

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 300 923 V7.0.1:2003](https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91433fd43fe4/sist-en-300-923-v7-0-1-2003)

<https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91433fd43fe4/sist-en-300-923-v7-0-1-2003>

ETSI EN 300 923 V7.0.1 (2000-01)

European Standard (Telecommunications series)

Digital cellular telecommunications system (Phase 2+); Description of Charge Advice Information (CAI) (GSM 02.24 version 7.0.1 Release 1998)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

GSM®
GLOBAL SYSTEM FOR
MOBILE COMMUNICATIONS

[SIST EN 300 923 V7.0.1:2003](https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91433fd43fe4/sist-en-300-923-v7-0-1-2003)

<https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91433fd43fe4/sist-en-300-923-v7-0-1-2003>



Reference

REN/SMG-010224Q7

Keywords

Digital cellular telecommunications system,
Global System for Mobile communications (GSM)**ETSI**

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C

Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

<https://standards.etsi.org/standards-search/>
91433fd43fe4/sist-en-300-923-v7-0-1-2003

Internet

secretariat@etsi.frIndividual copies of this ETSI deliverable
can be downloaded from<http://www.etsi.org>If you find errors in the present document, send your
comment to: editor@etsi.fr

Important notice

This ETSI deliverable may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF).

In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

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 2000.
All rights reserved.

Contents

Intellectual Property Rights	4
Foreword.....	4
1 Scope	5
1.1 References	5
1.2 Definitions and abbreviations	5
2 Introduction	6
3 Charge Advice Information.....	7
4 Functional operation in MS.....	8
4.1 Handling of the CAI elements	8
4.2 Handling of call meters.....	9
4.2.1 The Current Call Meter (CCM)	9
4.2.2 The Accumulated Call Meter (ACM)	10
4.2.3 The ACM Maximum Value (ACMmax).....	10
4.2.4 The Price per Unit and Currency Table (PUCT)	10
4.3 Special processing	10
5 Functional operation in PLMN	11
5.1 Outgoing calls.....	11
5.2 Incoming calls	11
Annex A (informative): Change history	13
History	14

[SIST EN 300 923 V7.0.1:2003](https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91433fd43fe4/sist-en-300-923-v7-0-1-2003)
<https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91433fd43fe4/sist-en-300-923-v7-0-1-2003>

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.org/ipr>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This European Standard (Telecommunications series) has been produced by the Special Mobile Group (SMG).

The present document describes the overall view of how the supplementary service of Charge Advice Information (CAI) operates within the digital cellular telecommunications system.

The contents of the present document may be subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document it will then be re-submitted for formal approval procedures by ETSI with an identifying change of release date and an increase in version number as follows:

Version 7.x.y

where:

- iTeh STANDARD PREVIEW**
(standards.iteh.ai)
- 7 GSM Phase 2+ Release 1998;
 - x the second digit is incremented for changes of substance, i.e. technical enhancements, corrections, updates, etc.; <https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91433fd43fe4/sist-en-300-923-v7-0-1-2003>
 - y the third digit is incremented when editorial only changes have been incorporated in the specification.

National transposition dates

Date of adoption of this EN:	31 December 1999
Date of latest announcement of this EN (doa):	31 March 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 September 2000
Date of withdrawal of any conflicting National Standard (dow):	30 September 2000

1 Scope

The charging supplementary service is described in GSM 02.86 [2] and the relevant charging principles are given in the relevant GSM MoU Association documents. These services are designed to supply to a mobile user sufficient information to allow a real-time estimate to be made of the bill which will eventually be levied in the home PLMN on the Mobile Station (MS) subscriber.

In the case of certain MS uses, for example a mobile payphone, this estimate could be subject to further processing (e.g. to present the charges in currency, rather than units, this may include an additional mark up). This additional processing is not described in the present document in order to avoid constraining the evolution of the MS product in this area.

The present document gives an overall view of how this supplementary service shall operate both in the PLMN and within the MS. Text given in the present document is required to define functionality and is not intended to constrain implementation.

1.1 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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1998 document, references to GSM documents are for Release 1998 versions (version 7.x.y).

- [1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".
- [2] GSM 02.86: "Digital cellular telecommunication system (Phase 2+); Advice of Charge (AoC) Supplementary Services - Stage 1".
- [3] GSM 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module-Mobile Equipment (SIM-ME) interface".

1.2 Definitions and abbreviations

In addition to the following, abbreviations used in the present document are listed in GSM 01.04 [1].

Mark up (MU):

An increase over the basic charge e.g. to provide extra revenue or to cover additional costs.

Service Provider (SP):

The organization through which the subscriber obtains GSM telecommunication services. This may be the network operator or possibly a separate body.

Home Units (HU):

The published basic telecommunication unit as published by the HPLMN. This has a published value expressed in the currency of the Home country.

Local PLMN (LPLMN):

The LPLMN is the HPLMN or VPLMN depending on the location of the MS at the time and is the PLMN with which the MS is interworking via the radio interface.

Local Units (LU):

The published basic telecommunication unit as published by the LPLMN. This has a published value expressed in the currency of the local country.

Price per Unit and Currency Table (PUCT):

The PUCT is the value of the Home unit in a currency chosen by the subscriber. The PUCT is stored in the SIM. The value of the PUCT can be set by the subscriber and may exceed the value published by the HPLMN. The PUCT value does not have any impact on the charges raised by the HPLMN.

Current Call Meter (CCM):

The accumulated charge as computed by the MS, expressed in terms of Home units.

Accumulated Call Meter (ACM):

The accumulated charge for both the current call and all preceding calls as computed by the MS, expressed in terms of Home units. The ACM is stored in the SIM.

ACM Maximum value (ACMmax):

The ACMmax sets the upper limit for the ACM. The ACMmax is stored in the SIM. The value of the ACMmax can be set by the subscriber.

Charging point (CHP):

The time at which charging commences i.e. at the point when the called party answers or the equivalent.

End of charge point (CEND):

The time at which the calling, or called, party stops charging by the termination of the call or by an equivalent procedure invoked by the network or by failure of the radio path.

Advice of Charge (AOC):

The charge as computed by the MS, expressed in terms of Home Units.

Segment:

A charging element as defined by CCITT, in octets (up to 64).

2 Introduction

The principle of this service is that the MS shall be capable of indicating the cost of a call in home units as a basic service. This is the Advice of Charge (AOC).

The ability for the MS to perform further processing on AOC is not precluded. If the subscriber wishes, the MS shall indicate the value of CCM, ACM, ACMmax in the currency she has indicated using the PUCT.

At the charging point, the MS is informed of the charging rate.

The MS shall then use its independent internal clock to time the call from the charging point to the end of call i.e. the chargeable duration (CDUR) is measured by the MS. In the case of multiple calls this applies separately for each call (see subclause 4.3 l). The time taken attempting to perform call reestablishment is not included in CDUR (see subclause 4.3 m).

By using the calculations described in clause 4, the MS shall be able to derive the number of home units used.

Due to the independence of the calculated value, an exact one-to-one relation with the bill cannot be guaranteed. This discrepancy is due to the short delays in signalling between the MS and the network, e.g. transmission of charging point and end of call signals.

In deriving the present document the following principles are assumed:

- i) For mobile originated calls, the mobile user pays for the connection to the dialled number, as per the published tariff of the Local PLMN, plus a mark-up defined by the HPLMN to cover additional administration costs, when roaming.

It is assumed that the MS subscriber will **not** be charged for the forwarded leg if the dialled number has set call forwarding. If additional charging is required for this forwarded leg, then it is assumed that such charging will be applied only to the called party. This follows current telecommunications practice.

- ii) For mobile terminated calls, any charge set for incoming calls is that based on the tariff as published by the HPLMN.

The tariff as published for the roaming extension charges is assumed to be time and date invariant. For the avoidance of doubt, this assumption does not preclude routine tariff changes.

- iii) Charge rates for calls originating within a PLMN vary depending upon, for example, location, destination, service, time of day, type of day and any mark ups.

- iv) The units indicated in the advice of charge are always given in terms of Home units, the value of which is defined and published by the HPLMN, regardless of the PLMN in which they were incurred or the call direction or the type of call including supplementary service and data calls.

3 Charge Advice Information

The MS is supplied with the necessary Charge Advice Information (CAI) at the charging point on a per call basis, in a signalling message over the radio interface. [SIST EN 300 923 V7.0.1:2003](https://standards.iteh.ai/catalog/standards/sist/0d44f412-bf0a-42ea-bb97-91435d451e4/sist-en-300-923-v7-0-1-2003)

The MS uses the CAI elements to compute the AOC value for the relevant call. Thus the signalling CAI not only provides charging information, but indicates the charging point and hence initiates the timing of the chargeable duration.

The information sent to the MS from the MSC consists of seven elements as follows:

Table 1: Information elements

Element	Dimensions	Description	MIN	MAX	RES
e1	u/i	Units per interval	0	819.1	0.1
e2	t/i	Seconds/time interval	0	819.1	0.1
e3	-	Scaling Factor	0	81.91	0.01
e4	u	Unit increment	0	819.1	0.1
e5	u/d	Units per data interval	0	819.1	0.1
e6	seg/d	Segments/data interval	0	8191	1
e7	t/i	Initial secs/t interval	0	819.1	0.1

where:

u = units; t = time; i = interval; seg = segments; d = data interval.

The CAI Message need only contain those elements required for the particular situation. If elements are missing from the initial CAI message of a call, they shall be treated as zero.

Element e1 -

This element defines the number of units incremented per interval. It is set in terms of LPLMN units/interval to a resolution as defined in the table above under RES.