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Digital cellular telecommunications system (Phase 2) (GSM); Specification of the
Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11 version
4.19.1)

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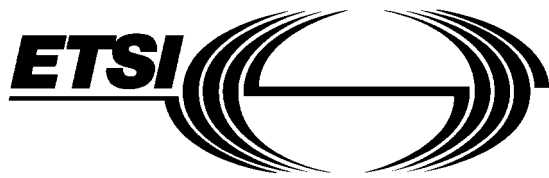
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**Digital cellular telecommunications system (Phase 2);
Specification of the Subscriber Identity Module -
Mobile Equipment (SIM - ME) interface
(GSM 11.11 version 4.19.1)**

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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 specifies the Subscriber Identity Module (SIM) to Mobile Equipment (ME) interface within the digital cellular telecommunications system (Phase 2).

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.

| Transposition dates | |
|-----------------------------------------------------------------------------------------|-----------------|
| Date of adoption of this ETS: | 2 January 1998 |
| Date of latest announcement of this ETS (doa): | 30 April 1998 |
| Date of latest publication of new National Standard or endorsement of this ETS (dop/e): | 31 October 1998 |
| Date of withdrawal of any conflicting National Standard (dow): | 31 October 1998 |

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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 Technical Specification 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 realization 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. (standards.iteh.ai)

2 Normative references SIST ETS 300 608 E7:2003

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This 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 (ETR 99): "Digital cellular telecommunications system (Phase 2); General Description of a GSM Public Land Mobile Network (PLMN)". |
| [2] | GSM 01.04 (ETR 100): "Digital cellular telecommunications system (Phase 2); Abbreviations and acronyms". |
| [3] | GSM 02.07 (ETS 300 505): "Digital cellular telecommunications system (Phase 2); Mobile Station (MS) features". |
| [4] | GSM 02.09 (ETS 300 506): "Digital cellular telecommunications system (Phase 2); Security aspects". |
| [5] | GSM 02.11 (ETS 300 507): "Digital cellular telecommunications system (Phase 2); Service accessibility". |
| [6] | GSM 02.17 (ETS 300 509): "Digital cellular telecommunications system (Phase 2); Subscriber Identity Modules (SIM), Functional characteristics". |
| [7] | GSM 02.24 (ETS 300 510): "Digital cellular telecommunications system (Phase 2); Description of Charge Advice Information (CAI)". |

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- [8] GSM 02.30 (ETS 300 511): "Digital cellular telecommunications system (Phase 2); Man-Machine Interface (MMI) of the Mobile Station (MS)".
- [9] GSM 02.86 (ETS 300 519): "Digital cellular telecommunications system (Phase 2); Advice of charge (AoC) supplementary services - Stage 1".
- [10] GSM 03.20 (ETS 300 534): "Digital cellular telecommunications system (Phase 2); Security related network functions".
- [11] GSM 03.38 (ETS 300 628): "Digital cellular telecommunications system (Phase 2); Alphabets and language-specific information".
- [12] GSM 03.40 (ETS 300 536): "Digital cellular telecommunications system (Phase 2); Technical realization of the Short Message (SMS) Service Point-to-Point (PP)".
- [13] GSM 03.41 (ETS 300 537): "Digital cellular telecommunications system (Phase 2); Technical realization of the Short Message Service Cell Broadcast (SMSCB)".
- [14] GSM 04.08 (ETS 300 557): "Digital cellular telecommunications system (Phase 2); Mobile radio interface layer 3 specification".
- [15] GSM 04.11 (ETS 300 559): "Digital cellular telecommunications system (Phase 2); Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [16] GSM 09.91 (ETSI 174): "Digital cellular telecommunications system (Phase 2); Interworking aspects of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface between Phase 1 and Phase 2".
- [17] CCITT Recommendation E.118: "The international telecommunications charge card".
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- [18] CCITT Recommendation E.164: "Numbering plan for the ISDN era".
- [19] CCITT Recommendation T.50: "International Alphabet No. 5". (ISO 646: 1983, Information processing - ISO 7-bits coded characters set for information interchange).
- [20] ISO/IEC 7810 (1995): "Identification cards - Physical characteristics".
- [21] ISO/IEC 7811-1 (1995): "Identification cards - Recording technique - Part 1: Embossing".
- [22] ISO/IEC 7811-3 (1995): "Identification cards - Recording technique - Part 3: Location of embossed characters on ID-1 cards".
- [23] ISO 7816-1 (1987): "Identification cards - Integrated circuit(s) cards with contacts, Part 1: Physical characteristics".
- [24] ISO 7816-2 (1988): "Identification cards - Integrated circuit(s) cards with contacts, Part 2: Dimensions and locations of the contacts".
- [25] ISO/IEC 7816-3 (1989): "Identification cards - Integrated circuit(s) cards with contacts, Part 3: Electronic signals and transmission protocols".
- [26] 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".3 Definitions, abbreviations and symbols

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.

ID-1 SIM: The SIM having the format of an ID-1 card (see ISO 7816-1 [23]).

Master File (MF): The unique mandatory file containing access conditions and optionally DFs and/or EFs.

padding: One or more bits appended to a message in order to cause the message to contain the required number of bits or bytes.

plug-in SIM: A second format of SIM (specified in clause 4).

record: A string of bytes within an EF handled as a single entity (see clause 6).

record number: The number which identifies a record within an EF.

record pointer: The pointer which addresses one record in an EF.

root directory: Obsolete term for Master File.

3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply, in addition to the those listed in GSM 01.04 [2].

| | |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| A3 | Algorithm 3, authentication algorithm; used for authenticating the subscriber |
| A5 | Algorithm 5, cipher algorithm; used for enciphering/deciphering data |
| A8 | Algorithm 8, cipher key generator; used to generate K_C |
| A38 | A single algorithm performing the functions of A3 and A8 |
| ACM | Accumulated Call Meter |
| ADN | Abbreviated Dialling Number |
| ADM | Access condition to an EF which is under the control of the authority which creates this file |
| ALW | ALWays |
| AoC | Advice of Charge |
| APDU | Application Protocol Data Unit |
| ATR | Answer To Reset |
| BCCH | Broadcast Control CHannel |
| BCD | Binary Coded Decimal |
| BTS | Base Transmitter Station |
| CB | Cell Broadcast |
| CBMI | Cell Broadcast Message Identifier |
| CCITT | The International Telegraph and Telephone Consultative Committee (now also known as the ITU Telecommunications Standardization sector) |
| CCP | Capability/Configuration Parameter |
| CHV | Card Holder Verification information; access condition used by the SIM for the verification of the identity of the user |
| CLA | CLAss |
| DCS | Digital Cellular System |
| DF | Dedicated File (abbreviation formerly used for Data Field) |
| DTMF | Dual Tone Multiple Frequency |
| EF | Elementary File |
| ETSI | European Telecommunications Standards Institute |
| etu | elementary time unit |
| FDN | Fixed Dialling Number |
| GSM | Global System for Mobile communications |
| HPLMN | Home PLMN |
| IC | Integrated Circuit |
| ICC | Integrated Circuit(s) Card |
| ID | IDentifier |
| IEC | International Electrotechnical Commission |
| IMSI | International Mobile Subscriber Identity |
| ISO | International Organization for Standardization |
| Kc | Cryptographic key; used by the cipher A5 |
| Ki | Subscriber authentication key; the cryptographic key used by the authentication algorithm, A3, and cipher key generator, A8 |
| LAI | Location Area Information; information indicating a cell or a set of cells |
| lgth | The (specific) length of a data unit |
| LND | Last Number Dialed |
| LSB | Least Significant Bit |
| MCC | Mobile Country Code |
| ME | Mobile Equipment |
| MF | Master File |
| MMI | Man Machine Interface |
| MNC | Mobile Network Code |
| MS | Mobile Station |
| MSISDN | Mobile Station international ISDN number |
| MSB | Most Significant Bit |
| NET | NETwork |
| NEV | NEVer |
| NPI | Numbering Plan Identifier |

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| | |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| PIN/PIN2 | Personal Identification Number / Personal Identification Number 2 (obsolete terms for CHV1 and CHV2, respectively) |
| PLMN | Public Land Mobile Network |
| PTS | Protocol Type Select (response to the ATR) |
| PUK/PUK2 | PIN Unblocking Key / PIN2 Unblocking Key (obsolete terms for UNBLOCK CHV1 and UNBLOCK CHV2, respectively) |
| RAND | A RANDom challenge issued by the network |
| RFU | Reserved for Future Use |
| SIM | Subscriber Identity Module |
| SMS | Short Message Service |
| SRES | Signed RESponse calculated by a SIM |
| SSC | Supplementary Service Control string |
| SW1/SW2 | Status Word 1 / Status Word 2 |
| TMSI | Temporary Mobile Subscriber Identity |
| TON | Type Of Number |
| TP | Transfer layer Protocol |
| TPDU | Transfer Protocol Data Unit |
| TS | Technical Specification |
| UNBLOCK CHV1/2 | value to unblock CHV1/CHV2 |
| VPLMN | Visited PLMN |

3.3 Symbols

For the purposes of this ETS, the following symbols apply.

| | |
|---------------------------|--------------------------------|
| Vcc | Supply voltage |
| Vpp | Programming voltage |
| '0' to '9' and 'A' to 'F' | The sixteen hexadecimal digits |

4 Physical characteristics

Two physical types of SIM are specified. These are the "ID-1 SIM" and the "Plug-in SIM".

The physical characteristics of both types of SIM shall be in accordance with ISO 7816-1,2 [22, 23] unless otherwise specified. The following additional requirements shall be applied to ensure proper operation in the GSM environment.

4.1 Format and layout

The information on the exterior of either SIM should include at least the individual account identifier and the check digit of the IC Card Identification (see clause 10, EF_{ICCID}).

4.1.1 ID-1 SIM

Format and layout of the ID-1 SIM shall be in accordance with ISO 7816-1,2 [22, 23].

The card shall have a polarization mark (see GSM 02.07 [3]) which indicates how the user should insert the card into the ME.

The ME shall accept embossed ID-1 cards. The embossing shall be in accordance with ISO/IEC 7811 [21]. The contacts of the ID-1 SIM shall be located on the front (embossed face, see ISO/IEC 7810 [20]) of the card.

NOTE: Card warpage and tolerances are now specified for embossed cards in ISO/IEC 7810 [20].

4.1.2 Plug-in SIM

The Plug-in SIM has a width of 25 mm, a height of 15 mm, a thickness the same as an ID-1 SIM and a feature for orientation. (see figure A.1 in normative annex A for details of the dimensions of the card and the dimensions and location of the contacts).