



SLOVENSKI STANDARD
SIST ETS 300 977 E5:2003

01-december-2003

8 [[]HJb]`WV] b]`hY`Y_ca i b]_UW`g_]`g]ghYa `fZUnU&ZL`E`GdYWZ]_UW`Uj a Ygb]_U
bUfc b]y_]`]XYbhZ]_UW`g_]`a cXi `!a cV]bUcdfYa UfG=A!A9Lfi GA `%%`%`zfUn`]]WU
)`%\$`%z]nXUU% - * Ł

Digital cellular telecommunications system (Phase 2+) (GSM); Specification of the
Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11 version
5.10.1 Release 1996)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ETS 300 977 E5:2003](https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003)

[https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-
a4d7e316ad20/sist-ets-300-977-e5-2003](https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003)

Ta slovenski standard je istoveten z: ETS 300 977 Edition 5

ICS:

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

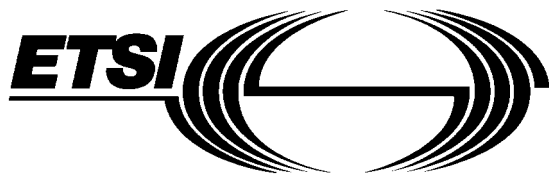
SIST ETS 300 977 E5:2003

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST ETS 300 977 E5:2003

<https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003>



EUROPEAN
TELECOMMUNICATION
STANDARD

ETS 300 977

December 1998

Fifth Edition

Source: SMG

Reference: RE/SMG-091111QR6

ICS: 33.020

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



**Digital cellular telecommunications system (Phase 2+);
Specification of the Subscriber Identity Module -
Mobile Equipment (SIM - ME) interface
(GSM 11.11 version 5.10.1 Release 1996)**

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

Internet: secretariat@etsi.fr - <http://www.etsi.fr> - <http://www.etsi.org>

Tel.: +33 4 92 94 42 00 - Fax: +33 4 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 1998. All rights reserved.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST ETS 300 977 E5:2003](https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003)

<https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003>

Contents

Foreword	9
1 Scope	11
2 Normative references	11
3 Definitions, abbreviations and symbols	13
3.1 Definitions	13
3.2 Abbreviations	14
3.3 Symbols	15
4 Physical characteristics	16
4.1 Format and layout	16
4.1.1 ID-1 SIM	16
4.1.2 Plug-in SIM	16
4.2 Temperature range for card operation	16
4.3 Contacts	16
4.3.1 Provision of contacts	16
4.3.2 Activation and deactivation	17
4.3.3 Inactive contacts	17
4.3.4 Contact pressure	17
4.4 Precedence	17
4.5 Static Protection	17
5 Electronic signals and transmission protocols	17
5.1 Supply voltage Vcc (contact C1)	18
5.2 Reset (RST) (contact C2)	18
5.3 Programming voltage Vpp (contact C6)	19
5.4 Clock CLK (contact C3)	19
5.5 I/O (contact C7)	19
5.6 States	20
5.7 Baudrate	20
5.8 Answer To Reset (ATR)	20
5.8.1 Structure and contents	20
5.8.2 PTS procedure	22
5.8.3 Speed enhancement	23
5.9 Bit/character duration and sampling time	23
5.10 Error handling	23
6 Logical Model	24
6.1 General description	24
6.2 File identifier	24
6.3 Dedicated files	25
6.4 Elementary files	25
6.4.1 Transparent EF	25
6.4.2 Linear fixed EF	25
6.4.3 Cyclic EF	26
6.5 Methods for selecting a file	27
6.6 Reservation of file IDs	28
7 Security features	28
7.1 Authentication and cipher key generation procedure	28
7.2 Algorithms and processes	29
7.3 File access conditions	29

8	Description of the functions	30
8.1	SELECT	30
8.2	STATUS	31
8.3	READ BINARY	31
8.4	UPDATE BINARY	31
8.5	READ RECORD	31
8.6	UPDATE RECORD	32
8.7	SEEK	32
8.8	INCREASE	33
8.9	VERIFY CHV	33
8.10	CHANGE CHV	34
8.11	DISABLE CHV	34
8.12	ENABLE CHV	34
8.13	UNBLOCK CHV	35
8.14	INVALIDATE	35
8.15	REHABILITATE	35
8.16	RUN GSM ALGORITHM	36
8.17	SLEEP	36
8.18	TERMINAL PROFILE	36
8.19	ENVELOPE	36
8.20	FETCH	36
8.21	TERMINAL RESPONSE	36
9	Description of the commands	37
9.1	Mapping principles	37
9.2	Coding of the commands	39
9.2.1	SELECT	40
9.2.2	STATUS	43
9.2.3	READ BINARY	43
9.2.4	UPDATE BINARY	44
9.2.5	READ RECORD	44
9.2.6	UPDATE RECORD	44
9.2.7	SEEK	44
9.2.8	INCREASE	45
9.2.9	VERIFY CHV	45
9.2.10	CHANGE CHV	46
9.2.11	DISABLE CHV	46
9.2.12	ENABLE CHV	46
9.2.13	UNBLOCK CHV	46
9.2.14	INVALIDATE	47
9.2.15	REHABILITATE	47
9.2.16	RUN GSM ALGORITHM	47
9.2.17	SLEEP	47
9.2.18	GET RESPONSE	47
9.2.19	TERMINAL PROFILE	48
9.2.20	ENVELOPE	48
9.2.21	FETCH	48
9.2.22	TERMINAL RESPONSE	48
9.3	Definitions and coding	48
9.4	Status conditions returned by the card	50
9.4.1	Responses to commands which are correctly executed	50
9.4.2	Responses to commands which are postponed	50
9.4.3	Memory management	50
9.4.4	Referencing management	51
9.4.5	Security management	51
9.4.6	Application independent errors	51
9.4.7	Commands versus possible status responses	51
10	Contents of the Elementary Files (EF)	52
10.1	Contents of the EFs at the MF level	53

ETS 300 977 (GSM 11.11 version 5.10.1 Release 1996): December 1998

	10.1.1	EF _{ICCID} (ICC Identification)	53
10.2		DFs at the GSM application level.....	53
10.3		Contents of files at the GSM application level.....	54
	10.3.1	EF _{LP} (Language preference)	54
	10.3.2	EF _{IMSI} (IMSI)	54
	10.3.3	EF _{Kc} (Ciphering key Kc).....	55
	10.3.4	EF _{PLMNsel} (PLMN selector)	56
	10.3.5	EF _{HPLMN} (HPLMN search period)	56
	10.3.6	EF _{ACMmax} (ACM maximum value)	57
	10.3.7	EF _{SST} (SIM service table)	58
	10.3.8	EF _{ACM} (Accumulated call meter)	60
	10.3.9	EF _{GID1} (Group Identifier Level 1)	61
	10.3.10	EF _{GID2} (Group Identifier Level 2)	61
	10.3.11	EF _{SPN} (Service Provider Name)	61
	10.3.12	EF _{PUCT} (Price per unit and currency table)	62
	10.3.13	EF _{CBMI} (Cell broadcast message identifier selection)	63
	10.3.14	EF _{BCCH} (Broadcast control channels).....	63
	10.3.15	EF _{ACC} (Access control class)	64
	10.3.16	EF _{FPLMN} (Forbidden PLMNs).....	64
	10.3.17	EF _{LOCI} (Location information)	65
	10.3.18	EF _{AD} (Administrative data).....	67
	10.3.19	EF _{Phase} (Phase identification).....	68
	10.3.20	EF _{VGCS} (Voice Group Call Service)	68
	10.3.21	EF _{VGCS} (Voice Group Call Service Status).....	69
	10.3.22	EF _{VBS} (Voice Broadcast Service).....	69
	10.3.23	EF _{VBS} (Voice Broadcast Service Status)	70
	10.3.24	EF _{eMLPP} (enhanced Multi Level Pre-emption and Priority)	70
	10.3.25	EF _{AAeM} (Automatic Answer for eMLPP Service)	71
	10.3.26	EF _{CBMID} (Cell Broadcast Message Identifier for Data Download)	72
	10.3.27	EF _{ECC} (Emergency Call Codes).....	73
	10.3.28	EF _{CBMIR} (Cell broadcast message identifier range selection).....	73
	10.3.29	EF _{DCK} De-personalization Control Keys.....	74
	10.3.30	EF _{CNL} (Co-operative Network List).....	74
	10.3.31	EF _{NIA} (Network's Indication of Alerting).....	76
10.4		Contents of files at the telecom level.....	77
	10.4.1	EF _{ADN} (Abbreviated dialling numbers).....	77
	10.4.2	EF _{FDN} (Fixed dialling numbers).....	80
	10.4.3	EF _{SMS} (Short messages)	80
	10.4.4	EF _{CCP} (Capability configuration parameters).....	81
	10.4.5	EF _{MSISDN} (MSISDN).....	82
	10.4.6	EF _{SMSP} (Short message service parameters).....	82
	10.4.7	EF _{SMSS} (SMS status).....	84
	10.4.8	EF _{LND} (Last number dialled)	85
	10.4.9	EF _{SDN} (Service Dialling Numbers)	85
	10.4.10	EF _{EXT1} (Extension1)	86
	10.4.11	EF _{EXT2} (Extension2)	87
	10.4.12	EF _{EXT3} (Extension3)	88
	10.4.13	EF _{BDN} (Barred Dialling Numbers)	88
	10.4.14	EF _{EXT4} (Extension4)	89
10.5		Files of GSM (figure 8).....	89
11		Application protocol	92
	11.1	General procedures	93
		11.1.1 Reading an EF	93
		11.1.2 Updating an EF	93
		11.1.3 Increasing an EF	94
	11.2	SIM management procedures	94
		11.2.1 SIM initialization	94
		11.2.2 GSM session termination	95
		11.2.3 Emergency Call Codes	96

	11.2.4	Language preference.....	96
	11.2.5	Administrative information request;.....	96
	11.2.6	SIM service table request	96
	11.2.7	SIM phase request	96
	11.2.8	SIM Presence Detection and Proactive Polling.....	96
11.3	CHV related	procedures	96
	11.3.1	CHV verification.....	97
	11.3.2	CHV value substitution	97
	11.3.3	CHV disabling.....	97
	11.3.4	CHV enabling	97
	11.3.5	CHV unblocking	98
11.4	GSM security related	procedures	98
	11.4.1	GSM algorithms computation.....	98
	11.4.2	IMSI request.....	98
	11.4.3	Access control request	98
	11.4.4	HPLMN search period request.....	98
	11.4.5	Location information.....	98
	11.4.6	Cipher key	98
	11.4.7	BCCH information.....	98
	11.4.8	Forbidden PLMN	98
11.5	Subscription related	procedures	99
	11.5.1	Dialling numbers	99
	11.5.2	Short messages	101
	11.5.3	Advice of Charge (AoC)	102
	11.5.4	Capability configuration parameters	102
	11.5.5	PLMN selector	102
	11.5.6	Cell broadcast message identifier.....	102
	11.5.7	Group identifier level 1	103
	11.5.8	Group identifier level 2	103
	11.5.9	Service Provider Name	103
	11.5.10	Voice Group Call Services.....	103
	11.5.11	Voice Broadcast Services.....	103
	11.5.12	Enhanced Multi Level Pre-emption and Priority Service.....	103
	11.5.13	Cell Broadcast Message range identifier.....	104
	11.5.14	Depersonalisation Control Keys.....	104
11.6	SIM Application Toolkit related	procedures.....	104
	11.6.1	Initialization procedure	104
	11.6.2	Proactive polling	104
	11.6.3	Support of commands.....	104
	11.6.4	Support of response codes	104
	11.6.5	Command-response pairs	104
	11.6.6	Independence of normal GSM and SIM Application Toolkit tasks	105
	11.6.7	Use of BUSY status response	105
	11.6.8	Use of NULL procedure byte	105
	11.6.9	Using the TERMINAL PROFILE, ENVELOPE, and TERMINAL RESPONSE commands	105
	11.6.10	Using the FETCH command.....	105
	11.6.11	Data Download via SMS-CB.....	105
	11.6.12	Data Download via SMS-PP.....	106
	11.6.13	Menu selection	106
	11.6.14	Call Control.....	106
	11.6.15	Proactive SIM	106
Annex A (normative):	Plug-in SIM.....		107
Annex B (informative):	Not used.....		108
Annex C (informative):	FDN/BDN Procedures.....		109
Annex D (informative):	Suggested contents of the EFs at pre-personalization.....		115

ETS 300 977 (GSM 11.11 version 5.10.1 Release 1996): December 1998

Annex E (Informative):	SIM application Toolkit protocol diagrams.....	116
Annex F (informative):	Bibliography.....	123
Annex G (informative):	Change history.....	124
History		125

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ETS 300 977 E5:2003](https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003)

<https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003>

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ETS 300 977 E5:2003](https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003)

<https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003>

Foreword

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

This ETS defines the interface between the Subscriber Identity Module (SIM) and the Mobile Equipment (ME) for use during the network operation phase of GSM as well as those aspects of the internal organization of the SIM which are related to the network operation phase, within 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 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:

- 5 Indicates GSM Phase 2+ Release 1996
- x the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.
- y the third digit is incremented when editorial only changes have been incorporated in the specification;

NOTE: The present document includes only material relating to the 1996 release of GSM 11.11. All release 1997 material can be found in the release 6.x.y of GSM 11.11.

(standards.iteh.ai)

Transposition dates

Date of adoption of this ETS: a4d7e316ad20/sist-ets-300-977-e5-2003	11 December 1998
Date of latest announcement of this ETS (doa):	31 March 1999
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 September 1999
Date of withdrawal of any conflicting National Standard (dow):	30 September 1999

Blank page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ETS 300 977 E5:2003](https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003)

<https://standards.iteh.ai/catalog/standards/sist/177d1739-ee5-4940-837c-a4d7e316ad20/sist-ets-300-977-e5-2003>

1 Scope

This European Telecommunication Standard (ETS) defines the interface between the Subscriber Identity Module (SIM) and the Mobile Equipment (ME) for use during the network operation phase of GSM as well as those aspects of the internal organization of the SIM which are related to the network operation phase. This is to ensure interoperability between a SIM and an ME independently of the respective manufacturers and operators. The concept of a split of the Mobile Station (MS) into these elements as well as the distinction between the GSM network operation phase, which is also called GSM operations, and the administrative management phase are described in the GSM 02.17 [6].

This ETS defines:

- the requirements for the physical characteristics of the SIM, the electrical signals and the transmission protocols;
- the model which shall be used as a basis for the design of the logical structure of the SIM;
- the security features;
- the interface functions;
- the commands;
- the contents of the files required for the GSM application;
- the application protocol.

Unless otherwise stated, references to GSM also apply to DCS 1800.

This ETS does not specify any aspects related to the administrative management phase. Any internal technical reallocation of either the SIM or the ME are only specified where these reflect over the interface. This ETS does not specify any of the security algorithms which may be used.

This ETS defines the SIM/ME interface for GSM Phase 2. While all attempts have been made to maintain phase compatibility, any issues that specifically relate to Phase 1 should be referenced from within the relevant Phase 1 specification.

2 Normative references

This European Telecommunication Standard (ETS) incorporates, by dated or 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 01.02: "Digital cellular telecommunications system (Phase 2+); General description of a GSM Public Land Mobile Network (PLMN)".
- [2] GSM 01.04 (ETR 350): "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".
- [3] GSM 02.07 (ETS 300 906): "Digital cellular telecommunications system (Phase 2+); Mobile Stations (MS) features".
- [4] GSM 02.09 (ETS 300 920): "Digital cellular telecommunications system (Phase 2+); Security aspects".
- [5] GSM 02.11 (ETS 300 921): "Digital cellular telecommunications system (Phase 2+); Service accessibility".

- [6] GSM 02.17 (ETS 300 922): "Digital cellular telecommunications system (Phase 2+); Subscriber Identity Modules (SIM) Functional characteristics".
- [7] GSM 02.24 (ETS 300 923): "Digital cellular telecommunications system (Phase 2+); Description of Charge Advice Information (CAI)".
- [8] GSM 02.30 (ETS 300 907): "Digital cellular telecommunications system (Phase 2+); Man-Machine Interface (MMI) of the Mobile Station (MS)".
- [9] GSM 02.86: "Digital cellular telecommunications system (Phase 2+); Advice of charge (AoC) Supplementary Services - Stage 1".
- [10] GSM 03.03 (ETS 300 927): "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".
- [11] GSM 03.20 (ETS 300 929): "Digital cellular telecommunications system (Phase 2+); Security related network functions".
- [12] GSM 03.38 (ETS 300 900): "Digital cellular telecommunications system (Phase 2+); Alphabets and language-specific information".
- [13] GSM 03.40 (ETS 300 901): "Digital cellular telecommunications system (Phase 2+); Technical realization of the Short Message Service (SMS) Point-to-Point (PP)".
- [14] GSM 03.41 (ETS 300 902): "Digital cellular telecommunications system (Phase 2+); Technical realization of Short Message Service Cell Broadcast (SMSCB)".
- [15] GSM 04.08 (ETS 300 940): "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification".
- [16] 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".
- [17] GSM 09.91 (ETR 174): "Digital cellular telecommunications system; Interworking aspects of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface between Phase 1 and Phase 2".
- [18] CCITT Recommendation E.118: "The international telecommunication charge card".
- [19] CCITT Recommendation E.164: "Numbering plan for the ISDN era".
- [20] CCITT Recommendation T.50: "International Alphabet No. 5". (ISO 646: 1983, Information processing - ISO 7-bits coded characters set for information interchange).
- [21] ISO/IEC 7810 (1995): "Identification cards - Physical characteristics".
- [22] ISO/IEC 7811-1 (1995): "Identification cards - Recording technique - Part 1: Embossing".
- [23] ISO/IEC 7811-3 (1995): "Identification cards - Recording technique - Part 3: Location of embossed characters on ID-1 cards".
- [24] ISO 7816-1 (1987): "Identification cards - Integrated circuit(s) cards with contacts, Part 1: Physical characteristics".

ETS 300 977 (GSM 11.11 version 5.10.1 Release 1996): December 1998

- [25] ISO 7816-2 (1988): "Identification cards - Integrated circuit(s) cards with contacts, Part 2: Dimensions and locations of the contacts".
- [26] ISO/IEC 7816-3 (1989): "Identification cards - Integrated circuit(s) cards with contacts, Part 3: Electronic signals and transmission protocols".
- [27] GSM 11.14: "Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".
- [28] GSM 11.12 (ETS 300 641): "Digital cellular telecommunications system (Phase 2); Specification of the 3 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".
- [29] GSM 02.22: "Digital cellular telecommunications system (Phase 2+); Personalization of GSM Mobile Equipment (ME) Mobile functionality specification".

3 Definitions, abbreviations and symbols**3.1 Definitions**

For the purposes of this ETS, the following definitions apply. For further information and definitions refer to GSM 01.02 [1].

access conditions: A set of security attributes associated with a file.

application: An application consists of a set of security mechanisms, files, data and protocols (excluding transmission protocols).

application protocol: The set of procedures required by the application.

card session: A link between the card and the external world starting with the ATR and ending with a subsequent reset or a deactivation of the card.

current directory: The latest MF or DF selected.

current EF: The latest EF selected.

data field: Obsolete term for Elementary File.

Dedicated File (DF): A file containing access conditions and, optionally, Elementary Files (EFs) or other Dedicated Files (DFs).

directory: General term for MF and DF.

Elementary File (EF): A file containing access conditions and data and no other files.

file: A directory or an organized set of bytes or records in the SIM.

file identifier: The 2 bytes which address a file in the SIM.

GSM or DCS 1800 application: Set of security mechanisms, files, data and protocols required by GSM or DCS 1800.

GSM session: That part of the card session dedicated to the GSM operation.

IC card SIM: Obsolete term for ID-1 SIM.