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Smart Cards;
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Physical and logical characteristics
(Release 17)

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Secure Element Technologies (SET).

It is based on work originally done in the 3GPP in TSG-terminals WG3.

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Introduction

The present document defines a generic Terminal/Integrated Circuit Card (ICC) interface.

The aim of the present document is to ensure interoperability between an ICC and a terminal independently of the respective manufacturer, card issuer or operator. The present document does not define any aspects related to the administrative management phase of the ICC. Any internal technical realization of either the ICC or the terminal is only specified where these are reflected over the interface.

Application specific details for applications residing on an ICC are specified in the respective application specific documents. The Universal Subscriber Identity Module (USIM)-application for 3G telecommunication networks is specified in ETSI TS 131 102 [2].

1 Scope

The present document specifies the interface between the UICC and the terminal.

The present document specifies:

- the requirements for the physical characteristics of the UICC;
- the electrical interface for exchanging APDUs between the UICC and the terminal, based on ISO/IEC 7816-3 [11];
- the initial communication establishment and the transport protocols for this interface;
- a model which serves as a basis for the logical structure of the UICC APDU interface;
- communication commands and procedures for the UICC APDU interface;
- application independent files and protocols for the UICC APDU interface.

Starting from Release 17, the UICC may support Logical Secure Element interfaces, which allows it to host multiple logical secure elements. A special form of such a Logical Secure Element (LSE) is a logical UICC. Where required, the lower layers which represent the features common to all LSEs are denoted as LSE base. The applicability of the clauses in the present document to either the LSE base or to the logical UICC is given in the introduction of each affected clause.

The administrative procedures, initial card management and optional communication interfaces between the UICC and terminal are not within the scope of the present document.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- In the case of a reference to a TC SET document, a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 123 038: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Alphabets and language-specific information (3GPP TS 23.038)".

[2] ETSI TS 131 102: "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Characteristics of the Universal Subscriber Identity Module (USIM) application (3GPP TS 31.102)".

[3] ETSI TS 101 220: "Smart Cards; ETSI numbering system for telecommunication application providers".

[4] ETSI TS 102 223: "Smart Cards; Card Application Toolkit (CAT)".

[5] Recommendation ITU-T E.118: "The international telecommunication charge card".

[6] ISO 639 (all parts): "Codes for the representation of names of languages".

[7] ISO/IEC 7810: "Identification cards -- Physical characteristics".

[8] ISO/IEC 7811-1: "Identification cards -- Recording technique -- Part 1: Embossing".

[9] ISO/IEC 7816-1: "Identification cards -- Integrated circuit cards -- Part 1: Cards with contacts - Physical characteristics".

[10] ISO/IEC 7816-2: "Identification cards -- Integrated circuit cards -- Part 2: Cards with contacts - Dimensions and location of the contacts".

[11] ISO/IEC 7816-3: "Identification cards -- Integrated circuit cards -- Part 3: Cards with contacts - Electrical interface and transmission protocols".

[12] ISO/IEC 7816-4: "Identification cards -- Integrated circuit cards -- Part 4: Organization, security and commands for interchange".

[13] Void.

[14] Void.

[15] Void.

[16] Void.

[17] ISO/IEC 10646: "Information technology -- Universal Coded Character Set (UCS)".

[18] ETSI TS 102 600: "Smart Cards; UICC-Terminal interface; Characteristics of the USB interface".

[19] ETSI TS 102 613: "Smart Cards; UICC - Contactless Front-end (CLF) Interface; Physical and data link layer characteristics".

[20] ETSI TS 102 484: "Smart Cards; Secure channel between a UICC and an end-point terminal".

[21] ETSI TS 102 225: "Smart Cards; Secured packet structure for UICC based applications".

[22] ETSI TS 124 008: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 (3GPP TS 24.008)".

[23] JEDEC JESD22-A101D.01: "Steady-State Temperature-Humidity Bias Life Test".

[24] OMA-ERELD- Smartcard-Web-Server-V1-1-20090512-A: "Enabler Release Definition for Smartcard-Web-Server". Approved Version 1.1 - 12 May 2009 (OMA).

[25] ISO/IEC 15948:2004: "Information technology -- Computer graphics and image processing -- Portable Network Graphics (PNG): Functional specification".

[26] IETF RFC 2046: "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types".

NOTE: Available from http://www.ietf.org/rfc/rfc2046.txt.

[27] ETSI TS 102 671: "Smart Cards; Machine to Machine UICC; Physical and logical characteristics".

[28] Void.

[29] ETSI TS 102 226: "Smart Cards; Remote APDU structure for UICC based applications".

[30] Void.

[31] ISO/IEC 9797-1:2011: "Information technology -- Security techniques -- Message Authentication Codes (MACs) -- Part 1: Mechanisms using a block cipher".

[32] ETSI TS 102 222: "Integrated Circuit Cards (ICC); Administrative commands for telecommunications applications".

[33] GSMA SGP.22: "RSP Technical Specification".