

Source: T3

Title: CRs to TS 11.14 and TS 51.014:
Specification of the SIM ME Interface for the SIM application toolkit

Document for: Approval

This document contains the following change requests:

Doc-2nd-Level	Spec	CR	Rev	Cat	Phase	Subject	Version-Current	Version-New	WI
T3-030170	11.14	A216	-	F	R99	Correction to the lack of specified behaviour when the link drops in Bearer Independent Protocol.	8.12.0	8.13.0	TEI
T3-030154	51.014	001	-	F	Rel-4	Local Links correction	4.0.0	4.1.0	TEI
T3-030153	51.014	002	-	F	Rel-4	Replacement of improper terms "UICC" and "11.11".	4.0.0	4.1.0	TEI

CR-Form-v7

CHANGE REQUEST

⌘ **11.14 CR A216** ⌘ rev **-** ⌘ Current version: **8.12.0** ⌘

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 to the lack of specified behaviour when the link drops in Bearer Independent Protocol.		
Source:	⌘ T3		
Work item code:	⌘ TEI	Date:	⌘ 13/02/2003
Category:	⌘ F	Release:	⌘ R99
	<i>Use one of the following categories:</i> 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 .		<i>Use one of the following releases:</i> 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 behaviour of the ME regarding the allocation of the channel identifier for a data channel is not clear when the link is dropped.
Summary of change:	⌘ If the link is dropped the ME shall not release the Channel Identifier for a data channel. The data channel shall be closed by the card with a CLOSE CHANNEL proactive command. Moreover the ME shall not empty its buffers until the successful execution of a CLOSE CHANNEL.
Consequences if not approved:	⌘ SIM Toolkit applications will not consistently or reliably operate if they use bearer independent functionality.

Clauses affected:	⌘ § 11.11.1										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X						⌘ TS 43.019 Rel-5	
Y	N										
X											
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.

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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.

11.11 Channel status event

All subclauses under 11.11 apply only if class "e" is supported.

11.11.1 Procedure

If the Channel status event is part of the current event list (as set up by the last SET UP EVENT LIST command, see subclause 6.4.16), then, when the ME detects one of the following changes:

- a link is error, or
- any other error,

which is not resulting from the execution of a proactive command, the ME shall inform the SIM that this has occurred, by using the ENVELOPE (EVENT DOWNLOAD – Channel status) command as defined below.

The channel identifier for a data channel shall not be released during a card session until the CLOSE CHANNEL command for this channel identifier has been successfully executed.

The ME shall not empty the Rx/Tx buffers during the card session until the CLOSE CHANNEL command has been successfully executed.

CR-Form-v7
CHANGE REQUEST
⌘ 51.014 CR 001 ⌘ rev - ⌘ Current version: 4.0.0 ⌘

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:	⌘ Local Links correction		
Source:	⌘ T3		
Work item code:	⌘ TEI	Date:	⌘ 12/02/2003
Category:	⌘ F	Release:	⌘ Rel-4
	Use <u>one</u> 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 <u>one</u> 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:	⌘ Some parts concerning the Local Links were forgotten at the creation of this specification
Summary of change:	⌘ Missing parts added Alignment of the general result chapter on 102 223.
Consequences if not approved:	⌘ Incomplete description of the Local Links

Clauses affected:	⌘ 6.4.27.x – 6.4.XX – 6.4.YY – 6.4.ZZ – 6.6.27.x – 6.6.XX – 6.6.YY – 6.6.ZZ – 6.8 – 6.8.TT – 6.8.UU – 12.6 – 12.12 – 12.12.11 – 12.52 – 12.TT – 12.UU – 12.VV – 12.WW – 12.XX – 12.YY										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications ⌘ Test specifications ⌘ O&M Specifications ⌘	
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
Other comments:	⌘										

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[6.4.27.x OPEN CHANNEL related to local bearer](#)

[See TS 102 223 \[37\].](#)

[...]

[6.4.XX SERVICE SEARCH](#)

[See TS 102 223 \[37\].](#)

[6.4.YY GET SERVICE INFORMATION](#)

[See TS 102 223 \[37\].](#)

[6.4.ZZ DECLARE SERVICE](#)

[See TS 102 223 \[37\].](#)

[...]

[6.6.27.x OPEN CHANNEL related to local bearer](#)

[See TS 102 223 \[37\].](#)

[...]

[6.6.XX SERVICE SEARCH](#)

[See TS 102 223 \[37\].](#)

[6.6.YY GET SERVICE INFORMATION](#)

[See TS 102 223 \[37\].](#)

[6.6.ZZ DECLARE SERVICE](#)

[See TS 102 223 \[37\].](#)

[...]

6.8 Structure of TERMINAL RESPONSE

Direction: ME to UICC

The command header is specified in TS 51.011 [20]. Length (A+B+C+D+E+F+G+H+I+J+K+L+M+N+P+Q+R+S+T+U+V+W+X) is indicated by P3 of the header.

Command parameters/data:

Description	Section	M/O	Min	Length
Command details	12.6	M	Y	A
Device identities	12.7	M	N	B
Result	12.12	M	Y	C
Duration (only required in response to a POLL INTERVAL proactive command)	12.8	M/O	Y/N	D
Text string (only required in response to a GET INKEY or GET INPUT or SEND USSD proactive command)	12.15	M/O	Y/N	E
Item identifier (only required in response to SELECT ITEM proactive command)	12.10	M/O	Y/N	F
Local information (only required in response to PROVIDE LOCAL INFORMATION proactive command)	12.19, 12.20, 12.22, 12.29, 12.39, 12.45 & 12.46	M/O	Y/N	G
Call control requested action (only required if call control by SIM has modified a proactive command SET UP CALL, SEND SS or SEND USSD in another type of request).	12.30	M/O	Y/N	H
Result data object 2 (only required if call control by SIM has modified a proactive command SET UP CALL, SEND SS or SEND USSD in another type of request).	12.12	M/O	Y/N	I
Card reader status (only required in response to GET READER STATUS command). According to the requested information, one Card reader status object for each card interface reported or one Card reader identifier object is required. (only if class "a" is supported)""	12.33, 12.57	M/O	N	$J_0 + \dots + J_n$ or J
Card ATR (only required in response to POWER ON CARD). (only if class "a" is supported)	12.34	M/O	N	K
R-APDU (only required in response to PERFORM CARD APDU). (only if class "a" is supported)	12.36	M/O	N	L
Timer identifier (only required in response to a TIMER MANAGEMENT proactive command)	12.37	M/O	Y/N	M
Timer value (only required in response to a TIMER MANAGEMENT proactive command)	12.38	M/O	Y/N	N
AT Response (only required in response to RUN AT COMMAND proactive command) (only if class "b" is supported)	12.41	M/O	Y/N	P
Text string2 (only required if call control by SIM has modified the proactive command SET UP CALL or SEND SS into a USSD request)	12.15	M/O	Y/N	Q
Channel data (only required in response to RECEIVE DATA) (only if class "e" is supported)	12.53	M/O	Y/N	R

Description	Section	M/O	Min	Length
Channel status (only required in response to GET CHANNEL STATUS or OPEN CHANNEL proactive command) (only if class "e" is supported)	12.56	M/O	Y/N	$S_0 + \dots + S_n$
Channel data length (only required in response to RECEIVE DATA or SEND DATA proactive command) (only if class "e" is supported)	12.54	M/O	Y/N	T
Bearer description (only required in response to OPEN CHANNEL proactive command) (only if class "e" is supported)	12.52	M/O	Y/N	U
Buffer size (only required in response to OPEN CHANNEL proactive command) (only if class "e" is supported)	12.55	M/O	Y/N	V
Service availability (only required in response to SERVICE SEARCH proactive command)	12.XX	C	N	W
Service record (only required in response to GET SERVICE INFORMATION proactive command)	12.TT	C	N	X

Specific rules apply for the coding of the TERMINAL RESPONSE, see TS 102 223 [37]

Response parameters/data: None.

[...]

[6.8.TT Service Availability](#)

[See TS 102 223 \[37\].](#)

[6.8.UU Service Record](#)

[See TS 102 223 \[37\].](#)

[...]

12.6 Command details

The content and the coding of the Command Details TLV object is defined in TS 102 223 [37], except for the following.

- The coding of the Command Qualifier is defined for the following commands:

Coding:

- REFRESH;
 - '00' =SIM Initialization and Full File Change Notification;
 - '01' = File Change Notification;
 - '02' = SIM Initialization and File Change Notification;
 - '03' = SIM Initialization;
 - '04' = UICC Reset;

'05' to 'FF' = reserved values.

- SEND SS;
This byte is RFU.
- SEND USSD;
This byte is RFU.
- GET INKEY,
 - bit 1: 0 = digits (0-9, *, # and +) only
1 = alphabet set;
 - bit 2: 0 = SMS default alphabet
1 = UCS2 alphabet
 - bit 3: 0 = character sets defined by bit 1 and bit 2 are enabled
1 = character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested
 - bits 4-7: = RFU
 - bit 8: 0 = no help information available
1 = help information available
- PROVIDE LOCAL INFORMATION
 - '00' = Location Information (MCC, MNC, LAC and Cell Identity)
 - '01' = IMEI of the ME
 - '02' = Network Measurement results
 - '03' = Date, time and time zone
 - '04' = Language setting
 - '05' = Timing Advance
 - '06' to 'FF' = Reserved

~~Note: The following commands can be found in TS 102 223[37], but don't apply for a SIM Application: SERVICE SEARCH, GET SERVICE INFORMATION and DECLARE SERVICE.~~

[...]

12.12 Result

Byte(s)	Description	Length
4	Result tag	4
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3	General result	4
(Y-1)+4 to (Y-1)+X+2	Additional information on result	X-1

~~General result~~

~~Contents: General result specifies the result and indicates appropriate SIM action:~~

~~Coding:~~

- ~~'00' = Command performed successfully;~~
- ~~'01' = Command performed with partial comprehension;~~
- ~~'02' = Command performed, with missing information;~~
- ~~'03' = REFRESH performed with additional EFs read;~~
- ~~'04' = Command performed successfully, but requested icon could not be displayed;~~
- ~~'05' = Command performed, but modified by call control by SIM;~~
- ~~'06' = Command performed successfully, limited service;~~
- ~~'07' = Command performed with modification (if class "e" is supported);~~
- ~~'10' = Proactive UICC session terminated by the user;~~
- ~~'11' = Backward move in the proactive UICC session requested by the user;~~
- ~~'12' = No response from user;~~
- ~~'13' = Help information required by the user;~~

~~—'14' = USSD or SS transaction terminated by the user.~~

~~Results '0X' and '1X' indicate that the command has been performed.~~

~~—'20' = ME currently unable to process command;~~

~~—'21' = Network currently unable to process command;~~

~~—'22' = User did not accept the proactive command;~~

~~—'23' = User cleared down call before connection or network release;~~

~~—'24' = Action in contradiction with the current timer state;~~

~~—'25' = Interaction with call control by SIM, temporary problem;~~

~~—'26' = Launch browser generic error code.~~

~~Results '2X' indicate to the UICC that it may be worth re-trying the command at a later opportunity.~~

~~—'30' = Command beyond ME's capabilities;~~

~~—'31' = Command type not understood by ME;~~

~~—'32' = Command data not understood by ME;~~

~~—'33' = Command number not known by ME;~~

~~—'34' = SS Return Error;~~

~~—'35' = SMS RP ERROR;~~

~~—'36' = Error, required values are missing;~~

~~—'37' = USSD Return Error;~~

~~—'38' = MultipleCard commands error, if class "a" is supported;~~

~~—'39' = Interaction with call control by SIM or MO short message control by SIM, permanent problem;~~

~~—'3A' = Bearer Independent Protocol error (if class "e" is supported).~~

~~Results '3X' indicate that it is not worth the UICC re-trying with an identical command, as it will only get the same response. However, the decision to retry lies with the SIM application.~~

~~The SIM application should avoid a rapid sequence of repeated retried commands as this may be detrimental to ME performance.~~

~~All other values are reserved.~~

~~—Additional information~~

~~Contents: For the general result "Command performed successfully", some proactive commands require additional information in the command result. This is defined in the subclauses below. For the general results '20', '21', '26', '34', '35', '37', '38' and '39' and '3A', it is mandatory for the ME to provide a specific cause value as additional information, as defined in the subclauses below. For the other general results, the ME may optionally supply additional information. If additional information is not supplied, then the length of the value part of the data object need only contain the general result.~~

~~For the general result byte coding the following values are defined in addition to or replacement of those in TS 102 223 [32]:~~

~~- '14' = USSD or SS transaction terminated by the user.~~

~~- '34' = SS Return Error;~~

~~- '35' = SMS RP-ERROR;~~

~~- '37' = USSD Return Error;~~

~~- '39' = Interaction with call control by SIM or MO short message control by SIM, permanent problem;~~

~~- Additional information.~~

~~- Contents: For the general result "Command performed successfully", some proactive commands require additional information in the command result. This is defined in the clauses below. For the general result values '20', '21', '34', '35', '37', and '39', it is mandatory for the ME to provide a specific cause value as additional information, as defined in the clauses below. For other values, see TS 102 223 [32].~~

[...]

12.12.11 Additional information for Bearer Independent Protocol

[See TS 102 223 \[37\].](#)

~~This subclause applies only if class "e" is supported.~~

~~For the general result "Bearer Independent Protocol error", it is mandatory for the ME to provide additional information, the first byte of which is defined below:~~

- ~~— '00' = No specific cause can be given;~~
- ~~— '01' = No channel available;~~
- ~~— '02' = Channel closed;~~
- ~~— '03' = Channel identifier not valid;~~
- ~~— '04' = Requested buffer size not available;~~
- ~~— '05' = Security error (unsuccessful authentication);~~
- ~~— '06' = Requested UICC/ME interface transport level not available.~~

~~All other values shall be interpreted by the UICC as '00'.~~

~~The coding '00' shall only be used by the ME if no others apply.~~

[...]

12.52 Bearer description

~~This subclause applies only if class "e" is supported.~~

Byte(s)	Description	Length
1	Bearer description tag	1
2	Length (X+1)	1
3	Bearer type	1
4 to (3+X)	Bearer parameters	X

- ~~— Bearer Type coding~~
 - ~~— '01': CSD~~
 - ~~— '02': GPRS~~
 - ~~— '03': default bearer for requested transport layer.~~

~~all other values are reserved for future use~~

~~- [Bearer Type coding: in addition to the values defined in TS 102 223 \[32\], the following are defined:](#)~~

- ~~- ['01' = CSD;](#)~~
- ~~- ['02' = GPRS / 3G packet service;](#)~~

~~- [Bearer parameters coding: see the following clauses for 2G specific technologies.](#)~~

[...]

[12.TT Service Record](#)

[See TS 102 223 \[37\]](#).

[12.UU Device Filter](#)

[See TS 102 223 \[37\]](#).

[12.VV Service Search](#)

[See TS 102 223 \[37\]](#).

[12.WW Attribute Information](#)

[See TS 102 223 \[37\]](#).

[12.XX Service Availability](#)

[See TS 102 223 \[37\]](#).

[12.YY Remote Entity Address](#)

[See TS 102 223 \[37\]](#).

CHANGE REQUEST

51.014 CR 002 # rev - # Current version: 4.0.0

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:	# Replacement of improper terms "UICC" and "11.11".		
Source:	# T3		
Work item code:	# TEI	Date:	# 12/02/2003
Category:	# F	Release:	# Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	# When creating the specification, some improper terms were used or forgotten to be replaced.
Summary of change:	# UICC is replaced by SIM. References to 11.11 is replaced by reference to 51.011. References to 02.17 is replaced by reference to 42.017.
Consequences if not approved:	# Inconsistency in the specification due to usage of several terms (UICC and SIM) to describe the card. The wrong references to 11.11 and 02.17 can lead to misunderstandings.

Clauses affected:	# 1 – 4 – 4.1 – 4.2 – 4.3 – 5.1 – 5.2 – 6 – 6.1 – 6.2 – 6.4.7 – 6.4.10 – 6.4.11 – 6.4.12 – 6.4.13 – 6.4.15 – 6.4.27.1 – 6.4.27.2 – 6.6 – 6.7 – 6.8 – 6.8.7 – 6.8.8 – 6.9 – 7.1.1 – 7.1.2 – 7.2.1 – 7.2.2 – 9.1.1 – 9.1.2 – 9.1.3 – 9.1.6 – 9.2.1 – 9.2.2 – 9.2.3 – 12.4 – 12.6 – 12.12 – 12.12.2 – 12.12.3 – 12.12.8 – 12.12.11 – 12.13 – 12.14 – 14 – Annex B – Annex C				
Other specs affected:	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications # <input type="checkbox"/>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Y	N				
<input type="checkbox"/>	<input checked="" type="checkbox"/>				
	<input checked="" type="checkbox"/> Test specifications # <input type="checkbox"/>				
	<input checked="" type="checkbox"/> O&M Specifications # <input type="checkbox"/>				
Other comments:	# <input type="text"/>				

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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document defines the interface between the Subscriber Identity Module (SIM) and the Mobile Equipment (ME), and mandatory ME procedures, specifically for "SIM Application Toolkit".

The present document refers in its majority to the ETSI TS 102 223 [37] "Card Application Toolkit", which describes the generic aspects of application toolkits within the [UICC-SIM](#). SIM Application Toolkit is a set of commands and procedures for use during the network operation phase of GSM, in addition to those defined in TS 51.011 [20].

Specifying the interface is to ensure interoperability between a [UICC-SIM](#) and an ME independently of the respective manufacturers and operators. The concept of a split of the Mobile Station (MS) into these elements as well as the distinction between the GSM network operation phase, which is also called GSM operations, and the administrative management phase are described in TS [02.1742.017](#) [3].

The present document defines:

- the commands;
- the application protocol;
- the mandatory requirements on the [UICC-SIM](#) and ME for each procedure.

Unless otherwise stated, references to GSM also apply to DCS 1800.

The present document does not specify any aspects related to the administrative management phase. Any internal technical realization of either the [UICC-SIM](#) or the ME are only specified where these reflect over the interface. This standard does not specify any of the security algorithms which may be used.

Within the context of this document, the term "terminal" used in TS 102 223 [37] refers to the Mobile Equipment (ME).

[Within the context of this document, the term "UICC" used in TS 102 223 \[37\] refers to the SIM card.](#)

Within the context of this document, the term "NAA" used in TS 102 223 [37] refers to the SIM [application](#).

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

- [1] not used
- [2] 3GPP TS 01.04: "Abbreviations and acronyms".
- [3] 3GPP TS [042.017](#): "Subscriber Identity Modules (SIM) Functional characteristics".
- [4] 3GPP TS 22.030: "Man-Machine Interface (MMI) of the Mobile Station (MS)".
- [5] 3GPP TS 23.038: "Alphabets and language-specific information".
- [6] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) Point-to-Point (PP)".
- [7] 3GPP TS 23.041: "Technical realization of Short Message Service Cell Broadcast (SMSCB)".
- [8] 3GPP TS 04.08: "Mobile radio interface layer 3 specification".
- [9] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

- [10] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats and coding".
- [11] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3"
- [12] not used
- [13] GSM 09.91: "Digital cellular telecommunications system; Interworking aspects of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface between Phase 1 and Phase 2".
- [14] (void)
- [15] ITU-T Recommendation E.164: "Numbering plan for the ISDN era".
- [16] ISO/IEC 7816-3 (1997): "Identification cards - Integrated circuit(s) cards with contacts, Part 3: Electronic signals and transmission protocols".
- [17] ISO/IEC 7816-6 (1995): "Identification cards - Integrated circuit(s) cards with contacts, Part 6 Inter-industry data elements".
- [18] 3GPP TS 02.40: "Procedures for call progress indications".
- [19] 3GPP TS 02.07: "Mobile Stations (MS) features".
- [20] 3GPP TS 51.011: "Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".
- [21] 3GPP TS 11.12: "Digital cellular telecommunications system (Phase 2); Specification of the 3 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".
- [22] 3GPP TS 43.022: "Functions related to Mobile Station (MS) in idle mode and group receive mode".
- [23] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".
- [24] 3GPP TS 23.048: "Security Mechanisms for the (U)SIM application toolkit; Stage 2".
- [25] ISO/IEC 7816-4 (1995): "Identification cards - Integrated circuit(s) cards with contacts, Part 4: Inter-industry commands for interchange".
- [26] 3GPP TS 22.042: "Network identity and timezone; Service description; Stage 1".
- [27] 3GPP TS 27.007: "AT command set for GSM Mobile Equipment (ME)".
- [28] 3GPP TS 03.22: "Functions related to Mobile Station (MS) in idle mode and group receive mode".
- [29] ISO 639 (1988): "Code for the representation of names of languages".
- [30] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS); Point-to-Point (PP)".
- [31] 3GPP TS 22.002: "Digital cellular telecommunication system (Phase 2+); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".
- [32] IETF RFC 1738: "Uniform Resource Locators (URL)", Berners-Lee T, et al., December 1994.
- [33] IETF RFC 768 "User Datagram Protocol (UDP)".
- [34] IETF RFC 793 "Transmission Control Protocol (TCP)".
- [35] TIA/EIA-136-123 "Third Generation Wireless – Digital Control Channel Layer 3, April 23, 2001".
- [36] 3GPP TS 23.003: "Numbering, addressing and identification".
- [37] ETSI TS 102 223: "Smart cards; Card Application Toolkit (CAT)".
- [38] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

3 Definitions, abbreviations and symbols

3.1 Definitions

For the present document the definitions in TS 102 223 [37] apply.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply in addition to those listed in TS 102 223 [37]:

ADN	Abbreviated Dialling Number
CB	Cell Broadcast
CBMID	Cell Broadcast Message IDentifier
DCS	Digital Cellular System
EGPRS	EDGE General Packet Radio Service
GGSN	Gateway GPRS Support Node
GPRS	General Packet Radio Service
MS	Mobile Station
SAT	SIM Application Toolkit
SIM	Subscriber Identity Module
SS	Supplementary Service
SSC	Supplementary Service Control string
USSD	Unstructured Supplementary Service Data

3.3 Symbols

For the purposes of the present document, the following symbols apply:

'0' to '9' and 'A' to 'F' The sixteen hexadecimal digits.

4 Overview of SIM Application Toolkit

The SIM Application Toolkit provides mechanisms which allow applications, existing in the [UICC-SIM](#), to interact and operate with any ME which supports the specific mechanism(s) required by the application.

If class "a" is supported, a [UICC-SIM](#) supporting SIM Application Toolkit shall be able to communicate with the additional card(s) and get information about the additional reader(s) via the ME.

The following mechanisms have been defined. These mechanisms are dependent upon the commands and protocols relevant to SIM Application Toolkit in TS 51.011 [20].

4.1 Profile Download

Profile downloading provides a mechanism for the ME to tell the [UICC-SIM](#) what it is capable of. The ME knows what the [UICC-SIM](#) is capable of through the SIM Service Table and EF_{PHASE}.

4.2 Proactive [UICC-SIM](#)

Proactive [UICC-SIM](#) gives a mechanism whereby the [UICC-SIM](#) can initiate actions to be taken by the ME. In addition to the actions listed in TS 102 223 [37], the SAT is extended with the following actions:

- sending a SS control or USSD string;

4.3 Data download to ~~UICC~~SIM

Data downloading to the ~~UICC~~SIM uses either dedicated commands (the transport mechanisms of SMS point-to-point and Cell Broadcast) or the Bearer independent protocol. Transferral of information over the ~~UICC~~SIM-ME interface uses the ENVELOPE command.

4.4 Menu selection

See TS 102 223 [37].

4.5 Call control by SIM

When this service is activated by the SIM, all dialled digit strings, supplementary service control strings and USSD strings are first passed to the SIM before the ME sets up the call, the supplementary service operation or the USSD operation. The ME shall also pass to the SIM at the same time its current serving cell. The SIM has the ability to allow, bar or modify the call, the supplementary service operation or the USSD operation. The SIM also has the ability to replace a call request, a supplementary service operation or a USSD operation by another call request or supplementary service operation or USSD operation. For example, a call request can be replaced by a supplementary service operation or a USSD operation, and vice-versa.

4.6 MO Short Message control by SIM

When this service is activated by the SIM, all MO short messages are first passed to the SIM before the ME sends the short message. The ME shall also pass to the SIM at the same time its current serving cell. The SIM shall have the ability to allow the sending, bar the sending or modify the destination address of the short message before sending it.

4.7 Event download

See TS 102 223 [37].

4.8 Security

Applications designed using the features in this specification may require methods to ensure data confidentiality, data integrity, and data sender validation, or any subset of these. Requirements for these mechanisms are defined in clause 15.

4.9 Multiple card

See TS 102 223 [37].

4.10 Timer Expiration

See TS 102 223 [37].

4.11 Bearer Independent Protocol

See TS 102 223 [37].

5 Profile download

5.1 Procedure

The profile download instruction is sent by the ME to the [UICC/SIM](#) as part of the [UICC/SIM](#) initialization procedure. This procedure is specified in TS 51.011 [20]. The profile sent by the ME shall state the facilities relevant to SIM Application Toolkit that are supported by the ME.

See additional details in TS 102 223 [37].

5.2 Structure and coding of TERMINAL PROFILE

Direction: ME to [UICC/SIM](#)

The command header is specified in TS 51.011 [20].

Command parameters/data:

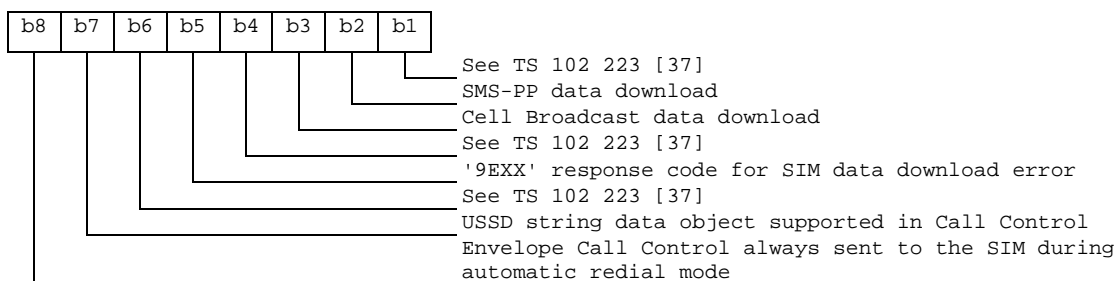
Description	Section	M/O	Length
Profile	-	M	lgth

- Profile:
Contents: The list of SIM Application Toolkit facilities that are supported by the ME.

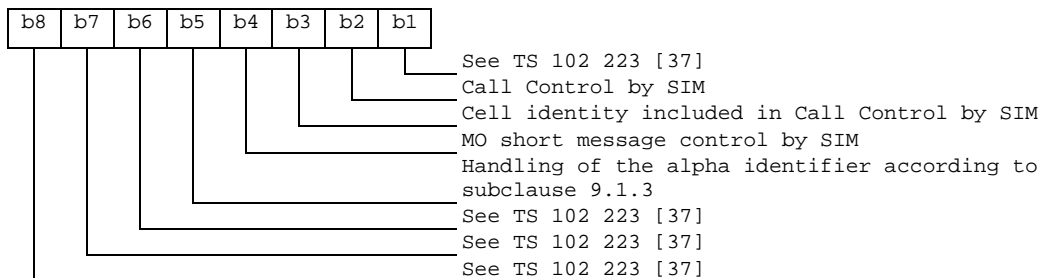
Coding:

- 1 bit is used to code each facility:
- bit = 1: facility supported by ME
- bit = 0: facility not supported by ME

First byte (Download):

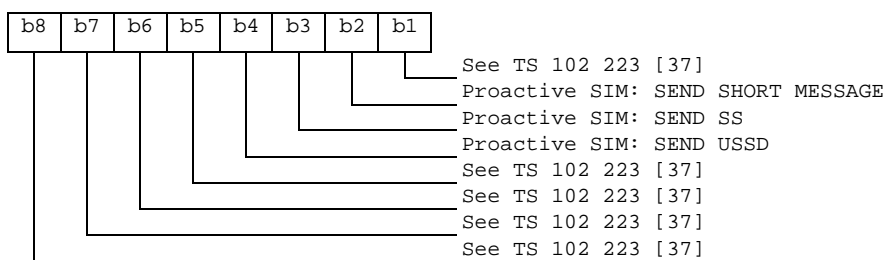


Second byte (Other):



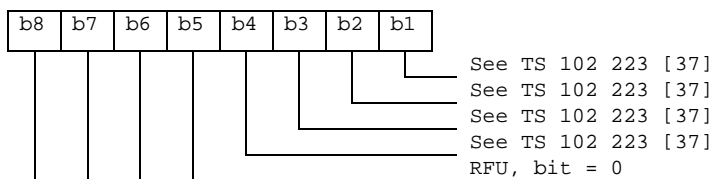
Third byte (Proactive SIM): See TS 102 223 [37]

Fourth byte (Proactive SIM):



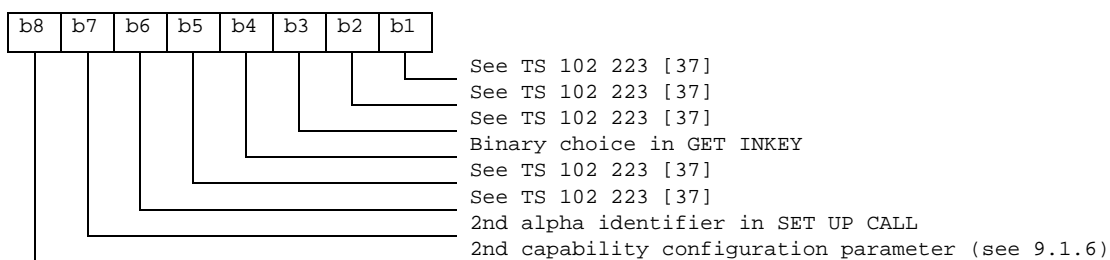
Fifth byte (Event driven information): see TS 102 223 [37]

Sixth byte (Event driven information extensions):

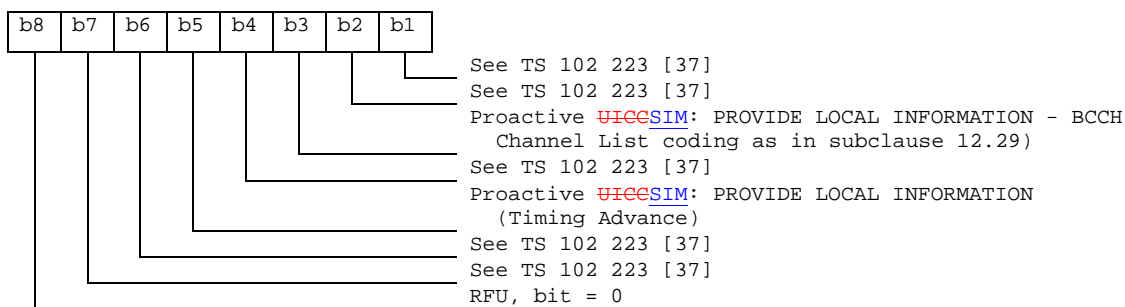


Seventh byte (Multiple card proactive commands) for class "a": see TS 102 223 [37]

Eighth byte (Proactive SIM):



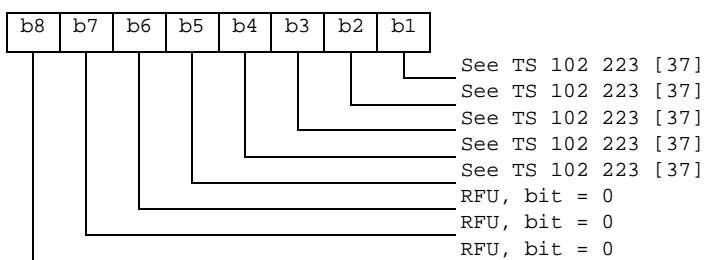
Ninth byte:



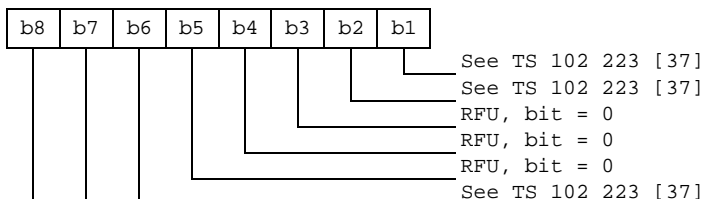
Tenth byte (Soft keys support): see TS 102 223 [37]

Eleventh byte (Soft keys information): see TS 102 223 [37]

Twelfth byte (Bearer Independent protocol proactive commands (class "e")):



Thirteenth byte (Bearer Independent protocol supported bearers (class "e")):



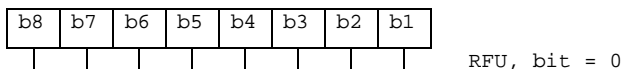
Fourteenth byte (Screen height): see TS 102 223 [37]

Fifteenth byte (Screen width): see TS 102 223 [37]

Sixteenth byte (Screen effects): see TS 102 223 [37]

Seventeenth byte: (Bearer independent protocol supported transport interface) for class "e": see TS 102 223 [37]

Eighteenth byte: (Reserved):



Nineteenth byte: (reserved for TIA/EIA-136 facilities): see TS 102 223 [37]

Subsequent bytes: see TS 102 223 [37]

Response parameters/data: None.

5.3 Definition of display parameters in Profile download

See TS 102 223 [37].

6 Proactive ~~UICC~~SIM

6.1 Introduction

TS 51.011 [20] defines the communication protocols between the ME and the ~~UICC~~SIM, and defines a mechanism to transport "proactive" commands using these protocols. The SIM can issue a variety of commands through this mechanism, given in alphabetical order:

- **CLOSE CHANNEL**, which requests the ME to close the specified data channel (if class "e" is supported).
- **DISPLAY TEXT**, which displays text or an icon on screen. A high priority is available, to replace anything else on screen.
- **GET CHANNEL STATUS**, which requests the ME to return the current status of all available data channel(s) (if class "e" is supported).
- **GET INKEY**, which sends text or an icon to the display and requests a single character response in return. It is intended to allow a dialogue between the [UICC/SIM](#) and the user, particularly for selecting an option from a menu.
- **GET INPUT**, which sends text or an icon to the display and requests a response in return. It is intended to allow a dialogue between the [UICC/SIM](#) and the user.
- **GET READER STATUS**, which gives information about the additional reader(s) and inserted card(s) (Card x state, e.g. powered on or not, Card x Presence), if class "a" is supported.
- **LANGUAGE NOTIFICATION**, which allows the [UICC/SIM](#) to notify the ME about the currently used language in text strings issued by the SIM Application Toolkit application.
- **LAUNCH BROWSER**, which requests a browser inside a browser enabled ME to interpret the content corresponding to a URL.
- **MORE TIME**, which does not request any action from the ME. The ME is required to respond with TERMINAL RESPONSE (OK) as normal - see below. The purpose of the MORE TIME command is to provide a mechanism for the SIM Application Toolkit task in the [UICC/SIM](#) to request more processing time.
- **OPEN CHANNEL**, which requests the ME to open a data channel with parameters indicated in the command (if class "e" is supported.)
- **PERFORM CARD APDU**, which requests the ME to send an APDU command to the additional card, if class "a" is supported. This command is compatible with any protocol between the ME and the additional card.
- **PLAY TONE**, which requests the ME to play a tone in its earpiece, ringer, or other appropriate loudspeaker.
- **POLL INTERVAL**, which negotiates how often the ME sends STATUS commands to the [UICC/SIM](#) during idle mode. Polling is disabled with POLLING OFF. Use of STATUS for the proactive [UICC/SIM](#) is described in TS 51.011 [20].
- **POWER OFF CARD**, which closes the session with the additional card, if class "a" is supported.
- **POWER ON CARD**, which initiates a session with the additional card and returns all the ATR bytes, if class "a" is supported.
- **PROVIDE LOCAL INFORMATION** which requests the ME to pass local information to the [UICC/SIM](#), for example the mobile country and network codes (MCC + MNC) of the network on which the user is registered.
- **RECEIVE DATA**, which requests the ME to return to the [UICC/SIM](#) data received on the specified channel (if class "e" is supported).
- **REFRESH**, which requests the ME to carry out a [UICC/SIM](#) initialization according to TS 51.011 , and/or advises the ME that the contents or structure of EFs on the [UICC/SIM](#) have been changed. The command also makes it possible to restart a card session by resetting the [UICC/SIM](#).
- **RUN AT COMMAND**, which will convey an AT Command to the ME, and cause the response to the AT Command to be returned to the [UICC/SIM](#).
- **SELECT ITEM**, where the [UICC/SIM](#) supplies a list of items, and the user is expected to choose one. The ME presents the list in an implementation-dependent way.
- **SEND DATA**, which requests the ME to send on the specified channel data provided by the [UICC/SIM](#) (if class "e" is supported).
- **SEND DTMF**, which requests the ME to send DTMF tone(s) during an established call.

- **SEND SHORT MESSAGE**, which sends a short message or SMS-COMMAND to the network.
- **SEND SS**, which sends an SS request to the network.
- **SEND USSD**, which sends a USSD string to the network.
- **SET UP CALL**, of which there are three types:
 - set up a call, but only if not currently busy on another call;
 - set up a call, putting all other calls (if any) on hold;
 - set up a call, disconnecting all other calls (if any);
- **SET UP EVENT LIST** where the **UICC/SIM** supplies a list of events which it wants the ME to provide details of when these events happen.
- **SET UP IDLE MODE TEXT**, which supplies a text string to be used by the ME as stand-by mode text.
- **SET UP MENU**, where the **UICC/SIM** supplies a list of items to be incorporated into the ME's menu structure.
- **TIMER MANAGEMENT**, which requests the ME to manage a timer in a way described in the command (start, deactivate and get the current value) and, in the case of starting a timer, for a duration indicated in the command.

The ME tells the **UICC/SIM** if the command was successful or not using the command result procedure defined in subclause 6.7. Responsibility for what happens after that (whether to repeat the command, try another one immediately, try again sometime later, or not to try again at all) lies with the SIM application. However, the SIM application needs to know why the command failed, so the ME provides the **UICC/SIM** with the result of the command.

Results are grouped into three main types:

- OK.
- Temporary problem. These results are further broken down into types of temporary problems, and specific causes. Generally, they indicate to the **UICC/SIM** that it may be worth trying again.
- Permanent problem. These results are again further broken down into types of permanent problems, and specific causes. Generally, they indicate to the **UICC/SIM** that it is not worth trying again during this GSM session.

If the **UICC/SIM** issues an instruction to the ME to initiate a Mobile Originated transaction (e.g. SEND SMS, SEND USSD or SEND DTMF), then unless explicitly stated elsewhere in the present document or in TS ~~44.011~~ [51.011](#) [14], the content supplied by the **UICC/SIM** for onward transmission by the ME shall not be altered by the ME.

6.2 Identification of proactive **UICC/SIMs** and of ME support

See TS 102 223 [37].

6.3 General procedure

See TS 102 223 [37].

6.4 Proactive SIM commands and procedures

6.4.1 DISPLAY TEXT

See TS 102 223 [37].

6.4.2 GET INKEY

See TS 102 223 [37].

6.4.3 GET INPUT

See TS 102 223 [37].

6.4.4 MORE TIME

See TS 102 223 [37].

6.4.5 PLAY TONE

See TS 102 223 [37].

6.4.6 POLL INTERVAL

See TS 102 223 [37].

6.4.7 REFRESH

The purpose of this command is to enable the ME to be notified of the changes to the SIM configuration that have occurred as the result of a SIM application activity. It is up to the SIM application to ensure that this is done correctly.

The command supports five different modes:

- SIM Initialization. This mode tells the ME to carry out SIM initialization as it is defined in TS ~~11.11~~51.011 [20], starting after the CHV1 verification procedure. The ME shall not reset the SIM electrically.
- File Change Notification. This mode advises the ME of the identity of the EFs that have been changed (in structure and/or contents) in the SIM. This information can be used by the ME if there is an image of SIM EFs (e.g. the ADN file) in the ME's memory, to determine whether it needs to update this image.
- SIM Initialization and File Change Notification. This is a combination of the first two modes above.
- SIM Initialization and Full File Change Notification. This mode causes the ME to perform the SIM initialization procedure of the first mode above and advises the ME that several EFs have been changed (in structure or contents) in the SIM. If there is an image of SIM EFs in the ME's memory, the ME shall completely update this image.
- SIM Reset. This mode causes the ME to run the GSM session termination procedure and to deactivate the SIM in accordance with TS ~~11.11~~51.011 [20]. Subsequently, the ME activates the SIM again and starts a new card session. In case of a 3 Volt technology ME, the ME shall restart the SIM with the same supply voltage as in the previous session, if the ME can ensure that the SIM has not been changed in between. Otherwise, the ME shall perform the supply voltage switching in accordance with TS 11.12 [21]. The ME shall not send the TERMINAL RESPONSE; this is an exception from the normal procedure, where TERMINAL RESPONSE is sent after completion of the command. The SIM Application shall interpret a new activation of the contacts of the SIM as an implicit TERMINAL RESPONSE. The SIM Reset mode is used when a SIM application requires ATR or complete SIM initialization procedures to be performed. SIM Applications should take into account that early implementations of SIM Application Toolkit in some MEs may send a TERMINAL RESPONSE after performing the REFRESH command involving resetting the SIM electrically.

If the ME performs the REFRESH command successfully for only those EFs indicated in the mode, the ME shall inform the SIM using TERMINAL RESPONSE (OK), after it has completed its refreshing.

For REFRESH commands with mode other than "SIM Reset", it is permissible for the ME, as part of its execution of the REFRESH command, to read EFs in addition to those notified by the SIM, or to perform a SIM initialisation, provided that the procedure executed wholly encompasses the mode requested by the SIM. The ME shall not electrically reset the SIM. If the ME does the refreshing successfully, it shall inform the SIM using TERMINAL RESPONSE (Refresh performed with additional EFs read), after the ME has completed its refreshing. It should be noted that reading additional EFs will lengthen the refresh procedure.

If the ME receives a REFRESH command while in a state where execution of the command would be unacceptable, upsetting the current user operation (e.g. notification during a call that the IMSI has changed), the ME shall inform the SIM using TERMINAL RESPONSE (ME currently unable to process command - currently busy on call) or TERMINAL RESPONSE (ME currently unable to process command - screen is busy) as appropriate.

NOTE: Many MEs copy an image of the SIM's memory to the ME at initialization to speed up access to these fields during a GSM session. One of the purposes of this coding of the REFRESH command is to enable MEs to change such an image efficiently.

If, on receipt of the REFRESH command, the ME replies that it is busy (e.g. in call or navigating menus), the toolkit application may shorten the polling interval utilising the POLL INTERVAL command in order to resend the REFRESH command more frequently.

It is recommended for the ME to minimise the use of sending temporary problem TERMINAL RESPONSE, as during the period between the SIM issuing a REFRESH command and the ME performing the refresh procedure, there may be inconsistencies between data held in the ME and in the SIM. However, responsibility for retrying of all pro-active commands lies with the SIM Application.

6.4.7.1 EF_{IMSI} changing procedure

When EF_{IMSI} is changed via Data Download or a SIM Toolkit application and a REFRESH command is issued by the SIM the following rules apply to the SIM Toolkit and ME:

- SIM Initialization. This command shall not be used if EF_{IMSI} is changed, as the behaviour of the MS is unpredictable.
- File Change Notification. This command shall not be used if EF_{IMSI} is changed, as the behaviour of the MS is unpredictable.
- SIM Initialization and File Change Notification. If EF_{IMSI} is part of the file change notification, the ME shall invoke the MM Restart procedure defined in 03.22 [28].
- SIM Initialization and Full File Change Notification. The ME shall invoke the MM Restart procedure defined in 03.22 [28].
- SIM Reset. Normal SIM Reset procedure is carried out.

If EF_{IMSI} is to be updated, neither EF_{IMSI} nor EF_{LOCI} shall be updated in the SIM before the phase request procedure has been executed by the ME.

6.4.8 SET UP MENU

See TS 102 223 [37].

6.4.9 SELECT ITEM

See TS 102 223 [37].

6.4.10 SEND SHORT MESSAGE

This command requests the ME to send a short message.

Two types are defined in TS 102 223 [37] and apply as follows within the context of this specification:

- a short message to be sent to the network in an SMS-SUBMIT message, or an SMS-COMMAND message, where the user data can be passed transparently;
- a short message to be sent to the network in an SMS-SUBMIT message where the text needs to be packed by the ME.

Where the text has been packed, the text string provided by the ~~UECSIM~~ shall not be longer than 160 characters. It shall use the SMS default 7-bit coded alphabet, packed into 8-bit octets, in accordance with TS 23.038 [5]. The data coding indication contained in the Data Coding Scheme byte shall be "default alphabet". The text length (which is part

of the SMS TPDU) given by the [UICC/SIM](#) shall state the number of 7-bit characters in the text string. The command details shall indicate "packing not required".

8-bit data Short Messages may be sent by the [UICC/SIM](#). The command shall indicate packing not required. The data coding indication contained in the Data Coding Scheme byte shall be "8 bit". The string shall not be longer than 140 bytes, and the length (in SMS TPDU) shall state the number of bytes in the string.

If UCS2 is supported by the ME, 16-bit data Short Messages may be sent by the [UICC/SIM](#). The text string provided by the [UICC/SIM](#) shall not be longer than 70 characters. It shall use the 16-bit UCS2 alphabet format, in accordance with TS 23.038 [5]. The text length (which is part of the SMS TPDU) given by the [UICC/SIM](#) shall state the number of 16-bit characters in the text string. The command details shall indicate "packing not required".

SMS commands may be sent by the [UICC/SIM](#). These shall count as packed text message. The SMS TPDU from the [UICC/SIM](#) shall indicate SMS-COMMAND. The command details shall indicate "packing not required".

Where packing by the ME is required, the text string provided by the [UICC/SIM](#) shall not be longer than 160 characters. It shall use the SMS default 7-bit coded alphabet as defined in TS 23.038 [5] with bit 8 set to 0. The text length given by the [UICC/SIM](#) shall state the number of characters in the text string. The ME shall pack the text string and modify the Data Coding Scheme byte to "default alphabet" in accordance with TS 23.038 [5] before submitting the message to the network.

Optionally, the [UICC/SIM](#) may include in this command an alpha identifier. See TS 102 223 [37] for the use of this alpha identifier.

If the ME is capable of SMS-MO, then it shall send the data as a Short Message TPDU to the destination address. The ME shall give the result to the SIM using TERMINAL RESPONSE (indicating successful or unsuccessful transmission of the Short Message) after receiving an SMS RP-ACK or RP-Error from the network. If an alpha identifier was provided by the SIM, the ME should not give any information to the user at the reception of SMS RP-ACK or RP-Error.

If the Short Message TPDU is unsuccessfully received by the network (e.g. the reception of a CP-ERROR), the ME shall inform the [UICC/SIM](#) using TERMINAL RESPONSE (network currently unable to process command). If a null alpha identifier was provided by the [UICC/SIM](#), the ME should not give any information to the user at the unsuccessful network reception.

6.4.11 SEND SS

Upon receiving this command, the ME shall decide if it is able to execute the command. Examples are given below, but the list is not exhaustive:

- if the command is rejected because the ME is busy on an SS transaction, the ME informs the [UICC/SIM](#) using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction);
- if the command is rejected because the ME is busy on a USSD transaction, the ME shall inform the [UICC/SIM](#) using TERMINAL RESPONSE (ME unable to process command - currently busy on USSD transaction);
- if the command is rejected because the ME does not support that Supplementary Service, the ME informs the [UICC/SIM](#) using TERMINAL RESPONSE (Command beyond ME's capabilities).

If the ME is able to send the SS request, the ME shall:

- send the SS request immediately, without need to alert the user first;
- optionally, the [UICC/SIM](#) may include in this command an alpha-identifier. The use of this alpha-identifier by the ME is described below:
 - if the alpha identifier is provided by the [UICC/SIM](#) and is not a null data object, the ME shall use it to inform the user. This is also an indication that the ME should not give any other information to the user on the fact that the ME is sending a SS request. If an icon is provided by the [UICC/SIM](#), the icon indicated in the command may be used by the ME to inform the user, in addition to, or instead of the alpha identifier, as indicated with the icon qualifier (see subclause 6.5.4);
 - if the alpha identifier is provided by the [UICC/SIM](#) and is a null data object (i.e. length = '00' and no value part), this is an indication that the ME should not give any information to the user on the fact that the ME is sending an SS request;

- if the alpha identifier is not provided by the [UICC-SIM](#), the ME may give information to the user concerning what is happening.
- once an SS Return Result message not containing an error has been received from the network, the ME shall inform the [UICC-SIM](#) that the command has been successfully executed, using TERMINAL RESPONSE. This command shall include the contents of SS Return Result as additional data.
If a null alpha identifier was provided by the [UICC-SIM](#), the ME should not give any information to the user at the reception of an SS Return Result message;
- if the command is rejected because the network cannot support or is not allowing the Supplementary Service request, the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (SS Return Result error code).
If a null alpha identifier was provided by the [UICC-SIM](#), the ME should not give any information to the user at the reception of a SS Return Result message;
- if the SS request is unsuccessfully received by the network, the ME shall inform the [UICC-SIM](#) using TERMINAL RESPONSE (network currently unable to process command), and not retry to send the request.
If a null alpha identifier was provided by the [UICC-SIM](#), the ME should not give any information to the user at the reception of a SS Return Result message.

If the ME supports the Last Number Dialed service, the ME shall not store in EF_{LND} the supplementary service control string sent by the [UICC-SIM](#) in this command.

The supplementary service control string included in the SEND SS proactive command shall not be checked against those of the FDN list, even if the Fixed Dialling Number service is enabled.

6.4.12 SEND USSD

Upon receiving this command, the ME shall decide if it is able to execute the command. Examples are given below, but the list is not exhaustive:

- If the command is rejected because the ME is busy on a USSD transaction, the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (ME unable to process command - currently busy on USSD transaction);
- If the command is rejected because the ME is busy on a SS transaction, the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction).

If the ME is able to send the USSD request, the ME shall:

- send the USSD immediately, without need to alert the user first;
- optionally, the [UICC-SIM](#) may include in this command an alpha-identifier. The use of this alpha-identifier by the ME is described below:
 - If the alpha identifier is provided by the [UICC-SIM](#) and is not a null data object, the ME shall use it to inform the user. This is also an indication that the ME should not give any other information to the user on the fact that the ME is sending a USSD request. If an icon is provided by the [UICC-SIM](#), the icon indicated in the command may be used by the ME to inform the user, in addition to, or instead of the alpha identifier, as indicated with the icon qualifier (see subclause 6.5.4).
 - If the alpha identifier is provided by the [UICC-SIM](#) and is a null data object (i.e. length = '00' and no value part), this is an indication that the ME should not give any information to the user on the fact that the ME is sending a USSD request.
 - If the alpha identifier is not provided by the [UICC-SIM](#), the ME may give information to the user concerning what is happening.
- once the USSD transaction is initiated, a dialogue between the network and the user may occur which involves the MMI of the ME. If an alpha identifier was initially provided by the [UICC-SIM](#), this alpha identifier may be discarded during this dialogue;
- once a RELEASE COMPLETE message containing the USSD Return Result message not containing an error has been received from the network, the ME shall inform the [UICC-SIM](#) that the command has been successfully executed, using TERMINAL RESPONSE. This command shall include the text contained in the USSD Return

Result in a Text String data object. If a null alpha identifier was provided by the [UICC-SIM](#), the ME should not give any information to the user at the reception of a USSD Return Result message;

- if the MS clears the transaction by sending a RELEASE COMPLETE upon request of the user, the ME shall inform the [UICC-SIM](#) using TERMINAL RESPONSE (USSD transaction terminated by user);
- if the USSD operation is rejected because the network cannot support or is not allowing mobile initiated USSD, the ME informs the SIM using TERMINAL RESPONSE (USSD Return Result error code). If a null alpha identifier was provided by the [UICC-SIM](#), the ME should not give any information to the user at the reception of a USSD Return Result message;
- if the USSD request is unsuccessfully received by the network, the ME shall inform the [UICC-SIM](#) using TERMINAL RESPONSE (network currently unable to process command), and not retry to send the request. If a null alpha identifier was provided by the [UICC-SIM](#), the ME should not give any information to the user at the reception of a USSD Return Result message.

6.4.13 SET UP CALL

This command is issued by the [UICC-SIM](#) to request a call set up. The procedure is defined in TS 102 223 [37], except when stated otherwise in the present document.

If the Fixed Dialling Number service is enabled, the number included in the SET UP CALL proactive command shall not be checked against those of the FDN list.

Upon receiving this command, the ME shall decide if it is able to execute the command. Examples are given below, but the list is not exhaustive:

- If the command is rejected because the ME is busy on another call, the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (ME unable to process command - currently busy on call);
- If the command is rejected because the ME is busy on a SS transaction, the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction);
- If the command is rejected because the ME cannot support Call Hold, because the ME does not support Called Party Subaddress or because the ME does not support the capability configuration parameters requested by the [UICC-SIM](#), the ME informs the SIM using TERMINAL RESPONSE (Command beyond ME's capabilities);
- If the command is rejected because the network cannot support or is not allowing Call Hold of a multi party call, the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (SS Return Result error code).
- If the command is rejected because the network cannot support or is not allowing Call Hold of a single call, the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (Network currently unable to process command).

If the ME is able to set up the call on the serving network, the ME shall:

- Alert the user (as for an incoming call). This is the confirmation phase.
- Optionally, the [UICC-SIM](#) may include in this command an alpha-identifier. The use of this alpha-identifier by the ME is described below :

If Second Alpha Identifier in SET UP CALL is supported by ME:

- If the first alpha identifier is provided by the [UICC-SIM](#) and is not a null data object, the ME shall use it during the user confirmation phase. This is also an indication that the ME should not give any other information to the user during the user confirmation phase. If an icon is provided by the [UICC-SIM](#), the icon indicated in the command may be used by the ME to inform the user, in addition to, or instead of the alpha identifier, as indicated with the icon qualifier (see subclause 6.5.4).
- If the first alpha identifier is not provided by the [UICC-SIM](#) or is a null data object (i.e. length = '00' and no value part), the ME may give information to the user.

- If the second alpha identifier (i.e the one after the mandatory address object) is provided by the [UICC-SIM](#) and is not a null data object, the ME shall use it during the call set-up phase and during the call. If an icon is provided by the [UICC-SIM](#), the icon indicated in the command may be used by the ME to inform the user, in addition to, or instead of the alpha identifier, as indicated with the icon qualifier (see subclause 6.5.4).
- If the second alpha identifier is not provided by the [UICC-SIM](#) or is a null data object (i.e. length = '00' and no value part), the ME may give information to the user.

If Second Alpha Identifier in SET UP CALL is not supported by ME:

- If the alpha identifier is provided by the [UICC-SIM](#), the ME shall use it to inform the user, at the latest when the user is alerted. The ME may also use it to inform the user during the call set-up. If an icon is provided by the [UICC-SIM](#), the icon indicated in the command may be used by the ME to inform the user, in addition to, or instead of the alpha identifier, as indicated with the icon qualifier (see subclause 6.5.4).
- If the user accepts the call, the ME shall then set up a call to the destination address given in the response data, with the relevant capability configuration parameters and called party subaddress (if provided by the SIM);
- If the user does not accept the call, or rejects the call, then the ME informs the [UICC-SIM](#) using TERMINAL RESPONSE (user did not accept the proactive command). The operation is aborted;
- If the user has indicated the need to end the proactive [UICC-SIM](#) session, the ME shall send a TERMINAL RESPONSE with "Proactive [UICC-SIM](#) session terminated by the user" result value.
- Optionally, during call set-up, the ME can give some audible or display indication concerning what is happening;
- Once a CONNECT message has been received from the network (defined in TS 04.08), the ME shall inform the [UICC-SIM](#) that the command has been successfully executed, using TERMINAL RESPONSE. Operation of the call then proceeds as normal.

6.4.14 POLLING OFF

See TS 102 223 [37].

6.4.15 PROVIDE LOCAL INFORMATION

This command requests the ME to send current local information to the [UICC-SIM](#). At present, this information is restricted to:

- location information: the mobile country code (MCC), mobile network code (MNC), location area code (LAC) and cell ID of the current serving cell;
- the IMEI of the ME;
- the Network Measurement Results and the BCCH channel list;
- the current date, time and time zone;
- the current ME language setting;
- and the Timing Advance.

The ME shall return the requested local information within a TERMINAL RESPONSE. Where location information or Network Measurement Results has been requested and no service is currently available, then the ME shall return TERMINAL RESPONSE (ME currently unable to process command - no service). Where location information or Network Measurement Results has been requested and the ME is on limited service (e.g. emergency calls only), the ME shall return the data requested in the TERMINAL RESPONSE with the general result (Limited Service).

If the NMR are requested and a call is in progress, the value of all the returned parameters provided by the ME in the response to the command will be valid. The NMR returned when a call is in progress from MEs supporting multiband operation, shall be according to the value of the multiband reporting parameter as defined in TS 04.08 [8]. If a call is not in progress (i.e. ME is in idle mode) some of the returned parameters (e.g. RXQUAL) may be invalid. In idle mode, MEs supporting multiband operation shall ignore the value of the multiband reporting parameter and the NMR returned shall be as defined in TS 04.08 [8] when the multiband reporting parameter equals zero.

NOTE 1: When in idle mode, the only information element on which it is possible to rely on is the RXLEV-FULL-SERVING-CELL, which contains the value of the received signal strength on the BCCH of the current serving cell.

NOTE 2: Network Measurement Results are defined in TS 04.08 [8] as Measurement Results.

The ME shall return the current date and time as set by the user. If available, the ME shall also return the time zone known from the network with the NITZ feature (see TS 22.042 [26]). If the time zone information is not available, the ME shall return 'FF' for this element.

If language setting is requested, the ME shall return the currently used language.

If the Timing Advance is requested, the ME shall return the timing advance value that was received from the BTS during the last active dedicated connection (e.g. for call or SMS). Timing advance is defined in TS 04.08 [8]. An ME supporting the Timing Advance feature shall be able to store the last value of timing advance. In addition to the timing advance value, the ME shall return its current status (i.e. ME is in idle mode or not) in order for the application to be aware of potential misinterpretation of the timing advance value. Caution should be taken if using the Timing Advance value for distance measurement as reflections from the external environment (buildings etc.) may affect the accuracy.

6.4.16 SET UP EVENT LIST

See TS 102 223 [37].

6.4.17 PERFORM CARD APDU

See TS 102 223 [37].

6.4.18 POWER OFF CARD

See TS 102 223 [37].

6.4.19 POWER ON CARD

See TS 102 223 [37].

6.4.20 GET READER STATUS

See TS 102 223 [37].

6.4.21 TIMER MANAGEMENT

See TS 102 223 [37].

6.4.22 SET UP IDLE MODE TEXT

See TS 102 223 [37].

6.4.23 RUN AT COMMAND

See TS 102 223 [37].

6.4.24 SEND DTMF

See TS 102 223 [37].

6.4.25 LANGUAGE NOTIFICATION

See TS 102 223 [37].

6.4.26 LAUNCH BROWSER

Upon receiving this command, the ME shall decide if it is able to execute the command. Examples are given below, but the list is not exhaustive:

- if the command is rejected because the browser on the ME is busy or not available, the ME informs the SIM using TERMINAL RESPONSE (ME unable to process command – browser unavailable);
- if the command is rejected because the ME is busy on a SS transaction, the ME informs the SIM using TERMINAL RESPONSE (ME unable to process command – ME currently unable to process command);
- if the command is rejected because the bearer provided in the command is not available, the ME informs the SIM using TERMINAL RESPONSE (ME unable to process command – bearer unavailable).

If the ME is able to execute the command:

- the ME shall inform the SIM that the command has been successfully taken into account, using TERMINAL RESPONSE;
- the SIM shall end the proactive session;
- the ME shall request content using the URL.

If the gateway addresses and/or the bearer objects are present in the command and are non null data objects, then the browser shall use these data to request content using the URL. If the gateway addresses, bearer objects, Provisioning File Reference, Browser Identity or URL are null objects or missing, then the ME shall use the default values, i.e. the provisioning data defined in [32] for example.

The way the ME requests content using the URL is out of the scope of the present document. This is specified in RFC 1738 [32] Annex K for example.

NOTE: There is a maximum size for the URL that can be given in argument of this proactive command.

6.4.27 OPEN CHANNEL

6.4.27.1 OPEN CHANNEL for CSD

This subclause applies only if class "e" is supported.

This command is issued by the [UICC/SIM](#) to request a channel opening. The procedure is defined in TS 102 223 [37], except when stated otherwise in the present document.

The [UICC/SIM](#) may request the use of an automatic reconnection mechanism according to TS 22.001 [38].

Upon receiving this command, the ME shall decide if it is able to execute the command. In addition to the examples given in TS 102 223 [37] the following example applies:

- If the command is rejected because the ME is busy on a SS transaction, the ME informs the [UICC/SIM](#) using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction). The operation is aborted;

6.4.27.2 OPEN CHANNEL related to GPRS

The procedures defined in TS 102 223 [37] apply, understanding that:

- "packet data service" means GPRS,
- "activation of packet data service" means activation of a PDP context.

Upon receiving this command, the ME shall decide if it is able to execute the command. In addition to the examples given in TS 102 223 [37] the following example applies:

- If the command is rejected because the class B ME is busy on a SS transaction, the ME informs the ~~UECSIM~~ using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction). The operation is aborted;

6.4.27.3 OPEN CHANNEL related to Default (network) Bearer

This subclause applies only if class "e" is supported.

Upon receiving this command, the ME shall decide if it is able to execute the command. The SIM shall indicate whether the ME should establish the link immediately or upon receiving the first transmitted data (on demand).

The ME is responsible for providing the parameters necessary to establish the connection (e.g. APN for GPRS, Address for CSD, ...).

Upon receiving this command, the ME shall decide if it is able to execute the command. Example behaviours are listed in clauses for the selected bearer.

The ME shall inform the SIM that the command has been successfully executed using TERMINAL RESPONSE:

- If immediate connection is requested (link establishment or PDP context activation), the ME allocates buffers, sets up the link or activates the PDP context (depending of the kind of connection), and informs the SIM and reports the channel identifier using TERMINAL RESPONSE (Command performed successfully);
- If on demand connection is requested (link establishment or PDP context activation), the ME allocates buffers, informs the SIM and reports the channel identifier using TERMINAL RESPONSE (Command performed successfully);

If the ME is able to set up the channel on the serving network, the ME shall follow the different actions of the chosen bearer (see appropriate sections).

6.4.28 CLOSE CHANNEL

See TS 102 223 [37].

6.4.29 RECEIVE DATA

See TS 102 223 [37].

6.4.30 SEND DATA

See TS 102 223 [37].

6.4.31 GET CHANNEL STATUS

See TS 102 223 [37].

6.5 Common elements in proactive SIM commands

6.5.1 Command number

See TS 102 223 [37].

6.5.2 Device identities

See TS 102 223 [37].

Device Identities are given in clause 14 of the present document.

6.5.3 Alpha identifier

See TS 102 223 [37].

6.5.4 Icon identifiers

See TS 102 223 [37].

6.6 Structure of proactive SIM commands

The general structure of proactive ~~UICC~~SIM commands using TLV objects is described in Annex D.

6.6.1 DISPLAY TEXT

See TS 102 223 [37].

6.6.2 GET INKEY

See TS 102 223 [37].

6.6.3 GET INPUT

See TS 102 223 [37].

6.6.4 MORE TIME

See TS 102 223 [37].

6.6.5 PLAY TONE

See TS 102 223 [37].

6.6.6 POLL INTERVAL

See TS 102 223 [37].

6.6.7 SET-UP MENU

See TS 102 223 [37].

6.6.8 SELECT ITEM

See TS 102 223 [37].

6.6.9 SEND SHORT MESSAGE

Description	Section	M/O	Min	Length
Proactive SIM command Tag	13.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	12.6	M	Y	A
Device identities	12.7	M	Y	B
Alpha identifier	12.2	O	N	C
Address	12.1	O	N	D
SMS TPDU (SMS-SUBMIT or SMS-COMMAND)	12.13	M	Y	E
Icon identifier	12.31	O	N	F

The address data object holds the RP_Destination_Address of the Service Centre. If no RP_Destination_Address is transferred, then the ME shall insert the default Service Centre address.

6.6.10 SEND SS

Description	Section	M/O	Min	Length
Proactive SIM command Tag	13.2	M	Y	1
Length (A+B+C+D+E)	-	M	Y	1 or 2
Command details	12.6	M	Y	A
Device identities	12.7	M	Y	B
Alpha identifier	12.2	O	N	C
SS string	12.14	M	Y	D
Icon identifier	12.31	O	N	E

6.6.11 SEND USSD

Description	Section	M/O	Min	Length
Proactive SIM command Tag	13.2	M	Y	1
Length (A+B+C+D+E)	-	M	Y	1 or 2
Command details	12.6	M	Y	A
Device identities	12.7	M	Y	B
Alpha identifier	12.2	O	N	C
USSD String	12.17	M	Y	D
Icon identifier	12.31	O	N	E

6.6.12 SET UP CALL

See TS 102 223 [37].

6.6.13 REFRESH

Description	Section	M/O	Min	Length
Proactive SIM command Tag	13.2	M	Y	1
Length (A+B+C)	-	M	Y	1 or 2
Command details	12.6	M	Y	A
Device identities	12.7	M	Y	B
File List	12.18	M/O	N	C

For the refresh modes "File Change Notification" and "SIM Initialization and File Change Notification", the SIM shall supply a File List data object, indicating which EFs need to be refreshed. For other modes, inclusion of a File List is optional, and the ME shall ignore it.

6.6.14 POLLING OFF

See TS 102 223 [37].

6.6.15 PROVIDE LOCAL INFORMATION

See TS 102 223 [37].

6.6.16 SET UP EVENT LIST

See TS 102 223 [37].

6.6.17 PERFORM CARD APDU

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

6.6.18 POWER OFF CARD

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

6.6.19 POWER ON CARD

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

6.6.20 GET READER STATUS

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

6.6.21 TIMER MANAGEMENT

See TS 102 223 [37].

6.6.22 SET UP IDLE MODE TEXT

See TS 102 223 [37].

6.6.23 RUN AT COMMAND

This subclause applies only if class "b" is supported.

See TS 102 223 [37].

6.6.24 SEND DTMF COMMAND

See TS 102 223 [37].

6.6.25 LANGUAGE NOTIFICATION

See TS 102 223 [37].

6.6.26 LAUNCH BROWSER

See TS 102 223 [37].

The ME shall ask the user for confirmation using the Alpha Identifier/Icon Identifier (user confirmation phase) if present, when it receives a LAUNCH BROWSER command which requests the existing browser session connected to a new URL or to terminate a browser session.

6.6.27 OPEN CHANNEL

6.6.27.1 OPEN CHANNEL related to a CS bearer

See TS 102 223 [37].

6.6.27.2 OPEN CHANNEL related to GPRS

Description	Section	M/O	Min	Length
Proactive SIM command Tag	13.2	M	Y	1
Length (A+B+C+D+E+F+G+H+I+J+K+L)	-	M	Y	1 or 2
Command details	12.6	M	Y	A
Device identities	12.7	M	Y	B
Alpha identifier	12.2	O	N	C
Icon identifier	12.31	O	N	D
Bearer description	12.52	M	Y	E
Buffer size	12.55	M	Y	F
Network Access Name	12.61	O	N	G
Other address (local address)	12.58	O	N	H
Text String (User login)	12.15	O	N	I
Text String (User password)	12.15	O	N	J
SIM/ME interface transport level	12.59	O	N	K
Data destination address	12.58	O	N	L

The Network Access Name parameter may be requested. The Network Access Name parameter contains an Access Point Name (APN) identifying the Gateway GSN (GGSN) which provides interworking with an external packet data network. If the parameter is not present, the mobile may use the default Access Point Name in the mobile configuration or the default subscription value.

The local address parameter (see 12.58) provides information to the ME necessary to identify the local device. If the parameter is present and length is not null, it provides an IP address that identifies the SAT application in the address area applicable to the PDN. If local address length is null, dynamic local address allocation is required for the SAT application. If parameter is not present, the mobile may use the mobile default local address configuration.

The ME may support a remote access login feature. If supported by the ME, the SIM may provide 'User login' and 'User password' parameters, which can be used for authentication. If only one parameter is present, it is considered as the User Login and the ME shall use default Password configuration if any. If the parameters are not present, the ME shall use default Login/Password configuration if any. If no authentication challenge is requested, the user login and password parameters shall be ignored.

If the SIM/ME interface transport level is present in the command, then the ME shall provide the requested transport layer protocols under the channel and shall use this object containing a set of parameters required to make the transport connection. The data that is exchanged at the SIM/ME interface in the RECEIVE DATA/SEND DATA commands are SDUs. When the SAT application sends an SDU, the transport layer within the ME is in charge to add the transport header to the SDU in order to build the Transport-PDU. When the SAT application requests to receive an SDU, the transport layer within the ME is in charge to remove the transport header of the Transport-PDU, and to forward the SDU to the SAT. If the parameter is not present, the SIM/ME interface is the bearer level (serial link or packet link as defined in TS 27.007 [27]) and the SAT application is in charge of the network and transport layer.

The Data Destination Address is the end point destination address of sent data. This data destination address is requested when a SIM/ME interface transport is present, otherwise it is ignored. The data destination address is a data network address (e.g. IP address).

6.6.27.3 OPEN CHANNEL related to Default (network) Bearer

Description	Section	M/O	Min	Length
Proactive SIM command Tag	13.2	M	Y	1
Length (A+B+C+D+E+F+H+I+J+K+L)	-	M	Y	1 or 2
Command details	12.6	M	Y	A
Device identities	12.7	M	Y	B
Alpha identifier	12.2	O	N	C
Icon identifier	12.31	O	N	D
Bearer description	12.52	M	Y	E
Buffer size	12.55	M	Y	F
Other address (local address)	12.58	O	N	H
Text String (User login)	12.15	O	N	I
Text String (User password)	12.15	O	N	J
SIM/ME interface transport level	12.59	O	N	K
Data destination address	12.58	O	N	L

The local address parameter (see 12.58) provides information to the ME necessary to identify the local device. If the parameter is present and length is not null, it provides an IP address that identifies the SAT application in the address area applicable to the PDN. If local address length is null, dynamic local address allocation is required for the SAT application. If parameter is not present, the mobile may use the mobile default local address configuration.

The ME may support a remote access login feature. If supported by the ME, the SIM may provide 'User login' and 'User password' parameters, which can be used for authentication. If only one parameter is present, it is considered as the User Login and the ME shall use default Password configuration if any. If the parameters are not present, the ME shall use default Login/Password configuration if any. If no authentication challenge is requested, the user login and password parameters shall be ignored.

If the SIM/ME interface transport level is present in the command, then the ME shall provide the requested transport layer protocols under the channel and shall use this object containing a set of parameters required to make the transport connection. The data that is exchanged at the SIM/ME interface in the RECEIVE DATA/SEND DATA commands are SDUs. When the SAT application sends an SDU, the transport layer within the ME is in charge to add the transport header to the SDU in order to build the Transport-PDU. When the SAT application requests to receive an SDU, the transport layer within the ME is in charge to remove the transport header of the Transport-PDU, and to forward the SDU to the SAT. If the parameter is not present, the SIM/ME interface is the bearer level (serial link or packet link as defined in TS 27.007 [27]) and the SAT application is in charge of the network and transport layer.

The Data Destination Address is the end point destination address of sent data. This data destination address is requested when a SIM/ME interface transport is present, otherwise it is ignored. The data destination address is a data network address (e.g. IP address).

6.6.28 CLOSE CHANNEL

See TS 102 223 [37].

6.6.29 RECEIVE DATA

See TS 102 223 [37].

6.6.30 SEND DATA

See TS 102 223 [37].

6.6.31 GET CHANNEL STATUS

See TS 102 223 [37].

6.7 Command results

Once the ME has made its attempt to execute a proactive command from the [UICC/SIM](#), the ME shall inform the [UICC/SIM](#) of the success or otherwise of that command, by using TERMINAL RESPONSE

This procedure is defined in TS 102 223, and applies here except for the following statements.

Successful commands are further defined as:

- Command performed successfully. There were no problems;
- Command performed with partial comprehension. Here the ME receives a command with one or more SIMPLE-TLV data objects that are unrecognized or unexpected, all of which do not have their "comprehension required" flag set (subclause 13.3), but the parent BER-TLV data object still has the minimum set of SIMPLE-TLV data objects required to perform the command;
- Command performed, with missing information. The ME received at least the minimum set of component parts, but did not receive all of the parts that it believed mandatory for the SIM to send;
- Command performed, but modified by call control. This is sent by the ME to indicate that call control modified the type of request indicated in the proactive command, and that the action requested by call control was performed successfully;
- Command performed with modification. This is sent by the ME to indicate that it is unable to process the command using the exact parameters provided by the [UICC/SIM](#). The command is processed with the best possible parameters.

Temporary problems are further defined as:

- ME is currently unable to process the command. Specific causes for this are listed in TS 102 223 [37]; in addition to these, the following causes may be returned within the USAT context:
 - ME currently busy on SS transaction;
 - ME currently busy on USSD operation;

If none of these can be made to apply, a "no cause can be given" value can be used.

- Network is currently unable to process the command. Specific cause values are the cause values given by the network, as defined in TS 04.08 [8].
- In some proactive commands, the ME is required to solicit and receive approval of the user before executing the proactive command. In the case that the user does not give approval for the execution of the proactive command, it shall not be executed by the ME and the terminal response "user did not accept the proactive command" shall be returned by the ME to the [UICC/SIM](#).
- The user cleared down the call, before the call connected (CONNECT received from network, as defined in TS 04.08 [8]) or before the network released the call.
- Action in contradiction with the current timer state. This is where the SIM requests an action for a timer to be taken by the ME and the state of the timer does not allow that action.
- Interaction with call control by [UICC/SIM](#), temporary problem. This is sent by the ME to indicate that call control modified the type of request indicated in the proactive command, and that the action requested by call control encounters a temporary problem.

Permanent problems are defined as in TS 102 223 [37], with the addition of:

- SS Return Error. This is given to the [UICC/SIM](#) when the network returns a SS error in response to a previous SS command. Specific cause values are the same as given by the network in the Return Error message.

- USSD Return Error. This is given to the [UICC-SIM](#) when the network returns a USSD error in response to a previous USSD command. Specific cause values are the same as given by the network in a Return Error message.
- SMS RP-ERROR. This is given to the [UICC-SIM](#) when the network returns an error in response to the ME trying to send a short message. Specific cause values are the same as the cause value of RP-Cause in an RP-ERROR message.
- Error, required values are missing. This is given when the command type is understood by the ME, but it does not receive the minimum set of SIMPLE-TLV data objects that it requires to perform the command. These components are shown by the "Min" column in the command structure definitions.
- Interaction with MO short message control by SIM, permanent problem. This is sent by the ME to indicate that :
 - MO short message control by SIM does not allow the action corresponding to the proactive command or
 - MO short message control by SIM has modified the type of request indicated in the proactive command and that the action requested by call control encounters a permanent problem.

6.8 Structure of TERMINAL RESPONSE

Direction: ME to [UICC-SIM](#)

The command header is specified in TS 51.011 [20]. Length (A+B+C+D+E+F+G+H+I+J+K+L+M+N+P+Q+R+S+T+U+V) is indicated by P3 of the header.

Command parameters/data:

Description	Section	M/O	Min	Length
Command details	12.6	M	Y	A
Device identities	12.7	M	N	B
Result	12.12	M	Y	C
Duration (only required in response to a POLL INTERVAL proactive command)	12.8	M/O	Y/N	D
Text string (only required in response to a GET INKEY or GET INPUT or SEND USSD proactive command)	12.15	M/O	Y/N	E
Item identifier (only required in response to SELECT ITEM proactive command)	12.10	M/O	Y/N	F
Local information (only required in response to PROVIDE LOCAL INFORMATION proactive command)	12.19, 12.20, 12.22, 12.29, 12.39, 12.45 & 12.46	M/O	Y/N	G
Call control requested action (only required if call control by SIM has modified a proactive command SET UP CALL, SEND SS or SEND USSD in another type of request).	12.30	M/O	Y/N	H
Result data object 2 (only required if call control by SIM has modified a proactive command SET UP CALL, SEND SS or SEND USSD in another type of request).	12.12	M/O	Y/N	I
Card reader status (only required in response to GET READER STATUS command). According to the requested information, one Card reader status object for each card interface reported or one Card reader identifier object is required. (only if class "a" is supported)""	12.33, 12.57	M/O	N	$J_0 + \dots + J_n$ or J
Card ATR (only required in response to POWER ON CARD). (only if class "a" is supported)	12.34	M/O	N	K
R-APDU (only required in response to PERFORM CARD APDU). (only if class "a" is supported)	12.36	M/O	N	L
Timer identifier (only required in response to a TIMER MANAGEMENT proactive command)	12.37	M/O	Y/N	M
Timer value (only required in response to a TIMER MANAGEMENT proactive command)	12.38	M/O	Y/N	N
AT Response (only required in response to RUN AT COMMAND proactive command) (only if class "b" is supported)	12.41	M/O	Y/N	P
Text string2 (only required if call control by SIM has modified the proactive command SET UP CALL or SEND SS into a USSD request)	12.15	M/O	Y/N	Q
Channel data (only required in response to RECEIVE DATA) (only if class "e" is supported)	12.53	M/O	Y/N	R

Description	Section	M/O	Min	Length
Channel status (only required in response to GET CHANNEL STATUS or OPEN CHANNEL proactive command) (only if class "e" is supported)	12.56	M/O	Y/N	$S_0 + \dots + S_n$
Channel data length (only required in response to RECEIVE DATA or SEND DATA proactive command) (only if class "e" is supported)	12.54	M/O	Y/N	T
Bearer description (only required in response to OPEN CHANNEL proactive command) (only if class "e" is supported)	12.52	M/O	Y/N	U
Buffer size (only required in response to OPEN CHANNEL proactive command) (only if class "e" is supported)	12.55	M/O	Y/N	V

Specific rules apply for the coding of the TERMINAL RESPONSE, see TS 102 223 [37]

Response parameters/data: None.

6.8.1 Command details

See TS 102 223 [37].

6.8.2 Device identities

See TS 102 223 [37].

6.8.3 Result

See TS 102 223 [37].

6.8.4 Duration

See TS 102 223 [37].

6.8.5 Text string

TS 102 223 [37] applies, with the addition of the following procedure.

When the ME issues a successful TERMINAL RESPONSE for a SEND USSD command, it shall supply the text returned within the Return Result message from the network for the USSD command, no matter what type of string was returned.

6.8.6 Item identifier

When the ME issues a successful TERMINAL RESPONSE ('0X' result value - refer to subclause 12.12) for a SELECT ITEM command, it shall supply the identifier of the item selected by the user in the Item identifier data object. If the ME issues a TERMINAL RESPONSE with result "Help information required by the user" for a SELECT ITEM command, it shall supply the identifier of the item for which the user is requiring help information.

6.8.7 Local information

When the ME issues a successful TERMINAL RESPONSE for a PROVIDE LOCAL INFORMATION command, it shall supply the requested local information.

- Where the **UICC**SIM has requested location information, TERMINAL RESPONSE shall contain the location information data object. All other types of TERMINAL RESPONSE do not need to include location information. If one is included by the ME, the SIM shall ignore it.
- Where the **UICC**SIM has requested the IMEI, TERMINAL RESPONSE shall contain the IMEI data object. All other types of TERMINAL RESPONSE do not need to include IMEI information. If one is included by the ME, the SIM shall ignore it.
- Where the **UICC**SIM has requested the Network Measurement Results the TERMINAL RESPONSE shall contain the NMR data object and the BCCH channel list data object. All other types of TERMINAL RESPONSE do not need to include the NMR information or the BCCH channel list. If one is included by the ME, the SIM shall ignore it.
- Where the **UICC**SIM has requested the date, time and time zone the TERMINAL RESPONSE shall contain the Date-Time and Time zone data object. All other types of TERMINAL RESPONSE do not need to include the Date-Time and Time zone information. If one is included by the ME, the SIM shall ignore it.
- Where the **UICC**SIM has requested the currently used language, the TERMINAL RESPONSE shall contain the Language data object. All other types of TERMINAL RESPONSE need not to include the Language information. If one is included by the ME, the SIM shall ignore it.
- Where the **UICC**SIM has requested the Timing Advance, the TERMINAL RESPONSE shall contain the Timing Advance data object. All other types of TERMINAL RESPONSE do not need to include the Timing Advance information. If one is included by the ME, the SIM shall ignore it.

6.8.8 Call control requested action

When the ME issues a TERMINAL RESPONSE for a proactive command SET UP CALL, SEND SS or SEND USSD which has been modified by call control by **UICC**SIM in another type of request, it shall supply the response data given in response to the ENVELOPE (CALL CONTROL).

6.8.9 Result data object 2

When the ME issues a TERMINAL RESPONSE for a proactive command SET UP CALL, SEND SS or SEND USSD which has been modified by call control by SIM in another type of request, it shall supply the Result data object it would have supplied for the proactive command equivalent to the action requested by call control, and given in the Call control request data element.

6.8.10 Card reader status

See TS 102 223 [37].

6.8.11 Card ATR

See TS 102 223 [37].

6.8.12 R-APDU

See TS 102 223 [37].

6.8.13 Timer identifier

See TS 102 223 [37].

6.8.14 Timer value

See TS 102 223 [37].

6.8.15 AT Response

See TS 102 223 [37].

6.8.16 Text string 2

When the ME issues a successful TERMINAL RESPONSE for a proactive command SET UP CALL or SEND SS which has been modified by "call control" by SIM into a USSD request ('05' result value), it shall supply the Text string2. The Text string2 shall contain the text returned within the Return Result message from the network for the USSD response. Text string2 is equivalent to the Text string in the Terminal Response to a SEND USSD command.

6.8.17 Channel data

See TS 102 223 [37].

6.8.18 Channel status

See TS 102 223 [37].

6.8.19 Channel data length

See TS 102 223 [37].

6.8.20 Bearer description

See TS 102 223 [37].

6.8.21 Buffer size

See TS 102 223 [37].

6.9 Proactive ~~UICC~~SIM session and ME display interaction

During a proactive session the ME display shall be refreshed by any display data contained in the first and each subsequent proactive command. The refresh shall occur once the ME has retrieved the proactive command using the Fetch instruction, following the proactive command pending status response.

If no proactive command is pending (status response of '90 00' following the Terminal Response), then the session releases the display back into ME control. If this session was terminated in a backwards move, and the session was initiated from an Envelope command containing a Menu Selection, it is recommended that the display returns to the Setup Menu.

If the text is to be sustained, the ME shall display the text of applicable DISPLAY TEXT commands beyond the sending of the TERMINAL RESPONSE and possibly beyond the end of the proactive session.

6.10 Handling of unknown, unforeseen and erroneous messages

See TS 102 223 [37].

6.11 Proactive commands versus possible Terminal response

The following table shows for each proactive command the possible terminal response returned (marked by a "•" character).

		Proactive Command																				
Terminal response		'01'	'02'	'03'	'04'	'05'	'10'	'11'	'12'	'13'	'14'	'15'	'20'	'21'	'22'	'23'	'24'	'25'	'26'	'27'	'28'	
'00'	Command performed successfully	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'01'	Command performed with partial comprehension	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'02'	Command performed, with missing info	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'03'	REFRESH performed with additional EFs read	•																				
'04'	Command performed successfully, but requested icon could not be displayed						•	•	•	•	•		•	•	•	•	•					
'05'	Command performed, but modified by call control by SIM.						•	•	•													
'06'	Command performed successfully, limited service																	•				
'07'	Command performed with modification																					
'10'	Proactive SIM session terminated by user						•				•		•	•	•	•	•					
'11'	Backward move in the proactive SIM session requested by the user													•	•	•	•					
'12'	No response from user													•	•	•	•					
'13'	Help information required by the user														•	•	•					
'14'	USSD/SS Transact terminated by user						•	•	•													
'20'	ME currently unable to process command	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'21'	Network currently unable to process command						•	•	•	•	•	•										
'22'	User did not accept the proactive command						•					•										
'23'	User cleared down call before connection or network release						•															
'24'	Action in contradiction with the current timer state																				•	
'25'	Interaction with call control by SIM, temporary problem						•	•	•													
'26'	Launch Browser generic error											•										
'30'	Command beyond MEs capabilities	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'31'	Command type not understood by ME	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'32'	Command data not understood by ME	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'33'	Command number not known by ME	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'34'	SS Return Error						•	•														
'35'	SMS RPERROR									•												
'36'	Error, required values are missing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
'37'	USSD return error									•												
'38'	Multiple Card command error																					
'39'	Interaction with call control by SIM or MO SM control by SIM, permanent problem.						•	•	•	•												
'3A'	Bearer Independent Protocol error																					

Continued.....

Terminal response		Proactive Command										
		CARD APDU	POWER ON CARD	POWER OFF CARD	GET READER STATUS	RUN AT COMMAND	LANG NOTIFICATION	OPEN CHANNEL	CLOSE CHANNEL	RECEIVE DATA	SEND DATA	GET CHANNEL STATUS
		'30'	'31'	'32'	'33'	'34'	'35'	'40'	'41'	'42'	'43'	'44'
'00'	Command performed successfully	•	•	•	•	•	•	•	•	•	•	•
'01'	Command performed with partial comprehension	•	•	•	•	•	•	•	•	•	•	•
'02'	Command performed, with missing info	•	•	•	•	•	•	•	•	•	•	•
'03'	REFRESH performed with additional EFs read											
'04'	Command performed successfully, but requested icon could not be displayed							•	•	•	•	•
'05'	Command performed, but modified by call control by SIM.											
'06'	Command performed successfully, limited service											
'07'	Command performed with modification							•				
'10'	Proactive SIM session terminated by user							•	•	•	•	•
'11'	Backward move in the proactive SIM session requested by the user											
'12'	No response from user											
'13'	Help information required by the user											
'14'	USSD/SS Transact terminated by user											
'20'	ME currently unable to process command	•	•	•	•	•	•	•	•	•	•	•
'21'	Network currently unable to process command							•			•	
'22'	User did not accept the proactive command							•				
'23'	User cleared down call before connection or network release											
'24'	Action in contradiction with the current timer state											
'25'	Interaction with call control by SIM, temporary problem							•				
'26'	Launch Browser generic error											
'30'	Command beyond MEs capabilities	•	•	•	•	•	•	•	•	•	•	•
'31'	Command type not understood by ME	•	•	•	•	•	•	•	•	•	•	•
'32'	Command data not understood by ME	•	•	•	•	•	•	•	•	•	•	•
'33'	Command number not known by ME	•	•	•	•	•	•	•	•	•	•	•
'34'	SS Return Error											
'35'	SMS RPERROR											
'36'	Error, required values are missing	•	•	•	•	•	•	•	•	•	•	•
'37'	USSD return error											
'38'	Multiple Card command error	•	•	•	•							
'39'	Interaction with call control by SIM or MO SM control by SIM, permanent problem											
'3A'	Bearer Independent Protocol error							•	•	•	•	

7 Data download to SIM

7.1 SMS-PP data download

7.1.1 Procedure

If the service "data download via SMS Point-to-point" is allocated and activated in the SIM Service Table (see TS ~~44.44~~51.011 [20]), then the ME shall follow the procedure below:

- When the ME receives a Short Message with:
 protocol identifier = SIM data download, and
 data coding scheme = class 2 message,
 or
 when the ME receives a Short Message with:
 protocol identifier=ANSI-136 R-DATA (see 3G TS 23.040 [30]) and
 data coding scheme = class 2 message, and the ME chooses not to handle the message (e.g. MEs not supporting EGPRS over TIA/EIA-136 do not need to handle the message),
 then the ME shall pass the message transparently to the SIM using the ENVELOPE (SMS-PP DOWNLOAD) command as defined below.
- The ME shall not display the message, or alert the user of a short message waiting.
- The ME shall wait for an acknowledgement from the SIM.
- If the SIM responds with '90 00', the ME shall acknowledge the receipt of the short message to the network using an RP-ACK message.
- If the SIM responds with '93 00', the ME shall either retry the command or send back an RP-ERROR message to the network with the TP-FCS value indicating 'SIM Application Toolkit Busy' (see TS 23.040 [6]).
- If the SIM responds with '9F XX', the ME shall use the GET RESPONSE command to get the response data. The response data from the SIM will be supplied by the ME in the TP-User-Data element of the RP-ACK message it will send back to the network (see TS 23.040 [6] and TS 24.011 [9]). The values of protocol identifier and data coding scheme in RP-ACK shall be as in the original message.
- If the SIM responds with '6F XX', the ME shall send back an RP-ERROR message to the network with the TP-FCS value indicating "SIM data download error". The values of protocol identifier and data coding scheme in RP-ERROR shall be as in the original message.

NOTE: The preferred way for a SIM application to indicate a Data Download error is by using the specific code '9E XX' as described in the following bullet point.

- If the ME has indicated in TERMINAL PROFILE that it supports the status word '9E XX' and if the SIM responds with '9E XX', the ME shall use the GET RESPONSE command to get the response data. The response data from the SIM will be supplied by the ME in the TP-User-Data element of the RP-ERROR message it will send back to the network (see TS 23.040 [6] and TS 24.011 [9]). The values of protocol identifier and data coding scheme in RP-ERROR shall be as in the original message. The value of the TP-FCS element of the RP-ERROR shall be "SIM data download error".

If the service "data download via SMS-PP" is not allocated and activated in the SIM Service Table, and the ME receives a Short Message with the protocol identifier = SIM data download and data coding scheme = class 2 message, then the ME shall store the message in EF_{SMS} in accordance with TS ~~44.44~~51.011 [20].

NOTE: MEs not supporting SIM Application Toolkit are likely to store data download messages in EF_{SMS}, as if they were normal short messages.

7.1.2 Structure of ENVELOPE (SMS-PP DOWNLOAD)

Direction: ME to SIM

The command header is specified in TS [44.445.011](#) [20].

Command parameters/data:

Description	Section	M/O	Min	Length
SMS-PP download tag	13.1	M	Y	1
Length (A+B+C)	-	M	Y	1 or 2
Device identities	12.7	M	Y	A
Address	12.1	O	N	B
SMS TPDU (SMS-DELIVER)	12.13	M	Y	C

- Device identities: the ME shall set the device identities to:
 Source: Network
 Destination: SIM
- Address: The address data object holds the RP_Originating_Address of the Service Centre (TS-Service-Centre-Address), as defined in TS 24.011 [9].

Response parameters/data:

It is permissible for the SIM not to provide response data. If the SIM responds with '90 00' then no response parameter shall be available, otherwise the SIM shall respond with '9F XX' or '9E XX' and the following data is returned:

Byte(s)	Description	Length
1-X (X≤128)	SIM Acknowledgement	X

7.2 Cell Broadcast data download

7.2.1 Procedure

If the service "data download via SMS-CB" is allocated and activated in the SIM Service Table (see TS [44.445.011](#) [20]), then the ME shall follow the procedure below:

- When the ME receives a new Cell Broadcast message, the ME shall compare the message identifier of the Cell Broadcast message with the message identifiers contained in EF_{CBMID}.
- If the message identifier is found in EF_{CBMID}, the cell broadcast page is passed to the SIM using the ENVELOPE (CELL BROADCAST DOWNLOAD) command, defined below. The ME shall not display the message.
- If the message identifier of the incoming cell broadcast message is not found in EF_{CBMID}, then the ME shall determine if the message should be displayed, by following the procedures in TS 23.041 [7] and TS [44.445.011](#) [20].
- If the SIM responds with '93 00', the ME shall consider that the Cell Broadcast page has not been delivered successfully. The ME may retry to deliver the same Cell Broadcast page.

The ME shall identify new cell broadcast pages by their message identifier, serial number and page values.

7.2.2 Structure of ENVELOPE (CELL BROADCAST DOWNLOAD)

Direction: ME to SIM

The command header is specified in TS [44.445.011](#) [20].

Command parameters/data:

Description	Section	M/O	Min	Length
Cell Broadcast Download tag	13.1	M	Y	1
Length (A+B)	-	M	Y	1 or 2
Device identities	12.7	M	Y	A
Cell Broadcast page	12.5	M	Y	B

- Device identities: the ME shall set the device identities to:
 - Source: Network
 - Destination: SIM

Response parameters/data: None for this type of ENVELOPE command.

8 Menu Selection

See TS 102 223 [37].

8.1 Procedure

If the service "menu selection" is allocated and activated in the SIM Service Table (see TS 51.011 [20]), then follow the procedure described in TS 102 223 [37].

8.2 Structure of ENVELOPE (MENU SELECTION)

See TS 102 223 [37].

9 Call Control and MO SMS control by SIM

9.1 Call Control by SIM

9.1.1 Procedure for mobile originated calls

If the service "call control" is allocated and activated in the SIM Service Table (see TS 51.011 [20]), then the ME shall follow the procedure below:

- For all call set-up attempts (even those resulting from a SET UP CALL proactive [UICC-SIM](#) command, from the Bearer Independent Protocol proactive [UICC-SIM](#) commands where CSD is selected, or those occurring when another call is already in progress), the ME shall first pass the call set-up details (dialled digits and associated parameters) to the [UICC-SIM](#), using the ENVELOPE (CALL CONTROL) command defined below. SIM applications should take into account the following two exceptions:
 - when the ME is managing automatic redial attempts, the ME may pass the call set-up details to the SIM for the first attempt only. The [UICC-SIM](#) can identify MEs which send ENVELOPE (CALL CONTROL) each time during redial attempts by evaluating the indication "Envelope Call Control always sent to the [UICC-SIM](#) during automatic redial mode" in the TERMINAL PROFILE. If the ME is sending ENVELOPE (CALL CONTROL) as part of a redial attempt, the call setup details shall be the same as the first with the exception of "Location Information" which shall be the current information;
 - when the user is dialling "112" or an emergency call code stored in EF_{ECC}, for which the ME sets up an emergency call instead of passing the call set-up details to the [UICC-SIM](#).
- If the [UICC-SIM](#) responds with '90 00', the ME shall set up the call with the dialled digits and other parameters as sent to the [UICC-SIM](#).
- If the [UICC-SIM](#) responds with '93 00', the ME shall not set up the call and may retry the command.

- If the **UICC-SIM** responds with '9F XX', the ME shall use the GET RESPONSE command to get the response data. The response data from the **UICC-SIM** shall indicate to the ME whether to set up the call as proposed, not set up the call, set up a call using the data supplied by the **UICC-SIM**, or instead send a supplementary service or USSD operation using the data supplied by the **UICC-SIM**. It is mandatory for the ME to perform the call set-up request and the supplementary service or USSD operation in accordance with the data from the **UICC-SIM**, if it is within the ME's capabilities to do so. If the **UICC-SIM** requires a call set-up or supplementary service or USSD operation that is beyond the ME's capabilities (e.g. the **UICC-SIM** maps a speech call to a data call, and the ME does not support data calls), then the ME shall not perform the call set-up request or supplementary service or USSD operation at all. It is possible for the **UICC-SIM** to request the ME to set up an emergency call by supplying the number "112" as the response data. If the **UICC-SIM** supplies a number stored in EF_{ECC}, this shall not result in an emergency call.

In the case where the initial call set-up request results from a proactive command SET UP CALL:

- if the call control result is "not allowed", the ME shall inform the **UICC-SIM** using TERMINAL RESPONSE "interaction with call control by SIM or MO short message control by SIM, action not allowed".
- if the call set-up request is changed by call control in a supplementary service or USSD operation, and if the supplementary service or USSD operation is within the ME's capabilities, then the ME shall send this request to the network. The ME shall then send back a TERMINAL RESPONSE to the SET UP CALL command at the same time it would have done for the proactive command equivalent to the action requested by call control (i.e. SEND SS or SEND USSD). However, in that case, the TERMINAL RESPONSE shall contain the response data given in the response to ENVELOPE (CALL CONTROL) and a second Result TLV identical to the one given in response to the proactive command equivalent to the action requested by call control (i.e. SEND SS or SEND USSD). The mapping between the general result in the first Result TLV and the general result in the second Result TLV is given below :
 - the general result "command performed, but modified by call control by SIM" shall be given in the first Result TLV if the general result of the second Result TLV is '0X' or '1X'.
 - the general result "interaction with call control by SIM, temporary problem" shall be given in the first Result TLV if the general result of the second Result TLV is '2X'.
 - the general result "interaction with call control by SIM or MO short message control by SIM, permanent problem" shall be given in the first Result TLV if the general result of the second Result TLV is '3X'.
- if the call set-up request is changed by call control into a supplementary service or USSD operation, and if the supplementary service or USSD operation is beyond the ME's capabilities, then the ME shall send back a TERMINAL RESPONSE to the SET UP CALL command, without performing the supplementary service or USSD operation at all. In that case, the TERMINAL RESPONSE shall contain the response data given in the response to ENVELOPE (CALL CONTROL) and a second Result TLV identical to the one given in response to the proactive command equivalent to the action requested by call control (i.e. SEND SS or SEND USSD). The mapping between the general result in the first Result TLV and the general result in the second Result TLV is given below:
 - the general result "interaction with call control by SIM or MO short message control by SIM, permanent problem" shall be given in the first Result TLV, and the general result "command beyond ME's capabilities" shall be given in the second Result TLV.

If the ME supports the Last Number Dialed service, the ME shall update EF_{LND} with the call set-up details (digits string and associated parameters) corresponding to the initial user request.

The ME shall then follow the call set-up procedure defined in TS 04.08 [8] or the supplementary service or USSD operation procedure defined in TS 24.080 [10].

9.1.2 Procedure for Supplementary Services and USSD

If the service "call control" is allocated and activated in the SIM Service Table (see TS 51.011 [20]), then for all supplementary service and USSD operations (including those resulting from a SEND SS or SEND USSD proactive **UICC-SIM** command), the ME shall first pass the supplementary service or USSD control string (corresponding to the supplementary service or USSD operation and coded as defined in TS 02.30 [4], even if this SS or USSD operation has been performed via a specific menu of the ME) to the **UICC-SIM**, using the ENVELOPE (CALL CONTROL) command defined below. The ME shall also pass to the SIM in the ENVELOPE (CALL CONTROL) command the current serving cell.

The [UICC-SIM](#) shall respond in the same way as for mobile originated calls. The ME shall interpret the response as follows:

- If the [UICC-SIM](#) responds with '90 00', the ME shall send the supplementary service or USSD operation with the information as sent to the [UICC-SIM](#).
- If the [UICC-SIM](#) responds with '93 00', the ME shall not send the supplementary service or USSD operation and may retry the command.
- If the [UICC-SIM](#) responds with '9F XX', the ME shall use the GET RESPONSE command to get the response data. The response data from the [UICC-SIM](#) shall indicate to the ME whether to send the supplementary service or USSD operation as proposed, not send the SS or USSD operation, send the SS or USSD operation using the data supplied by the [UICC-SIM](#), or instead set up a call using the data supplied by the [UICC-SIM](#). It is mandatory for the ME to perform the supplementary service or USSD operation or the call set-up request in accordance with the data from the [UICC-SIM](#), if it is within the ME's capabilities to do so. If the [UICC-SIM](#) requires a call set-up or supplementary service or USSD operation that is beyond the ME's capabilities (e.g. the [UICC-SIM](#) maps a USSD operation to a data call, and the ME does not support data calls), then the ME shall not perform the call set-up request or supplementary service or USSD operation at all.

In the case where the initial SS or USSD request results from a proactive command SEND SS or SEND USSD:

- if the call control result is "not allowed", the ME shall inform the [UICC-SIM](#) using TERMINAL RESPONSE ("interaction with call control by SIM or MO short message control by SIM, action not allowed").
- if the SS or USSD request is changed by call control in a call set-up request, then the ME shall set up the call using the data given by the [UICC-SIM](#), if it is within the ME's capabilities to do so. If the [UICC-SIM](#) requires a call set-up that is beyond the ME's capabilities (e.g. the SIM maps a USSD operation to a data call, and the ME does not support data calls), then the ME shall not set up the call at all. The ME shall send back a TERMINAL RESPONSE to the initial proactive command at the same time it would have done for the proactive command equivalent to the action requested by call control (i.e. SET UP CALL). However, in that case, the TERMINAL RESPONSE shall contain the response data given in the response to ENVELOPE (CALL CONTROL) and a second Result TLV identical to the one given in response to the proactive command equivalent to the action requested by call control (i.e. SET UP CALL). The mapping between the general result in the first Result TLV and the general result in the second Result TLV is the same as the one described in section 9.1.1.

If the ME supports the Last Number Dialed service, the ME shall update EF_{LND} with the supplementary service or USSD control string corresponding to the initial user request.

The ME shall then follow the supplementary service or USSD operation procedure defined in TS 24.080 [10] or the call set-up procedure defined in TS 04.08 [8].

9.1.3 Indication to be given to the user

The [UICC-SIM](#) may optionally include an alpha-identifier in the response data to the ENVELOPE (CALL CONTROL) message, in order to inform the user at the time the response is received by the ME. The use of this alpha identifier by the ME is described in TS 102 223 [37] with the additional rules listed here:

- if the [UICC-SIM](#) responds with "allowed, with modifications", and the data supplied by the [UICC-SIM](#) is an SS String, and the modified request is within the ME's capabilities, then :
 - if the alpha identifier is provided by the [UICC-SIM](#) and is not a null data object, the ME shall use it to inform the user. The ME shall then not display the SS string given by the [UICC-SIM](#). This is also an indication that the ME should not give any other information to the user on the changes made by the [UICC-SIM](#) to the initial user request;
 - if the alpha identifier is provided by the [UICC-SIM](#) and is a null data object (i.e. length = '00' and no value part), this is an indication that the ME should not give any information to the user on the changes made by the [UICC-SIM](#) to the initial user request. The ME shall not display the SS string given by the [UICC-SIM](#). The ME should not modify the display corresponding to the initial user request;
 - if the alpha identifier is not provided by the [UICC-SIM](#), the ME may indicate to the user that the initial user request has been changed.

- if the [UECSIM](#) responds with "allowed, with modifications" to a request by a proactive command SEND SS or SEND USSD, and the modified request is beyond the ME's capabilities, then the ME shall not give any information to the user on the fact that the modified request is beyond the ME's capabilities, and shall give a TERMINAL RESPONSE to the proactive command (i.e. SEND SS or SEND USSD) as detailed in subsections 9.1.1 and 9.1.2. The responsibility to inform the user in this case lies with the SIM application which sent the proactive command.

9.1.4 Interaction with Fixed Dialling Number

The procedure defined in TS 102 223 [37] for calls applies. In addition, it shall apply in the same way for supplementary service operations, the supplementary service control string being checked as if it was a called number.

The ME shall check the number (or the supplementary service control string) in accordance with TS 22.101 [ZZ].

9.1.5 Support of Barred Dialling Number (BDN) service

The procedure defined in TS 102 223 [37] for calls applies. In addition, it shall apply in the same way for supplementary service operations, the supplementary service control string being checked as if it was a called number.

The ME shall check the number (or the supplementary service control string) in accordance with TS 22.101 [ZZ].

9.1.6 Structure of ENVELOPE (CALL CONTROL)

Direction: ME to [UECSIM](#)

The command header is specified in TS 51.011 [20].

Command parameters/data:

Description	Section	M/O	Min	Length
Call control tag	13.1	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Device identities	12.7	M	Y	A
Address or SS string or USSD string	12.1, 12.14 or 12.17	M	Y	B
Capability configuration parameters 1	12.4	O	N	C
Subaddress	12.3	O	N	D
Location information	12.19	M	N	E
Capability configuration parameters 2	12.4	O	N	F

- Device identities: the ME shall set the device identities to:
Source: ME
Destination: [UECSIM](#)
- Address or SS string or USSD string: only one data object shall be sent to the [UECSIM](#).

For a call set-up, the address data object is used and holds the Called Party Number, as defined in TS 04.08 [8], to which the ME is proposing setting up the call.

For a supplementary service, the SS string data object is used and holds the corresponding supplementary service.

For a USSD operation, the USSD string data object is used and holds the corresponding USSD control string.

SIM Applications and MEs should take into account that early implementations of SIM application Toolkit use the SS string data object for coding of USSD control strings (instead of the USSD string data object). This behaviour is only possible for USSD control strings consisting of digits (0-9,*,#). The [UECSIM](#) can identify MEs having this early implementation by evaluating the indication "USSD string data object supported in Call Control" in the TERMINAL PROFILE. The ME can identify [UECSIMs](#) having this early implementation by evaluating the indication "USSD string data object supported in Call Control" in the SIM Service Table.

- Capability configuration parameters: Only used for a call set-up, this contains the Bearer capabilities that the ME is proposing to send to the network. The first capability configuration parameters corresponds to the bearer capability 1 information element of a mobile originating SETUP message, as defined in TS 04.08 [8]. The second capability configuration parameters correspond to the bearer capability 2 information element of a mobile originating SETUP message, as defined in TS 04.08 [8]. If no capability configuration parameters are present, this shall indicate a speech call.
- Subaddress: Only used for a call set-up, this contains the called party subaddress that the ME is proposing to send to the network. If one is not present, this shall indicate that the ME is proposing not to send this information element to the network.
- Location information: This data object contains the identification (MCC, MNC, LAC, Cell Identity) of the current serving cell of the MS. The comprehension required flag of this data object in this command shall be set to '0'.

Response parameters/data:

It is permissible for the **UICC/SIM** to provide no response data, by responding with SW1 / SW2 = '90 00'. If the SIM does not provide any response data, then this shall have the same meaning as "allowed, no modification".

Description	Section	M/O	Min	Length
Call control result	-	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Address or SS string or USSD string	12.1, 12.14 or 12.17	O	N	A
Capability configuration parameters 1	12.4	O	N	B
Subaddress	12.3	O	N	C
Alpha identifier	12.2	O	N	D
BC repeat indicator	12.42	M/O	N	E
Capability configuration parameters 2	12.4	O	N	F

- Call control result:

Contents: the command that the **UICC/SIM** gives to the ME concerning whether to allow, bar or modify the proposed call (or supplementary service operation).

Coding:

- '00' = Allowed, no modification
- '01' = Not allowed
- '02' = Allowed with modifications

- Address or SS string or USSD string : Only one data object may be included if the **UICC/SIM** requests the call (or supplementary service or USSD operation) details to be modified.

The **UICC/SIM** should take into account that early implementations of SIM Application Toolkit in some MEs are unable to support coding of USSD control strings in the USSD string data object and the **UICC/SIM** should instead use the SS string data object. The **UICC/SIM** can identify MEs having this early implementation by evaluating the indication "USSD string data object supported in Call Control" in the TERMINAL PROFILE.

For a call set-up, if the address data object is not present, then the ME shall assume the Dialling number is not to be modified.

For a supplementary service, if the SS string data object is not present, then the ME shall assume that SS is not to be modified.

For a USSD operation, if the USSD string data object is not present, then the ME shall assume that the USSD operation is not to be modified.

- Capability configuration parameters: Only used for a call set-up, this data object is only required if the **UICC/SIM** requests the call details to be modified. The first capability configuration parameters corresponds to the bearer capability 1 information element of a mobile originating SETUP message, as defined in TS 04.08 [8]. The second capability configuration parameters corresponds to the bearer capability 2 information element of a mobile originating SETUP message, as defined in TS 04.08 [8]. If the capability configuration parameters are not present, then the ME shall assume the parameters are not to be modified.

- Subaddress: Only used for a call set-up, this data object is only required if the [UECSIM](#) requests the call details to be modified. If the subaddress is not present, then the ME shall assume the called party subaddress is not to be modified. If the subaddress supplied by the [UECSIM](#) is a null data object, then the ME shall not provide a called party subaddress to the network. A null data object shall have length = '00' and no value part.
- Alpha identifier: this data object is only required if the [UECSIM](#) requests a particular indication to be given to the user. The handling of this data object by the ME is described in section 9.1.3. The comprehension required flag of this data object shall be set to '0'.
- BC repeat indicator: indicates how the 2 associated bearers shall be interpreted. The two modes to manage the bearers are the "alternate way" or "sequential way". The change of bearer occurs on a network event. This BC repeat indicator is conditioned to the presence of the second capability configuration parameters and is coded as defined in TS 04.08 [8].

It is mandatory for the [UECSIM](#) to provide at least one of the optional data objects if it has set the Call control result to "allowed with modifications".

9.2 MO Short Message Control by SIM

9.2.1 Description

If the service "MO Short Message Control" is allocated and activated in the SIM Service Table (see TS ~~44.4~~51.011 [20]), then the ME shall follow the procedure below:

- For all MO short message attempts (even those resulting from a SEND SM proactive SIM command), the ME shall first pass the RP_destination_address of the service center and the TP_Destination_Address to the SIM, using the ENVELOPE (MO SHORT MESSAGE CONTROL) command defined below. The ME shall also pass to the SIM in the ENVELOPE (MO SHORT MESSAGE CONTROL) command the current serving cell
- If the SIM responds with '90 00', the ME shall send the short message with the addresses unchanged.
- If the SIM responds with '93 00', the ME shall not send the short message and may retry the command.
- If the SIM responds with '9F XX', the ME shall use the GET RESPONSE command to get the response data. The response data from the SIM shall indicate to the ME whether to send the short message as proposed, not send the short message or send a short message using the data supplied by the SIM. It is mandatory for the ME to perform the MO short message request in accordance with the data from the SIM.

The ME shall then follow the MO Short Message procedure defined in TS 24.011 [9].

In the case where the initial MO short message request results from a proactive command SEND SHORT MESSAGE, if the MO short message control result is "not allowed", the ME shall inform the SIM using TERMINAL RESPONSE, "interaction with call control by SIM or MO short message control by SIM, action not allowed".

9.2.2 Structure of ENVELOPE (MO SHORT MESSAGE CONTROL)

Direction: ME to [UECSIM](#)

The command header is specified in TS 51.011 [20].

Command parameters/data:

Description	Section	M/O	Min	Length
MO Short Message control tag	13.1	M	Y	1
Length (A+B+C+D)	-	M	Y	1 or 2
Device identities	12.7	M	Y	A
Address data object 1	12.1	M	Y	B
Address data object 2	12.1	M	Y	C
Location information	12.19	M	Y	D

- Device identities: the ME shall set the device identities to:

Source: ME
 Destination: UICC-SIM

- Address data object 1 : this address data object 1 contains the RP_Destination_Address of the Service Center to which the ME is proposing to send the short message.
- Address data object 2 : this address data object 2 contains the TP_Destination_Address to which the ME is proposing to send the short message.
- Location information : this data object contains the identification (MCC, MNC, LAC, Cell Identity) of the current serving cell of the MS.

Response parameters/data:

It is permissible for the UICC-SIM to provide no response data, by responding with SW1 / SW2 = '90 00'. If the UICC-SIM does not provide any response data, then this shall have the same meaning as "allowed, no modification".

Description	Section	M/O	Min	Length
MO short message control result	-	M	Y	1
Length (A+B+C)	-	M	Y	1 or 2
Address data object 1	12.1	O	N	A
Address data object 2	12.1	O	N	B
Alpha identifier	12.2	O	N	C

- MO Short Message control result:
 Contents: the command that the UICC-SIM gives to the ME concerning whether to allow, bar or modify the proposed short message.

Coding:

'00' = Allowed, no modification
 '01' = Not allowed
 '02' = Allowed with modifications

- Address data object 1: if the address data object 1 is not present, then the ME shall assume the RP_Destination_Address of the Service Center is not to be modified.
- Address data object 2: if the address data object 2 is not present, then the ME shall assume the TP_Destination_Address is not to be modified.
- Alpha identifier: this data object is only required if the SIM requests a particular indication to be given to the user. The handling of this data object by the ME is described in section 9.2.3.

The UICC-SIM shall provide the two optional address data objects if it has set the MO Short Message control result to "allowed with modifications".

9.2.3 Indication to be given to the user

The UICC-SIM may optionally include an alpha-identifier in the response data to the ENVELOPE (MO SHORT MESSAGE CONTROL) message, in order to inform the user at the time the response is received by the ME. The use of this alpha identifier by the ME is identical to the one described in section 9.1.3 relative to call control by SIM.

10 Timer Expiration

See TS 102 223 [37].

11 Event download

See TS 102 223 [37].

Regarding all the call events, the following equivalences shall apply :

- the "call setup message" is the SETUP message as defined in TS 24.008 [11],
- the "call connect message" is the CONNECT message as defined in TS 24.008 [11],
- the "disconnect messages" are the DISCONNECT, RELEASE, RELEASE COMPLETE messages as defined in TS 24.008 [11],
- the "NULL state" is the CC-U0 state as defined in TS 24.008 [11].

Regarding the location status event, the following equivalence shall apply :

- the "idle" state is the MM-IDLE state as defined in TS 24.008 [11].

Where events occur and the SIM responds with '93 00', the ME shall retry to deliver the event download messages to the SIM.

11.1 MT call event

See TS 102 223 [37].

11.2 Call connected event

See TS 102 223 [37].

11.3 Call disconnected event

See TS 102 223 [37].

11.4 Location status event

See TS 102 223 [37].

11.5 User activity event

See TS 102 223 [37].

11.6 Idle screen available event

See TS 102 223 [37].

11.7 Card reader status event

See TS 102 223 [37].

11.8 Language selection event

See TS 102 223 [37].

11.9 Browser Termination event

See TS 102 223 [37].

11.10 Data available event

See TS 102 223 [37].

11.11 Channel status event

See TS 102 223 [37].

11.12 Access Technology Change Event

See TS 102 223 [37].

11.13 Display parameters changed event

See TS 102 223 [37].

11.14 Local Connection event

See TS 102 223 [37].

12 SIMPLE-TLV data objects

The coding of the TLV objects is as described in TS 102 223 [37], except when stated otherwise in the present document.

12.1 Address

See TS 102 223 [37].

12.2 Alpha identifier

See TS 102 223 [37].

12.3 Subaddress

See TS 102 223 [37].

12.4 Capability configuration parameters

Byte(s)	Description	Length
1	Capability configuration parameters tag	1
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3 to (Y-1)+X+2	Capability configuration parameters	X

Capability configuration parameters are coded as for EF_{CCP}. If it is being provided by the [HCCSIM](#), the [HCCSIM](#) shall supply all information required to complete the Bearer Capability Information Element in the Call Set-up message (see TS 24.008 [11]). Any unused bytes at the end of the value part shall be coded 'FF'.

See TS 51.011 [20] for the coding of all EFs.

NOTE: The second byte of this TLV contains the Length of the TLV and the third byte contains the Length of the bearer capability contents, followed by the actual contents.

12.5 Cell Broadcast Page

Byte(s)	Description	Length
1	Cell Broadcast page tag	1
2	Length = '58' (88 decimal)	1
3 - 90	Cell Broadcast page	88

The Cell Broadcast page is formatted in the same way as described in TS 23.041 [7].

12.6 Command details

The content and the coding of the Command Details TLV object is defined in TS 102 223 [37], except for the following.

- The coding of the Command Qualifier is defined for the following commands:

Coding:

- REFRESH;
 - '00' = SIM Initialization and Full File Change Notification;
 - '01' = File Change Notification;
 - '02' = SIM Initialization and File Change Notification;
 - '03' = SIM Initialization;
 - '04' = ~~UICC~~SIM Reset;
 - '05' to 'FF' = reserved values.
- SEND SS;
 - This byte is RFU.
- SEND USSD;
 - This byte is RFU.
- GET INKEY,
 - bit 1: 0 = digits (0-9, *, # and +) only
1 = alphabet set;
 - bit 2: 0 = SMS default alphabet
1 = UCS2 alphabet
 - bit 3: 0 = character sets defined by bit 1 and bit 2 are enabled
1 = character sets defined by bit 1 and bit 2 are disabled and the "Yes/No" response is requested
 - bits 4-7: = RFU
 - bit 8: 0 = no help information available
1 = help information available
- PROVIDE LOCAL INFORMATION
 - '00' = Location Information (MCC, MNC, LAC and Cell Identity)
 - '01' = IMEI of the ME
 - '02' = Network Measurement results
 - '03' = Date, time and time zone
 - '04' = Language setting
 - '05' = Timing Advance
 - '06' to 'FF' = Reserved

Note: The following commands can be found in TS 102 223[37], but don't apply for a SIM Application: SERVICE SEARCH, GET SERVICE INFORMATION and DECLARE SERVICE.

12.7 Device identities

See TS 102 223 [37].

12.8 Duration

See TS 102 223 [37].

12.9 Item

See TS 102 223 [37].

12.10 Item identifier

See TS 102 223 [37].

12.11 Response length

See TS 102 223 [37].

12.12 Result

Byte(s)	Description	Length
1	Result tag	1
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3	General result	1
(Y-1)+4 to (Y-1)+X+2	Additional information on result	X-1

- General result

Contents: General result specifies the result and indicates appropriate SIM action:

Coding:

- '00' = Command performed successfully;
- '01' = Command performed with partial comprehension;
- '02' = Command performed, with missing information;
- '03' = REFRESH performed with additional EFs read;
- '04' = Command performed successfully, but requested icon could not be displayed;
- '05' = Command performed, but modified by call control by SIM;
- '06' = Command performed successfully, limited service;
- '07' = Command performed with modification (if class "e" is supported);
- '10' = Proactive [UICCSIM](#) session terminated by the user;
- '11' = Backward move in the proactive [UICCSIM](#) session requested by the user;
- '12' = No response from user;
- '13' = Help information required by the user;
- '14' = USSD or SS transaction terminated by the user.

Results '0X' and '1X' indicate that the command has been performed.

- '20' = ME currently unable to process command;
- '21' = Network currently unable to process command;
- '22' = User did not accept the proactive command;
- '23' = User cleared down call before connection or network release;
- '24' = Action in contradiction with the current timer state;
- '25' = Interaction with call control by SIM, temporary problem;
- '26' = Launch browser generic error code.

Results '2X' indicate to the [UICC/SIM](#) that it may be worth re-trying the command at a later opportunity.

- '30' = Command beyond ME's capabilities;
- '31' = Command type not understood by ME;
- '32' = Command data not understood by ME;
- '33' = Command number not known by ME;
- '34' = SS Return Error;
- '35' = SMS RP-ERROR;
- '36' = Error, required values are missing;
- '37' = USSD Return Error;
- '38' = MultipleCard commands error, if class "a" is supported;
- '39' = Interaction with call control by SIM or MO short message control by SIM, permanent problem;
- '3A' = Bearer Independent Protocol error (if class "e" is supported).

Results '3X' indicate that it is not worth the [UICC/SIM](#) re-trying with an identical command, as it will only get the same response. However, the decision to retry lies with the SIM application.

The SIM application should avoid a rapid sequence of repeated retried commands as this may be detrimental to ME performance.

All other values are reserved.

- Additional information

Contents: For the general result "Command performed successfully", some proactive commands require additional information in the command result. This is defined in the subclauses below. For the general results '20', '21', '26', '34', '35', '37', '38' and '39' and '3A', it is mandatory for the ME to provide a specific cause value as additional information, as defined in the subclauses below. For the other general results, the ME may optionally supply additional information. If additional information is not supplied, then the length of the value part of the data object need only contain the general result.

12.12.1 Additional information for SEND SS

When the ME issues a successful COMMAND RESULT for a SEND SS proactive command, it shall also include the Operation Code and Parameters included in the Return Result component from the network, as additional information.

The first byte of the additional information shall be the SS Return Result Operation code, as defined in TS 24.080 [10].

The rest of the additional information shall be the SS Return Result Parameters, as defined in TS 24.080 [10].

12.12.2 Additional information for ME problem

For the general result "ME currently unable to process command", it is mandatory for the ME to provide additional information, the first byte of which to be as defined below:

- '00' = No specific cause can be given;
- '01' = Screen is busy;
- '02' = ME currently busy on call;
- '03' = ME currently busy on SS transaction;
- '04' = No service;
- '05' = Access control class bar;
- '06' = Radio resource not granted;
- '07' = Not in speech call;
- '08' = ME currently busy on USSD transaction;
- '09' = ME currently busy on SEND DTMF command.

All other values shall be interpreted by the [UICC/SIM](#) as '00'. The coding '00' shall only be used by the ME if no others apply.

12.12.3 Additional information for network problem

For the general result "network currently unable to process command", it is mandatory for the ME to provide additional information. The first byte shall be the cause value of the Cause information element returned by the network (as defined in TS 04.08 [8]). Bit 8 shall be set to '1'. One further value is defined:

- '00' = No specific cause can be given.

All other values shall be interpreted by the ~~UICC~~[SIM](#) as '00'. The coding '00' shall only be used by the ME if no others apply.

12.12.4 Additional information for SS problem

For the general result "SS Return Error", it is mandatory for the ME to provide additional information. The first byte shall be the error value given in the Facility (Return result) information element returned by the network (as defined in TS 24.080 [10]). One further value is defined:

- '00' = No specific cause can be given.

All other values shall be interpreted by the SIM as '00'. The coding '00' shall only be used by the ME if no others apply.

12.12.5 Additional information for SMS problem

For the general result "SMS RP-ERROR", it is mandatory for the ME to provide additional information. The first byte shall be the cause value given in the RP-Cause element of the RP-ERROR message returned by the network (as defined in TS 24.011 [9]), with bit 8 = 0. One further value is defined:

- '00' = No specific cause can be given.

All other values shall be interpreted by the SIM as '00'. Specific cause '00' shall only be used by the ME if no others apply.

12.12.6 Not used

12.12.7 Additional information for USSD problem

For the general result "USSD Return Error", the ME shall provide additional information. The first byte shall be the error value given in the Facility (Return result) information element returned by the network (as defined in TS 24.080 [10]). One further value is defined:

- '00' = No specific cause can be given.

All other values shall be interpreted by the SIM as '00'.

The coding '00' shall only be used by the ME if no others apply.

12.12.8 Additional information for interaction with call control or MO SM control

For the general result "interaction with call control by SIM or MO short message control by SIM, permanent problem", it is mandatory for the ME to provide additional information, the first byte of which to be as defined below:

- '00' = No specific cause can be given;
- '01' = Action not allowed;
- '02' = The type of request has changed.

All other values shall be interpreted by the ~~UICC~~[SIM](#) as '00'. The coding '00' shall only be used by the ME if no others apply.

12.12.9 Additional information for MultipleCard commands

See TS 102 223 [37].

12.12.10 Additional information for Launch Browser problem

See TS 102 223 [37].

12.12.11 Additional information for Bearer Independent Protocol

This subclause applies only if class "e" is supported.

For the general result "Bearer Independent Protocol error", it is mandatory for the ME to provide additional information, the first byte of which is defined below:

- '00' = No specific cause can be given;
- '01' = No channel available;
- '02' = Channel closed;
- '03' = Channel identifier not valid;
- '04' = Requested buffer size not available;
- '05' = Security error (unsuccessful authentication);
- '06' = Requested [UICC/SIM](#)/ME interface transport level not available.

All other values shall be interpreted by the [UICC/SIM](#) as '00'.

The coding '00' shall only be used by the ME if no others apply.

12.13 SMS TPDU

Byte(s)	Description	Length
1	SMS TPDU tag	1
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3 to (Y-1)+X+2	SMS TPDU	X

The TPDU is formatted as described in TS 23.040 [6].

Where the TPDU is being sent from the SIM to the ME (to be forwarded to the network), and where it includes a TP-Message-Reference which is to be incremented by the ME for every outgoing message, the TP-Message-Reference as provided by the [UICC/SIM](#) need not be the valid value. TP-Message-Reference shall be checked and corrected by the ME to the value described in TS 23.040 [6].

12.14 SS string

Byte(s)	Description	Length
1	SS string tag	1
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3	TON and NPI	1
(Y-1)+4 to (Y-1)+X+2	SS or USSD string	X - 1

TON/NPI and SS or USSD control string are coded as for EF_{ADN}, where the ADN record relates to a Supplementary Service Control string. See TS [44.451.011](#) [20] for the coding of EF_{ADN}.

12.15 Text string

Content and coding is defined TS 102 223 [37], with the following requirement :

Data coding scheme is coded as for SMS Data coding scheme defined in TS 23.038 [5]. Parts of the data coding scheme other than the character set indication shall be ignored.

12.16 Tone

See TS 102 223 [37]. Excepted for the following:

Coding of the ME proprietary tones:

- '10' General beep
- '11' Positive acknowledgement tone
- '12' Negative acknowledgement or error tone

All other values are reserved.

NOTE: Standard supervisory tones for 3G are specified in TS 22.001 [22].

12.17 USSD string

Byte(s)	Description	Length
1	USSD string tag	1
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3	Data coding scheme	1
(Y-1)+4 to (Y-1)+X+2	USSD string	X-1

The Data coding scheme is coded as for Cell Broadcast defined in TS 23.038 [5]. The coding of the USSD string is defined in TS 02.30 [4].

12.18 File List

Byte(s)	Description	Length
1	File List tag	1
2 to (Y-1)+2	Length (X) of bytes following	Y
(Y-1)+3	Number of files (n)	1
(Y-1)+4 to (Y-1)+X+2	Files	X-1

Number of files:

This is the number of files that will be described in the following list.

Files:

Full paths are given to files. Each of these shall be at least 4 octets in length (e.g. '3F002FE2' or '3F007F206FAD').

Each entry in the file description is composed of two bytes, where the first byte identifies the type of file (see TS 51.011 [20]).

An entry in the file description shall therefore always begin with '3FXX'. There can be any number of Dedicated File entries between the Master File and Elementary File. There shall be no delimiters between files, as this is implied by the fact that the full path to any EF starts with '3FXX' and ends with an Elementary type file.

12.19 Location Information

Byte(s)	Description	Length
1	Location Information tag	1
2	Length = '07'	1
3 - 5	Mobile Country & Network Codes (MCC & MNC)	3
6 - 7	Location Area Code (LAC)	2
8 - 9	Cell Identity Value (Cell ID)	2

The mobile country code (MCC), the mobile network code (MNC), the location area code (LAC) and the cell ID are coded as in TS 04.08 [8].

12.20 IMEI

See TS 102 223 [37].

12.21 Help Request

See TS 102 223 [37].

12.22 Network Measurement Results

Byte(s)	Description	Length
1	Network Measurement Results tag	1
2	Length = '10'	1
3 - 18	Network Measurement Results	16

The Network Measurement Results are coded as for the Measurement Results information element in TS 04.08 [8], starting at octet 2 (the IEI is removed, as this information is duplicated by the data object tag).

12.23 Default Text

See TS 102 223 [37].

12.24 Items Next Action Indicator

See TS 102 223 [37].

12.25 Event list

Content and coding is defined TS 102 223 [37], with the following exception:

Coding of events:

- '0B' to 'FF' = RFU

12.26 Cause

Byte(s)	Description	Length
1	Cause tag	1
2	Length (X) of bytes following. $X=0$, or $2 \leq X \leq 30$.	1
3 to X+2	Cause	X

The Cause data object is coded as for the Cause call control information element in TS 04.08 [8], starting at octet 3 (the IEI and Length information are removed, as this information is duplicated by the data object tag and length).

Radio Link Timeout is indicated by the Cause data object having a value part of zero length (only the Tag and Length components are sent).

12.27 Location status

See TS 102 223 [37].

12.28 Transaction identifier

Byte(s)	Description	Length
1	Transaction identifier tag	1
2	Length (X) of bytes following	1
3 to X+2	Transaction identifier list	X

- Transaction identifier list

Contents: A list of transaction identifiers, of variable length. Each byte in the list defines a transaction identifier. Each transaction identifier shall not appear more than once within the list.

Coding: Each byte in the transaction identifier list shall be coded as defined below:

bits 1 to 4 = RFU
 bits 5 to 7 = TI value
 bit 8 = TI flag

TI value and TI flag are coded as defined in TS 24.007 [23].

12.29 BCCH channel list

Byte(s)	Description	Length
1	BCCH channel list tag	1
2	Length (X) of bytes following	1
3 to X+2	BCCH channel list	X

- BCCH channel list

Contents: the list of absolute RF channels for BCCH carriers, as known by the ME from the SYSTEM INFORMATION messages. The BCCH channel list is composed of one to three BCCH channel sub lists, each sub list is derived from the set of frequencies defined by reference neighbour cells description information element or elements. In the latter case the set is the union of the different subsets defined by the neighbour cells description information elements (see TS 04.08 [8]). The length of the BCCH channel list field depends on the length of the received BCCH channel list derived from the different SYSTEM INFORMATION messages to be considered.

Coding: Each ARFCN is represented by 10 bits. Spare bit(s) are to be filled with 0.

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
-------	-------	-------	-------	-------	-------	-------	-------

Byte 1	ARFCN#1 (high part)		
Byte 2	ARFCN#1 (low part)	ARFCN#2 (high part)	
Byte 3	ARFCN#2 (low part)		ARFCN#3 (high part)
...	...		
Byte X-1	ARFCN#m-1 (low part)		ARFCN#m (high part)
Byte X	ARFCN#m (low part)		Spare bit (0)
			Spare bit (0)

SIM applications should take into account that early implementations of SIM application toolkit may have coded this field differently, because of an inconsistency between the content and the coding of this element in previous versions of 11.14. The SIM is able to identify MEs that are using the coding described above by evaluating the indication "BCCH Channel List coding" in the TERMINAL PROFILE command.

12.30 Call control requested action

See TS 102 223 [37].

12.31 Icon Identifier

See TS 102 223 [37].

12.32 Item Icon Identifier list

See TS 102 223 [37].

12.33 Card reader status

See TS 102 223 [37].

12.34 Card ATR

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

12.35 C-APDU

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

12.36 R-APDU

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

12.37 Timer identifier

See TS 102 223 [37].

12.38 Timer value

See TS 102 223 [37].

12.39 Date-Time and Time zone

See TS 102 223 [37].

12.40 AT Command

This subclause applies only if class "b" is supported.

Byte(s)	Description	Length
1	AT Command tag	1
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3 to (Y-1)+3+X-1	AT Command string	X

Contents: The AT Command string is structured exactly as the AT Command line as defined in TS 27.007 [27], which may contain single or concatenated AT commands.

12.41 AT Response

This subclause applies only if class "b" is supported.

Byte(s)	Description	Length
1	AT Response tag	1
2 to (Y-1)+2	Length (X)	Y
(Y-1)+3 to (Y-1)+3+X-1	AT Response string	X

Contents: The AT Response string is structured exactly as the response to a command line as defined in TS 27.007 [27], which may contain single or concatenated responses appropriate to the issued AT command.

If the AT Response string is longer than the maximum length capable of being transmitted to the SIM then the AT Response string shall be truncated to this length by the ME.

12.42 BC Repeat indicator

Byte(s)	Description	Length
1	BC repeat indicator tag	1
2	Length	1
3	BC repeat indicator values	1

Contents : The BC repeat indicator is structured exactly as defined in TS 04.08 [08], which may be alternate mode or sequential mode.

Coding : '01' = Alternate mode;
'03' = Sequential mode

12.43 Immediate response

See TS 102 223 [37].

12.44 DTMF string

See TS 102 223 [37].

12.45 Language

See TS 102 223 [37].

12.46 Timing Advance

Byte(s)	Description	Length
1	Timing Advance tag	1
2	Length = '02'	1
3	ME Status	1
4	Timing Advance	1

Coding of ME status:

'00' = ME is in the idle state

'01' = ME is not in idle state

'02' to 'FF' = reserved values

The Timing Advance is coded as for the Timing Advance information element in TS 04.08 [8], starting at octet 2 (the IEI is removed, as this information is duplicated by the data object tag).

12.47 Browser Identity

See TS 102 223 [37].

12.48 URL

See TS 102 223 [37].

12.49 Bearer

Byte(s)	Description	Length
1	Bearer tag	1
2 to (Y + 1)	Length (X)	Y
(Y+2) to (Y + X + 1)	List of bearers in order of priority requested	X

The ME shall use this list to choose which bearers are allowed in order of priority.

Coding of the bearers :

'00' = SMS ;

'01' = CSD ;

'02' = USSD ;

'03' = GPRS ;

'04' to 'FF' = RFU.

12.50 Provisioning File Reference

See TS 102 223 [37].

12.51 Browser Termination Cause

See TS 102 223 [37].

12.52 Bearer description

This subclause applies only if class "e" is supported.

Byte(s)	Description	Length
1	Bearer description tag	1
2	Length (X+1)	1
3	Bearer type	1
4 to (3+X)	Bearer parameters	X

- Bearer Type coding
 - '01': CSD
 - '02': GPRS
 - '03': default bearer for requested transport layer.

all other values are reserved for future use

12.52.1 Bearer parameters for CSD

Contents: parameters specific to the bearer.

The default values of the subparameters are manufacturer specific since they depend on the purpose of the device and data services provided by it. Not all combinations and values of these subparameters are supported by GSM (refer TS 22.002 [30]).

X (length of parameters) = 3.

Coding:

The following values are as defined in the TS 27.007 [27] for the select service bearer type "+CBST" extended command. They are coded in hexadecimal.

- byte 4 - Data rate: same as the "speed" subparameter defined in TS 27.007 [27].
- byte 5 - bearer service: same as the "name" subparameter defined in TS 27.007 [27].
- byte 6 - connection element: same as the "ce" subparameter defined in TS 27.007 [27].

12.52.2 Bearer parameters for GPRS / packet service

Contents : parameters describing the Quality of Service (QoS) and the type of PDP. This is an element of the PDP context.

The default values of the subparameters are manufacturer specific since they depend on the purpose of the device and data services provided by it. Not all combinations and values of these subparameters are supported by GSM (refer TS 22.002 [30]).

X (length of parameters) = 6.

Coding: The following values are as defined in TS 27.007 [27], for the quality of Service profile requested "+CGQREQ" extended command. They are coded in hexadecimal.

- Coding of Byte 4 - Precedence class: same as the "precedence" subparameter, defined in TS 27.007 [27].
- Coding of Byte 5 - Delay class: same as the "delay" subparameter, defined in TS 27.007 [27].
- Coding of Byte 6 - Reliability class: same as the "reliability" subparameter, defined in TS 27.007 [27].
- Coding of Byte 7 - Peak throughput class: same as the "peak" subparameter, defined in TS 27.007 [27].
- Coding of Byte 8 - Mean throughput class: same as the "mean" subparameter, defined in TS 27.007 [27].
- Coding of Byte 9 - Packet data protocol type:
 - '02' = IP (Internet Protocol, IETF STD 5);
 - all other values are reserved.

12.52.3 Default bearer

Contents: none

X (length of parameters) = 0.

The ME is responsible for providing the parameters necessary to establish the connection (e.g. APN for GPRS, Address for CSD, ...).

12.53 Channel data

This subclause applies only if class "e" is supported.

See TS 102 223 [37].

12.54 Channel data length

This subclause applies only if class "e" is supported.

See TS 102 223 [37].

12.55 Buffer size

This subclause applies only if class "e" is supported.

See TS 102 223 [37].

12.56 Channel status

This subclause applies only if class "e" is supported.

See TS 102 223 [37].

12.57 Card reader identifier

This subclause applies only if class "a" is supported.

See TS 102 223 [37].

12.58 Other Address

See TS 102 223 [37].

12.59 SIM/ME interface transport level

See TS 102 223 [37].

12.60 Void

12.61 Network Access Name

Byte(s)	Description	Length
1	Network Access Name tag	1
2	Length (X)	1
3 to 3+X-1	Network Access Name	X

- Content: The Network Access Name is used to identify the Gateway entity, which provides interworking with an external packet data network. For GPRS, the Network Access Name is an APN.
- Coding: As defined in TS 23.003 [36].

13 Tag values

This clause specifies the tag values used to identify the BER-TLV and SIMPLE-TLV data objects used in this specification, in addition to those defined in TS 102 223 [37].

13.1 BER-TLV tags in ME to SIM direction

Description	Length of tag	Value
SMS-PP download tag	1	'D1'
Cell Broadcast download tag	1	'D2'
MO Short message control tag (if (MOSMcontrol is supported)	1	'D5'

13.2 BER-TLV tags in SIM TO ME direction

No additional tag is defined for the SIM application.

13.3 SIMPLE-TLV tags in both directions

8	7	6	5	4	3	2	1
CR							
Tag value							

CR: Comprehension required for this object.

Unless otherwise stated, for SIMPLE-TLV data objects it is the responsibility of the SIM application and the ME to decide the value of the CR flag for each data object in a given command.

Handling of the CR flag at the receiving entity is described in subclause 6.10.

CR	Value
Comprehension required	1
Comprehension not required	0

Description	Length of tag	Tag value, bits 1-7 (Range: '01' - '7E')	Tag (CR and Tag value)
SS string tag	1	'09'	'09' or '89'
USSD string tag	1	'0A'	'0A' or '8A'
SMS TPDU tag	1	'0B'	'0B' or '8B'
Cell Broadcast page tag	1	'0C'	'0C' or '8C'
Cause tag	1	'1A'	'1A' or '9A'
Transaction identifier tag	1	'1C'	'1C' or '9C'
BCCH channel list tag	1	'1D'	'1D' or '9D'
BC Repeat Indicator tag	1	'2A'	'2A' or 'AA'
Timing Advance tag	1	'2E'	'2E' or 'AE'
Card reader identifier tag class "a"	1	'3A'	'3A' or 'BA'
not used	1	'3B'	-
SIM/ME interface transport level tag class "e"	1	'3C'	'3C' or 'BC'
not used	1	'3D'	-
Other address (data destination address) tag class "e"	1	'3E'	'3E' or 'BE'
Reserved for use in 3GPP TS 31.111		'3F' to '46'	
Network Access Name tag	1	'47'	'47' or 'C7'
Reserved for 3GPP2 (CDMA-SMS-TPDU)	1	'48'	'48' or 'C8'
Reserved for use in 3GPP TS 31.111		'49'	'49' or 'C9'
Reserved for TIA/EIA-136	1	'60'	'60' or 'E0'
Reserved for TIA/EIA-136	1	'61'	'61' or 'E1'

13.4 Type of Command and Next Action Indicator

The table below shows the values which shall be used for Type of Command coding (see subclause 12.6) and Next Action Indicator coding (see subclause 12.24) in addition to those defined in TS 102 223 [37].

Value	Name	used for Type of Command coding	used for Next Action Indicator coding
'11'	SEND SS	X	X
'12'	SEND USSD	X	X
'45' to '47'	Reserved		

14 Allowed Type of command and Device identity combinations

Only certain types of commands can be issued with certain device identities. These are defined below:

Command description	Source	Destination
CALL CONTROL	ME	UICC/SIM
CELL BROADCAST DOWNLOAD	Network	UICC/SIM
COMMAND RESULT	ME	UICC/SIM
CLOSE CHANNEL class "e"	UICC/SIM	Channel x
DISPLAY TEXT	UICC/SIM	Display
EVENT DOWNLOAD		
- MT call	Network	UICC/SIM
- Call connected at near end (MT call)	ME	UICC/SIM
- Call connected at far end (MO call)	Network	UICC/SIM
- Call disconnected at near end	ME	UICC/SIM
- Call disconnected at far end	Network	UICC/SIM
- Location status	ME	UICC/SIM
- User activity	ME	UICC/SIM
- Idle screen available	Display	UICC/SIM
- Card reader status class "a"	ME	UICC/SIM
- language selection	ME	UICC/SIM
- Data available class "e"	ME	UICC/SIM
- Channel status class "e"	ME	UICC/SIM
GET CHANNEL STATUS class "e"	UICC/SIM	ME
GET INKEY	UICC/SIM	ME
GET INPUT	UICC/SIM	ME
GET READER STATUS class "a"	UICC/SIM	ME
- If card reader status requested	UICC/SIM	ME
- If card reader identifier requested	UICC/SIM	card reader x
LANGUAGE NOTIFICATION	UICC/SIM	ME
LAUNCH BROWSER class "c"	UICC/SIM	ME
MENU SELECTION	Keypad	UICC/SIM
MO SHORT MESSAGE CONTROL	ME	UICC/SIM
MORE TIME	UICC/SIM	ME
OPEN CHANNEL class "e"	UICC/SIM	ME
PERFORM CARD APDU class "a"	UICC/SIM	Card reader x
PLAY TONE	UICC/SIM	Earpiece (see note)
POLLING OFF	UICC/SIM	ME
POLL INTERVAL	UICC/SIM	ME
POWER ON CARD class "a"	UICC/SIM	Card reader x
POWER OFF CARD class "a"	UICC/SIM	Card reader x
PROFILE DOWNLOAD	ME	UICC/SIM
PROVIDE LOCAL INFORMATION	UICC/SIM	ME
RECEIVE DATA class "e"	UICC/SIM	Channel x
REFRESH	UICC/SIM	ME
RUN AT COMMAND class "b"	UICC/SIM	ME
SELECT ITEM	UICC/SIM	ME
SEND DATA class "e"	UICC/SIM	Channel x
SEND DTMF	UICC/SIM	Network
SEND SHORT MESSAGE	UICC/SIM	Network
SEND SS	UICC/SIM	Network
SEND USSD	UICC/SIM	Network
SET UP CALL	UICC/SIM	Network
SET UP EVENT LIST	UICC/SIM	ME
SET UP IDLE MODE TEXT	UICC/SIM	ME
SET UP MENU	UICC/SIM	ME
SMS-PP DOWNLOAD	Network	UICC/SIM
TIMER MANAGEMENT	UICC/SIM	ME
TIMER EXPIRATION	ME	UICC/SIM

NOTE: The ME may route the tone to other loudspeakers (external ringer, car kit) if more appropriate.

15 Security requirements

TS 03.48 [24] specifies standardised methods of securing the content of application messages to and from the SIM Application Toolkit. If it is necessary to secure application messaging to Toolkit applications, then TS 03.48 [24] may be used.

Annex A (normative): Support of SIM Application Toolkit by Mobile Equipment

Support of SIM Application Toolkit is optional for Mobile Equipment. However, if an ME states conformance with a specific GSM release, it is mandatory for the ME to support all functions of that release.

The support of letter classes, which specify mainly ME hardware dependent features, is optional for the ME and may supplement the SIM Application Toolkit functionality described in this document. If an ME states conformance to a letter class, it is mandatory to support all functions within the respective letter class.

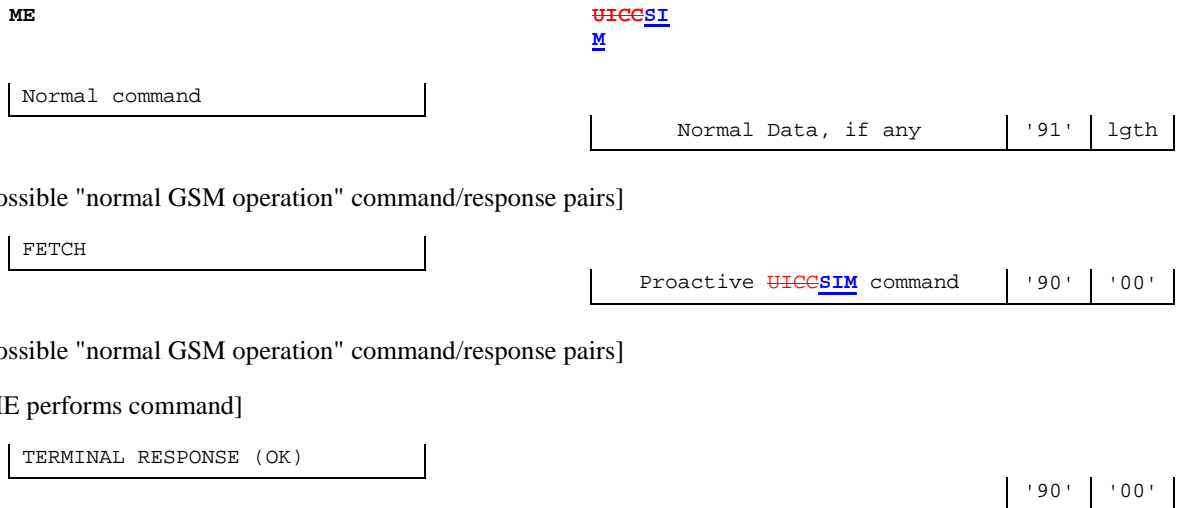
The table below indicates the commands of the optional letter classes:

Letter classes	Command/function description
a	Proactive command: GET READER STATUS Proactive command: PERFORM CARD APDU Proactive command: POWER ON CARD Proactive command: POWER OFF CARD Event download: Card reader status
b	Proactive command: RUN AT COMMAND
c	Proactive command: LAUNCH BROWSER Event download: Browser termination
d	Soft key support
e	Proactive command: OPEN CHANNEL Proactive command: CLOSE CHANNEL Proactive command: RECEIVE DATA Proactive command: SEND DATA Proactive command: GET CHANNEL STATUS Event download: Data available Event download: Channel status
f	Proactive command: SERVICE SEARCH Proactive command: GET SERVICE INFORMATION Proactive command: DECLARE SERVICE Event download: Local connection event

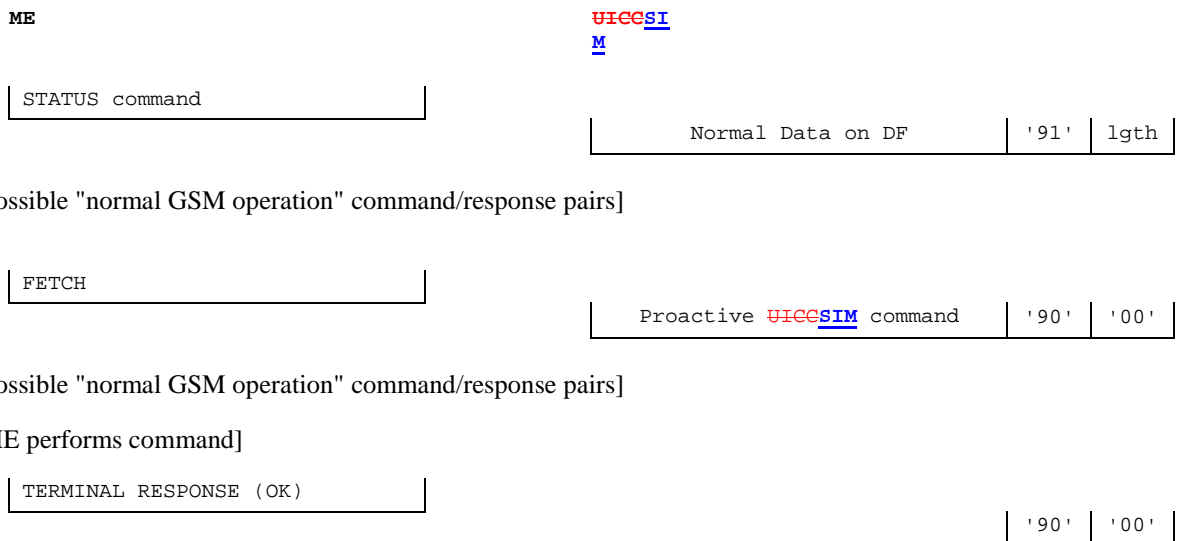
Annex B (informative): Example command sequences for proactive **UICC****SIM**

This subclause shows example APDU sequences for proactive **UICC****SIM** commands, and is for information only.

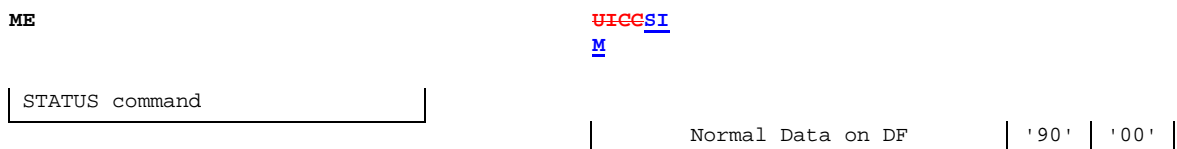
Case 1: Proactive **UICC****SIM** request following a normal command from the ME



Case 2: Proactive **UICC****SIM** request following a (polling) STATUS command from the ME



Case 3: STATUS command from ME, not followed by any proactive **UICC****SIM** request



Case 4: Unsuccessful proactive UICCSIM request, followed by UICCSIM asking the ME to retry

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Normal command</div>	<p>UICC<u>SIM</u></p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Normal Data, if any</div>
	'91'
	lgth

[Possible "normal GSM operation" command/response pairs]

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">FETCH</div>	<p>UICC<u>SIM</u></p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Proactive UICC<u>SIM</u> command</div>
	'90'
	'00'

[Possible "normal GSM operation" command/response pairs]

[ME performs command]

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">TERMINAL RESPONSE (temporary problem)</div>	<p>UICC<u>SIM</u></p>
	'91'
	lgth

[Possible "normal GSM operation" command/response pairs]

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">FETCH</div>	<p>UICC<u>SIM</u></p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Repeat of proactive UICC<u>SIM</u> command</div>
	'90'
	'00'

[Possible "normal GSM operation" command/response pairs]

[ME performs command]

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">TERMINAL RESPONSE (OK)</div>	<p>UICC<u>SIM</u></p>
	'90'
	'00'

Case 5: Unsuccessful proactive UICCSIM request, and the UICCSIM does not ask for the ME to retry

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Normal command</div>	<p>UICC<u>SIM</u></p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Normal Data, if any</div>
	'91'
	lgth

[Possible "normal GSM operation" command/response pairs]

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">FETCH</div>	<p>UICC<u>SIM</u></p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">Proactive UICC<u>SIM</u> command</div>
	'90'
	'00'

[Possible "normal GSM operation" command/response pairs]

[ME performs command]

<p>ME</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;">TERMINAL RESPONSE (temporary problem)</div>	<p>UICC<u>SIM</u></p>
	'90'
	'00'

Annex C (informative):
Example of DISPLAY TEXT Proactive ~~UICC~~SIM Command

See TS 102 223 [37].

Annex D (normative): Structure of SIM Application Toolkit communications

See TS 102 223 [37].

Annex E (informative): ME display in proactive SIM session

See TS 102 223 [37].

Annex F (informative): Help information feature processing

See TS 102 223 [37].

Annex G (informative): Monitoring of events

See TS 102 223 [37].

Annex H (normative): Support of Multiple Card Operation

See TS 102 223 [37].

Annex I (informative): Multiple Card proactive command examples

See TS 102 223 [37].

Annex J (informative): Bearer independent protocol proactive command examples

See TS 102 223 [37].

Annex K (informative): WAP References

See TS 102 223 [37].