

Agenda Item: 5.2.3

Source: T2

Title: "Terminal Interfaces and Capabilities" Change Requests

Document for: Approval

Spec	CR	Rev	Rel	Subject	Cat	Vers-Curr	Vers-New	T2 Tdoc	Workitem
21.904	008		R99	Reflection of the decision to stop work on the TR after December 2000, and miscellaneous editorial corrections	F	3.2.0	3.3.0	T2-000678	UCR
27.007	049		R99	Incorporation of UICC/USIM references	F	3.6.0	3.7.0	T2-000803	TEI

3GPP TSG-T2 meeting #11
Yokohama, Japan, 27 Nov-1 Dec 2000

Document T2-000678

*e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx*

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

21.904 CR 008

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **T#10**
list expected approval meeting # here ↑

for approval
for information

strategic
non-strategic *(for SMG use only)*

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects:

(at least one should be marked with an X)

(U)SIM

ME

UTRAN / Radio

Core Network

Source:

T2

Date: **12/01/2000**

Subject:

Reflection of the decision stop work on the TR after December 2000, and miscellaneous editorial corrections

Work item:

UE Capability Requirements

Category:

(only one category shall be marked with an X)

F Correction
A Corresponds to a correction in an earlier release
B Addition of feature
C Functional modification of feature
D Editorial modification

Release:

Phase 2
Release 96
Release 97
Release 98
Release 99
Release 00

Reason for change:

Reflection of the decision to cease maintenance and up-issuing of the Report after December 2000, and correction of miscellaneous editorial mistakes

Clauses affected:

Foreword, Scope, References, 4.9, 5, 6.5, 7, 7.1, 7.1.1.1, Annex A.2

Other specs affected:

Other 3G core specifications → List of CRs:
Other GSM core specifications → List of CRs:
MS test specifications → List of CRs:
BSS test specifications → List of CRs:
O&M specifications → List of CRs:

Other comments:

Consequences of not approving are that freezing the TR will not be well explained in the document and Annex A2 will be confusing and inaccurate.

Foreword

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

No further changes to the contents of this TR are currently planned. Nevertheless, it is still possible that the contents of the present document may be subject to continuing work within the 3GPP and may require changes in the future following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

1 Scope

The present document's scope is the Release 99 of the 3GPP Specifications to which it refers. This document is not currently planned to be kept updated beyond December 2000.

The present document defines a baseline set of capability requirements that enable all UEs to "register" with all applicable 3GPP networks (depending on the availability of a appropriate subscription). It describes all the functions that a UE has to perform in order to "exist" within a 3GPP network. These functions are used to derive requirements for all aspects of UE baseline capability. The present document also identifies different UE Service Capabilities and the functions that a UE must perform in order to access a service. The actual capabilities that a UE must possess to meet these requirements are identified in the report and in some instances listed in the Annexes to the present document, as well as being described in the referenced implementation specifications.

The present document introduces the concept of "**service-less UE**" which can exist in the network but provides no user service. Although this is not a marketable UE type it describes from the standardisation viewpoint a baseline set of capabilities to which specific service-related UE capabilities can then be added.

The present document should not be used as the sole basis for UE design, only as an informative indication of capabilities required to support a given functionality, and as a pointer to the location of text describing said functionality, in the core specifications.

UE capability requirements may include some regulatory requirements (mandatory requirements). However, it is not intended to identify them as such in this report. Some of the requirements identified in this document as essential, may therefore also be "mandatory" according to the definition of that term appearing herein.

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 version as of the date in the relevant Annex ~~the latest version~~ applies. Since this TR is not planned to be kept updated beyond December 2000, validity of non-specific references beyond this date should be verified by the reader.

[1] 3G TS 25.304: "UE Procedures in idle mode and procedures for cell reselection in connected mode~~3GPP; UE Procedures in idle mode~~".

4.9 Ready to Transmit

The state "ready to transmit" describes the condition in which the UE has regulatory permission meets all the conditions required to start transmitting at the 3GPP frequencies.

5 UE Implementation Types

Although the baseline capability requirements define what is needed for service-less UEs there are a few basic service-less UE types which can be used to meet these requirements. Examples of these are as follows:

6.5 Receive service

The state "Receive Service" describes the UE when a service relationship has been established with the network, and the UE is in the process of accessing the requested service. It is also possible that the UE will request/terminate additional services whilst in the "Receive service" state. The many service possibilities/combinations that exist for this state are discussed in section 7 below. The corresponding Service Implementation Capabilities are referenced in the Annexes-B. This state encompasses any handovers that might take place within the network and with other 3G networks & 2G networks, depending on the UE's modes of operation.

7 UE Service Capabilities

UE Service Capabilities are required in addition to Baseline Capabilities in order that the UE can support a given service. In the 3GPP documentation unless otherwise stated, none of the identified UE Service Capabilities are Unconditionally Essential for the UE and the support of one service in a UE does not imply a requirement to support any other service (unless otherwise stated).

Details of negotiable implementation capabilities for the radio access domain are contained in [30]. However, the intention of that document is to identify the capabilities parameters that have to be notified by the UE to the UTRAN, rather than to explicitly identify the implementation capabilities required to support a given service.

7.1 3GPP Standardised UE Service Capabilities

The 3GPP release '99 requirements for the UE Service Capabilities listed below are listed in TS 22.100 UMTS Phase 1 Release 99 **[Error! Bookmark not defined.]**. UMTS R99 will standardise the technical means by which a UE may implement the following UE Service Capabilities. The UE Service Capabilities can be divided into five main categories as follows:

1. Tele-services (defined in [Error! Bookmark not defined.]

- Speech.
- Emergency Call (essential for all UE supporting the default speech service).
- Short Message Service.
- Cell Broadcast Service - CBS.

2. Bearer Services

- Circuit-switched data
- Packet-switched data

-Defined by their attributes as described in [Error! Bookmark not defined.].

- Information transfer attributes (e.g. Information transfer rate, Information Transfer Characteristics,etc.).
- Information quality attributes (e.g. Bit Error Ratio, Maximum transfer delay, Delay variation, etc.).

7.1.1.1.1 Default Speech Service

The default speech service that is provided using the Adaptive MultiRate (AMR) codec, is unusual for UMTS in that it is a standardised service, rather than a service which can be supported by standardised capabilities, i.e. the implementation of the service itself is specified. The AMR codec for implementation in UMTS UE equipment is defined in [19] to [25]. Support of the AMR in the UE has implications for the UE physical layer and layers 2/3 (Access Stratum). Annex B contains the Service Implementation Capabilities required for UEs supporting the default speech service.

Annex A: Baseline Implementation Capabilities

The references in this annex are to 3GPP documents agreed for release '99 in June 2000. The referenced section numbers may change with future versions.

A.1 Baseline implementation capabilities to facilitate conformance testing

UE baseline implementation capabilities:

- The special conformance testing functions and the logical test interface as specified in TS 34.109.
- Up-link reference measurement channel 12.2 kbps (FDD), TS 25.101 clause A.2.1.
- Down-link reference measurement channel 12.2 kbps (FDD), TS 25.101 clause A.3.1.
- Up-link reference measurement channel 12.2 kbps (TDD), TS 25.102 clause A.2.1.
- Down-link reference measurement channel 12.2 kbps (TDD), TS 25.102 clause A.2.2.

A.2 RF Baseline Implementation Capabilities

Table 1: Void

Table 2: RF baseline implementation capabilities for FDD mode
E: Essential Unconditional, C: Essential Conditional, O: Optional

Capability FDD	Specification	Subclause	UE	General Comments
Chiprate 3.84 Mcps	25.101	5.1	E	
Frequency bands (a) 1920-1980, 2110-2170 MHz (b) 1850-1910, 1930-1990 MHz Combinations of (a), (b) allowed Other spectrum	25.101	5.2	C C O O	Except Region 2 Used in Region 2 FFS, to allow for regional variations
TX-RX Freq. Sep: Fixed Separation - 190 MHz - Variable separation – Range - 134.8-245.2 MHz - 80 MHz Variable	25.101	5.3	C O C O	For band (a) For band (a) For band (b) FFS, to allow for regional variations.
Channel arrangement	25.101	5.4	E	
UE maximum output power	25.101	6.2.1, 4.2	C	Defined for each UE Power Class. For UE Power Class 3 or 4. UE Power Classes 1,2 are ffs
Output RF spectrum Emissions	25.101	6.6	E	Please see NOTE 1

NOTE 1: Other RF Requirements in 25.101 may also apply as Essential or ~~Essential~~ Essential-Conditional baseline implementation capabilities or Optional implementation capabilities. Refer to 25.101 Clauses 4-8 for more details.

Table 3: RF baseline implementation capabilities for TDD mode

Capability TDD	Specification	Subclause	UE	General Comments
Chiprate 3.84 Mcps	25.102	5.1	E	
Frequency bands (a) 1900-1920, 2010-2025 MHz (b) 1850-1910, 1930-1990 MHz (c) 1910-1930 MHz Combinations of a, b, c allowed Other spectrum	25.102	5.2	C C C O O	Except Region 2 For Region 2 For Region 2 FFS, to allow for regional variations.
Channel arrangement.	25.102	5.4	E	
UE maximum output power	25.102	6.2.1	C	Defined for each UE Power Class. For UE Power Class 2 or 3. UE Power Classes 1,4 are ffs
Output RF spectrum Emissions	25.102	6.6	E	Please see NOTE 2

NOTE 2: Other RF Requirements in 25.102 may also apply as Essential or ~~Essential~~Essential-Conditional baseline implementation capabilities or Optional implementation ~~capabilities~~capabilities. Refer to 25.102 Clauses 4-8 for more details.

CHANGE REQUEST

⌘ **27.007 CR 049** ⌘ rev **-** ⌘ Current version: **3.6.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Incorporation of UICC/USIM references		
Source:	⌘ T2		
Work item code:	⌘ TEI	Date:	⌘ 2000-11-29
Category:	⌘ F	Release:	⌘ R99
	Use <u>one</u> of the following categories: F (essential correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) D (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

Reason for change:	⌘ Clarification of the specification to incorporate UICC/USIM references		
Summary of change:	⌘ In the command description where it is said "SIM" it has been replaced by "active application in the UICC (GSM or USIM) or SIM card"		
Consequences if not approved:	⌘ Not clearly identify the link between the AT commands and the UICC/USIM		

Clauses affected:	⌘ 2, 3.2, 5.6, 6.3, 7.1, 7.3, 7.4, 7.16, 7.19, 7.21, 7.22, 8, 8.3, 8.11, 8.12, 8.13, 8.14, 8.25, 8.26, 8.27, 8.30		
Other specs affected:	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘ 27.005	
Other comments:	⌘		

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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.

- [1] 3GPP TS 22.002: "3rd Generation Partnership Project; Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".
- [2] 3GPP TS 22.003: "3rd Generation Partnership Project; Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [3] 3GPP TS 22.081: "3rd Generation Partnership Project; Line identification supplementary services - Stage 1".
- [4] 3GPP TS 22.082: "3rd Generation Partnership Project; Call Forwarding (CF) supplementary services - Stage 1".
- [5] 3GPP TS 22.083: "3rd Generation Partnership Project; Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".
- [6] 3GPP TS 22.088: "3rd Generation Partnership Project; Call Barring (CB) supplementary services - Stage 1".
- [7] 3GPP TS 23.003: "3rd Generation Partnership Project; Numbering, addressing and identification".
- [8] 3GPP TS 04.08: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification".
- [9] GSM MoU SE.13, GSM MoU Permanent Reference Document SE.13: "GSM Mobile Network Codes and Names".
- [10] ITU-T Recommendation E.212: "Identification plan for land mobile stations".
- [11] ITU-T Recommendation T.31: "Asynchronous facsimile DCE control, service class 1".
- [12] ITU-T Recommendation T.32: "Asynchronous facsimile DCE control, service class 2".
- [13] ITU-T Recommendation T.50: "International Reference Alphabet (IRA) (Formerly International Alphabet No. 5 or IA5) - Information technology - 7-bit coded character set for information exchange".
- [14] ITU-T Draft new Recommendation V.25ter: "Serial asynchronous automatic dialling and control".
- [15] Telecommunications Industry Association TIA IS-99: "Data Services Option Standard for Wideband Spread Spectrum Digital Cellular System".
- [16] Telecommunications Industry Association TIA IS-135: "800 MHz Cellular Systems, TDMA Services, Async Data and Fax".
- [17] Portable Computer and Communications Association PCCA STD-101 Data Transmission Systems and Equipment: "Serial Asynchronous Automatic Dialling and Control for Character Mode DCE on Wireless Data Services".
- [18] 3GPP TS 24.022: "3rd Generation Partnership Project; Radio Link Protocol (RLP) for data and telematic services on the Mobile Station - Base Station System (MS - BSS) interface and the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

- [19] 3GPP TS 22.030: "3rd Generation Partnership Project; Man Machine Interface (MMI) of the Mobile Station (MS)".
- [20] 3GPP TS 05.08: "Digital cellular telecommunication system (Phase 2+); Radio subsystem link control".
- [21] 3GPP TS 22.085: "3rd Generation Partnership Project; Closed User Group (CUG) supplementary services - Stage 1".
- [22] 3GPP TS 22.084: "3rd Generation Partnership Project; MultiParty (MPTY) supplementary services - Stage 1".
- [23] 3GPP TS 22.090: "3rd Generation Partnership Project; Unstructured Supplementary Service Data (USSD) - Stage 1".
- [24] 3GPP TS 27.005: "3rd Generation Partnership Project; Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)".
- [25] 3GPP TS 23.038: "3rd Generation Partnership Project; Alphabet and language specific information".
- [26] 3GPP TS 22.024: "3rd Generation Partnership Project; Description of Charge Advice Information (CAI)".
- [27] 3GPP TS 22.086: "3rd Generation Partnership Project; Advice of Charge (AoC) supplementary services - Stage 1".
- [28] 3GPP TS 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface".
- [29] 3GPP TS 22.034: "3rd Generation Partnership Project; High Speed Circuit Switched Data (HSCSD) - Stage 1".
- [30] 3GPP TS 22.091: "3rd Generation Partnership Project; Explicit Call Transfer (ECT) supplementary service - Stage 1".
- [31] 3GPP TS 22.072: "3rd Generation Partnership Project; Call Deflection (CD) supplementary service - Stage 1".
- [32] ISO/IEC10646: "Universal Multiple-Octet Coded Character Set (UCS)"; UCS2, 16 bit coding.
- [33] 3GPP TS 22.022: "3rd Generation Partnership Project; Personalization of GSM Mobile Equipment (ME) Mobile functionality specification".
- [34] 3GPP TS 27.060: "3rd Generation Partnership Project; General requirements on Mobile Stations (MS) supporting General Packet Radio Bearer Service (GPRS)".
- [35] CCITT Recommendation V.110: "Support of data terminal equipments (DTEs) with V-Series interfaces by an integrated services digital network".
- [36] CCITT Recommendation V.120: "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".
- [37] ITU-T Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".
- [38] 3GPP TS 05.05: "Digital cellular telecommunication system (Phase 2+); Radio transmission and reception".
- [39] 3GPP TS 29.061: "3rd Generation Partnership Project; General Packet Radio Service (GPRS); Interworking between the Public Land Mobile Network (PLMN) supporting GPRS and Packet Data Networks (PDN)".
- [40] 3GPP TS 23.081: "3rd Generation Partnership Project; Technical Specification Group Core Network; Line identification supplementary services - Stage 2".

- [41] 3GPP TS 27.001: "3rd Generation Partnership Project; Technical Specification Group Core Network; General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".
- [42] 3GPP TS 29.007: "3rd Generation Partnership Project; Technical Specification Group Core Network; General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [43] Infrared Data Association; Specification of Ir Mobile Communications (IrMC).
- [44] IrDA Object Exchange Protocol.
- [45] 3GPP TS 27.010: "3rd Generation Partnership Project; Terminal Equipment to User Equipment (TE-UE) multiplexer protocol User Equipment (UE)".
- [46] 3GPP TS 23.107: "3rd Generation Partnership Project; Quality of Service, Concept and Architecture".
- [47] 3GPP TS 23.060: "3rd Generation Partnership Project; General Packet Radio Service (GPRS) Service description; Stage 2".
- [48] 3GPP TS 23.067: "3rd Generation Partnership Project; Enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 2".
- [49] 3GPP TS 03.68: "Digital cellular telecommunication system (Phase 2+); Voice Group Call service (VGCS) - Stage 2".
- [50] 3GPP TS 03.69: "Digital cellular telecommunication system (Phase 2+); Voice Broadcast Service (VBS) - Stage 2".
- [51] 3GPP TS 24.067: "3rd Generation Partnership Project; Enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 3".
- [52] 3GPP TS 04.68: "Digital cellular telecommunication system (Phase 2+); Voice Group Call service (VGCS) - Stage 3".
- [53] 3GPP TS 04.69: "Digital cellular telecommunication system (Phase 2+); Voice Broadcast Service (VBS) - Stage 3".
- [54] 3GPP TS 22.067: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1".
- [55] 3GPP TS 02.68: "Digital cellular telecommunication system (Phase 2+); Voice Group Call service (VGCS) - Stage 1".
- [56] 3GPP TS 02.69: "Digital cellular telecommunication system (Phase 2+); Voice Broadcast Service (VBS) - Stage 1".
- [57] 3GPP TS 24.008: "3rd Generation Partnership Project; Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3".
- [58] [3GPP TS 31.102: "3rd Generation Partnership Project; Technical Specification Group Terminals; Characteristics of the USIM Application".](#)

3.2 Abbreviations

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

AT	ATtention; this two-character abbreviation is always used to start a command line to be sent from TE to TA
ASCI	Advanced Speech Call Items, including VGCS, VBS and eMLPP
BCD	Binary Coded Decimal
eMLPP	Enhanced Multi-Level Precedence and Pre-emption Service
ETSI	European Telecommunications Standards Institute
FTM	Frame Tunnelling Mode (refer 3GPP TS 27.001 [41] and 3GPP TS 29.007[42])
HSCSD	High Speed Circuit Switched Data
IHOSS	Internet Hosted Octet Stream Service
IMEI	International Mobile station Equipment Identity
IRA	International Reference Alphabet (ITU-T T.50 [13])
IrDA	Infrared Data Association
ISO	International Standards Organization
ITU-T	International Telecommunication Union - Telecommunications Standardization Sector
ME	Mobile Equipment, e.g. a GSM phone (equal to MS; Mobile Station)
MoU	Memorandum of Understanding (GSM operator joint)
MT	Mobile Termination
OSP	Octet Stream Protocol
OSP:IHOSS	Octet Stream Protocol for Internet Hosted Octet Stream Service
PCCA	Portable Computer and Communications Association
PTT	Push to Talk
RDI	Restricted Digital Information
RLP	Radio Link Protocol
SIM	Subscriber Identity Module
TA	Terminal Adaptor, e.g. a GSM data card (equal to DCE; Data Circuit terminating Equipment)
TE	Terminal Equipment, e.g. a computer (equal to DTE; Data Terminal Equipment)
TIA	Telecommunications Industry Association
UDI	Unrestricted Digital Information
<u>UICC</u>	<u>Universal Integrated Circuit Card</u>
<u>USIM</u>	<u>Universal Subscriber Identity Module</u>
VBS	Voice Broadcast Service
VGCS	Voice Group Call Service

5.6 Request international mobile subscriber identity +CIMI

Table 1: +CIMI action command syntax

Command	Possible response(s)
+CIMI	<IMSI> +CME ERROR: <err>
+CIMI=?	

Description

Execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual SIM an active application in the UICC (GSM or USIM) or SIM card which is attached to ME. Refer subclause 9.2 for possible <err> values.

Defined values

<IMSI>: International Mobile Subscriber Identity (string without double quotes)

Implementation

Optional.

6.3 Direct dialling from phonebooks

GSM/UMTS ME and SIM/**UICC** can contain phonebooks which have a phone number and an alphanumeric field for each phonebook entry location. The use of V.25ter [14] dialling command ensures that direct dialling from ME and SIM/**UICC** phonebook is possible through ordinary communications software which just gives the phone number field to be filled and then use the D command to originate the call. Available memories may be queried with Select Phonebook Storage test command +CPBS=?, and location range for example with Read Phonebook Entries test command +CPBR=?.

Execute commands

1. D><str>[I][G][;] originate call to phone number which corresponding alphanumeric field is <str> (if possible, all available memories should be searched for the correct entry).
2. D>mem<n>[I][G][;] originate call to phone number in memory *mem* entry location <n> (available memories may be queried with Select Phonebook Storage test command +CPBS=?; *mem* could be e.g. ME).
3. D><n>[I][G][;] originate call to phone number in entry location <n> (it is manufacturer specific which memory storage of ME, SIM and TA is used; command Select Phonebook Memory Storage +CPBS setting is recommended to be used).

Semicolon character shall be added when voice call is originated. CLIR and CUG per call base modifiers may also be present.

Responses

Possible error responses include +CME ERROR: <err> when error is related to ME functionality. Refer subclause 9.2 for possible error values. Otherwise TA responses can have values defined by V.25ter [14] and commands Service Reporting Control +CR and Connected Line Identification Presentation +COLP. Detailed error report of an unsuccessful originated call failed in a GSM/UMTS network error can be obtained with command Extended Error Report +CEER (if implemented).

Defined values

<str>: string type value, which should equal to an alphanumeric field in at least one phonebook entry in the searched memories; used character set should be the one selected with Select TE Character Set +CSCS

<n>: integer type memory location should be in the range of locations available in the memory used

Implementation

Mandatory when direct dialling is implemented. Also phonebook commands implementation is required.

7.1 Subscriber number +CNUM

Table 2: +CNUM action command syntax

Command	Possible response(s)
+CNUM	+CNUM: [<alpha1>], <number1>, <type1>[, <speed>, <service>[, <itc>]] [<CR><LF>+CNUM: [<alpha2>], <number2>, <type2>[, <speed>, <service>[, <itc>]] [...]] +CME ERROR: <err>
+CNUM=?	

Description

Action command returns the MSISDNs related to the subscriber (this information can be stored in the SIM/UICC or in the ME. When storing information in the SIM/UICC, if stored in the SIM/UICC, when the a SIM card is inserted or if a UICC with an active inserted with GSM application is active inserted present, the information is stored in the EF_{MSISDN} under DF_{Telecom}. If when the UICC inserted with an active USIM application active is inserted present, the information is stored in the EF_{MSISDN} under ADF_{USIM} of the active USIM application or in the ME). If subscriber has different MSISDN for different services, each MSISDN is returned in a separate line. Refer subclause 9.2 for possible <err> values.

Defined values

<alphax>: optional alphanumeric string associated with <numberx>; used character set should be the one selected with command Select TE Character Set +CSCS

<numberx>: string type phone number of format specified by <typex>

<typex>: type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

<speed>: as defined in subclause 6.7

<service> (service related to the phone number):

- 0 asynchronous modem
- 1 synchronous modem
- 2 PAD Access (asynchronous)
- 3 Packet Access (synchronous)
- 4 voice
- 5 fax

also all other values below 128 are reserved by the present document

<itc> (information transfer capability):

- 0 3,1 kHz
- 1 UDI

Implementation

Optional.

7.3 Operator selection +COPS

Table 3: +COPS parameter command syntax

Command	Possible response(s)
+COPS=[<mode>[,<format>[,<oper>]]]	+CME ERROR: <err>
+COPS?	+COPS: <mode>[,<format>,<oper>] +CME ERROR: <err>
+COPS=?	+COPS: [list of supported (<stat>, long alphanumeric <oper> , short alphanumeric <oper>, numeric <oper>)s] [, , (list of supported <mode>s), (list of supported <format>s)] +CME ERROR: <err>

Description

Set command forces an attempt to select and register the GSM/UMTS network operator. <mode> is used to select whether the selection is done automatically by the ME or is forced by this command to operator <oper> (it shall be given in format <format>). If the selected operator is not available, no other operator shall be selected (except <mode>=4). The selected operator name format shall apply to further read commands (+COPS?) also. <mode>=2 forces an attempt to deregister from the network. The selected mode affects to all further network registration (e.g. after <mode>=2, ME shall be unregistered until <mode>=0 or 1 is selected). Refer subclause 9.2 for possible <err> values. This command should be abortable when registration/deregistration attempt is made.

Read command returns the current mode and the currently selected operator. If no operator is selected, <format> and <oper> are omitted.

Test command returns a list of quadruplets, each representing an operator present in the network. Quadruplet consists of an integer indicating the availability of the operator <stat>, long and short alphanumeric format of the name of the operator, and numeric format representation of the operator. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM/[UICC](#), and other networks.

It is recommended (although optional) that after the operator list TA returns lists of supported <mode>s and <format>s. These lists shall be delimited from the operator list by two commas.

Defined values

<mode>:

- 0 automatic (<oper> field is ignored)
- 1 manual (<oper> field shall be present)
- 2 deregister from network
- 3 set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> field is ignored); this value is not applicable in read command response
- 4 manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered

<format>:

- 0 long format alphanumeric <oper>
- 1 short format alphanumeric <oper>
- 2 numeric <oper>

<oper>: string type; <format> indicates if the format is alphanumeric or numeric; long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]); numeric format is the GSM Location Area Identification number (refer GSM 04.08 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 2)(network code digit 1)

<stat>:

- 0 unknown
- 1 available
- 2 current
- 3 forbidden

Implementation

Optional.

7.4 Facility lock +CLCK

Table 4: +CLCK action command syntax

Command	Possible response(s)
+CLCK=<fac>, <mode>[, <passwd>[, <class>]]	+CME ERROR: <err> when <mode>=2 and command successful: +CLCK: <status>[, <class1> [<CR><LF>+CLCK: <status>, <class2> [...]]
+CLCK=?	+CLCK: (list of supported <fac>s) +CME ERROR: <err>

Description

Execute command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. Refer subclause 9.2 for possible <err> values. This command should be abortable when network facilities are set or interrogated.

Call barring facilities are based on GSM/UMTS supplementary services (refer 3GPP TS 22.088 [6]). The interaction of these with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard.

Test command returns facility values supported by the TA as a compound value.

Defined values

<fac> values reserved by the present document:

- "CS" CNTRL (lock CoNTRoL surface (e.g. phone keyboard))
- "PS" PH-SIM (lock PHone to SIM/UICC card) (ME asks password when other than current SIM/UICC card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted)
- "PF" lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (ME asks password when other than the first SIM/UICC card is inserted)

"SC"	SIM (lock SIM/ UICC card) (SIM/ UICC asks password in ME power-up and when this lock command issued)
"AO"	BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 [6] clause 1)
"OI"	BOIC (Barr Outgoing International Calls) (refer 3GPP TS 22.088 [6] clause 1)
"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer 3GPP TS 22.088 [6] clause 1)
"AI"	BAIC (Barr All Incoming Calls) (refer 3GPP TS 22.088 [6] clause 2)
"IR"	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer 3GPP TS 22.088 [6] clause 2)
"NT"	barr incoming calls from numbers Not stored to TA memory
"NM"	barr incoming calls from numbers Not stored to ME memory
"NS"	barr incoming calls from numbers Not stored to SIM/ UICC memory
"NA"	barr incoming calls from numbers Not stored in Any memory
"AB"	All Barring services (refer 3GPP TS 22.030 [19]) (applicable only for <mode>=0)
"AG"	All outGoing barring services (refer 3GPP TS 22.030 [19]) (applicable only for <mode>=0)
"AC"	All inComing barring services (refer 3GPP TS 22.030 [19]) (applicable only for <mode>=0)
"FD"	SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)
"PN"	Network Personalization (refer 3GPP TS 22.022 [33])
"PU"	network sUbsset Personalization (refer 3GPP TS 22.022 [33])
"PP"	service Provider Personalization (refer 3GPP TS 22.022 [33])
"PC"	Corporate Personalization (refer 3GPP TS 22.022 [33])

<mode>:

- 0 unlock
- 1 lock
- 2 query status

<status>:

- 0 not active
- 1 active

<passwd>: string type; shall be the same as password specified for the facility from the ME user interface or with command Change Password +CPWD

<classx> is a sum of integers each representing a class of information (default 7):

- 1 voice (telephony)
- 2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
- 4 fax (facsimile services)

- 8 short message service
- 16 data circuit sync
- 32 data circuit async
- 64 dedicated packet access
- 128 dedicated PAD access

Implementation

The call barring supplementary service control is mandatory for ME supporting AT commands only and not supporting the control through dial command D.

7.16 Advice of Charge +CAOC

Table 5: +CAOC parameter command syntax

Command	Possible response(s)
+CAOC[=<mode>]	[+CAOC: <ccm>] +CME ERROR: <err>
+CAOC?	+CAOC: <mode>
+CAOC=?	[+CAOC: (list of supported <mode>s)]

Description

This refers to Advice of Charge supplementary service (3GPP TS 22.024 [26] and 3GPP TS 22.086 [27]) that enables subscriber to get information about the cost of calls. With <mode>=0, the execute command returns the current call meter value from the ME.

The command also includes the possibility to enable an unsolicited event reporting of the CCM information. The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes, but not more that every 10 seconds. Deactivation of the unsolicited event reporting is made with the same command.

Refer subclause 9.2 for possible <err> values.

NOTE: Advice of Charge values stored in the [SIM card or in the active application in the UICC \(GSM or USIM\)](#) (ACM, ACMmax, PUCT) can be accessed with generic or restricted SIM access command (+CSIM or +CRSM). Those values can be more readily accessed with commands +CACM, +CMM and +CPUC.

The Read command indicates whether the unsolicited reporting is activated or not. Read command is available when the unsolicited result code is supported.

It is recommended (although optional) that the test command returns the supported mode values.

Defined values

<mode>:

- 0 query CCM value
- 1 deactivate the unsolicited reporting of CCM value
- 2 activate the unsolicited reporting of CCM value

<ccm>: string type; three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the [SIM card or in the active application in the UICC \(GSM or USIM\)](#)

Implementation

Optional.

7.19 Preferred operator list +CPOL

Table 6:+CPOL parameter command syntax

Command	Possible response(s)
+CPOL=[<index>][, <format>[, <oper>]]	+CME ERROR: <err>
+CPOL?	+CPOL: <index1> , <format> , <oper1> [<CR><LF>+CPOL: <index2> , <format> , <oper2> [...]] +CME ERROR: <err>
+CPOL=?	+CPOL: (list of supported <index>s) , (list of supported <format>s)+CME ERROR: <err>

Description

This command is used to edit the [SIM active application in the UICC \(GSM or USIM\) user preferred list of networks in the active application on the UICC \(GSM or USIM\) or SIM card](#) preferred list of networks in the SIM card. Execute command writes an entry in the SIM list of preferred operators (EF_{PLMNsel}), [when the SIM card is present or when the GSM application active when the UICC is present with an active GSM application. When UICC is present with an active USIM application active](#), execute commands writes an entry in the User controlled PLMN selector with Access Technology list (EF_{PLMNwAct}), only the PLMN field could be entered, the Access Technologies for each PLMN in this list is not accesible with this command (note: new command for accessing the Access Technologies for each PLMN in this list is, FFS). If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed. Refer subclause 9.2 for possible <err> values.

NOTE: ME may also update this list automatically when new networks are selected.

Read command returns all used entries from the [SIM active application in the UICC \(GSM or USIM\) user preferred list of networks or SIM card](#) list of preferred operators.

Test command returns the whole index range supported by the [SIM active application in the UICC \(GSM or USIM\) user preferred list of networks or SIM card](#).

Defined values

<indexn>: integer type; the order number of operator in the [SIM active application in the UICC \(GSM or USIM\) user preferred list of networks or SIM card](#) preferred operator list

<format>:

0 long format alphanumeric <oper>

1 short format alphanumeric <oper>

2 numeric <oper>

<opern>: string type; <format> indicates if the format is alphanumeric or numeric (see +COPS)

Implementation

Optional.

7.21 eMLPP Priority Registration and Interrogation +CAEMLPP

Table 7: CAEMLPP parameter command syntax

Command	Possible Response(s)
+CAEMLPP=<priority>	+CME ERROR: <err>
+CAEMLPP?	+CAEMLPP: <default_priority>,<max_priority> +CME ERROR: <err>
+CAEMLPP=?	

Description

The execute command is used to change the default priority level of the user in the network. The requested priority level is checked against the eMLPP subscription of the user stored on the [SIM active application in the UICC \(GSM or USIM\) or SIM card EF_{eMLPP}](#). If the user doesn't have subscription for the requested priority level an ERROR or +CMEE ERROR result code is returned.

The read command triggers an interrogation of the provision of the maximum priority level which the service subscriber is allowed to use and default priority level activated by the user.

If the service is not provisioned, a result code including the SS-Status (?) parameter is returned.

Defined Values

<priority>: integer type parameter which identifies the default priority level to be activated in the network, values specified in 3GPP TS 22.067 [54]

<default_priority>: integer type parameter which identifies the default priority level which is activated in the network, values specified in 3GPP TS 22.067 [54]

<max_priority>: integer type parameter which identifies the maximum priority level for which the service subscriber has a subscription in the network, values specified in 3GPP TS 22.067 [54]

Implementation

Mandatory for a ME supporting AT commands only and supplementary service eMLPP is implemented.

7.22 Informative examples

This subclause includes all the GSM/UMTS supplementary service related commands, additional commands to lock ME and [SIM/UICC](#) capabilities, and commands to check the network registration status.

An example where MSISDNs of a ME are queried, calls are forwarded to different numbers when mobile is busy (CFB) or when it does not answer (CFNRy). The status of CFNRy is read:

```
AT+CNUM
+CNUM: ,"+358501234567",145,,4      (voice number)
OK
AT+CCFC=1,1,"931123456"           (enable CFB)
OK
AT+CCFC=2,1,"921654321"           (enable CFNRy)
OK
AT+CCFC=1,2                         (query CFNRy)
+CCFC: 1,7,"+35821654321",145,,20  (forward after 20 seconds)
OK
```

An example of Call Waiting (+CCWA), Call Related Supplementary Services (+CHLD), and Connected Line Identification Presentation (+COLP) usage:

```
AT+CCWA=1,1;+COLP=1                (enable call waiting and COLP result codes)
OK
ATD9311234567;                       (originate a voice call)
```

```

+COLP: "+358311234567",145
OK
...conversation...
+CCWA: "+358317654321",145 (another call is waiting)
AT+CHLD=2 (put first call on hold and answer the second one)
OK
...conversation...
AT+CHLD=1 (release the second (active) call and recover the first (held) call)
OK
ATH (release the first call)
OK

```

Call barring supplementary services are combined in one command, Facility Lock (+CLCK), which is also used to restrict ME and SIM/UICC functionality. Some of the facilities require a password when enabled or disabled. An additional command, Change Password (+CPWD), is defined for changing the password of different barring and restriction facilities. An example where locking status of outgoing international calls is interrogated and then barred, and the password of the SIM/UICC card lock (Personal Identity Number, PIN) is changed:

```

AT+CLCK="OI",2
+CLCK: 0,7
OK
AT+CLCK="OI",1,"1234"
OK
AT+CPWD="SC","4321","1234"
OK

```

Operator Selection (+COPS) command is used for querying the status of all GSM/UMTS operators detected in the area, and switching between operators.

Following example illustrates a network selection sequence in Finland. Two operators are found, the status of Tele is unknown and Radiolinja is currently selected. Read command shows that automatic selection mode is on and that Radiolinja is selected. Then an attempt is made to access Tele, but it is denied (shown by +CME ERROR).

```

AT+COPS=?
+COPS: (2,"RADIOLINJA","RL","24405"),(0,"TELE","TELE","24491")
OK
AT+COPS?
+COPS: 0,0,"RADIOLINJA"
OK
AT+COPS=1,0,"TELE"
+CME ERROR: 3

```

When a terminal wanders between countries (i.e. networks), an application may follow this e.g. with the following scenario:

```

AT+CREG=1 (enable +CREG: <stat> unsolicited result code)
OK
AT+CREG?
+CREG: 1,1 (ME is registered in home PLMN)
OK
AT+COPS=3,2;+COPS?;+COPS=3,0;+COPS?
+COPS: 0,2,"24405" (get the country...
+COPS: 0,0,"RADIOLINJA" ...and operator name)
OK
...user wanders to another PLMN...
+CREG: 2 (deregistered, roaming ongoing)
+CREG: 5 (registered again, not home PLMN)
AT+COPS=3,2;+COPS?;+COPS=3,0;+COPS?
+COPS: 0,2,"24001" (get the country...
+COPS: 0,0,"TELIA MOBITEL" ...and operator name)
OK
...user loses connection, no other PLMNs around...
+CREG: 0

```

An example of eMLPP Supplementary Service usage for a ptp voice call:

```

ATD*752#+436644101453; (originate a voice call with the priority level 2, see for priority level definitions GSM 02.30)
OK (call setup was successful)

```

8 Mobile Equipment control and status commands

This clause includes commands for ME power, keypad, display and indicator handling. Also commands for selecting, reading and writing of phonebooks, and setting real-time clock facilities are specified. Two commands are specified for accessing SIM/UICC database records in a general way.

Figure 1 illustrates the effect of these commands. Command Phone Activity Status +CPAS indicates the current general activity status of the ME. Command Set Phone Functionality +CFUN is used to set the ME to different power consumption states. Command Enter PIN +CPIN is used to enter ME passwords which are needed before any other functionality of the ME can be used (e.g. SIM PIN, PUK). Commands Generic SIM Access +CSIM and Restricted SIM Access +CRSM can be used to access all data in SIM/UICC. Commands Battery Charge +CBC and Signal Quality +CSQ are same as in TIA IS-135 [16] and they are used to query the battery charge of the ME and the current RSSI of the ME. Command Mobile Equipment Control Mode +CMEC is used to select the controlling unit of ME keypad, display and indicators. Controlling commands for the TE are Keypad Emulation +CKPD, Display Control +CDIS and Indicator Control +CIND. If corresponding event reporting is enabled with command Mobile Equipment Event Reporting +CMER, +CKEV is the result code of a keypad event, +CDEV is the result code of a display event, and +CIEV is the result code of an indicator event. Phonebook commands are Select Phonebook Memory Storage +CPBS, Read Phonebook Entries +CPBR, Find Phonebook Entries +CPBF and Write Phonebook Entry +CPBW. Additional command Clock +CCLK can be used to control the real-time clock of the ME if available. Command Alarm +CALA sets possible alarm clock facilities of the ME.

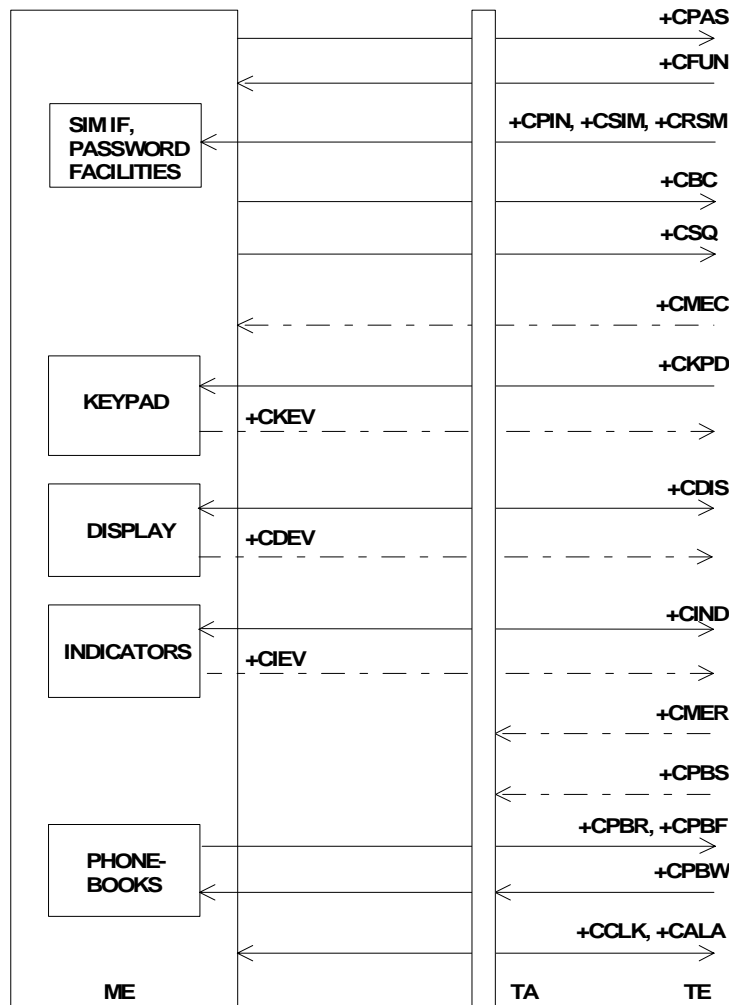


Figure 1: Mobile equipment control and status commands

8.3 Enter PIN +CPIN

Table 8: +CPIN parameter command syntax

Command	Possible response(s)
+CPIN=<pin>[, <newpin>]	+CME ERROR: <err>
+CPIN?	+CPIN: <code> +CME ERROR: <err>
+CPIN=?	

Description

Set command sends to the ME a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards ME and an error message, +CME ERROR, is returned to TE. Refer subclause 9.2 for possible <err> values.

If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the [SIM active application in the UICC \(GSM or USIM\) or SIM card](#).

NOTE: Commands which interact with ME that are accepted when ME is pending SIM PIN, SIM PUK, or PH-SIM are: +CGMI, +CGMM, +CGMR, +CGSN, D112; (emergency call), +CPAS, +CFUN, +CPIN, +CDIS (read and test command only), and +CIND (read and test command only).

Read command returns an alphanumeric string indicating whether some password is required or not.

Defined values

<pin>, <newpin>: string type values

<code> values reserved by the present document:

READY	ME is not pending for any password
SIM PIN	ME is waiting SIM UICC/SIM PIN to be given
SIM PUK	ME is waiting SIM UICC/SIM PUK to be given
PH-SIM PIN	ME is waiting phone-to-SIM/ UICC card password to be given
PH-FSIM PIN	ME is waiting phone-to-very first SIM/ UICC card password to be given
PH-FSIM PUK	ME is waiting phone-to-very first SIM/ UICC card unblocking password to be given
SIM PIN2	ME is waiting SIM active application in the UICC (GSM or USIM) or SIM card PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that ME does not block its operation)
SIM PUK2	ME is waiting SIM active application in the UICC (GSM or USIM) or SIM card PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that ME does not block its operation)
PH-NET PIN	ME is waiting network personalization password to be given
PH-NET PUK	ME is waiting network personalization unblocking password to be given
PH-NETSUB PIN	ME is waiting network subset personalization password to be given
PH-NETSUB PUK	ME is waiting network subset personalization unblocking password to be given
PH-SP PIN	ME is waiting service provider personalization password to be given

PH-SP PUK ME is waiting service provider personalization unblocking password to be given
 PH-CORP PIN ME is waiting corporate personalization password to be given
 PH-CORP PUK ME is waiting corporate personalization unblocking password to be given

Implementation

Mandatory for ME not supporting the +CKPD command and supporting AT commands only.

8.11 Select phonebook memory storage +CPBS

Table 9: +CPBS parameter command syntax

Command	Possible response(s)
+CPBS=<storage> [, <password>]	+CME ERROR: <err>
+CPBS?	+CPBS: <storage>[, <used> , <total>] +CME ERROR: <err>
+CPBS=?	+CPBS: (list of supported <storage>s)

Description

Set command selects phonebook memory storage <storage>, which is used by other phonebook commands. If setting fails in an ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Read command returns currently selected memory, and when supported by manufacturer, number of used locations and total number of locations in the memory.

Test command returns supported storages as compound value.

Defined values

<storage> values reserved by the present document:

"DC "	ME dialled calls list (+CPBW may not be applicable for this storage)
"EN "	SIM active application in the UICC (GSM or USIM) or SIM card (or ME) emergency number (+CPBW is not be applicable for this storage)
"FD "	SIM active application in the UICC (GSM or USIM) or SIM card fixdialling-phonebook
"LD "	SIM active application in the UICC (GSM or USIM) or SIM card last-dialling-phonebook
"MC "	ME missed (unanswered received) calls list (+CPBW may not be applicable for this storage)
"ME "	ME phonebook
"MT "	combined ME and SIM/UICC phonebook
"ON "	SIM active application in the UICC (GSM or USIM) or SIM card (or ME) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also)
"RC "	ME received calls list (+CPBW may not be applicable for this storage)
"SM "	SIM/UICC phonebook
"TA "	TA phonebook

<password>: string type value representing the PIN2-code required when selecting PIN2-code locked <storage>s above, e.g. "FD".

<used>: integer type value indicating the number of used locations in selected memory

<total>: integer type value indicating the total number of locations in selected memory

Implementation

Mandatory when phonebook read, find or write command, or direct dialling (refer subclause "Direct dialling from phonebooks") is implemented.

8.12 Read phonebook entries +CPBR

Table 10: +CPBR action command syntax

Command	Possible response(s)
+CPBR=<index1> [, <index2>]	[+CPBR: <index1>, <number>, <type>, <text>[[...] <CR><LF>+CPBR: <index2>, <number>, <type>, <text>]] +CME ERROR: <err>
+CPBR=?	+CPBR: (list of supported <index>s), [, <nlength>], [, <tlength>] +CME ERROR: <err>

Description

Execution command returns phonebook entries in location number range <index1>... <index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned. Entry fields returned are location number <indexn>, phone number stored there <number> (of format <type>) and text <text> associated with the number. If all queried locations are empty (but available), no information text lines may be returned. If listing fails in an ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Test command returns location range supported by the current storage as a compound value and the maximum lengths of <number> and <text> fields. In case of SIM/UICC storage, the lengths may not be available. If ME is not currently reachable, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Defined values

<index1>, <index2>, <index>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

<text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

Implementation

Optional.

8.13 Find phonebook entries +CPBF

Table 11: +CPBF action command syntax

Command	Possible response(s)
+CPBF=<findtext>	[+CPBF: <index1>, <number>, <type>, <text>[[...] <CR><LF>+CPBF: <index2>, <number>, <type>, <text>]] +CME ERROR: <err>

+CPBF=?	+CPBF: [<nlength>],[<tlength>] +CME ERROR: <err>
---------	---

Description

Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>. Entry fields returned are location number <indexn>, phone number stored there <number> (of format <type>) and text <text> associated with the number. If listing fails in an ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Test command returns the maximum lengths of <number> and <text> fields. In case of SIM/UICC storage, the lengths may not be available. If ME is not currently reachable, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Defined values

<index1>, <index2>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

<findtext>, <text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

Implementation

Optional.

8.14 Write phonebook entry +CPBW

Table 12: +CPBW action command syntax

Command	Possible response(s)
+CPBW=[<index>][,<number>[,<type>[,<text>]]]	+CME ERROR: <err>
+CPBW=?	+CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>] +CME ERROR: <err>

Description

Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS. Entry fields written are phone number <number> (in the format <type>) and text <text> associated with the number. If those fields are omitted, phonebook entry is deleted. If <index> is left out, but <number> is given, entry is written to the first free location in the phonebook (the implementation of this feature is manufacturer specific). If writing fails in an ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Test command returns location range supported by the current storage as a compound value, the maximum length of <number> field, supported number formats of the storage, and the maximum length of <text> field. In case of SIM/UICC storage, the lengths may not be available. If ME is not currently reachable, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values. If storage does not offer format information, the format list should be empty parenthesis

Defined values

<index>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7); default 145 when dialling string includes international access code character "+", otherwise 129

<text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

Implementation

Optional.

8.25 Accumulated call meter +CACM

Table 13: +CACM parameter command syntax

Command	Possible response(s)
+CACM=[<passwd>]	+CME ERROR: <err>
+CACM?	+CACM: <acm> +CME ERROR: <err>
+CACM=?	

Description

Set command resets the Advice of Charge related accumulated call meter value in [SIM an active application in the UICC \(GSM or USIM\) or SIM card](#) file EF_{ACM}. ACM contains the total number of home units for both the current and preceding calls. SIM PIN2 is usually required to reset the value. If setting fails in an ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Read command returns the current value of ACM.

Defined values

<passwd>: string type; SIM PIN2

<acm>: string type; accumulated call meter value similarly coded as <ccm> under +CAOC

Implementation

Optional.

8.26 Accumulated call meter maximum +CAMM

Table 14: +CAMM parameter command syntax

Command	Possible response(s)
+CAMM=[<acmmax> [, <passwd>]]	+CME ERROR: <err>
+CAMM?	+CAMM: <acmmax> +CME ERROR: <err>
+CAMM=?	

Description

Set command sets the Advice of Charge related accumulated call meter maximum value in [SIM an active application in the UICC \(GSM or USIM\) or SIM card](#) file EF_{ACMmax}. ACMmax contains the maximum number of home units allowed to be consumed by the subscriber. When ACM (refer +CACM) reaches ACMmax calls are prohibited (see also 3GPP TS 22.024 [26]). SIM PIN2 is usually required to set the value. If setting fails in an ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Read command returns the current value of ACMmax.

Defined values

<acmmax>: string type; accumulated call meter maximum value similarly coded as <ccm> under +CAOC; value zero disables ACMmax feature

<passwd>: string type; SIM PIN2

Implementation

Optional.

8.27 Price per unit and currency table +CPUC

Table 15: +CPUC parameter command syntax

Command	Possible response(s)
+CPUC=<currency> , <ppu> [, <passwd>]	+CME ERROR: <err>
+CPUC?	+CPUC: <currency> , <ppu> +CME ERROR: <err>

+CPUC=?	
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Description

Set command sets the parameters of Advice of Charge related price per unit and currency table in [SIM an active application in the UICC \(GSM or USIM\) or SIM card](#) file EF_{PUCT}. PUCT information can be used to convert the home units (as used in +CAOC, +CACM and +CAMP) into currency units. SIM PIN2 is usually required to set the parameters. If setting fails in an ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

Read command returns the current parameters of PUCT.

Defined values

<currency>: string type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command Select TE Character Set +CSCS

<ppu>: string type; price per unit; dot is used as a decimal separator (e.g. "2.66")

<passwd>: string type; SIM PIN2

Implementation

Optional.

8.30 Set Language +CLAN

Table 16: +CLAN parameter command syntax

Command	Possible response(s)
+CLAN=<code>	+CME ERROR: <err>
+CLAN?	+CLAN: <code> +CME ERROR: <err>
+CLAN=?	+CLAN: (list of supported <code>s) +CME ERROR: <err>

Description

This command sets the language in the ME. The set-command must confirm the selected language with the MMI-module in the ME. If setting fails, a ME error, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.

The <code>-parameter is a two-letter abbreviation of the language. The language codes, as defined in ISO 639, consists of two characters, e.g. "sv", "en" etc.

The complete set of language codes to be used are manufacturer specific and should all be possible to use with the command. Some examples are described under <code>. For a complete list see ISO 639.

The read command gives the current language as output. If the language has been set to "AUTO", the read command returns the current language set from the [SIM card active application in the UICC \(GSM or USIM\) or SIM card](#). Hence, the "AUTO"-code is never returned by the read-command.

Test command returns supported <code>s.

Defined values

<code>: (not all language codes are present in this list)

"AUTO" Read language from [SIM the active application in the UICC \(GSM or USIM\) or SIM card](#). "Auto" is not returned by the read-command.

"sw" Swedish

"fi"	Finnish
"da"	Danish
"no"	Norwegian
"de"	German
"fr"	French
"es"	Spanish
"it"	Italian
"en"	English

Implementation

Optional.