

TS 101 204-3 V1.1.1 (1997-07)

Technical Specification

**Identification card systems;
Telecommunications IC cards and terminals;
Test methods and conformance testing for EN 726-4;
Part 3: Abstract Test Suite (ATS) and Implementation eXtra
Information for Testing (IXIT) proforma specification**



European Telecommunications Standards Institute

Reference

DTS/PTS-00204-3 (b5cr0icr.PDF)

Keywords

Card, testing, ATS, TTCN

ETSI Secretariat

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - 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

X.400

c= fr; a=atlas; p=etsi; s=secretariat

Internet

secretariat@etsi.fr
<http://www.etsi.fr>

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.

Contents

Intellectual Property Rights.....	4
Foreword	4
1 Scope.....	5
2 Normative references	5
3 Definitions and abbreviations	6
3.1 Definitions	6
3.2 Abbreviations.....	7
4 General aspects	8
4.1 Instruction on completion of tables.....	8
Annex A (normative): IXIT proforma	9
A.1 Identification summary	9
A.2 Abstract Test Suite (ATS) summary	9
A.3 Test laboratory	10
A.4 Client.....	11
A.5 SUT (terminal).....	11
A.6 Protocols.....	12
A.6.1 T = 0 protocol	12
A.6.2 T = 1 protocol	12
A.7 Base standard identification.....	14
A.8 Implementation options.....	14
A.8.1 Contact force.....	14
A.8.2 Sequences	14
A.8.2.1 Command sequence.....	14
A.8.2.2 Message display	15
A.8.2.3 User related data.....	16
A.8.2.4 Error displays	16
History.....	17

Intellectual Property Rights

ETSI has not been informed of the existence of any Intellectual Property Right (IPR) which could be, or could become essential to the present document. However, pursuant to the ETSI Interim IPR Policy, no investigation, including IPR searches, has been carried out. No guarantee can be given as to the existence of any IPRs which are, or may be, or may become, essential to the present document.

Foreword

This Technical Specification (TS) has been produced by the ETSI Project Pay Terminal and Systems (PTS). The present document was handed over to the CEN Secretariat in order to become an EN through the CEN approval process. ETSI has produced a set of TSs which are not a copy of any CEN published EN. The TSs are complete and consistent documents with references among themselves. It has been made clear in these TSs that they are contributions to the CEN work for publication as EN (after re-editing the references). Once published by CEN as EN, ETSI will withdraw its TS.

The present document is part 3 of a multi-part document covering Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-4, as identified below:

- Part 1: "Implementation Conformance Statement (ICS) proforma specification";
- Part 2: "Test Suite Structure and Test Purposes (TSS&TP)";
- Part 3: "Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT)".**

Overview of ETSI deliverables on EN 726 family

TS 101 200-1	"EN 726-1: Identification card systems; Telecommunications IC cards and terminals; Part 1: System overview".
TS 101 200-2	"EN 726-2: Identification card systems; Telecommunications IC cards and terminals; Part 2: Security framework".
TS 101 200-3	"EN 726-3: Identification card systems; Telecommunications IC cards and terminals; Part 3: Application independent card requirements".
TS 101 200-4	"EN 726-4: Identification card systems; Telecommunications IC cards and terminals; Part 4: Application independent card related terminal requirements".
TS 101 200-5	"EN 726-5: Identification card systems; Telecommunications IC cards and terminals; Part 5: Payment methods".
TS 101 200-6	"EN 726-6: Identification card systems; Telecommunications IC cards and terminals; Part 6: Telecommunications features".
TS 101 200-7	"EN 726-7: Identification card systems; Telecommunications IC cards and terminals; Part 7: Security module".

Overview of ETSI deliverables on EN 726 conformance testing family

TS 101 203-1	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-3; Part 1: Implementation Conformance Statement (ICS) proforma specification".
TS 101 203-2	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-3; Part 2: Test Suite Structure and Test Purposes (TSS&TP)".
TS 101 203-3	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-3; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) proforma specification".
TS 101 204-1	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-4; Part 1: Implementation Conformance Statement (ICS) proforma specification".
TS 101 204-2	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-4; Part 2: Test Suite Structure and Test Purposes (TSS&TP)".
TS 101 204-3	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-4; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) proforma specification".
TS 101 207-1	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-7; Part 1: Implementation Conformance Statement (ICS) proforma specification".
TS 101 207-2	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-7; Part 2: Test Suite Structure and Test Purposes (TSS&TP)".
TS 101 207-3	"Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-7; Part 3: Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) proforma specification".

1 Scope

The present document specifies the Abstract Test Suite (ATS) and Implementation eXtra Information for Testing (IXIT) proforma for *Application independent card requirements* defined in TS 101 200-4 [1].

ISO/IEC 9646, parts 1 to 5 [13], [14], [15], [16] and [17] are used as the basis for the test methodology.

2 Normative references

References may be made to:

- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
- b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or
- c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or
- d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] TS 101 200-4 version 1.2.1: "EN 726-4: Identification card systems; Telecommunications IC cards and terminals; Part 4: Application independent card related terminal requirements".
- [2] TS 101 200-3 version 1.2.1: "EN 726-3: Identification card systems; Telecommunications IC cards and terminals; Part 3: Application independent card requirements".
- [3] EN 27811-1: "Identification card systems - Recording technique - Part 1: Embossing".
- [4] EN 27816-1: "Identification cards - Integrated circuit(s) cards with cards contacts - Part 1: Physical characteristics".
- [5] EN 27816-1 (1989): "Identification cards - Integrated circuit(s) cards with contacts - Part 1: Physical characteristics".
- [6] EN 27816-2 (1989): "Identification cards - Integrated circuit(s) cards with contacts - Part 2: Dimensions and locations of the contacts".
- [7] EN 27816-3 (1989): "Identification cards - Integrated circuit(s) cards with contacts - Part 3: Electronic signals and transmission protocols".
- [8] EN 27816-3 (1992/A1) (1993): "Identification cards - Integrated circuit(s) cards with contacts - Part 3: Electronic signals and transmission protocols. Amendment 1: Protocol type T=1, asynchronous half duplex block transmission protocol".
- [9] EN 27816-3 (1992/A2)(1995): "Identification cards - Integrated circuit(s) cards with contacts - Part 3: Electronic signals and transmission protocols. Amendment 2: Revision of protocol type selection".
- [10] ISO/IEC 7816-4 (1995): "Information technology - Identification cards - Integrated circuit(s) cards with contacts - Part 4: Interindustry commands for interchange".
- [11] ISO/IEC 7816-5: "Identification cards; Integrated circuit(s) cards with contacts; Part 5: Numbering system and registration procedure for application identifiers".
- [12] ETS 300 406 (April 1995): "Methods for testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

- [13] ISO/IEC 9646-1 (1994): "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 1: General concepts".
- [14] ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite Specification".
- [15] ISO/IEC 9646-3: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 3: The Tree and Tabular Combined Notation (TTCN)".
- [16] ISO/IEC 9646-4: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 4: Test realization".
- [17] ISO/IEC 9646-5: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 5: Requirements on test laboratories and clients for the conformance assessment process".
- [18] ISO/IEC 9646-7 (1995): "Information technology - Open systems interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [19] CCITT No. 5 Recommendation V.3/ISO 646 (1983): "Information processing - ISO 7-bits coded characters set for information exchange".
- [20] TS 101 204-1: "Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-4; Part 1: Implementation Conformance Statement (ICS) proforma specification".
- [21] TS 101 204-2: "Identification card systems; Telecommunications IC cards and terminals; Test methods and conformance testing for EN 726-4, Part 2: Test Suite Structure and Test Purposes (TSS&TP)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

Abstract Test Suite (ATS): See ISO/IEC 9646-1 [13].

Implementation Conformance Statement (ICS): See ISO/IEC 9646-1 [13].

ICS proforma: See ISO/IEC 9646-1 [13].

Implementation eXtra Information for Testing (IXIT): See ISO/IEC 9646-1 [13].

Implementation Under Test (IUT): See ISO/IEC 9646-1 [13].

IXIT proforma: See ISO/IEC 9646-1 [13].

System Under Test (SUT): See ISO/IEC 9646-1 [13].

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AC	Access Condition(s)
ATC	Abstract Test Case
ATR	Answer To Reset
ATS	Abstract Test Suite
BCD	Binary Code Decimal
CAD	Card Accepting Device (this includes only the mechanics)
CHV	Card Holder Verification
CLA	CLAss
CS	Cyclic Structure
DF	Dedicated Files
EF	Elementary Files
GR	GRaphical form (TTCN)
IC	Integrated Circuit
ICS	Implementation Conformance Statement
ID	IDentifier
IFD	InterFace Device, used as short form for a terminal including CAD
INS	INStruction
IUT	Implementation Under Test
IXIT	Implementation eXtra Information for Testing
LFS	Linear Fixed Structure
LM	Logical Model
LVS	Linear Variable Structure
MAC	Message Authentication Code
MF	Master File
MP	Machine Processable form (TTCN)
PC	Physical Characteristics
PDU	Protocol Data Unit
RC	Return Code
SCS	System Conformance Statement
SP	Signals and Protocols
SUT	System Under Test
TC	Test Case
TP	Test Purposes
TR	TRansparent
TSS	Test Suite Structure
TTCN	Tree and Tabular Combined Notation

4 General aspects

No ATS will be produced for TS 101 200-4 [1] implementations. The tests are verbally described in TS 101 204-2 [21]. The IXIT defines additional parameters that are application dependant and are not covered by the ICS.

Depending on options supported by the IUT it is possible that only part of the test suite, defined in TSS&TP, is applicable. A test selection procedure needs to be performed to determine the applicability of a test to a particular IUT. Such selection shall be based on the Implementation Conformance Statement (ICS) and the Implementation eXtra Information for Testing (IXIT).

4.1 Instruction on completion of tables

The IXIT proforma request a number of aspects of the SUT to be revealed. These aspects are questioned in the form of tables that shall be completed.

The meaning of the table columns is defined as follows:

Item	A sequential number used for referencing
Description (e.g. file, type)	A descriptive text of the item under question
Status/suggested value	An indication of requested support. Apart from literal values the following codes apply: <ul style="list-style-type: none"> o Optional c Conditional Y Yes, available/Yes, can be created N Not available/Cannot be created - Not applicable
Support/value/supported value	A confirmation in the form of a code or value as defined for status
Version	For a keyfile it indicates the current version
Identifier	The file identifier in hexadecimal notation of a DF or EF

Annex A (normative): IXIT proforma

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the partial IXIT proforma in this annex so that it can be used for its intended purposes and may further publish the completed partial IXIT.

A.1 Identification summary

This clause is to be completed by the test laboratory.

IXIT number:

.....

Test laboratory name:

.....

Date of issue:

.....

Issued to:

.....

The test laboratory may include client or contract references in the identification summary.

A.2 Abstract Test Suite (ATS) summary

This clause is to be completed by the test laboratory.

System specification:

.....

ATS specification:

.....

Abstract test method(s):

.....

A.3 Test laboratory

This clause is to be completed by the test laboratory.

Test laboratory identification:

.....

.....

.....

.....

Accreditation status of the test service:

.....

Accreditation reference:

.....

Test laboratory manager:

.....

Test laboratory contact:

.....

Means of testing:

Means of testing may include any particular facilities such as: executable test suite and test equipment (e.g.; card probes, special cards).

.....

.....

.....

.....

.....

Instructions for completion:

The laboratory should include any special instructions necessary for the completion and return of the proforma by the client.

.....

.....

.....

.....

.....

A.4 Client

This clause is to be completed by the client.

Client identification:

.....
.....
.....
.....

Client test manager:

.....

Client contact:

.....

Test facilities required:

The client should record any particular facilities required for testing, if a range of facilities is provided by the test laboratory.

.....
.....
.....
.....
.....

A.5 SUT (terminal)

Name:

.....

Version:

.....

ICS reference for IUT:

.....

Limitations of the SUT:

The client may provide information explaining if any of the abstract test cases cannot be executed, e.g. implementation restriction.

.....

.....

.....

.....

.....

Environmental conditions:

The test laboratory may specify the normal environmental conditions applying to the laboratory to be used for testing (e.g. temperature, humidity). The client should specify any tighter environmental conditions that may be necessary for the correct operation of the SUT.

.....

.....

A.6 Protocols

In tables A.1 and A.2 the client identifies relevant information concerning any protocol in the SUT on which the IUT may depend.

Table A.1: Protocol used

Item	Protocol name	Status	Support
1	T = 0	o.1	
2	T = 1	o.1	

o.1: It is mandatory to support at least one of these items.

A.6.1 T = 0 protocol

Prerequisite: A.1/1 -- T = 0 protocol

The supplier of the implementation shall indicate which options of the T = 0 protocol specification are implemented.

No options for T = 0 on which IUT or test system depend are foreseen.

A.6.2 T = 1 protocol

Prerequisite: A.1/2 -- T = 1 protocol

The supplier of the implementation shall indicate which options of the T = 1 protocol specification are implemented.

Table A.2: T = 1 protocol options

Item	Option	Status/ Suggested value	Support/ Supported value
1	Maximum block size	≥ 32	
2	Chaining mechanism	0	
3	Maximum command size	≥ 32	
4	WTX request	0	
5	IFS request	0	
6	Error recovery by R-blocks	0	
7	Error recovery by S-blocks	0	

A.7 Base standard identification

This clause is completed by the test laboratory and client in consultation.

Specification reference:

Version:

ICS reference:

The ICS reference should reference a completed ICS which is conformant with the ICS proforma contained in TS 101 204-1 [20].

A.8 Implementation options

A.8.1 Contact force

Table A.3: Contact force

Item	Requirement	Value
1	Minimum contact force to ensure proper contact in N	

A.8.2 Sequences

A.8.2.1 Command sequence

Table A.4: Command sequence

Item	Requirement	Value
1	<p>Give any operation (O) or sequence thereof that always issues a sequence of commands (C), and these commands.</p> <p>For example:</p> <p>(O) Insert card (O) Lift Handset (C) SELECT MF (C) SELECT EF_{LANG} (C) READ BINARY (C)</p>	<hr/> <hr/> <hr/> <hr/> <hr/>
2	<p>Give the operation with the shortest turn-around time (Time between reception and sending)</p>	<hr/> <hr/> <hr/>

A.8.2.2 Message display

Table A.5: Display a specific message

Item	Requirement	Value
1	Specify the operation that leads to the display "Insert your card" For example: (O) Lift Handset	_____ _____
2	Specify the operation that leads to the display "Remove your card"	_____ _____
3	Specify the operation that leads to the display "Card refused"	_____ _____
4	Specify the operation that leads to the display "Re-Insert your card"	_____ _____
5	Specify the operation that leads to the display "Enter your Card Holder Verification number"	_____ _____
6	Specify the operation that leads to the display "Wrong Card Holder Verification number"	_____ _____
7	Specify the operation that leads to the display " Enter your old Card Holder Verification number"	_____ _____
8	Specify the operation that leads to the display " Re-enter your Card Holder Verification number"	_____ _____
9	Specify the operation that leads to the display "Service locked"	_____ _____
10	Specify the operation that leads to the display "Service not available"	_____ _____
11	Specify the operation that leads to the display "Terminal out of service"	_____ _____

A.8.2.3 User related data

Table A.6: Display user related data

Item	Requirement	Value
1	Specify the operation that reveals user related data (e.g. phone number)	_____ _____
2	Specify the operation that suppresses the display of user related data	_____ _____

A.8.2.4 Error displays

Table A.7: Display specific error messages

Item	Requirement	Value
1	Under which circumstances is the following error message displayed. "Card malfunction, contact application provider"	_____ _____
2	Under which circumstances is the following error message displayed. "Card blocked, contact application provider"	_____ _____
3	Under which circumstances is the following error message displayed. "Wrong CHV"	_____ _____

History

Document history		
V1.1.1	July 1997	Publication