3GPP TSG-CN Meeting #24 **NP-040186**
2nd – 4th June 2004. Seoul, Korea.

Source: **TSG CN WG 1**

Title: **CRs to R99 (with mirror CRs) on Work Item TEI towards 24.008**

Agenda item: **7.11**

Document for: **APPROVAL**

Introduction:

This document contains **8** CRs, **R99** Work Item **"TEI"**, that have been agreed by **TSG CN WG1 in CN1#34 meeting**, and are forwarded to TSG CN Plenary meeting #24 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Version-Current	Doc-2nd-Level
24.008	857	1	R99	Correction of the network initiated in-call modification	F	3.18.0	N1-040972
24.008	858	1	Rel-4	Correction of the network initiated in-call modification	A	4.13.0	N1-040973
24.008	859	1	Rel-5	Correction of the network initiated in-call modification	A	5.11.0	N1-040974
24.008	860	1	Rel-6	Correction of the network initiated in-call modification	A	6.4.0	N1-040975
24.008	876	2	R99	Reference to 4.7.x.4	F	3.18.0	N1-041086
24.008	877	2	Rel-4	Reference to 4.7.x.4	A	4.13.0	N1-041087
24.008	878	2	Rel-5	Reference to 4.7.x.4	A	5.11.0	N1-041088
24.008	879	2	Rel-6	Reference to 4.7.x.4	A	6.4.0	N1-041089

3GPP TSG-CN1 Meeting #34
Zagreb, Croatia 10 – 14 May 2004

Tdoc N1-040972
(rev of Tdoc N1-040814)

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **857** ⌘ **rev** **1** ⌘ Current version: **3.18.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Correction of the network initiated in-call modification
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	30.04.2004
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change: ⌘

1) The procedural description of the network initiated in-call modification in subclause 5.3.4.3.2 suggests that the MS waits for the change of the channel configuration before it returns a MODIFY COMPLETE message to the network.

This is not in line with figure 5.10b at the end of subclause 5.3.4.4, which suggests the opposite order of sequence, i.e. the MS returns MODIFY COMPLETE before the channel configuration is changed.

2) For the network initiated case, the description requests the MS to change the channel configuration. But the MS will do this only on command of the MSC, and there is no requirement stated for the MSC to initiate a channel reconfiguration at this point of the procedure.

3) There is a requirement for the MS to start sending user information and interpreting received user information according to the next call mode, and to send a MODIFY COMPLETE message, after 'successful change of the channel configuration'. But in UTRAN it is difficult for the MS to determine when this criterion is fulfilled, especially when the service is changed from speech to multimedia, since the NAS does not get an indication from the lower layers (the NAS synch indicator is sent only for speech) and since the MSC does not send any user information in the downlink before it received the MODIFY COMPLETE message.

All in all, it seems that when the description of the in-call modification procedure was revised at the transition from GSM phase 1 to GSM phase 2, the description was improved for the mobile initiated case, but for the network initiated case it became incorrect.

	4) The proposed change (alignment with fig. 5.10b) is also in line with the example message flows for the service change that were added to the SCUDIF stage 2, TS 23.153, in v.5.2.0. 5) If the order of sequence is aligned with figure 5.10b, then the Immediate modification indicator IE is no longer needed. This indicator was introduced for a special case of the network initated in-call modification where no change of the traffic channel is necessary. If the MS always returns the MODIFY COMPLETE message before the channel reconfiguration takes place, if any needed, then no special indication is necessary.
Summary of change: ⌘	The description of the network initiated in-call modification is aligned with fig. 5.10b, i.e. the MS is mandated to send the MODIFY COMPLETE message before the channel is reconfigured. The Immediate modification indicator IE is removed from TS 24.008.
Consequences if not approved: ⌘	Inconsistent specification: if the MS is implemented according to the textual description and the MSC according to figure 5.10b, then the MS waits for the network to perform the channel reconfiguration, but the network waits for the MS to send MODIFY COMPLETE before it initiates the reconfiguration. The result will be a deadlock, and after expiry of timer T323 (= 30s) the MSC will clear the call. Backwards compatibility: The fallback from analogue multimedia to speech, introduced with R99, was the first application of the network initiated in-call modification. If the CR is not agreed from R99 onwards, it will be difficult to introduce the change at a later release, because of interworking problems between legacy R99 MS implementations and new Rel-6 MSC implementations: the interworking may result in a deadlock, as explained above, and after expiry of timer T323 (= 30s) the MSC will clear the call.

Clauses affected:	⌘	5.3.4.3.2, 5.3.6.3, 5.3.6.3.1, 5.3.6.3.2, 5.3.6.3.3, 5.3.6.3.3.1, 5.3.6.3.3.2, 9.3.13.4, 10.5.4.31			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 27.001-105r1 (N3-040363), 29.007-097r1 (N3-040366)
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3.4.3 Changing the Call Mode

In order to change the call mode, the following in-call modification procedures shall be used.

Either side of the radio interface may act as the requesting user to invoke the in-call modification.

Upon each successful completion of the in-call modification procedure, the call changes to the next mode negotiated and agreed during the establishment phase of the call.

The in-call modification procedures are completely symmetrical at the radio interface.

NOTE: Considering a possible future evolution, in-call modification is specified as a symmetrical procedure.

5.3.4.3.1 Initiation of in-call modification

The procedure is initiated by the requesting originating side in the "active" state of the call. It shall send a MODIFY message including the new mode to be changed to; start timer T323; and enter the "mobile originating modify" state (mobile station side) or the "mobile terminating modify" state (network side). Any internal resources necessary to support the next call mode shall be reserved. The new mode given in the MODIFY message shall be one of those already negotiated and agreed during the establishment phase of the call. If the data call direction is different from the direction of the call setup a reverse call setup direction IE shall be included in the MODIFY message; otherwise this IE shall not be included. The MODIFY originating side shall stop sending Bm-channel information; and stop interpreting received Bm-channel information according to the old call mode.

Upon receipt of the MODIFY message, the destination side shall check to ensure that the requested call mode can still be supported and if so, it shall initiate the reservation of any resources necessary to support the next call mode and enter the "mobile originating modify" (network side) or "mobile terminating modify" state (mobile station side).

5.3.4.3.2 Successful completion of in-call modification

If the destination network/mobile station receives a MODIFY message with a new mode which is already the actual one of the call the network/mobile station shall remain in the "active" state; send a MODIFY COMPLETE message with the actual mode; and shall not initiate anything else.

If the requested mode is a speech mode and the call is UMTS then default UMTS AMR speech version shall be assumed.

If the requested mode is speech and the call is GSM then if speech versions are included in *Bearer Capability IE* then the network shall use these speech versions, if none are included then GSM speech version 1 shall be assumed.

If the in-call modification was originated by the mobile station, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the network~~destination interface~~ it shall change the channel configuration, if required, and step on to any internal resources~~-~~ necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. After successful change of the channel configuration it shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode; send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (~~mobile station or~~ network side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message. [*Format changed to B1*]

~~In case of an alternate speech/facsimile group 3 service (refer to clause 5.3.4) the old resources may still be kept reserved.~~

- Upon receipt of the MODIFY COMPLETE message the mobile station~~originating side~~ shall: initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (mobile station ~~or network~~ side). [*Format changed to B1*]

If the in-call modification was originated by the network, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the mobile station it shall step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it

shall also perform the appropriate means to take the direction of the data call into account. The mobile station shall send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (mobile station side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message.

Upon receipt of the MODIFY COMPLETE message the network shall: change the channel configuration, if required; after successful change of the channel configuration initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (network side).

The mobile station shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode as soon as a suitable channel for the new mode is available.

In both cases:

For an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.

The reaction of the originating side if it had included a reverse call setup direction IE in the MODIFY message, but the destination side did not include the IE in the MODIFY COMPLETE message is implementation dependent. *[Format changed to B1]*

5.3.4.3.3 Change of the channel configuration

In case the requested bearer capability cannot be supported by the current channel configuration the network shall initiate the assignment procedure and change the channel configuration accordingly.

5.3.4.3.4 Failure of in-call modification

5.3.4.3.4.1 Network rejection of in-call modification

If the network cannot support the change to the requested call mode or if the change of the channel configuration fails the network shall: release the resources which had been reserved for the alternation: send a MODIFY REJECT message with the old bearer capability and with cause # 58 "bearer capability not presently available" to the initiating mobile station; and enter the "active" state. If the change of the channel configuration fails, the network shall return to the internal resources required for the old call mode.

Upon receipt of the MODIFY REJECT message with the old bearer capability the initiating mobile station shall: stop timer T323; release any resources which had been reserved for the alternation; resume sending user channel information according to the present call mode; resume interpreting received user channel information according to the present call mode; and enter the "active" state.

5.3.4.3.4.2 Mobile station rejection of in-call modification

If the mobile station cannot support the change to the requested call mode, the mobile station shall: release any resources which had been reserved for the alternation; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.

Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the alternation.

5.3.4.3.4.3 Time-out recovery

Upon expiration of T323 in either the mobile station or the network the procedures for call clearing shall be initiated with cause # 102 "recovery on timer expiry".

5.3.4.4 Abnormal procedures

If a MODIFY, MODIFY COMPLETE or MODIFY REJECT message is received in the "disconnect indication", "disconnect request" (mobile station side only) or "release request" state then the received message shall be discarded and no action shall be taken.

If a MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one is received or if a MODIFY REJECT message indicating a call mode which does not correspond to the actual one is received then the received message shall be discarded and no action shall be taken.

If a MODIFY message indicating a call mode which does not belong to those negotiated and agreed during the establishment phase of the call, is received, then a MODIFY REJECT message with the actual call mode and with cause # 57 "bearer capability not authorized" shall be sent back.

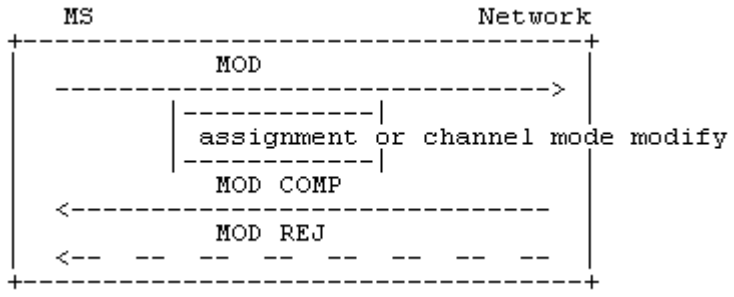

Figure 5.10a/3GPP TS 24.008 In-call modification sequence initiated by MS

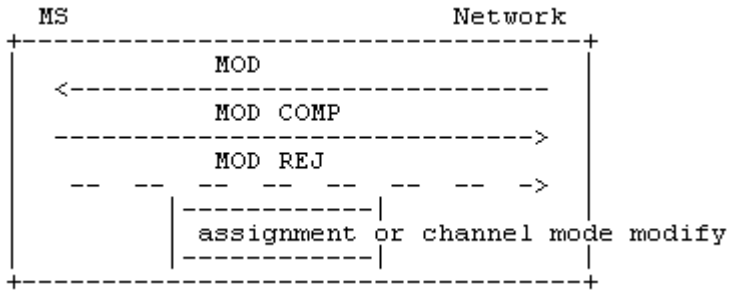

Figure 5.10b/3GPP TS 24.008 In-call modification sequence initiated by network

********** NEXT MODIFIED SECTION **********

5.3.6.3 In-call modification in the "active" state

~~In order to change the bearer capability for a multimedia call, t~~The ~~following~~ in-call modification procedure as specified in subclause 5.3.4.3 shall be used. Following bearer capability parameters can be modified with the procedure (see 3GPP TS 29.007 [38]):

- Fixed Network User Rate

Only network side of the radio interface may act as the requesting user to invoke the in-call modification.

5.3.6.3.1 Void~~Initiation of in-call modification~~

~~The procedure is initiated by the network in the "active" state of the call. The network shall send a MODIFY message including *Immediate modification indicator IE* and the new bearer capability to be changed to; start timer T323; and enter the "mobile terminating modify" state. Any internal resources necessary to support the new bearer capability shall be reserved. The detailed operation of the MODIFY originating side is described in 3GPP TS 29.007.~~

~~Upon receipt of the MODIFY message with *Immediate modification indicator IE*, the MS shall check to ensure that the requested bearer capability can be supported and if so, it shall initiate the reservation of any resources necessary to support the new bearer capability and enter the "mobile terminating modify" state.~~

5.3.6.3.2 VoidSuccessful completion of in-call modification

If the MS can support the requested bearer capability the MS shall perform actions defined in 3GPP TS 27.001 [37]. After successful modifications defined in 3GPP TS 27.001 [37] the MS shall send a MODIFY COMPLETE message with the new bearer capability included and enter the "active" state.

Upon receipt of the MODIFY COMPLETE message the network shall: initiate the alternation to those resources necessary to support the new bearer capability; stop timer T323; and enter the "active" state.

5.3.6.3.3 VoidFailure of in-call modification

5.3.6.3.3.1 VoidMS rejection of in-call modification

If the MS cannot support the requested bearer capability, the MS shall: release any resources which had been reserved for the modification; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.

Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the modification, enter the "active" state and perform activities defined in 3GPP TS 29.007 [38].

5.3.6.3.3.2 VoidTime-out recovery

Upon expiration of T323 in the network the procedures for call clearing shall be initiated with cause # 102 "recovery on timer expiry".

********** NEXT MODIFIED SECTION **********

9.3.13 Modify

This message is sent by the mobile station to the network or by the network to the mobile station to request a change in bearer capability for a call.

See table 9.63/3GPP TS 24.008.

Message type: MODIFY

Significance: global

Direction: both

Table 9.63/3GPP TS 24.008: MODIFY message content

IEI	Information element	Type / Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Modify message type	Message type 10.4	M	V	1
	Bearer capability	Bearer capability 10.5.4.5	M	LV	2-15
7C	Low layer comp.	Low layer comp. 10.5.4.18	O	TLV	2-18
7D	High layer comp.	High layer comp. 10.5.4.16	O	TLV	2-5
A3	Reverse call setup direction	Reverse call setup direction 10.5.4.22a	O	T	1
A4	Immediate modification indicator	Immediate modification indicator 10.5.4. 31	O	T	1

9.3.13.1 Low layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.2 High layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.3 Reverse call setup direction

This information element is included or omitted in the mobile to network direction according to the rules defined in clause 5.3.4.3.1.

9.3.13.4 VoidImmediate modification indicator

This information element shall be included if and only if immediate in-call modification is requested.

********** NEXT MODIFIED SECTION **********

10.5.4.31 VoidImmediate modification indicator

This information element is used to indicate an immediate in-call modification without changing the channel configuration.

The *Immediate modification indicator* information element is coded as shown in figure 10.5.118c/3GPP TS 24.008.

The *Immediate modification indicator* is a type 2 information element.

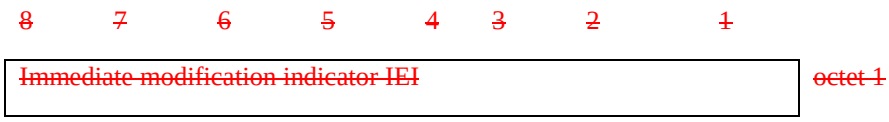

Figure 10.5. 118c/3GPP TS 24.008 *Immediate modification indicator* information element

3GPP TSG-CN1 Meeting #34
Zagreb, Croatia 10 – 14 May 2004

Tdoc N1-040973
(rev of Tdoc N1-040815)

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **858** ⌘ **rev** **1** ⌘ Current version: **4.13.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of the network initiated in-call modification
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	30.04.2004
Category:	⌘	**A**
Release:	⌘	Rel-4

Use one of the following categories:
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Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change: ⌘

1) The procedural description of the network initiated in-call modification in subclause 5.3.4.3.2 suggests that the MS waits for the change of the channel configuration before it returns a MODIFY COMPLETE message to the network.

This is not in line with figure 5.10b at the end of subclause 5.3.4.4, which suggests the opposite order of sequence, i.e. the MS returns MODIFY COMPLETE before the channel configuration is changed.

2) For the network initiated case, the description requests the MS to change the channel configuration. But the MS will do this only on command of the MSC, and there is no requirement stated for the MSC to initiate a channel reconfiguration at this point of the procedure.

3) There is a requirement for the MS to start sending user information and interpreting received user information according to the next call mode, and to send a MODIFY COMPLETE message, after 'successful change of the channel configuration'. But in UTRAN it is difficult for the MS to determine when this criterion is fulfilled, especially when the service is changed from speech to multimedia, since the NAS does not get an indication from the lower layers (the NAS synch indicator is sent only for speech) and since the MSC does not send any user information in the downlink before it received the MODIFY COMPLETE message.

All in all, it seems that when the description of the in-call modification procedure was revised at the transition from GSM phase 1 to GSM phase 2, the description was improved for the mobile initiated case, but for the network initiated case it became incorrect.

	4) The proposed change (alignment with fig. 5.10b) is also in line with the example message flows for the service change that were added to the SCUDIF stage 2, TS 23.153, in v.5.2.0. 5) If the order of sequence is aligned with figure 5.10b, then the Immediate modification indicator IE is no longer needed. This indicator was introduced for a special case of the network initated in-call modification where no change of the traffic channel is necessary. If the MS always returns the MODIFY COMPLETE message before the channel reconfiguration takes place, if any needed, then no special indication is necessary.
Summary of change: ⌘	The description of the network initiated in-call modification is aligned with fig. 5.10b, i.e. the MS is mandated to send the MODIFY COMPLETE message before the channel is reconfigured. The Immediate modification indicator IE is removed from TS 24.008.
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Clauses affected:	⌘	5.3.4.3.2, 5.3.6.3, 5.3.6.3.1, 5.3.6.3.2, 5.3.6.3.3, 5.3.6.3.3.1, 5.3.6.3.3.2, 9.3.13.4, 10.5.4.31			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 27.001-106r1 (N3-040364), 29.007-098r1 (N3-040367)
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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5.3.4.3.1 Initiation of in-call modification

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Upon receipt of the MODIFY message, the destination side shall check to ensure that the requested call mode can still be supported and if so, it shall initiate the reservation of any resources necessary to support the next call mode and enter the "mobile originating modify" (network side) or "mobile terminating modify" state (mobile station side).

5.3.4.3.2 Successful completion of in-call modification

If the destination network/mobile station receives a MODIFY message with a new mode which is already the actual one of the call the network/mobile station shall remain in the "active" state; send a MODIFY COMPLETE message with the actual mode; and shall not initiate anything else.

If the requested mode is speech and if during call establishment the network received a *Supported Codec List* IE, the network shall use this list to select the codec for UMTS. If no *Supported Codec List* information element is received, then for UMTS the network shall select the default UMTS speech codec according to subclause 5.2.1.11.

Codecs for GSM shall be selected from the codecs indicated in the *Bearer Capability* information element. If no *Bearer Capability* information element is received, then for GSM the network shall select GSM full rate speech version 1.

If the *Supported Codec List* IE is received, then the network shall indicate the codec selected for UMTS to the mobile station via RANAP and RRC protocol in the NAS Synchronisation Indicator IE (see subclause 5.2.1.11).

If the in-call modification was originated by the mobile station, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the network~~destination interface~~ it shall change the channel configuration, if required, and step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. After successful change of the channel configuration it shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode; send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (~~mobile station or~~ network side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message. [*Format changed to B1*]

~~In case of an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.~~

- Upon receipt of the MODIFY COMPLETE message the mobile station~~originating side~~ shall: initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (mobile station~~ or network~~ side). [*Format changed to B1*]

If the in-call modification was originated by the network, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the mobile station it shall step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. The mobile station shall send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (mobile station side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message.

- Upon receipt of the MODIFY COMPLETE message the network shall: change the channel configuration, if required; after successful change of the channel configuration initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (network side).

- The mobile station shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode as soon as a suitable channel for the new mode is available.

In both cases:

- For an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.

- The reaction of the originating side if it had included a reverse call setup direction IE in the MODIFY message, but the destination side did not include the IE in the MODIFY COMPLETE message is implementation dependent. *[Format changed to B1]*

5.3.4.3.3 Change of the channel configuration

In case the requested bearer capability cannot be supported by the current channel configuration the network shall initiate the assignment procedure and change the channel configuration accordingly.

5.3.4.3.4 Failure of in-call modification

5.3.4.3.4.1 Network rejection of in-call modification

If the network cannot support the change to the requested call mode or if the change of the channel configuration fails the network shall: release the resources which had been reserved for the alternation: send a MODIFY REJECT message with the old bearer capability and with cause # 58 "bearer capability not presently available" to the initiating mobile station; and enter the "active" state. If the change of the channel configuration fails, the network shall return to the internal resources required for the old call mode.

Upon receipt of the MODIFY REJECT message with the old bearer capability the initiating mobile station shall: stop timer T323; release any resources which had been reserved for the alternation; resume sending user channel information according to the present call mode; resume interpreting received user channel information according to the present call mode; and enter the "active" state.

5.3.4.3.4.2 Mobile station rejection of in-call modification

If the mobile station cannot support the change to the requested call mode, the mobile station shall: release any resources which had been reserved for the alternation; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.

Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the alternation.

5.3.4.3.4.3 Time-out recovery

Upon expiration of T323 in either the mobile station or the network the procedures for call clearing shall be initiated with cause # 102 "recovery on timer expiry".

5.3.4.4 Abnormal procedures

If a MODIFY, MODIFY COMPLETE or MODIFY REJECT message is received in the "disconnect indication", "disconnect request" (mobile station side only) or "release request" state then the received message shall be discarded and no action shall be taken.

If a MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one is received or if a MODIFY REJECT message indicating a call mode which does not correspond to the actual one is received then the received message shall be discarded and no action shall be taken.

If a MODIFY message indicating a call mode which does not belong to those negotiated and agreed during the establishment phase of the call, is received, then a MODIFY REJECT message with the actual call mode and with cause # 57 "bearer capability not authorized" shall be sent back.

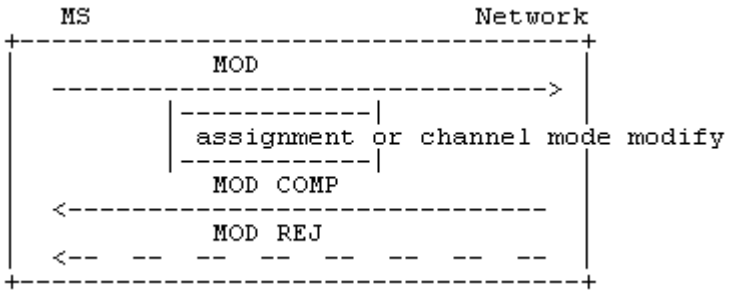

Figure 5.10a/3GPP TS 24.008 In-call modification sequence initiated by MS

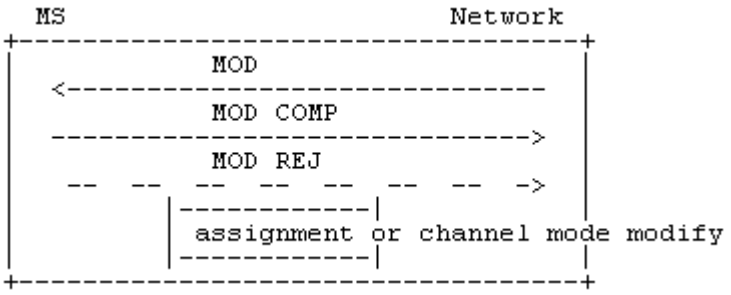

Figure 5.10b/3GPP TS 24.008 In-call modification sequence initiated by network

********** NEXT MODIFIED SECTION **********

5.3.6.3 In-call modification in the "active" state

~~In order to change the bearer capability for a multimedia call, t~~The ~~following~~ in-call modification procedure as specified in subclause 5.3.4.3 shall be used. Following bearer capability parameters can be modified with the procedure (see 3GPP TS 29.007 [38]):

- Fixed Network User Rate

Only network side of the radio interface may act as the requesting user to invoke the in-call modification.

5.3.6.3.1 Void~~Initiation of in-call modification~~

~~The procedure is initiated by the network in the "active" state of the call. The network shall send a MODIFY message including *Immediate modification indicator IE* and the new bearer capability to be changed to; start timer T323; and enter the "mobile terminating modify" state. Any internal resources necessary to support the new bearer capability shall be reserved. The detailed operation of the MODIFY originating side is described in 3GPP TS 29.007 [38].~~

~~Upon receipt of the MODIFY message with *Immediate modification indicator IE*, the MS shall check to ensure that the requested bearer capability can be supported and if so, it shall initiate the reservation of any resources necessary to support the new bearer capability and enter the "mobile terminating modify" state.~~

5.3.6.3.2 Void~~Successful completion of in-call modification~~

~~If the MS can support the requested bearer capability the MS shall perform actions defined in 3GPP TS 27.001 [37]. After successful modifications defined in 3GPP TS 27.001 [37] the MS shall send a MODIFY COMPLETE message with the new bearer capability included and enter the "active" state.~~

~~Upon receipt of the MODIFY COMPLETE message the network shall: initiate the alternation to those resources necessary to support the new bearer capability; stop timer T323; and enter the "active" state.~~

5.3.6.3.3 Void~~Failure of in-call modification~~

5.3.6.3.3.1 Void~~MS rejection of in-call modification~~

~~If the MS cannot support the requested bearer capability, the MS shall: release any resources which had been reserved for the modification; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.~~

~~Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the modification, enter the "active" state and perform activities defined in 3GPP TS 29.007 [38].~~

5.3.6.3.3.2 Void~~Time-out recovery~~

~~Upon expiration of T323 in the network the procedures for call clearing shall be initiated with cause # 102 "recovery on timer expiry".~~

********** NEXT MODIFIED SECTION **********

9.3.13 Modify

This message is sent by the mobile station to the network or by the network to the mobile station to request a change in bearer capability for a call.

See table 9.63/3GPP TS 24.008.

Message type: MODIFY

Significance: global

Direction: both

Table 9.63/3GPP TS 24.008: MODIFY message content

IEI	Information element	Type/Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Modify message type	Message type 10.4	M	V	1
	Bearer capability	Bearer capability 10.5.4.5	M	LV	2-15
7C	Low layer comp.	Low layer comp. 10.5.4.18	O	TLV	2-18
7D	High layer comp.	High layer comp. 10.5.4.16	O	TLV	2-5
A3	Reverse call setup direction	Reverse call setup direction 10.5.4.22a	O	T	1
~~A4~~	~~Immediate modification indicator~~	~~Immediate modification indicator 10.5.4. 31~~	~~O~~	~~T~~	~~1~~

9.3.13.1 Low layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.2 High layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.3 Reverse call setup direction

This information element is included or omitted in the mobile to network direction according to the rules defined in subclause 5.3.4.3.1.

9.3.13.4 Void~~Immediate modification indicator~~

~~This information element shall be included if and only if immediate in-call modification is requested.~~

********** NEXT MODIFIED SECTION **********

10.5.4.31 Void~~Immediate modification indicator~~

~~This information element is used to indicate an immediate in-call modification without changing the channel configuration.~~

~~The *Immediate modification indicator* information element is coded as shown in figure 10.5.118c/3GPP TS 24.008.~~

~~The *Immediate modification indicator* is a type 2 information element~~

~~8~~	~~7~~	~~6~~	~~5~~	~~4~~	~~3~~	~~2~~	~~1~~	
~~Immediate modification indicator IEI~~								~~octet 1~~

~~Figure 10.5. 118c/3GPP TS 24.008 *Immediate modification indicator* information element~~

3GPP TSG-CN1 Meeting #34
Zagreb, Croatia 10 – 14 May 2004

Tdoc N1-040974
(rev of Tdoc N1-040816)

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **859** ⌘ **rev** **1** ⌘ Current version: **5.11.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of the network initiated in-call modification
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	30.04.2004
Category:	⌘	**A**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change: ⌘

1) The procedural description of the network initiated in-call modification in subclause 5.3.4.3.2 suggests that the MS waits for the change of the channel configuration before it returns a MODIFY COMPLETE message to the network.

This is not in line with figure 5.10b at the end of subclause 5.3.4.4, which suggests the opposite order of sequence, i.e. the MS returns MODIFY COMPLETE before the channel configuration is changed.

2) For the network initiated case, the description requests the MS to change the channel configuration. But the MS will do this only on command of the MSC, and there is no requirement stated for the MSC to initiate a channel reconfiguration at this point of the procedure.

3) There is a requirement for the MS to start sending user information and interpreting received user information according to the next call mode, and to send a MODIFY COMPLETE message, after 'successful change of the channel configuration'. But in UTRAN it is difficult for the MS to determine when this criterion is fulfilled, especially when the service is changed from speech to multimedia, since the NAS does not get an indication from the lower layers (the NAS synch indicator is sent only for speech) and since the MSC does not send any user information in the downlink before it received the MODIFY COMPLETE message.

All in all, it seems that when the description of the in-call modification procedure was revised at the transition from GSM phase 1 to GSM phase 2, the description was improved for the mobile initiated case, but for the network initiated case it became incorrect.

	4) The proposed change (alignment with fig. 5.10b) is also in line with the example message flows for the service change that were added to the SCUDIF stage 2, TS 23.153, in v.5.2.0. 5) If the order of sequence is aligned with figure 5.10b, then the Immediate modification indicator IE is no longer needed. This indicator was introduced for a special case of the network initated in-call modification where no change of the traffic channel is necessary. If the MS always returns the MODIFY COMPLETE message before the channel reconfiguration takes place, if any needed, then no special indication is necessary.
Summary of change: ⌘	The description of the network initiated in-call modification is aligned with fig. 5.10b, i.e. the MS is mandated to send the MODIFY COMPLETE message before the channel is reconfigured. The Immediate modification indicator IE is removed from TS 24.008.
Consequences if not approved: ⌘	Inconsistent specification: if the MS is implemented according to the textual description and the MSC according to figure 5.10b, then the MS waits for the network to perform the channel reconfiguration, but the network waits for the MS to send MODIFY COMPLETE before it initiates the reconfiguration. The result will be a deadlock, and after expiry of timer T323 (= 30s) the MSC will clear the call. Backwards compatibility: The fallback from analogue multimedia to speech, introduced with R99, was the first application of the network initiated in-call modification. If the CR is not agreed from R99 onwards, it will be difficult to introduce the change at a later release, because of interworking problems between legacy R99 MS implementations and new Rel-6 MSC implementations: the interworking may result in a deadlock, as explained above, and after expiry of timer T323 (= 30s) the MSC will clear the call.

Clauses affected:	⌘	5.3.4.3.2, 5.3.6.3, 9.3.13.4, 10.5.4.31			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ 27.001-107r1 (N3-040365), 29.007-099r1 (N3-040368)
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3.4.3 Changing the Call Mode

In order to change the call mode, the following in-call modification procedures shall be used.

Either side of the radio interface may act as the requesting user to invoke the in-call modification.

Upon each successful completion of the in-call modification procedure, the call changes to the next mode negotiated and agreed during the establishment phase of the call.

The in-call modification procedures are completely symmetrical at the radio interface.

NOTE: Considering a possible future evolution, in-call modification is specified as a symmetrical procedure.

5.3.4.3.1 Initiation of in-call modification

The procedure is initiated by the requesting originating side in the "active" state of the call. It shall send a MODIFY message including the new mode to be changed to; start timer T323; and enter the "mobile originating modify" state (mobile station side) or the "mobile terminating modify" state (network side). Any internal resources necessary to support the next call mode shall be reserved. The new mode given in the MODIFY message shall be one of those already negotiated and agreed during the establishment phase of the call. If the data call direction is different from the direction of the call setup a reverse call setup direction IE shall be included in the MODIFY message; otherwise this IE shall not be included. The MODIFY originating side shall stop sending Bm-channel information; and stop interpreting received Bm-channel information according to the old call mode.

Upon receipt of the MODIFY message, the destination side shall check to ensure that the requested call mode can still be supported and if so, it shall initiate the reservation of any resources necessary to support the next call mode and enter the "mobile originating modify" (network side) or "mobile terminating modify" state (mobile station side).

5.3.4.3.2 Successful completion of in-call modification

If the destination network/mobile station receives a MODIFY message with a new mode which is already the actual one of the call the network/mobile station shall remain in the "active" state; send a MODIFY COMPLETE message with the actual mode; and shall not initiate anything else.

If the requested mode is speech and if during call establishment the network received a *Supported Codec List* IE, the network shall use this list to select the codec for UMTS. If no *Supported Codec List* information element is received, then for UMTS the network shall select the default UMTS speech codec according to subclause 5.2.1.11.

Codecs for GSM shall be selected from the codecs indicated in the *Supported Codec List* information element or in the *Bearer Capability* information element. If neither a *Supported Codec List* information element nor a *Bearer Capability* information element is received, then for GSM the network shall select GSM full rate speech version 1.

If the *Supported Codec List* IE is received, then the network shall indicate the codec selected for UMTS to the mobile station via RANAP and RRC protocol in the NAS Synchronisation Indicator IE (see subclause 5.2.1.11).

If the in-call modification was originated by the mobile station, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the network~~destination interface~~ it shall change the channel configuration, if required, and step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. After successful change of the channel configuration it shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode; send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (~~mobile station or~~ network side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message. [*Format changed to B1*]

~~In case of an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.~~

- Upon receipt of the MODIFY COMPLETE message the mobile station~~originating side~~ shall: initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (mobile station ~~or network~~ side). [*Format changed to B1*]

If the in-call modification was originated by the network, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the mobile station it shall step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. The mobile station shall send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (mobile station side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message.

- Upon receipt of the MODIFY COMPLETE message the network shall: change the channel configuration, if required; after successful change of the channel configuration initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (network side).

- The mobile station shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode as soon as a suitable channel for the new mode is available.

In both cases:

- For an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.

- The reaction of the originating side if it had included a reverse call setup direction IE in the MODIFY message, but the destination side did not include the IE in the MODIFY COMPLETE message is implementation dependent. [*Format changed to B1*]

5.3.4.3.3 Change of the channel configuration

In case the requested bearer capability cannot be supported by the current channel configuration the network shall initiate the assignment procedure and change the channel configuration accordingly.

5.3.4.3.4 Failure of in-call modification

5.3.4.3.4.1 Network rejection of in-call modification

If the network cannot support the change to the requested call mode or if the change of the channel configuration fails the network shall: release the resources which had been reserved for the alternation: send a MODIFY REJECT message with the old bearer capability and with cause # 58 "bearer capability not presently available" to the initiating mobile station; and enter the "active" state. If the change of the channel configuration fails, the network shall return to the internal resources required for the old call mode.

Upon receipt of the MODIFY REJECT message with the old bearer capability the initiating mobile station shall: stop timer T323; release any resources which had been reserved for the alternation; resume sending user channel information according to the present call mode; resume interpreting received user channel information according to the present call mode; and enter the "active" state.

5.3.4.3.4.2 Mobile station rejection of in-call modification

If the mobile station cannot support the change to the requested call mode, the mobile station shall: release any resources which had been reserved for the alternation; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.

Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the alternation.

5.3.4.3.4.3 Time-out recovery

Upon expiration of T323 in either the mobile station or the network the procedures for call clearing shall be initiated with cause # 102 "recovery on timer expiry".

5.3.4.4 Abnormal procedures

If a MODIFY, MODIFY COMPLETE or MODIFY REJECT message is received in the "disconnect indication", "disconnect request" (mobile station side only) or "release request" state then the received message shall be discarded and no action shall be taken.

If a MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one is received or if a MODIFY REJECT message indicating a call mode which does not correspond to the actual one is received then the received message shall be discarded and no action shall be taken.

If a MODIFY message indicating a call mode which does not belong to those negotiated and agreed during the establishment phase of the call, is received, then a MODIFY REJECT message with the actual call mode and with cause # 57 "bearer capability not authorized" shall be sent back.

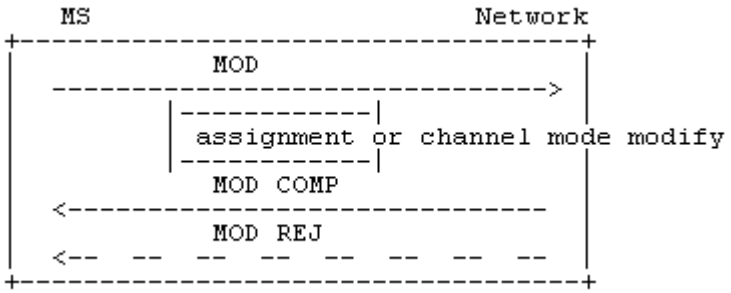

Figure 5.10a/3GPP TS 24.008 In-call modification sequence initiated by MS

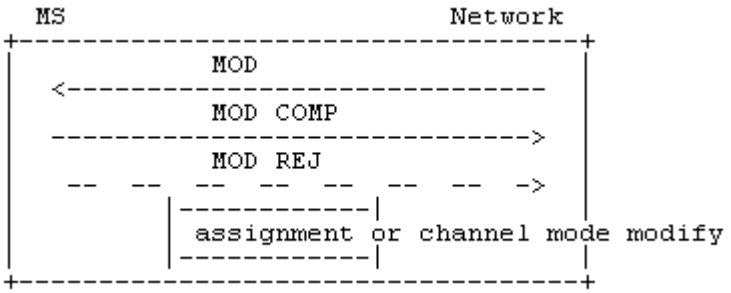

Figure 5.10b/3GPP TS 24.008 In-call modification sequence initiated by network

********** NEXT MODIFIED SECTION **********

5.3.6.3 In-call modification in the "active" state

The in-call modification procedure as described in chapter 5.3.4.3 shall be used to:

- trigger a service change between speech and UDI/RDI multimedia modes, when service change has been agreed at call setup; or

- modify the multimedia bearer capability for an analogue multimedia call (restricted to the network initiated in-call modification only). In this case, the network shall send a MODIFY message including ~~*immediate modification indicator IE* and~~ the new Bearer Capability to be changed to. The following bearer capability parameters can be modified with the procedure (see 3GPP TS 29.007 [38]):

  - Fixed Network User Rate (analogue multimedia calls only).

********** NEXT MODIFIED SECTION **********

9.3.13 Modify

This message is sent by the mobile station to the network or by the network to the mobile station to request a change in bearer capability for a call.

See table 9.63/3GPP TS 24.008.

Message type: MODIFY

Significance: global

Direction: both

Table 9.63/3GPP TS 24.008: MODIFY message content

IEI	Information element	Type/Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Modify message type	Message type 10.4	M	V	1
	Bearer capability	Bearer capability 10.5.4.5	M	LV	2-15
7C	Low layer comp.	Low layer comp. 10.5.4.18	O	TLV	2-18
7D	High layer comp.	High layer comp. 10.5.4.16	O	TLV	2-5
A3	Reverse call setup direction	Reverse call setup direction 10.5.4.22a	O	T	1
~~A4~~	~~Immediate modification indicator~~	~~Immediate modification indicator 10.5.4. 31~~	~~O~~	~~T~~	~~1~~

9.3.13.1 Low layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.2 High layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.3 Reverse call setup direction

This information element is included or omitted in the mobile to network direction according to the rules defined in subclause 5.3.4.3.1.

9.3.13.4 Void~~Immediate modification indicator~~

~~This information element shall be included if and only if immediate in-call modification is requested.~~

********** NEXT MODIFIED SECTION **********

10.5.4.31 VoidImmediate modification indicator

This information element is used to indicate an immediate in-call modification without changing the channel configuration.

The *Immediate modification indicator* information element is coded as shown in figure 10.5.118c/3GPP TS 24.008.

The *Immediate modification indicator* is a type 2 information element

Figure 10.5. 118c/3GPP TS 24.008 *Immediate modification indicator* information element

3GPP TSG-CN1 Meeting #34
Zagreb, Croatia 10 – 14 May 2004

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(rev of Tdoc N1-040817)

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **860** ⌘ **rev** **1** ⌘ Current version: **6.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of the network initiated in-call modification
Source:	⌘	Siemens
Work item code:	⌘	TEI
Date:	⌘	30.04.2004
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change: ⌘

1) The procedural description of the network initiated in-call modification in subclause 5.3.4.3.2 suggests that the MS waits for the change of the channel configuration before it returns a MODIFY COMPLETE message to the network.

This is not in line with figure 5.10b at the end of subclause 5.3.4.4, which suggests the opposite order of sequence, i.e. the MS returns MODIFY COMPLETE before the channel configuration is changed.

2) For the network initiated case, the description requests the MS to change the channel configuration. But the MS will do this only on command of the MSC, and there is no requirement stated for the MSC to initiate a channel reconfiguration at this point of the procedure.

3) There is a requirement for the MS to start sending user information and interpreting received user information according to the next call mode, and to send a MODIFY COMPLETE message, after 'successful change of the channel configuration'. But in UTRAN it is difficult for the MS to determine when this criterion is fulfilled, especially when the service is changed from speech to multimedia, since the NAS does not get an indication from the lower layers (the NAS synch indicator is sent only for speech) and since the MSC does not send any user information in the downlink before it received the MODIFY COMPLETE message.

All in all, it seems that when the description of the in-call modification procedure was revised at the transition from GSM phase 1 to GSM phase 2, the description was improved for the mobile initiated case, but for the network initiated case it became incorrect.

	4) The proposed change (alignment with fig. 5.10b) is also in line with the example message flows for the service change that were added to the SCUDIF stage 2, TS 23.153, in v.5.2.0. 5) If the order of sequence is aligned with figure 5.10b, then the Immediate modification indicator IE is no longer needed. This indicator was introduced for a special case of the network initated in-call modification where no change of the traffic channel is necessary. If the MS always returns the MODIFY COMPLETE message before the channel reconfiguration takes place, if any needed, then no special indication is necessary.
Summary of change: ⌘	The description of the network initiated in-call modification is aligned with fig. 5.10b, i.e. the MS is mandated to send the MODIFY COMPLETE message before the channel is reconfigure. The Immediate modification indicator IE is removed from TS 24.008.
Consequences if not approved: ⌘	Inconsistent specification: if the MS is implemented according to the textual description and the MSC according to figure 5.10b, then the MS waits for the network to perform the channel reconfiguration, but the network waits for the MS to send MODIFY COMPLETE before it initiates the reconfiguration. The result will be a deadlock, and after expiry of timer T323 (= 30s) the MSC will clear the call. Backwards compatibility: The fallback from analogue multimedia to speech, introduced with R99, was the first application of the network initiated in-call modification. If the CR is not agreed from R99 onwards, it will be difficult to introduce the change at a later release, because of interworking problems between legacy R99 MS implementations and new Rel-6 MSC implementations: the interworking may result in a deadlock, as explained above, and after expiry of timer T323 (= 30s) the MSC will clear the call.

Clauses affected:	⌘	5.3.4.3.2, 5.3.6.3, 9.3.13.4, 10.5.4.31			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3.4.3 Changing the Call Mode

In order to change the call mode, the following in-call modification procedures shall be used.

Either side of the radio interface may act as the requesting user to invoke the in-call modification.

Upon each successful completion of the in-call modification procedure, the call changes to the next mode negotiated and agreed during the establishment phase of the call.

The in-call modification procedures are completely symmetrical at the radio interface.

NOTE: Considering a possible future evolution, in-call modification is specified as a symmetrical procedure.

5.3.4.3.1 Initiation of in-call modification

The procedure is initiated by the requesting originating side in the "active" state of the call. It shall send a MODIFY message including the new mode to be changed to; start timer T323; and enter the "mobile originating modify" state (mobile station side) or the "mobile terminating modify" state (network side). Any internal resources necessary to support the next call mode shall be reserved. The new mode given in the MODIFY message shall be one of those already negotiated and agreed during the establishment phase of the call. If the data call direction is different from the direction of the call setup a reverse call setup direction IE shall be included in the MODIFY message; otherwise this IE shall not be included. The MODIFY originating side shall stop sending Bm-channel information; and stop interpreting received Bm-channel information according to the old call mode.

Upon receipt of the MODIFY message, the destination side shall check to ensure that the requested call mode can still be supported and if so, it shall initiate the reservation of any resources necessary to support the next call mode and enter the "mobile originating modify" (network side) or "mobile terminating modify" state (mobile station side).

5.3.4.3.2 Successful completion of in-call modification

If the destination network/mobile station receives a MODIFY message with a new mode which is already the actual one of the call the network/mobile station shall remain in the "active" state; send a MODIFY COMPLETE message with the actual mode; and shall not initiate anything else.

If the requested mode is speech and if during call establishment the network received a *Supported Codec List* IE, the network shall use this list to select the codec for UMTS. If no *Supported Codec List* information element is received, then for UMTS the network shall select the default UMTS speech codec according to subclause 5.2.1.11.

Codecs for GSM shall be selected from the codecs indicated in the *Supported Codec List* information element or in the *Bearer Capability* information element. If neither a *Supported Codec List* information element nor a *Bearer Capability* information element is received, then for GSM the network shall select GSM full rate speech version 1.

If the *Supported Codec List* IE is received, then the network shall indicate the codec selected for UMTS to the mobile station via RANAP and RRC protocol in the NAS Synchronisation Indicator IE (see subclause 5.2.1.11).

If the in-call modification was originated by the mobile station, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the network~~destination interface~~ it shall change the channel configuration, if required, and step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. After successful change of the channel configuration it shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode; send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (~~mobile station or~~ network side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message. [*Format changed to B1*]

~~In case of an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.~~

- Upon receipt of the MODIFY COMPLETE message the mobile station~~originating side~~ shall: initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (mobile station ~~or network~~ side). [*Format changed to B1*]

If the in-call modification was originated by the network, the mobile station and the network shall proceed as follows:

- If the requested mode is not the actual one and can be supported by the mobile station it shall step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. The mobile station shall send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (mobile station side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message.

- Upon receipt of the MODIFY COMPLETE message the network shall: change the channel configuration, if required; after successful change of the channel configuration initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (network side).

- The mobile station shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode as soon as a suitable channel for the new mode is available.

In both cases:

- For an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.

- The reaction of the originating side if it had included a reverse call setup direction IE in the MODIFY message, but the destination side did not include the IE in the MODIFY COMPLETE message is implementation dependent. [*Format changed to B1*]

5.3.4.3.3 Change of the channel configuration

In case the requested bearer capability cannot be supported by the current channel configuration the network shall initiate the assignment procedure and change the channel configuration accordingly.

5.3.4.3.4 Failure of in-call modification

5.3.4.3.4.1 Network rejection of in-call modification

If the network cannot support the change to the requested call mode or if the change of the channel configuration fails the network shall: release the resources which had been reserved for the alternation: send a MODIFY REJECT message with the old bearer capability and with cause # 58 "bearer capability not presently available" to the initiating mobile station; and enter the "active" state. If the change of the channel configuration fails, the network shall return to the internal resources required for the old call mode.

Upon receipt of the MODIFY REJECT message with the old bearer capability the initiating mobile station shall: stop timer T323; release any resources which had been reserved for the alternation; resume sending user channel information according to the present call mode; resume interpreting received user channel information according to the present call mode; and enter the "active" state.

5.3.4.3.4.2 Mobile station rejection of in-call modification

If the mobile station cannot support the change to the requested call mode, the mobile station shall: release any resources which had been reserved for the alternation; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.

Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the alternation.

5.3.4.3.4.3 Time-out recovery

Upon expiration of T323 in either the mobile station or the network the procedures for call clearing shall be initiated with cause # 102 "recovery on timer expiry".

5.3.4.4 Abnormal procedures

If a MODIFY, MODIFY COMPLETE or MODIFY REJECT message is received in the "disconnect indication", "disconnect request" (mobile station side only) or "release request" state then the received message shall be discarded and no action shall be taken.

If a MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one is received or if a MODIFY REJECT message indicating a call mode which does not correspond to the actual one is received then the received message shall be discarded and no action shall be taken.

If a MODIFY message indicating a call mode which does not belong to those negotiated and agreed during the establishment phase of the call, is received, then a MODIFY REJECT message with the actual call mode and with cause # 57 "bearer capability not authorized" shall be sent back.

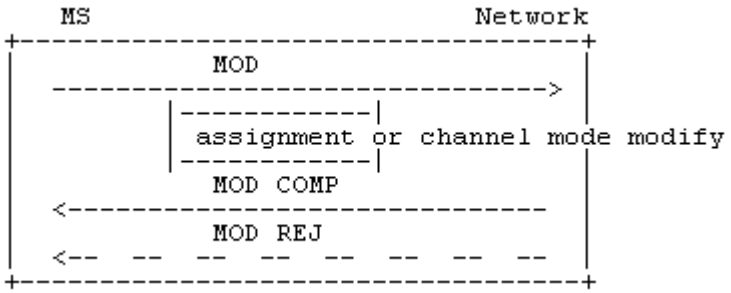

Figure 5.10a/3GPP TS 24.008 In-call modification sequence initiated by MS

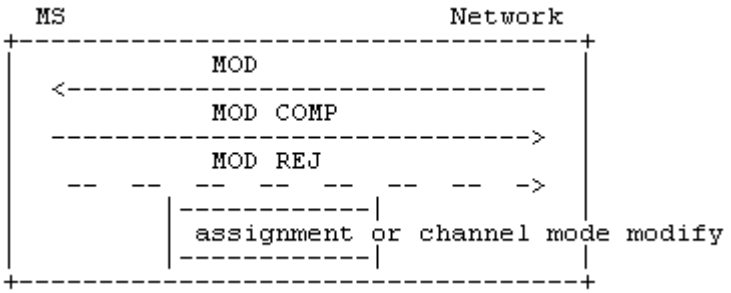

Figure 5.10b/3GPP TS 24.008 In-call modification sequence initiated by network

********** NEXT MODIFIED SECTION **********

5.3.6.3 In-call modification in the "active" state

The in-call modification procedure as described in chapter 5.3.4.3 shall be used to:

- trigger a service change between speech and UDI/RDI multimedia modes, when service change has been agreed at call setup; or

- modify the multimedia bearer capability for an analogue multimedia call (restricted to the network initiated in-call modification only). In this case, the network shall send a MODIFY message including ~~*immediate modification indicator IE* and~~ the new Bearer Capability to be changed to The following bearer capability parameters can be modified with the procedure (see 3GPP TS 29.007 [38]):

  - Fixed Network User Rate (analogue multimedia calls only).

********** NEXT MODIFIED SECTION **********

9.3.13 Modify

This message is sent by the mobile station to the network or by the network to the mobile station to request a change in bearer capability for a call.

See table 9.63/3GPP TS 24.008.

Message type: MODIFY

Significance: global

Direction: both

Table 9.63/3GPP TS 24.008: MODIFY message content

IEI	Information element	Type/Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Modify message type	Message type 10.4	M	V	1
	Bearer capability	Bearer capability 10.5.4.5	M	LV	2-15
7C	Low layer comp.	Low layer comp. 10.5.4.18	O	TLV	2-18
7D	High layer comp.	High layer comp. 10.5.4.16	O	TLV	2-5
A3	Reverse call setup direction	Reverse call setup direction 10.5.4.22a	O	T	1
~~A4~~	~~Immediate modification indicator~~	~~Immediate modification indicator 10.5.4. 31~~	~~O~~	~~T~~	~~1~~

9.3.13.1 Low layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.2 High layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.3 Reverse call setup direction

This information element is included or omitted in the mobile to network direction according to the rules defined in subclause 5.3.4.3.1.

9.3.13.4 Void~~Immediate modification indicator~~

~~This information element shall be included if and only if immediate in-call modification is requested.~~

********** NEXT MODIFIED SECTION **********

10.5.4.31 VoidImmediate modification indicator

This information element is used to indicate an immediate in-call modification without changing the channel configuration.

The *Immediate modification indicator* information element is coded as shown in figure 10.5.118c/3GPP TS 24.008.

The *Immediate modification indicator* is a type 2 information element

8	7	6	5	4	3	2	1	
Immediate modification indicator IEI								octet 1

Figure 10.5. 118c/3GPP TS 24.008 *Immediate modification indicator* information element

3GPP TSG-CN1 Meeting #34

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Revision of N1-040981

Zagreb, Croatia 10 – 14 May 2004

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CHANGE REQUEST

⌘ **24.008** **CR** **876** ⌘ **rev** **2** ⌘ Current version: **3.18.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Reference to 4.7.x.4
Source:	⌘	Ericsson
Work item code:	⌘	TEI
Date:	⌘	13/05/2004
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	The sub-clause 4.7.13.5 contains in the bullet d) a reference to 4.7.x.4, which is obviously incorrect and refers to nothing. This makes the reference not meaningful at all.
Summary of change:	⌘	The reference 4.7.x.4 is corrected to refer to 4.7.13.4.
Consequences if not approved:	⌘	The reference to 4.7.x.4 remains, so the reference is not meaningful at all. This lead to make actions to be taken by the MS if the bullet d) of 4.7.13.5 is fulfilled completely unclear. This results in undesirable effects, for instance in different MS implementations when SERVICE REJECT message is received from the network.

Clauses affected:	⌘	4.7.13.5

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.7.13.5 Abnormal cases in the MS

The following abnormal cases can be identified:

a) Access barred because of access class control

The Service request procedure shall not be started. The MS stays in the current serving cell and applies normal cell reselection process. The Service request procedure may be started by CM layer if it is still necessary, i.e. when access is granted or because of a cell change.

b) Lower layer failure before the security mode control procedure is completed, SERVICE ACCEPT or SERVICE REJECT message is received

The procedure shall be aborted.

c) T3317 expired

The MS shall enter GMM-REGISTERED state.

If the MS is in PMM-IDLE mode then the procedure shall be aborted and the MS shall initiate a PS signalling connection release.

If the MS is in PMM-CONNECTED mode, then the procedure shall be aborted.

d) SERVICE REJECT received, other causes than those treated in clause 4.7.13x.4

The procedure shall be aborted.

e) Routing area update procedure is triggered

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, a SERVICE ACCEPT or SERVICE REJECT message has been received, the Service request procedure shall be aborted and the routing area updating procedure is started immediately. Follow-on request pending may be indicated in the ROUTING AREA UPDATE REQUEST for the service, which was the trigger of the aborted Service request procedure, to restart the pending service itself or the Service Request procedure after the completion of the routing area updating procedure. If the service type of the aborted SERVICE REQUEST was indicating "data", then the routing area update procedure may be followed by a re-initiated Service request procedure indicating "data", if it is still necessary.

f) Power off

If the MS is in state GMM-SERVICE-REQUEST-INITIATED at power off, the GPRS detach procedure shall be performed.

g) Procedure collision

If the MS receives a DETACH REQUEST message from the network in state GMM-SERVICE-REQUEST-INITIATED, the GPRS detach procedure shall be progressed and the Service request procedure shall be aborted. If the cause IE, in the DETACH REQUEST message, indicated a "reattach request", the GPRS attach procedure shall be performed.

3GPP TSG-CN1 Meeting #34

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Revision of N1-040982

Zagreb, Croatia 10 – 14 May 2004

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CHANGE REQUEST

⌘ **24.008** **CR** **877** ⌘ **rev** **2** ⌘ Current version: **4.13.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Reference to 4.7.x.4
Source:	⌘	Ericsson
Work item code:	⌘	TEI
Date:	⌘	13/05/2004
Category:	⌘	**A**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
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Consequences if not approved:	⌘	The reference to 4.7.x.4 remains, so the reference is not meaningful at all. This lead to make actions to be taken by the MS if the bullet d) of 4.7.13.5 is fulfilled completely unclear. This results in undesirable effects, for instance in different MS implementations when SERVICE REJECT message is received from the network.

Clauses affected:	⌘				
Other specs affected:	⌘	**Y**	**N**		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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b) Lower layer failure before the security mode control procedure is completed, SERVICE ACCEPT or SERVICE REJECT message is received

The procedure shall be aborted.

c) T3317 expired

The MS shall enter GMM-REGISTERED state.

If the MS is in PMM-IDLE mode then the procedure shall be aborted and the MS shall initiate a PS signalling connection release.

If the MS is in PMM-CONNECTED mode, then the procedure shall be aborted.

d) SERVICE REJECT received, other causes than those treated in subclause 4.7.13~~*~~.4

The procedure shall be aborted.

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If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, a SERVICE ACCEPT or SERVICE REJECT message has been received, the Service request procedure shall be aborted and the routing area updating procedure is started immediately. Follow-on request pending may be indicated in the ROUTING AREA UPDATE REQUEST for the service, which was the trigger of the aborted Service request procedure, to restart the pending service itself or the Service Request procedure after the completion of the routing area updating procedure. If the service type of the aborted SERVICE REQUEST was indicating "data", then the routing area update procedure may be followed by a re-initiated Service request procedure indicating "data", if it is still necessary.

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g) Procedure collision

If the MS receives a DETACH REQUEST message from the network in state GMM-SERVICE-REQUEST-INITIATED, the GPRS detach procedure shall be progressed and the Service request procedure shall be aborted. If the cause IE, in the DETACH REQUEST message, indicated a "reattach request", the GPRS attach procedure shall be performed.

3GPP TSG-CN1 Meeting #34

Tdoc N1-041088
Revision of N1-040983

Zagreb, Croatia 10 – 14 May 2004

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CHANGE REQUEST

⌘ **24.008** **CR** **878** ⌘ **rev** **2** ⌘ Current version: **5.11.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

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Source:	⌘	Ericsson
Work item code:	⌘	TEI
Date:	⌘	13/05/2004
Category:	⌘	**A**
Release:	⌘	Rel-5

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Clauses affected:	⌘	4.7.13.5

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
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		X	O&M Specifications	

Other comments:	⌘	

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b) Lower layer failure before the security mode control procedure is completed, SERVICE ACCEPT or SERVICE REJECT message is received

The procedure shall be aborted.

c) T3317 expired

The MS shall enter GMM-REGISTERED state.

If the MS is in PMM-IDLE mode then the procedure shall be aborted and the MS shall initiate a PS signalling connection release.

If the MS is in PMM-CONNECTED mode, then the procedure shall be aborted.

d) SERVICE REJECT received, other causes than those treated in subclause 4.7.13~~*~~.4

The procedure shall be aborted.

e) Routing area update procedure is triggered

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, a SERVICE ACCEPT or SERVICE REJECT message has been received, the Service request procedure shall be aborted and the routing area updating procedure is started immediately. Follow-on request pending may be indicated in the ROUTING AREA UPDATE REQUEST for the service, which was the trigger of the aborted Service request procedure, to restart the pending service itself or the Service Request procedure after the completion of the routing area updating procedure. If the service type of the aborted SERVICE REQUEST was indicating "data", then the routing area update procedure may be followed by a re-initiated Service request procedure indicating "data", if it is still necessary.

f) Power off

If the MS is in state GMM-SERVICE-REQUEST-INITIATED at power off, the GPRS detach procedure shall be performed.

g) Procedure collision

If the MS receives a DETACH REQUEST message from the network in state GMM-SERVICE-REQUEST-INITIATED, the GPRS detach procedure shall be progressed and the Service request procedure shall be aborted. If the cause IE, in the DETACH REQUEST message, indicated a "reattach request", the GPRS attach procedure shall be performed.

3GPP TSG-CN1 Meeting #34

Tdoc N1-041089
Revision of N1-040984

Zagreb, Croatia 10 – 14 May 2004

CR-Form-v7

CHANGE REQUEST

⌘ **24.008** **CR** **879** ⌘ **rev** **2** ⌘ Current version: **6.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Reference to 4.7.x.4
Source:	⌘	Ericsson
Work item code:	⌘	TEI
Date:	⌘	13/05/2004
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The sub-clause 4.7.13.5 contains in the bullet d) a reference to 4.7.x.4, which is obviously incorrect and refers to nothing. This makes the reference not meaningful at all.
Summary of change:	⌘	The reference 4.7.x.4 is corrected to refer to 4.7.13.4.
Consequences if not approved:	⌘	The reference to 4.7.x.4 remains, so the reference is not meaningful at all. This lead to make actions to be taken by the MS if the bullet d) of 4.7.13.5 is fulfilled completely unclear. This results in undesirable effects, for instance in different MS implementations when SERVICE REJECT message is received from the network.

Clauses affected:	⌘	4.7.13.5

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.7.13.5 Abnormal cases in the MS

The following abnormal cases can be identified:

a) Access barred because of access class control

The Service request procedure shall not be started. The MS stays in the current serving cell and applies normal cell reselection process. The Service request procedure may be started by CM layer if it is still necessary, i.e. when access is granted or because of a cell change.

b) Lower layer failure before the security mode control procedure is completed, SERVICE ACCEPT or SERVICE REJECT message is received

The procedure shall be aborted.

c) T3317 expired

The MS shall enter GMM-REGISTERED state.

If the MS is in PMM-IDLE mode then the procedure shall be aborted and the MS shall initiate a PS signalling connection release.

If the MS is in PMM-CONNECTED mode, then the procedure shall be aborted.

d) SERVICE REJECT received, other causes than those treated in subclause 4.7.13~~*~~.4

The procedure shall be aborted.

e) Routing area update procedure is triggered

If a cell change into a new routing area occurs and the necessity of routing area update procedure is determined before the security mode control procedure is completed, a SERVICE ACCEPT or SERVICE REJECT message has been received, the Service request procedure shall be aborted and the routing area updating procedure is started immediately. Follow-on request pending may be indicated in the ROUTING AREA UPDATE REQUEST for the service, which was the trigger of the aborted Service request procedure, to restart the pending service itself or the Service Request procedure after the completion of the routing area updating procedure. If the service type of the aborted SERVICE REQUEST was indicating "data", then the routing area update procedure may be followed by a re-initiated Service request procedure indicating "data", if it is still necessary.

f) Power off

If the MS is in state GMM-SERVICE-REQUEST-INITIATED at power off, the GPRS detach procedure shall be performed.

g) Procedure collision

If the MS receives a DETACH REQUEST message from the network in state GMM-SERVICE-REQUEST-INITIATED, the GPRS detach procedure shall be progressed and the Service request procedure shall be aborted. If the cause IE, in the DETACH REQUEST message, indicated a "reattach request", the GPRS attach procedure shall be performed.