



Smart Cards;
Test specification for the Host Controller Interface (HCI);
Part 1: Terminal features
(Release 12)

STANDARD PREVIEW
(Standard not for circulation)
https://standards.iteh.ai/standards/sist/88267d9c-d6d0-4005-849-4489b008c00e/etsi-ts-102-695-1-v12.1.0-2016-10

ReferenceRTS/SCP-00HCITvc10

Keywordssmart card, terminal

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 only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

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/CommitteeSupportStaff.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.

© European Telecommunications Standards Institute 2016.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.
GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	8
Foreword.....	8
Modal verbs terminology.....	8
Introduction	9
1 Scope	10
2 References	10
2.1 Normative references	10
2.2 Informative references.....	11
3 Definitions, symbols and abbreviations	11
3.1 Definitions	11
3.2 Symbols.....	11
3.3 Abbreviations	11
3.4 Void.....	12
3A Formats.....	12
3A.1 Format of the table of optional features.....	12
3A.2 Format of the applicability table.....	13
3A.3 Status and Notations.....	13
3A.4 Format of the conformance requirements tables	14
4 Test environment.....	14
4.1 Table of optional features.....	14
4.2 Applicability table	15
4.3 Information to be provided by the device supplier	18
4.4 Test equipment	18
4.4.0 Base Requirements	18
4.4.1 Measurement/setting uncertainties.....	19
4.4.2 Default conditions for DUT operation.....	19
4.4.2.1 General	19
4.4.2.2 Status of UICC interfaces.....	19
4.4.3 Minimum/maximum conditions for DUT operation.....	19
4.4.4 Conventions	19
4.5 Test execution	19
4.5.1 Parameter variations	19
4.5.2 Execution requirements	20
4.6 Pass criterion	20
4.6.0 Principle.....	20
4.6.1 Unanticipated behaviour from the DUT	20
5 Test cases.....	21
5.1 HCI architecture	21
5.1.1 Overview	21
5.1.2 Hosts	21
5.1.3 Gates	21
5.1.3.1 Conformance requirements	21
5.1.3.2 Test case 1: existence of gates.....	21
5.1.3.2.1 Test execution.....	21
5.1.3.2.2 Initial conditions.....	21
5.1.3.2.3 Test procedure	22
5.1.3.3 Void.....	22
5.1.4 Pipes.....	22
5.1.4.1 Conformance requirements	22
5.1.4.2 Test case 1: static pipe deletion.....	23
5.1.4.2.1 Test execution.....	23
5.1.4.2.2 Initial conditions	23

5.1.4.2.3	Test procedure	23
5.1.4.3	Test case 2: initial pipe state and persistence of pipe state and registry value	23
5.1.4.3.1	Test execution.....	23
5.1.4.3.2	Initial conditions	23
5.1.4.3.3	Test procedure	23
5.1.5	Registries	24
5.1.5.1	Conformance requirements	24
5.1.5.2	Test case 1: registry deletion	24
5.1.5.2.1	Test execution.....	24
5.1.5.2.2	Initial conditions	24
5.1.5.2.3	Test procedure	25
5.2	HCP	25
5.2.1	HCP packets.....	25
5.2.1.1	Conformance requirements	25
5.2.2	HCP message structure	26
5.2.2.1	Conformance requirements	26
5.2.2.2	Test case 1: commands/events on pipe which is not open	26
5.2.2.2.1	Test execution.....	26
5.2.2.2.2	Initial conditions	26
5.2.2.2.3	Test procedure	26
5.2.3	Message fragmentation	27
5.2.3.1	Conformance requirements	27
5.3	Instructions	27
5.3.1	Commands	27
5.3.1.1	Overview	27
5.3.1.1.1	Conformance requirements.....	27
5.3.1.2	Generic commands.....	27
5.3.1.2.1	ANY_SET_PARAMETER.....	27
5.3.1.2.2	ANY_GET_PARAMETER.....	28
5.3.1.2.3	ANY_OPEN_PIPE.....	28
5.3.1.2.4	ANY_CLOSE_PIPE.....	29
5.3.1.3	Administration commands	30
5.3.1.3.1	ADM_CREATE_PIPE.....	30
5.3.1.3.2	ADM_NOTIFY_PIPE_CREATED.....	30
5.3.1.3.3	ADM_DELETE_PIPE.....	30
5.3.1.3.4	ADM_NOTIFY_PIPE_DELETED.....	30
5.3.1.3.5	ADM_CLEAR_ALL_PIPE.....	31
5.3.1.3.6	ADM_NOTIFY_ALL_PIPE_CLEARED.....	31
5.3.2	Responses	31
5.3.2.1	Conformance requirements	31
5.3.2.2	Test case 1: response to unknown command	31
5.3.2.2.1	Test execution.....	31
5.3.2.2.2	Initial conditions	32
5.3.2.2.3	Test procedure	32
5.3.3	Events	32
5.3.3.1	Conformance requirements	32
5.3.3.2	Test case 1: reception of unknown events	32
5.3.3.2.1	Test execution.....	32
5.3.3.2.2	Initial conditions	32
5.3.3.2.3	Test procedure	32
5.4	GATES and subclauses	33
5.4.1	GATES	33
5.4.1.1	Conformance requirements	33
5.4.2	Management gates	33
5.4.2.1	Administration gates	33
5.4.2.1.1	Host controller administration gate	33
5.4.2.1.2	Host administration gate	37
5.4.2.2	Link management gate	38
5.4.2.2.1	Host controller link management gate	38
5.4.2.2.2	Host link management gate	38
5.4.2.3	Identity management gate	38
5.4.2.3.1	Local registry.....	38

5.4.2.3.2	Remote registry	40
5.4.2.4	Loop back gate	41
5.4.2.4.1	Conformance requirements.....	41
5.4.3	Generic gates	41
5.5	HCI procedures	41
5.5.1	Pipe management.....	41
5.5.1.1	Pipe creation.....	41
5.5.1.1.1	Conformance requirements.....	41
5.5.1.2	Pipe deletion.....	42
5.5.1.2.1	Conformance requirements.....	42
5.5.1.2.2	Test case 1: valid pipe deletion from host to host controller	42
5.5.1.3	Clear all Pipes	43
5.5.1.3.1	Conformance requirements.....	43
5.5.1.3.2	Test case 1: identity reference data when ETSI TS 102 613 is used	43
5.5.1.3.3	Test case 2: reception of ADM_CLEAR_ALL_PIPE - static pipes, dynamic pipes to host	43
5.5.2	Registry access.....	44
5.5.3	Host and Gate discovery	44
5.5.4	Session initialization	44
5.5.4.1	Conformance requirements	44
5.5.4.2	Test case 1: inhibited state	45
5.5.4.2.1	Test execution.....	45
5.5.4.2.2	Initial conditions	45
5.5.4.2.3	Test procedure	45
5.5.4.3	Test case 2: inhibited state, followed by subsequent successful identity check	46
5.5.4.3.1	Test execution.....	46
5.5.4.3.2	Initial conditions	46
5.5.4.3.3	Test procedure	46
5.5.4.4	Test case 3: initialization using all defined gates.....	46
5.5.4.4.1	Test execution.....	46
5.5.4.4.2	Initial conditions	46
5.5.4.4.3	Test procedure	47
5.5.5	Loop back testing	50
5.5.5.1	Conformance requirements	50
5.5.5.2	Test case 1: processing of EVT_POST_DATA	50
5.5.5.2.1	Test execution.....	50
5.5.5.2.2	Initial conditions	50
5.5.5.2.3	Test procedure	50
5.6	Contactless card emulation.....	50
5.6.1	Overview	50
5.6.1.1	Conformance requirements	50
5.6.1.2	Test case 1: RF gate of type A	51
5.6.1.2.1	Test execution.....	51
5.6.1.2.2	Initial conditions	51
5.6.1.2.3	Test procedure	51
5.6.1.3	Test case 2: RF gate of type B.....	51
5.6.1.3.1	Test execution.....	51
5.6.1.3.2	Initial conditions	51
5.6.1.3.3	Test procedure	51
5.6.1.4	Test case 3: RF gate of type F.....	52
5.6.1.4.1	Test execution.....	52
5.6.1.4.2	Initial conditions	52
5.6.1.4.3	Test procedure	52
5.6.2	Void.....	53
5.6.3	Gates.....	53
5.6.3.1	Void.....	53
5.6.3.2	Identity management gate	53
5.6.3.2.1	Conformance requirements.....	53
5.6.3.3	Card RF gates.....	53
5.6.3.3.1	Overview	53
5.6.3.3.2	Commands.....	53
5.6.3.3.3	Events and subclauses	53
5.6.3.3.4	Registry and subclauses.....	54

5.6.3.4	Card application gates	64
5.6.3.4.1	Overview	64
5.6.3.4.2	Commands	64
5.6.3.4.3	Events and subclauses	64
5.6.3.4.4	Registry	65
5.6.4	Procedures	65
5.6.4.1	Use of contactless card application	65
5.6.4.1.1	Conformance requirements	65
5.6.4.1.2	Test case 1: ISO/IEC 14443-3 Type A	66
5.6.4.1.3	Test case 2: ISO/IEC 14443-3 Type B	67
5.6.4.1.4	Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID}	68
5.6.4.1.5	Test case 4: ISO/IEC 14443-3 Type A	69
5.6.4.1.6	Test case 5: ISO/IEC 14443-3 Type B	70
5.6.4.1.7	Test case 6: Routing HCI events to RF Gate with MODE parameter enabled only - single card RF Gate	71
5.6.4.1.8	Test case 7: Routing HCI events to RF Gate with MODE parameter enabled only - multiple card RF Gates	72
5.6.4.2	Non ISO/IEC 14443-4 type A applications	73
5.6.4.2.1	Conformance requirements	73
5.6.4.2.2	Test case 1: Non ISO/IEC 14443-4 type A	73
5.6.4.2.3	Test case 2: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID}	74
5.6.4.3	Type B' RF technology	75
5.6.4.3.1	Conformance requirements	75
5.6.4.4	Type F RF technology	75
5.6.4.4.1	Conformance requirements	75
5.6.4.4.2	Test case 1: ISO/IEC 18092 Type F	76
5.6.4.4.3	Test case 2: RF off during ISO/IEC 18092 Type F commands handling	77
5.6.4.4.4	Test case 3: Routing EVT_FIELD_ON and EVT_FIELD_OFF to RF Gate with lowest G _{ID}	79
5.6.4.5	Update RF technology settings	80
5.6.4.5.1	Conformance requirements	80
5.6.4.6	Identity check	80
5.6.4.6.1	Conformance requirements	80
5.7	Contactless reader	81
5.7.1	Overview	81
5.7.1.1	Conformance requirements	81
5.7.2	Reader RF gates	81
5.7.2.1	Overview	81
5.7.2.2	Command	81
5.7.2.2.1	WR_XCHG_DATA	81
5.7.2.3	Registries	82
5.7.2.3.1	Type A reader RF gate	82
5.7.2.3.2	Type B reader RF gate	85
5.7.2.4	Events and subclauses	88
5.7.2.4.1	Events	88
5.7.2.4.2	EVT_READER_REQUESTED	88
5.7.2.4.3	EVT_END_OPERATION	88
5.7.2.4.4	EVT_READER_STATUS	89
5.7.2.5	Responses	89
5.7.2.5.1	Conformance requirements	89
5.7.3	Reader application gates	89
5.7.3.1	Overview	89
5.7.3.2	Command	89
5.7.3.2.1	Conformance requirements	89
5.7.3.3	Registry	90
5.7.3.3.1	Conformance requirements	90
5.7.3.4	Events and subclauses	90
5.7.3.4.1	Events	90
5.7.3.4.2	EVT_TARGET_DISCOVERED	90
5.7.4	Procedures	90
5.7.4.1	Use of contactless reader application	90
5.7.4.1.1	Conformance requirements	90
5.7.4.2	Contactless reader not available	91

5.7.4.2.1	Conformance requirements.....	91
5.7.4.3	Error management.....	91
5.7.4.3.1	Conformance requirements.....	91
5.8	Connectivity	91
5.8.1	Overview	91
5.8.2	Connectivity gate and subclauses	91
5.8.2.1	Connectivity gate	91
5.8.2.2	Commands	92
5.8.2.2.1	PRO_HOST_REQUEST	92
5.8.2.3	Events and subclauses	92
5.8.2.3.1	Events	92
5.8.2.3.2	EVT_CONNECTIVITY	92
5.8.2.3.3	Void.....	92
5.8.2.3.4	EVT_OPERATION_ENDED	92
5.8.2.3.5	EVT_TRANSACTION	93
5.8.2.4	Registry	93
5.8.2.4.1	Conformance requirements.....	93
5.8.3	Connectivity application gate and subclauses.....	94
5.8.3.1	Connectivity application gate.....	94
5.8.3.1.1	Conformance requirements.....	94
5.8.3.2	Commands	94
5.8.3.2.1	Conformance requirements.....	94
5.8.3.3	Events and subclauses	94
5.8.3.3.1	Events	94
5.8.3.3.2	EVT_STANDBY	94
5.8.3.4	Registry	94
5.8.3.4.1	Conformance requirements.....	94
5.8.4	Procedures.....	94
5.8.4.1	Use of connectivity gate.....	94
5.9	APDU Transport	95
5.9.1	Server APDU host (APDU gate).....	95
5.9.1.1	General	95
5.9.1.1.1	Conformance requirements.....	95
5.9.1.2	Commands	95
5.9.1.3	Events.....	95
5.9.1.3.1	Conformance requirements.....	95
5.9.1.4	Registry	96
5.9.1.4.1	Conformance requirements.....	96
5.9.1.5	State diagram for the APDU gate.....	96
5.9.1.5.1	Conformance requirements.....	96
5.9.2	Client APDU host (APDU application gate)	96
5.9.2.1	General	96
5.9.2.1.1	Conformance requirements.....	96
5.9.2.2	Commands	96
5.9.2.3	Events.....	97
5.9.2.3.1	Conformance requirements.....	97
5.9.2.4	Registry	97
5.9.2.5	State diagram for the APDU gate.....	97
5.9.2.5.1	Conformance requirements.....	97
Annex A (informative):	Bibliography.....	98
Annex B (informative):	Core specification version information.....	99
Annex C (informative):	Change history	100
History		102

Intellectual Property Rights

IPRs essential or potentially essential to the present document 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.

Foreword

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

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.

The present document is part 1 of a multi-part deliverable covering the Test specification for the Host Controller Interface (HCI), as identified below:

- Part 1: "Terminal features";**
- Part 2: "UICC features";
- Part 3: "Host Controller features".

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 test cases for the terminal relating to the Host Controller Interface (HCI) as specified in ETSI TS 102 622 [1].

The aim of the present document is to ensure interoperability between the terminal and the UICC independently of the respective manufacturer, card issuer or operator.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/88267d9c-d6d0-4005-84f9-4489b008060e/etsi-ts-102-695-1-v12.1.0-2016-10>

1 Scope

The present document covers the minimum characteristics which are considered necessary for the terminal in order to provide compliance to ETSI TS 102 622 [1].

The present document specifies the test cases for:

- the HCI core as described in the first part of ETSI TS 102 622 [1];
- the contactless platform as described in the second part of ETSI TS 102 622 [1].

Test cases for the UICC relating to ETSI TS 102 622 [1] and test cases for the Single Wire Protocol (SWP) covering both terminal and UICC are out of 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 SCP 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 <http://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 102 622: "Smart Cards; UICC - Contactless Front-end (CLF) Interface; Host Controller Interface (HCI)".
- [2] ETSI TS 102 613: "Smart Cards; UICC - Contactless Front-end (CLF) Interface; Part 1: Physical and data link layer characteristics".
- [3] ETSI TS 102 223: "Smart Cards; Card Application Toolkit (CAT)".
- [4] ISO/IEC 18092: "Information technology - Telecommunications and information exchange between systems - Near Field Communication - Interface and Protocol (NFCIP-1)".
- [5] ISO/IEC 14443-2: "Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 2: Radio frequency power and signal interface".
- [6] ISO/IEC 14443-3: "Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 3: Initialization and anticollision".
- [7] ISO/IEC 14443-4: "Identification cards - Contactless integrated circuit(s) cards - Proximity cards - Part 4: Transmission Protocol".
- [8] ISO/IEC 7816-4: "Identification cards - Integrated circuit cards - Part 4: Organization, security and commands for interchange".
- [9] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [10] ETSI TS 102 695-3: "Smart Cards; Test specification for the Host Controller Interface (HCI); Part 3: Host Controller features".

- [11] ISO/IEC 7816-3: "Identification cards - Integrated circuit cards - Part 3: Cards with contacts - Electrical interface and transmission protocols".
- [12] ETSI TS 102 221: "Smart Cards; UICC-Terminal interface; Physical and logical characteristics".

2.2 Informative 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 SCP document, a non specific reference implicitly refers to the latest version of that document in the same Release as the present document.

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 not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI TS 102 622 [1] and the following apply:

allowed error response code: response code which is not ANY_OK and which is allowed for the referenced command as specified in ETSI TS 102 622 [1]

non-occurrence RQ: RQ which has been extracted from ETSI TS 102 622 [1], but which indicates a situation which should never occur

NOTE: The consequence is that such RQs cannot be explicitly tested.

user: describes any logical or physical entity which controls the test equipment in a way that it is able to trigger activities of the DUT

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI TS 102 622 [1] and the following apply:

PIPE0	the static pipe connected to the link management gate of the device under test
PIPE1	the static pipe connected to the administration gate of the device under test

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 102 622 [1] and the following apply:

(U)SIM	(Universal) Subscriber Identity Module
AC	AntiCollision
AFI	Application Family Identifier
AID	Application IDentifier
ATQA	Answer To reQuest of type A
ATQB	Answer To reQuest of type B
ATS	Answer To Select

CLF	ContactLess Front-end
CLT	ContactLess Tunnelling
CRC	Cyclic Redundancy Code
DUT	Device Under Test
FFS	For Further Study
HCI	Host Controller Interface
HCUT	Host Controller Under Test
HS	Host Simulator
ICRx	Initial Condition Requirement (where x is a number)

NOTE: As used in the applicability table; see clauses 4.2 and 4.5.2.

LEN	LENgth
NAA	Network Access Application
PCD	Proximity Coupling Device
PICC	Proximity Integrated Circuit Card
PPS	Protocol and Parameter Selection
RATS	Request for Answer To Select
REQA	REQuest command, type A
RF	Radio Frequency
RO	Read-Only
RQ	Conformance requirement
RW	Read-Write
SAK	Select AcKnowledge
SDL	Specification and Description Language
SRx	Static Requirement (where x is a number)

NOTE: As used in the applicability table; see clauses 4.2 and 4.5.2.

TC	Test Case
TRx	Trigger requirement (where x is a number)
UID	Unique IDentification
WO	Write Only
WUPB	Wake-Up command for PICC type B

NOTE: As used in the applicability table; see clauses 4.2 and 4.5.2.

3.4 Void

Content of this clause has been moved to clause 3A.

3A Formats

3A.1 Format of the table of optional features

The columns in table 4.1 have the following meaning.

Column	Meaning
Option	The optional feature supported or not by the DUT.
Status	See clause 3.4.3.
Support	The support columns shall be filled in by the supplier of the implementation. The following common notations, defined in ISO/IEC 9646-7 [9], are used for the support column in table 4.1. Y or y supported by the implementation. N or n not supported by the implementation. N/A, n/a or - no answer required (allowed only if the status is N/A, directly or after evaluation of a conditional status).
Mnemonic	The mnemonic column contains mnemonic identifiers for each item.

3A.2 Format of the applicability table

The applicability of every test in table 4.2 is formally expressed by the use of Boolean expression defined in the following clause.

The columns in table 4.2 have the following meaning.

Column	Meaning
Clause	The "Clause" column identifies the clause containing the test case referenced in the "Test case number and description" column.
Test case number and description	The "Test case number and description" column gives a reference to the test case number (along with the corresponding description) detailed in the present document and required to validate the DUT.
Release	The "Release" column gives the Release applicable and onwards, for the corresponding test case.
Execution requirements	The usage of the "Execution requirements" column is described in clause 4.5.2.
Rel-x Terminal	For a given Release, the corresponding "Rel-x" column lists the tests required for a DUT to be declared compliant to this Release.
Support	The "Support" column is blank in the proforma, and shall be completed by the manufacturer in respect of each particular requirement to indicate the choices, which have been made in the implementation.

3A.3 Status and Notations

The "Rel-x" columns show the status of the entries as follows:

The following notations, defined in ISO/IEC 9646-7 [9], are used for the status column:

M	mandatory - the capability is required to be supported.
O	optional - the capability may be supported or not.
N/A	not applicable - in the given context, it is impossible to use the capability.
X	prohibited (excluded) - there is a requirement not to use this capability in the given context.
O.i	qualified optional - for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.
Ci	conditional - the requirement on the capability ("M", "O", "X" or "N/A") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." shall be used to avoid ambiguities.

References to items

For each possible item answer (answer in the support column) there exists a unique reference, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item number in the table. If there is more than one support column in a table, the columns shall be discriminated by letters (a, b, etc.), respectively.

EXAMPLE: 4.1/4 is the reference to the answer of item 4 in table 4.1.