



SLOVENSKI STANDARD

SIST EN 300 925 V7.0.2:2003

01-december-2003

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Digital cellular telecommunications system (Phase 2+) (GSM); Voice Group Call Service (VGCS) - Stage 1 (GSM 02.68 version 7.0.2 Release 1998)

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Ta slovenski standard je istoveten z: **EN 300 925 Version 7.0.2**

SIST EN 300 925 V7.0.2:2003
<https://standards.iteh.ai/catalog/standards/sist/25099d59-cb81-47d2-bb0d-f42ff6595f44/sist-en-300-925-v7-0-2-2003>

ICS:

33.070.50	Globalni sistem za mobilno telekomunikacijo (GSM)	Global System for Mobile Communication (GSM)
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SIST EN 300 925 V7.0.2:2003

en

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ETSI EN 300 925 V7.0.2 (2000-08)

European Standard (Telecommunications series)

**Digital cellular telecommunications system (Phase 2+);
Voice Group Call Service (VGCS) - Stage 1
(GSM 02.68 version 7.0.2 Release 1998)**

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Reference

REN/SMG-010268Q7

KeywordsDigital cellular telecommunications system,
Global System for Mobile communications (GSM)**ETSI**650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

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

Siret N° 348 623 562 00017 - NAF 742 C
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Foreword

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

The present document specifies the stage one description of the Voice Group Call Service (VGCS) 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:

7 GSM Phase 2+ Release 1998

x the second digit is incremented for changes of substance, i.e. technical enhancements, corrections, updates, etc.;

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

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National transposition dates

Date of adoption of this EN:	10 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 present document specifies the stage one description of the Voice Group Call Service (VGCS) which allows speech conversation of a predefined group of service subscribers in half duplex mode on the radio link taking into account multiple mobile service subscribers involved in the VGCS call per cell.

The VGCS is applicable to all mobile stations in a certain network and area which have the technical capability and the corresponding subscription, respectively, to participate in a VGCS call.

NOTE: It is not considered as requirement that normal GSM phase 2 mobile stations will be able to be used for this service.

The service is described from the service subscriber's and user's point of view; in particular:

- the procedure for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other GSM services and features.

The present document does not deal with the Man-Machine Interface (MMI) requirements, but makes reference to the appropriate Global System for Mobile Communications (GSM) specifications.

The present document defines a teleservice of the digital cellular telecommunications system GSM. Any interaction with other services and/or networks not dealt with in clauses 7 or 8 are outside the scope of the present document.

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2 References (standards.iteh.ai)

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

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- 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 telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] GSM 02.67: "Digital cellular telecommunications system (Phase 2+); enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

network operator: Entity which provides the network operating elements and resources for the execution of the VGCS.

service provider: Entity which offers the VGCS for subscription. The network operator may be the service provider.

voice group call: An instance of the VGCS initiated by a subscriber. This term is used synonymously with the term "VGCS call".

service subscriber: Mobile subscriber which subscribes to the VGCS.

group identification (group ID): A numerical classification. The maximum number of group IDs which can be defined in one PLMN depends on the maximum number of group call areas defined in this PLMN. The maximum number of group IDs and group call areas combined is 10^8 , Service subscriber shall be provided with one or up to 50 group IDs.

dispatcher: Particular fixed line or mobile users are identified within the network as dispatchers. Dispatchers shall receive all voice group calls to a certain group ID in a group call area (this shall be done automatically by the network). In addition they can initiate voice group calls to a group ID in a group call area.

Dispatchers shall be connected to a voice group call by means of standard links via radio or via an ISDN. They shall be called by their ISDN or MSISDN number, respectively. When dispatchers initiate voice group calls, they shall call a particular MSISDN number which is related to a group ID and group call area. Dispatchers using the GSM network can be located outside of this group call area.

The identities of the dispatchers are exclusively predefined in the network by the service provider. There will be none or up to five dispatchers involved in a particular voice group call.

destination subscriber: Service subscriber or dispatcher to which the VGCS call is directed.

calling subscriber: Service subscriber or dispatcher which originates the VGCS call.

group call area: Predefined area composed of one or a cluster of cells to which a particular VGCS call is distributed. The maximum number of group call area IDs which can be defined in one PLMN depends on the maximum number of group IDs defined in this PLMN. The maximum number of group IDs and group call areas combined is 10^8 , The composition of a group call area is predefined in the network by the service provider. Changing of cell allocation in the network due to operational reasons will need an adaptation of the group call area definition. The group call area may include more than one MSC area and cells of more than one PLMN.

group call member: Any service subscriber or dispatcher participating in an on going voice group call.

3.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04.

4 Description

The VGCS is defined in the following. Figure 1 gives an explanation of the logical concept of the VGCS.

- a) The VGCS enables a calling subscriber to establish a voice group call to destination subscribers belonging to a predefined group call area and group ID.

NOTE 1: The service is provided by use of half duplex transmission mode.

Applications for voice group call services typically involve multiple group members in a small group call area, for which the VGCS should provide spectrum efficient solutions.

- b) The calling subscriber as well as the destination subscribers may be any service subscriber which has subscribed to the related group ID or any dispatcher who is entitled to it by his identity which shall be registered in the network.
- c) Destination subscribers are all service subscribers or a group of service subscribers identified by the called group ID which have their present location in the group call area, and pre-registered dispatchers. Destination service subscribers shall be notified with the group ID, not by paging the subscriber individually. Dispatchers shall be called individually with their identity.

Service subscribers may become late destination subscribers when entering the group call area within 500 ms after reception of the first notification message related to the VGCS call. Service subscribers which leave the corresponding group call area during an on going VGCS call of which they are member cease to be destination subscribers.

- d) The voice group call shall be established in a group call area which is comprised of one or a cluster of cells. Group call areas shall be predefined in the network by the service provider, co-ordinated by the network operator.

In case of a service subscriber initiating a VGCS, the group call area is uniquely identified by the actual cell in which the service subscriber resides at the moment of VGCS call initialization and by the group ID they issue.

A dispatcher initiating a VGCS call will be connected to a related predefined group call area. The entitlement of the dispatcher is checked by the network element responsible for the voice group call management by verification of the calling identity. Since a dispatcher may be registered to more than one group call area and group ID an indication of the wanted group call area and group ID has to be given in form of a dedicated address called by the dispatcher.

- e) The service shall permit only one talking service subscriber at any moment; additionally up to five dispatcher can be talking simultaneously at one time. Dispatchers should hear all combinations of voices other than their own. Listening service subscribers shall hear the combination of all voices. The talking service subscriber shall gain some audible indication if any dispatchers are talking simultaneously.

Dispatchers shall be able to talk at any moment without any need to signal the wish to talk. Service subscribers who wish to talk shall indicate this. They shall only be able to become talking subscribers if there is no other talking service subscriber. The right to be a talking service subscriber is allocated on a first come first served basis without queuing. Once a service subscriber has become a talking subscriber they shall eventually indicate their wish to become a listening subscriber, or the network may detect that they are no longer a talking subscriber due to time-out or other mechanisms.

SMS, CW and procedures for supplementary service management are not possible for a service subscriber.

- f) The calling subscriber shall be informed by the network with a suitable indication about the successful establishment of the voice group call so that he can start to speak.

NOTE 2: A successful establishment means that all voice group call downlink channels are allocated, with the restrictions mentioned in clause 6, whether somebody is listening or not, and the related dispatchers are alerted.

The system provides that for an established voice group call the uplink assignment to a service subscriber who wishes to talk is performed under normal conditions in <300 ms after a request to talk is made.

The mobile station of the talking service subscriber shall be requested to send its IMSI to the network in order so that the talker's IMSI be stored in the event records.

- g) Authentication is mandatory at GSM call set up. To allow fast call set up in VGCS authentication of calling subscribers at invocation may optionally be delayed. Similarly authentication of the talking service subscriber may optionally be delayed to allow fast access.

Confidentiality on the radio path is optional.

- h) Different levels of priority and pre-emption shall be applied as defined in the stage 1 description on the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP) in GSM 02.67.
- i) A number of voice group calls may exist simultaneously intended for different groups of destination users in the same group call area.