
15	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
16	SS -> MS	CM SERVICE ACCEPT	
17	MS -> SS	REGISTER	
18	SS -> MS	FACILITY	GetPassword
19	MS -> SS	FACILITY	Getpassword operation Return Result
20	SS -> MS	RELEASE COMPLETE	ActivateSS operation Return result
21	MS		provide correct MMI user indication
22	SS -> MS	CHANNEL RELEASE	

Specific message contents

step 6 - BAOC

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Activation:

Supplementary service code = BAOC.

Basic service code: Bearer Service (all synchronous services), no teleservice present.

step 17 - BICRoam

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Activation:

Supplementary service code = BICRoam.

Basic service code: no bearer service present, no teleservice present.

steps 7, 18 -

- protocol discriminator: non call related SS message.

- transaction identifier: in FACILITY same as previous REGISTER message.

- message type: FACILITY.

- facility:

invoke = GetPassword:

Guidance info: Password.

31.8.3.2 Activation rejected

31.8.3.2.1 Rejection after invoke of ActivateSS operation

31.8.3.2.1.1 Conformance requirements

1) A transaction of any kind being already established, for activation of one specific barring services, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the ActivateSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.8.3.2.1.2 Test purpose

1) To check that, when a call transaction is already established, the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of specific call barring service, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the ActivateSS operation with the expected parameter values for specific call barring service.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

Those checks are performed with a call transaction already established for:

- BOIC, the RELEASE COMPLETE message being sent at the beginning of the procedure with a facility IE containing a return_error(error) where error is "SS subscription violation".

31.8.3.2.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests activation of BOIC.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE (PD and TI of the SS transaction) message with the Facility information element containing a Return_error(error: SS subscription violation) of the ActivateSS operation.

The system simulator then sends STATUS ENQUIRY, and the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

2 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of a new password for BOIC
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	RegisterPassword operation Return_error
6	MS		provide correct MMI user indication
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	STATUS	CC state U10

Specific message content

step 4 -

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

  invoke = ActivateSS:

    Supplementary service code = BOIC.

step 5 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

  return error code: SS subscription violation.

For the return error the invoke ID must be the same as in the invoke of the ActivateSS operation.

31.8.3.2.2 Rejection after use of password procedure

31.8.3.2.2.1 Conformance requirements

1) A transaction of any kind being already established, for activation of any specific call restriction services, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the ActivateSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
   3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.8.3.2.2.2 Test purpose

1) To check that, when a call transaction is already established, the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of activation of one specific call restriction service, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the ActivateSS operation with the expected parameter values for activation of one specific call restriction service.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

Those checks are performed with a call transaction already established for:

- BAIC, the RELEASE COMPLETE message being sent at the end of the procedure with a facility IE containing a return_error(error) where error is "NegativePasswordCheck".

31.8.3.2.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests activation of BAIC.

Upon receipt of the REGISTER message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the current password.

If the manufacturer defined MMI has been used to request the activation of BAIC, then the MS may, by means of appropriate manufacturer defined MMI functions, prompt the user to give a password, depending on the implementation of the manufacturer defined MMI functions.

Upon receipt of the FACILITY message, the system simulator sends RELEASE COMPLETE message (PD and TI of the SS transaction) with the Facility information element containing a Return_error(error: NegativePasswordCheck) of the GetPassword operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of BAIC
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	FACILITY	Invoke = GetPassword (password)
6	MS -> SS	FACILITY	GetPassword operation Return Result
7	SS -> MS	RELEASE COMPLETE	Register Password operation ReturnError
8	MS		provide correct MMI user indication
9	SS -> MS	STATUS ENQUIRY	
10	MS -> SS	STATUS	CC state U10

Specific message content

step 4 - BAIC

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

 invoke = Activation:

 Supplementary service code = BAIC.

step 5 - All Barring services

- protocol discriminator: non call related SS message.

- transaction identifier: in FACILITY same as previous REGISTER message.

- message type: FACILITY.

- facility:

 invoke = GetPassword:

 Guidance info: Password (step 5).

step 8 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

 reject code: NegativePasswordCheck.

For the reject the invoke ID must be the same as in the invoke of the GetPassword operation.

31.8.4 Deactivation

31.8.4.1 Deactivation accepted

31.8.4.1.1 Conformance requirements

1) For deactivation of any group of call restriction services with any parameters, the MS shall transmit successively

 1.1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

 1.2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

 1.3) and then the REGISTER message containing a facility IE that includes an invoke of the DeactivateSS operation with parameter values according to the user's request (MMI action).

2) Upon receipt of FACILITY message requiring the password, the MS shall be able to send a password by sending a FACILITY message.

3) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.2.9.

2) 3GPP TS 04.88,
3GPP TS 04.80 subclauses 2.3 and 3.6.

3) 3GPP TS 02.30 subclause 4.5.

31.8.4.1.2 Test purpose

1) To check that the MS correctly requests a supplementary service transaction for deactivation of a group of call barring services in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for deactivation of a group of call barring services in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the DeactivateSS operation with the expected parameter values for deactivation of a group of call restriction services.

4) To check that upon receipt of FACILITY message requiring the password, the MS is able to send a password by sending a FACILITY message.

5) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (which is to be described by the manufacturer).

These checks are done for:

a) all restrictions, for basic service group "speech".

b) barring of outgoing calls, for all facsimile.

31.8.4.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests deactivation of all restrictions, for speech.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the current password.

If the manufacturer defined MMI has been used to request the deactivation of all restrictions for speech, then the MS may, by means of appropriate manufacturer defined MMI functions, prompt the user to give a password, depending on the implementation of the manufacturer defined MMI functions.

Upon receipt of the FACILITY message, the system simulator answers with the FACILITY message with the Facility information element containing the Return_result of the DeactivateSS operation.

The SS transaction and the dedicated channel are released.

Then again, by means of appropriate MMI functions, the user requests deactivation of barring of outgoing calls, for all facsimile.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the GetPassword operation requiring the current password.

If the manufacturer defined MMI has been used to request the deactivation of barring of outgoing calls for all facsimile, then the MS may, by means of appropriate manufacturer defined MMI functions, prompt the user to give a password, depending on the implementation of the manufacturer defined MMI functions.

Upon receipt of the FACILITY message, the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the Return_result of the DeactivateSS operation.

The dedicated channel is released.

Maximum duration of test

5 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a deactivation of all call restrictions (speech)
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	FACILITY	GetPassword
8	MS -> SS	FACILITY	Getpassword operation Return Result
9	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return_result
10	SS -> MS	CHANNEL RELEASE	
11	MS		The MS is made to initiate a deactivation of barring of outgoing calls (all facsimile),
12	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
13	SS -> MS	IMMEDIATE ASSIGNMENT	
14	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
15	SS -> MS	CM SERVICE ACCEPT	
16	MS -> SS	REGISTER	
17	SS -> MS	FACILITY	GetPassword
18	MS -> SS	FACILITY	Getpassword operation Return Result
19	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return result
20	MS		provide correct MMI user indication
21	SS -> MS	CHANNEL RELEASE	

Specific message contents

   step 6 - all call restrictions:

      - protocol discriminator: non call related SS message.

      - message type: REGISTER.

      - facility:

invoke = Deactivation:

    Supplementary service code = B.

    Basic service code: no Bearer Service present, Tele Service AllSpeechTransmissionServices (TS10) or Telephony (TS 11).

step 16 - barring of outgoing calls,

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Deactivation:

    Basic service code: no bearer service present, teleservice: all facsimile.

steps 7, 17 -

- protocol discriminator: non call related SS message.

- transaction identifier: in FACILITY same as previous REGISTER message.

- message type: FACILITY.

- facility:

invoke = GetPassword:

    Guidance info: Password.

31.8.4.2 Deactivation rejected

31.8.4.2.1 Rejection after invoke of DeactivateSS operation

31.8.4.2.1.1 Conformance requirements

1) A transaction of any kind being already established, for deactivation of a group of call restriction services, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the DeactivateSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.8.4.2.1.2 Test purpose

1) To check that, when a call transaction is already established, the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of a group of call barring services, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the DeactivateSS operation with the expected parameter values for a group of call barring services.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

These checks are performed with a call transaction already established for:

BOIC, the RELEASE COMPLETE message being sent at the beginning of the procedure with a facility IE containing a return_error(error) where error is "SS subscription violation".

31.8.4.2.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests deactivation of incoming calls.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with the RELEASE COMPLETE (PD and TI of the SS transaction) message with the Facility information element containing a Return_error(error: SS subscription violation) of the DeactivateSS operation.

The system simulator then sends STATUS ENQUIRY, and the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

30 s.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a deactivation for bi
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	DeactivateSS operation Return_error
6	MS		provide correct MMI user indication
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	STATUS	CC state U10

Specific message content

    step 4 -

        -    protocol discriminator: non call related SS message.

        -    message type: REGISTER.

        -    facility:

        invoke = DeactivateSS:

            Supplementary service code = bi.

    step 5 -

        -    protocol discriminator: non call related SS message.

        -    transaction identifier: same TI as previous REGISTER message.

        -    message type: RELEASE COMPLETE.

        -    facility:

            return error code: SS subscription violation.

For the return error the invoke ID must be the same as in the invoke of the DeactivateSS operation.

31.8.4.2.2 Rejection after use of password procedure

31.8.4.2.2.1 Conformance requirements

1) A transaction of any kind being already established, for deactivation of a group of call restriction services, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the DeactivateSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.8.4.2.2.2 Test purpose

1) To check that, when a call transaction is already established, the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of deactivation of a group of call restriction services, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the DeactivateSS operation with the expected parameter values for deactivation of a group of call restriction service.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

Those checks are performed with a call transaction already established for:

BOICExHC, the RELEASE COMPLETE message being sent at the end of the procedure with a facility IE containing a return_error(error) where error is "NegativePasswordCheck".

31.8.4.2.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests deactivation of a group of call restriction services.

Upon receipt of the REGISTER message, the system simulator answers with the FACILITY message with the Facility information element containing an invoke of the DeactivateSS operation requiring the current password.

If the manufacturer defined MMI has been used to request the deactivation of a group of call restriction services, then the MS may, by means of appropriate manufacturer defined MMI functions, prompt the user to give a password, depending on the implementation of the manufacturer defined MMI functions.

Upon receipt of the FACILITY message, the system simulator sends RELEASE COMPLETE message (PD and TI of the SS transaction) with the Facility information element containing a Return_error(error: NegativePasswordCheck) of the GetPassword operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a deactivation of BoicExHC
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	FACILITY	Invoke = GetPassword (password)
6	MS -> SS	FACILITY	GetPassword operation Return Result
7	SS -> MS	RELEASE COMPLETE	Register Password operation ReturnError
8	MS		provide correct MMI user indication
9	SS -> MS	STATUS ENQUIRY	
10	MS -> SS	STATUS	CC state U10

Specific message content

step 4 -

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = DeactivateSS:

Supplementary service code = BOICExHC.

step 7 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

reject code: NegativePasswordCheck.

For the reject the invoke ID must be the same as in the invoke of the DeactivateSS operation.

step 5 -

- protocol discriminator: non call related SS message.

- transaction identifier: in FACILITY same as previous REGISTER message.

- message type: FACILITY.

- facility:

invoke = GetPassword:

Guidance info: Password (step 5).

31.8.5 Invocation

Invocation is not applicable.

31.8.6 Interrogation

31.8.6.1 Interrogation accepted

31.8.6.1.1 Conformance requirements

1) For interrogation of any specific call restriction service with any parameters, the MS shall transmit successively:

   1.1) a CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user";

   1.2) a CM SERVICE REQUEST with CM service type indicating "supplementary service activation";

   1.3) and then the REGISTER message containing a facility IE that includes an invoke of the InterrogateSS operation with parameter values according to the user's request (MMI action).

2) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
   3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.8.6.1.2 Test purpose

1) To check that the MS correctly requests a supplementary service transaction for interrogation of a specific call barring service in CHANNEL REQUEST message.

2) To check that the MS correctly requests a supplementary service transaction for interrogation of a call barring service in the subsequent CM SERVICE REQUEST.

3) To check that the MS sends a REGISTER message containing the invoke of the InterrogateSS operation with the expected parameter values for interrogation of one call restriction service.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (which is to be described by the manufacturer).

These checks are done for:

a) BAIC, the result of the operation being a Basic Service code if supported by the MS.

b) BOICExHC, the result of the operation being a SS-status if supported by the MS.

31.8.6.1.3 Method of test

Initial conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS is "idle updated".

Specific PICS Statements

- Support of Barring of All Incoming Calls (TSPC_Serv_SS_BAIC)

- Support of Barring of Outgoing International Calls except those directed to the Home PLMN Country (TSPC_Serv_SS_BOICexHC)

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of BAIC if supported by the MS.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the Return_result (basic service) of the InterrogateSS operation.

The SS transaction and the dedicated channel are released.

By means of appropriate MMI functions, the user requests interrogation of BOICExHC if supported by the MS.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the Return_result(SS-status) of the InterrogateSS operation.

The dedicated channel is released.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
			Steps 1-9 are applicable if MS supports BAIC (TSPC_Serv_SS_BAIC) and steps 10-18 are applicable if MS supports BOICExHC (TSPC_Serv_SS_BOICExHC).
1	MS		The MS is made to initiate a interrogation of BAIC
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	
7	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_result
8	MS		provide correct MMI user indication
9	SS -> MS	CHANNEL RELEASE	
10	MS		The MS is made to initiate a interrogation of call forwarding service for BOICExHC,
11	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
12	SS -> MS	IMMEDIATE ASSIGNMENT	
13	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
14	SS -> MS	CM SERVICE ACCEPT	
15	MS -> SS	REGISTER	
16	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return result
17	MS		provide correct MMI user indication
18	SS -> MS	CHANNEL RELEASE	

Specific message contents

step 6 - BOIC

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = BAIC.

step 14 - BOICExHC

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = BOICExHC.

31.8.6.2 Interrogation rejected

31.8.6.2.1 Conformance requirements

1) A transaction of any kind being already established, for interrogation of any specific call barring with any parameters, the MS shall establish a parallel MM transaction, sending a CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

2) Then the MS shall send a REGISTER message related to the present SS transaction containing a facility IE that includes an invoke of the InterrogateSS operation with parameter values according to the user's request (MMI action).

3) Upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the SS transaction shall be released but the first transaction shall remain unaffected.

4) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the Manufacturer).

References

1) 3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.1.2 and 9.1.9.

2) 3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1, 9.2.9 and 10.5.3.3.

3) 3GPP TS 04.88,
3GPP TS 04.80 subclauses 2.3 and 3.6.

4) 3GPP TS 02.30 subclause 4.5.

31.8.6.2.2 Test purpose

1) To check that the MS correctly requests the establishment of a parallel MM transaction for supplementary service transaction of interrogation of a specific call barring service message, sending a CM SERVICE REQUEST.

2) To check that the MS sends a REGISTER message containing the invoke of the InterrogateSS operation with the expected parameter values for interrogation of call barring.

3) To check that upon receipt of the RELEASE COMPLETE message related to the present SS transaction, the first transaction remains unaffected.

4) To check that upon receipt of the RELEASE COMPLETE message, the MS provides the appropriate user indication (as described by the Manufacturer).

These checks are performed with a call transaction already established for:

a) BICRoam, the RELEASE COMPLETE message being sent with a facility IE containing a return_error(error) where error is "SS not available".

b) BOIC, the RELEASE COMPLETE message being sent with a facility IE containing a reject(invoke_problem) where invoke_problem is "resource limitation".

31.8.6.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in CC state U10.

Specific PICS Statements

- Barring of Outgoing International Calls (TSPC_Serv_SS_BOIC)

 Barring of Incoming Calls when Roaming Outside the Home PLMN Country (TSPC_Serv_SS_BICRoam)

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is in CC state U10.

Test procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of BICRoam if supported by the MS.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing a Return_error(error: SS not available) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

By means of appropriate MMI functions, the user requests interrogation of BOIC if supported by the MS.

Upon receipt of the REGISTER message, the system simulator answers with the RELEASE COMPLETE message (same PD and TI that in the REGISTER message) with the Facility information element containing a reject(invoke_problem: resource limitation) of the InterrogateSS operation.

The system simulator sends STATUS ENQUIRY, the MS responds with STATUS message indicating CC state U10.

Maximum duration of test

3 minutes.

Expected sequence

Step	Direction	Message	Comments
			Steps 1-8 are applicable if MS supports BICRoam (TSPC_Serv_SS_BICRoam) and Steps 9-16 are applicable if MS supports BOIC(TSPC_Serv_SS_BOIC).
1	MS		The MS is made to initiate a interrogation of call barring service for BICRoam
2	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
3	SS -> MS	CM SERVICE ACCEPT	
4	MS -> SS	REGISTER	
5	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_error
6	MS		provide correct MMI user indication
7	SS -> MS	STATUS ENQUIRY	
8	MS -> SS	STATUS	CC state U10
9	MS		The MS is made to initiate a interrogation of call barring service for BOIC
10	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
11	SS -> MS	CM SERVICE ACCEPT	
12	MS -> SS	REGISTER	
13	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_reject
14	MS		provide correct MMI user indication
15	SS -> MS	STATUS ENQUIRY	
16	MS -> SS	STATUS	CC state U10

Specific message content

step 4 - BICRoam

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = BICRoam.

step 5 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

return error code: SS not available.

For the return error the invoke ID must be the same as in the invoke of the InterrogateSS operation.

step 11 - BOIC

- protocol discriminator: non call related SS message.

- message type: REGISTER.

- facility:

invoke = Interrogation:

Supplementary service code = BOIC.

step 12 -

- protocol discriminator: non call related SS message.

- transaction identifier: same TI as previous REGISTER message.

- message type: RELEASE COMPLETE.

- facility:

reject code: resource limitation.

For the reject the invoke ID must be the same as in the invoke of the InterrogateSS operation.

31.8.7 Normal operation

In case of barring of outgoing call the calling mobile receives information about the activation of supplementary services subscribed.

In case of barring of incoming call the calling mobile receives information about the activation of supplementary services subscribed by the other party (the mobile called).

31.8.7.1 Conformance requirements

Upon receipt of the RELEASE COMPLETE message the MS shall provide the appropriate user indication (which is to be described by the manufacturer).

References

31.8.7.2 Test purpose

To check that upon receipt of the RELEASE COMPLETE message the MS provides the appropriate user indication (as described by the manufacturer).

This is tested in the case of an MS making a call to a mobile with incoming calls barred.

31.8.7.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is "idle updated".

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of the answers from the network for call barring.

Foreseen final state of the MS

The MS is "idle updated".

Test procedure

The MS is made to initiate a call.

Upon receipt of the SETUP message, the system simulator answers with the negative acknowledgement RELEASE COMPLETE (to simulate a case where call barring is activated).

Maximum duration of test

1 minute.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	
2	SS -> MS	IMMEDIATE ASSIGNMENT	
3	MS -> SS	CM SERVICE REQUEST	
4	SS -> MS	CM SERVICE ACCEPT	
5	MS -> SS	SETUP	
6	SS -> MS	RELEASE COMPLETE	provide correct MMI user indication
7	SS -> MS	CHANNEL RELEASE	

Specific message content

RELEASE COMPLETE

- protocol discriminator.

- transaction identifier.

- message type.

- cause: cause value #8.

- facility:

invoke = notification:

SS code = BI.

SS status = activation indicator (indicating: Provisioned, registered and active).

31.9 Handling of undefined (future) GSM supplementary services

31.9.1 Mobile station initiated Unstructured supplementary service data operation

31.9.1.1 ProcessUnstructuredSS-request/accepted

Conformance requirements

1) The mobile station shall invoke an USSD request by sending a REGISTER message to the network containing a ProcessUnstructuredSS-Request invoke component. This message will contain the alphabet indicator set to "SMS default alphabet" and the language indicator set to "language unspecified". The ussd-string parameter shall contain the following digits and symbols depending on the operation initiated:

Activation: *NN(N)# (no supplementary information included)

*NN(N)*SI# (one field of supplementary infor. included)

*NN(N)*SIA*SIB# (two fields of supplementary infor. included)

Deactivation: #NN(N)#

#NN(N)*SI#

#NN(N)*SIA*SIB#

Interrogation: *#NN(N)#

*#NN(N)*SI#

*#NN(N)*SIA*SIB#

Registration **NN(N)#

**NN(N)*SI#

**NN(N)*SIA*SIB#

Erasure ##NN(N)#

##NN(N)*SI#

##NN(N)*SIA*SIB#

Operations not yet: see conformance requirement 2).

defined in 3GPP TS 02.30.

NN(N) features a set of service codes which have not yet been allocated for GSM supplementary services (see 3GPP TS 02.30 for service codes already specified).

N is a digit within 1..9 and SI, SIA, SIB strings of characters.

2) Concerning operations which are not yet specified in 3GPP TS 02.30, the MS shall proceed as follows:

The entry of 1 or 2 characters defined in the 3GPP TS 03.38 default alphabet followed by "SEND" shall be interpreted by the MS as an USSD request unless the MS is not engaged in a call and the first of the two character entry followed by "SEND" is a "1". Except if the 1 or 2 characters are MS manufacturer defined procedure in idle mode.

3) For supplementary service procedures independent of any call, the initiating side shall establish a MM-connection between the network and the mobile station according to the rules given in 3GPP TS 04.08 / 3GPP TS 24.008.

4) Within a call, the MS shall transmit a USSD request from the user if any. See 3GPP TS 04.07 and 3GPP TS 04.08 / 3GPP TS 24.008 for the handling of multiple MM connections.

5) Upon receipt of the RELEASE COMPLETE message, the MS shall display the information contained to the user in a way described by the manufacturer.

References

Conformance requirement 1: 3GPP TS 04.90 subclause 6.1,
3GPP TS 02.30 subclause 4.5.2, and
3GPP TS 02.90 subclause 4.1.1.

Conformance requirement 2: 3GPP TS 02.30 subclause 4.5.3.2.

Conformance requirement 3: 3GPP TS 04.10 subclause 3.2.1.

Conformance requirement 4: 3GPP TS 04.08 / 3GPP TS 24.008 subclause 4.5.1.1.

Conformance requirement 5: 3GPP TS 03.90 subclause 6.2.1.

Test Purpose

1) To verify that the mobile station invokes an USSD request by sending a REGISTER message to the network containing a ProcessUnstructuredSS-Request invoke component. This message will contain the alphabet indicator set to "SMS default alphabet" and the language indicator set to "language unspecified". The ussd-string parameter shall contain the following digits and symbols depending on the operation initiated:

Activation	*NN(N)# (no supplementary information included)
	*NN(N)*SI# (one field of supplementary infor. included)
	*NN(N)*SIA*SIB# (two fields of supplementary infor. included)
Deactivation	#NN(N)#
	#NN(N)*SI#
	#NN(N)*SIA*SIB#
Interrogation	*#NN(N)#
	*#NN(N)*SI#
	*#NN(N)*SIA*SIB#
Registration	**NN(N)#
	**NN(N)*SI#
	**NN(N)*SIA*SIB#
Erasure	##NN(N)#
	##NN(N)*SI#
	##NN(N)*SIA*SIB#

Operations not yet: see 2).

    defined in 3GPP TS 02.30

NN(N) features a set of service codes which have not yet been allocated for GSM supplementary services (see 3GPP TS 02.30 for service codes already specified).

N is a digit within 1..9 and SI, SIA, SIB strings of characters.

2) To check that the entry of 1 or 2 characters defined in the 3GPP TS 03.38 default alphabet followed by "SEND" shall be interpreted by the MS as an USSD request unless the MS is not engaged in a call and the first of the two character entry followed by "SEND" is a "1". Except if the 1 or 2 characters are MS manufacturer defined procedure in idle mode.

3) To verify that, for supplementary service procedures independent of any call, the initiating side must establish a MM-connection between the network and the mobile station according to the rules given in 3GPP TS 04.07 and 3GPP TS 04.08 / 3GPP TS 24.008.

4) To verify that, within a call the MS shall transmit a USSD request if any. See 3GPP TS 04.07 and 3GPP TS 04.08 / 3GPP TS 24.008 for the handling of multiple MM connections.

5) To check that upon receipt of the RELEASE COMPLETE message, the MS shall display the information contained to the user in a way described by the manufacturer.

Specific PICS Statements

-

PIXIT Statements

- Description of the user's commands and of display of USSD.

- Identification of the short strings defining MS manufacturer defined procedure in idle mode (1 or 2 characters defined in the 3GPP TS 03.38 default alphabet followed by "SEND").

Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle updated".

Foreseen final state of the MS

MM-state "idle updated".

Test Procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI) the mobile is made to initiate an Unstructured SS data operation. The mobile first establishes a MM-connection with the SS. Then, a REGISTER message is sent to the SS. Upon receipt of this message, the system simulator answers with the RELEASE COMPLETE message. Then a CHANNEL RELEASE message is sent to the MS to release the main signalling link.

The mobile station is forced to originate a call. After the MS has received a CONNECT ACKNOWLEDGE, MMI keys are depressed on the mobile in order to initiate an Unstructured SS data operation. Then a REGISTER message is sent to the SS. Upon receipt of this message, the system simulator answers with the RELEASE COMPLETE message. Finally, the main signalling link is released by transferring a CHANNEL RELEASE message to the MS.

Expected Sequence

The sequence is executed for execution counters c=1,..,16.

The second part of the sequence, namely from step 9 to step 18, is executed for execution counter c=17.

Counter c determines the ussd-string selected by the user and sent by the MS (see specific message contents concerning the REGISTER message).

Step	Direction	Message	Comments
1	MS		The user presses appropriate MMI keys to initiate the desired unstructured SS data operation.
2	MS -> SS	CHANNEL REQUEST	with establishment cause set to "Other procedures which can be completed with an SDCCH".
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	"Supplementary service activation".
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	The SS checks that the content of this message matches specific message content i).
7	SS -> MS	RELEASE COMPLETE	It terminates the transaction used to initiate the desired unstructured SS data operation. It is checked that the ussd string, if any, is displayed by the MS in a way described by the manufacturer. See ii).
8	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
9	MS		The MS is brought to state U10 by initiating a Mobile originating call
10			Specific MMI keys are depressed to initiate the desired undefined SS service operation. DTMF signalling may occur.
11	MS -> SS	CM SERVICE REQUEST	"Supplementary service activation".
12	SS -> MS	CM SERVICE ACCEPT	
13	MS -> SS	REGISTER	The MS starts the transaction on the radio interface. The SS checks that REGISTER matches i).
14	SS -> MS	RELEASE COMPLETE	It terminates the transaction used to activate the desired undefined SS data operation. See specific message contents ii).
15	SS -> MS	DISCONNECT	
16	MS -> SS	RELEASE	
17	SS -> MS	RELEASE COMPLETE	See message contents iii).
18	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific message contents.

i) REGISTER message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	
Register message type	As 3GPP TS 04.80
Facility Information Element	See below
SS version indicator	As specified in 3GPP TS 04.80

Facility Information Element with Invoke = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Invoke from 3GPP TS 04.80
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	Arbitrary (1 octet)
Operation Code tag	From 3GPP TS 04.80
Operation Code length	1
Operation Code	ProcessUnstructuredSS-Request
ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
ussd-string	c=1, *60# (Activation with no supplementary information included) c=2, *201*35# (Activation with one field of supplementary information included) c=3, *70*635*562# (Activation with two fields of supplementary information included) c=4, #60# (Deactivation with no supplementary information included) c=5, #201*35# (Deactivation with one field of supplementary information included) c=6, #70*635*562# (Deactivation with two fields of supplementary information included) c=7, *#60# (Interrogation with no supplementary information included) c=8, *#201*35# (Interrogation with one field of supplementary information included) c=9, *#70*635*562# (Interrogation with two fields of supplementary information included) c=10, **60# (Registration with no supplementary information included) c=11, **201*35# (Registration with one field of supplementary information included) c=12, **70*635*562# (Registration with two fields of supplementary information included) c=13, ##60# (Erasure with no supplementary information included) c=14, ##201*35# (Erasure with one field of supplementary information included) c=15, ##70*635*562# (Erasure with two fields of supplementary information included) in idle mode : c=16, 1 or 2 characters defined in the 3GPP TS 03.38 default alphabet followed by "SEND" (related to conformance requirement 2). This short string shall not be a MS manufacturer defined procedure as identified in PIXIT statements and shall not be in the format 1x in active call : c=16, 36 (related to conformance requirement 2) in active call : c=17, 7 (related to conformance requirement 2)

ii) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	the transaction value is the same as REGISTER transaction value but the transaction flag is different
Release Complete message type	As 3GPP TS 04.80
Cause	omitted.
Facility Information Element	See below

Facility information element with Return Result = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of IE contents	
Component type tag	Return Result from 3GPP TS 04.80
Component length	depending on the length of the ussd-string
Invoke ID tag	
From 3GPP TS 04.80	
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Sequence Identifier	From 3GPP TS 04.80
Operation Code tag	From 3GPP TS 04.80
Operation Code length	1
Operation Code	ProcessUnstructuredSS-Request
ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet" Language indicator set to "undefined"
ussd-string	chosen at random

iii) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call control)"
Transaction identifier	same as current call.
Release Complete message type	As 3GPP TS 04.08 / 3GPP TS 24.008

31.9.1.2 ProcessUnstructuredSS-request/cross phase compatibility and error handling

Conformance requirements

1) If a mobile initiated USSD request using protocol version 2 is rejected by the network, and the reason for the rejection is indicated either by the problem code "unrecognized operation" or a cause "facility rejected", the mobile station shall assume that the network only supports protocol version 1 of USSD operations. The mobile station shall re-attempt the request by using the appropriate protocol version 1 USSD operation without a SS version indicator if the unstructured data entered by the user can be coded as an IA5 string.

2) Upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer). If ussd-String information is included this shall be given to the user (in a way described by the manufacturer).

References

Conformance requirement1: 3GPP TS 04.90 subclause 6.2.1.

Conformance requirement2: 3GPP TS 03.90.

Test Purpose

1) To verify that If a mobile initiated USSD request using protocol version 2 is rejected by the network, and the reason for the rejection is indicated either by the problem code "unrecognized operation" or a cause "facility rejected", the mobile station shall assume that the network only supports protocol version 1 of USSD operations. The mobile station shall re-attempt the request by using the appropriate protocol version 1 USSD operation without a SS version indicator if the unstructured data entered by the user can be coded as an IA5 string.

2) To check that, upon receipt of the RELEASE COMPLETE message, the MS shall provide the appropriate user indication (which is to be described by the manufacturer). If ussd-String information is included this shall be given to the user (in a way described by the manufacturer).

Specific PICS Statements

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PIXIT Statements

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Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle updated".

Foreseen final state of the MS

MM-state "idle updated".

Test Procedure

Appropriate MMI keys are pressed on the mobile in order to activate an USSD service. The mobile first establishes a MM-connection with the SS. Then, a REGISTER message is sent to the SS. Upon receipt of this message, the system simulator answers with the RELEASE COMPLETE message with the problem code set to "unrecognized operation", the main signalling link is released. Then the SS checks that the MS re-establishes a MM-connection and re-attempts the request by using a REGISTER message containing an invoke of the ProcessUnstructuredData operation. The SS answers with a normal RELEASE COMPLETE to terminate the transaction. Finally the main signalling link is released by transferring to the MS a CHANNEL RELEASE.

Appropriate MMI keys are pressed on the mobile in order to activate an USSD service. The mobile first establishes a MM-connection with the SS. Then, a REGISTER message is sent to the SS. Upon receipt of this message, the system simulator answers with the RELEASE COMPLETE message with the cause element set to "Facility rejected", the main signalling link is released. Then the SS checks that the MS re-establishes a MM-connection and re-attempts the request by using a REGISTER message containing an invoke of the ProcessUnstructuredData operation. Then the SS answers with a normal RELEASE COMPLETE to terminate the transaction. Finally the main signalling link is released by transferring to the MS a CHANNEL RELEASE.

The mobile station is forced to originate a call. After the SS has sent a CONNECT ACKNOWLEDGE, MMI keys are pressed on the mobile in order to activate an USSD service. A REGISTER message is sent to the SS. Upon receipt of this message, the system simulator answers with the RELEASE COMPLETE message containing a return error with an error or a reject with a problem. Then the radio link is release by transferring to the MS a CHANNEL RELEASE message. This subtest is repeated with different errors and problems in the RELEASE COMPLETE message.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The user presses appropriate MMI keys to initiate the desired undefined supplementary service operation.
2	MS -> SS	CHANNEL REQUEST	with establishment cause set to "Other procedures which can be completed with an SDCCH".
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	"Supplementary service activation".
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	See specific message contents i).Operation code set to "ProcessUnstructuredSS-Request"
7	SS -> MS	RELEASE COMPLETE	See specific message contents ii).
8	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
9	MS -> SS	CHANNEL REQUEST	with establishment cause set to "Other procedures which can be completed with an SDCCH".
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	CM SERVICE REQUEST	"Supplementary service activation".
12	SS -> MS	CM SERVICE ACCEPT	
13	MS -> SS	REGISTER	Operation code is set to "ProcessUnstructuredSS-Data". See specific message content i).
14	SS -> MS	RELEASE COMPLETE	normal release of the transaction. See iiia).
15	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
16	MS		The user presses appropriate MMI keys to initiate the desired undefined supplementary service.
17	MS -> SS	CHANNEL REQUEST	with establishment cause set to "Other procedures which can be completed with an SDCCH".
18	SS -> MS	IMMEDIATE ASSIGNMENT	
19	MS -> SS	CM SERVICE REQUEST	"Supplementary service activation".

Step	Direction	Message	Comments
20	SS -> MS	CM SERVICE ACCEPT	
21	MS -> SS	REGISTER	See specific message contents i).Operation code is set to "ProcessUnstructureSS- Request". See i).
22	SS -> MS	RELEASE COMPLETE	see iii).cause is set to "facility rejected"
23	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
24	MS -> SS	CHANNEL REQUEST	with establishment cause set to "Other procedures which can be completed with an SDCCH".
25	SS -> MS	IMMEDIATE ASSIGNMENT	
26	MS -> SS	CM SERVICE REQUEST	"Supplementary service activation".
27	SS -> MS	CM SERVICE ACCEPT	
28	MS -> SS	REGISTER	Operation code is "ProcessUnstructuredSSdata". See specific message contents i).
29	SS -> MS	RELEASE COMPLETE	normal release of the transaction. See iiia).
30	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
			For k=1 to 10, go through steps 31 to 40. Counter k deals with different kinds of general and invoke problems in step 36.
31	MS		The MS is brought to state U10 by initiating a Mobile originating call
32			Specific MMI keys are pressed to initiate the desired undefined supplementary service. DTMF signalling may occur.
33	MS -> SS	CM SERVICE REQUEST	"supplementary service activation"
34	SS -> MS	CM SERVICE ACCEPT	
35	MS -> SS	REGISTER	The MS starts the transaction on the radio interface. See specific message contents i).The operation code is set to "ProcessUnstructuredSS-Request".
36	SS -> MS	RELEASE COMPLETE	different errors and problems are sent. See specific message contents iiib) and iiic).
37	SS -> MS	DISCONNECT	
38	MS -> SS	RELEASE	
39	SS -> MS	RELEASE COMPLETE	See message contents iv).
40	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific message contents.

i) **REGISTER** message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	
Register message type	As 3GPP TS 04.80
Facility Information Element	See below
SS version indicator	As specified in 3GPP TS 04.80 for version 2 protocol Always omitted for version 1 protocol

For steps 6, 21 and 35, Facility Information Element with Invoke = ProcessUnstructuredSS-Request (for version 2 protocol) component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

For steps 13 and 28, Facility Information Element with Invoke = ProcessUnstructuredSS-Data (for version 1 protocol) as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Invoke from 3GPP TS 04.80
Component length	Depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	Arbitrary (1 octet)
Operation Code tag	From 3GPP TS 04.80
Operation Code length	1
Operation Code	ProcessUnstructuredSS-Request (for version 2 protocol) ProcessUnstructuredSS-Data (for version 1 protocol)
ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
ussd-string	*70*635*562#

ii) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	Set to "Supplementary service (call independent)"
Transaction identifier	The transaction value is the same as the REGISTER transaction value but the transaction flag is different
Facility message type	As 3GPP TS 04.80
Facility Information Element	See below

Facility Information Element with Reject = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.6.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Reject from 3GPP TS 04.80
Component length	Depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Problem Code tag	As 3GPP TS 04.80
Problem Code length	
General Problem code	Unrecognized operation

iii) **RELEASE COMPLETE** message.

Contents	Value/remark
Protocol Discriminator	Set to "Supplementary service (call independent)"
Transaction identifier	The transaction value is the same as the REGISTER transaction value but the transaction flag is different
Release complete message type	As 3GPP TS 04.80
Cause	For step 22, cause is set to "facility rejected" and FIE is omitted. For steps 14, 29 and 36 this field is omitted.
Facility Information Element	For step 14 and 29 see iiia). For step 36 see iiib) and iiic). For step 22 this field is omitted.

iiia) For steps 14 and 29, Facility Information Element with Return Result = ProcessUnstructuredSS-Data component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	ReturnResult from 3GPP TS 04.80
Component length	
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Data
Sequence Tag	As 3GPP TS 04.80 / 3GPP TS 24.080 Table 3.4
Sequence length	As 3GPP TS 04.80 / 3GPP TS 24.080 Table 3.4
Operation Code Tag	As 3GPP TS 04.80 / 3GPP TS 24.080 Table 3.4
Operation Code Length	As 3GPP TS 04.80 / 3GPP TS 24.080 Table 3.4
Operation Code	ProcessUnstructuredSS-Data
Parameters	As 3GPP TS 04.80 / 3GPP TS 24.080 Table 3.4

iiib) Facility Information Element with Return Error = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.5.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Return Error from 3GPP TS 04.80
Component length	
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Error Code tag	As 3GPP TS 04.80
Error Code length	
Error Code	k=1, system failure k=2, data missing k=3, unknown alphabet k=4, unexpected data value

iiic) Facility Information Element with Reject = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.6.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Reject from 3GPP TS 04.80
Component length	
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Problem Code tag	As 3GPP TS 04.80
Problem Code length	
General Problem code	k=5, Unrecognized component k=6, Mistyped component k=7, Badly structured component
Invoke Problem code	k=8, Mistyped parameter k=9, Resource limitation k=10, Initiating release

iv) **RELEASE COMPLETE** message.

Contents	Value/remark
Protocol Discriminator	Set to "Supplementary service (call control)"
Transaction identifier	Same as current call.
Release Complete message type	As 3GPP TS 04.08 / 3GPP TS 24.008

31.9.2 Network initiated unstructured supplementary service operations

31.9.2.1 UnstructuredSS-Notify/accepted

Conformance requirements

1) For a USSD notification, the MS shall display the text provided and await user input. The MS shall acknowledge the operation by sending a FACILITY message containing an empty result component to the network.

2) The MS shall include alphabet and language indicators in the response to the network. The alphabet indicator shall indicate "SMS default alphabet". The language indicator shall indicate "language unspecified".

3) At any stage while the MS is registered with a network, the network may send an unstructured string to the MS. So, the MS shall be able to process the operation during a call or out of a call.

References

Conformance requirement 1:   3GPP TS 04.90 subclause 5.2.1.

Conformance requirement 2:   3GPP TS 02.90 subclause 4.2.2.

Conformance requirement 3:   3GPP TS 02.90 subclause 4.2.1.

Test Purpose

1) To verify that for a USSD notification, the MS shall display the text provided and await user input. If the user enters a response, the MS shall acknowledge the operation by sending a FACILITY message containing an empty result component to the network.

2) To verify that the MS shall include alphabet and language indicators in the response to the network. The alphabet indicator shall indicate "SMS default alphabet". The language indicator shall indicate "language unspecified".

3) To check that the MS shall be able to process the operation during a call or out of a call.

Specific PICS Statements

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PIXIT Statements

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Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle updated".

Foreseen final state of the MS

MM-state "idle updated".

Test Procedure

- The MS is paged and a RR-connection is established. Then, the SS sends a REGISTER message containing a facility information element with operation code set to ProcessUnstructuredSS-Notify. The user checks that the ussd string sent by the SS is correctly displayed by the MS. The MS has to send a FACILITY message with an empty return result component.

- Then the SS originates a call to the MS. When the MS is in the U10 state, the SS releases the transaction identifier concerning USSD transaction by sending a RELEASE COMPLETE. The SS initiates a new ussd transaction by sending a REGISTER message containing a facility information element with operation code set to UnstructuredSS-Notify. The user checks that the ussd string sent by the SS is correctly displayed by the MS.

The MS has to send a FACILITY message with an empty return result component. Finally the SS releases both MM connections and the radio link.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	a SDCCH is allocated to the MS.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	REGISTER	initiation of the transaction concerning the USSD notification operation. See i).
6			The MS has to display the USSD string sent from the network.
7	MS -> SS	FACILITY	signalling message sent by the MS as the response. The SS checks that it matches ii).
8	SS -> MS	SETUP	incoming call.
9	MS -> SS	CALL CONFIRMED	
10	MS -> SS	ALERTING	
11	MS -> SS	CONNECT	
12	SS -> MS	ASSIGNMENT COMMAND	a TCH is allocated to the MS.
13	MS -> SS	ASSIGNMENT COMPLETE	
14	SS -> MS	CONNECT ACKNOWLEDGE	
15	SS -> MS	RELEASE COMPLETE	this message releases the transaction concerning the USSD operation. See iii).
16	SS -> MS	REGISTER	initiation of a USS request operation during a call. See specific message contents i).
17			The MS has to display the USSD string received from the SS.
18	MS -> SS	FACILITY	The SS checks that this message matches ii).
19	SS -> MS	RELEASE COMPLETE	It releases he transaction identifier concerning the ussd operation.
20	SS -> MS	DISCONNECT	call release initiation. see iv).
21	MS -> SS	RELEASE	
22	SS -> MS	RELEASE COMPLETE	
23	SS -> MS	CHANNEL RELEASE	

Specific message contents.

i) REGISTER message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	
Register message type	As 3GPP TS 04.80
Facility Information Element	See below

Facility Information Element with Invoke = UnstructuredSS-Notify component type as defined in 3GPP TS 04.90, subclause 5.2.1.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Invoke from 3GPP TS 04.80
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	Arbitrary (1 octet)
Operation Code tag	From 3GPP TS 04.80
Operation Code length	1
Operation Code	UnstructuredSS-Notify
ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
ussd-string	arbitrary chosen by the SS

ii) Facility message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	the transaction value is the same as REGISTER
	transaction value but the transaction flag is different
Facility message type	As 3GPP TS 04.80
Facility Information Element	See below

Facility Information Element with Return Result = empty result component according to 3GPP TS 04.90, subclause 5.2.1, figure 5.3.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Return Result from 3GPP TS 04.80
Component length	
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the UnstructuredSS-Notify

iii) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	the transaction value is the same as REGISTER
	transaction flag is different
Release Complete message type	As 3GPP TS 04.80
Facility Information Element	omitted

iv) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call control)"
Transaction identifier	same as current call.
Release Complete message type	As 3GPP TS 04.08 / 3GPP TS 24.008

31.9.2.2   UnstructuredSS-Notify/rejected on user busy

Conformance requirements

1) When the mobile station receives an USSD operation in parallel to any call independent supplementary transaction, it shall respond with a return error component in a RELEASE COMPLETE message, containing the "USSD-Busy" error.

References

   Conformance requirement 1:   3GPP TS 04.90 subclause 5.1.1.

Test Purpose

1) To verify that when the mobile station receives an USSD operation in parallel to any call independent supplementary transaction, it responds with a return error component in a RELEASE COMPLETE message, containing the "USSD-Busy" error.

Specific PICS Statements

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PIXIT Statements

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Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle updated".

Foreseen final state of the MS

MM-state "idle updated".

Test Procedure

- The MS is paged and a RR-connection is established. Then, the SS sends a REGISTER message containing a facility information element with operation code set to UnstructuredSS-Notify. The SS initiates an other USSD transaction by sending a REGISTER message with transaction identifier different form the previous one. The SS checks that the MS answers with a RELEASE COMPLETE message with an error component set to "USSD busy". Then the SS releases the radio link.

Test Procedure

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	a SDCCH is allocated to the MS.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	REGISTER	initiation of the transaction concerning the USSD notification operation. See i).
6			The MS has to display the USSD string sent from the SS. See ii).
7	MS -> SS	FACILITY	
8	SS -> MS	REGISTER	initiation of an other USSD notification. The transaction identifier is different from that in step 5.See i).
9	MS -> SS	RELEASE COMPLETE	error set to "USSD busy". Transaction initiated in step 6 by the network is rejected by the MS. See iii).
10	SS -> MS	RELEASE COMPLETE	normal release of transaction initiated in step 5.See iii).
11	SS -> MS	CHANNEL RELEASE	release of the main signalling link.

Specific message contents.

i) REGISTER **message.**

See subclause 31.9.2.1.

ii) FACILITY **message.**

See subclause 31.9.2.1.

iii) RELEASE COMPLETE **message.**

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	for step 10, same as REGISTER transaction identifier for step 9, the transaction value is the same as REGISTER transaction value but the transaction flag is different.
Release complete message type	As 3GPP TS 04.80
Facility Information Element	for step 9 see iiib). for step 10, see iiia).

iiia) Facility Information Element with Return Result = UnstructuredSS-Notify component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Return Result from 3GPP TS 04.80
Component length	
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the UnstructuredSS-Notify in step 5

iiib) Facility Information Element with Return Error = UnstructuredSS-Notify component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.5.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08
Length of FIE contents	
Component type tag	Return Result from 3GPP TS 04.80
Component length	
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the UnstructuredSS-Notify in step 8
Error Code tag	As 3GPP TS 04.80
Error Code length	
Error Code	USSD Busy

31.9.2.3 UnstructuredSS-Request/accepted

Conformance requirements

1) For a USSD request, the MS shall display the text provided and await user input. if the user enters a response, the MS shall return the response to the network, maintaining the transaction.

2) The MS shall include alphabet and language indicators in the response to the network. The alphabet indicator shall indicate "SMS default alphabet". The language indicator shall indicate "language unspecified".

3) At any stage while the MS is registered with a network, the network may send an unstructured string to the MS. So, the MS shall be able to process the operation during a call or out of a call.

References

Conformance requirement 1: 3GPP TS 03.90 subclause 5.2.5.

Conformance requirement 2: 3GPP TS 02.90 subclause 4.2.2.

Conformance requirement 3: 3GPP TS 02.90 subclause 4.2.1.

Test Purpose

1) To test that, for a USSD request, the MS shall display the text provided and await user input. if the user enters a response, the MS shall return the response to the network, maintaining the transaction.

2) To verify that the MS shall include alphabet and language indicators in the response to the network. The alphabet indicator shall indicate "SMS default alphabet". The language indicator shall indicate "language unspecified".

3) To check that the MS shall be able to process the operation during a call or out of a call.

Specific PICS Statements

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PIXIT Statements

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Initial Conditions

System Simulator:

    1 cell, default parameters.

Mobile Station:

    The MS is in the MM-state "idle updated".

Foreseen final state of the MS

MM-state "idle updated".

Test Procedure

- The MS is paged and a RR-connection is established. Then, the SS sends a REGISTER message containing a facility information element with operation code set to ProcessUnstructuredSS-Request. The user checks that the ussd string sent by the SS is correctly displayed by the MS and answers the request by depressing MMI keys. Then the MS has to send a FACILITY message with ussd string exactly containing the digits and symbols expressed on the mobile equipment keypad.

- Then the SS originates a call to the MS. When the MS is in the U10 state, the SS releases the transaction identifier concerning USSD transaction by sending a RELEASE COMPLETE. The SS initiates a new ussd transaction by sending a REGISTER message containing a facility information element with operation code set to UnstructuredSS-Request. The user checks that the ussd string sent by the SS is correctly displayed by the MS and answers the request by depressing MMI keys. Then the MS has to send a FACILITY message with ussd string exactly containing the digits and symbols expressed on the mobile equipment keypad. Finally the SS releases both MM connections and the radio link.

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	a SDCCH is allocated to the MS.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	REGISTER	initiation of the transaction concerning the USSD Request operation. See i).
6			The MS has to display the USSD string sent from the network and waits for the user response. By depressing MMI keys followed by SEND the user answers
7	MS -> SS	FACILITY	signalling message sent by the MS as the response. See ii).
8	SS -> MS	SETUP	incoming call.
9	MS -> SS	CALL CONFIRMED	
10	MS -> SS	ALERTING	
11	MS -> SS	CONNECT	
12	SS -> MS	ASSIGNMENT COMMAND	a TCH is allocated to the MS.
13	MS -> SS	ASSIGNMENT COMPLETE	
14	SS -> MS	CONNECT ACKNOWLEDGE	
15	SS -> MS	RELEASE COMPLETE	this message releases the transaction concerning the USSD operation. See iii).
16	SS -> MS	REGISTER	initiation of a USS request operation during a call. See specific message contents i).
17			The MS has to display the USSD string received from the SS. By depressing MMI keys followed by SEND, the user answers. DTMF signalling may occur.
18	MS -> SS	FACILITY	See ii).
19	SS -> MS	RELEASE COMPLETE	It releases the transaction identifier concerning the ussd operation.
20	SS -> MS	DISCONNECT	
21	MS -> SS	RELEASE	
22	SS -> MS	RELEASE COMPLETE	call release initiation. see iv).
23	SS -> MS	CHANNEL RELEASE	

Specific message contents

i) REGISTER message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	
Register message type	As 3GPP TS 04.80
Facility Information Element	See below

Facility Information Element with Invoke = UnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.3.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Invoke from 3GPP TS 04.80
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	Arbitrary (1 octet)
Operation Code tag	From 3GPP TS 04.80
Operation Code length	1
Operation Code	UnstructuredSS-Request
ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
ussd-string	arbitrary chosen by the SS

ii) Facility message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	the transaction identifier value is the same as REGISTER transaction value but the transaction flag is different.
Facility message type	As 3GPP TS 04.80
Facility Information Element	See below

Facility Information Element with Return Result = UnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Return Result from 3GPP TS 04.80
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the UnstructuredSS-Request
Sequence Identifier	
Sequence length	
Operation Code tag	1
Operation Code length	1
Operation Code	UnstructuredSS-Request
ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
ussd-string	contains exactly the digits and symbols expressed on the mobile equipment keypad.

iii) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	same as REGISTER transaction identifier
Release Complete message type	As 3GPP TS 04.80
Facility Information Element	omitted

iv) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call control)"
Transaction identifier	same as current call.
Release Complete message type	As 3GPP TS 04.08 / 3GPP TS 24.008

31.9.2.4   UnstructuredSS-Request/rejected on user busy

Conformance requirements

1) When the mobile station receives an USSD operation in parallel to any call independent supplementary transaction, it shall respond with a return error component in a RELEASE COMPLETE message, containing the "USSD-Busy" error.

References

Conformance requirement 1: 3GPP TS 04.90 subclause 5.1.1.

Test Purpose

1) To verify that when the mobile station receives an USSD operation in parallel to any call independent supplementary transaction, it responds with a return error component in a RELEASE COMPLETE message, containing the "USSD-Busy" error.

Specific PICS Statements

-

PIXIT Statements

-

Initial Conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in the MM-state "idle updated".

Foreseen final state of the MS

MM-state "idle updated".

Test Procedure

- The MS is paged and a RR-connection is established. Then, the SS sends a REGISTER message containing a facility information element with operation code set to UnstructuredSS-Request. The SS initiates an other USSD transaction by sending a REGISTER message with transaction identifier different form the previous one. The SS checks that the MS answers with a RELEASE COMPLETE message with an error component set to "USSD busy". Then the SS releases the radio link.

Test Procedure

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST TYPE 1	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	a SDCCH is allocated to the MS.
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	REGISTER	initiation of the transaction concerning the USSD Request operation. See i).
6			The MS has to display the USSD string sent from the network and waits for the user response. By depressing MMI keys followed by SEND the user answers.
7	MS -> SS	FACILITY	signalling message sent by the MS as the response to the request. See ii).
8	SS -> MS	REGISTER	initiation of an other USSD request. The transaction identifier is different from that in step 5. See i).
9	MS -> SS	RELEASE COMPLETE	error set to "USSD busy". Transaction initiated in step 6 by the network is rejected by the MS. See iii).
10	SS -> MS	RELEASE COMPLETE	normal release of transaction initiated in step 5. See iii).
11	SS -> MS	CHANNEL RELEASE	release of the main signalling link.

Specific message contents

i) REGISTER **message.**

See subclause 31.9.2.3.

ii) FACILITY **message**.

See subclause 31.9.2.3.

iii) RELEASE COMPLETE message.

Contents	Value/remark
Protocol Discriminator	set to "Supplementary service (call independent)"
Transaction identifier	the transaction identifier value is the same as REGISTER transaction value but the transaction flag is different.
Release complete message type	As 3GPP TS 04.80
Facility Information Element	for step 9 see iiib).
	for step10 see iiia).

iiia) Facility Information Element with Return Result = UnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.4.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Return Result from 3GPP TS 04.80
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the UnstructuredSS-Request

iiib) Facility Information Element with Return Error = UnstructuredSS-Request component type as defined in 3GPP TS 04.80 subclause 3.6.1 table 3.5.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 04.08 / 3GPP TS 24.008
Length of FIE contents	
Component type tag	Return Error from 3GPP TS 04.80
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 04.80
Invoke ID length	1
Invoke ID	The same as the invoke of the UnstructuredSS-Request
Error Code tag	As 3GPP TS 04.80
Error Code length	
Error Code	USSD Busy

31.10 MMI input for USSD

31.10.1 Conformance requirements

If the MS cannot interpret the MMI input as a defined GSM Supplementary Services, SIM control procedure or MS manufacturer-defined procedure, and if the MMI input is in the form:

- "entry of any characters defined in the 3GPP TS 03.38 Default Alphabet (up to the maximum defined in 3GPP TS 04.80) followed by #SEND"; or

- "entry of 1 or 2 characters defined in the 3GPP TS 03.38 Default Alphabet followed by SEND";

then it shall be interpreted by the MS as Unstructured SS Data and sent transparently towards the network, unless the MS is not engaged in a call and the first digit of the 2 character entry, followed by SEND, is a "1". In this case the MS shall transmit this as a call-setup request.

References

3GPP TS 02.30 subclause 4.5.3.

31.10.2 Test purpose

To check that the entry of 2 digits in the form 1X (X in the set 0,...9) followed by SEND is accepted by the mobile station in idle mode as a normal call establishment for the 1X number. It is checked that the MS sends a CHANNEL REQUEST, sends CM SERVICE REQUEST message for mobile originated call (after having received an IMMEDIATE ASSIGNMENT), and then sends the SETUP message containing the 1X phone number as called number (after having received the CM SERVICE ACCEPT message).

31.10.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station

The MS is "idle updated";

Specific PICS Statements

-

PIXIT Statements

-

Foreseen final state of the MS:

The MS is "idle updated.

Test procedure

The user requests call establishment successively for every 2 digit phone number of the 1X form (X in the set 0,...9) allowing ten seconds between each attempts.

Maximum duration of test

3 minutes.

Expected Sequence

The following sequence is executed for execution counter k = 1 to 10.

Step	Direction	Message	Comments
1	MS		The MS is made to initiate call establishment for phone number 1X (where X = k-1)
2	MS -> SS	CHANNEL REQUEST	with establishment cause related to mobile originating call
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	"mobile originating call"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	SETUP	called BCD number is 1X
7	SS -> MS	RELEASE COMPLETE	
8			Wait for 10 seconds

Specific message contents.

None.

31.11   Specific message contents and ASN.1 codings

Introduction

In this subclause a mixed form of ASN.1 coding has been used in ASN.1 components within the messages.

Some components use the indefinite form of coding, and some use the short definite form.

An example of a FACILITY message using indefinite form of coding is described below.

The same message using short definite form of coding is described in Test 31.2.1.1.1 Step 7 of this subclause.

Contents	Value/remark	Coding
Length of FIE contents	43	2B
Component type tag	**Return Result**	A2
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30
Sequence length	indefinite	80
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterSS**	0A
SS-Information		
Forwarding Info tag	Tag=A0	A0
Forwarding Info length	indefinite	80
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRy**	2A
Forwarding Feature List	Seq.	30
Length Indicator	indefinite	80
Forwarding Feature	Seq.	30
Forwarding Feature length	indefinite	80
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmissionServices**	10
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov., Registered, Active**	07
Forwarded To Number identifier	Tag=85	85
ISDN-AddressString length	5	05
AddressString type	Unknown	81
AddressString	**TBCD-String: 00431234**	00 34 21 43
NoReplyConditionTime	Tag=87	87
Length Indicator	1	01
NoReplyConditionTime	5	05
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.1.1. Registration accepted

MMI sequence: **61*00431234*11*5#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	26	1A
Component type tag	**Invoke**	A1 (note 1)
Component length	24	18
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterSS**	0A
RegisterSS-Arg	Seq.	30 (note 1)
RegisterSS-Arg length	16	10
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRy**	2A
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmissionServices**	10
Forwarded To Number identifier	Tag=84	84
AddressString length	5	05
AddressString type	Unknown	81
AddressString	**TBCD-String: 00431234**	00 34 21 43
NoReplyConditionTime tag	Tag=85	85
NoReplyConditionTime length	1	01
NoReplyConditionTime	5	05

NOTE 1: This component may use the indefinite form.

Step 7: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	35	23
Component type tag	**Return Result**	A2 (note 1)
Component length	33	21
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	28	1C
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterSS**	0A
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	23	17
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	CFNRy	2A
Forwarding Feature List	Seq.	30 (note 1)
Length Indicator	18	12
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	16	10
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	AllSpeechTransmissionServices	10
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	Prov., Registered, Active	07
Forwarded To Number identifier	Tag=85	85
ISDN-AddressString length	5	05
AddressString type	Unknown	81
AddressString	TBCD-String: 00431234	00 34 21 43
NoReplyConditionTime	Tag=87	87
Length Indicator	1	01
NoReplyConditionTime	5	05

MMI sequence: **21*00431234*13#

Step 15: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	23	17
Component type tag	**Invoke**	A1 (note 1)
Component length	21	15
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterSS**	0A
RegisterSS-Arg	Seq.	30 (note 1)
RegisterSS-Arg length	13	0D
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFU**	21
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60
Forwarded To Number identifier	Tag=84	84
AddressString length	5	05
AddressString type	Unknown	81
AddressString	**TBCD-String: 00431234**	00 34 21 43

Step 16: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	42	2A
Component type tag	**Return Result**	A2 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	indefinite	80
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterSS**	0A
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	indefinite	80
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFU**	21
Forwarding Feature List	Seq.	30 (note 1)
Length indicator	indefinite	80
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	indefinite	80
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov., Registered, Active**	07
Forwarded To Number identifier	Tag=85	85
ISDN-AddressString length	5	05
AddressString type	Unknown	81
AddressString	**TBCD-String: 00431234**	00 34 21 43
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.1.2. Registration rejected

MMI sequence: **67*00431234*21#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	23	17
Component type tag	**Invoke**	A1 (note 1)
Component length	21	15
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterSS**	0A
RegisterSS-Arg	Seq.	30 (note 1)
RegisterSS-Arg length	13	0D
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFB**	29
Basic Service Code identifier	BearerserviceCode	82
Bearerservice length	1	01
Bearerservice code	**AllAsynchronousServices**	60
Forwarded To Number identifier	Tag=84	84
AddressString length	5	05
AddressString type	Unknown	81
AddressString	**TBCD-String: 00431234**	00 34 21 43

Step 5: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Return Error**	A3 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error Code tag		02
Error Code length	1	01
Error Code	**BearerServiceNot Provisioned**	0A

MMI sequence: **002*00431234*13#

Step 11: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	23	1715
Component type tag	**Invoke**	A1 (note 1)
Component length	21	15
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterSS**	0A
RegisterSS-Arg		30 (note 1)
RegisterSS-Arg length	13	0D
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CF**	20
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60
Forwarded To Number identifier	Tag=84	84
AddressString length	5	05
AddressString type	Unknown	81
AddressString	**TBCD-String: 00431234**	00 34 21 43

Step 12: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Reject**	A4 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Invoke Problem tag	Tag=81	81
Invoke Problem length	1	01
Invoke Problem code	**Resource limitation**	03

Test 31.2.1.2.1. Erasure accepted

MMI sequence: ##004**13#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**EraseSS**	0B
SS-ForBS	Seq.	30 (note 1)
SS-ForBS length	6	06
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFC**	28
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60

Step 7: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	31	1F
Component type tag	**Return Result**	A2 (note 1)
Component length	29	1D
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	24	18
Operation Code tag		02
Operation Code length	1	01
Operation Code	**EraseSS**	0B
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	indefinite	80
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFC**	28
Forwarding Feature List	Seq.	30 (note 1)
Length Indicator	indefinite	80
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	indefinite	80
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Provisioned**	04
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

MMI sequence: ##62#

Step 15: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**EraseSS**	0B
SS-ForBS	Seq.	30 (note 1)
SS-ForBS length	3	03
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRc**	2B

Step 16: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	22	16
Component type tag	**Return Result**	A2 (note 1)
Component length	20	14
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	15	0F
Operation Code tag		02
Operation Code length	1	01
Operation Code	**EraseSS**	0B
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	10	0A
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRc**	2B
Forwarding Feature List	Seq.	30 (note 1)
Length Indicator	5	05
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	3	03
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Provisioned**	04

Test 31.2.1.2.2. Erasure rejected

MMI sequence: ##21**11#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**EraseSS**	0B
SS-ForBS		30 (note 1)
SS-ForBS length	6	06
SS-Code tag	Tag=4	04
SS-Code length	**1**	01
SS-Code	**CFU**	21
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmissionServices**	10

Step 5: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Return Error**	A3 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error Code tag	Tag=2	02
Error Code length	1	01
Error Code	**TeleserviceNotProvisioned**	0B

MMI sequence: ##61**13#

Step 11: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**EraseSS**	0B
SS-ForBS		30 (note 1)
SS-ForBS length	6	06
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRy**	2A
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60

Step 12: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	10	0A
Component type tag	**Reject**	A4 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Invoke Problem tag		81
Invoke Problem length	1	01
Invoke Problem	**Resource limitation**	03
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.3. Activation

MMI sequence: *002**22#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**ActivateSS**	0C
SS-ForBS		30 (note 1)
SS-ForBS length	6	06
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CF**	20
Basic Service Code identifier	BearerserviceCode	82
Bearerservice length	1	01
Bearerservice code	**AllSynchronousServices**	68

Step 7:SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	29	1D
Component type tag	**Return Result**	A2 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	20	14
Operation Code tag		02
Operation Code length	1	01
Operation Code	**ActivateSS**	0C
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	indefinite	80
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CF**	20
Forwarding Feature List	Seq.	30 (note 1)
Length Indicator	8	08
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	6	06
Basic Service Code identifier	BearerserviceCode	82
Bearerservice length	1	01
Bearerservice code	**AllSynchronousServices**	68
SS-Status	Tag=4	84
SS-Status length	1	01
SS-Status code	**Prov., Registered, Active**	07
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

MMI sequence: *21#

Step 15: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**ActivateSS**	0C
SS-ForBS	Seq.	30 (note 1)
SS-ForBS length	3	06
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFU**	21

Step 16: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	26	1A
Component type tag	**Return Result**	A2 (note 1)
Component length	24	18
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	indefinite	80
Operation Code tag		02
Operation Code length	1	01
Operation Code	**ActivateSS**	0C
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	indefinite	80
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFU**	21
Forwarding Feature List	Seq.	30 (note 1)
Length Indicator	5	05
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	3	03
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov. Registered, Active**	07
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.4. Deactivation

MMI sequence: #004**11#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**DeactivateSS**	0D
SS-ForBS	Seq.	30 (note 1)
SS-ForBS length	6	06
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFC**	28
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmissionServices**	10

Step 7: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	29	1D
Component type tag	**Return Result**	A2 (note 1)
Component length	27	1B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	22	16
Operation Code tag		02
Operation Code length	1	01
Operation Code	**DeactivateSS**	0D
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	indefinite	80
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFC**	28
Forwarding Feature List	Seq.	30 (note 1)
Length Indicator	indefinite	80
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	6	06
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmissionServices**	10
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Provisioned, Registered**	06
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

MMI sequence: #62**13#

Step 15: MS -> SS REGISTER

Contents	Value/remark	Coding
Same header as Step 6		
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRc**	2B
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60

Step 16: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	27	1B
Component type tag	**Return Result**	A2 (note 1)
Component length	25	19
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	20	14
Operation Code tag		02
Operation Code length	1	01
Operation Code	**DeactivateSS**	0D
SS-Information		
Forwarding Info tag	Tag=A0	A0 (note 1)
Forwarding Info length	15	0F
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRc**	2B
Forwarding Feature List	Seq.	30 (note 1)
Length Indicator	10	0A
Forwarding Feature	Seq.	30 (note 1)
Forwarding Feature length	indefinite	80
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60
SS-Status	Tag=4	84
SS-Status length	1	01
SS-Status code	**Provisioned, Registered**	06
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.6.1. Interrogation accepted

MMI sequence: *#67#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**InterrogateSS**	0E
SS-ForBS		30 (note 1)
SS-ForBS length	3	03
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFB**	29

Step 7: SS -> MS RELEASE COMPLETE

Contents	Value/Remark	Coding
Length of FIE contents	13	0D
Component type tag	**Return Result**	A2 (note 1)
Component length	11	0B
Invoke ID tag	Tag=02	02
Invoke ID length	1	01
Invoke ID	As received	03
Sequence tag		30 (note 1)
Sequence length	6	06
Operation code tag	Tag=02	02
Operation code length	1	01
Operation code	**InterrogateSS**	0E
InterrogateSS-Res	Choice	
SS-Status	Tag=80	80
SS-Status length	1	01
SS-Status	**Provisioned**	04

MMI sequence: *#61**11#

Step 15: MS -> SS REGISTER

Contents	Value/Remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**InterrogateSS**	0E
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	6	06
SS code tag	Tag=4	04
SS code length	1	01
SS code	**CFNRy**	2A
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmissionServices**	10

Step 16: SS -> MS RELEASE COMPLETE

Contents	Value/Remark	Coding
Length of FIE contents	26	1A
Component type tag	**Return Result**	A2 (note 1)
Component length	24	18
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	03
Sequence tag		30 (note 1)
Sequence length	19	13
Operation code tag		02
Operation code length	1	01
Operation code	**InterrogateSS**	0E
InterrogateSS-Res	Choice	
Forwarding Feature List	Seq.	A3 (note 1)
length indicator	14	0E
Forwarding Feature tag	Seq.	30 (note 1)
Forwarding Feature length	12	0C
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmissionServices**	10
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov. Registered Active**	07
Forwarded To Number Identifier	Tag=85	85
ISDN-AddressString length	4	04
AddressString type	International Number	91
AddressString	**TBCD-String: 431234**	34 21 43

Test 31.2.1.6.2. Interrogation rejected

MMI sequence: *#62#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**InterrogateSS**	0E
SS-ForBS		30 (note 1)
SS-ForBS length	3	03
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**CFNRc**	2B

Step 5: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Return Error**	A3 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error Code tag		02
Error Code length	1	01
Error Code	**SS-Not Available**	12

MMI sequence: *#67**13#

Step 11: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**InterrogateSS**	0E
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	6	06
SS code tag	Tag=04	04
SS code length	1	01
SS code	**CFB: CF on MS Busy**	29
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**All Facsimile Services**	60

Step 12: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Reject**	A4 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Problem code tag	Tag=81	81
Problem code length	1	01
Invoke problem	**Resource limitation**	03
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.7.1.1. Notification during an incoming call

Step 10 and 15: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	18	12
Component type tag	**Invoke**	A1　(note 1)
Component length	16	10
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**NotifySS**	10
SS-ForBS		30　(note 1)
SS-ForBS length	indefinite	80
SS-Code tag	Tag=81	81
SS-Code length	1	01
SS-Code	**CFB**	29
SS-Notification tag	Tag=85	85
SS-Notification length	1	01
SS-Notification	**Incoming call forwarded**	02
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.7.1.2. Notification during an outgoing call

Step 9 : SS -> MS ALERTING

Contents	Value/remark	Coding
Length of FIE contents	18	12
Component type tag	**Invoke**	A1　(note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	00
Operation code tag		02
Operation code length	1	01
Operation code	**NotifySS**	10
NotifySS-Arg tag	Seq.	30　(note 1)
NotifyBS-Arg length	6	06
SS code tag	Tag=81	81
SS code length	1	01
SS code	**CFU: Forw Unconditional**	21
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov. Registered Active**	07
End-Of-Content Tag	0	00
Length Indicator	0	00

Step 10 : SS -> MS CONNECT

Contents	Value/remark	Coding
Length of FIE contents	18	12
Component type tag	**Invoke**	A1 (note 1)
Component length	16	10
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	01
Operation code tag		02
Operation code length	1	01
Operation code	**NotifySS**	10
NotifySS-Arg tag	Seq.	30 (note 1)
NotifyBS-Arg length	indefinite	80
SS code tag	Tag=81	81
SS code length	1	01
SS code	**CFC: Conditional Forw.**	28
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov. Registered Active**	07
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.2.1.7.2. Forwarded-to mobile subscriber side

Step 5 : SS -> MS SETUP

Contents	Value/remark	Coding
Length of FIE contents	18	12
Component type tag	**Invoke**	A1 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	00
Operation code tag		02
Operation code length	1	01
Operation code	**NotifySS**	10
NotifySS-Arg tag	Seq.	30 (note 1)
NotifyBS-Arg length	6	06
SS code tag	Tag=81	81
SS code length	1	01
SS code	**CFNRc MS not reachable**	2B
SS-Notification tag	Tag=85	85
SS-Notification length	1	01
SS-Notification	**Forwarded call**	01
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.6.1.1. AOC time related charging/MS originated call

k=1 Step 11: SS -> MS CONNECT

Contents	Value/remark	Coding
Length of FIE contents	41	29
Component type tag	**Invoke**	A1 (note 1)
Component length	39	27
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**ForwardChargeAdvice**	7D
ForwardChargeAdviceArg	Seq.	30 (note 1)
ForwardChargeAdviceArg length	indefinite	80
SS code tag	Tag=80	80
SS code length	1	01
SS code	**AoC-Charging**	72
Charging Information	Tag=a1	A1 (note 1)
Charging Information length	24	18
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 6,0**	**3C**
e2 tag	Tag=82	82
e2 length	2	02
e2	**Value = 14,0**	**00 8C**
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 1,0**	**64**
e4 tag	Tag=84	84
e4 length	2	02
e4	**Value = 25,0**	**00 FA**
e5 tag	Tag=85	85
e5 length	1	01
e5	**Value = 0,0**	**00**
e6 tag	Tag=86	86
e6 length	1	01
e6	**Value = 0,0**	**00**
e7 tag	Tag=87	87
e7 length	2	02
e7	**Value = 60,0**	**02 58**
End-Of-Content Tag	0	00
Length Indicator	0	00

Step A13/B12: MS -> SS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	5	05
Component type tag	**Return Result**	A2 (note 1)
Component length	3	03
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--

k=1...5: e-parameters

k-value	e-parameter values						
	e1	**e2**	**e3**	**e4**	**e5**	**e6**	**e7**
1	6	14	1	25	0	0	60
2	0	0	1	100	0	0	0
3	250	16	2	500	0	0	60
4	1	1	1	0	10	10	1
5	12,5	30	1	25	10	10	30

k-value	e-parameter coding						
	e1	**e2**	**e3**	**e4**	**e5**	**e6**	**e7**
1	3C	00 8C	64	00 FA	00	00	02 58
2	00	00	64	03 E8	00	00	00
3	09 C4	00 A0	00 C8	13 88	00	00	02 58
4	00 0A	00 0A	00 64	00 00	00 64	00 0A	00 0A
5	7D	01 2C	64	00 FA	64	0A	01 2C

Test 31.6.1.2. AOC time related charging/MS terminated call

k=1...5 Step 12: SS -> MS FACILITY e-parameters

k-value	e-parameter values						
	e1	**e2**	**e3**	**e4**	**e5**	**e6**	**e7**
1	0	0	0	0	0	0	0
2	0	0	1	100	0	0	0
3	6	14	1	25	0	0	60
4	1	1	1	0	0	0	1
5	12,5	30	1	25	0	0	30

k-value	e-parameter coding						
	e1	**e2**	**e3**	**e4**	**e5**	**e6**	**e7**
1	00	00	00	00	00	00	00
2	00	00	64	03 E8	00	00	00
3	3C	00 8C	64	00 FA	00	00	02 58
4	0A	0A	64	00	00	00	0A
5	7D	01 2C	00 64	FA	00	00	01 2C

Test 31.6.1.5. Change in charging information during a call

Step A12: SS -> MS FACILITY (initial CAI message)

Contents	Value/remark	Coding
CAI header element		
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 10,0**	64
e2 tag	Tag=82	82
e2 length	2	02
e2	**Value = 28,0**	01 18
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 1,0**	64
e4 tag	Tag=84	84
e4 length	1	01
e4	**Value = 10,0**	64
e5 tag	Tag=85	85
e5 length	1	01
e5	Value = 0,0	00
e6 tag	Tag=86	86
e6 length	1	01
e6	Value = 0,0	00
e7 tag	Tag=87	87
e7 length	2	02
e7	**Value = 60,0**	02 58

Step A12: SS -> MS FACILITY (subsequent CAI message)

Contents	Value/remark	Coding
CAI header element		
e1	Value = 10,0	64
e2	Value = 14,0	00 8C
e3	Value = 1,0	64
e4	Value = 5,0	32
e5	Value = 0,0	00
e6	Value = 0,0	00
e7	Value = 60,0	02 58

Test 31.6.1.6. Different formats of charging information

k=1 SS -> MS FACILITY

Contents	Value/remark	Coding
CAI header element		
e1	Value = 10,0	64
e2	Value = 40,0	01 90
e3	Value = 1,0	64
e4	Value = 0,0	00
e5	Value = 0,0	00
e6	Value = 0,0	00
e7	Value = 0,0	00 00

k=2 SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	27	1B
Component type tag	**Invoke**	A1 (note 1)
Component length	25	19
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**forwardChargeAdvice**	7D
ForwardChargeAdviceArg	Seq.	30 (note 1)
ForwardChargeAdviceArg length	17	11
SS code tag	Tag=80	80
SS code length	1	01
SS code	**AoC-Charging**	72
Charging Information	Tag=a1	A1 (note 1)
Charging Information length	indefinite	80
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 10,0**	64
e2 tag	Tag=82	82
e2 length	2	02
e2	**Value = 40,0**	01 90
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 1,0**	64
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.6.1.7. AOC on a Call Hold call

Step 11: SS -> MS CONNECT

Contents	Value/remark	Coding
CAI header element		
e1	Value = 7,0	46
e2	Value = 40,0	01 90
e3	Value = 1,0	64
e4	Value = 0,0	00
e5	Value = 0,0	00
e6	Value = 0,0	00
e7	Value = 0,0	00

Step 20: SS -> MS CONNECT

Contents	Value/remark	Coding
CAI header element		
e1	Value = 13,0	00 82
e2	Value = 40,0	01 90
e3	Value = 1,0	64
e4	Value = 0,0	00
e5	Value = 0,0	00
e6	Value = 0,0	00
e7	Value = 0,0	00

Test 31.6.1.8. AOC on a Multi-party call

Step 11 & 20: SS -> MS CONNECT

k-value	e-parameter values						
	e1	**e2**	**e3**	**e4**	**e5**	**e6**	**e7**
1	19	40	1	0	0	0	0
2	29	40	1	0	0	0	0

k-value	e-parameter coding						
	e1	**e2**	**e3**	**e4**	**e5**	**e6**	**e7**
1	00 BE	01 90	64	00	00	00	00
2	01 22	01 90	64	00	00	00	00

Step 23: MS -> SS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Invoke**	A1 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**BuildMPTY**	7C

Step 24: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	7	07
Component type tag	**Return Result**	A2 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.6.2. Charge Storage

31.6.2.1 Removal of SIM during an active call

and 31.6.2.2 Interruption of power supply during an active call

and 31.6.2.3 MS going out of coverage during an active AoCC call

Step A11: SS -> MS CONNECT

Contents	Value/remark	Coding
Length of FIE contents	39	27
Component type tag	**Invoke**	A1 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**forwardChargeAdvice**	7D
ForwardChargeAdviceArg	Seq.	30 (note 1)
ForwardChargeAdviceArg length	27	1B
SS code tag	Tag=80	80
SS code length	1	01
SS code	**AoC-Charging**	72
Charging Information	Tag=a1	A1 (note 1)
Charging Information length	22	16
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 10,0**	64
e2 tag	Tag=82	82
e2 length	2	02
e2	**Value = 55,0**	02 26
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 1,0**	64
e4 tag	Tag=84	84
e4 length	1	01
e4	**Value = 10,0**	64
e5 tag	Tag=85	85
e5 length	1	01
e5	Value = 0,0	00
e6 tag	Tag=86	86
e6 length	1	01
e6	Value = 0,0	00
e7 tag	Tag=87	87
e7 length	1	01
e7	**Value = 10,0**	64
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.6.2.4. ACMmax operation/Mobile Originating

k=1 Step A11: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	41	29
Component type tag	**Invoke**	A1 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**ForwardChargeAdvice**	7D
ForwardChargeAdviceArg	Seq.	30 (note 1)
ForwardChargeAdviceArg length	27	1B
SS code tag	Tag=80	80
SS code length	1	01
SS code	**AoC-Charging**	72
Charging Information	Tag=a1	A1 (note 1)
Charging Information length	22	16
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 1,0**	**0A**
e2 tag	Tag=82	82
e2 length	2	02
e2	**Value = 30,0**	**01 2C**
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 1,0**	**64**
e4 tag	Tag=84	84
e4 length	1	01
e4	**Value = 0,0**	**00**
e5 tag	Tag=85	85
e5 length	1	01
e5	**Value = 0,0**	**00**
e6 tag	Tag=86	86
e6 length	1	01
e6	**Value = 0,0**	**00**
e7 tag	Tag=87	87
e7 length	1	01
e7	**Value = 0,0**	**00**
End-Of-Content Tag	0	00
Length Indicator	0	00

k=2 Step A11: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	40	28
Component type tag	**Invoke**	A1 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**ForwardChargeAdvice**	7D
ForwardChargeAdviceArg	Seq.	30 (note 1)
ForwardChargeAdviceArg length	26	1A
SS code tag	Tag=80	80
SS code length	1	01
SS code	**AoC-Charging**	72
Charging Information	Tag=a1	A1 (note 1)
Charging Information length	21	15
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 0,0**	**00**
e2 tag	Tag=82	82
e2 length	1	01
e2	**Value = 0,0**	**00**
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 0,0**	**00**
e4 tag	Tag=84	84
e4 length	1	01
e4	**Value = 0,0**	**00**
e5 tag	Tag=85	85
e5 length	1	01
e5	**Value = 0,0**	**00**
e6 tag	Tag=86	86
e6 length	1	01
e6	**Value = 0,0**	**00**
e7 tag	Tag=87	87
e7 length	1	01
e7	**Value = 0,0**	**00**
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.6.2.5 ACMmax operation/Mobile Terminating

k=1 Step A13: SS -> MS FACILITY, k=2 Step B13: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	41	29
Component type tag	**Invoke**	A1 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**ForwardChargeAdvice**	7D
ForwardChargeAdviceArg	Seq.	30 (note 1)
ForwardChargeAdviceArg length	27	1B
SS code tag	Tag=80	80
SS code length	1	01
SS code	**AoC-Charging**	72
Charging Information	Tag=a1	A1 (note 1)
Charging Information length	28	1C
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 1,0**	**00 0A**
e2 tag	Tag=82	82
e2 length	2	02
e2	**Value = 30,0**	**01 2C**
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 1,0**	**64**
e4 tag	Tag=84	84
e4 length	1	01
e4	**Value = 0,0**	**00**
e5 tag	Tag=85	85
e5 length	1	01
e5	**Value = 0,0**	**00**
e6 tag	Tag=86	86
e6 length	1	01
e6	**Value = 0,0**	**00**
e7 tag	Tag=87	87
e7 length	1	01
e7	**Value = 0,0**	**00**
End-Of-Content Tag	0	00
Length Indicator	0	00

k=3 Step A13: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	40	28
Component type tag	**Invoke**	A1 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**ForwardChargeAdvice**	7D
ForwardChargeAdviceArg	Seq.	30 (note 1)
ForwardChargeAdviceArg length	26	1A
SS code tag	Tag=80	80
SS code length	1	01
SS code	**AoC-Charging**	72
Charging Information	Tag=a1	A1 (note 1)
Charging Information length	21	15
e1 tag	Tag=81	81
e1 length	1	01
e1	**Value = 0,0**	**00**
e2 tag	Tag=82	82
e2 length	1	01
e2	**Value = 0,0**	**00**
e3 tag	Tag=83	83
e3 length	1	01
e3	**Value = 0,0**	**00**
e4 tag	Tag=84	84
e4 length	1	01
e4	**Value = 0,0**	**00**
e5 tag	Tag=85	85
e5 length	1	01
e5	**Value = 0,0**	**00**
e6 tag	Tag=86	86
e6 length	1	01
e6	**Value = 0,0**	**00**
e7 tag	Tag=87	87
e7 length	1	01
e7	**Value = 0,0**	**00**
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.8.1.1. Registration of a password accepted

MMI sequence:**03*330*1234*9876*9876#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	11	0B
Component type tag	**Invoke**	A1 (note 1)
Component length	9	09
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterPasswordSS**	11
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**B: All barring services**	90

Step 7: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	14	0E
Component type tag	**Invoke**	A1 (note 1)
Component length	12	0C
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Linked ID tag		80
Linked ID length	1	01
Linked ID	As received	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**GetPasswordSS**	12
Guidance information	Enumerated	0A
Guidance length	1	01
Guidance	**enter password**	00

Step 9: MS -> SS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Return Result**	A2 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--

Contents	Value/remark	Coding
Sequence tag		30 (note 1)
Sequence length	9	09
Operation Code tag		02
Operation Code length	1	01
Operation Code	**GetPasswordSS**	12
Password tag	Numeric String	12
Password length	4	04
Password	**Password = 1234**	31 32 33 34

Step 10 & 12: FACILITY

Contents	Value/remark	Coding
Guidance	**Enter New Password**	01

Contents	Value/remark	Coding
Password	**Password = 9876**	39 38 37 36

Step 13 & 15: FACILITY

Contents	Value/remark	Coding
Guidance	**EnterNewPasswordAgain**	02

Contents	Value/remark	Coding
Password	**Password = 9876**	39 38 37 36

Step 16: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	20	14
Component type tag	**Return Result**	A2 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30 (note 1)
Sequence length	indefinite	80
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterPasswordSS**	11
Password tag	Numeric String	12
Password length	4	04
Password	**Password = 1234**	31 32 33 34
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.8.1.2. Registration of a password rejected

MMI sequence:**03*330*1234*9876*987X#

Test 31.8.1.2.1. Rejection after invoke of the RegisterPassword operation

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	11	0B
Component type tag	**Invoke**	A1 (note 1)
Component length	9	09
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**RegisterPasswordSS**	11
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**B: All barring services**	90

Step 5: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Return Error**	A3 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error Code tag	Tag=2	02
Error Code length	1	01
Error Code	**SS subscription violation**	13

Test 31.8.1.2.2. Rejection after password check with negative result

Step 6: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	10	0A
Component type tag	**Return Error**	A3 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error Code tag	Tag=2	02
Error Code length	1	01
Error Code	**Negative Password Check**	26
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.8.1.2.3. Rejection after new password mismatch

Step 14: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	11	0B
Component type tag	**Return Error**	A3 (note 1)
Component length	9	09
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error Code tag	Tag=2	02
Error Code length	1	01
Error Code	**PW-Registration Failure**	25
pw-Registration Failure cause	Tag=04	04 (note 2)
pw-Registration Failure length	1	01
pw-Registration Failure	**New Password Mismatch**	02

NOTE 2: This element is described in Rec. 3GPP TS 04.80 subclause 4.3.2.12, but there is no ASN.1 description in subclause 4.5. Description given in the informative annex A should be put at the end of subclause 4.5.

Test 31.8.3.1. Activation accepted

MMI sequence: *33*1234*22#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary (01)	--
Operation code tag		02
Operation code length	1	01
Operation code	**ActivateSS**	0C
SS-ForBS	Seq.	30 (note 1)
SS-ForBS length	6	06
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BAOC**	92
Basic Service Code identifier	BearerserviceCode	82
BearerService length	1	01
BearerService code	**AllSynchronousServices**	68

Step 7: SS -> MS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	14	0E
Component type tag	**Invoke**	A1 (note 1)
Component length	12	0C
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary (02)	--
Linked ID tag		80
Linked ID length	1	01
Linked ID	As received (01)	--
Operation code tag		02
Operation code length	1	01
Operation code	**Getpassword**	12
Guidance tag	Enumerated	0a
Guidance length	1	01
Guidance	**Enter Password**	00

Step 8: MS -> SS FACILITY

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Return Result**	A2 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received (02)	--
Sequence tag		30 (note 1)
Sequence length	9	09
Operation code tag		02
Operation code length	1	01
Operation code	**Getpassword**	12
Password tag	NumericString	12
Password length	4	04
Password	**Password = 1234**	31 32 33 34

Step 9: SS -> MS RELEASE COMPLETE

This message is coded to give a complete answer to the MS request. Shorter message can also be used (see last paragraph).

Contents	Value/remark	Coding	
Length of FIE contents	29	1D	
Component type tag	**Return Result**	A2	(note 1)
Component length	27	1B	
Invoke ID tag		02	
Invoke ID length	1	01	
Invoke ID	As received (01)	--	
Sequence tag		30	(note 1)
Sequence length	indefinite	80	
Operation code tag		02	
Operation code length	1	01	
Operation code	**ActivateSS**	0C	
SS information			
CallBarringInfo	Tag=a1	A1	(note 1)
CallBarringInfo length	indefinite	80	
SS code tag	Tag=04	04	
SS code length	1	01	
SS code	**BAOC**	92	
CallBarringFeature List	Seq.	30	(note 1)
Length indicator	8	08	
CallBarring Feature tag	Seq.	30	(note 1)
CallBarring Feature length	6	06	
Basic Service Code identifier	BearerserviceCode	82	
BearerService length	1	01	
BearerService code	**AllSynchronousServices**	68	
SS-Status	Tag=84	84	
SS-Status length	1	01	
SS-Status code	**Prov. Registered Active**	07	
End-Of-Content Tag	0	00	
Length Indicator	0	00	
End-Of-Content Tag	0	00	
Length Indicator	0	00	

MMI sequence: *351*1234#

Step 17: MS -> SS REGISTER

Contents	Value/remark	Coding	
Length of FIE contents	13	0D	
Component type tag	**Invoke**	A1	(note 1)
Component length	11	0B	
Invoke ID tag		02	
Invoke ID length	1	01	
Invoke ID	Arbitrary	--	
Operation code tag		02	
Operation code length	1	01	
Operation code	**ActivateSS**	0C	
SS-ForBS	Seq	30	(note 1)
SS-ForBS length	3	03	
SS code tag	Tag=04	04	
SS code length	1	01	
SS code	**BICRoam**	9B	

Step 20: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	26	1A
Component type tag	**Return Result**	A2 (note 1)
Component length	24	18
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence identifier		30 (note 1)
Sequence length	19	13
Operation code tag		02
Operation code length	1	01
Operation code	**ActivateSS**	0C
SS-Information		
CallBarringInfo	Tag=a1	A1 (note 1)
CallBarringInfo length	14	0E
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BICRoam**	9B
CallBarringFeature List	Seq.	30 (note 1)
Length indicator	indefinite	80
CallBarring Feature tag	Seq.	30 (note 1)
CallBarring Feature length	indefinite	80
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov. Registered Active**	07
End-Of-Content Tag	0	00
Length Indicator	0	00
End-Of-Content Tag	0	00
Length Indicator	0	00

Step 9 & 20: short messages

Step 10 and 22 messages can be coded using this shorter form:

Message containing only the "Return result"

Contents	Value/remark	Coding
Length of FIE contents	5	05
Component type tag	**Return Result**	A2 (note 1)
Component length	3	03
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--

Message containing the "Return result" and the "Operation Code"

Contents	Value/remark	Coding
Length of FIE contents	12	0C
Component type tag	**Return Result**	A2 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence identifier		30 (note 1)
Sequence length	3	03
Operation code tag		02
Operation code length	1	01
Operation code	**ActivateSS**	0C
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.8.3.2.1. Rejection after invoke of ActivateSS operation

MMI sequence: *331*1234#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**ActivateSS**	0C
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	3	03
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BOIC**	93

Step 5: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Return Error**	A3 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error code tag		02
Error code length	1	01
Error code	**SS Subscription Violation**	13

Test 31.8.3.2.2. Rejection after use of password procedure

MMI sequence: *35*1234#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**ActivateSS**	0C
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	3	03
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BAIC**	9A

Step 7: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	10	0A
Component type tag	**Return Error**	A3 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error code tag		02
Error code length	1	01
Error code	**NegativePasswordCheck**	26
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.8.4.1. Deactivation accepted

MMI sequence: #330*1234*11#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0D
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**DeactivateSS**	0D
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	3	03
SS code tag	Tag=04	04
SS code length	1	01
SS code	**B: All barring services**	90
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllSpeechTransmission**	10

Step 10: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	21	15
Component type tag	**Return Result**	A2 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence identifier		30 (note 1)
Sequence length	12	0C
Operation code tag		02
Operation code length	1	01
Operation code	**DeactivateSS**	0D
SS-Information		
CallBarringInfo	Tag=a1	A1 (note 1)
CallBarringInfo length	7	07
CallBarringFeature List	Seq.	30 (note 1)
Length indicator	5	05
CallBarring Feature tag	Seq.	30 (note 1)
CallBarring Feature length	3	03
Basic Service Code Identifier	TeleserviceCode	83
Teleservice Length	1	01
Teleservice code	**AllSpeechTransmission**	10
End-Of-Content Tag	0	00
Length Indicator	0	00

MMI sequence: #333*1234*13#

Step 17: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**DeactivateSS**	0D
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	6	06
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BO**	91
Basic Service Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**AllFacsimileServices**	60

Step 21: MS -> SS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	21	15
Component type tag	**Return Result**	A2 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence identifier		30 (note 1)
Sequence length	12	0C
Operation code tag		02
Operation code length	1	01
Operation code	**DeactivateSS**	0D
SS-Information		
CallBarringInfo	Tag=a1	A1 (note 1)
CallBarringInfo length	7	07
CallBarringFeature List	Seq.	30 (note 1)
Length indicator	5	05
CallBarring Feature tag	Seq.	30 (note 1)
CallBarring Feature length	3	03
Basic Service Code Identifier	TeleserviceCode	83
Teleservice Length	1	01
Teleservice code	**AllFacsimileServices**	60
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.8.4.2.1. Deactivation rejected after invoke operation

MMI sequence: *#353*1234#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**DeactivateSS**	0D
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	3	03
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BI**	99

Step 5: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	10	0A
Component type tag	**Return Error**	A3 (note 1)
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error code tag		02
Error code length	1	01
Error code	**SS Subscription Violation**	13
End-Of-Content Tag	0	00
Length Indicator	0	00

Test 31.8.4.2.2. Deactivation rejection after password operation

MMI sequence: *#332*1234#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**DeactivateSS**	0D
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	3	03
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BOICExHome**	94

Step 7: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	8	08
Component type tag	**Return Error**	A3 (note 1)
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error code tag		02
Error code length	1	01
Error code	**NegativePasswordCheck**	26

Test 31.8.6.1. Interrogation accepted

MMI sequence: *#35#

Step 6: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE contents	13	0D
Component type tag	**Invoke**	A1 (note 1)
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**InterrogateSS**	0E
SS-ForBS	Seq	30 (note 1)
SS-ForBS length	3	03
SS code tag	Tag=04	04
SS code length	1	01
SS code	**BAIC**	9A

Step 10: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE Contents	15	0F
Component type tag	**Return Result**	A2
Component length	13	0D
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30
Sequence length	8	08
Operation Code tag		02
Operation Code length	1	01
Operation Code	**InterrogateSS**	0E
InterrogateSS-Res	Choice	
BasicServiceGroupList tag	Seq.	A2
BasicServiceGroupList length	3	03
BasicService Code identifier	TeleserviceCode	83
Teleservice length	1	01
Teleservice code	**Telephony**	11

MMI sequence: *#332#

Step 17: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE Contents	13	0D
Component type tag	**Invoke**	A1
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**InterrogateSS**	0E
SS-ForBS	Seq	30
SS-ForBS length	3	03
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**BOICExHome**	94

Step 21: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE Contents	13	0D
Component type tag	**Return Result**	A2
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Sequence tag		30
Sequence length	6	06
Operation Code tag		02
Operation Code length	1	01
Operation Code	**InterrogateSS**	0E
InterrogateSS-Res	Choice	
SS-Status	Tag=80	80
SS-Status length	1	01
SS-Status	**Prov., Registered, Deactive**	06

Test 31.8.6.2. Interrogation rejected

MMI sequence: *#351#

Step 4: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE Contents	13	0D
Component type tag	**Invoke**	A1
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**InterrogateSS**	0E
SS-ForBS	Seq	30
SS-ForBS length	3	03
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**BICRoam**	9B

Step 5: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE Contents	10	0A
Component type tag	**Return Error**	A3
Component length	indefinite	80
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Error code tag		02
Error code length	1	01
Error code	**SS_NotAvailable**	12
End-Of-Content Tag	0	00
Length Indicator	0	00

MMI sequence: *#331#

Step 11: MS -> SS REGISTER

Contents	Value/remark	Coding
Length of FIE Contents	13	0D
Component type tag	**Invoke**	A1
Component length	11	0B
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**InterrogateSS**	0E
SS-ForBS	Seq	30
SS-ForBS length	3	03
SS-Code tag	Tag=4	04
SS-Code length	1	01
SS-Code	**BOIC**	93

Step 12: SS -> MS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE Contents	8	08
Component type tag	**Reject**	A4
Component length	6	06
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	As received	--
Problem code tag	Tag=81	81
Problem code length	1	01
Invoke problem code	**Resource limitation**	03

Test 31.8.7. Normal operation

Incoming call

Step 6: MS -> SS RELEASE COMPLETE

Contents	Value/remark	Coding
Length of FIE contents	16	10
Component type tag	**Invoke**	A1 (note 1)
Component length	14	0E
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation code tag		02
Operation code length	1	01
Operation code	**NotifySS**	10
NotifySS-Arg tag	Seq.	30 (note 1)
NotifySS-Arg length	6	06
SS code tag	Tag=81	81
SS code length	1	01
SS code	**BI**	99
SS-Status	Tag=84	84
SS-Status length	1	01
SS-Status code	**Prov. Registered Active**	07

Test 31.9. Registration accepted of a USSD

MMI sequence: **00#

Contents	Value/remark	Coding
Length of FIE contents	15	0F
Component type tag	**Invoke**	A1 (note 1)
Component length	13	0D
Invoke ID tag		02
Invoke ID length	1	01
Invoke ID	Arbitrary	--
Operation Code tag		02
Operation Code length	1	01
Operation Code	**ProcessUSSDSS**	0A
IA5 String tag	Tag=16	16
IA5 String length	5	05
Content	****00#**	2A 2A 30 30 23

31.12   eMLPP Service

This subclause is applicable to the mobile stations supporting eMLPP service. The eMLPP is applicable to teleservices 1x, 6x, 9x and bearer services 2x, 3x, 4x, 5x.

For an MS supporting speech the test procedures in subclauses 31.12.1 and 31.12.2 are performed for full rate speech (teleservice 11, telephony). For an MS not supporting speech but supporting at least one of telecommunication services (TS6x, BS2x, BS3x, BS4x, BS5x), for each of the test procedures 31.12.1 and 31.12.2 a full rate service supported by the MS (see PICS/PIXIT statement) is chosen, and the test is performed corresponding to that service.

31.12.1   eMLPP Service / priority level of MO call

31.12.1.1   Conformance requirement

For the MS supporting MO calls:

1. Mobile stations indicate the priority of their call in the signalling that takes place during the call establishment process.

2. The MS shall verify the selected priority level against the priority levels stored in the SIM. If the selected priority is not allowed, then the priority of the call shall be modified to that of the nearest allowed priority level below the requested level.

3. In case of no priority selection or use of a non-compatible Mobile Station the Mobile Station shall send a standard service request message.

4.   Signalling information required for the prioritisation at mobile originating call establishment. (see figure 1 of 3GPP TS 04.67 subclause 4.1.1) and Signalling information between the network and the calling mobile station required for the prioritisation in case of a VGCS or VBS call (figure 4 of 3GPP TS 04.67 subclause 4.1.4).

5. The user or the network may wish to omit or postpone authentication and ciphering in order to provide for a faster call set-up.

Reference(s)

3GPP TS 03.67 subclauses 11.3.1.1, 11.3.1.2, 11.6 and 11.3.1.3.

3GPP TS 02.67 clause 4.

3GPP TS 04.67 subclauses 4.1.1 and 4.1.4.

31.12.1.2   Test purpose

For the MS supporting MO, to verify that:

1. When user selects priority level for normal MO call, the priority level is indicated in the signalling message.

2. The MS verifies the selected priority level against the priority levels stored in the SIM. If the selected priority is not allowed, then the priority of the call shall be modified to that of the nearest allowed priority level below the requested level.

3. If the user does not select a priority level, the priority level is not indicated in the signalling message.

4. If a priority selection is performed by the user the MS provides the priority level information element in L3-MM CM SERVICE REQUEST message when a group call is initiated.

5. The mobile is able to establish a normal MO call with a priority level or a group call with a priority level according to the procedure specified in 3GPP TS 04.67 subclause 4.1.1 and the procedure in 3GPP TS 04.67 subclause 4.1.4.

6. The mobile is able to initiate a fast call set-up without authentication and ciphering.

31.12.1.3 Method of test

Initial Conditions

System Simulator:

  1 cell with default parameters.

Mobile Station:

  The MS is in idle mode with SIM in which the available priority levels are level 2, level 3, and level 4

Specific PICS Statements

  - Support mobile originating call (TSPC_AddInfo_MOsvc)

  - Support mobile emergency call (TSPC_Serv_TS12)

  - Support VGCS originating (TSPC_AddInfo_VGCS_Originating)

  - Support VBS originating (TSPC_AddInfo_VBS_Originating)

PIXIT Statements

  - Way to select a priority level.

Foreseen Final State of the MS

  "Idle, updated".

Test Procedure

The test steps 1 to 26 are repeated for k=1, 2, 3. After the repetition is finished the steps 27 to 71 are performed.

The test steps 1 to 7 are performed if the mobile station supports normal MO call. The steps 8 to 13 are executed if the MS supports TS12. The test steps 20 to step 26 are executed for k= 1, 2, 3, if the mobile station supports VGCS/VBS originating.

An allowed priority level (level 3) or a priority level (level 1) higher than allowed level or no priority level is selected by MMI action (for k=1, 2, 3 respectively). An MO call is attempted. It is checked that the MS indicates the selected priority level (for k=1) or the nearest allowed priority level below the selected level (for k=2) or no priority level (for k=3) in the signalling message.

A normal MO call is attempted with an allowed priority level (level 3). It is checked that the MS establishes completely this call.

 If the mobile station supports VGCS/VBS originating a VGCS/VBS call is initiated via the MMI by using the SETUP procedure.

A MO VGCS/VBS call is attempted with the allowed priority level 0. It is checked that the MS establishes completely this call using the immediate setup procedure without authentication and ciphering.

Maximum Duration of Test

5 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	MS		for k=1, MMI action to select a priority level 3 for k=2, MMI action to select a priority level 0 for k=3, no MMI action to select priority level
2	MS		to initiate a normal MO call
3	MS -> SS	CHANNEL REQUEST	
4	SS -> MS	IMMEDIATE ASSIGNMENT	
5	MS -> SS	CM SERVICE REQUEST	for k=1, containing priority IE with the selected priority for k=2, containing priority IE with a priority level nearest allowed priority level below the requested one (level 2) for k=3, containing no priority IE
6	SS -> MS	CM SERVICE REJECT	
7	SS -> MS	CHANNEL RELEASE	
8	MS		to initiate a normal MO emergency call
9	MS -> SS	CHANNEL REQUEST	
10	SS -> MS	IMMEDIATE ASSIGNMENT	
11	MS -> SS	CM SERVICE REQUEST	for k=1, containing priority IE with the selected priority for k=2, containing priority IE with a priority level nearest allowed priority level below the requested one (level 2) for k=3, containing no priority IE
12	SS -> MS	CM SERVICE REJECT	
13	SS -> MS	CHANNEL RELEASE	
20	MS		for k=1, MMI action to select a priority level 3 for k=2, MMI action to select a priority level 0 for k=3, no MMI action to select priority level
21	MS		to initiate a VGCS call by setup procedure, if supporting VGCS originating. to initiate a VBS call by setup procedure, if supporting only VBS originating.
22	MS -> SS	CHANNEL REQUEST	
23	SS -> MS	IMMEDIATE ASSIGNMENT	
24	MS -> SS	CM SERVICE REQUEST	for k=1, containing priority IE with the selected priority for k=2, containing priority IE with a priority level nearest allowed priority level below the requested one (level 2) for k=3, containing no priority IE
25	SS -> MS	CM SERVICE REJECT	
26	SS -> MS	CHANNEL RELEASE	
27	MS		MMI action to select a priority level 3
28	MS		initiate a normal MO call
29	MS -> SS	CHANNEL REQUEST	
30	SS -> MS	IMMEDIATE ASSIGNMENT	
31	MS -> SS	CM SERVICE REQUEST	containing priority IE with a priority level nearest allowed priority level below the requested one (level 3)
32	SS -> MS	AUTHENTICATION REQUEST	
33	MS -> SS	AUTHENTICATION RESPONSE	
34	SS -> MS	CIPHERING MODE COMMAND	no ciphering
35	MS -> SS	CIPHERING MODE COMPLETE	
36	MS -> SS	SETUP	
37	SS -> MS	CALL PROCEEDING	
38	SS -> MS	ASSIGNMENT COMMAND	
39	MS -> SS	ASSIGNMENT COMPLETE	

Step	Direction	Message	Comments
40	SS -> MS	ALERTING	
41	SS -> MS	CONNECT	
42	MS -> MS	CONNECT ACKNOWLEDGE	
43	SS -> MS	DISCONNECT	
44	MS -> SS	RELEASE	
45	SS -> MS	RELEASE COMPLETE	
46	SS -> MS	CHANNEL RELEASE	
			Steps 47 – 71 are performed if the MS supports VGCS/VBS originating
47	MS		MMI action to select a priority level 3 and initiate a VGCS/VBS call by setup procedure
49	MS -> SS	CHANNEL REQUEST	
50	SS -> MS	IMMEDIATE ASSIGNMENT	
51	MS -> SS	CM SERVICE REQUEST	containing priority IE with a priority level nearest allowed priority level below the requested one (level 3)
52	SS -> MS	AUTHENTICATION REQUEST	
53	MS -> SS	AUTHENTICATION RESPONSE	
54	SS -> MS	CIPHERING MODE COMMAND	no ciphering
55	MS -> SS	CIPHERING MODE COMPLETE	
56	MS -> SS	SETUP	
57	SS -> MS	CHANNEL MODE MODIFY	
58	MS -> SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
59	SS -> MS	CONNECT	
60	SS		Verify that TCH is through connected
61	SS -> MS	TERMINATION	
62	SS -> MS	CHANNEL RELEASE	
63	MS		MMI action to select a priority level 0, MMI action to initiate VGCS/VBS call.
64	MS -> SS	CHANNEL REQUEST	
65	SS -> MS	IMMEDIATE ASSIGNMENT	TCH/F, single RF channel GSM 450: 275 GSM 480: 322 GSM 900: 50 DCS 1800: 750 PCS 1 900: 650 GSM 710, GSM 750, T-GSM 810: 470 GSM 850: 177
66	MS -> SS	IMMEDIATE SETUP	L2: SABM / UA
67	SS -> MS	CHANNEL MODE MODIFY	very early assignment
68	MS -> SS	CHANNEL MODE MODIFY ACKNOWLEDGE	
69	SS -> MS	CONNECT	verify that the TCH is through connected
70	SS		Verify that TCH is through connected
70	SS -> MS	TERMINATION	
71	SS -> MS	CHANNEL RELEASE	

Special Message Contents

CM SERVICE REQUEST **in step 5 and step 24**

for k=1, 2

Information Element	value/remark
as default except:	
CM Service Type	not checked
Ciphering key sequence number	not checked
Mobile station classmark	not checked
Priority	
Information element identifier	0001
Spare	0
Call priority	010 for k=1
	011 for k=2

for k=3

Information Element	value/remark
as default except:	
CM Service Type	not checked
Ciphering key sequence number	not checked
Mobile station classmark	not checked
Priority	not present

CM SERVICE REQUEST **in step 11**

for k=1, 2

Information Element	value/remark
as default except:	
CM Service Type	"emergency call establishment"
Ciphering key sequence number	not checked
Mobile station classmark	not checked
Priority	
Information element identifier	0001
Spare	0
Call priority	010 for k=1

for k=3

Information Element	value/remark
as default except:	
CM Service Type	"emergency call establishment"
Ciphering key sequence number	not checked
Mobile station classmark	not checked
Priority	not present

31.12.2   eMLPP Service / automatic answering point-to-point MT call

31.12.2.1   Conformance requirement

For the MS supporting MT call:

1. Automatic answering or, if necessary, called-party pre-emption has to be performed by the Mobile Station as defined in the following:

   - point-to-point calls:

      If the user is in idle mode, the Mobile Station shall automatically connect to an incoming call of a sufficient priority level. If the user is in dedicated mode and has a subscription to Call Waiting, a Call

Waiting indication including the priority level of the call shall be given to the Mobile Station which automatically accepts the waiting call.

2. In dedicated mode, in the case where the called subscriber has a subscription for eMLPP and for Call Waiting and is using a compatible Mobile Station, the Mobile Station shall be informed of the priority of the new call together with the call waiting indication. The Mobile Station will then consult the internal service configuration list stored on the SIM to establish whether it should automatically accept the waiting call without consulting the user, or whether the call waiting facility will be used as normal.

3. In the case where the called subscriber has a subscription for eMLPP and for CW, the mobile station shall be informed of the priority of the new call together with the CW indication. On reception of the set-up message the compatible mobile station decides on called party pre-emption. If called party pre-emption applies, the mobile station shall automatically accept the waiting call and send a hold message to the network. If a hold acknowledge is received, the waiting call is accepted. If a hold reject is received for any reason, e.g. there is no subscription for hold, the other call shall be released and the waiting call accepted. If the ongoing call is not a TS11 call, the mobile station should not send a hold message to the network but release the call and accept the waiting call.

Reference(s)

3GPP TS 02.67 subclause 4, 5.9.

3GPP TS 03.67 clause 4, subclauses 11.3.2.4, 11.3.2.5 and 11.6.

3GPP TS 04.67 subclause 4.1.3.

3GPP TS 04.83 subclauses 1.1 and 1.2.

31.12.2.2 Test purpose

For the MS supporting MT call, to verify that:

1. In idle mode the MS automatically accepts an incoming point-to-point call of priority level for which automatic answering is enabled.

2. In idle mode the MS alerts an incoming point-to-point call of a priority level for which automatic answering is disabled.

3. In dedicated mode and supporting Call Waiting, when a Call Waiting indication includes a level for which automatic answering is enabled and the priority level is higher than the ongoing point-to-point call, the MS automatically confirms the waiting call and sends a hold message to the network. If a hold reject is received the other call is released and the waiting call is accepted.

4. In dedicated mode and supporting Call Waiting, when a Call Waiting indication includes a priority level for which automatic answering is enabled and the priority level is equal or lower than the priority level of the ongoing call, the MS indicates the waiting call.

5. In group receive mode the MS automatically responds to the paging message containing a priority level for which automatic answering is enabled and the priority level is higher than the priority level of the ongoing call.

6. In group receive mode the MS indicates an incoming point-to-point call of a priority level for which automatic answering is enabled and the priority level is equal or lower than the priority level of the ongoing call.

31.12.2.3 Method of test

Initial Conditions

System Simulator:

1 cell with default parameters.

Mobile Station:

The MS is in idle mode.

The auto answering priority level is set to higher than priority level 2.

Specific PICS Statements

-   Support VGCS listening (TSPC_AddInfo_VGCS_Listening)

-   Support VBS listening (TSPC_AddInfo_VBS_Listening)

PIXIT Statements

-   Way to configure automatic answering.

-   Way to indicate a call has been automatically answered.

Foreseen Final State of the MS

"Idle, updated".

Test Procedure

The call waiting is activated. The MS is in idle mode and automatic answering for priority level 2 is disabled. A PAGING REQUEST message containing priority level 2 is sent. It is checked that the MS indicates the incoming call to the user. The automatic answering for level 1 is enabled. A PAGING REQUEST message with priority level 2 is sent. It is checked that the MS automatically accepts the incoming normal call. The call is released. A PAGING REQUEST message without priority level is sent, and during the call set-up the SETUP message contains priority level 1. It is checked that the MS automatically accepts the incoming normal call.

The MS is in dedicated mode (If the MS supports TS11, TS11service shall be selected for the dedicated mode testing). a SETUP message with priority level higher enough for auto answering is sent by the SS. It is checked that the MS automatically accepts the incoming normal call. A SETUP message containing low priority level without auto answering is sent. It is checked that the MS indicates the incoming call to the user.

The MS is in group receive mode, a NOTIFICATION/FACCH message containing paging information and a PAGING REQUEST message with priority level 0 are sent. It is checked that the MS automatically accepts the incoming normal call. The MS is brought into group receive mode. A NOTIFICATION/FACCH message containing paging information and a PAGING REQUEST message containing low priority level are sent. It is checked that the MS indicates the incoming call to the user.

Maximum Duration of Test

5 minutes.

Expected Sequence

Step	Direction	Message	Comments
0	MS		the MS is in idle mode and auto answering for priority level 2 is disabled
1	SS -> MS	PAGING REQUEST TYPE 1	with priority level 2
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
4	MS -> SS	PAGING RESPONSE	
5	SS -> MS	SETUP	containing priority level 2, but no signal IE
6	MS -> SS	CALL CONFIRMED	
7	SS -> MS	ASSIGNMENT COMMAND	TCH
8	MS -> SS	ASSIGNMENT COMPLETE	
9	MS -> SS	ALERTING	
10	MS		An alerting indication as defined in a PICS/PIXIT statement is given by the MS
11	MS		The MS is made to accept the call in the way described in a PICS/PIXIT statement
12	MS -> SS	CONNECT	
13	SS -> MS	CONNECT ACKNOWLEDGE	
14	SS -> MS	DISCONNECT	
15	MS -> SS	RELEASE	
16	SS -> MS	RELEASE COMPLETE	
17	SS -> MS	CHANNEL RELEASE	return to idle mode
21	SS -> MS	PAGING REQUEST TYPE 1	containing priority level 1
22	MS -> SS	CHANNEL REQUEST	

Step	Direction	Message	Comments
23	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
24	MS -> SS	PAGING RESPONSE	
25	SS -> MS	SETUP	containing priority level 1, but no signal IE
26	MS -> SS	CALL CONFIRMED	
27	MS -> SS	CONNECT	automatic connection
28	SS -> MS	ASSIGNMENT COMMAND	TCH
29	MS -> SS	ASSIGNMENT COMPLETE	
30	SS -> MS	CONNECT ACKNOWLEDGE	
31	MS		to check that the MS gives an indication as defined in a PICS/PIXIT statement for call automatically answered
32	SS -> MS	DISCONNECT	
33	MS -> SS	RELEASE	
34	SS -> MS	RELEASE COMPLETE	
35	SS -> MS	CHANNEL RELEASE	return to idle mode
36	SS -> MS	PAGING REQUEST TYPE 1	containing no priority level
37	MS -> SS	CHANNEL REQUEST	
38	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
39	MS -> SS	PAGING RESPONSE	
40	SS -> MS	SETUP	containing priority level 3, but no signal IE
41	MS -> SS	CALL CONFIRMED	
42	MS -> SS	CONNECT	automatic connection
43	SS -> MS	ASSIGNMENT COMMAND	TCH
44	MS -> SS	ASSIGNMENT COMPLETE	
45	SS -> MS	CONNECT ACKNOWLEDGE	
51	SS -> MS	SETUP	new transaction, containing priority level 1 and Signal Information Element with value #7
52	MS -> SS	CALL CONFIRMED	on new transaction with cause #17
53a	MS -> SS	HOLD	on old transaction for service TS11
53b			no signalling for services other than TS11
54a	SS -> MS	HOLD REJECT	on old transaction for service TS11 with cause #69
54b			no signalling for services other than TS11
55	MS -> SS	DISCONNECT	on old transaction, cause = 'Normal call clearing'
56	SS -> MS	RELEASE	on old transaction
57	MS -> SS	RELEASE COMPLETE	on old transaction
58	MS -> SS	CONNECT	on new transaction
59	SS -> MS	CONNECT ACKNOWLEDGE	on new transaction
60	SS -> MS	SETUP	another new transaction different from step 51, containing priority level 1 and Signal Information Element with value #7
61	MS -> SS	CALL CONFIRMED	on the same transaction as step 60, with cause #17
62	MS -> SS	ALERTING	on the same transaction as step 60
63	MS		to check that the MS gives incoming call indication
64	SS -> MS	DISCONNECT	on the same transaction as step 51
65	MS -> SS	RELEASE	on the same transaction as step 51
66	SS -> MS	RELEASE COMPLETE	on the same transaction as step 51
67	SS -> MS	CHANNEL RELEASE	
70	MS		the MS is in group receive mode, the priority level of current call is level 3
72	SS -> MS	PAGING REQUEST TYPE 1	containing priority level 0
73	MS -> SS	CHANNEL REQUEST	
74	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH
75	MS -> SS	PAGING RESPONSE	
76	SS -> MS	SETUP	without priority level and signal IE
77	MS -> SS	CALL CONFIRMED	
78	MS -> SS	CONNECT	automatic connection
79	SS -> MS	ASSIGNMENT COMMAND	TCH
80	MS -> SS	ASSIGNMENT COMPLETE	
81	SS -> MS	CONNECT ACKNOWLEDGE	
82	SS -> MS	DISCONNECT	
83	MS -> SS	RELEASE	
84	SS -> MS	RELEASE COMPLETE	
85	SS -> MS	CHANNEL RELEASE	

Step	Direction	Message	Comments
86	MS		the MS is brought into group receive mode with the priority level 3
88	SS -> MS	PAGING REQUEST TYPE 1	containing priority level 3
89	MS		to check that the MS gives incoming call indication
90	SS -> MS	CHANNEL RELEASE	UI format

31.12.3 eMLPP Service / automatic answering MT VGCS or VBS call

31.12.3.1 Conformance requirement

For the MS supporting VGCS/VBS listening:

1. Automatic answering or, if necessary, called-party pre-emption has to be performed by the Mobile Station as defined in the following:

   - voice group calls and voice broadcast calls:

     Notifications for other voice group calls, voice broadcast calls or information on paging for point-to-point calls shall be given to the Mobile Stations involved in on-going voice group calls or voice broadcast calls as defined in 3GPP TS 03.68 and 3GPP TS 03.69, respectively. The notifications include the related priority level of the call. In case of a notified call with higher priority where called-party pre-emption applies, the Mobile Station shall automatically leave the on-going voice group call or voice broadcast call and react according to the type of the notified call type.

2. In dedicated mode, in the case where the called subscriber has a subscription for eMLPP and for Call Waiting and is using a compatible Mobile Station, the Mobile Station shall be informed of the priority of the new call together with the call waiting indication. The Mobile Station will then consult the internal service configuration list stored on the SIM to establish whether it should automatically accept the waiting call without consulting the user, or whether the call waiting facility will be used as normal.

3. In the case where the called subscriber has a subscription for eMLPP and for CW, the mobile station shall be informed of the priority of the new call together with the CW indication. On reception of the notification message the compatible mobile station decides on called party pre-emption. If called party pre-emption applies, the mobile station shall automatically release the call and join the new call.

Reference(s)

3GPP TS 02.67 clause 4.

3GPP TS 03.68 clause 4, subclauses 11.3.1.3 and 11.3.1.4.

3GPP TS 03.67 clause 4.

3GPP TS 04.67 subclause 4.1.5.

31.12.3.2 Test purpose

For the MS supporting VGCS/VBS listening, to verify that:

1. In idle mode the MS automatically accepts an incoming VGCS or VBS call of sufficient priority level.

2. In idle mode the MS indicates an incoming VGCS or VBS call of priority level not high enough for automatic answering.

3. In dedicated mode, the MS automatically accepts an incoming VGCS or VBS call of sufficient priority level.

4. In dedicated mode, the MS indicates an incoming VGCS or VBS call of priority level not high enough for automatic answering.

5. In group receive mode the MS automatically accepts an incoming VGCS or VBS call of sufficient priority level.

6. In group receive mode the MS indicates an incoming VGCS or VBS call of priority level not high enough for automatic answering.

31.12.3.3 Method of test

Initial Conditions

System Simulator:

1 cell with default parameters.

Mobile Station:

The MS is in idle mode.

The auto answering priority level is set to higher than priority level 2.

Specific PICS Statements

-

PIXIT Statements

- Way to configure automatic answering.

- Way to indicate that a VGCS/VBS call has been automatically accepted.

Foreseen Final State of the MS

"Idle, updated".

Test Procedure

The MS is in idle mode. a NOTIFICATION/NCH message with priority level higher enough for auto answering is sent. It is checked that the MS automatically accepts the incoming VGCS/VBS call. The call is released. A NOTIFICATION/NCH message containing low priority level without auto answering is sent. It is checked that the MS indicates the incoming VGCS/VBS call to the user.

The MS is in dedicated mode. a NOTIFICATION/FACCH message with priority level higher enough for auto answering is sent. It is checked that the MS automatically accepts the incoming VGCS/VBS call. A NOTIFICATION/FACCH message containing low priority level without auto answering is sent. It is checked that the MS indicates the incoming VGCS/VBS call to the user.

The MS is in group receive mode. a NOTIFICATION/FACCH message with priority level higher enough for auto answering and containing VGCS/VBS channel description is sent. It is checked that the MS automatically accepts the incoming VGCS/VBS call. A NOTIFICATION/FACCH message containing priority level not higher enough for auto answering and containing VGCS/VBS channel description is sent. It is checked that the MS indicates the incoming VGCS/VBS call to the user.

Maximum Duration of Test

5 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	MS		the MS is in idle mode
2	SS -> MS	NOTIFICATION/NCH	containing priority level 1
3	MS		to check that the MS automatically accepts the VGCS/VBS call
4	SS		stop sending NOTIFICATION/NCH
5	SS -> MS	CHANNEL RELEASE	UI format, release VGCS/VBS channel
6	SS -> MS	NOTIFICATION/NCH	containing priority level 3
7	MS		to check that the MS indicates the VGCS/VBS call to the user
8	SS		stop sending NOTIFICATION/NCH
15	MS		the MS is in dedicated mode, the priority level of current call is level 3
16	SS -> MS	NOTIFICATION/FACCH	containing priority level 2
17	MS -> SS	DISCONNECT	
18	SS -> MS	RELEASE	
19	MS -> SS	RELEASE COMPLETE	
20	SS -> MS	CHANNEL RELEASE	
21	MS		to check that the MS automatically accepts the VGCS/VBS call
22	SS -> MS	CHANNEL RELEASE	UI format, release VGCS/VBS channel
23	MS		the MS is brought into dedicated mode, the priority level of current call is level 3
24	SS -> MS	NOTIFICATION/FACCH	containing priority level 4
25	MS		to check that the MS indicates the VGCS/VBS call to the user
26	SS		stop sending NOTIFICATION/FACCH
27	SS -> MS	DISCONNECT	
28	MS -> SS	RELEASE	
29	SS -> MS	RELEASE COMPLETE	
30	SS -> MS	CHANNEL RELEASE	I format, release dedicated channel
31	MS		the MS is in group receive mode, the priority level of current call is level 3
32	SS -> MS	NOTIFICATION/FACCH	containing priority level 1 and with VGCS/VBS channel description
33	MS		to check the MS automatically accepts the incoming VGCS/VBS call
34	SS -> MS	NOTIFICATION/FACCH	containing priority level 4 and with VGCS/VBS channel description
35	MS		to check the MS indicates the incoming VGCS/VBS call to the user
36	SS -> MS	CHANNEL RELEASE	UI format, release VGCS/VBS channel

31.12.4 eMLPP Service / registration

31.12.4.1 Conformance requirement

For registration of eMLPP default priority level, the MS shall transmit successively:

1. A CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user".

2. A CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

3. An eMLPP registration request from a mobile user shall include the SS-Code of the eMLPP service and the default priority level.

Reference(s)

3GPP TS 04.67 subclause 4.2 (figure 6).

3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.2 and 9.1.8.

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1 and 9.2.9.

31.12.4.2 Test purpose

To check that the MS:

1. Correctly requests a supplementary service transaction for registration of eMLPP in CHANNEL REQUEST message.

2. Correctly requests a supplementary service transaction for registration of eMLPP in the subsequent CM SERVICE REQUEST.

3. Then sends a REGISTER message containing the invoke of the RegisterSS operation with the expected parameter values for registration of eMLPP default priority level.

4. Provides the appropriate user indication (as described by the manufacturer) upon receipt of the result of the operation (in a RELEASE COMPLETE message).

31.12.4.3 Method of test

Initial Conditions

System Simulator:

1 cell with default parameters.

Mobile Station:

the MS is in idle mode

Specific PICS Statements

-

PIXIT Statements

- Way to select a priority level.

- Way to initiate eMLPP registration.

- Way to indicate the result of the eMLPP registration.

Foreseen Final State of the MS

"Idle, updated".

Test Procedure

By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests registration of eMLPP for a default priority level DefaultPriorityLevel arbitrarily selected.

Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the RegisterSS operation.

The SS transaction is released and the dedicated channel is released.

Then check the MS provides a correct user indication.

Maximum Duration of Test

3 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a registration of eMLPP default priority level
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	RegisterSS(eMLPP, DefaultPriorityLevel)
7	SS -> MS	RELEASE COMPLETE	RegisterSS operation Return_result
8	MS		provide correct MMI user indication
9	SS -> MS	CHANNEL RELEASE	

Special Message Contents

REGISTER:

Information Element	value/remark
as default except:	
Facility	
invoke	RegisterSS
Supplementary service code	eMLPP
Default Priority	arbitrary

31.12.5 eMLPP Service / interrogation

31.12.5.1 Conformance requirement

For interrogation of eMLPP default priority level, the MS shall transmit successively:

1. A CHANNEL REQUEST with establishment cause set to "other services requested by the mobile user".

2. A CM SERVICE REQUEST with CM service type indicating "supplementary service activation".

3. And then the REGISTER message containing a facility IE that includes an invoke of the InterrogateSS operation with parameter values eMLPP (MMI action) (see figure 7 of 3GPP TS 04.67 subclause 4.5).

Reference(s)

3GPP TS 04.67 subclause 4.5 (figure 7).

3GPP TS 04.08 / 3GPP TS 44.018 subclauses 3.3.1.2 and 9.1.9.

3GPP TS 04.08 / 3GPP TS 24.008 subclauses 4.5.1.1 and 9.2.9.

31.12.5.2 Test purpose

To check that the MS:

1. Correctly requests a supplementary service transaction for interrogation of eMLPP in CHANNEL REQUEST message.

2. Correctly requests a supplementary service transaction for interrogation of eMLPP in the subsequent CM SERVICE REQUEST.

3. Then sends a REGISTER message containing the invoke of the InterrogateSS operation with the expected parameter values for interrogation of eMLPP default priority level.

4. Provides the appropriate user indication (as described by PIXIT) upon receipt of the result of the operation (in a RELEASE COMPLETE message).

31.12.5.3 Method of test

Initial Conditions

System Simulator:

1 cell with default parameters.

Mobile Station:

the MS is in idle mode

Specific PICS Statements

-

PIXIT Statements

- Way to select a priority level.

- Way to initiate eMLPP interrogation.

- Way to indicate the result of the eMLPP interrogation.

Foreseen Final State of the MS

"Idle, updated".

Test Procedure

1. By means of appropriate MMI functions (using either 3GPP TS 02.30 or manufacturer defined MMI), the user requests interrogation of eMLPP.

2. Upon receipt of the operation (in a REGISTER message), the system simulator answers with a RELEASE COMPLETE message with the Facility information element containing the return result of the InterrogateSS operation.

3. The SS transaction is released and the dedicated channel is released.

4. Then check the MS provides a correct user indication.

Maximum Duration of Test

3 minutes.

Expected Sequence

Step	Direction	Message	Comments
1	MS		The MS is made to initiate a interrogation of eMLPP default priority level
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	InterrogateSS(eMLPP)
7	SS -> MS	RELEASE COMPLETE	InterrogateSS operation Return_result containing SS-Status, MaximumPriorityLevel, DefaultPriorityLevel
8	MS		provide correct MMI user indication
9	SS -> MS	CHANNEL RELEASE	

Special Message Contents

REGISTER:

Information Element	value/remark

as default except:
Facility
   invoke
   Supplementary service code
	InterrogateSS
	eMLPP

31.13 Explicit Call Transfer (ECT)

NOTE: In this subclause, Subscriber A is the MS under test, and subscribers B and C are distant parties to the calls made during the tests.

31.13.1 Explicit Call Transfer invocation

31.13.1.1 Explicit Call Transfer invocation, successful case, both calls active, clearing using DISCONNECT

Conformance requirement

3GPP TS 04.91 subclauses 4.1 and 4.2.

Applicability

MS supporting the Explicit Call Transfer supplementary service.

Test purpose

To test that the MS invokes explicit call transfer between two active calls by sending a FACILITY message with the correct invoke component, and reacts correctly on receipt of a DISCONNECT response from the network.

Method of test

Specific PICS Statements

-

PIXIT Statements

-   Method of performing Explicit Call transfer on two active calls.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held" and Call A-C in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and applicable to the ECT supplementary service as described in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall invoke an explicit call transfer between the two calls. The MS shall send a FACILITY message with a transaction identifier for either call A-B or call A-C and containing an ExplicitCT invoke component. The call state of both calls shall be unchanged. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a DISCONNECT message with respect to one of the calls containing a return result component, followed by a DISCONNECT message for the other call, the MS shall respond with a RELEASE message for each call. On receipt of a RELEASE COMPLETE message for each call, the MS shall enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value".

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, perform and explicit call transfer
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, ExplicitCT Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
7	SS -> MS	DISCONNECT	Transaction identifier of Call A-B
8	MS -> SS	RELEASE	Transaction identifier of Call A-B
9	SS -> MS	DISCONNECT	Transaction identifier of Call A-C
10	MS -> SS	RELEASE	Transaction identifier of Call A-C
11	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-B
12	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-C
13	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
14	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
15	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
16	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"

31.13.1.2 Explicit Call Transfer invocation, successful case, both calls active, clearing using RELEASE

Conformance requirement

3GPP TS 04.91 subclauses 4.1 and 4.2.

Applicability

MS supporting the Explicit Call Transfer supplementary service.

Test purpose

1. To test that the MS invokes explicit call transfer between two active calls by sending a FACILITY message with the correct invoke component, and reacts correctly on receipt of a RELEASE response from the network.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of performing Explicit Call transfer on two active calls.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held" and Call A-C in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and applicable to the ECT supplementary service as described in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall invoke an explicit call transfer between the two calls. The MS shall send a FACILITY message with a transaction identifier for either call A-B or call A-C and containing an ExplicitCT invoke component. The call state of both calls shall be unchanged. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a RELEASE message with respect to one of the calls containing a return result component, followed by a RELEASE message for the other call, the MS shall respond with a RELEASE COMPLETE message for each call and shall enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value".

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, perform and explicit call transfer
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, ExplicitCT Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
7	SS -> MS	RELEASE	Transaction identifier of Call A-B
8	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B
9	SS -> MS	RELEASE	Transaction identifier of Call A-C
10	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C
11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
12	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
13	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
14	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"

31.13.1.3 Explicit Call Transfer invocation, successful case, both calls active, clearing using RELEASE COMPLETE

Conformance requirement

3GPP TS 04.91 subclauses 4.1 and 4.2.

Applicability

MS supporting the Explicit Call Transfer supplementary service.

Test purpose

1. To test that the MS invokes explicit call transfer between two active calls by sending a FACILITY message with the correct invoke component, and reacts correctly on receipt of a RELEASE COMPLETE response from the network.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of performing Explicit Call transfer on two active calls.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held" and Call A-C in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and applicable to the ECT supplementary service as described in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall invoke an explicit call transfer between the two calls. The MS shall send a FACILITY message with a transaction identifier for either call A-B or call A-C and containing an ExplicitCT invoke component. The call state of both calls shall be unchanged. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a RELEASE COMPLETE message with respect to one of the calls containing a return result component, followed by a RELEASE COMPLETE message for the other call, the MS shall enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value".

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, perform and explicit call transfer
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, ExplicitCT Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
7	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-B
8	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-C
9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
10	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
12	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"

31.13.1.4 Explicit Call Transfer invocation, successful case, second call alerting

Conformance requirement

3GPP TS 04.91 subclauses 4.1 and 4.2.

Applicability

MS supporting the Explicit Call Transfer supplementary service.

Test purpose

1. To test that the MS invokes explicit call transfer between an active held call and an alerting call by sending a FACILITY message with the correct invoke component, and reacts correctly on receipt of clearing messages from the network.

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of performing Explicit Call transfer on an active call and an alerting call.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held" and Call A-C in state U4 "Call Delivered" with no auxiliary state. Both calls shall be of a basic service supported by the MS and applicable to the ECT supplementary service as described in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U0. Call A-C, state U0.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall invoke an explicit call transfer between the two calls. The MS shall send a FACILITY message with a transaction identifier for either call A-B or call A-C and containing an ExplicitCT invoke component. The call state of both calls shall be unchanged. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a DISCONNECT message with respect to one of the calls containing a return result component, followed by a DISCONNECT message for the other call, the MS shall respond with a RELEASE message for each call. On receipt of a RELEASE COMPLETE message for each call, the MS shall enter state U0 "Null". The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a RELEASE COMPLETE message with cause #81 "invalid transaction identifier value".

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, perform and explicit call transfer
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, ExplicitCT Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U4
7	SS -> MS	DISCONNECT	Transaction identifier of Call A-B
8	MS -> SS	RELEASE	Transaction identifier of Call A-B
9	SS -> MS	DISCONNECT	Transaction identifier of Call A-C
10	MS -> SS	RELEASE	Transaction identifier of Call A-C
11	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-B
12	SS -> MS	RELEASE COMPLETE	Transaction identifier of Call A-C
13	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
14	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-B, with cause #81 "invalid transaction identifier value"
15	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
16	MS -> SS	RELEASE COMPLETE	Transaction identifier of Call A-C, with cause #81 "invalid transaction identifier value"

31.13.1.5   Explicit Call Transfer invocation, unsuccessful case

Conformance requirement

   3GPP TS 04.91 subclauses 4.1 and 4.2

Applicability

MS supporting the Explicit Call Transfer supplementary service.

Test purpose

   1. To test that the MS invokes explicit call transfer between an active held call and an alerting call by sending a FACILITY message with the correct invoke component, and returns both calls to their original states on receipt of an error or reject response.

Initial conditions

The MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held" and Call A-C in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and applicable to the ECT supplementary service as described in 3GPP TS 02.04 Table A.1.

Method of test

Specific PICS Statements

   -

PIXIT Statements

- Method of performing Explicit Call transfer on two active calls.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held" and Call A-C in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and applicable to the ECT supplementary service as described in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call held". Call A-C, Call A-C, state U10, no auxiliary state.

Maximum duration of test

30 s.

Procedure

Using suitable MMI commands, the MS shall invoke an explicit call transfer between the two calls. The MS shall send a FACILITY message with a transaction identifier for either call A-B or call A-C and containing an ExplicitCT invoke component. The call state of both calls shall be unchanged. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message using the same transaction identifier and including a return error component, the MS shall not send any further messages in respect of the transfer attempt, and shall remain in the same call state for both calls. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Using suitable MMI commands, the MS shall again invoke an explicit call transfer between the two calls. The MS shall send a FACILITY message with a transaction identifier for either call A-B or call A-C and containing an ExplicitCT invoke component. The call state of both calls shall be unchanged. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

On receipt of a FACILITY message using the same transaction identifier and including a reject component, the MS shall not send any further messages in respect of the transfer attempt, and shall remain in the same call state for both calls. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, perform an explicit call transfer
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, ExplicitCT Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
7	SS -> MS	FACILITY	TI same as step 2, Return Error component
8	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
12	MS		Using MMI commands, perform an explicit call transfer
13	MS -> SS	FACILITY	TI for Call A-B or Call A-C, ExplicitCT Invoke component
14	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
15	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
16	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
17	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
18	SS -> MS	FACILITY	TI same as step 2, Reject component
19	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
20	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
21	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
22	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state

31.13.1.6   Explicit Call Transfer invocation, expiry of T(ECT)

Conformance requirement

3GPP TS 04.91 subclauses 4.1 and 4.2.

3GPP TS 04.80 subclause 4.2.

Applicability

MS supporting the Explicit Call Transfer supplementary service.

Test purpose

To test that the MS invokes explicit call transfer between an active held call and an alerting call by sending a FACILITY message with the correct invoke component, and returns both calls to their original states on expiry of T(ECT).

Method of test

Specific PICS Statements

-

PIXIT Statements

- Method of performing Explicit Call transfer on two active calls.

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall have Call A-B in state U10 "Active" with auxiliary state "Call held" and Call A-C in state U10 "Active" with no auxiliary state. Both calls shall be of a basic service supported by the MS and applicable to the ECT supplementary service as described in 3GPP TS 02.04 table A.1.

Foreseen final state of the MS

Call A-B, state U10, auxiliary state "Call held". Call A-C, Call A-C, state U10, no auxiliary state.

Maximum duration of test

45 s.

Procedure

Using suitable MMI commands, the MS shall invoke an explicit call transfer between the two calls. The MS shall send a FACILITY message with a transaction identifier for either call A-B or call A-C and containing an ExplicitCT invoke component. The call state of both calls shall be unchanged. The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Between 5s and 15s after sending the FACILITY message, the MS shall either:

- remain in the same call states and indicate failure to the user; or

- send another FACILITY message with the same contents.

The call states shall be verified by the SS sending a STATUS ENQUIRY message in respect of the transaction identifier of each call, and receiving a STATUS message indicating the appropriate call state.

Expected sequence

Step	Direction	Message	Comments
1	MS		Using MMI commands, perform an explicit call transfer
2	MS -> SS	FACILITY	TI for Call A-B or Call A-C, ExplicitCT Invoke component
3	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
4	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
5	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
6	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
7	SS		Wait 15 s from receiving FACILITY message
A8	SS -> MS	STATUS ENQUIRY	Take this branch if no message is received within 15 s Transaction identifier of Call A-B
A9	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
A10	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
A11	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state
B8	MS -> SS	FACILITY	Take this branch if a message is received within 15 s Same as Step 2. Message shall not be received less than 5 s after the first FACILITY message
B9	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-B
B10	MS -> SS	STATUS	Transaction identifier of Call A-B, state U10, auxiliary state "Call held"
B11	SS -> MS	STATUS ENQUIRY	Transaction identifier of Call A-C
B12	MS -> SS	STATUS	Transaction identifier of Call A-C, state U10, no auxiliary state

31.14 User-to-User Signalling (UUS)

This subclause applies to mobile station supporting User-to-User Signalling (UUS). The objective of this clause is to test UUS concerned procedures.

Unless indicated in individual sub-clauses, the default message contents in subclause 26.8.4 are applied for CC calls and default message contents in subclause 26.14.10 are applied for VGCS/VBS calls.

31.14.1 UUS / Implicit UUS1

31.14.1.1 UUS / Implicit UUS1 / CC MO call

31.14.1.1.1 Conformance requirement

The UUI service is activated implicitly by the presence of UUI in the set-up request from the mobile station.

To activate UUS1 implicitly, the MS shall include a User-user information element in the SETUP message as part of a normal call request.

The MS shall accept the presence of User-user information element in the ALERTING, CONNECT, DISCONNECT, RELEASE or RELEASE COMPLETE messages (as indicated in 3GPP TS 24.087, figure 1 in subclause 4.1.1).

References

> 3GPP TS 23.087 subclauses 4.1.1 and 5.2.1.2.1.

> 3GPP TS 24.087 subclause 4.1.1.

31.14.1.1.2 Test purpose

1. To verify that upon initiation of an outgoing basic call with implicit UUS1 by the user, the MS includes a User-user information element in the SETUP message.

2. To verify that inclusion of the User-user information element with different data length in either of the downlink messages ALERTING, CONNECT, DISCONNECT or RELEASE COMPLETE, causes no adverse effects on the operation of the MS.

31.14.1.1.3 Method of test

Initial conditions

> System Simulator:

> > 1 cell, default parameters.

> Mobile Station:

> > The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS Statements

> - Support MO telephony (TSPC_AddInfo_MOsvc)

> - Support UUS (TSPC_Serv_SS_UUS)

PIXIT Statements

> - Way to activate implicit UUS1.

> - Description of display of the User-user data received from the network.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI.

Test procedure

By means of appropriate MMI function, the user requests implicit UUS1 and enters a string, which shall be included in the UUS1. Then MS is made to initiate a call. In the SETUP message, the User-user information element shall be present and shall include the requested string. Then, SS releases the call.

The MS is made to initiate a second call with implicit UUS1. In the SETUP message, the User-user information element shall be present with the requested string. SS releases the call, by sending a RELEASE COMPLETE message including a User-user information element with a long data value. It is checked that the MS is not disturbed by the optional User-user information element.

The MS is made to initiate a third call with implicit UUS1. In the SETUP message, the User-user information element shall be present with the requested string. Then SS shall include User-user information element in the ALERTING and in the CONNECT message with respectively short and long data value, it is checked that MS does not respond adversely to the inclusion of the optional User-user information element. After 10 seconds, SS initiates call clearing. SS sends DISCONNECT and RELEASE COMPLETE messages with User-user information element respectively without data and with a short data value, again the MS shall not respond adversely to the inclusion of the User-user information element, but shall continue to clear down the call normally.

Maximum Duration of Test

2 minutes.

Expected Sequence

Step	Direction	Message	Comments/actions/next state
0	MS		The MS is in idle mode. MMI actions to initiate a CC call with implicit UUS1 including the string 'abc0123456'.
1	MS -> SS	CHANNEL REQUEST	
2	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH4
3	MS -> SS	CM SERVICE REQUEST	
4	MS -> SS	SETUP	Check User-user IE is included. See specific message contents
5	SS -> MS	RELEASE COMPLETE	
6	SS -> MS	CHANNEL RELEASE	The main signalling link shall be released by the MS (L2: DISC/UA).
10	MS		MMI actions to initiate a CC call with implicit UUS1 including the string 'abc'
11	MS -> SS	CHANNEL REQUEST	
12	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH4
13	MS -> SS	CM SERVICE REQUEST	
14	MS -> SS	SETUP	Check User-user IE is included. See specific message contents
15	SS -> MS	RELEASE COMPLETE	Message contains the User-user IE with a long data value, see Specific message contents
16	MS		It is checked that the MS, in a way described by the manufacturer, displays user-user data.
17	SS -> MS	CHANNEL RELEASE	The main signalling link shall be released by the MS (L2: DISC/UA).
20	MS		MMI actions to initiate a CC call with implicit UUS1 including the string '123497'.
21	MS -> SS	CHANNEL REQUEST	
22	SS -> MS	IMMEDIATE ASSIGNMENT	SDCCH4
23	MS -> SS	CM SERVICE REQUEST	
24	MS -> SS	SETUP	Check User-user IE is included. See specific message contents
25	SS -> MS	AUTHENTICATION REQUEST	
26	MS -> SS	AUTHENTICATION RESPONSE	
27	SS -> MS	CALL PROCEEDING	
28	SS -> MS	ASSIGNMENT COMMAND	TCH
29	MS -> SS	ASSIGNMENT COMPLETE	
30	SS -> MS	ALERTING	Message contains the User-user IE with a short data value, see Specific message contents

Step	Direction	Message	Comments/actions/next state
31	MS		It is checked that the MS, in a way described by the manufacturer, displays user-user data.
32	SS -> MS	CONNECT	Message contains the User-user IE with a long data value, see Specific message contents
33	MS		It is checked that the MS, in a way described by the manufacturer, displays user-user data.
34	MS -> SS	CONNECT ACKNOWLEDGE	
35	SS -> MS	DISCONNECT	Without Progress Indication IE Including the User-user IE without data, see Specific message contents
36	MS		It is checked that the MS, in a way described by the manufacturer, displays no user-user data.
37	MS -> SS	RELEASE	
38	SS-> MS	RELEASE COMPLETE	Message contains the User-user IE with a short data value, see Specific message contents
39	SS		It is checked that the MS, in a way described by the manufacturer, displays user-user data.
40	SS -> MS	CHANNEL RELEASE	The main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

SETUP

As default message contents as defined in subclause 26.8.4 (mobile station to network direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	1 + the entered string length
- PD	User specific protocol
- user-user	The string as entered coded in IA5 characters

ALERTING

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	2
- PD	User specific protocol
- user-user	The following string coded in IA5 characters: "A"

CONNECT

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	101
- PD	User specific protocol
- user-user	The following string with a length of 100 octets coded in IA5 characters: "abcdefghijklmnopqrstuvwxyz0123456789abc………."

DISCONNECT

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark

User-user
  - IEI
  - length
  - PD
  - user-user
	
	'7E'O
	1
	User specific protocol
	-

RELEASE COMPLETE – **step 15**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark

User-user
  - IEI
  - length
  - PD
  - user-user
	
	'7E'O
	37
	User specific protocol
	The following string coded in IA5 characters:
	"0123456789abcdefghijklmnopqrstuvwxyz"

RELEASE COMPLETE – **step 38**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark

User-user
  - IEI
  - length
  - PD
  - user-user
	
	'7E'O
	17
	User specific protocol
	The following string coded in IA5 characters: "RELEASE COMPLETE"

31.14.1.2   UUS / Implicit UUS1 / CC MT call

31.14.1.2.1   Conformance requirement

The MS shall accept the presence of User-user information element in the SETUP and DISCONNECT messages (as indicated in 3GPP TS 23.087, figure 5.2.1.2.1.1).

The MS may include User-user information element in the ALERTING or CONNECT messages (as indicated in 3GPP TS 23.087, figure 5.2.1.2.1.1).

References

3GPP TS 23.087 subclause 5.2.1.2.1.

3GPP TS 24.087.

31.14.1.2.2   Test purpose

1. To verify that, the receipt of SETUP message including user-user information element with a short or large data value causes no adverse effects on the call establishment operation of the MS.

2. To verify that MS could include User-user information element in either of the uplink messages ALERTING or CONNECT.

3. To verify that inclusion of the User-user information element with different data length in either of the downlink message DISCONNECT or RELEASE COMPLETE, causes no adverse effects on the operation of the MS.

31.14.1.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS Statements

- Support MT telephony (TSPC_AddInfo_MTsvc)

- Support UUS (TSPC_Serv_SS_UUS)

PIXIT Statements

- Support the sending of UUS1 information element in ALERTING message

- Support the sending of UUS1 information element in CONNECT message

- Way to activate implicit UUS1.

- Description of display of the User-user data received from the network.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI.

Test procedure

SS initiates a call. In the SETUP message, the User-user information element shall be present. It is checked that the MS, in a way described by the manufacturer, displays the user-user data. Then, SS releases the call immediately after the MS call confirmation.

The SS initiates a second call and in the SETUP message, the User-user information element shall contain a larger data value. It is checked that the MS, in a way described by the manufacturer, displays the user-user data. Then the SS releases the call immediately after the MS call confirmation. In the RELEASE COMPLETE message, the User-user information element shall also contain a large data value. It is checked that the MS is not disturbed by the User-user optional information element.

By means of appropriate MMI function and if MS supports User-user information element in ALERTING or CONNECT messages, the user enters a string, which shall be included in the UUS1. The SS initiates a third call and in the SETUP message, the User-user information element shall be included without data. After the MS call confirmation and depending on the MS capability, it is checked that the MS sends in the User-user information element of the ALERTING message the string as requested. When the TCH is allocated and depending on the MS capability, it is checked that the MS sends in the User-user information element of the CONNECT message the string as requested. When the call is established, the SS releases the call and shall include in the DISCONNECT message the optional User-user information element. It is checked that the MS is not disturbed by the User-user information element. The SS shall also include in the RELEASE COMPLETE message the optional User-user information element. It is checked that the MS is not disturbed by the User-user information element.

Maximum Duration of Test

2 minutes.

Expected Sequence

Step	Direction	Message	Comments/actions/next state
0	MS		The MS is in idle mode.
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	
3	SS -> MS	IMMEDIATE ASSIGNMENT	U0, SDCCH4
4	MS -> SS	PAGING RESPONSE	
7	SS -> MS	SETUP	User-user IE included with a short data value, see Specific message contents
8	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
9	MS -> SS	CALL CONFIRMED	
10	SS -> MS	RELEASE COMPLETE	
11	SS -> MS	CHANNEL RELEASE	The main signalling link shall be released by the MS (L2: DISC/UA).
15	SS -> MS	PAGING REQUEST	
16	MS -> SS	CHANNEL REQUEST	
17	SS -> MS	IMMEDIATE ASSIGNMENT	U0, SDCCH4
18	MS -> SS	PAGING RESPONSE	
21	SS -> MS	SETUP	User-user IE included with a large data value, see Specific message contents
22	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
23	MS -> SS	CALL CONFIRMED	
24	SS -> MS	RELEASE COMPLETE	Message contains the User-user IE with a long data value, see Specific message contents.
25	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
26	SS -> MS	CHANNEL RELEASE	The main signalling link shall be released by the MS (L2: DISC/UA).
			If supported, MMI actions to initiate implicit UUS1 with the string '12346aA'
30	SS -> MS	PAGING REQUEST	
31	MS -> SS	CHANNEL REQUEST	
32	SS -> MS	IMMEDIATE ASSIGNMENT	U0, SDCCH4
33	MS -> SS	PAGING RESPONSE	
34	SS -> MS	AUTHENTICATION REQUEST	
35	MS -> SS	AUTHENTICATION RESPONSE	
36	SS -> MS	SETUP	User-user IE included without data. See Specific message contents.
37	MS		Check that the MS, in a way described by the manufacturer, displays no User-user data value.
38	MS -> SS	CALL CONFIRMED	
39	MS -> SS	ALERTING	If MS support User-user IE in ALERTING message, then check the presence of this IE. See specific message contents.
40	MS -> SS	CONNECT	If MS support User-user IE in CONNECT message, then check the presence of this IE. See specific message contents.
41	SS -> MS	ASSIGNMENT COMMAND	TCH
42	MS -> SS	ASSIGNMENT COMPLETE	
43	SS -> MS	CONNECT ACKNOWLEDGE	

Step	Direction	Message	Comments/actions/next state
44	SS -> MS	DISCONNECT	With the User-user IE with a long data value, see Specific message contents
45	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
46	MS -> SS	RELEASE	
47	SS-> MS	RELEASE COMPLETE	Message contains the User-user IE with a short data value, see Specific message contents.
48	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
49	SS -> MS	CHANNEL RELEASE	The main signalling link shall be released by the MS (L2: DISC/UA).

Specific message contents:

SETUP – **step 7**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user - IEI - length - PD - user-user	 '7E'O 4 User specific protocol The following string coded in IA5 characters :"012"

SETUP – **step 21**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user - IEI - length - PD - user-user	 '7E'O 33 User specific protocol The following string coded in IA5 characters : "abcdefghijklmnopqrstuvwxyz012345'"

SETUP – **step 36**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user - IEI - length - PD - user-user	 '7E'O 1 User specific protocol -

RELEASE COMPLETE – **step 24**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user - IEI - length - PD - user-user	 '7E'O 37 User specific protocol The following string coded in IA5 characters : "abcdefghijklmnopqrstuvwxyz0123456789"

RELEASE COMPLETE – **step 47**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark

User-user
  - IEI
  - length
  - PD
  - user-user
	
	'7E'O
	2
	User specific protocol
	The following string coded in IA5 characters: "A"

ALERTING

As default message contents as defined in subclause 26.8.4 (mobile station to network direction), except:

Information Element	value/remark

User-user
  - IEI
  - length
  - PD
  - user-user
	
	'7E'O
	8
	User specific protocol
	The string '12346aA' coded in IA5 characters

CONNECT

As default message contents as defined in subclause 26.8.4 (mobile station to network direction), except:

Information Element	Value/remark

User-user
  - IEI
  - length
  - PD
  - user-user
	
	'7E'O
	8
	User specific protocol
	The string '12346aA ' coded in IA5 characters

DISCONNECT

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	Value/remark

User-user
  - IEI
  - length
  - PD
  - user-user
	
	'7E'O
	37
	User specific protocol
	The following string coded in IA5 characters :
	"abcdefghijklmnopqrstuvwxyz0123456789"

31.14.1.3 UUS / Implicit UUS1 / Interactions with Call Waiting and call HOLD supplementary services

31.14.1.3.1 Conformance requirement

There are no interactions between UUS and the Call hold (HOLD) and Call waiting (CW) supplementary services.

To activate UUS1 implicitly, the MS shall include a User-user information element in the SETUP message as part of a normal call request.

The MS shall accept the presence of User-user information element in the SETUP and DISCONNECT messages (as indicated in 3GPP TS 23.087, figure 5.2.1.2.1.1).

References

    3GPP TS 23.087 subclauses 4.1.1, 5.2.1.2.1.1 and 5.2.1.2.1.

    3GPP TS 24.087 subclauses 4.1.1, 6.4 and 6.5.

31.14.1.3.2   Test purpose

1. To verify that when in active Call State and supporting Call Hold, to initiate a second call with implicit UUS1, the MS places the first call on hold and sends a SETUP message with the User-user information element. Verify that the second call is successfully established.

2. In call active state and supporting Call Waiting, when a Call Waiting indication includes a User-user information element, the MS accepts the waiting call and places the first call on hold and successfully establishes the second call.

31.14.1.3.3   Method of test

Initial conditions

System Simulator:

   1 cell, default parameters.

Mobile Station:

   The MS has a call ("Call A-B") in the active state. The SIM in the MS under test has Call Waiting enabled.

Specific PICS Statements

   - Support MO telephony (TSPC_AddInfo_MOsvc)

   - Support MT telephony (TSPC_AddInfo_MTsvc)

   - Support UUS (TSPC_Serv_SS_UUS)

   - Support hold (TSPC_Serv_SS_HOLD)

PIXIT Statements

   - Way to activate implicit UUS1.

   - Description of display of the User-user data received from the network.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI.

Test procedure

A call is established between the MS and SS. This call is the active call named Call A-B.

Using suitable MMI commands, the MS shall request that the call A-B be placed on hold. The MS shall send a HOLD message and enter auxiliary state "hold request". On receipt of a HOLD ACKNOWLEDGE message from the SS, the MS is made to initiate a second call with implicit UUS1. It is checked that the MS includes the User-user information element in the SETUP message. Then the SS sends an ALERTING message including the optional User-user information. It is checked that the MS, in a way described by the manufacturer, displays the User-user data value. Then the SS sends a CONNECT message including the optional User-user information element. It is checked that the MS, in a way described by the manufacturer, displays the User-user data value. On receipt of a CONNECT ACKNOWLEDGE message, MS shall enter state U10 "Active". The SS releases the second call A-C and shall include in the DISCONNECT message the optional User-user information element. It is checked that the MS is not disturbed by the User-user information element. The SS shall also include in the RELEASE COMPLETE message the optional User-user information element. It is checked that the MS is not disturbed by the User-user information element.

The Call A-B is still alive. By means of appropriate MMI function, the user enters a string, which shall be included in the UUS1 sent by the MS. The SS sends a SETUP message including a User-user information element and indicating the request of a new call, named Call C-A. It is checked with the appropriate MMI function, that the MS displays the contents of the User-user information element. Then the MS shall place Call A-B on hold, and answer Call C-A. The MS shall send a HOLD message to the SS using the transaction identifier of Call A-B. On receipt of a HOLD ACKNOWLEDGE from the SS, the MS shall send a CALL CONFIRMED message and an ALERTING message to the SS, using the transaction identifier of Call C-A, and depending on the MS capability including the optional User-user information element as requested by the user. Then the MS shall send a CONNECT message to the SS, using the

transaction identifier of Call C-A, and depending on the MS capability including the optional User-user information element as entered by the user. On receipt of a CONNECT ACKNOWLEDGE message, MS shall enter state U10 "Active". The SS releases the call C-A and shall include in the DISCONNECT message the optional User-user information element. It is checked that the MS is not disturbed by the User-user information element. The SS shall also include in the RELEASE COMPLETE message the optional User-user information element. It is checked that the MS is not disturbed by the User-user information element.

Then SS releases the first call A-B.

Maximum Duration of Test

2 minutes.

Expected Sequence

Step	Direction	Message	Comments/actions/next state
0	MS		Active call state with call A-B.
1	MS		If supported, MMI actions to initiate implicit UUS1 with the string '12345'.
2	MS		Call A-C is requested using MMI commands and Call A-B is placed on hold using MMI commands
3	MS -> SS	CM SERVICE REQUEST	Transaction identifier of Call A-C
4	SS -> MS	CM SERVICE ACCEPT	Transaction identifier of Call A-C
5	MS -> SS	SETUP	Check User-user IE is included, transaction identifier of Call A-C, see Specific message contents.
6	SS -> MS	ALERTING	Message contains the User-user IE with a short data value, transaction identifier of Call A-C, see Specific message contents
7	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
8	MS -> SS	HOLD	Transaction identifier of Call A-B
9	SS -> MS	HOLD ACKNOWLEDGE	Transaction identifier of Call A-B
10	SS -> MS	CONNECT	Message contains the User-user IE with a long data value, transaction identifier of Call A-C, see Specific message contents
11	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
12	MS -> SS	CONNECT ACKNOWLEDGE	Transaction identifier of Call A-C
13	SS -> MS	DISCONNECT	Without Progress Indication IE, transaction identifier of Call A-C. With the User-user IE without data, see Specific message contents
14	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
15	MS -> SS	RELEASE	
16	SS-> MS	RELEASE COMPLETE	Message contains the User-user IE with a short data value, transaction identifier of Call A-C, see Specific message contents
17	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
18	SS		Call A-B is released
19	SS -> MS	CHANNEL RELEASE	The main signalling link shall be released by the MS (L2: DISC/UA).
20			Active call state with call A-B.
21	MS		MMI actions to initiate implicit UUS1 with the string '201'.
22	SS -> MS	PAGING REQUEST	
23	MS -> SS	PAGING RESPONSE	
31	SS->MS	SETUP	User-user IE is included, see Specific message contents. Transaction identifier of Call C-A
32	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value. Call A-B is placed on hold using MMI commands.
34	MS -> SS	HOLD	Transaction identifier of Call A-B
35	SS -> MS	HOLD ACKNOWLEDGE	Transaction identifier of Call A-B
36	MS		Call C-A is answered using MMI commands
37	MS -> SS	CALL CONFIRMED	Transaction identifier of Call C-A
38	MS -> SS	ALERTING	If MS support User-user IE in ALERTING message, then check the presence of this IE. Transaction identifier of Call C-A
39	MS -> SS	CONNECT	If MS supports User-user IE in CONNECT message, then check the presence of this IE. Transaction identifier of Call C-A

Step	Direction	Message	Comments/actions/next state
40	SS -> MS	CONNECT ACKNOWLEDGE	Transaction identifier of Call C-A
41	SS -> MS	DISCONNECT	With the User-user IE without data, transaction identifier of Call C-A, see Specific message contents.
42	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.
43	MS -> SS	RELEASE	
44	SS-> MS	RELEASE COMPLETE	Message contains the User-user IE with a short data value, see Specific message contents. Transaction identifier of Call C-A
45	MS		Check that the MS, in a way described by the manufacturer, displays the User-user data value.

Specific message contents:

SETUP – **step 5**

As default message contents as defined in subclause 26.8.4 (mobile station to network direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	1 + the entered string length
- PD	User specific protocol
- user-user	The string as entered, coded in IA5 characters

SETUP – **step 31**

As default message contents as defined in subclause 26.8.4 (network direction to mobile station), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	4
- PD	User specific protocol
- user-user	The following string coded in IA5 characters : "012"

ALERTING– **step 6**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	4
- PD	User specific protocol
- user-user	The following string coded in IA5 characters : "012"

ALERTING– **step 38**

As default message contents as defined in subclause 26.8.4 (mobile station to network direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	1 + the entered string length
- PD	User specific protocol
- user-user	The string as entered, coded in IA5 characters

CONNECT– **step 10**

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	37
- PD	User specific protocol
- user-user	The following string coded in IA5 characters : "abcdefghijklmnopqrstuvwxyz0123456789"

CONNECT– **step 39**

As default message contents as defined in subclause 26.8.4 (mobile station to network direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	1 + the entered string length
- PD	User specific protocol
- user-user	The string as entered in IA5 characters

DISCONNECT

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	1
- PD	User specific protocol
- user-user	-

RELEASE COMPLETE

As default message contents as defined in subclause 26.8.4 (network to mobile station direction), except:

Information Element	value/remark
User-user	
- IEI	'7E'O
- length	2
- PD	User specific protocol
- user-user	The following string coded in IA5 characters: "A"

31.15 Follow Me (FM)

This subclause applies to mobile station supporting Follow Me (FM). The objective of this clause is to test FM concerned procedures.

Unless indicated in individual sub-clauses, the default message contents in subclause 31.11 are applied.

31.15.1 Follow Me (FM) / Registration

31.15.1.1 Conformance requirement

1. The initiating subscriber registers the Follow Me feature with respect to a particular remote party. The initiating subscriber shall provide the following information to the network: the number of the remote party. The initiating subscriber shall receive an indication if the FM registration request was accepted or rejected by the network.

2. MS shall behave as indicated in the Information flow as indicated in 3GPP TS 23.094, figure 4.1.

3. As an operator's option additional information (such as passwords) for registration may be required from the initiating subscriber. This information shall be coded as a USSD string with a length not exceeding 30 characters.

4. All the messages between MS and the mobile network and internal to the mobile network, which are used for control of Follow Me, are USSD Phase 2 messages.

5. If a mobile initiated USSD request using protocol version 2 is rejected by the network, and the reason for the rejection is indicated either by the problem code "unrecognized operation" or a cause "Facility rejected", the MS shall assume that the network only supports protocol version 1 of USSD operations. The MS shall re-attempt the request by using the appropriate protocol version 1 USSD operation without an SS version indicator if the unstructured data entered by the user can be coded as an IA5 string.

References

3GPP TS 22.094 subclause 6.3.

3GPP TS 23.094 subclauses 4.1, 4.2 and 4.4.

3GPP TS 24.090 subclause 6.1.

31.15.1.2 Test purpose

1. To check that the MS correctly requests a supplementary service transaction for registration of FM in CHANNEL REQUEST message and in the subsequent CM SERVICE REQUEST.

2. To check that the MS sends a REGISTER message using USSD phase 2 and containing the FM-request control message for registration.

3. To check that upon receipt of the result or the error of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

4. To check that upon receipt of a rejection from the network with the problem code "unrecognized operation" or a cause "Facility rejected", the MS re-attempt the request by using USSD version 1.

31.15.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN.

Specific PICS Statements

-

PIXIT Statements

- Way to activate the registration of FM.

- Description of display of the FM answers from the network.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI.

Test procedure

By means of appropriate MMI functions, the user requests registration of FM for a remote number. Upon receipt of the REGISTER message, SS answers with the RELEASE COMPLETE message with an unsuccessful FM-result information. Check that the MS provides the appropriate user indication (as described by the manufacturer). Then SS transaction is released. This procedure is executed for all possible error values.

The user requests registration of FM for another remote subscriber. Upon receipt of the operation (in a REGISTER message), SS answers with a RELEASE COMPLETE message with a successful FM-response information. Check that the MS provides the appropriate user indication (as described by the manufacturer). The SS transaction is released.

Then user request again two registrations, upon receipt of the REGISTER message, SS answers with a RELEASE COMPLETE message including a rejection with respectively the problem code "unrecognized operation" or a cause "facility rejected". Check that MS re-attempt the request by using USSD version 1: without the SS version indicator information element included in the REGISTER message.

Maximum Duration of Test

2 minutes.

Expected Sequence

Test steps 1 to 10 are executed for k=1 to 13 with respectively the following error values:

1. Illegal interaction with incoming barring.

2. Unauthorised request.

3. Unknown remote party.

4. FM not subscribed.

5. Remote party already registered.

6. Unauthorised changes to remote party.

7. Illegal interaction with call forwarding.

8. Illegal interaction with call barring.

9. Request to own MSISDN not possible.

10. Forwarded-to number is invalid directory number.

11. Insufficient information.

12. Forwarded-to number is a special code.

13. Conflicting situation with other supplementary services.

Step	Direction	Message	Comments
0	MS		The MS is in idle mode.
1	MS		The MS is made to initiate a registration of FM
2	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
7	SS -> MS	RELEASE COMPLETE	With an unsuccessful FM-result info with the following error value: k=1: Illegal interaction with incoming barring (code 21) k=2: Unauthorised request (code 22) k=3: Unknown remote party (code 41) k=4: FM not subscribed (code 42) k=5: Remote party already registered (code 61) k=6: Unauthorised changes to remote party (code 64) k=7: Illegal interaction with call forwarding (code 65) k=8: Illegal interaction with call barring (code 66) k=9: Request to own MSISDN not possible (code 67) k=10: Forwarded-to number is invalid directory number (code 80) k=11: Insufficient information (code 81) k=12: Forwarded-to number is a special code (code 82) k=13: Conflicting situation with other supplementary services (code 83) See specific message contents.
8	MS		It is checked that the MS, in a way described by the manufacturer, displays the error.
10	SS -> MS	CHANNEL RELEASE	
15	MS		The MS is made to initiate a registration of FM
16	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
19	SS -> MS	CM SERVICE ACCEPT	
20	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
21	SS -> MS	RELEASE COMPLETE	With a successful FM-result. See specific message contents.
22	MS		It is checked that the MS, in a way described by the manufacturer, displays the positive result.
23	SS -> MS	CHANNEL RELEASE	
30	MS		The MS is made to initiate a registration of FM
31	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
32	SS -> MS	IMMEDIATE ASSIGNMENT	
33	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
34	SS -> MS	CM SERVICE ACCEPT	
35	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
36	SS -> MS	RELEASE COMPLETE	Including a rejection with the problem code "unrecognized operation"
37	SS -> MS	CHANNEL RELEASE	
38	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
39	SS -> MS	IMMEDIATE ASSIGNMENT	

Step	Direction	Message	Comments
40	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
41	SS -> MS	CM SERVICE ACCEPT	
42	MS -> SS	REGISTER	Check that SS version indicator IE is not included. See specific message contents.
43	SS -> MS	RELEASE COMPLETE	With a successful FM-result. See specific message contents.
44	MS		It is checked that the MS, in a way described by the manufacturer, displays the positive result.
45	SS -> MS	CHANNEL RELEASE	
50	MS		The MS is made to initiate a registration of FM
51	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
52	SS -> MS	IMMEDIATE ASSIGNMENT	
53	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
54	SS -> MS	CM SERVICE ACCEPT	
55	MS -> SS	REGISTER	The SS checks that the content of this message matches specific message contents.
56	SS -> MS	RELEASE COMPLETE	Including a rejection with the cause value Facility rejected. See specific message contents.
57	SS -> MS	CHANNEL RELEASE	
58	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
59	SS -> MS	IMMEDIATE ASSIGNMENT	
60	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
61	SS -> MS	CM SERVICE ACCEPT	
62	MS -> SS	REGISTER	Check that SS version indicator IE is not included. See specific message contents.
63	SS -> MS	RELEASE COMPLETE	With a successful FM-result. See specific message contents.
64	MS		It is checked that the MS, in a way described by the manufacturer, displays the positive result.
65	SS -> MS	CHANNEL RELEASE	

Specific message contents:

REGISTER

Information Element	value/remark
Supplementary service protocol discriminator	Supplementary service (call independent)
Transaction identifier	'1011'B
Message type	As 3GPP TS 24.080
Facility 1C	See below
SS version indicator	As specified in 3GPP TS 24.080
	For steps 42 and 62 omitted

For steps 6, 20, 35 and 55, Facility Information Element with Invoke = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 24.080 subclause 3.6.1 table 3.3.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 24.080
Length of FIE contents	depending on the length of ussd-string
Component type tag	Invoke CS/C/tag=1
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 24.080
Invoke ID length	1
Invoke ID	Arbitrary (1 octet)
Operation Code tag	From 3GPP TS 24.080
Operation Code length	1
Operation Code	UnstructuredSS-Request
Ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
Ussd-string	For step 6 **214*04965878***# For step 20 **214*04969***# For steps 35 and 55 **214*31245688***#

RELEASE COMPLETE

Information Element	value/remark
Supplementary service protocol discriminator	Supplementary service (call independent)
Transaction identifier	the transaction value is the same as the REGISTER transaction value but the transaction flag is different
Message type	As 3GPP TS 24.080
Cause	For step 56, cause is set to "facility rejected" and FIE is omitted. For steps 7,21,43,63,36 this field is omitted.
Facility Information Element	See below (omitted for step 56)
SS version indicator	As specified in 3GPP TS 24.080

For steps 7, 21, 43 and 63, Facility Information Element with Return result = ProcessUnstructuredSS-Request return result component type as defined in 3GPP TS 24.080 subclause 3.6.1 table 3.6.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 24.080
Length of FIE contents	depending on the length of ussd-string
Component type tag	Return result
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 24.080
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
Ussd-string	For step 7: value of the error code For steps 21 43 and 63: 01

For step 36, Facility Information Element with Reject = ProcessUnstructuredSS-Request return result component type as defined in 3GPP TS 24.080 subclause 3.6.1 table 3.6.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 24.080
Length of FIE contents	depending on the length of ussd-string
Component type tag	Reject
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 24.080
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Problem Code tag	As 3GPP TS 24.080
Problem Code length	1
General Problem code	Unrecognized operation

31.15.2 Follow Me (FM) / Interrogation

31.15.2.1 Conformance requirement

1. An initiating subscriber (also the FM service supervisor) shall be able to interrogate the Follow Me data of any remote party, for which she is authorised to become initiating subscriber.

2. In case the remote party corresponds to a subscriber the remote party shall be able to interrogate her own Follow Me data stored in the network.

3. As an operator's option additional information (such as passwords) for interrogation may be required from the subscriber. The registration procedure shall transport this information from the subscriber to the network of the remote party. This information shall be coded as a USSD string with a length not exceeding 30 characters.

4. All the messages between MS and the mobile network and internal to the mobile network, which are used for control of Follow Me, are USSD Phase 2 messages.

5. MS shall behave as indicated in the Information flow as indicated in 3GPP TS 23.094, figure 4.1.

References

3GPP TS 22.094 subclauses 6.8 and 7.3.

3GPP TS 23.094 subclauses 4.1, 4.2 and 4.4.

3GPP TS 24.090 subclause 6.1.

31.15.2.2 Test purpose

1. To check that the MS (as initiating subscriber or remote party) correctly requests a supplementary service transaction for interrogation of FM in CHANNEL REQUEST message and in the subsequent CM SERVICE REQUEST.

2. To check that the MS sends a REGISTER message using USSD version 2 and containing the FM-request control message for interrogation.

3. To check that upon receipt of the result or the error of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

31.15.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN. The MS is registered to FM with respect to a remote party B.

Specific PICS Statements

-

PIXIT Statements

- Way to activate the interrogation of FM.

- Description of display of the FM answers from the network.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI.

Test procedure

MS is registered to FM.

By means of appropriate MMI functions, the user requests interrogation of FM for a remote number. Upon receipt of the REGISTER message, SS answers with the RELEASE COMPLETE message with an unsuccessful FM-result in a facility information element. Check that the MS provides the appropriate user indication (was described by the manufacturer). Then SS transaction is released. This procedure is executed for all possible error values.

The user requests interrogation of FM for another remote subscriber. Upon receipt of the operation (in a REGISTER message), SS answers with a RELEASE COMPLETE message with a successful FM-response information. Check that the MS provides the appropriate user indication (as described by the manufacturer). The SS transaction is released.

Maximum Duration of Test

2 minutes.

Expected Sequence

Test steps 1 to 10 are executed for k=1 to 6 with respectively the following error values:

1. Illegal interaction with incoming barring.

2. Unauthorised request.

3. Unknown remote party.

4. FM not subscribed.

5. FM not registered to remote party.

6. Conflicting situation with other supplementary services.

Step	Direction	Message	Comments
0	MS		The MS is in idle mode. MS is registered to FM with respect to a remote party B.
1	MS		The MS is made to initiate an interrogation of FM of remote subscriber other than B.
2	MS -> SS	CHANNEL REQUEST	with establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
7	SS -> MS	RELEASE COMPLETE	With an unsuccessful FM-result info with the following error value: k=1: Illegal interaction with incoming barring (code 21) k=2: Unauthorised request (code 22) k=3: Unknown remote party (code 41) k=4: FM not subscribed (code 42) k=5: FM not registered to remote party (code 62) k=6: Conflicting situation with other supplementary services (code 83) See specific message contents.
8	MS		Check that the MS, in a way described by the manufacturer, displays the error.
10	SS -> MS	CHANNEL RELEASE	
15	MS		The MS is made to initiate an interrogation of FM of remote party B.
16	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
19	SS -> MS	CM SERVICE ACCEPT	
20	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
21	SS -> MS	RELEASE COMPLETE	With a successful FM-result. See specific message contents.
22	MS		Check that the MS, in a way described by the manufacturer, displays the positive result.
23	SS -> MS	CHANNEL RELEASE	

Specific message contents:

REGISTER

Information Element	value/remark
Supplementary service protocol discriminator	Supplementary service (call independent)
Transaction identifier	'1011'B
Message type	As 3GPP TS 24.080
Facility 1C	See below
SS version 7F	As 3GPP TS 24.080

For steps 6 and 20, Facility Information Element with Invoke = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 24.080 subclause 3.6.1 table 3.3.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 24.080
Length of FIE contents	depending on the length of ussd-string
Component type tag	CS/C/tag=1
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 24.080
Invoke ID length	1
Invoke ID	Arbitrary (1 octet)
Operation Code tag	From 3GPP TS 24.080
Operation Code length	1
Operation Code	ProcessUnstructuredSS-Request
Ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
Ussd-string	For step 6: **#21445896****# For step 20: **#21431245688****#

RELEASE COMPLETE

Information Element	value/remark
Supplementary service protocol discriminator	Supplementary service (call independent)
Transaction identifier	the transaction value is the same as the REGISTER transaction value but the transaction flag is different
Message type	As 3GPP TS 24.080
Cause	Omitted.
Facility Information Element	See below
SS version indicator	As specified in 3GPP TS 24.080

For steps 7 and 21, Facility Information Element with Return result = ProcessUnstructuredSS-Request return result component type as defined in 3GPP TS 24.080 subclause 3.6.1 table 3.6.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 24.080
Length of FIE contents	depending on the length of ussd-string
Component type tag	Return result
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 24.080
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
Ussd-string	For step 7: value of the error code For steps 21: 03 31245688

31.15.3 Follow Me (FM) / Erasure

31.15.3.1 Conformance requirement

A previous FM registration can be erased in either of the following ways:

a) The initiating subscriber can specifically erase her previous registration with an appropriate control procedure.

b) In case the remote party corresponds to a subscriber the remote party can erase any previous registration with an appropriate control procedure.

c) The FM service supervisor can erase any previous registration to any remote party with an appropriate control procedure (forced erasure).

The subscriber who initiates the FM erase request shall be informed of the outcome of the request by the network.

As an operator's option additional information (such as passwords) for erasure may be required from the subscriber. The registration procedure shall transport this information from the subscriber to the network of the remote party. This information shall be coded as a USSD string with a length not exceeding 30 characters.

MS shall behave as indicated in the Information flow as indicated in 3GPP TS 23.094, figure 4.1.

All the messages between MS and the mobile network and internal to the mobile network, which are used for control of Follow Me, are USSD Phase 2 messages.

References

3GPP TS 22.094 subclause 6.4.

3GPP TS 23.094 subclauses 4.1, 4.2 and 4.4.

3GPP TS 24.090 subclause 6.1.

31.15.3.2 Test purpose

1. To check that the MS, acting as an initiating subscriber or as a remote party, correctly requests a supplementary service transaction for erasure of FM in CHANNEL REQUEST message and in the subsequent CM SERVICE REQUEST.

2. To check that the MS as initiating subscriber or remote party sends a REGISTER message containing the FM-request control message for erasure.

3. To check that the MS, acting as a supervisor, correctly requests a supplementary service transaction for erasure of FM in CHANNEL REQUEST message and in the subsequent CM SERVICE REQUEST

4. To check that the MS as supervisor sends a REGISTER message containing the FM-request control message for forced-erasure.

5. To check that upon receipt of the result or the error of the operation (in a RELEASE COMPLETE message), the MS provides the appropriate user indication (as described by the manufacturer).

31.15.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS is in MM-state "idle, updated" with valid TMSI and CKSN. The MS is registered to FM with respect to a remote party B.

Specific PICS Statements

-

PIXIT Statements

- Way to activate the erasure of FM.

- Description of display of the FM answers from the network.

Foreseen final state of the MS

The MS is in MM-state "idle, updated" with valid TMSI.

Test procedure

MS is registered to FM.

By means of appropriate MMI functions, the user requests erasure of FM for a remote number. Upon receipt of the REGISTER message, SS answers with the RELEASE COMPLETE message with an unsuccessful FM-result information. Check that the MS provides the appropriate user indication (as described by the manufacturer). Then SS transaction is released. This procedure is executed for all possible error values.

The user requests erasure of FM for another remote subscriber. Upon receipt of the operation (in a REGISTER message), SS answers with a RELEASE COMPLETE message with a successful FM-response information. Check that the MS provides the appropriate user indication (as described by the manufacturer). The SS transaction is released.

By means of appropriate MMI functions, the user requests forced-erasure of FM for a remote number. Upon receipt of the REGISTER message, SS answers with the RELEASE COMPLETE message with an unsuccessful FM-result information. Check that the MS provides the appropriate user indication (which is to be described by the manufacturer). Then SS transaction is released. This procedure is executed for all possible error values.

The user requests forced-erasure of FM for another remote subscriber. Upon receipt of the operation (in a REGISTER message), SS answers with a RELEASE COMPLETE message with a successful FM-response information. Check that the MS provides the appropriate user indication (as described by the manufacturer). The SS transaction is released.

Maximum Duration of Test

2 minutes.

Expected Sequence

Test steps 1 to 10 and 25 to 34 are executed for k=1 to 10 with respectively the following error values:

1. Illegal interaction with incoming barring.

2. Unauthorised request.

3. Unknown remote party.

4. FM not subscribed.

5. FM not registered to remote party.

6. Remote party not registered to this MSISDN.

7. Unauthorised changes to remote party.

8. Illegal interaction with call barring.

9. Insufficient information.

10. Inconsistent with registration.

Step	Direction	Message	Comments
0	MS		The MS is in idle mode. MS is registered to FM with respect to a remote party B.
1	MS		The MS is made to initiate erasure of FM for a remote subscriber other than B.
2	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
3	SS -> MS	IMMEDIATE ASSIGNMENT	
4	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
5	SS -> MS	CM SERVICE ACCEPT	
6	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
7	SS -> MS	RELEASE COMPLETE	With an unsuccessful FM-result info with the following error value: k=1: Illegal interaction with incoming barring (code 21) k=2: Unauthorised request (code 22) k=3: Unknown remote party (code 41) k=4: FM not subscribed (code 42) k=5: FM not registered to remote party (code 62) k=6: Remote party not registered to this MSISDN (code 63) k=7: Unauthorised changes to remote party (code 64) k=8: Illegal interaction with call barring (code 66) k=9: Insufficient information (code 81) k=10: Inconsistent with registration (code 84) See specific message contents.
8	MS		Check that the MS, in a way described by the manufacturer, displays the error.
10	SS -> MS	CHANNEL RELEASE	
15	MS		The MS is made to initiate erasure of FM for remote subscriber B
16	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
17	SS -> MS	IMMEDIATE ASSIGNMENT	
18	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
19	SS -> MS	CM SERVICE ACCEPT	
20	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
21	SS -> MS	RELEASE COMPLETE	With a successful FM-result. See specific message contents.
22	MS		Check that the MS, in a way described by the manufacturer, displays the positive result.
23	SS -> MS	CHANNEL RELEASE	

Step	Direction	Message	Comments
25	MS		The MS is made to initiate forced erasure
26	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
27	SS -> MS	IMMEDIATE ASSIGNMENT	
28	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
29	SS -> MS	CM SERVICE ACCEPT	
30	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
31	SS -> MS	RELEASE COMPLETE	With an unsuccessful FM-result info with the following error value: k=1: Illegal interaction with incoming barring (code 21) k=2: Unauthorised request (code 22) k=3: Unknown remote party (code 41) k=4: FM not subscribed (code 42) k=5: FM not registered to remote party (code 62) k=6: Remote party not registered to this MSISDN (code 63) k=7: Unauthorised changes to remote party (code 64) k=8: Illegal interaction with call barring (code 66) k=9: Insufficient information (code 81) k=10: Inconsistent with registration (code 84) See specific message contents.
32	MS		Check that the MS, in a way described by the manufacturer, displays the negative result.
34	SS -> MS	CHANNEL RELEASE	
40	MS		The MS is made to initiate forced erasure
41	MS -> SS	CHANNEL REQUEST	With establishment cause "Other procedures which can be completed with an SDCCH"
42	SS -> MS	IMMEDIATE ASSIGNMENT	
43	MS -> SS	CM SERVICE REQUEST	Cause: "supplementary service activation"
44	SS -> MS	CM SERVICE ACCEPT	
45	MS -> SS	REGISTER	Check that the content of this message matches specific message contents.
46	SS -> MS	RELEASE COMPLETE	With a successful FM-result. See specific message contents.
47	MS		Check that the MS, in a way described by the manufacturer, displays the positive result.
49	SS -> MS	CHANNEL RELEASE	

Specific message contents:

REGISTER

Information Element	value/remark
Supplementary service protocol discriminator	Supplementary service (call independent)
Transaction identifier	'1011'B
Message type	As 3GPP TS 24.080
Facility 1C	See below
SS version 7F	As 3GPP TS 24.080

For steps 6, 20, 30 and 45, Facility Information Element with Invoke = ProcessUnstructuredSS-Request component type as defined in 3GPP TS 24.080 subclause 3.6.1 table 3.3.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 24.080
Length of FIE contents	depending on the length of ussd-string
Component type tag	CS/C/tag=1
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 24.080
Invoke ID length	1
Invoke ID	Arbitrary (1 octet)
Operation Code tag	From 3GPP TS 24.080
Operation Code length	1
Operation Code	ProcessUnstructuredSS-Request
Ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
Ussd-string	For step 6: ##214*45896***# For step 20: ##214*31245688***# For steps 30 and 45: ##214*45896*88*0436987*#

RELEASE COMPLETE

Information Element	value/remark
Supplementary service protocol discriminator	Supplementary service (call independent)
Transaction identifier	the transaction value is the same as the REGISTER transaction value but the transaction flag is different
Message type	As 3GPP TS 24.080
Cause	Omitted.
Facility Information Element	See below
SS version indicator	As specified in 3GPP TS 24.080

For steps 7, 21, 31 and 46, Facility Information Element with Return result = ProcessUnstructuredSS-Request return result component type as defined in 3GPP TS 24.080 subclause 3.6.1 table 3.6.

Contents	Value/remark
Facility IE identifier	As 3GPP TS 24.080
Length of FIE contents	depending on the length of ussd-string
Component type tag	Return result
Component length	depending on the length of ussd-string
InvokeID tag	From 3GPP TS 24.080
Invoke ID length	1
Invoke ID	The same as the invoke of the ProcessUnstructuredSS-Request
Ussd-dataCodingScheme	1 octet long. Alphabet indicator set to "default alphabet". Language indicator set to "undefined"
Ussd-string	For steps 7 and 31: value of the error code For steps 21 and 46: 02