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Technical Specification

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Foreword

This Technical Specification (TS) 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:

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- x the first digit:
  - 1 presented to TSG for information;
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1 Scope

The present document defines the interface between the Universal ICC (UICC) and the Mobile Equipment (ME), and mandatory ME procedures, specifically for "USIM Application Toolkit".

USAT is a set of commands and procedures for use during the network operation phase of 3G, in addition to those defined in TS 31.101 [13].

Specifying the interface is to ensure interoperability between a UICC and an ME independently of the respective manufacturers and operators.

The present document defines:

- the commands;
- the application protocol;
- the mandatory requirements on the UICC and ME for each procedure.

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

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] 3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)".

[3] 3GPP TS 22.042: "Network identity and timezone (NITZ); Service description; Stage 1".

[6] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

[7] 3GPP TS 23.122: "Non Access Stratum functions related to Mobile Station (MS) in idle mode".

[8] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[10] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[11] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats and coding".

[13] 3GPP TS 31.101: "UICC-Terminal Interface; Physical and Logical Characteristics".

[20] GSM 02.07: "Mobile Stations (MS) features".

[21] 3GPP TS 42.017: "Subscriber Identity Modules; Functional characteristics".

[22] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN) ".

[23] 3GPP TS 23.048: "Security Mechanisms for the SIM application toolkit Stage 2".

[27] 3GPP TS 44.018: "Mobile Radio Interface Layer 3 Specification; Radio Resource Control Protocol"

[29] TIA/EIA-136-123: "Third Generation Wireless – Digital Control Channel Layer 3, April 23, 2001"

[30] 3GPP TS 23.003: "Numbering, addressing and identification”

3 Definitions, abbreviations and symbols

3.2 Abbreviations

For the purpose of the present document, the following abbreviations apply:

ADN	Abbreviated Dialling Number
CBMI	Cell Broadcast Message Identifier
CCP	Capability/Configuration Parameter
EGPRS	EDGE General Packet Radio Service
ETSI	European Telecommunications Standards Institute
etu	elementary time unit
FDN	Fixed Dialling Number
GGSN	Gateway GPRS Support Node
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
LND	Last Number Dialled
RAND	A RANDom challenge issued by the network
SRES	Signed RESponse calculated by a UICC
SSC	Supplementary Service Control string
TS	Technical Specification
USAT	USIM Application Toolkit
USIM	Universal Subscriber Identity Module

4 Overview of USAT

4.2 Proactive UICC

Proactive UICC gives a mechanism whereby the UICC can initiate actions to be taken by the ME. These actions include:

- sending a short message;
- sending a SS control or USSD string;

4.3 Data download to UICC

Data downloading to the UICC 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-ME interface uses the ENVELOPE command.

4.5 Call control by USIM

When this service is activated by the USIM, all dialled digit strings, supplementary service control strings and USSD strings or PDP context parameters are first passed to a USIM application before the ME sets up the call, the supplementary service operation or the USSD operation or establishes the PDP context. The ME shall also pass to the USIM application at the same time its current serving cell. The USIM application has the ability to allow, bar or modify the call, the supplementary service operation, the USSD operation or PDP context activation.by another context activation. The USIM application 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.

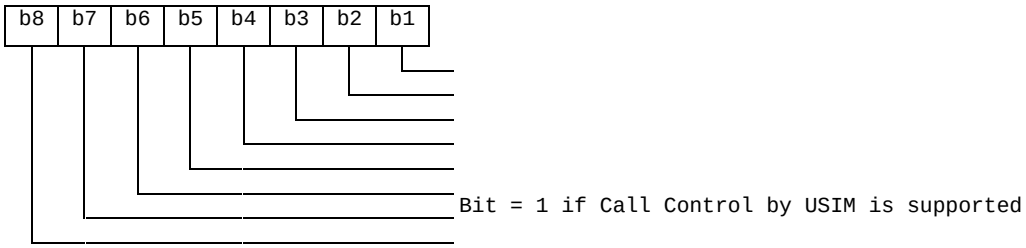
4.6 MO Short Message control by USIM

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

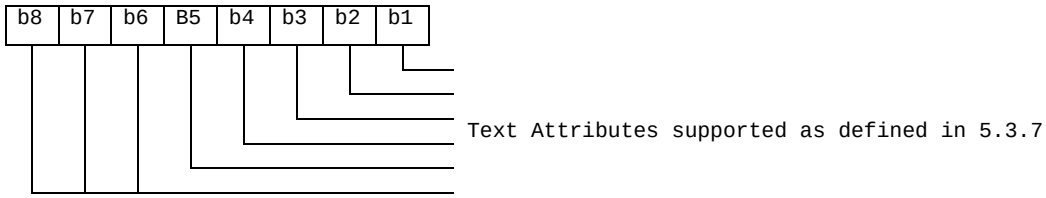
5 Profile download

5.2 Structure and coding of TERMINAL PROFILE

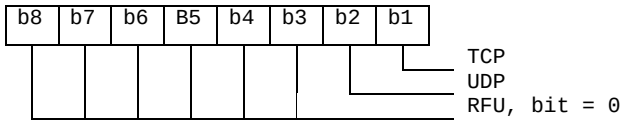
First byte (Download):



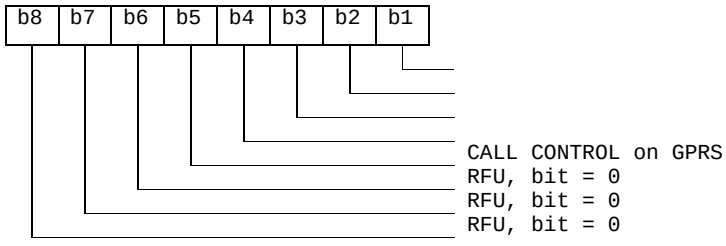
Sixteenth byte: (Screen effects)



Seventeenth byte:



Eighteenth byte:



5.3 Definition of display parameters in Profile download

5.3.7 Text Attributes

Text that is displayed on the ME screen can be displayed in various formats if the ME supports it. A description of the various text formats are defined in 3GPP TS 23.040 “Technical Realization of the Short Message Service (SMS)”[5]

6 Proactive UICC

6.1 Introduction

The UICC can issue a variety of commands through this mechanism, given in alphabetical order:

- **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;

6.3 General procedure

6.4 Proactive UICC commands and procedures

6.4.5 PLAY TONE

Upon receiving this command, the ME shall check if it is currently in, or in the process of setting up (SET-UP message sent to the network, see 3G 24.008 [9]), a speech call.

6.4.7 REFRESH

6.4.7.1 EF_{IMSI} changing procedure

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

- USIM Initialization. This command shall not be used if an EF_{IMSI} is changed, as the behaviour of the UE is unpredictable;
- File Change Notification. This command shall not be used if an EF_{IMSI} is changed, as the behaviour of the UE is unpredictable;
- USIM Initialization and File Change Notification. This command shall not be used if an EF_{IMSI} is changed, as the behaviour of the UE is unpredictable;
- USIM Initialization and Full File Change Notification. This command shall not be used if an EF_{IMSI} is changed, as the behaviour of the UE is unpredictable;
- UICC Reset. Normal UICC Reset procedure is carried out;
- USIM Application Reset. Normal USIM Application Reset procedure is carried out;
- 3G Session Reset. Normal 3G Session Reset procedure is carried out.

If an EF_{IMSI} is to be updated, neither EF_{IMSI} nor EF_{LOCI} shall be updated in the UICC before the 3G session termination procedure has been completed by the ME.

6.4.10 SEND SHORT MESSAGE

Two types are defined:

- 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 UICC 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 [4]. 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 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. 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. The text string provided by the UICC shall not be longer than 70 characters. It shall use the 16-bit UCS2 alphabet format, in accordance with TS 23.038 [4]. The text length (which is part of the SMS TPDU) given by the UICC 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. These shall count as packed text message. The SMS TPDU from the UICC 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 shall not be longer than 160 characters. It shall use the SMS default 7-bit coded alphabet as defined in TS 23.038 [4] with bit 8 set to 0. The text length given by the UICC 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 [4] before submitting the message to the network.

Optionally, the UICC 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 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 short message. If an icon is provided by the UICC, 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 clause 6.5.4).

- If the alpha identifier is provided by the UICC 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 short message.

- If the alpha identifier is not provided by the UICC, the ME may give information to the user concerning what is happening.

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 UICC 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 UICC, 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 using TERMINAL RESPONSE (network currently unable to process command). If a null alpha identifier was provided by the UICC, the ME should not give any information to the user at the unsuccessful network reception.

The destination address and the SMSC address included in the SEND SHORT MESSAGE proactive command shall not be checked against those of the FDN list, even if the Fixed Dialling Number service is enabled.

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 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 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 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 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 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, 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 clause 6.5.4);

    - if the alpha identifier is provided by the UICC 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, 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 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, 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 using TERMINAL RESPONSE (SS Return Result error code).
  If a null alpha identifier was provided by the UICC, 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 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, 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 Dialled service, the ME shall not store in EF_{LND} the supplementary service control string sent by the UICC 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 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 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 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 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, 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 clause 6.5.4);

  - if the alpha identifier is provided by the UICC 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, 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, 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 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, the ME should not give any information to the user at the reception of a USSD Return Result message;

- if the UE clears the transaction by sending a RELEASE COMPLETE upon request of the user, the ME shall inform the UICC 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 UICC using TERMINAL RESPONSE (USSD Return Result error code). If a null alpha identifier was provided by the UICC, 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 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, 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

It is possible for the UICC to request the ME to set up an emergency call by supplying the number "112" as called party number. If the UICC supplies a number stored in EF_{ECC}, this shall not result in an emergency call.

- if the command is rejected because the ME is busy on a SS transaction, the ME informs the UICC 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, or because the ME does not support the capability configuration parameters requested by the UICC, the ME informs the UICC 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 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 using TERMINAL RESPONSE (Network currently unable to process command).

6.4.15 PROVIDE LOCAL INFORMATION

This command requests the ME to send current local information to the UICC. 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, suitable only for GSM access network;

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).

NMR are only available if the ME is connected to a GSM access network. 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 44.018 [27]. 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 44.018 [27] when the multiband reporting parameter equals zero.

NOTE 2: 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 3: Network Measurement Results are defined in TS 44.018 [27] as Measurement Results.

The BCCH channel list is only available if the ME is connected to a GSM access network.

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 3G 22.042 [3]). If the time zone information is not available, the ME shall return 'FF' for this element.

Timing advance is only available if the ME is connected to a GSM access network. 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 44.018 [27]. 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.

6.4.26 LAUNCH BROWSER

- if the command is rejected because the ME is busy on a SS transaction, the ME informs the UICC using TERMINAL RESPONSE (ME unable to process command – ME currently unable to process command);

6.4.27 OPEN CHANNEL

6.4.27.1 OPEN CHANNEL related to CS bearer

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 SS transaction, the ME informs the UICC using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction). The operation is aborted.

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

- if the UICC did not request link re-connection then the ME shall inform the UICC using TERMINAL RESPONSE (network currently unable to process command), and not retry to set-up the link:

6.4.27.2 OPEN CHANNEL related to GPRS

The UICC provides to the ME a list of parameters necessary to activate a PDP context.

The ME shall attempt at least one PDP context activation.

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 immediate PDP context activation is requested and the ME is unable to set-up a channel using the exact parameters provided by the UICC, the ME sets up the channel using the best parameters it can support and informs the UICC of the channel identifier and the modified parameters using TERMINAL RESPONSE (Command performed with modification);

- if immediate PDP context activation is requested and the ME is unable to activate the PDP context with the network using the exact parameters provided by the UICC, the ME informs the UICC using TERMINAL RESPONSE (Network currently unable to process command). The operation is aborted;

- - if the command is rejected because the class B ME is busy on a call, the ME informs the UICC using TERMINAL RESPONSE (ME unable to process command - currently busy on call). The operation is aborted;

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

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

- if immediate PDP context activation is requested, the ME allocates buffers, activates the PDP context and informs the UICC and reports the channel identifier using TERMINAL RESPONSE (Command performed successfully);

- if on demand PDP context activation is requested, the ME allocates buffers, informs the UICC 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:

- optionally, during PDP context activation, the ME can give some audible or display indication concerning what is happening;

- if the user stops the PDP context activation attempt before a result is received from the network, the ME informs the UICC using TERMINAL RESPONSE (user cleared down call before connection or network release).

6.4.27.3 OPEN CHANNEL related to local bearer

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 SS transaction, the ME informs the UICC using TERMINAL RESPONSE (ME unable to process command - currently busy on SS transaction). The operation is aborted.

6.4.33 SERVICE SEARCH

If the ME is able to execute the command:

- the ME performs the service search, gathers all received responses and informs the UICC using TERMINAL RESPONSE(command performed successfully, Service Availability).
- If the command fails because no device in the radio range supported the requested service, the ME informs the UICC using TERMINAL RESPONSE (Bearer independent protocol error – Service error).
- If the command fails because there is no device reachable, the ME informs the UICC using TERMINAL RESPONSE (Bearer independent protocol error – Remote device is not reachable).

6.5 Common elements in proactive UICC commands

6.5.5 Text Attribute

Some commands may provide a text attribute. Text attributes are intended to enhance the MMI when providing information to the user. The display of various text formats as described in 3GPP TS 23.040 “Technical Realization of the Short Message Service (SMS)”[5] are optional for the ME.

6.6 Structure of proactive UICC commands

The general structure of proactive UICC commands using TLV objects is described in annex C.

6.6.1 DISPLAY TEXT

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Text string	8.15	M	Y	C
Icon identifier	8.31	O	N	D
Immediate response	8.43	O	N	E
Duration	8.8	O	N	F
Text attribute	8.70	O	N	G

- Duration:
  - Contents: the required duration for execution of the command before the timeout expires. Resolution and the precision of the time value are in accordance with clause 6.4.21 Timer Management.
- Text attribute applies to the Text String.

6.6.2 GET INKEY

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Text string	8.15	M	Y	C
Icon identifier	8.31	O	N	D
Duration	8.8	O	N	E
Text attribute	8.70	O	N	F

- Text string:

- Contents: text for the ME to display in conjunction with asking the user to respond.

- Duration:

  - Contents: the duration for execution of the command before the timeout expires. Resolution and the precision of the time value are in accordance with clause 6.4.21 Timer Management.

- Text attribute applies to the Text String.

6.6.3 GET INPUT

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Text string	8.15	M	Y	C
Response length	8.11	M	Y	D
Default Text	8.23	O	N	E
Icon identifier	8.31	O	N	F
ext attribute	8.70	O	N	G

- Text string:

  - Contents: text for the ME to display in conjunction with asking the user to respond.

  - Text attribute applies to Text string when supported

- Response length:

  - Contents: the minimum and maximum acceptable lengths in characters (see clause 6.4.3) for the response from the user.

- Default Text:

  - Contents: text for the ME to display, corresponds to a default text string offered by the UICC.

  - Text attribute does not apply to Default text.

6.6.5 PLAY TONE

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Tone	8.16	O	N	D
Duration	8.8	O	N	E
Icon identifier	8.31	O	N	F
Text attribute	8.70	C	N	G

- Tone:

  - Contents: the standard supervisory tone or proprietary ME tone that the ME shall generate, either on its own or on top of the downlink audio path. If no tone is specified, then the ME shall default to "general beep".

NOTE: Some supervisory tones are optional for mobile equipment (see TS 22.001 [22]).

- Duration:

- Contents: the length of time for which the ME shall generate the tone, if the tone is continuous or repeatable. For single tones, the value of this data object shall be ignored by the ME. If no duration is specified, the ME shall default to a duration determined by the ME manufacturer.

- Text attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier data object is present.

6.6.7 SET-UP MENU

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D1+D2+...Dn+E+F+G+H+I)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	M	Y	C
Item data object for item 1	8.9	M	Y	D1
Item data object for item 2	8.9	O	N	D2
.....	8.9	O	N	Dx
Item data object for last item in list	8.9	O	N	Dn
Items Next Action Indicator	8.24	O	N	E
Icon identifier	8.31	O	N	F
Item Icon identifier list	8.32	O	N	G
Text Attribute	8.70	O	N	H
Item text attribute list	8.71	O	N	I

The SET-UP MENU command BER-TLV data object shall contain Item SIMPLE-TLV data objects. Each Item data object contains an item in the list, for the user to choose. The length of each Item data object may be different. Within a list, each Item shall have a unique item identifier.

If the "Item data object for item 1" is a null data object (i.e. length = '00' and no value part), this is an indication to the ME to remove the existing menu from the menu system in the ME.

If the UICC provides an Items Next Action Indicator data object, the comprehension required flag shall be set to '0'.

The UICC may provide a title icon identifier data object and/or an item icon identifier list data object. The item icon identifier data object contains an icon identifier for each item.

The UICC provides a title (Alpha Identifier) with a text atribute data object and/or an item text attribute list data object. The item text attribute list data object contains a text attribute for each item.

6.6.8 SELECT ITEM

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D1+D2+...Dn+E+F+G+H+I+J)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Item data object for item 1	8.9	M	Y	D1
Item data object for item 2	8.9	O	N	D2
.....	8.9	O	N	Dx
Item data object for last item in list	8.9	O	N	Dn
Items Next Action Indicator	8.24	O	N	E
Item Identifier	8.10	O	N	F
Icon identifier	8.31	O	N	G
Item Icon identifier list	8.32	O	N	H
Text attribute	8.70	C	N	I
Item text attribute list	8.71	O	N	J

The SELECT ITEM command BER-TLV data object shall contain Item SIMPLE-TLV data objects. Each Item data object contains an item in the list, for the user to choose. The length of each Item data object may be different. Within a list, each Item shall have a unique item identifier. The SELECT ITEM command BER-TLV data object may contain a single Item Identifier data object as an indication of the default item. The Comprehension Required flag in the Item Identifier data object shall be set to 0, indicating that it is not mandatory for the ME to support indication of the default item.

If the UICC provides an Items Next Action Indicator data object, the comprehension required flag shall be set to '0'.

The UICC may provide a title icon identifier data object and/or an item icon identifier list data object. The item icon identifier data object contains an icon identifier for each item.

The Text attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present. The item text attribute list data object contains a text attribute for each item.

6.6.9 SEND SHORT MESSAGE

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Address	8.1	O	N	D
SMS TPDU (SMS-SUBMIT or SMS-COMMAND)	8.13	M	Y	E
Icon identifier	8.31	O	N	F
Text attribute	8.70	C	N	G

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.

The Text attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.10 SEND SS

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
SS string	8.14	M	Y	D
Icon identifier	8.31	O	N	E
Text attribute	8.70	C	N	F

The Text attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.11 SEND USSD

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
USSD String	8.17	M	Y	D
Icon identifier	8.31	O	N	E
Text attribute	8.70	C	N	F

The Text attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.12 SET UP CALL

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G+H+I+J+K+L)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier (user confirmation phase)	8.2	O	N	C
Address	8.1	M	Y	D
Capability configuration parameters	8.4	O	N	E
Subaddress	8.3	O	N	F
Duration	8.8	O	N	G
Icon identifier (user confirmation phase)	8.31	O	N	H
Alpha identifier (call set up phase)	8.2	O	N	I
Icon identifier (call set up phase)	8.31	O	N	J
Text attribute (user confirmation phase)	8.70	C	N	K
Text attribute (call set up phase)	8.70	C	N	L

If the capability configuration parameters are not present, the ME shall assume the call is a speech call.

If the subaddress is not present, the ME shall not provide a called party subaddress to the network.

If the duration is not present, the UICC imposes no restrictions on the ME of the maximum duration of redials.

The Text attribute (user confirmation phase) applies to the Alpha Identifier (user confirmation phase). The Text attribute (call set up phase) applies to the Alpha identifier (call set up call phase). One Text attribute may be present only if at least one Alpha Identifier is present. Both Text attributes may be present only if both Alpha Identifiers are present. If only one Text attribute data object is present, it shall apply to the first or unique Alpha identifier present in the command.

6.6.22 SET UP IDLE MODE TEXT

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	8.2	M	Y	1
Length (A+B+C+D+E)	-	M	Y	1 or 2
Command details	7.5.6	M	Y	A
Device identities	7.5.7	M	Y	B
Text string	7.5.15	M	Y	C
Icon identifier	8.31	O	N	D
Text attribute	8.70	O	N	E

If the "Text string" is a null data object (i.e. length = '00' and no value part), the ME shall remove the existing idle mode text in the ME.

The Text Attribute applies to the Text String.

6.6.23 RUN AT COMMAND

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device Identities	8.7	M	Y	B
Alpha Identifier	8.2	O	N	C
AT Command	8.40	M	Y	D
Icon identifier	8.31	O	N	E
Text attribute	8.70	C	N	F

The Text attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.24 SEND DTMF COMMAND

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device Identities	8.7	M	Y	B
Alpha Identifier	8.2	O	N	C
DTMF String	8.44	M	Y	D
Icon identifier	8.31	O	N	E
Text attribute	8.70	C	N	F

The Text attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.26 LAUNCH BROWSER

Description	Clause	M/O	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F1+ F2+…+FN+G+H+I+J)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device Identities	8.7	M	Y	B
Browser Identità	8.47	O	N	C
URL	8.48	M	Y	D
Bearer	8.49	O	N	E
Provisioning File Reference 1	8.50	O	N	F1
Provisioning File Reference 2	8.50	O	N	F2
…..	8.50	O	N	Fx
Provisioning File Reference N	8.50	O	N	FN
Text String (Gateway/Proxy Identity)	8.15	O	N	G
Alpha identifier (user confirmation phase)	8.2	O	N	H
Icon identifier (user confirmation phase)	8.31	O	N	I
Text attribute	8.70	C	N	J

If the URL data object is provisioned the URL value shall take precedence over any other URL value.

If Provisioning File Reference data object is present in the command then it shall take precedence over Bearer and Proxy Identity. If several Provisioning File References are present in the same command the information in the first reference shall take precedence.

Gateway/Proxy Identity is a text string which gives to the mobile the name/identity of the Gateway/Proxy to be used for connecting to the URL. This Gateway/Proxy Identity is required when the bearer data object is present.

Text attribute applies to the alpha identifier (user confirmation phase). It may be present only if the Alpha Identifier (user confirmation phase) is present.

6.6.27 OPEN CHANNEL

6.6.27.1 OPEN CHANNEL related to CS bearer

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G+H+I+J+K+L+M+N+O+P)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Address	8.1	M	Y	E
Subaddress	8.3	O	N	F
Duration 1	8.8	C	N	G
Duration 2	8.8	O	N	H
Bearer description	8.52	M	Y	I
Buffer size	8.55	M	Y	J
Other address (local address)	8.58	O	N	K
Text String (User login)	8.15	O	N	L
Text String (User password)	8.15	O	N	M
SIM/ME interface transport level	8.59	O	N	N
Data destination address	8.58	C	Y	O
Text attribute	8.70	C	N	P

The subaddress may be requested. If the subaddress is not present, the ME shall not provide a called party subaddress to the network.

Duration 1 indicates the duration of reconnection tries. If Duration 1 is not present or is null, the UICC imposes no restrictions on the ME. Duration 1 shall be present if Duration 2 is present.

Duration 2 indicates the timeout value before the ME releases the link if there is no data exchanged on the link. If duration 2 is not present the link is never released automatically by the ME.

The local address parameter (see 8.58) provides information to the ME necessary to identify the local device (i.e. it provides an IP address). If local address length is null, dynamic local address is required. If parameter is not present, the mobile may use the mobile default local address configuration.

The ME may support a remote access login feature (e.g. PPP login). If supported by the ME, the UICC may provide "User login" and "User password" parameters which allow the ME to answer an access authentication challenge. 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 USAT 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 USAT 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 USAT. 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 [12]) and the USAT 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.

Text attribute applies to the alpha identifier. It may be present only if the Alpha Identifier is present.

6.6.27.2 OPEN CHANNEL related to GPRS

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G+H+I+J+K)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Bearer description	8.52	M	Y	E
Buffer size	8.55	M	Y	F
Network Access Name	8.61	O	N	G
Other address (local address)	8.58	O	N	H
SIM/ME interface transport level	8.59	O	N	I
Data destination address	8.58	C	Y	J
Text attribute	8.70	C	N	K

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 Namein the mobile configuration or the default subscription value.

The local address parameter (see 8.58) 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 USAT 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.

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 USAT 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 USAT. 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 [12]), and the USAT 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).

Text attribute applies to the alpha identifier. It may be present only if the Alpha Identifier is present.

6.6.27.3 OPEN CHANNEL for local links

Description	Clause	M/O/C	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F+G+H+I+J+K+L+M)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Duration 1	8.8	C	N	E
Duration 2	8.8	O	N	F
Bearer description	8.52	M	Y	G
Buffer size	8.55	M	N	H
Text String (User password)	8.15	O	N	I
SIM/ME interface transport level	8.59	O	N	J
Data destination address	8.58	C	Y	K
Remote Entity Address	8.69	O	N	L
Text attribute	8.70	C	N	M

Duration 1 indicates the duration of reconnection tries. If Duration 1 is not present or is null, the UICC imposes no restrictions on the ME. Duration 1 shall be present if Duration 2 is present.

Duration 2 indicates the timeout value before the ME releases the link if there is no data exchanged on the link. If duration 2 is not present the link is never released automatically by the ME.

Bearer Description gives detailed information characterising the bearer. When the UICC acts as a server, local information (local service record data) is included in Bearer Description; in addition, if the UICC provides a Service Record field (which is part of the Bearer Description TLV) different from '00', the ME shall ignore it and proceed with the command. When the UICC acts as a client, remote information (remote service record data) is included in Bearer Description; in addition, if the UICC provides a Service Identifier field (which is part of the Bearer Description TLV) different from 'FF', the ME shall ignore it and proceed with the command.

The UICC may optionally provide a user password that should be used by the ME for authentication. For the Bluetooth local bearer, the user password corresponds to the passkey/PIN as defined in [28].

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. If the parameter is not present, the SIM/ME interface is the bearer level. The data that will be received/sent from the SAT to the transport layer is a SDU that will be received/transmitted in the Transport-PDU.

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).

The Remote Entity Address parameter provides information to the ME necessary to identify the entity which provides access to the requested resource. Depending on the local technology, this parameter is necessary or not. For Bluetooth, it shall be the BD_ADDR of the remote device.

Text attribute applies to the alpha identifier. It may be present only if the Alpha Identifier is present.

6.6.28 CLOSE CHANNEL

Description	Clause	M/O	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device Identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Text attribute	8.70	C	N	E

The Text Attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.29 RECEIVE DATA

Description	Clause	M/O	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device Identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Channel data length	8.54	M	Y	E
Text attribute	8.70	C	N	F

The Text Attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.30 SEND DATA

Description	Clause	M/O	Min	Length
Proactive UICC command Tag	9.2	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Channel data	8.53	M	Y	E
Text attribute	8.70	C	N	F

The Text Attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.32 SERVICE SEARCH

Description	Section	M/O	Min	Length
Proactive SIM command Tag	9.3	M	Y	1
Length (A+B+C+D+E+F+G)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device Identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Service search	8.66	M	Y	E
Device filter	8.65	O	N	F
Text attribute	8.70	C	N	G

The Text Attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.6.33 GET SERVICE INFORMATION

Description	Clause	M/O	Min	Length
Proactive SIM command Tag	9.3	M	Y	1
Length (A+B+C+D+E+F)	-	M	Y	1 or 2
Command details	8.6	M	Y	A
Device Identities	8.7	M	Y	B
Alpha identifier	8.2	O	N	C
Icon identifier	8.31	O	N	D
Attribute information	8.67	M	Y	E
Text attribute	8.70	C	N	F

The Text Attribute applies to the Alpha Identifier. It may be present only if the Alpha Identifier is present.

6.7 Command results

- Temporary problems are further defined as:
    - ME currently busy on SS transaction;
    - ME currently busy on USSD operation;
    - network is currently unable to process the command. Specific cause values are the cause values given by the network, as defined in 3G 24.008 [9];
    - the user cleared down the call, before the call connected (CONNECT received from network, as defined in 3G 24.008 [9]) or before the network released the call;

-Permanent problems are further defined as:

- SS Return Error. This is given to the UICC 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 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 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;

6.8 Structure of TERMINAL RESPONSE

Command parameters/data.

Description	Clause	M/O/C	Min	Length
Text string (only required in response to a GET INKEY or GET INPUT or SEND USSD proactive command)	8.15	C	N	E
Local information (only required in response to PROVIDE LOCAL INFORMATION proactive command)	8.19, 8.20, 8.22, 8.29, 8.39, 8.45, 8.46, 8.62	C	N	G
Call control requested action (only required if call control by USIM has modified a proactive command SET UP CALL, SEND SS or SEND USSD in another type of request).	8.30	C	N	H
Result data object 2 (only required if call	8.12	C	N	I

Description	Clause	M/O/C	Min	Length
control by USIM has modified a proactive command SET UP CALL, SEND SS or SEND USSD in another type of request).				
Text string2 (only required if call control by USIM has modified the proactive command SET UP CALL or SEND SS into a USSD request)	8.15	C	N	Q

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 UICC 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.

6.8.16 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 USIM into a USSD request ('05' result value), it shall supply the Text string 2. The Text string 2 shall contain the text returned within the Return Result message from the network for the USSD response. Text string 2 is equivalent to the Text string in the Terminal Response to a SEND USSD command.

6.11 Proactive commands versus possible Terminal response

Table 6.1 shows for each proactive command the possible terminal response returned (marked by a "●" character).

Table 6.1: Proactive commands versus possible Terminal response (continued overleaf…)

		PROACTIVE COMMAND																			
		RE-FRESH	MORE TIME	POLL INTER-VAL	POLL-ING OFF	SETUP EVENT LIST	SET UP CALL	SEND SS	SEND USSD	SEND SMS	SEND DTMF	LAUNCH BROWSER	PLAY TONE	DIS-PLAY TEXT	GET INKEY	GET INPUT	SEL-ECT ITEM	SET UP MENU	PRO-VIDE LOCAL INFO	TIMER MAN-AGE-MENT	SETUP IDLE MODE TEXT
	TERMINAL RESPONSE	'01'	'02'	'03'	'04'	'05'	'10'	'11'	'12'	'13'	'14'	'15'	'20'	'21'	'22'	'23'	'24'	'25'	'26'	'27'	'28'
14	USSD or SS Transaction terminated by user						•	•	•												
34	SS Return Error						•	•													
35	SMS RPERROR									•											
37	USSD return error								•												

Table 6.1: Proactive commands versus possible Terminal response

		PROACTIVE COMMAND															
		CARD APDU	POWER ON CARD	POWER OFF CARD	GET READ-ER STATUS	RUN AT COMM-AND	LANG NOTIFI CA TION	OPEN CHANN EL	CLOSE CHANN EL	RECEIVE DATA	SEND DATA	GET CHANN EL STATUS	SERVIC E SEARC H	GET SERVIC E INFORM ATION	DECLA RE SERVIC E		
	TERMINAL RESPONSE	**'30'**	**'31'**	**'32'**	**'33'**	**'34'**	**'35'**	**'40'**	**'41'**	**'42'**	**'43'**	**'44'**	**'45'**	**'46'**	**'47'**		
14	USSD or SS Transaction terminated by user																
34	SS Return Error																
35	SMS RPERROR																
37	USSD return error																

7 ENVELOPE Commands

7.1 Data download to UICC

7.1.1 SMS-PP data download

7.1.1.1 Procedure

If the service "data download via SMS Point-to-point" is allocated and activated in the UICC Service Table (see 3G TS 31.101 [13]), 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 [7]); 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 UICC 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 UICC;
- if the UICC responds with '90 00', the ME shall acknowledge the receipt of the short message to the network using an RP-ACKmessage. The response data from the UICC 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 3G 23.040 [5] and 3G 24.011 [10]). The values of protocol identifier and data coding scheme in RP-ACK shall be as in the original message;
- if the UICC 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 3G 23.040 [5]).
- If the UICC responds with '6F XX', the ME shall send back an RP-ERROR message to the network with the TP-FCS value indicating "UICC 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 USAT application to indicate a Data Download error is by using the specific code '62 XX' or '63 XX' as desribed in the following bullet point.

- if the UICC responds with '62 XX' or '63 XX', the ME shall acknowledge the receipt of the short message to the network using an RP-ERROR message. The response data from the UICC 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 3G 23.040 [5] and 3G 24.011 [10]). 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 available in the UICC 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 3G TS 31.102 [14].

7.1.1.2 Structure of ENVELOPE (SMS-PP DOWNLOAD)

Direction: ME to UICC.

The command header is specified in TS 31.101 [13].

Command parameters/data.

Description	Clause	M/O/C	Min	Length
SMS-PP download tag	9.1	M	Y	1
Length (A+B+C)	-	M	Y	1 or 2
Device identities	8.7	M	Y	A
Address	8.1	O	N	B
SMS TPDU (SMS-DELIVER)	8.13	M	Y	C

- Device identities: the ME shall set the device identities to:
  - source: Network;
  - destination: UICC.
- Address: The address data object holds the RP_Originating_Address of the Service Centre (TS-Service-Centre-Address), as defined in 3G 24.011 [10].

Response parameters/data.

It is permissible for the UICC not to provide response data. If the UICC provides response data, the following data is returned.

Byte(s)	Description	Length
1-X (X□128)	UICC Acknowledgement	X

7.1.2 Cell Broadcast data download

7.1.2.1 Procedure

If the service "data download via SMS-CB" is available in the UICC Service Table or USIM Service Table (see TS 31.102 [14]), 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 UICC 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 3G 23.041 [6] and 3G TS 31.102 [14].

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

7.1.2.2 Structure of ENVELOPE (CELL BROADCAST DOWNLOAD)

Direction: ME to UICC.

The command header is specified in TS 31.101 [13].

Command parameters/data.

Description	Clause	M/O/C	Min	Length
Cell Broadcast Download tag	9.1	M	Y	1
Length (A+B)	-	M	Y	1 or 2
Device identities	8.7	M	Y	A
Cell Broadcast page	8.5	M	Y	B

- Device identities: the ME shall set the device identities to:
  - source: Network;
  - Destination: UICC.

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

7.2 Menu Selection

7.2.2 Structure of ENVELOPE (MENU SELECTION)

7.3 Call Control and MO SMS control by USIM

7.3.1 Call Control by USIM

7.3.1.1 Procedure for mobile originated calls

If the service "call control" is available in the USIM Service Table (see TS 31.102 [14]), then the ME shall follow the procedure below:

- 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;

or instead send a supplementary service or USSD operation using the data supplied by the UICC. 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, if it is within the ME's capabilities to do so. If the UICC requires a call set-up or supplementary service or USSD operation that is beyond the ME's capabilities (e.g. the UICC 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 to request the ME to set up an emergency call by supplying the number "112" as the response data. If the UICC 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 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 USIM" 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 USIM, 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 USIM or MO short message control by USIM, 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 USIM or MO short message control by USIM, 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.

The ME shall then follow the call set-up procedure defined in 3G 24.008 [9] or the supplementary service or USSD operation procedure defined in 3G 24.080 [11].

7.3.1.2 Procedure for Supplementary Services and USSD

If the service "call control" is available in the USIM Service Table (see TS 31.102 [14]), then for all supplementary service and USSD operations (including those resulting from a SEND SS or SEND USSD proactive UICC 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 3G 22.030 [2], even if this SS or USSD operation has been performed via a specific menu of the ME) to the UICC, using the ENVELOPE (CALL CONTROL) command defined below. The ME shall also pass to the UICC in the ENVELOPE (CALL CONTROL) command the current serving cell.

The UICC shall respond in the same way as for mobile originated calls. The ME shall interpret the response as follows:

- if the UICC responds with '90 00', the ME shall send the supplementary service or USSD operation with the information as sent to the UICC;

- if the UICC responds with '93 00', the ME shall not send the supplementary service or USSD operation and may retry the command;

- if the UICC provides response data,then the response data from the UICC 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, or instead set up a call using the data supplied by the UICC. 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, if it is within the ME's capabilities to do so. If the UICC requires a call set-up or supplementary service or USSD operation that is beyond the ME's capabilities (e.g. the UICC maps a USSD operation to a data call, and the ME does not support data calls), then the ME shall not the 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 using TERMINAL RESPONSE ("interaction with call control by UICC or MO short message control by UICC, 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, if it is within the ME's capabilities to do so. If the UICC requires a call set-up that is beyond the ME's capabilities (e.g. the UICC 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 clause 7.3.1.1.

If the ME supports the Last Number Dialled 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 3G 24.080 [11] or the call set-up procedure defined in 3G 24.008 [9].

7.3.1.3 Indication to be given to the user

-- if the UICC responds with "allowed, with modifications" to a request by a proactive command SET UP CALL, SEND SS, SEND USSD or OPEN CHANNEL where GPRS is selected, 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. SET UP CALL, SEND SS, SEND USSD or OPEN CHANNEL) as detailed in clauses 7.3.1.1, 7.3.1.2 and 7.3.1.3. The responsibility to inform the user in this case lies with the UICC application which sent the proactive command.

7.3.1.4 Interaction with Fixed Dialling Number

If FDN is enabled and Call Control is activated, the ME shall follow this procedure:

- the ME shall check that the number (or the supplementary service control string) entered through the MMI is on the FDN list, in accordance with GSM 02.07 [20];

- if the MMI input does not pass the FDN check, the call (or the supplementary service operation) shall not be set-up;

- if the MMI input does pass the FDN check, the ME shall pass the dialled digits (or the supplementary service control string) and other parameters to the UICC, using the ENVELOPE (CALL CONTROL) command;

- if the UICC responds with "allowed, no modification", the ME shall set up the call (or the supplementary service operation) as proposed;

- if the UICC responds with "not allowed", the ME shall not set up the call (or the supplementary service operation);

- if the UICC responds with "allowed with modifications", the ME shall set up the call (or supplementary service operation) in accordance with the response from the UICC. If the modifications involve changing the dialled digits (or the supplementary service control string), the ME shall not re-check this modified number (or string) against the FDN list.

7.3.1.5 Support of Barred Dialling Number (BDN) service

If Barred Dialling Number service is enabled (see TS 31.102 [14]), when receiving the dialled number (or supplementary service control string) and other parameters from the ME, the USIM may check this information against those stored in EF_{BDN} (examples of comparison methods are given in GSM 02.07 [20]).

- If the UICC responds with "not allowed" (e.g., a match is made against a BDN), the ME shall not set up the call (or the supplementary service operation).

- If the UICC responds with "allowed, no modification", the ME shall set up the call (or the supplementary service operation) as proposed.

- If the UICC responds with "allowed with modifications", the ME shall set up the call (or the supplementary service operation) in accordance with the response from the UICC. If the modifications involve changing the dialled number (or the supplementary service control string), the ME shall not re-check this modified number (or string) against the FDN list when FDN is enabled.

7.3.1.6 Structure of ENVELOPE (CALL CONTROL)

Command parameters/data.

Description	Clause	M/O/C	Min	Length
Address or SS string or USSD string or PDP context activation parameters	8.1, 8.14, 8.17 or 8.72	M	Y	B

- Address or SS string or USSD string or PDP context activation parameters: only one data object shall be sent to the UICC:

  - for a call set-up, the address data object is used and holds the Called Party Number, as defined in 3G 24.008 [9], 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;

  - USIM Applications and MEs should take into account that early implementations of USAT 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 UICC 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 SIMs having this early implementation by evaluating the indication "USSD string data object supported in Call Control" in the UICC Service Table;

  - for a PDP context activation, the Activate PDP context request parameters are used, as defined in 3G 24.008 [9].

  as defined in 3G 24.008 [9].

- Location information: This data object contains the identification (MCC, MNC, LAC, Cell Identity) of the current serving cell of the UE. The comprehension required flag of this data object in this command shall be set to '0'.

Response parameters/data.

Description	Clause	M/O/C	Min	Length
Address or SS string or USSD string or PDP context activation parameters	8.1, 8.14, 8.17 or 8.72	O	N	A
BC repeat indicator	8.42	C	N	E

- Call control result:

  - contents: the command that the UICC gives to the ME concerning whether to allow, bar or modify the proposed call (or supplementary service operation);

- Address or SS string or USSD string or PDP context activation parameters: Only one data object may be included if the UICC requests the call (or supplementary service or USSD operation or PDP context activation) details 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.

- for a PDP context activation, if the PDP context activation parameters object is not present, then the ME shall assume that the PDP context activation is not to be modified.

- Capability configuration parameters: Only used for a call set-up, this data object is only required if the USIM application 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 3G 24.008 [9]. The second capability configuration parameters corresponds to the bearer capability 2 information element of a mobile originating SETUP message, as defined in 3G 24.008 [9]. If the capability configuration parameters are not present, then the ME shall assume the parameters are not to be modified.

- 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 3G 24.008 [9].

7.3.1.7 Procedure for PDP Context Activation

If the service "call control on GPRS by USIM" is available in the USIM Service Table (see TS 31.102 [14]), then for all PDP Context activation (including those resulting from a OPEN CHANNEL proactive UICC command where GPRS is selected), the ME shall first pass the corresponding Activate PDP Context message (see 3G 24.008 [9]) to the UICC, using the ENVELOPE (CALL CONTROL) command defined below. The ME shall also pass to the UICC in the ENVELOPE (CALL CONTROL) command the current serving cell.

The UICC shall respond in the same way as for mobile originated calls. The ME shall interpret the response as follows:

- if the UICC responds with '90 00', the ME shall send the Activate PDP Context message with the information as sent to the UICC;

- if the UICC responds with '93 00', the ME shall not the Activate PDP Context message and may retry the command;

- if the UICC provides response data, then the response data from the UICC shall indicate to the ME whether to send the Activate PDP Context message as proposed, not send the Activate PDP Context message or send the Activate PDP Context message using the data supplied by the UICC. It is mandatory for the ME to perform the PDP Context Activation in accordance with the data from the UICC, if it is within the ME's capabilities to do so. If the UICC requires PDP Context Activation that is beyond the ME's capabilities, then the ME shall not perform PDP Context Activation at all.

In the case where the initial PDP Context Activation request results from a proactive command OPEN CHANNEL where GPRS is selected

- if the call control result is "not allowed", the ME shall inform the UICC using TERMINAL RESPONSE ("interaction with call control by UICC or MO short message control by UICC, action not allowed");

- if the PDP Context Activation data is changed by call control, then the ME shall activate the PDP context using the data given by the UICC, if it is within the ME's capabilities to do so. If the UICC requires a PDP Context Activation that is beyond the ME's capabilities (e.g. the UICC requests a QoS that the ME cannot handle), then the ME shall not activate the PDP context at all.

7.3.2 MO Short Message Control by USIM

7.3.2.1 Description

If the service "MO Short Message Control" is available in the USIM Service Table (see 31.102 [14]), then the ME shall follow the procedure below:

- for all MO short message attempts (even those resulting from a SEND SM proactive UICC command), the ME shall first pass the RP_destination_address of the service center and the TP_Destination_Address to the UICC, using the ENVELOPE (MO SHORT MESSAGE CONTROL) command defined below. The ME shall also pass to the UICC in the ENVELOPE (MO SHORT MESSAGE CONTROL) command the current serving cell;
- if the UICC responds with '90 00', the ME shall send the short message with the addresses unchanged;
- if the UICC responds with '93 00', the ME shall not send the short message and may retry the command;
- if the UICC provides response data, then the response data from the UICC 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 UICC. It is mandatory for the ME to perform the MO short message request in accordance with the data from the UICC.

The ME shall then follow the MO Short Message procedure defined in 3G 24.011 [10].

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 UICC using TERMINAL RESPONSE, "interaction with call control by UICC or MO short message control by UICC, action not allowed".

7.3.2.2 Structure of ENVELOPE (MO SHORT MESSAGE CONTROL)

Direction: ME to UICC.

The command header is specified in TS 31.101 [13].

Command parameters/data.

Description	Clause	M/O/C	Min	Length
MO Short Message control tag	9.1	M	Y	1
Length (A+B+C+D)	-	M	Y	1 or 2
Device identities	8.7	M	Y	A
Address data object 1	8.1	M	Y	B
Address data object 2	8.1	M	Y	C
Location information	8.19	M	Y	D

- Device identities: the ME shall set the device identities to:
  - source: ME;
  - destination: UICC.
- 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 UE.

Response parameters/data.

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

Description	Clause	M/O/C	Min	Length
MO short message control result	-	M	Y	1
Length (A+B+C)	-	M	Y	1 or 2
Address data object 1	8.1	O	N	A
Address data object 2	8.1	O	N	B
Alpha identifier	8.2	O	N	C

- MO Short Message control result:
  - contents: the command that the UICC 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 UICC requests a particular indication to be given to the user. The handling of this data object by the ME is described in clause 7.3.2.3.

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

7.3.2.3 Indication to be given to the user

The UICC 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 clause 7.3.1.3 relative to call control by UICC.

7.3.2.4 Interaction with Fixed Dialling Number

It is permissible for the Fixed Dialling Number service to be enabled (see TS 31.102 [14]) at the same time as MO Short Message Control is available (in the USIM Service Table). If FDN is enabled, the ME shall follow the procedure for Call Control (see clause 7.3.1.4), where the number in the procedure refers to both the SMS destination address and the SMSC address.

7.5.1 MT call event

7.5.1.2 Structure of ENVELOPE (EVENT DOWNLOAD - MT call)

- Address: The address data object holds the Calling Party BCD number as received by the ME in the SETUP message. If the Calling Party BCD number is included in the SETUP message, the ME shall include the Address object, otherwise the ME shall not include the Address object.

7.5.3 Call disconnected event

, RELEASE, or RELEASE COMPLETE message7.5.3.2 Structure of ENVELOPE (EVENT DOWNLOAD - Call disconnected)

- - Cause: the cause shall reflect the CC-Cause information element sent or received in the DISCONNECT, RELEASE or RELEASE COMPLETE message (see TS 3G 24.008 [9]) triggering the ENVELOPE command

8 SIMPLE-TLV data objects

8.1 Address

Byte(s)	Description	Length
1	Address 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	Dialling number string	X-1

TON/NPI is coded as for EF_{ADN}.

Dialling number string is coded as for EF_{ADN}, and may include DTMF separators and DTMF digits, which the ME shall send in the same way as for EF_{ADN} but without locally generating audible DTMF tones to the user.

See TS 31.102 [14] for the coding of all EFs.

8.3 Subaddress

Subaddress contains information as defined for this purpose in 3G 24.008 [9] (calling party subaddress or called party subaddress). All information defined in 3G 24.008 shall be given in the value part of the data object, except the information element identifier and the length of subaddress contents (which is given by the length part of the data object).

8.4 Capability configuration parameters

Capability configuration parameters are coded as for EF_{CCP}. If it is being provided by the UICC, the UICC shall supply all information required to complete the Bearer Capability Information Element in the Call Set-up message (see 3G 24.008 [9]). Any unused bytes at the end of the value part shall be coded 'FF'.

See TS 31.102 [14] 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.

8.5 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 3G 23.041 [6].

8.6 Command details

- SET UP CALL:
- - SEND SS:
  - this byte is RFU.

- SEND USSD:
  - this byte is RFU.
- SEND SHORT MESSAGE:
  - bit 1: 0 = packing not required;
    1 = SMS packing by the ME required.
  - bits 2-8: = 0 RFU.
- PROVIDE LOCAL INFORMATION:
  - '00' = Location Information (MCC, MNC, LAC and Cell Identity);
  - '05' = Timing Advance;

8.12 Result

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

- results '2X' indicate to the UICC that it may be worth re-trying the command at a later opportunity:
  - '34' = SS Return Error;
  - '35' = SMS RP-ERROR;
  - '37' = USSD Return Error;
  - '39' = Interaction with call control by USIM or MO short message control by USIM, permanent problem;

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 application.

8.12.1 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 3G 24.080 [11].

The rest of the additional information shall be the SS Return Result Parameters, as defined in 3G 24.080 [11].

8.12.2 Additional information for ME problem

- '03' = ME currently busy on SS transaction;
- '07' = Not in speech call;
- '08' = ME currently busy on USSD transaction;

8.12.4 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 3G 24.080 [11]). One further value is defined:

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

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.

8.12.5 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 3G 24.011 [10]), with bit 8 = 0. One further value is defined:

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

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

8.12.6 Not used

8.12.7 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 3G 24.080 [11]). One further value is defined:

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

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.

8.13 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 3G 23.040 [5].

Where the TPDU is being sent from the UICC 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 need not be the valid value. TP-Message-Reference shall be checked and corrected by the ME to the value described in 3G 23.040 [5].

8.14 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 31.102 [14] for the coding of EF_{ADN}.

8.17 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 [4]. The coding of the USSD string is defined in 3G 22.030 [2].

8.19 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 3G 24.008 [9].

8.22 Network Measurement Results

This information is only available when the ME is connected to a GSM access network.

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 44.018 [27], starting at octet 2 (the IEI is removed, as this information is duplicated by the data object tag).

8.26 Cause

The Cause data object is coded as for the Cause call control information element in 3G 24.008 [9], starting at octet 3 (the IEI and Length information are removed, as this information is duplicated by the data object tag and length).

8.28 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 3G 24.007 [8].

8.29 BCCH channel list

This information is only available when the ME is connected to a GSM access network.

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 44.018 [27]). 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)

8.42 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 3G 24.008 [08], which may be alternate mode or sequential mode.
- Coding:
  - '01' = Alternate mode;
  - '03' = Sequential mode.

8.46 Timing Advance

This information is only available when the ME is connected to a GSM access network.

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 44.018 [27], starting at octet 2 (the IEI is removed, as this information is duplicated by the data object tag).

8.49 Bearer

- Coding of the bearers:
  - '02' = USSD;
  - '03' = GPRS;

8.52.1 Bearer parameters for CSD

Contents: parameters specific to the bearer.

In this case X=3.

NOTE: 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 [1]).

- Coding: The following values are as defined in the TS 27.007 [12] for the select service bearer type "+CBST" extended command. They are coded in hexadecimal.
- Coding of Byte 4 - Data rate: same as the "speed" subparameter defined in [12].
- Coding of byte 5 - bearer service: same as the "name" subparameter defined in [12].
- Coding of Byte 6 - connection element: same as the "ce" subparameter defined in [12].

8.52.2 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.

In this case X=6.

Coding: The following values are as defined in the TS 27.007 [12], for the "+CGQREQ" extended command. They are coded in hexadecimal.

- Coding of Byte 4 - Precedence class: same as the "precedence" subparameter, defined in [12].
- Coding of Byte 5 - Delay class: same as the "delay" subparameter, defined in [12].
- Coding of Byte 6 - Reliability class: same as the "reliability" subparameter, defined in [12].
- Coding of Byte 7 - Peak throughput class: same as the "peak" subparameter, defined in [12].
- Coding of Byte 8 - Mean throughput class: same as the "mean" subparameter, defined in [12].
- Coding of Byte 9 - Packet data protocol type:
  - '02' = IP (Internet Protocol, IETF STD 5);
  - all other values are reserved.

8.56 Channel status

- bit 8: 0 = Link not established or PDP context not activated;

  1 = Link established or PDP context not activated.

8.59 SIM/ME interface transport level

- Coding: As defined in TS 23.003 [30].

8.70 Text Attribute

Byte(s)	Description	Length
1	Text Attribute Tag	1
2	Length (4)	1
3 to 6	Text Formatting	4

Text Formatting:

- Coding:
- The text formatting scheme used is the same as Text Formatting defined in 3GPP TS 23.040 “Technical Realization of the Short Message Service (SMS)”[5]

8.71 Item Text Attribute List

Byte(s)	Description	Length
1	Item text attribute tag	1
2	Length (X)	1
3 to (2+X)	Text attribute list	X

All text attributes in the list shall be treated in the same manner by the ME, i.e. either none of the text attributes in this list are displayed, or for each item its related text format is displayed.

- Text attribute list:
  - contents:

- each item of a list of items has an text attribute coded on 4 bytes. The length of the Items text attribute list shall be the number of items of the list of items multiplied by 4. The order of each item text attribute, shall reflect the order of the items in the list of items;

EXAMPLE: For the following list of items:
- item #1;
- item #2;
- item #3;
- ....;
- item #n.

The Items text attribute list shall be as follows.

Tag	Length	Text attribute #1	Text attribute #2	Text attribute #3	...	Text attribute #n

8.72 PDP context Activation parameters

Byte(s)	Description	Length
1	PDP context Activation parameters tag	1
2	Length (X)	1
3 to X+2	PDP context Activation parameters	X

The PDP context Activation parameters are coded as the ACTIVATE PDP CONTEXT REQUEST message, refer to 3G 24.008 [9].

9 Tag values

This clause specifies the tag values used to identify the BER-TLV and SIMPLE-TLV data objects used in the present document.

9.1 BER-TLV tags in ME to UICC direction

Description	Length of tag	Value
SMS-PP download tag	1	'D1'
Cell Broadcast download tag	1	'D2'
MO Short message control tag	1	'D5'
Reserved for TIA/EIA-136	1	'DF'

9.3 SIMPLE-TLV tags in both directions

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'

Continued…..

Description	Length of tag	Tag value, bits 1-7 (Range: '01' - '7E')	Tag (CR and Tag value)
Reserved for ETSI SCP	1	'46'	
Reserved for ETSI SCP	1	'48'	
Remote Entity Address tag	1	'49'	'49' or 'C9'
Text attribute tag	1	'50'	'50' or 'D0'
Item text attribute list tag	1	'51'	'51' or 'D1'
PDP context Activation parameters tag	1	'52'	'52' or 'D2'
Reserved for TIA/EIA-136	1	'60'	'60' or 'E0'
Reserved for TIA/EIA-136	1	'61'	'61' or 'E1'

9.4 Type of Command and Next Action Indicator

The table below shows the values which shall be used for Type of Command coding (see clause 8.6) and Next Action Indicator coding (see clause 8.24).

Value	Name	used for Type of Command coding	used for Next Action Indicator coding
'11'	SEND SS	X	X
'12'	SEND USSD	X	X
'13'	SEND SHORT MESSAGE	X	X
'60'	Reserved for TIA/EIA-136	X	X

10 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
CELL BROADCAST DOWNLOAD	Network	UICC
MO SHORT MESSAGE CONTROL	ME	UICC
SEND SHORT MESSAGE	UICC	Network
SEND SS	UICC	Network
SEND USSD	UICC	Network
SMS-PP DOWNLOAD	Network	UICC
Continued...		

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

Annex A (normative): Support of USAT by Mobile Equipment

Support of USAT is optional for Mobile Equipment. However, if an ME states conformancy with a specific 3G 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 USAT functionality described in the present document. If an ME states conformancy to a letter class, it is mandatory to support all functions within the respective letter class.

The table below indicates the commands and functions of the optional letter classes.

Letter classes	Command/function description

Annex B (informative): Example of DISPLAY TEXT Proactive UICC Command

Example of DISPLAY TEXT Proactive UICC Command (BER-TLV Data Object).

Byte#	Value (Hex)	Description
1	D0	Proactive UICC command tag
2	16	length
3	81	command details tag
4	03	length
5	01	command number
6 - 7	21 00	Display text (normal priority, clear message after a delay)
8	82	Device identities tag
9	02	length
10	81	source: UICC
11	02	destination: Display
12	8D	Text string tag
13	05	length
14	04	Data coding scheme ('04'=8-bit default SMS)
15 - 18	55,53,41,54	text string ("USAT")
19	D0	Text attribute tag
20	4	Length
21 – 24	01,03,31,23	Text Formatting

.

Figure D.1

Annex E (informative):
Help information feature processing

Event	Continuously reported	Reported once

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

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

Example for GPRS bearer:

ICC	ME	SGSN

OPEN CHANNEL

OPEN CHANNEL (immediate, Bearer description(bearer type=GPRS, QoS, PDP type=IP), Buffer size, APN, SIM/ME interface transport level (UDP, port *p*), data destination address)⟶		
		Attach request ⟶
		⟵ Attach accept
		Activate PDP context Request (Requested PDP address, QoS, APN, PDP Type ⟶
		⟵ Activate PDP context Accept (PDP address, negotiated QoS, PDP type)
⟵ Terminal Response (Channel identifier, link established, no further information, buffer size)		

CLOSE CHANNEL

CLOSE CHANNEL(Channel identifier) ⟶		
		Deactivate PDP context request ⟶
		⟵ Deactivate PDP context accept
⟵ Terminal Response(OK)		

RECEIVE DATA

		⟵ Data (one complete SDU received)
⟵ ENVELOPE (Data available)		
RECEIVE DATA (Channel Data length) ⟶		
⟵ Terminal Response(Channel Data Length, Data<=Length)		
RECEIVE DATA (Channel Data length) ⟶		
⟵ Terminal Response(Channel Data Length, Data<=Length)		
RECEIVE DATA (Channel Data length) ⟶		
⟵ Terminal Response(Channel Data Length = 0, Data<=Length)		

SEND DATA 'Stored in Tx Buffer'

SEND DATA (Store, Data) ⟶ ⟵ Terminal Response(Channel Data length) SEND DATA (Store, Data) ⟶ ⟵ Terminal Response(Channel Data length) SEND DATA (Immediate, Data) ⟶ ⟵ Terminal Response(Channel Data length = 0)	Data ⟶

GET CHANNEL STATUS

GET CHANNEL STATUS ⟶ ⟵ Terminal Response (Channel status)	1 Channel available

Annex N (informative): Change history

The table below indicates all change requests that have been incorporated into the present document since it was initially approved by 3GPP TSG-T.

Change history								
Date	**TSG #**	**TSG Doc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**Old**	**New**
2000-04	TP-07	TP-000055				Version 2.1.0 was approved at TSG-T #07	2.1.0	3.0.0
2000-07	TP-08	TP-000096	001		F	Release 99 alignement of 31.111 with GSM 11.14	3.0.0	3.1.0
			003		F	Correction of SAT commands for using GPRS in bearer independent protocol feature		
			004		F	Clarification of ME/SIM interface for bearer independent protocol feature		
2000-10	TP-09	TP-000154	005		F	Correction of Profile Download regarding USAT service table	3.1.0	4.0.0
		TP-000154	006		C	Modification of GET INKEY		
		TP-000154	007		C	DTMF issues		
		TP-000154	008		F	Correction to GET INPUT regarding number of response string variables		
		TP-000154	009		F	Clarification for Alpha Identifier in PLAY TONE		
		TP-000154	010		F	EVENT DOWNLOAD-MT call: correction of the sub-address description		
		TP-000154	011		B	Addition of a Technology Indicator Tag in a Terminal Response message		
2000-12	TP-10	TP-000202	013		A	Get Reader Status - correction to card identifier tag	4.0.0	4.1.0
		TP-000202	014		B	New event for display parameters		
		TP-000202	016		A	General Clarification and Correction		
		TP-000202	018		A	Clarification of command qualifier related to LAUNCH BROWSER		
		TP-000202	020		A	Modification of general result for proactive command with user confirmation		
		TP-000202	022		A	Clarification of bearer independent related to GPRS		
		TP-000202	024		A	Correction to device identity coding		
2001-03	TP-11	TP-010039	026		A	Correction of TERMINAL PROFILE	4.1.0	4.2.0
		TP-010039	027		F	Addition of UTRAN to the technology indicator		
		TP-010039	028		C	Introduction of additional Access Technology Indicator values"		
		TP-010039	032		A	Correction of reference from GSM 02.40 to TS 22.001		
		TP-010039	033		B	Addition of variable timeout to the Display Text command		
		TP-010039	034		F	Correction to display parameters tag		
		TP-010039	035		B	Use of USAT Bearer independent protocol for local links. Client use case.		
		TP-010039	036		B	Use of USAT Bearer independent protocol for local links. server use case.		
		TP-010039	037		A	Correction of Annex A: Support of USAT by Mobile Equipment		
		TP-010039	038		F	Alignment with GSM 11.14 for reserved TIA/EIA-136 tags"		
		TP-010039	039		B	Addition of variable timeout to GetInkey command		
		TP-010039	040		C	Precisions on the PlayTone command		
						Implementation of CRs 035 & 036 was corrected	4.2.0	4.2.1
2001-06	TP-12	TP-010151	042		A	Correction to NMR functionnality (and BCCH list & TA)	4.2.1	4.3.0
		TP-010151	044		A	General corrections		
		TP-010151	046		A	Clarification of min and max length for GET INPUT		
		TP-010151	048		A	Limitation of data field in the C-APDU and R-APDU data object		
		TP-010151	050		A	Correction of Bearer independant protocol examples)		
2001-09	TP-13	TP-010202	052		B	Reservation of TIA/EIA 136 byte to terminal profile	4.3.0	4.4.0
		TP-010202	054		A	Corrections to OPEN CHANNEL commands		
		TP-010202	056		A	TLV object for the APN in the OPEN CHANNEL command		
		TP-010202	058		A	Corrections to SEND DATA commands and Channel Status Event		
2001-12	TP-14	TP-010243	059		F	Reservation for TIA/EIA/IS-820 facilities	4.4.0	4.5.0
		TP-010243	061		A	Miscellanous corrections (related to the bearer independant protocol)		
2002-03	TP-15	TP-020064	062		F	Usage of Simple TLV Tag Values	4.5.0	5.0.0
		TP-020064	063		B	Extension of Call Control to GPRS		
		TP-020064	064		B	SAT Display Menus in Colour and Various Text Formats		