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Contents

Foreword

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1 Scope

The present document defines the requirements for and gives guidelines on the MMI on the User Equipment (UE). This includes the requirements of the user procedures for call control and supplementary service control, the requirements on the physical input media and the output, such as indications and displayed information.

Some clauses of the present document include the requirements that are applicable only to UE connected to CS Domain. See 3GPP TS 22.101 [18]; for overall service principles and 3GPP TS 22.001 [19] for Circuit telecommunication services.

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 TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.004: "General on supplementary services".

[3] 3GPP TS 22.011: "Service accessibility".

[4] 3GPP TS 22.016: "International Mobile station Equipment Identities (IMEI)".

[5] 3GPP TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services – Stage 1".

[6] 3GPP TS 22.084: "MultiParty (MPTY) supplementary services – Stage 1".

[7] 3GPP TS 22.090: "Stage 1 description of Unstructured Supplementary Service Data (USSD)".

[8] 3GPP TS 23.038: "Alphabets and language".

[9] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core Network Protocols – Stage 3".

[10] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification Formats and coding".

[11] 3GPP TS 29.002 : "Mobile Application Part (MAP)".

[12] 3GPP TS 22.081: "Line Identification Supplementary Services – Stage 1".

[13] ITU-T Recommendation E.164: "Numbering plan for the ISDN era".

[14] ITU-T Recommendation E.121: "Pictograms and symbols to assist users of the telephone service".

[15] 3GPP TS 22.072: "Call Deflection; Stage 1".

[16] 3GPP TS 22.091: "Explicit Call Transfer Supplementary Service; Stage 1".

[17] 3GPP TS 22.093: "Call Completion to Busy Subscriber (CCBS); Stage 1".

[18] 3GPP TS 22.101: "Service principles".

[19] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

[20] 3GPP TS 22.094: "Follow Me Service description – Stage 1".

[21] 3GPP TS 22.135: "Multicall supplementary service Stage 1".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definition applies:

Directory Number: A string consisting of one or more of the characters from the set {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, *, #, a, b, c} associated with a nature of address indicator and number plan indicator. When using the public MMI for the control of supplementary services however, * and # cannot be part of any SC or SI field.

NOTE 1: No such restriction on the SC and SI fields exists when using other (e.g. menu-driven) MMI for the control of supplementary services.

NOTE 2: When using the public MMI, certain limitations on the use of one and two digit directory numbers may apply. The use of other MMI can remove these restrictions.

NOTE 3: This definition is not intended to require the support of all these characters in the MMI itself.

3.2 Abbreviations

For the purposes of the present document, the abbreviations listed in 3GPP TR 21.905 [18] apply.

4 General

4.1 Basic philosophy

The basic idea behind the present document is that it should give a minimum level of requirements, with emphasis on items which are seen as important from a usage point of view. This means, that the requirements are mainly dealing with standardized control procedures of access to services i.e. call establishment, invocation of supplementary services and so on.

The requirements on the physical layout of input and output features are kept to a minimum to allow for differentiated types of Ues and to ease the introduction of future developments in the area of MMI. The standardized control procedures describe the sequence of real actions to be taken by the users. However, since the requirements on the physical input features are minimal the control procedures may differ between Ues depending on the solution of the manufacturers. The "bridge" between these requirements is however that the same logical actions have to be taken by the user. That is, the user has to provide the same information for the call control and signalling no matter what the method is. This is also valid if an automatic device is used for carrying out the same actions. The logical procedures are therefore defined and standardized in the present document.

Optionally, the user may set the ME to disable some or all of the MMI functions defined in the present document. This setting shall only apply when the same SIM/USIM is in use otherwise the ME shall enable the standard MMI.

5 Physical user input features

5.1 General

This clause gives the requirements or guidelines for the MMI of the input related UE features. Basic requirements on these features are given in 3GPP TS 22.101 [18].

5.2 MMI related to UE features

* Country/PLMN selection:

The method is manufacturer optional.

* International Access Function ("+" key):

and

* Keypad:

The physical means of entering the characters 0-9, +, * and # (i.e. the SELECT function) may be keypad, voice input device, DTE or other, but there must be means to enter this information.

The relationship on the keypad between the numbers and letters (where used) is important when mnemonic dialling may be used. The following relationship is therefore preferred though optional.

1		6	MNO
2	ABC	7	PQRS
3	DEF	8	TUV
4	GHI	9	WXYZ
5	JKL	0	

* ACCEPT, SEND and END functions:

The physical means to perform these functions may be keypad, voice input device, DTE or other, but there must be means to perform these functions. ACCEPT and SEND may use the same means.

* Setting of called Number Fields (Type of Number), use of the "+" key function:

Users may enter a called number in two formats, called here International or Open. The Type of Number (TON) may be set to other values if required, but the procedure for this is not defined here.

"International format":

This is entered by starting with a "+" followed by country code, even for national calls. This method is preferred for roaming and international calls, and highly desirable for storage of short codes or for call-forwarding.

This sets the TON to "International" - see 3GPP TS 24.008 [9].

"Open format":

This is when the "+" is not entered, and the number is entered in the normal way for that network. The number may require a prefix or escape code as normal, for example for entering the international access code or national access code (often "0").

This sets the TON to "Unknown" - see 3GPP TS 24.008 [9]. (This is **not** the "National" case, which does not permit prefix or escape digits).

Care should be taken with this format, since the dialled number will only be correct in a given network, and may be wrong when roaming. Caution must be applied when using stored numbers or call-forwarding.

* Setting of Called Number Fields (Number Plan Indicator):

The default Number Plan Identification (NPI) shall be ITU-T E.164 [13] if all the digits are in the range 0-9 and the NPI shall be "unknown" if other number information is included. However, if the user selects (or has selected) a particular NPI (procedure not defined) then that NPI shall be used.

* Entry of Bearer Capability Information Elements (BCIE):

This is required in order to indicate information such as whether it is a voice or data call, facsimile, synchronous or asynchronous etc. The method for entering this information is of mobile manufacturer's option. For those User Equipment offering only telephony (and emergency calls), the default BCIE shall be for telephony (or

emergency call). For User Equipment supporting non-voice services, there shall be means to set the BCIE required, by reading the appropriate field in the SIM/USIM and possibly otherwise. This field may be associated with or independent of the called number.

6 Procedures

6.1 General

This clause defines the MMI of the service access procedures, and supplementary service control procedures. These procedures are defined as logical procedures and in general no mandatory methods are specified. In order to make the descriptions continuous and clear requirements in 3GPP TS 22.101 [18] have been included or are referenced. The mapping between the MMI procedures and the call control entity is specified in 3GPP TS 24.008 [9].

6.2 UE access

The UE access procedure is comprised of the initial actions the user has to take before calls can be established or received. This procedure includes e.g. insertion of subscriber-card and entering the PIN-code.

As there exist different types of UE and as requirements in other 3GPP specifications allow different options the UE access procedure may differ between User Equipment. The method for describing the UE access procedures is by using a Mealy-graph, see annex A.

The graph shows the UE access for simple UE e.g. hand-held and they may be different for more complex stations. It should also be noted that the exact sequences of events are not described, these may be chosen by the manufacturers.

6.3 Definition of functions

The following functions are applicable and mandatory for the logical procedures for Mobile originated and terminated calls and for the control of Supplementary Services:

ACCEPT: Acceptance of a mobile terminated call.

SELECT: Entry of information.

SEND: Transmission of the entered information to the network.

INDICATION: Call progress indications. Other indications may be given in addition throughout the procedure.

END: Termination of or disconnection from the call. The execution of the END-function may be caused by either party involved in the call by e.g. termination, loss of coverage, invalidation of payment.

6.4 Call Control

6.4.1 General

Voice calls to and from a User Equipment shall be controlled in accordance with the procedures described below. "Data calls" are expected to be controlled in a similar way but are not here specified.

6.4.2 Voice calls

The voice call is either a normal telephony call or an emergency call.

6.4.2.1 Mobile originated calls

The following sequence of functions shall be used:

SELECT: Entry of called address information.

SEND: Transmission of the called address.

INDICATION: Call progress indications.

END: Termination of the call.

6.4.2.2 Emergency calls

With User Equipment supporting Telephony, it shall be possible to place an emergency call as specified in 3GPP TS 22.101 [18].

6.4.2.3 Mobile terminated calls

The following sequence of functions shall be used:

INDICATION: Alert to the user that she is being called.

ACCEPT: Acceptance of the incoming call by the user.

INDICATION: Call progress indications.

END: Termination of the call.

User Determined User Busy (UDUB): If, on being alerted by an incoming call, the called user enters "0 SEND", this shall set UDUB for that call, which shall either invoke call forwarding on busy, if active and operative, or else present BUSY to the calling party.

6.5 Supplementary Services Control

6.5.1 General

The supplementary services shall be controlled in accordance with the procedures described below. All User Equipment with MMI shall be able to be controlled in this way, to minimize the confusion of users using different types of User Equipment (quite likely, due to the use of the SIM IC card or UICC) and to permit the introduction by a PLMN operator of new supplementary services, not defined at the time of the design of a User Equipment. These procedures are based on those recommended by ETSI/HF and ITU-T Recommendation E.131.

The specified MMI shall be supported by the L3 signalling between the UE and the MSC, see 3GPP TS 24.080 [10].

In addition to these specified MMI procedures the UE may be equipped with additional enhanced MMI procedures (e.g. dedicated keys, menu procedures...), left to the discretion of the manufacturer. These procedures shall also be converted in accordance with 3GPP TS 24.080 [10].

6.5.2 Structure of the MMI

The following sequence of functions shall be used for the control of Supplementary Services:

SELECT: Entry of the procedure information (may be a digit or a sequence of characters).

SEND: Transmission of the information to the network.

INDICATION: Call progress indications.

The UE shall support the MMI procedure specified as:

Activation : *SC*SI#

Deactivation : #SC*SI#

Interrogation : *#SC*SI#