SLOVENSKI STANDARD
SIST ETS 300 901 E2:2003

01-december-2003

Digitalni celiļ ni telekomunikacijski sistem (faza 2+) ï Tehniļ na realizacija storitve kratkih sporoļ il (SMS) ï Izvedba toļ ka-toļ ka (PP) (GSM 03.40, razliļ ica 5.5.1)

Digital cellular telecommunications system (Phase 2+) (GSM); Technical realization of Short Message Service (SMS) Point-to-Point (PP) (GSM 03.40 version 5.5.1)

Ta slovenski standard je istoveten z: ETS 300 901 Edition 2

ICS:

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

SIST ETS 300 901 E2:2003 **en**

EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 901

September 1997

Second Edition

Source: ETSI SMG

Reference: RE/SMG-040340QR4

ICS: 33.020

Key words: Digital cellular telecommunications system, Global System for Mobile communications (GSM)

GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS

Digital cellular telecommunications system (Phase 2+); Technical realization of the Short Message Service (SMS); Point-to-Point (PP) (GSM 03.40 version 5.5.1)

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Foreword

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

This ETS describes the point-to-point Short Message Service (SMS) of the digital cellular telecommunications system (Phase 2/Phase 2+).

The contents of this ETS is subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of this ETS it will then be resubmitted for OAP by ETSI with an identifying change of release date and an increase in version number as follows:

Version 5.x.y

where:

- y the third digit is incremented when editorial only changes have been incorporated in the specification;

- x the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

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.

Transposition dates	
Date of adoption:	5 September 1997
Date of latest announcement of this ETS (doa):	31 December 1997
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 June 1998
Date of withdrawal of any conflicting National Standard (dow):	30 June 1998

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1 Scope

This European Telecommunication Standard (ETS) 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 (ETS 300 905).

The use of radio resources for the transfer of short messages between the MS and the MSC is described in GSM 04.11 (ETS 300 942) "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). There is no technical restriction within this specification for the transfer of short messages between different PLMN's. Any such restriction is likely to be subject to commercial arrangements and PLMN operators must make their own provision for interworking or for preventing interworking with other PLMN's as they see fit.

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 (ETS 300 902) "Technical Realization of the Short Message Service - Cell Broadcast".

2 Normative references

This ETS incorporates by dated and undated references, 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 350): "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] GSM 02.03 (ETS 300 905): "Digital cellular telecommunications system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".

[3] GSM 02.04 (ETS 300 918): "Digital cellular telecommunications system (Phase 2+); General on supplementary services".

[4] GSM 02.41: "Digital cellular telecommunications system (Phase 2+); Operator determined barring".

[5] GSM 03.02: "Digital cellular telecommunications system (Phase 2+); Network architecture".

[6] GSM 03.08: "Digital cellular telecommunications system (Phase 2+); Organization of subscriber data".

[7] GSM 03.11 (ETS 300 928): "Digital cellular telecommunications system; Technical realization of supplementary services".

[8] GSM 03.15: "Digital cellular telecommunications system (Phase 2+); Technical realization of operator determined barring".

[9] GSM 03.38 (ETS 300 900): "Digital cellular telecommunications system (Phase 2+); Alphabets and language-specific information".

[10] GSM 03.41 (ETS 300 902): "Digital cellular telecommunications system (Phase 2+); Technical realization of Short Message Service Cell Broadcast (SMSCB)".

[11] GSM 03.47 (ETR 354): "Digital cellular telecommunications system; Example protocol stacks for interconnecting Service Centre(s) (SC) and Mobile-services Switching Centre(s) (MSC)".

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

[13] GSM 04.11 (ETS 300 942): "Digital cellular telecommunications system (Phase 2+); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[14] GSM 07.05: "Digital cellular telecommunications 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 300 974): "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

[16] GSM 11.11 (ETS 300 977): "Digital cellular telecommunications 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: "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".

[24] ISO/IEC10646: "Universal Multiple-Octet Coded Character Set (USC); UCS2, 16 bit coding".

[25] GSM 02.22: "Digital cellular telecommunications system (Phase 2+); Personalization of GSM Mobile Equipment (ME); Mobile functionality specification".

[26] GSM 03.42 (TS 101 032): "Digital cellular telecommunications system (Phase 2+); Compression Algorithm for Text Messaging Services".

2.1 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.

2.1.1 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.

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-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.

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)).

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.

Mobile-Station-Not-Reachable-Reason (MNRR): The part of the MWI in the HLR which stores the reason for an MS being absent when an attempt to deliver a short message to an MS fails at the MSC 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. The TP-MMS element (conveyed in the Transfer layer) is copied into the RP-MMS element (conveyed in the Relay layer). It is possible with Phase 2 and later versions of MAP (GSM 09.02) for the RP-MMS element to keep an SM transaction open between the GMSC and the MS in the case where there are more-messages-to-send. Earlier versions of MAP will support the transport of the TP-MMS element.

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.

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.

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-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 TP-Command-Type and the particular SM to operate on is indicated by the TP-Message-Number and the TP-Destination-Address. Receipt of an SMS-COMMAND is confirmed by an RP-ACK or RP-ERROR. In the case of certain SMS-COMMANDs, an SMS-STATUS-REPORT may be sent, where the outcome of the SMS-COMMAND is passed in its TP-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-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-SUBMIT: Short message transfer protocol data unit containing user data (the short message), being sent from an MS to an SC.

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

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.

2.2.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

E.163	CCITT Recommendation E.163 (Blue Book)
E.164	CCITT Recommendation 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 Recommendation T.100 (Blue Book)
T.101	CCITT Recommendation T.101 (Blue Book)
TPDU	Transfer protocol data unit
X.121	CCITT Recommendation X.121 (Blue Book)
X.400	CCITT Recommendation X.400 (Blue Book)

In addition to those above, definitions used in this ETS are listed in GSM 01.04.

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).

SM MT denotes the capability of the GSM system to transfer a short message submitted from the SC to one MS, and to provide information about the delivery of the short message either by a delivery report or a failure report with a specific mechanism for later delivery; see figure 03.40/1.

SM MO denotes the capability of the GSM system to transfer a short message submitted by the MS to one SME via an SC, and to provide information about the delivery of the short message either by a delivery report or a failure report. The message must include the address of that SME to which the SC shall eventually attempt to relay the short message; see figure 03.40/2.

The text messages to be transferred by means of the SM MT or SM MO contain up to 140 octets.