

# SLOVENSKI STANDARD SIST ETS 300 582 E2:2003

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European digital cellular telecommunications system (Phase 2); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS) (GSM 07.01)

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## **ICS:**

33.070.50	Globalni sistem za mobilno telekomunikacijo (GSM)	Global System for Mobile Communication (GSM)
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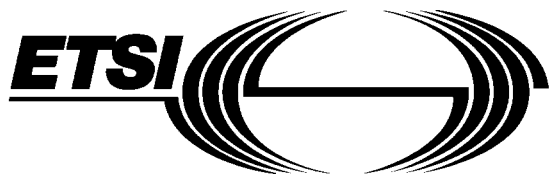
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## Contents

Foreword.....	7
1.1 SCOPE .....	9
1.2 Normative references .....	9
1.3 Definitions and abbreviations .....	11
2 ACCESS REFERENCE CONFIGURATION .....	12
3 not used .....	12
4 not used .....	12
5 FUNCTIONS TO SUPPORT DATA SERVICES.....	13
6 SUPPORT OF NON TRANSPARENT BEARER SERVICES.....	13
6.1 Functions of the Layer 2 Relay .....	13
6.2 Radio Link Services Used .....	15
6.3 Flow Control - General Description .....	15
6.3.1 End to End Flow Control .....	15
6.3.2 Back Pressure .....	15
6.3.3 Receive not Ready .....	15
7 STRUCTURE OF THE GSM 07-SERIES OF SPECIFICATIONS.....	16
8 FUNCTIONS COMMON TO ALL INTERFACES.....	16
8.1 Synchronization of the Traffic Channel.....	16
8.2 Filtering of Channel Control Information.....	17
8.2.1 General .....	17
8.2.2 Filtering Process to Be Applied.....	18
8.3 Terminal Compatibility Decision .....	19
8.3.1 Compatibility Check.....	19
8.3.2 Selection of Appropriate Terminal Function.....	20
8.3.3 Indication of Compatibility Requirements to the PLMN.....	20
8.3.3.1 Indication in case of Mobile Terminating Calls .....	20
8.3.3.2 Indication in case of Mobile originating calls .....	21
8.4 Test Loops .....	21
8.5 Alternate speech/data and speech/facsimile group 3.....	22
ANNEX 1 (Informative) List of Bearer Capability Elements.....	23
ANNEX 2 (Normative) : Setting of Bearer Capability, Low Layer Compatibility and High Layer Compatibility Information Element for GSM Bearer Services and GSM TeleServices.....	27
0 Scope .....	27
1 Bearer Capability Information Element .....	27
1.1 Introduction.....	27
1.1.1 General Consideration .....	27
1.1.2 Interpretation of the Diagrams .....	28
Table II.1 BC-Parameters subject to negotiation procedure.....	29
Table II.2 General Structure of the BC-Information Element .....	30

	Table	II.3 Selection of flow control method (for CENT with SAA only) .....	30
	Table	II.4a Modem Type subject to negotiation procedure .....	31
	Table	II.4b Intermediate Rate negotiation procedure.....	32
	Table	II.5 BC parameter setting (part 1) .....	33
	Table	II.5 BC parameter setting (part 2) .....	34
	Table	II.6 Channel combinations.....	35
	Table	II.7 TS61/TS62 Negotiation rules .....	36
1.2	Bearer Service 21 ... 26, Data Circuit Duplex Asynchronous .....		37
1.2.1	Unrestricted digital information transfer capability.....		37
1.2.2	3.1 kHz audio ex-PLMN information transfer capability.....		38
1.3.	Bearer Service 31 ... 34, Data Circuit Duplex Synchronous.....		39
1.3.1	Unrestricted digital information transfer capability.....		39
	1.3.1.1 Non-X.32 Cases .....		39
	1.3.1.2 X.32 Case (Packet Service) .....		40
1.3.2	3.1 kHz audio ex-PLMN information transfer capability.....		41
	1.3.2.1 Non-X.32 Cases .....		41
	1.3.2.2 X.32 Case ( Packet Service ) .....		42
1.4	Bearer Service 41 ... 46, PAD Access Asynchronous.....		43
1.5	Bearer Service 51 ... 53 ,Data Packet Duplex Synchronous, Unrestricted digital information transfer capability.....		44
1.6	Bearer Service 61, Alternate Speech/Data .....		45
1.6.1	Bearer Service 61,Speech .....		45
1.6.2	Bearer Service 61, 3.1 kHz audio ex-PLMN information transfer capability .....		46
	1.6.2.1 Asynchronous.....		46
	1.6.2.2 Synchronous.....		47
1.7	Bearer Service 81, Speech followed by Data .....		48
1.7.1	Bearer Service 81,Speech .....		48
1.7.2	Bearer Service 81, 3.1 kHz audio ex-PLMN information transfer capability ..		48
	1.7.2.1 Asynchronous.....		48
	1.7.2.2 Synchronous.....		48
1.8	Teleservice 11 ... 12, Speech.....		48
1.9	Teleservice 21 ... 23, Short Message .....		48
1.10	Teleservice 61, Alternate Speech and Facsimile group 3.....		49
1.10.1	Teleservice 61, Speech.....		49
1.10.2	Teleservice 61, Facsimile group 3.....		49
1.11	Teleservice 62, Automatic Facsimile Group 3 .....		49
2	Low Layer/High Layer Compatibility Information Element .....		50
2.1	Introduction.....		50
	2.1.1 General Consideration .....		50
	2.1.2 Interpretation of the Tables .....		50
2.2	LLC Bearer Service 21 ... 26.....		51
	2.2.1 Unrestricted digital information transfer capability.....		51
	2.2.2 3,1 kHz audio ex-PLMN information transfer capability.....		51
2.3	LLC Bearer Service 31 ... 34.....		52
	2.3.1 Unrestricted digital information transfer capability.....		52
	2.3.2 3.1kHz audio ex-PLMN information transfer capability.....		52
2.4	LLC Bearer Services 41 ... 46.....		52
2.5	LLC Bearer Services 51 ... 53.....		53
	2.5.1 Unrestricted digital information transfer capability.....		53
2.6	LLC Bearer Service 61 .....		53
	2.6.1 3,1 kHz audio ex-PLMN information transfer capability, Asynchronous.....		53
	2.6.2 3,1 kHz audio ex-PLMN information transfer capability, Synchronous.....		53
2.7	LLC Bearer Service 81 .....		53
	2.7.1 3,1 kHz audio ex-PLMN information transfer capability, Asynchronous.....		53

	2.7.2	3,1 kHz audio ex-PLMN information transfer capability, Synchronous .....	53
2.8	HLC Teleservices 11 ... 12.....		53
2.9	HLC Teleservices 21 ... 23.....		53
2.10	HLC Teleservice 61 .....		54
2.11	HLC Teleservice 62.....		54
History .....			55

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[SIST ETS 300 582 E2:2003](https://standards.iteh.ai/catalog/standards/sist/4d45e38d-301d-4379-a721-9fb69125bcf3/sist-ets-300-582-e2-2003)

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## Foreword

This European Telecommunication Standard (ETS) has been produced by the Special Mobile Group (SMG) Technical Committee (TC) of the European Telecommunications Standards Institute (ETSI).

This ETS describes the functions required for the terminal adaptation of terminal equipment to the Mobile Termination (MT) within the European digital cellular telecommunications system (Phase 2).

This ETS is based upon the principles of terminal adaptor functions presented in the CCITT I-series of recommendations (I.460 - I.463).

This ETS corresponds to GSM technical specification, GSM 07.01 version 4.8.0.

The specification from which this ETS has been derived was originally based on CEPT documentation, hence the presentation of this ETS may not be entirely in accordance with the ETSI/PNE rules.

Reference is made within this ETS to GSM Technical Specifications (GSM-TS) (NOTE).

Reference is also made within this ETS to GSM 0x.xx. series. The specifications in the series can be identified, with their full title, within the normative reference Clause of this ETS by the first two digits of their GSM reference number e.g. GSM 09.xx series, refers to GSM 09.01, GSM 09.02, etc.

**NOTE:** TC-SMG has produced documents which give the technical specifications for the implementation of the European digital cellular telecommunications system. Historically, these documents have been identified as GSM Technical Specifications (GSM-TSs). These TSs may have subsequently become I-ETTs (Phase 1), or ETs (Phase 2), whilst others may become ETSI Technical Reports (ETRs). GSM-TSs are, for editorial reasons, still referred to in current GSM ETs.

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## 1.1 SCOPE

This specification is based on the principles of terminal adaptor functions presented in the CCITT I-series of recommendations (I.460 - I.463).

The GSM PLMN supports a wide range of voice and non-voice services in the same network. In order to enable non-voice traffic in the GSM PLMN there is a need to connect various kinds of terminal equipments to the Mobile Termination (MT). The target of this Specification is to outline the functions needed for the terminal adaptation.

In the GSM 02.02 the bearer services are described. The general network configuration is described in GSM 03.02 and the GSM PLMN access reference configuration is defined in GSM 04.02. The various connection types used in the GSM PLMN are presented in GSM 03.10. Terminology used in this Specification is presented in GSM 01.04. For support of data services between GSM PLMN and other networks see GSM 09-series of Specifications.

## 1.2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

- [1] GSM 01.04 (ETR 100): "European digital cellular telecommunication system (Phase 2); Definitions, abbreviations and acronyms".
- [2] GSM 02.02 (ETS 300 501): "European digital cellular telecommunication system (Phase 2); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".
- [3] GSM 02.03 (ETS 300 502): "European digital cellular telecommunication system (Phase 2); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [4] GSM 03.02 (ETS 300 522): "European digital cellular telecommunication system (Phase 2); Network architecture".
- [5] GSM 03.10 (ETS 300 528): "European digital cellular telecommunication system (Phase 2); GSM Public Land Mobile Network (PLMN) connection types".
- [6] GSM 04.02 (ETS 300 551): "European digital cellular telecommunication system (Phase 2); GSM Public Land Mobile Network (PLMN) access reference configuration".
- [7] GSM 04.08 (ETS 300 557): "European digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 specification".
- [8] GSM 04.21 (ETS 300 562): "European digital cellular telecommunication system (Phase 2); Rate adaption on the Mobile Station - Base Station System (MS - BSS) interface".
- [9] GSM 04.22 (ETS 300 563): "European digital cellular telecommunication system (Phase 2); 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".
- [10] GSM 05.05 (ETS 300 577): "European digital cellular telecommunication system (Phase 2); Radio transmission and reception".

- [11] GSM 07.02 (ETS 300 583): "European digital cellular telecommunication system (Phase 2); Terminal Adaptation Functions (TAF) for services using asynchronous bearer capabilities".
- [12] GSM 07.03 (ETS 300 584): "European digital cellular telecommunication system (Phase 2); Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities".
- [13] GSM 07.05 (ETS 300 585): "European digital cellular telecommunication system (Phase 2); Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)".
- [14] GSM 07.06 (ETS 300 586): "European digital cellular telecommunication system (Phase 2); Use of the V series Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface at the Mobile Station (MS) for Mobile Termination (MT) configuration".
- [15] GSM 09.01 (ETR 109): "European digital cellular telecommunication system (Phase 2); General network interworking scenarios".
- [16] GSM 09.02 (ETS 300 599): "European digital cellular telecommunication system (Phase 2); Mobile Application Part (MAP) specification".
- [17] GSM 09.03 (ETS 300 600): "European digital cellular telecommunication system (Phase 2); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".
- [18] GSM 09.04 (ETS 300 601): "European digital cellular telecommunication system (Phase 2); Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN)".  
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- [19] GSM 09.05 (ETS 300 602): "European digital cellular telecommunication system (Phase 2); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly (PAD) facility access".
- [20] GSM 09.06 (ETS 300 603): "European digital cellular telecommunication system (Phase 2); Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet switched data transmission services".
- [21] GSM 09.07 (ETS 300 604): "European digital cellular telecommunication system (Phase 2); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [22] GSM 09.08 (ETR 110): "European digital cellular telecommunication system (Phase 2); Application of the Base Station System management Application Part (BSSMAP) on the E-interface".
- [23] GSM 09.10 (ETS 300 605): "European digital cellular telecommunication system (Phase 2); Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".
- [24] GSM 09.11 (ETS 300 606): "European digital cellular telecommunication system (Phase 2); Signalling interworking for supplementary services".

- [25] GSM 09.90 (ETR 111): "European digital cellular telecommunication system (Phase 2); Interworking between Phase 1 infrastructure and Phase 2 Mobile Stations (MS)".
- [26] CCITT Series V Recommendations: "Data communication over the Telephone network".
- [27] CCITT Series X Recommendations: "Data communication networks".
- [28] CCITT Recommendation X.25 "Interface between data terminal equipment (DTE) and data circuit - terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".
- [29] CCITT Recommendation X.150: "Data Communication Networks: Transmission, Signalling and Switching, Network Aspects, Maintenance and Administrative Arrangements".
- [30] CCITT Recommendation V.25bis: "Automatic Calling and/or Answering Equipment on the General Switched Telephone Network (GSTN) using the 100-Series Interchange Circuits".
- [31] CCITT Recommendation V.54: "Loop Test Devices for Modems".
- [32] CCITT Recommendation V.110: "Support of data terminal equipments (DTEs) with V-Series interfaces by an integrated services digital network".
- [33] CCITT Recommendation I.460-I.464: "ISDN Overall Network Aspects and Functions, User Network Interfaces".
- [34] ETS 300 102-1: "Integrated Services Digital Network (ISDN); User-network interface layer 3 specifications for basic call control".
- [35] ETR 018: "Integrated Services Digital Network (ISDN), Application of the BC-, HLC-, LLC-Information elements by terminals supporting ISDN services".
- [36] ISO/IEC 6429: "Information technology - Control functions for coded character sets".

### 1.3 Definitions and abbreviations

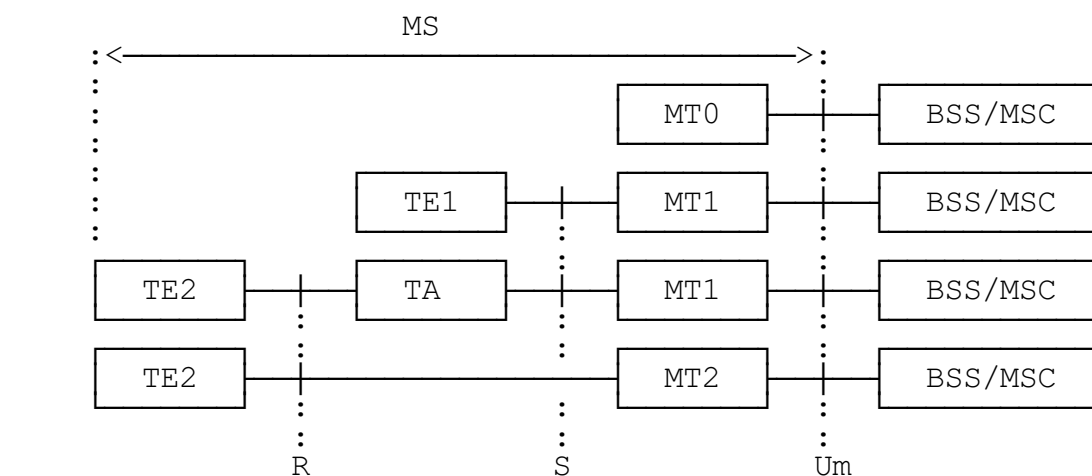
In addition to those below, abbreviations used in this specification are listed in GSM 01.04.

CALL PROC  
CALL CONF  
CONNACK

CALL PROCEEDING  
CALL CONFIRMED  
CONNECT ACKNOWLEDGEMENT

## 2 ACCESS REFERENCE CONFIGURATION

Figure 1 presents the reference configuration for access to a GSM PLMN (see GSM 04.02).



—+— = reference point

TE1 = ISDN terminal

TE2 = V- or X-type terminal

TA = Terminal Adaptor

BSS = Base Station System

MSC = Mobile Switching Centre

Figure 1: GSM PLMN Access Reference Configuration

Within the scope of this Specification the Mobile Termination MT0 means a fully integrated MS including data terminal and its adaptation functions. MT1 includes ISDN terminal adaptation functions and MT2 includes CCITT V- or X-series terminal adaptation functions among other MT functions.

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3 not used

4 not used

## 5 FUNCTIONS TO SUPPORT DATA SERVICES

The main functions of the MT to support data services are:

- functions to ensure conformity of terminal service requests to network capability
- physical connection of the reference points R and S
- flow control of signalling and mapping of user signalling to/from GSM PLMN access signalling
- rate adaptation of user data (see GSM 04.21)
- flow control of non-transparent user data and mapping of flow control for asynchronous data services
- support of data integrity between the MS and the interworking function in the GSM PLMN
- end-to-end synchronization between terminals
- filtering of status information
- functions to support non-transparent bearer services e.g. termination of the Radio Link Protocol (RLP) and the Layer 2 Relay function (L2R) (where applicable)
- terminal compatibility checking
- optional support of local test loops

In addition, functions to support autocalling and autoanswering are optionally specified in accordance with CCITT Rec. V.25 bis (although the use of other autocalling/autoanswering procedures are not prohibited provided that mapping in a functionally equivalent way to GSM 04.08 call control is also provided).

Other functional entities can be envisaged apart from the TAF. One of the physical interface to all these functions is the DTE/DCE interface to the MT. Normally, this DTE/DCE interface is associated with the TAF, if available. Therefore the access to any of these other functional entities, if implemented, via the DCE/DTE interface must be triggered by appropriate command sequences which are described in the applicable specifications (although the use of other procedures is not prohibited provided that mapping in a functionally equivalent way is also provided). These command sequences can be issued by the DTE only when the MT is in the appropriate command status and there is no data connection pending. They are interpreted by an MT internal control function and result in an association of the DTE/DCE interface with the addressed function, if available.

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## 6 SUPPORT OF NON-TRANSPARENT BEARER SERVICES

In order to support non transparent bearer services a Layer 2 Relay (L2R) function is included in the mobile termination. The details of the particular L2R function for the different non transparent bearer services are contained in the appropriate GSM 07-series Specification. This section describes the general aspects of the L2R function.

The Layer 2 Relay (L2R) function provides for the reliable transportation of known, i.e. non transparent, user protocols across the radio interface of a GSM PLMN. The L2R functions are located in the Mobile Termination (MT) and the Interworking Function (IWF) associated with a Mobile Switching Centre (MSC). The L2R uses the services provided by the Radio Link Protocol (RLP) to transport the non transparent protocol information between the MS and the IWF.

### 6.1 Functions of the Layer 2 Relay

The complete protocol reference models for data and telematic services are described in GSM 03.10. The subset of those protocol reference models relating to the L2R function is reproduced in Figure 2.