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Evropski digitalni celiļ ni telekomunikacijski sistem (faza 2) ï Tehniļ na realizacija storitev kratkih sporoļ il (SMS) toļ ka-toļ ka (PP) (GSM 03.40)

European digital cellular telecommunications system (Phase 2); Technical realization of Short Message Service (SMS) Point-to-Point (PP) (GSM 03.40)

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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 defines the technical realization of the Point-to-Point (PP) Short Message Service (SMS) for the European digital cellular telecommunications system (Phase 2). This ETS corresponds to GSM Technical Specification (GSM-TS) GSM 03.40 version 4.9.1.

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-TSs.

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-ETSs (Phase 1), or ETSs (Phase 2), whilst others may become ETSI Technical Reports (ETRs). GSM-TSs are, for editorial reasons, still referred to in current GSM ETSs.

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0.1 Scope

This specification describes the point-to-point Short Message Service (SMS) of the GSM PLMN system. It defines:

- the services and service elements,
- the network architecture,
- the Service Centre functionality,
- the MSC functionality (with regard to the SMS),
- the routing requirements,
- the protocols and protocol layering,

for the Teleservices 21 and 22, as specified in the GSM 02.03.

The use of radio resources for the transfer of short messages between the MS and the MSC is described in GSM 04.11 'Point-to-Point Short Message Service Support on Mobile Radio Interface', and is dealt with in that specification.

The network aspects of Short Message Service provision are outside the scope of this specification (i.e. the provision of network connectivity between the PLMN subsystems). The required and assumed network service offered to the higher layers is defined in this specification.

The Cell Broadcast Short Message Service (Teleservice 23) is a separate service, and is described in GSM 03.41 'Technical Realization of the Short Message Service - Cell Broadcast'.

0.2 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 02.03 (ETS 300 502): "European digital cellular telecommunication system (Phase 2); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".

[3] GSM 02.04 (ETS 300 503): "European digital cellular telecommunication system (Phase 2); General on supplementary services".

[4] GSM 02.41 (ETS 300 513): "European digital cellular telecommunication system (Phase 2); Operator determined barring".

[5] GSM 03.02 (ETS 300 522): "European digital cellular telecommunication system (Phase 2); Network architecture".

[6] GSM 03.08 (ETS 300 526): "European digital cellular telecommunication system (Phase 2); Organisation of subscriber data".

[7] GSM 03.11 (ETS 300 529): "European digital cellular telecommunication system (Phase 2); Technical realization of supplementary services".

[8] GSM 03.15 (ETS 300 533): "European digital cellular telecommunication system (Phase 2); Technical realization of operator determined barring".

[9] GSM 03.38 (ETS 300 537): "European digital cellular telecommunication system (Phase 2); Alphabets and language-specific information".

[10] GSM 03.41 (ETS 300 537): "European digital cellular telecommunication system (Phase 2); Technical realization of Short Message Service Cell Broadcast (SMSCB)".

[11] GSM 03.47 (ETR 106): "European digital cellular telecommunication system (Phase 2); Example protocol stacks for interconnecting Service Centre(s) (SC) and Mobile-services Switching Centre(s) (MSC)".

[12] GSM 04.08 (ETS 300 557): "European digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 specification".

[13] GSM 04.11 (ETS 300 559): "European digital cellular telecommunication system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[14] 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)".

[15] GSM 09.02 (ETS 300 599): "European digital cellular telecommunication system (Phase 2); Mobile Application Part (MAP) specification".

[16] GSM 11.11 (ETS 300 608): "European digital cellular telecommunication system (Phase 2); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[17] CCITT Recommendation E.164 (Blue Book): "Numbering plan for the ISDN era".

[18] CCITT Recommendation E.163 (Blue Book): "Numbering plan for the international telephone service".

[19] CCITT Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".

[20] CCITT Recommendation T.100 (Blue Book): "International information exchange for interactive videotex".

[21] CCITT Recommendation T.101 (Blue Book): "International interworking for videotex services".

[22] CCITT Recommendation X.121 (Blue Book): "International numbering plan for public data networks".

[23] CCITT Recommendation X.400 (Blue Book): "Message handling system and service overview".

0.3 Definitions and abbreviations

Note: Use of hyphens and full stops:

Care is needed when reading this specification as names containing words separated by hyphens have different meaning than when separated with full stops. E.g. TS-Status-Report-Request is a parameter within a TS-Submit primitive, whilst TS-Status-Report.Request is a primitive in its own right.

0.3.1 Key definitions

Active MS: A switched-on mobile station with a SIM module attached.

Alert-SC: Service element provided by a GSM PLMN to inform an SC which has previously initiated unsuccessful short message delivery attempt(s) to a specific MS, that the MS is now recognized by the PLMN to have recovered operation.

Status Report: SC informing the originating MS of the outcome of a short message submitted to an SME.

Gateway MSC for Short Message Service (SMS-GMSC): A function of an MSC capable of receiving a short message from an SC, interrogating an HLR for routing information and SMS info, and delivering the short message to the VMSC of the recipient MS.

Interworking MSC for Short Message Service (SMS-IWMSC): A function of an MSC capable of receiving a short message from within the PLMN and submitting it to the recipient SC.

Messages-Waiting (MW): Service element that makes a PLMN store information (Messages-Waiting-Indication), listing those SCs that have made unsuccessful short message delivery attempts to MSs in that PLMN.

Messages-Waiting-Indication (MWI): Data to be stored in the HLR and VLR with which an MS is associated, indicating that there is one or more messages waiting in a set of SCs to be delivered to the MS (due to unsuccessful delivery attempt(s)).

Messages-Waiting-Data (MWD): A part of the MWI to be stored in the HLR. MWD consists of an address list of the SCs which have messages waiting to be delivered to the MS.

Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF): A part of the MWI to be stored in the HLR. MCEF is a boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of MS Memory Capacity Exceeded.

Mobile-Station-Not-Reachable-Flag (MNRF): The part of the MWI to be stored in the VLR and the HLR. MNRF is a boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber.

More-Messages-to-Send (MMS): Information element offering an MS receiving a short message from an SC the information whether there are still more messages waiting to be sent from that SC to the MS.

Priority: Service element enabling the SC or SME to request a short message delivery attempt to an MS irrespective of whether or not the MS has been identified as temporarily absent.

Protocol-Identifier: Information element by which the originator of a short message (either an SC or an MS) may refer to a higher layer protocol.

Reply Path Procedure: A mechanism which allows an SME to request that an SC should be permitted to handle a reply sent in response to a message previously sent from that SME to another SME. This may happen even though the SC may be unknown to the SME which received the initial message.

Report: Response from either the network or the recipient upon a short message being sent from either an SC or an MS. A report may be a delivery report, which confirms the delivery of the short message to the recipient, or it may be a failure report, which informs the originator that the short message was never delivered and the reason why.

When issued by the Service Centre, the delivery report confirms the reception of the Short Message by the SC, and not the delivery of the Short Message to the SME.

When issued by the Mobile Station, the delivery report confirms the reception of the Short Message by the Mobile Station, and not the delivery of the Short Message to the user.

Replace Short Message Type:
A range of values in the Protocol Identifier which allows an indication to be sent with a short message (MT or MO) that the short message is of a particular type allowing the receiving MS or the SC to replace an existing message of the same type held in the SC, the ME or on the SIM, provided it comes:

- in MT cases: from the same SC and originating address;
- in MO cases: from the same MS.

Service Centre (SC): Function responsible for the relaying and store-and-forwarding of a short message between an SME and an MS. The SC is not a part of the GSM PLMN, however MSC and SC may be integrated.

Short Message: Information that may be conveyed by means of the Short Message Service described in this specification.

Short Message Entity (SME): An entity which may send or receive Short Messages. The SME may be located in a fixed network, an MS, or an SC.

SMS-STATUS-REPORT: Short message transfer protocol data unit informing the receiving MS of the status of a mobile originated short message previously submitted by the MS, i.e. whether the SC was able to forward the message or not, or whether the message was stored in the SC for later delivery.

SMS-COMMAND: Short message transfer protocol data unit which enables an MS to invoke an operation at the SC. An MS may then, for example, delete a short message, cancel a Status Report Request, enquire about the status of a short message or request another function to be performed by the SC.
The type of operation is indicated by the TS-Command-Type and the particular SM to operate on is indicated by the TS-Message-Number. The response to an SMS-COMMAND is an SMS-STATUS-REPORT, the outcome of the operation being passed in its TS-status field.

SMS-DELIVER: Short message transfer protocol data unit containing user data (the short message), being sent from an SC to an MS.

SMS-SUBMIT: Short message transfer protocol data unit containing user data (the short message), being sent from an MS to an SC.

Service-Centre-Time-Stamp (SCTS): Information element offering the recipient of a short message the information of when the message arrived at the SM-TL entity of the SC. The time of arrival comprises the year, month, day, hour, minute, second and time zone.

Validity-Period (VP): Information element enabling the originator MS to indicate the time period during which the originator considers the short message to be valid.

0.3.2 Abbreviations

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

E.163	CCITT Rec. E.163 (Blue Book)
E.164	CCITT Rec. E.164 (Blue Book)
ACSE	Association Control Service Element
SM MT	Short Message Mobile Terminated Point-to-Point
SM MO	Short Message Mobile Originated Point-to-Point
SM-AL	Short Message Application Layer
SM-TL	Short Message Transfer Layer
SM-RL	Short Message Relay Layer
SM-LL	Short Message Lower Layers
SM-TP	Short Message Transfer Layer Protocol
SM-RP	Short Message Relay Layer Protocol
SM-TS	Short Message Transfer Service
SM-RS	Short Message Relay Service
T.100	CCITT Rec. T.100 (Blue Book)
T.101	CCITT Rec. T.101 (Blue Book)
TPDU	Transfer protocol data unit
X.121	CCITT Rec. X.121 (Blue Book)
X.400	CCITT Rec. X.400 (Blue Book)

1 Introduction

The Point-to-Point Short Message Service (SMS) provides a means of sending messages of limited size to and from GSM mobiles. The provision of SMS makes use of a Service Centre, which acts as a store and forward centre for short messages. Thus a GSM PLMN needs to support the transfer of short messages between Service Centres and mobiles.

Two different point-to-point services have been defined: mobile originated and mobile terminated. Mobile originated messages will be transported from an MS to a Service Centre. These may be destined for other mobile users, or for subscribers on a fixed network. Mobile terminated messages will be transported from a Service Centre to an MS. These may be input to the Service Centre by other mobile users (via a mobile originated short message) or by a variety of other sources, e.g. speech, telex, or facsimile.

2 Not used

3 Services and service elements

The SMS provides a means to transfer short messages between a GSM MS and an SME via an SC. The SC serves as an interworking and relaying function of the message transfer between the MS and the SME.

This specification describes only the short message point-to-point services between the MS and SC. It may, however, refer to possible higher layer applications.

3.1 Basic services

The short message point-to-point services comprise two basic services:

SM MT (Short Message Mobile Terminated Point-to-Point),
SM MO (Short Message Mobile Originated Point-to-Point).