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Universal Mobile Telecommunications System (UMTS);**

**LTE;
5G;**

**AT command set for User Equipment (UE)
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1 Scope

The present document specifies a profile of AT commands and recommends that this profile be used for controlling Mobile Termination (MT) functions and network services from a Terminal Equipment (TE) through Terminal Adaptor (TA). The command prefix +C is reserved for Digital Cellular in ITU-T Recommendation V.250 [14]. The present document has also the syntax details used to construct extended commands. Commands from ITU-T Recommendation V.250 [14] and existing digital cellular standards (TIA IS-99 [15] and TIA IS-135 [16]) are used whenever applicable. Some of the new commands are defined such way that they can be easily applied to MT of other networks.

NOTE: The terms GSM and GSM/UMTS are used whenever appropriate for SIM/UICC GSM applications or GSM/UMTS bearer services or to represent specific mobile accesses covered by the present specification.

ITU-T Recommendation T.31 [11] and ITU-T Recommendation T.32 [12] fax AT commands may be used for GSM/UMTS fax transmission from TE. Short Message Service AT commands are defined in 3GPP TS 27.005 [24]. AT commands for packet systems are defined in clause 10 of this specification. The present document assumes an abstract architecture comprising a TE (e.g. a computer) and a MT interfaced by a TA (see figure 1). The span of control of the defined commands should allow handling of any physical implementation that this abstract architecture may lead to:

- TA, MT and TE as three separate entities;
- TA integrated under the MT cover, and the TE implemented as a separate entity;
- TA integrated under the TE cover, and the MT implemented as a separate entity; and
- TA and MT integrated under the TE cover as a single entity.

The commands described in the present document may be observed on the link between the TE and the TA. However, most of the commands retrieve information about the MT, not about the TA.

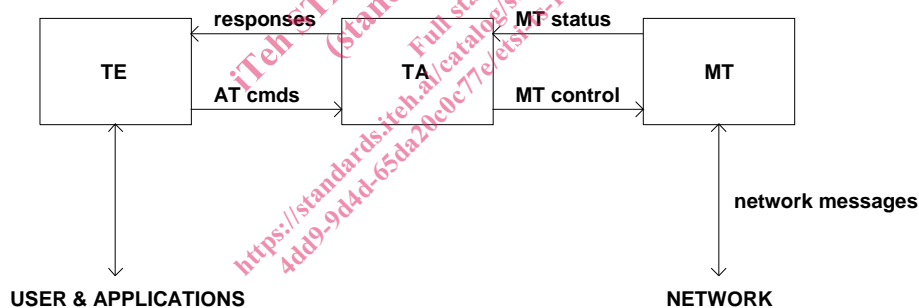


Figure 1: Setup

Interface between TE and TA is intended to operate over existing serial (ITU-T Recommendation V.24) cables, infrared link, and all link types with similar behaviour. For correct operation many of the defined commands require eight bit data and therefore it is recommended that TE-TA link is set to eight bits/ byte mode. (For infrared operation implementation, refer informative references IrDA. For embedding AT commands and data during on-line data state, refer TIA-617/ITU-T V.80.) Interface between TA and MT is dependent on the interface in the MT.

The functional blocks shown in figure 1, using AT commands, shall follow the principles described in the interactions handling framework 3GPP TS 23.227 [63].

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: "Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".
- [2] 3GPP TS 22.003: "Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [3] 3GPP TS 22.081: "Line identification supplementary services - Stage 1".
- [4] 3GPP TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".
- [5] 3GPP TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".
- [6] 3GPP TS 22.088: "Call Barring (CB) supplementary services - Stage 1".
- [7] 3GPP TS 23.003: "Numbering, addressing and identification".
- [8] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols- Stage 3".
- [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 Recommendation V.250: "Serial asynchronous automatic dialling and control".
- [15] TIA IS-99: "Data Services Option Standard for Wideband Spread Spectrum Digital Cellular System".
- [16] TIA IS-135: "800 MHz Cellular Systems, TDMA Services, Async Data and Fax".
- [17] 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: "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: "Man Machine Interface (MMI) of the Mobile Station (MS)".
- [20] 3GPP TS 45.008: "Radio subsystem link control".
- [21] 3GPP TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".
- [22] 3GPP TS 22.084: "MultiParty (MPTY) supplementary services - Stage 1".
- [23] 3GPP TS 22.090: "Unstructured Supplementary Service Data (USSD) - Stage 1".
- [24] 3GPP TS 27.005: "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: "Alphabet and language specific information".
- [26] 3GPP TS 22.024: "Description of Charge Advice Information (CAI)".