



**E**UROPEAN  
**T**ELECOMMUNICATION  
**S**TANDARD

**ETS 300 625**

January 1995

---

Source: ETSI TC-SMG

Reference: DE/SMG-010290P

ICS: 33.060.30

**Key words:** European digital cellular telecommunications system, Global System for Mobile communications (GSM)

**European digital cellular telecommunications system (Phase 2);  
Stage 1 description of  
Unstructured Supplementary Service Data (USSD)  
(GSM 02.90)**

**ETSI**

European Telecommunications Standards Institute

**ETSI Secretariat**

**Postal address:** F-06921 Sophia Antipolis CEDEX - FRANCE

**Office address:** 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

**X.400:** c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

---

**Copyright Notification:** No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1995. All rights reserved.



## Contents

Foreword .....	5
1 Scope .....	7
2 Normative references .....	7
3 Definitions and abbreviations .....	7
4 Unstructured SS data operations .....	7
4.1 Mobile initiated unstructured SS data operations .....	7
4.1.1 Initiating action at the Mobile Station (MS) .....	7
4.1.2 Action at the network .....	7
4.1.3 Mobile initiated USSD cross phase compatibility .....	8
4.1.4 Allocation of service codes (to be noted by network operators) .....	8
4.2 Network initiated unstructured SS data operation .....	9
4.2.1 Initiating actions in the network .....	9
4.2.2 Actions at the MS .....	9
4.3 Network aspects of unstructured SS data operation .....	9
History .....	10

Blank page

## 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 stage 1 description of Unstructured Supplementary Service Data (USSD) for use within the European digital cellular telecommunications system (Phase 2).

This ETS corresponds to GSM technical specification, GSM 02.90 version 4.0.4.

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).

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-TS). These TSs may have subsequently become I-ETTs (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.

Blank page

## 1 Scope

The purpose of this ETS is to define the stage 1 description of Unstructured Supplementary Service Data (USSD) for use in one or a number of GSM Public Land Mobile Networks (PLMNs).

## 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); Abbreviations and acronyms".
- [2] GSM 02.04 (ETS 300 503): "European digital cellular telecommunication system (Phase 2); General on supplementary services".
- [3] GSM 02.30 (ETS 300 511): "European digital cellular telecommunication system (Phase 2); Man-Machine Interface (MMI) of the Mobile Station (MS)".
- [4] GSM 03.38 (ETS 300 537): "European digital cellular telecommunication system (Phase 2); Alphabets and language-specific information".
- [5] GSM 04.80 (ETS 300 564): "European digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 supplementary services specification Formats and coding".

## 3 Definitions and abbreviations

Definitions and abbreviations used in this ETS are listed in GSM 01.04 [1].

## 4 Unstructured SS data operations

### 4.1 Mobile initiated unstructured SS data operations

#### 4.1.1 Initiating action at the Mobile Station (MS)

If the user enters an MMI string that, according to GSM 02.30 [3], should be treated as Unstructured SS Data, the MS shall send this string to the network using the appropriate operation from GSM 04.80 [5].

The mobile initiated operation shall contain an alphabet indicator and language indicator. The alphabet indicator shall indicate the alphabet used in the operation and shall be set to "SMS default alphabet". The language indicator shall indicate "language unspecified".

The MS may initiate an Unstructured SS Data Operation either during a call or out of call.

#### 4.1.2 Action at the network

A network supporting USSD shall examine the alphabet indicator. If the serving network does not recognise the alphabet indicated in the mobile initiated USSD operation, it shall send the operation to the HLR.

On recognition of the alphabet, the network shall examine the contents of the string, and take appropriate action, according to the following rules, depending of the format of the message.

Case a) 1, 2 or 3 digits from the set (\*, #) followed by 1X(Y), where X=any number 0-4, Y=any number 0-9, then, optionally "\*" followed by any number of any characters", and concluding with # SEND:

This case is reserved for HPLMN use. When a serving network receives such a message from a visiting subscriber, it shall pass the USSD message directly to the HPLMN. If it receives it from a home subscriber, it is up to the network to decide whether to treat it locally or to pass it to the HLR.

Case b) 1, 2 or 3 digits from the set (\*, #) followed by 1X(Y), where X=any number 5-9, Y=any number 0-9, then, optionally "\*" followed by any number of any characters", and concluding with # SEND:

This case is reserved for VPLMN use. It is up to the VPLMN to decide how to treat it.

Case c) 7(Y) SEND, where Y=any number 0-9:

This case is reserved for HPLMN use. When a serving network receives such a message from a visiting subscriber, it shall pass the USSD message directly to the HPLMN. If it receives it from a home subscriber, it is up to the network to decide whether to treat it locally or to pass it to the HLR.

Case d) All other formats:

The visited network examines the message. If it is able, it acts upon it. Failing that, it passes the message to the HLR.

If the HLR does not support the alphabet indicated, it shall inform the MS.

The network shall terminate the mobile initiated operation by responding to the request from the mobile with either an error signal, or a text string indicating the outcome of the operation. The response string uses the characters available in the "Default Alphabet" as defined in GSM 03.38 [4], and may be up to 80 characters long. If no indication to the user is required, the response string may be empty.

The response to the mobile initiated USSD operation shall contain alphabet and language indicators. The selection of values for these indicators is a matter for the network operator.

#### 4.1.3 Mobile initiated USSD cross phase compatibility

In situations of incompatibility the mobile initiated USSD operation will be rejected by a non-supporting network and the attempt will fail. In this situation, if it is possible to encode the content of the USSD message in the IA5 alphabet, the MS shall attempt the operation again using the IA5 format without the alphabet and language indicators.

This procedure is not applicable if an operation failure is due to alphabet support problems, services not supported or network failure problems.

#### 4.1.4 Allocation of service codes (to be noted by network operators)

Service codes for use in control of Supplementary Services are standardised by international agreement, so must not be used by GSM PLMNs unless authorised, except for those codes allocated for PLMN use.

If the message is of the format:

1, 2 or 3 digits from the set (\*, #), followed by NN(N), where N=0-9, optionally followed by "\*" and any number of any characters", and terminating in # SEND:

then NN(N) is known as the service code. Only codes specified in GSM 02.30 [3] and those defined in cases a) and b) above may be used in GSM. All other values are reserved.



Similarly, if the message is of the format:

X(Y) SEND, where X=0-6 or 8-9 and Y=0-9:

the codes X(Y) are standardised. Only codes specified in GSM 02.30 [3] section 4.5.5 may be used in GSM. All other values are reserved.

## **4.2 Network initiated unstructured SS data operation**

### **4.2.1 Initiating actions in the network**

At any stage while the MS is registered with a network, the network may send an unstructured string to the MS. This string contains operator determined information that is relevant to the user. If the network is unable to successfully reach the MS, then an error shall be returned to the node that originated the operation.

The network initiated USSD operation shall contain an alphabet indicator and language indicator. The alphabet indicator shall indicate the alphabet used in the operation. The selection of values for these indicators is a matter for the network operator.

### **4.2.2 Actions at the MS**

If the MS is unable to process the network initiated unstructured SS data operation (e.g. the feature is not supported or the user is engaged in another MMI activity) then an error indication shall be returned to the node that originated the operation. If the alphabet indicated by the network is not supported by the MS, the MS shall inform the network.

The network may explicitly indicate to the MS that a response from the user is required. In this case, the next string entered by the user shall be used as the response (and is not interpreted according to normal MMI procedures stated in GSM 02.30 [3]). An MMI command shall be provided to allow the user to terminate the dialogue with a null response. The response string uses the characters available in the "default alphabet" as defined in GSM 03.38 [4] and may be up to 80 characters long. The response is sent to the node that originated the operation. If the network does not indicate that a response is required, then the normal MMI procedures on the mobile station continue to apply.

The MS shall include alphabet and language indicators in the response to the network (if any). The alphabet indicator shall indicate "SMS default alphabet". The language indicator shall indicate "language unspecified".

## **4.3 Network aspects of unstructured SS data operation**

Applications that use Unstructured SS Data Operations may be located in either the HPLMN or a roamed to VPLMN.

Network applications using Unstructured SS Data Operations may:

- use several Unstructured SS Data Operations (possibly a mixture of mobile initiated and network initiated) in combination as part of a dialogue with the user. Linkage between separate operations as part of a dialogue is only implemented locally in the network application and does not lead to any special mode of operation in the mobile station. The network initiated request for a response from the user and the corresponding response is a single operation;
- act on calls in progress, or place new calls, as part of the service the application provides.

Release of the connection used for an unstructured dialogue is normally the responsibility of the network and may be carried out at the request of the application using the Unstructured SS Data Operations. The user may also initiate connection release through an MMI procedure.

## History

Document history	
January 1995	First Edition
November 1995	Converted into Adobe Acrobat Portable Document Format (PDF)