

ETSI TS 102 221 V16.1.0 (2019-11)



**Smart Cards;
UICC-Terminal interface;
Physical and logical characteristics
(Release 16)**

Standard PREVIEW
Full standards catalog
https://standards.iteh.ai/catalog/standards/sls/1008c51-46e0-43c1-a009-0b61d0756f48/etsi-ts-102-221-v16-1-0-2019-11

Reference

RTS/SCP-T102221vg10

Keywords

smart card

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

Important notice

The present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2019.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M™ logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	12
Foreword.....	12
Modal verbs terminology.....	12
Introduction	13
1 Scope	14
2 References	14
2.1 Normative references	14
2.2 Informative references.....	16
3 Definition of terms, symbols, abbreviations and coding conventions.....	16
3.1 Terms.....	16
3.2 Symbols.....	18
3.3 Abbreviations	19
3.4 Coding conventions	21
4 Physical characteristics.....	21
4.0 UICC Form Factors	21
4.0.0 Generic requirements.....	21
4.0.1 ID-1 UICC	21
4.0.2 Plug-in UICC.....	21
4.0.3 Mini-UICC.....	22
4.0.4 4FF.....	23
4.1 ID-1 UICC.....	24
4.2 Plug-in UICC.....	24
4.3 Mini-UICC	24
4.4 Environmental conditions for card operation and storage.....	24
4.4.0 Standard UICC environmental conditions.....	24
4.4.1 Specific UICC environmental conditions	25
4.4.1.0 Specific UICC environmental conditions indication.....	25
4.4.1.1 Temperature range for specific UICC environmental conditions.....	25
4.4.1.2 High humidity	25
4.5 Contacts.....	25
4.5.1 Provision of contacts.....	25
4.5.1.1 Terminal.....	25
4.5.1.2 UICC	25
4.5.2 Contact activation and deactivation	26
4.5.2.1 Contacts assigned by the present document	26
4.5.2.2 Optional contacts.....	26
4.5.3 Inactive contacts	26
4.5.4 Contact pressure.....	26
5 Electrical specifications of the UICC - Terminal interface.....	27
5.0 General requirements	27
5.1 Class A operating conditions.....	27
5.1.1 Supply voltage Vcc (contact C1)	27
5.1.2 Reset (RST) (contact C2).....	28
5.1.3 Programming voltage Vpp (contact C6).....	28
5.1.4 Clock CLK (contact C3).....	28
5.1.5 I/O (contact C7)	29
5.2 Class B operating conditions	29
5.2.1 Supply voltage Vcc (contact C1)	29
5.2.2 Reset (RST) (contact C2).....	30
5.2.3 Clock CLK (contact C3).....	30
5.2.4 I/O (contact C7)	30
5.3 Class C operating conditions	31
5.3.1 Supply voltage Vcc (contact C1)	31

5.3.2	Reset (RST) (contact C2).....	31
5.3.3	Clock CLK (contact C3).....	31
5.3.4	I/O (contact C7).....	32
6	Initial communication establishment procedures.....	32
6.1	UICC activation and deactivation.....	32
6.2	Supply voltage switching.....	32
6.2.0	UICC activation voltage.....	32
6.2.1	Supply voltage classes.....	33
6.2.2	Power consumption of the UICC during ATR.....	33
6.2.3	Application related electrical parameters.....	33
6.3	Answer To Reset content.....	34
6.3.0	Introduction.....	34
6.3.1	Coding of historical bytes.....	34
6.3.2	Speed enhancement.....	34
6.3.3	Global Interface bytes.....	35
6.4	PPS procedure.....	35
6.5	Reset procedures.....	36
6.5.1	Cold reset.....	36
6.5.2	Warm reset.....	36
6.5.3	Reaction to resets.....	36
6.6	Clock stop mode.....	36
6.7	Bit/character duration and sampling time.....	36
6.8	Error handling.....	37
6.9	Compatibility.....	37
7	Transmission protocols.....	37
7.0	Introduction.....	37
7.1	Physical layer.....	38
7.2	Data link layer.....	38
7.2.0	Introduction.....	38
7.2.1	Character frame.....	39
7.2.1.0	Structure, coding and timing.....	39
7.2.1.1	Low impedance I/O line behaviour.....	39
7.2.2	Transmission protocol T = 0.....	40
7.2.2.0	Introduction.....	40
7.2.2.1	Timing and specific options for characters in T = 0.....	40
7.2.2.2	Command header.....	40
7.2.2.3	Command processing.....	40
7.2.2.3.0	General description.....	40
7.2.2.3.1	Procedure bytes.....	40
7.2.2.3.2	Status bytes.....	41
7.2.2.4	Error detection and correction.....	41
7.2.3	Transmission protocol T = 1.....	41
7.2.3.0	Introduction.....	41
7.2.3.1	Timing and specific options for blocks sent with T = 1.....	42
7.2.3.1.0	Introduction.....	42
7.2.3.1.1	Information field size.....	42
7.2.3.1.2	Character waiting integer.....	42
7.2.3.1.3	Character waiting time.....	42
7.2.3.1.4	Block waiting time.....	42
7.2.3.1.5	Block guard time.....	42
7.2.3.1.6	Waiting time extension.....	43
7.2.3.1.7	Error detection code.....	43
7.2.3.2	Block frame structure.....	43
7.2.3.2.0	Overall structure.....	43
7.2.3.2.1	Prologue field.....	43
7.2.3.2.2	Epilogue field.....	45
7.2.3.2.3	Block notations.....	45
7.2.3.3	Error free operation.....	46
7.2.3.4	Error handling for T = 1.....	46
7.2.3.4.0	General description.....	46

7.2.3.4.1	Protocol initialization	47
7.2.3.4.2	Block dependent errors.....	47
7.2.3.5	Chaining.....	47
7.2.3.5.0	Chaining Mechanism.....	47
7.2.3.5.1	Rules for chaining.....	48
7.3	Transport layer	48
7.3.0	Introduction.....	48
7.3.1	Transportation of an APDU using T = 0.....	48
7.3.1.0	Introduction.....	48
7.3.1.1	Mapping of APDUs to TPDUs.....	48
7.3.1.1.0	General behaviour	48
7.3.1.1.1	Case 1	49
7.3.1.1.2	Case 2	49
7.3.1.1.3	Case 3	50
7.3.1.1.4	Case 4	51
7.3.1.1.5	Use of procedure bytes '61xx' and '6Cxx'.....	52
7.3.2	Transportation of a APDU using T = 1.....	53
7.3.2.0	General mechanism.....	53
7.3.2.1	Case 1.....	53
7.3.2.2	Case 2.....	53
7.3.2.3	Case 3.....	54
7.3.2.4	Case 4.....	54
7.4	Application layer	54
7.4.0	Overall description.....	54
7.4.1	Exchange of APDUs.....	55
7.4.2	CAT layer	55
7.4.2.0	Overview.....	55
7.4.2.1	Proactive command.....	55
7.4.2.2	ENVELOPE Commands.....	56
7.4.3	Application execution.....	56
8	Application and file structure.....	57
8.1	UICC application structure.....	57
8.2	File types	57
8.2.0	Introduction.....	57
8.2.1	Dedicated files	58
8.2.2	Elementary files	58
8.2.2.1	Transparent EF.....	58
8.2.2.2	Linear fixed EF	58
8.2.2.3	Cyclic EF	58
8.2.2.4	BER-TLV structure EF	59
8.3	File referencing	59
8.4	Methods for selecting a file	59
8.4.0	Default state after UICC activation and ATR.....	59
8.4.1	SELECT by File Identifier referencing.....	60
8.4.2	SELECT by path referencing.....	61
8.4.3	Short File Identifier (SFI)	62
8.5	Application characteristics	62
8.5.0	Application selection types.....	62
8.5.1	Explicit application selection.....	62
8.5.1.1	SELECT by DF name	62
8.5.1.2	SELECT by partial DF name	63
8.5.2	Application session activation	63
8.5.3	Application session termination.....	63
8.5.4	Application session reset	64
8.5.5	Void.....	64
8.6	Reservation of file Ids	64
8.7	Logical channels.....	65
8.8	Shareable versus not-shareable files.....	66
8.9	Secure channels.....	66
9	Security features.....	67

9.0	Introduction	67
9.1	Supported security features	67
9.2	Security architecture.....	68
9.2.0	Overview and basic rules	68
9.2.1	Security attributes	68
9.2.2	Access mode	68
9.2.3	Security condition	68
9.2.4	Access rules	68
9.2.5	Compact format	69
9.2.6	Expanded format.....	69
9.2.7	Access rule referencing.....	70
9.3	Security environment	70
9.3.0	Description.....	70
9.3.1	Definition of the security environment	71
9.3.2	Logical Channels and Security Environment.....	71
9.4	PIN definitions	72
9.4.0	Introduction.....	72
9.4.1	Universal PIN	72
9.4.2	Application PIN	72
9.4.3	Local PIN.....	72
9.4.4	PINs and logical channels.....	72
9.5	PIN and key reference relationship	73
9.5.0	Introduction.....	73
9.5.1	Access condition mapping	73
9.5.2	PIN status indication.....	74
10	Structure of commands and responses	75
10.1	Command APDU	75
10.1.0	Structure and case	75
10.1.1	Coding of Class Byte	76
10.1.2	Coding of Instruction Byte	77
10.1.3	Coding of parameter bytes	78
10.1.4	Coding of Lc byte	78
10.1.5	Coding of data part	78
10.1.6	Coding of Le byte	78
10.2	Response APDU.....	78
10.2.0	Structure.....	78
10.2.1	Status conditions returned by the UICC	78
10.2.1.0	Introduction.....	78
10.2.1.1	Normal processing	79
10.2.1.2	Postponed processing	79
10.2.1.3	Warnings	79
10.2.1.4	Execution errors	79
10.2.1.5	Checking errors	80
10.2.1.5.0	Base checking errors.....	80
10.2.1.5.1	Functions in CLA not supported	80
10.2.1.5.2	Command not allowed.....	80
10.2.1.5.3	Wrong parameters	80
10.2.1.6	Application errors	81
10.2.2	Status words of the commands	82
10.3	Logical channels.....	84
11	Commands.....	84
11.1	Generic commands	84
11.1.0	Introduction.....	84
11.1.1	SELECT.....	84
11.1.1.1	Functional description.....	84
11.1.1.2	Command parameters and data	84
11.1.1.3	Response Data.....	85
11.1.1.3.0	Base coding	85
11.1.1.3.1	Response for MF, DF or ADF	86
11.1.1.3.2	Response for an EF.....	86

11.1.1.4	File control parameters.....	86
11.1.1.4.1	File size.....	86
11.1.1.4.2	Total file size	87
11.1.1.4.3	File Descriptor.....	87
11.1.1.4.4	File identifier	88
11.1.1.4.5	DF name	88
11.1.1.4.6	Proprietary information	88
11.1.1.4.7	Security attributes.....	92
11.1.1.4.8	Short file identifier	94
11.1.1.4.9	Life cycle status integer.....	94
11.1.1.4.10	PIN status template DO	94
11.1.2	STATUS	95
11.1.2.1	Functional description.....	95
11.1.2.2	Command parameters.....	95
11.1.3	READ BINARY	96
11.1.3.1	Functional description.....	96
11.1.3.2	Command parameters.....	96
11.1.4	UPDATE BINARY	96
11.1.4.1	Functional parameters	96
11.1.4.2	Command parameters and data	97
11.1.5	READ RECORD	97
11.1.5.1	Functional description.....	97
11.1.5.2	Command parameters.....	98
11.1.6	UPDATE RECORD	98
11.1.6.1	Functional description.....	98
11.1.6.2	Command parameters and data	99
11.1.7	SEARCH RECORD	99
11.1.7.1	Functional description.....	99
11.1.7.2	Command parameters and data	100
11.1.8	INCREASE.....	101
11.1.8.1	Functional description.....	101
11.1.8.2	Command parameters and data.....	101
11.1.9	VERIFY PIN	102
11.1.9.1	Functional description.....	102
11.1.9.1.1	PIN verification	102
11.1.9.1.2	PIN retry counter	102
11.1.9.2	Void.....	103
11.1.9.3	Command parameters.....	103
11.1.10	CHANGE PIN	103
11.1.10.1	Functional description.....	103
11.1.10.2	Command parameters.....	104
11.1.11	DISABLE PIN	104
11.1.11.1	Functional description.....	104
11.1.11.2	Command parameters.....	105
11.1.12	ENABLE PIN	105
11.1.12.1	Functional description.....	105
11.1.12.2	Command parameters.....	106
11.1.13	UNBLOCK PIN.....	106
11.1.13.1	Functional description.....	106
11.1.13.1.1	PIN unblocking.....	106
11.1.13.1.2	UNBLOCK PIN retry counter	107
11.1.13.2	Void.....	107
11.1.13.3	Command parameters.....	107
11.1.14	DEACTIVATE FILE.....	107
11.1.14.1	Functional description.....	107
11.1.14.2	Command parameters.....	108
11.1.15	ACTIVATE FILE.....	108
11.1.15.1	Functional description.....	108
11.1.15.2	Command parameters.....	108
11.1.16	AUTHENTICATE.....	109
11.1.16.1	Functional description.....	109
11.1.16.2	Command parameters and data	110

11.1.17	MANAGE CHANNEL.....	112
11.1.17.1	Functional description.....	112
11.1.17.2	Command parameters and data	112
11.1.18	GET CHALLENGE.....	113
11.1.18.1	Functional description.....	113
11.1.18.2	Command parameters and data	113
11.1.19	TERMINAL CAPABILITY	113
11.1.19.1	Functional description.....	113
11.1.19.2	Command parameters and data	114
11.1.19.2.0	Base coding	114
11.1.19.2.1	Terminal power supply.....	114
11.1.19.2.2	Extended logical channels terminal support.....	114
11.1.19.2.3	Additional interfaces support.....	115
11.1.19.2.4	Additional Terminal capability indications related to eUICC	115
11.1.20	MANAGE SECURE CHANNEL.....	116
11.1.20.1	General functional description	116
11.1.20.2	Retrieve UICC Endpoints	117
11.1.20.2.0	Introduction	117
11.1.20.2.1	Functional description	117
11.1.20.2.2	Command parameters and data.....	117
11.1.20.3	Establish SA - Master SA	119
11.1.20.3.0	Introduction	119
11.1.20.3.1	Functional description	119
11.1.20.3.2	Command parameters and data.....	119
11.1.20.4	Establish SA - Connection SA	121
11.1.20.4.0	Introduction	121
11.1.20.4.1	Functional description	121
11.1.20.4.2	Command parameters and data.....	121
11.1.20.5	Establish SA - Start Secure Channel	123
11.1.20.5.0	Introduction	123
11.1.20.5.1	Functional description	123
11.1.20.5.2	Command parameters and data.....	123
11.1.20.6	Terminate Secure Channel SA	125
11.1.20.6.0	Introduction	125
11.1.20.6.1	Functional description	125
11.1.20.6.2	Command parameters and data.....	125
11.1.21	TRANSACT DATA	127
11.1.21.1	General functional description.....	127
11.1.21.2	Command parameters and data	127
11.1.22	SUSPEND UICC	129
11.1.22.1	Functional description.....	129
11.1.22.2	UICC suspension.....	130
11.1.22.2.1	Introduction	130
11.1.22.2.2	Functional description	130
11.1.22.2.3	Command parameters and data.....	130
11.1.22.3	UICC resume.....	131
11.1.22.3.1	Introduction	131
11.1.22.3.2	Functional description	131
11.1.22.3.3	Command parameters and data.....	132
11.1.23	GET IDENTITY.....	132
11.1.23.1	Functional description.....	132
11.1.23.2	Command parameters and data	132
11.1.24	EXCHANGE CAPABILITIES.....	133
11.2	CAT commands.....	133
11.2.1	TERMINAL PROFILE.....	133
11.2.1.1	Functional description.....	133
11.2.1.2	Command parameters and data	133
11.2.2	ENVELOPE.....	133
11.2.2.1	Functional description.....	133
11.2.2.2	Command parameters and data	134
11.2.3	FETCH.....	134
11.2.3.1	Functional description.....	134

11.2.3.2	Command parameters and data	134
11.2.4	TERMINAL RESPONSE.....	134
11.2.4.1	Functional description.....	134
11.2.4.2	Command parameters and data	135
11.3	Data Oriented commands	135
11.3.0	Overview and generic mechanism	135
11.3.1	RETRIEVE DATA	136
11.3.1.1	Functional description.....	136
11.3.1.2	Command parameters and data	137
11.3.2	SET DATA	137
11.3.2.1	Functional description.....	137
11.3.2.2	Command parameters and data	138
12	Transmission oriented commands	139
12.1	T = 0 specific commands.....	139
12.1.1	GET RESPONSE.....	139
12.1.1.1	Functional description.....	139
12.1.1.2	Command parameters.....	139
13	Application independent files.....	140
13.1	EF _{DIR}	140
13.2	EF _{ICCID} (ICC Identification)	141
13.3	EF _{PL} (Preferred Languages)	142
13.4	EF _{ARR} (Access Rule Reference)	142
13.5	DF _{CD} (Configuration Data).....	142
13.5.0	Introduction.....	142
13.5.1	EF _{LAUNCH PAD}	143
13.5.2	EF _{ICON}	146
13.6	EF _{UMPC} (UICC Maximum Power Consumption).....	147
14	Application independent protocol	148
14.1	File related procedures	148
14.1.1	Reading an EF.....	148
14.1.2	Updating an EF	148
14.1.3	Increasing an EF	148
14.2	PIN related procedures	149
14.2.0	Overview	149
14.2.1	PIN verification	149
14.2.2	PIN value substitution.....	149
14.2.3	PIN disabling	150
14.2.4	PIN enabling	150
14.2.5	PIN unblocking	150
14.3	Application selection procedures	150
14.3.1	Application selection by use of the EF _{DIR} file.....	150
14.3.2	Direct application selection.....	151
14.3.3	Direct application selection with partial AID	151
14.4	General application related procedures	151
14.4.1	Application session activation	151
14.4.2	UICC application interrogation.....	151
14.4.3	UICC application session termination	151
14.5	Miscellaneous procedures	151
14.5.1	UICC activation	151
14.5.2	UICC presence detection	151
14.5.3	UICC preferred language request	152
14.5.4	UICC logical channels	152
14.5.5	Power negotiation	152
14.5.6	UICC suspension	152
14.6	CAT related procedures.....	152
14.6.0	Scope of CAT related procedures	152
14.6.1	CAT Initialization procedure	152
14.6.2	Proactive polling	153
14.6.3	Support of commands	153
14.6.4	Support of response codes	153

14.6.5	Independence of applications and CAT tasks	153
14.6.6	Use of BUSY status response	153
14.6.7	Additional processing time	153
15	Support of APDU-based UICC applications over USB	153
Annex A (normative):	UCS2 coding of Alpha fields for files residing on the UICC	155
Annex B (informative):	Main states of a UICC	157
Annex C (informative):	APDU protocol transmission examples.....	158
C.1	Exchanges Using T = 0	158
C.1.0	Overview	158
C.1.1	Case 1 command	158
C.1.2	Case 2 command	158
C.1.3	Case 3 command	159
C.1.4	Case 4 command	159
C.1.5	Case 2 commands Using the '61' and '6C' procedure bytes	159
C.1.6	Case 4 command Using the '61' procedure byte	160
C.1.7	Case 4 command with warning condition	160
Annex D (informative):	ATR examples	161
Annex E (informative):	Security attributes mechanisms and examples.....	163
E.1	Coding	163
E.2	Compact format	163
E.2.0	Coding	163
E.2.1	AM byte	163
E.2.2	SC byte	163
E.2.3	Examples	164
E.3	Expanded format	164
E.3.0	Coding	164
E.3.1	AM_DO	164
E.3.2	SC_DO	164
E.3.3	Access rule referencing	165
E.3.4	Examples	165
Annex F (informative):	Example of contents of EF_{ARR} '2F06'	166
F.1	Sample content of the EF _{ARR}	166
Annex G (informative):	Access Rules Referencing (ARR).....	167
G.1	Sample content of EF _{ARR}	167
G.2	Example of access rule referencing with SE ID	170
Annex H (normative):	List of SFI Values assigned in ETSI TS 102 221	171
H.1	List of SFI Values at the MF Level	171
Annex I (informative):	Resets and modes of operation	172
Annex J (informative):	Example of the use of PINs	173
J.1	Application having several ADFs	173
J.2	Two applications with two different security contexts.....	173
Annex K (informative):	Examples of the PIN state transition on multi verification capable UICC	174
K.0	Context	174

K.1	PIN state transition on the single logical channel	174
K.2	PIN state transition between logical channels	176
Annex L (informative): Examples of SET DATA and RETRIEVE DATA usage.....		180
L.1	Examples of SET DATA and RETRIEVE DATA usage	180
L.2	Examples of RETRIEVE DATA usage with transport protocol T = 0	181
Annex M (informative): Examples of ODD AUTHENTICATE instruction code usage		184
M.1	Examples of ODD AUTHENTICATE instruction code usage at applicative level.....	184
M.2	Examples of ODD AUTHENTICATE instruction code usage with transport protocol T = 0.....	185
Annex N (informative): Change history		188
History		192

ITeH STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/a1d08e51-46e0-43e1-a009-0b61d0756f48/etsi-ts-102-221-v16.1.0-2019-11>

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables 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 ETSI 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 (<https://ipr.etsi.org/>).

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 ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Smart Card Platform (SCP).

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

The contents of the present document are subject to continuing work within TC SCP and may change following formal TC SCP approval. If TC SCP modifies the contents of the present document, it will then be republished by ETSI with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 0 early working draft;
 - 1 presented to TC SCP for information;
 - 2 presented to TC SCP for approval;
 - 3 or greater indicates TC SCP approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

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].

ITeH STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/a1d08e51-46e0-43e1-a009-0b61d0756f48/etsi-ts-102-221-v16.1.0-2019-11>