

Summary of SC17 standards

Introduction

Standards make a great contribution to most aspects of our lives, although very often that contribution is not seen. It is when there is an absence of standards that their importance is brought home. For example, as buyers or users of products, we soon notice when they turn out to be of poor quality, do not fit, are incompatible with equipment we already have, are unreliable or dangerous. When products meet our expectations, we tend to take it for granted. We are usually unaware of the role played by standards in raising levels of quality, safety, reliability, efficiency and interchangeability as well as in providing such benefits at an economical cost.

ISO (International Organization for Standardization) is the world's largest developer of standards. Although ISO's principal activity is the development of technical standards, ISO standards also have important economic and social repercussions. ISO standards make a positive difference, not just to engineers and manufacturers for whom they solve basic problems in production and distribution, but to society as a whole.

The International Standards that ISO develops are very useful. They are useful to

- industrial and business organizations of all types,
- governments and other regulatory bodies,
- trade officials,
- conformity assessment professionals,
- suppliers and customers of products and services in both public and private sectors,
- to people in general in their roles as consumers and end users.

ISO standards contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. They make trade between countries easier and fairer. They provide governments with a technical base for health, safety and environmental legislation. They aid in transferring technology to developing countries. ISO standards also serve to safeguard consumers and users of products and services as well as to make their lives simpler.

When things go well (for example when systems, machinery and devices work well and safely) it is often because they conform to standards. The organization responsible for many thousands of these standards that benefit society worldwide is ISO.

Every working day of the year, an average of eleven ISO meetings are taking place somewhere in the world. In between meetings, the experts continue the standards' development work by correspondence. Increasingly, their contacts are made by electronic means and some ISO technical bodies have already gone over entirely to electronic working, which speeds up the development of standards and reduces travel costs.

For more information about the structure and organization of ISO visit their web site at <http://www.iso.org>. Information about the structure of ISO is found under the heading ISO Structure at the left side. Information about SC17 can be found by selecting Technical Committees, then JTC1, then JTC1/SC17, or at the SC17 web site <http://www.sc17.com/>.

Summary of SC17 standards

1 Scope

This document gives the overview of standards and test methods related to ID cards and other information carrying documents, as well as the process for development and revision of such standards within SC17 *Cards and personal identification* (SC17 is one of many subcommittees within JTC1). It lists details about the various working groups and standards, ID card/document sizes, common terms used, the basic process steps for standards development and revision, and text from the scopes of these standards.

The ISO/IEC web site contains complete information about the standards development and revision process, and also offers the listed standards for purchase.

NOTE This document will be revised on a regular basis. Version control will be through the use of the WG1 document number and a version number found in the header. Larger numbers will be more current, the first version published was v.03 N1416. Please refer revisions, corrections and questions to <denny_warwick@datacard.com>.

2 ISO/IEC and SC17 organization

The ISO (International Organization for Standardization) and the IEC (International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental in liaison with ISO and IEC, also take part in the work. Information technology standardization has some unique requirements as a consequence of the pace of innovation. Therefore, ISO and IEC have established a joint technical committee, ISO/IEC JTC1, Information Technology. ISO/IEC JTC1 has accordingly developed and maintains its own procedures.

JTC1 comprises of some 19 sub-committees covering the area of Information Technology. Sub-Committee 17 (SC17) has responsibility for developing standards for Identification Cards and personal identification.

The scope for ISO/IEC JTC1/SC17 Cards and Personal identification is:

Standardization in the area of:

- a) identification and related documents,
- b) cards, and
- c) devices associated with their use in inter-industry applications and international interchange.

Further information about SC17 can be found at their web site: <http://www.sc17.com/>

3 SC17 working groups

Work on standards within ISO and SC17 is organized into technical committees and is carried out in working groups under these technical committees. Both the technical committees and the working groups are made up of representatives (referred to at "experts" within ISO) from industrial, technical and business sectors that have an interest in or a need for the standards. These experts may be joined by others with relevant knowledge, such as representatives of government agencies, testing laboratories, consumer associations, environmentalists, and so on.

The experts participate as national delegations, chosen by the ISO national member institute for the country concerned. These delegations are required to represent not just the views of their organization, but of other stakeholders too. According to ISO rules, the member institute is expected to take account of the views of the range of parties interested in the standard under development and to present a consolidated, national consensus position to the technical committee.

In general, most of the technical work is carried out in working groups made up of members as described above. Each working group has officers such as a convenor, secretary, and project editors for word processing revision of standards. The technical representatives and officers are all volunteer positions, that is ISO/IEC does not fund their activities for standards work.

Table 1 — SC17 working groups

Working group	Name Short description of scope of work	Convenor
WG1	<i>Physical Characteristics and Test Methods</i> Physical characteristics, embossing, magnetic stripe, and test methods for conformance and card durability	David May
WG3	<i>Machine Readable Travel Documents</i> To prepare a revised text of ISO 7501; monitor the standards referenced; consider and define standards for machine readable travel documents and related machine readable cards (see Recommendation 3 of N 379); co-ordination of JTC1 liaison with ICAO for maintenance of ICAO 9303, machine readable passports and related ICAO documents	Joel Shaw
WG4	<i>Integrated Circuit Cards with Contacts</i> To define specifications related to the Integrated Circuits Card with Contacts within the area of SC17	Rene Beltrando
WG5	<i>Issuer Identification Numbers (IINs)/Application Provider Identifiers (RIDs)</i> To serve as the RMG for ISO/IEC 7812 Parts 1 & 2 and ISO/IEC 7816-5. Responsibility for maintenance of ISO/IEC 7812 Parts 1 & 2. Responsible for Registration of Application providers under ISO/IEC 7816-5. To liaise, when necessary with Working Group 4 on matters relating to ISO/IEC 7816-5.	Freda Bennett
WG7	<i>Financial Transaction Cards</i> To revise ISO/IEC 7813 and its amendment 1 in accordance with SC17 resolution 365 and to carry out any further revisions as necessary	Jim Riddell
WG8	<i>Contactless Integrated Circuit(s) cards</i> cards The scope of WG8 is to develop standards for the Contactless Integrated Circuit(s) Card which do not preclude the incorporation of other Standard technologies on the card.	Michael Hegenbarth
WG9	<i>Optical Memory Cards</i> Enhanced OMC technologies enabling more data capacity, fast access and high reliability based on existing standard technologies or new technologies. Software or programming interface for accessing OMC data contents. (Host application program will be able to use this interface for easier implementation. Access method software of OMCs application program.) Physical assignment and /or logical assignment for OMC media use. Logical data structures in OMCs data (file structure etc).	Ron Field
WG10	<i>Motor Vehicle Drivers Licence and Related Documents</i> Draft Terms of Reference: Standardization in the field of Motor vehicle driver licences.	Geoffrey G. Slagle
WG11	<i>Biometrics</i> Interoperability for interindustry and government applications using personal identification technologies, e.g. biometrics. Excludes generic biometrics as undertaken by SC37.	Michael Hegenbarth

4 Terms and language

Some of the more common ISO/IEC terms and abbreviations are given. A complete description is given in ISO/IEC directives.

Table 2 — Common terms

Term	Definition
CD	Committee Draft
DIS	Draft International Standard (only for ISO documents, not used for ISO/IEC)
DL	Driving License
FCD	Final Committee Draft
FDIS	Final Draft International Standard
JCG	Joint Coordination Group
JTAB	Joint Technical Advisory Board
JTC	Joint Technical Committee
JWG	Joint Working Group
MRTD	Machine Readable Travel Document
NP	New work item Proposal
PAS	Publicly Available Specification
PT	Project Team
PWI	Preliminary Work Item
SC	Subcommittee
TC	Technical Committee
TD	Travel Document
TF	Task Force (similar to and usually a subset of the WG working on specific tasks)
TR	Technical Report
WD	Working Draft
WG	Working Group (consists of individual technical experts)

Specific language forms are used to convey various ideas within ISO/IEC standards. Since the normal use of these words can carry different meaning depending on context, ISO/IEC has given a more specific definition for the use of these words.

Table 3 — Language forms

Verbal forms for standards		
Type of statement	Positive form	Negative form
Absolute requirement	shall	shall not
Recommendation	should	should not
Permission	may	need not
Possibility/capability	can	cannot

NOTE In procedures (such as test method procedures) the passive form may be used but the active form is preferred, e.g. "switch on the power supply" is preferred to "the power supply shall be switched on".

5 Process for development and revision

5.1 Work flow

In general, national delegations of experts of a technical committee or working group meet to discuss and debate until they reach consensus on a draft agreement. This is then circulated to ISO's membership as a whole for comment and balloting. Many members have public review procedures for making draft standards known and available to interested parties and to the general public. The delegation then takes account of any feedback they receive in formulating their position for the next level of comment and balloting. At the last stage, if the voting is in favor of the document it is then published as an International Standard.

Work on new standards or revisions of existing standards follows the steps below starting with preliminary and ending in publication. Technical changes may be made up until the approval of FCD, but after this point only editorial changes are allowed. If technical changes are needed, then the work item is returned to an earlier stage.

In some cases a quicker process called fast track is available. This may be used when all, or nearly all, of the information needed to develop or revise a standard is available at the start of work. An example would be converting a national body standard from a specific country into an ISO/IEC standard. Much of the time saving benefit occurs as a result of fewer voting steps.

Table 4 — Process steps for development and revision

Project stage	Term	Associated document	Approval of stage, by	Notes
Preliminary	PWI	Preliminary work item	No	
Proposal	NP	New work item proposal	Yes, SC17	
Preparatory	WD	Working draft(s)	No	Eliminate for Fast Track
Committee	CD	Committee draft(s)	Yes, SC17	Eliminate for Fast Track
Final Committee	FCD	Committee draft(s)	Yes, SC17	Eliminate if no negative votes to CD
Enquiry	DIS	Enquiry draft	Yes, JTC1	Not used for ISO/IEC documents
Approval	FDIS	Final draft international standard	Yes, JTC1	Eliminate if no negative votes to DIS
Publication	ISO/IEC	International standard	No	

5.2 Status of documents and standards ISO web site

To find the status of a particular document go to the ISO web site <http://www.iso.org>, and in the area "Products and Services" click on "International Standards". In the blue section at the top click on "Extended Search" then type in the number of the standard and fill in any other information needed for the search. Then in the bottom section in the left column check boxes for both "Catalogue" (published standards) and "Technical programme" (standards still under development), and proceed with search.

5.3 Revisions

In general, most standards are reviewed and revised by the working groups every 5 years. Some standards are considered "stabilized" meaning that the standard has ongoing validity and effectiveness but is mature, and in so far as can be determined will not require further maintenance of any sort. Therefore, stabilized standards are only reviewed and revised if a request is made to do so (no 5 year review). To find out if a standard is stabilized, go to the following web site http://isotc.iso.org/livelink/livelink/fetch/2000/2489/Ittf_Home/ITTF.htm. On the left hand side there is a list which includes Stabilized Standards and half way down that is a link to the list.

6 Size of ID card or information carrying document

The item that carries holder information may be called a card, ticket, or document depending on the standard that defines the item. Table 5 gives the basic dimensions and thickness for the various documents. The document size MRV-A is intended to fit inside a TD-3 size document. The document size TFC-5 has 2 sizes listed: the longer one has with a stub at the end for attaching multiple documents together (for example, flight coupons).

Cards and documents listed with the same nominal dimensions may have different tolerances.

Table 5 — Sizes of cards and documents

Standard	Thickness nominal (mm)	Nominal size, length x width (dimensions in mm)						
		25 x 15	66 X 30	85.6 x 53.98	105 x 74	120 x 80	125 x 88	187 x 83 203 x 83
ISO/IEC 7810	0,76	ID-000	na	ID-1	ID-2	na	ID-3	na
ISO/IEC 7501	0,25 to 1,25	na	na	TD-1	TD-2	MRV-A	TD-3	na
ISO/IEC 15457	0,25	na	TFC-0	TFC-1	TFC-2	na	TFC-3	TFC-5

7 SC17 standards

Standards and related information is given below in Table 6. Full text for the scope of each standard is given in 10.

In some cases, the standard number listed may only be at some stage of work and not yet an ISO/IEC standard. Current status and publication dates can be found on at the ISO web site.

In the Table 6, the column headings have the following meaning (NA is not applicable):

Base Standard (ISO/IEC)	The ISO/IEC standard number. In some cases, the number listed may only be at some stage of work and not yet an ISO/IEC standard. Current status of revision and publication dates can be found on at the ISO web site.
Title	The full title of the standard.
WG	The working group responsible for maintenance of the standard.
Basic characteristics...	Any standard(s) listed here defines some general requirements for the base standard, for example, card size. In many cases, the base standard will require conformance to the basic characteristics standard. In the case of ISO/IEC 7501 series, the base standard is very short with only introductory remarks and then refers to the ICAO series for all requirements. Standards are ISO/IEC unless otherwise noted.
Test methods	Test method(s) developed within SC17 for verifying compliance to requirement(s) in the base standard. ISO/IEC general test methods that may apply to many standards (for example, surface roughness) are cited with the base standard and are not been listed here. The test method documents listed here have many such references. UD is under development.
Document sizes	Basic sizes of cards or documents that are defined by the base standard.

Table 6 — SC17 standards

Base Standard (ISO/IEC)	Title	WG	Basic characteristics defined by	Test methods	Document sizes
7501-1	Identification cards – Machine readable travel documents – Part 1: Machine readable passport	WG3	ICAO 9303-1	NA	TD-1, TD-2, TD-3
7501-2	Identification cards – Machine readable travel documents – Part 2: Machine readable visas	WG3	ICAO 9303-2	NA	MRV-A, TD2
7501-3	Identification cards – Machine readable travel documents – Part 3: Official travel documents	WG3	ICAO 9303-3	NA	
7810	Identification cards – Physical characteristics	WG1	NA	10373-1	ID-000, ID-1/000, ID-1, ID-2, ID-3
7811-1	Identification cards – Recording technique – Part 1: Embossing	WG1	7810	10373-1	ID-1
7811-2	Identification cards – Recording technique – Part 2: Magnetic stripe-low coercivity	WG1	7810	10373-1, 10373-2	ID-1
7811-6	Identification cards – Recording technique – Part 6: Magnetic stripe-high coercivity	WG1	7810	10373-1, 10373-2	ID-1
7811-7	Identification cards – Recording technique – Part 7: Magnetic stripe-high coercivity high density	WG1	7810	10373-1, 10373-2	ID-1, ID-2, ID-3
7812-1	Identification cards – Identification of issuers – Part 1: Numbering system	WG5			
7812-2	Identification cards – Identification of issuers – Part 2: Application and registration procedures	WG5			

Table 6 — SC17 standards

Base Standard (ISO/IEC)	Title	WG	Basic characteristics defined by	Test methods	Document sizes
7813	Financial transaction cards	WG7	7810		ID-1
7816-1	Identification cards – Integrated circuit cards – Part 1: Cards with contacts – Physical characteristics	WG4	7810	10373-3	
7816-2	Identification cards – Integrated circuit cards – Part 2: Cards with contacts – Dimensions and location of the contacts	WG4		10373-3	
7816-3	Identification cards – Integrated circuit cards – Part 3: Cards with contacts – Electrical interface and transmission protocols	WG4		10373-3	
7816-4	Identification cards – Integrated circuit cards – Part 4: Organization, security and commands for interchange	WG4		10373-3	
7816-5	Identification cards – Integrated circuit cards – Part 5: Registration of application providers	WG4		10373-3	
7816-6	Identification cards – Integrated circuit cards – Part 6: Interindustry data elements for interchange	WG4		10373-3	
7816-7	Identification cards – Integrated circuit cards – Part 7: Commands for Structured Card Query Language (SCQL)	WG4		10373-3	
7816-8	Identification cards – Integrated circuit cards – Part 8: Commands for security operations	WG4		10373-3	
7816-9	Identification cards – Integrated circuit cards – Part 9: Commands for card management	WG4		10373-3	
7816-10	Identification cards – Integrated circuit cards – Part 10: Cards with contacts – Electrical interface for synchronous cards	WG4		10373-3	
7816-11	Identification cards – Integrated circuit cards – Part 11: Personal verification through biometric methods	WG4		10373-3	
7816-12	Identification cards – Integrated circuit cards – Part 12: Cards with contacts – USB electrical interface and operating procedures	WG4		10373-3	
7816-13	Identification cards – Integrated circuit cards – Part 13: Commands for application management in multi-application environment	WG4		10373-3	
7816-14	Does not exist	WG4		10373-3	
7816-15	Identification cards – Integrated circuit cards – Part 15: Cryptographic information application	WG4		10373-3	
10536-1	Identification cards – Contactless integrated circuit(s) cards – Part 1: Physical characteristics.	WG8	7810	10373-3	
10536-2	Identification cards – Contactless integrated circuit(s) cards – Part 2: Dimensions and location of coupling areas	WG8		10373-3	
10536-3	Identification cards – Contactless integrated circuit(s) cards – Part 3: Electronic signals and reset procedures	WG8		10373-3	
11693	Identification cards – Optical memory cards.	WG9		10373-5	
11694-1	Identification cards – Optical memory cards and devices – Linear recording method - Part 1: Physical characteristics.	WG9		10373-5	
11694-2	Identification cards – Optical memory cards and devices – Linear recording method – Part 2: Dimensions and location of the accessible optical area.	WG9		10373-5	
11694-3	Identification cards – Optical memory cards and devices – Linear recording method – Part 3: Optical properties and characteristics.	WG9		10373-5	
11694-4	Identification cards – Optical memory cards and devices – Linear recording method – Part 4: Logical data structures.	WG9		10373-5	
14443-1	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 1: Physical characteristics	WG8	7810	10373-6	
14443-2	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 2: Radio frequency interface	WG8		10373-6	
14443-3	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 3: Initialization and anticollision	WG8		10373-6	
14443-4	Identification cards – Contactless integrated circuit(s) cards – Proximity integrated circuit(s) cards – Part 4: Transmission protocol	WG8		10373-6	

Table 6 — SC17 standards

Base Standard (ISO/IEC)	Title	WG	Basic characteristics defined by	Test methods	Document sizes
15457-1	Identification cards – Thin flexible cards – Part 1: Physical characteristics	WG1	NA	15457-3	TFC-0, TFC-1, TFC-2, TFC-3, TFC-5
15457-2	Identification cards – Thin flexible cards – Part 2: Magnetic recording techniques	WG1	15457-1 7811-2 7811-6	15457-3	TFC-0, TFC-1, TFC-5
15693-1	Identification cards – Contactless integrated circuit(s) cards – Vicinity cards – Part 1: Physical characteristics	WG8	7810	10373-7	
15693-2	Identification cards – Contactless integrated circuit(s) cards – Vicinity cards – Part 2: Air interface and initialization	WG8		10373-7	
15693-3	Identification cards – Contactless integrated circuit(s) cards – Vicinity cards – Part 3: Protocols	WG8		10373-7	
18013-1	Identification cards – Motor Vehicle Licence – Part 1: Physical characteristics and Basic Data Set	WG10	7810	10373-1	ID-1
18013-2	Identification cards – Motor Vehicle Licence – Part 2: Machine readable technologies	WG10	7811-1 7811-2 7811-6	10373-2	
18013-3	Identification cards – Motor Vehicle Licence – Part 3: Biometrics, Image Processing and Cryptography	WG10			
20060	Information technology – Open terminal architecture (OTA) specification – Virtual machine specification	WG4	??	NA	
24727-1	Identification cards-Integrated circuit cards-Programming interfaces-Part 1:Architecture	WG4			ID-1
24727-2	Identification cards-Integrated circuit cards-Programming interfaces-Part 2: <i>Generic card edge</i>	WG4		UD	
24727-3	Identification cards-Integrated circuit cards-Programming interfaces-Part 3: <i>Application Interface</i>	WG4		UD	

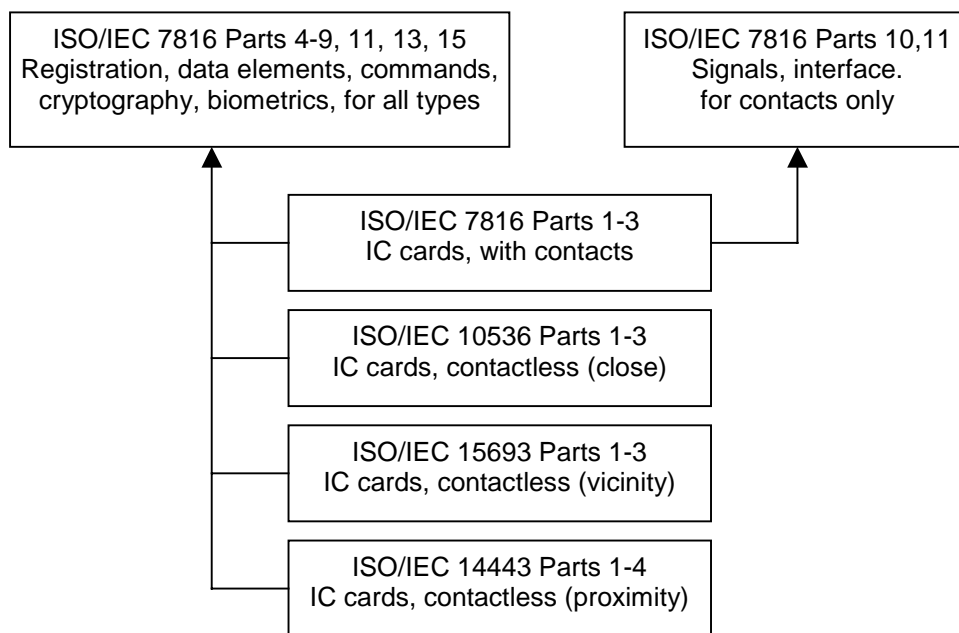


Figure 1 — Relationship between various IC card standards

The following standards are no longer being updated, have been withdrawn, or have been abandoned on the date shown.

Table 7 — SC17 Withdrawn or abandoned standards

Base Standard (ISO/IEC)	Title	WG	Date	Notes
7811-3	Identification cards – Recording technique – Part 3: Location of embossed characters on ID-1 cards	WG1	Aug 02	Requirements have been included in the standard that defines embossing (ISO/IEC 7811-1)
7811-4	Identification cards – Recording technique – Part 4: Location of read-only magnetic track – Tracks 1,2	WG1	Feb 01	Requirements have been included in the standard that defines magnetic requirements (ISO/IEC 7811-2 and -6)
7811-5	Identification cards – Recording technique – Part 5: Location of read-write magnetic track – Track 3	WG1	Feb 01	Requirements have been included in the standard that defines magnetic requirements (ISO/IEC 7811-2 and -6)
7816-3 AM3	Identification cards - Integrated circuit(s) cards with contacts –Part 3: Electronic signals and transmission protocols – AM3 -Electrical characteristics and conventions for ICCs with USB interface	WG4	Jul 02	Result of NP for USB Interface, 7816-2/AM1 This amendment is now 7816-12
7816-13	Identification cards – Integrated circuit(s) cards with contacts – Part 13: Registration of integrated circuit manufacturers	WG4	Jul 02	Formerly this was 7816-6 AM1. The registered part is a standing document on the ISO web site. The procedures are now in ISO/IEC 7816-6. Work is being carried out on a new Part 13 that so far has not been published.
10373	Test methods	WG1	Feb 02	Replaced by 10373 with various parts that deal with specific technologies
10373-4	Test methods - Contactless integrated circuit cards	WG1	Oct 01	Deleted from program of work
10536-4	Identification cards - Contactless integrated circuit(s) cards - Part 4: Answer to reset and transmission protocols	WG8	Oct 01	Deleted from program of work
14443-2 AM1	Identification cards - Contactless integrated circuit(s) cards - Proximity integrated circuit(s) cards - Part 2: Radio frequency interface Amendment 1: Additional optional signal interface types	WG8	Apr 02	Abandoned
14443-5	Identification cards - Contactless integrated circuit(s) cards - Proximity integrated circuit(s) cards - Part 5: Compatibility Guidelines	WG8	Dec 01	Deleted from work program
15693-4	Identification cards - Contactless integrated circuit(s) cards - Extended command set and security functions	WG8	Dec 01	Deleted from work program

8 SC17 test methods

Test methods give methods and apparatus to be used for verification of compliance to the requirements in a particular standard. Development of test methods is a cooperative effort between the working group responsible for the standard and WG1. The working group responsible for the standard normally gives technical details for the test while WG1 defines the format and acts as project editor. In some cases, an existing test is modified to be more generic rather than add a new test, or the new test may be changed to make use of an existing apparatus.

In Table 8, the WG listed is the one responsible for the base standard that the tests are needed for. The scope for each test method document is found in 8.

Table 8 — SC17 test methods

Base Standard (ISO/IEC)	Title	WG
10373-1	Identification cards – Test methods – Part 1: General characteristics	WG1
10373-2	Identification cards – Test methods – Part 2: Cards with magnetic stripes	WG1
10373-3	Identification cards – Test methods – Integrated circuit cards – Part 3: Integrated circuit(s) cards with contacts	WG4
10373-4	Deleted from program of work in SC17	---
10373-5	Test methods – Optical memory cards	WG9
10373-6	Test methods – Proximity cards	WG8
10373-7	Test methods – Vicinity cards	WG8
15457-3	Identification cards – Thin flexible cards – Part 3: Test methods	WG1

9 Use of standards in product specifications

Figure 2 shows how standards can form the foundation for building a product specification.

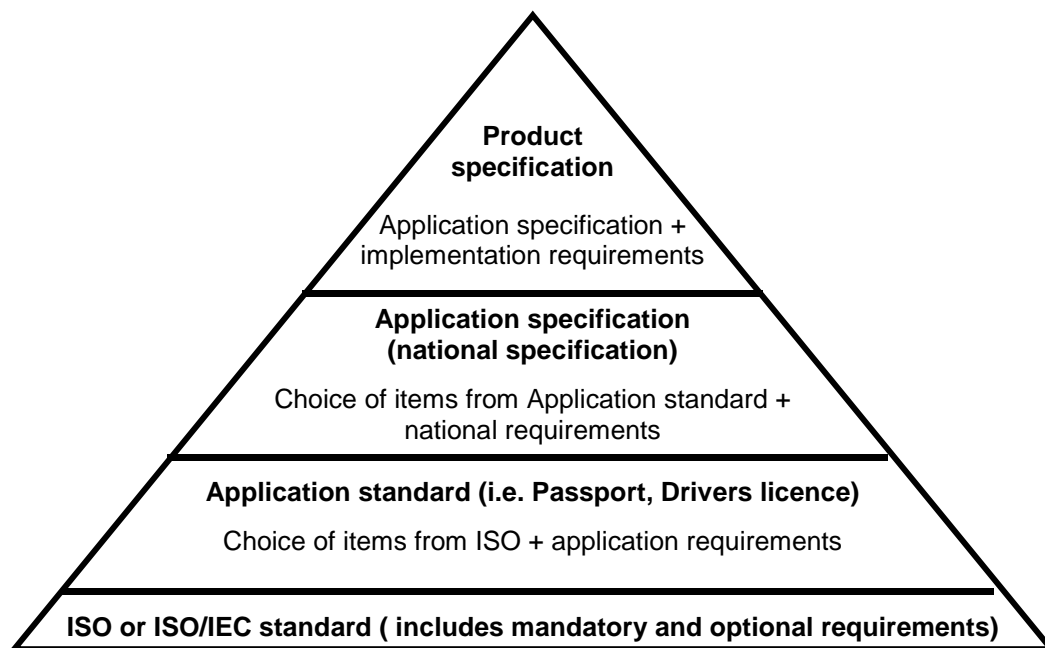


Figure 2 — ISO standards relationship to product specifications

10 Scopes

The following text (including any notes) is taken from the scope clause of each standard and test method. Scopes have been taken directly from each standard without modification.

10.1 ISO/IEC 7501-1

The current edition of the following document is adopted as International Standard ISO/IEC 7501-1: 1997: International Civil Aviation Organization (ICAO), Doc 9303 Part 1 - Machine Readable Passports, Section III, Technical Specifications.

This International Standard specifies the form and provides guidance on the construction of machine readable passports, in particular in relation to the sections of the document containing details of the holder in a form which is both visual and machine readable.

ICAO Doc 9303 Part 1 is maintained by a Technical Advisory Group on Machine Readable Travel Documents (TAG/MRTD). ISO/IEC JTC1 has provided liaison during the TAG/MRTD meetings on Doc 9303 Part 1 and considered the technical specifications to which the endorsement notice applies.

Information on the TAG/MRTD for ICAO 9303 Part 1 may be obtained on application to the Secretary General, International Civil Aviation Organization, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

NOTE Copies of ICAO Doc 9303 Part 1 may be obtained from the International Civil Aviation Organization, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

Technical Specifications defined in Section III of ICAO Doc 9303 Part 1 refers to a number of International Standards. Specifically,

ISO 1073-2 : 1 976, Alphanumeric character sets for optical recognition - Part 2: Character set OCR-B - Shapes and dimensions of the printed image.

ISO 1831 : 1980, Printing specifications for optical character recognition.

ISO/IEC 7810: 1995, Identification cards, Physical characteristics.

ISO 8601: 1988, Data elements and interchange formats - Information interchange - Representation of dates and times.

ISO 3166: 1993, Codes for the representation of names of countries.

Additional information. This International Standard does not adopt Sections I and II or attachments A and B of ICAO Doc 9303 Part 1.

Section I is "Introduction"

Section II is "General considerations"

Attachment A is for information on material and production methods.

Attachment B is historical background to the development of the machine readable passport.

10.2 ISO/IEC 7501-2

The current edition of the following document is adopted as International Standard ISO/IEC 7501-2: 1997: International Civil Aviation Organization (ICAO), Machine Readable Travel Documents, (Doc 9303 Part 2), Machine Readable Visas, Sections III and IV, Technical Specifications.

This International Standard specifies the form and provides guidance on the construction of machine readable visas, in particular in relation to the sections of the document containing details of the holder in a form which is both visible and machine readable.

It is based on a standard established by the International Civil Aviation Organization Doc 9303 Part 2.

ICAO Doc 9303 Part 2 is maintained by a Technical Advisory Group on Machine Readable Travel Documents (TAG/MRTD). ISO/IEC JTC1 has provided liaison during the TAG/MRTD meetings on Doc 9303 Part 2 and considered the technical specifications to which the endorsement notice applies.

Information on the TAG/MRTD for ICAO 9303 Part 2 may be obtained on application to the Secretary General, International Civil Aviation Organization, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

NOTE Copies of ICAO Doc 9303 Part 2 may be obtained from the International Civil Aviation Organization, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

Technical Specifications defined in Sections III and IV of ICAO Doc 9303 Part 2 refers to a number of International Standards. Specifically,

ISO 1073-2: 1976, Alphanumeric character sets for optical recognition - Part 2: Character set OCR-B - Shapes and dimensions of the printed image.

ISO 1831: 1980, Printing specifications for optical character recognition.

ISO/IEC 7810: 1995, Identification cards, Physical characteristics.

ISO 8601: 1988, Data elements and interchange formats - Information interchange - Representation of dates and times.

ISO 3166: 1993, Codes for the representation of names of countries.

Additional information. This International Standard does not adopt Sections I and II of ICAO Doc 9303 Part 2.

Section I is "Introduction"

Section II is "General considerations"

10.3 ISO/IEC 7501-3

The current edition of the following document is adopted as International Standard ISO/IEC 7501-3: 1997: International Civil Aviation Organization (ICAO), Doc 9303 Part 3 - Size-1 and Size-2 Machine Readable Official Travel Documents, Sections III and IV, Technical Specifications.

This International Standard specifies generic formats and minimum data elements for visual inspection and machine reading of official travel documents in the ID-1 and ID-2 card formats containing a single form of machine readable data (optical character recognition, OCR), which may at the option of Governments, be accepted in lieu of a passport as defined in Annex 9 (Chapter 3, paragraph 3.4) to the Convention on International Civil Aviation year 1 946 (as revised).

ICAO Doc 9303 Part 3 is maintained by a Technical Advisory Group on Machine Readable Travel Documents (TAG/MRTD). ISO/IEC JTC1 has provided liaison during the TAG/MRTD meetings on Doc 9303 Part 3 and considered the technical specifications to which the endorsement notice applies.

Information on the TAG/MRTD for ICAO 9303 Part 3 may be obtained on application to the Secretary General, International Civil Aviation Organization, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

NOTE Copies of ICAO Doc 9303 Part 3 may be obtained from the International Civil Aviation Organization, 999 University Street, Montreal, Quebec, Canada H3C 5H7.

Technical Specifications defined in Sections III and IV of ICAO Doc 9303 Part 3 refers to a number of International Standards. Specifically,

ISO 1073-2: 1976, Alphanumeric character sets for optical recognition - Part 2: Character set OCR-B - Shapes and dimensions of the printed image.

ISO 1831: 1980, Printing specifications for optical character recognition.

ISO/IEC 7810:1995, Identification cards — Physical characteristics.'

ISO 8601: 1988, Data elements and interchange formats - Information interchange - Representation of dates and times.

ISO 3166: 1993, Codes for the representation of names of countries.

Additional information. This International Standard does not adopt Sections I and II of ICAO Doc 9303 Part 3.

Section I is "Introduction"

Section II is "General considerations"

NOTE A number of differences exist between the specifications contained in ISO/IEC 7501-3 and ISO/IEC 7810 to accommodate the specific construction requirements of Machine Readable Travel Documents and the use of OCR machine readable technology. The specifications contained in ISO/IEC 7501-3 shall prevail where differences exist.

10.4 ISO/IEC 7810

This International standard is one of a series of standards describing the characteristics for identification cards as defined in the definitions clause and the use of such cards for international interchange.

This International standard specifies the physical characteristics of identification cards including card materials, construction, characteristics, and dimensions for four sizes of cards.

ISO/IEC 10373-1 specifies the test procedures used to check cards against the parameters specified in this International Standard.

This International Standard specifies the requirements for cards used for identification. It takes into consideration both human and machine aspects and states minimum requirements.

It is the purpose of this series of standards to provide criteria to which cards shall perform. No consideration is given within these standards to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria should be negotiated between the involved parties.

NOTE 1 Numeric values in the SI and/or Imperial measurement system in this International Standard may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should not be intermixed or reconverted. The original design was made using the Imperial measurement system.

NOTE 2 A different standard for thin flexible cards exists. Thin flexible cards are not within the scope of this International standard.

10.5 ISO/IEC 7811-1

This International standard is one of a series of standards describing the parameters for identification cards as defined in the definitions clause and the use of such cards for international interchange.

This International standard specifies requirements for embossed characters on identification cards. The embossed characters are intended for transfer of data either by use of imprinters or by visual or machine reading. It takes into consideration both human and machine aspects and states minimum requirements.

It is the purpose of this series of standards to provide criteria to which cards shall perform. No consideration is given within these standards to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria should be negotiated between the involved parties.

ISO/IEC 10373-1 specifies the test procedures used to check cards against the parameters specified in this International Standard.

NOTE Numeric values in the SI and/or Imperial measurement system in this International Standard may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should not be intermixed or reconverted. The original design was made using the Imperial measurement system.

10.6 ISO/IEC 7811-2

This part of ISO/IEC 7811 is one of a series of standards describing the characteristics for identification cards as defined in the definitions clause and the use of such cards for international interchange.

This part of ISO/IEC 7811 specifies requirements for a low coercivity magnetic stripe (including any protective overlay) on an identification card, the encoding technique and coded character sets. It takes into consideration both human and machine aspects and states minimum requirements.

Coercivity influences many of the quantities specified in this part of ISO/IEC 7811 but is not itself specified. Exposure of the card to a magnetic field is likely to destroy the recorded data.

It is the purpose of this series of standards to provide criteria to which cards shall perform. No consideration is given within these standards to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria should be negotiated between the involved parties.

ISO/IEC 10373-2 specifies the test procedures used to check cards against the parameters specified in this part of ISO/IEC 7811.

NOTE Numeric values in the SI and/or Imperial measurement system in this part of ISO/IEC 7811 may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should not be intermixed or reconverted. The original design was made using the Imperial measurement system.

10.7 ISO/IEC 7811-6

This part of ISO/IEC 7811 is one of a series of standards describing the characteristics for identification cards as defined in the definitions clause and the use of such cards for international interchange.

This part of ISO/IEC 7811 specifies requirements for a high coercivity magnetic stripe (including any protective overlay) on an identification card, the encoding technique and coded character sets. It takes into consideration both human and machine aspects and states minimum requirements.

Coercivity influences many of the quantities specified in this part of ISO/IEC 7811 but is not itself specified. The main characteristic of the high coercivity magnetic stripe is its improved resistance to erasure. This is achieved with minimal probability of damage to other magnetic stripes by contact while retaining read compatibility with magnetic stripes as defined in ISO/IEC 7811-2.

It is the purpose of this series of standards to provide criteria to which cards shall perform. No consideration is given within these standards to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria should be negotiated between the involved parties.

ISO/IEC 10373-2 specifies the test procedures used to check cards against the parameters specified in this part of ISO/IEC 7811.

NOTE Numeric values in the SI and/or Imperial measurement system in this part of ISO/IEC 7811 may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should not be intermixed or reconverted. The original design was made using the Imperial measurement system.

10.8 ISO/IEC 7811-7

This part of ISO/IEC 7811 is one of a series of standards describing the characteristics for identification cards as defined in the definitions clause and the use of such cards for international interchange.

This part of ISO/IEC 7811 specifies requirements for a high coercivity magnetic stripe (including any protective overlay) on an identification card, the encoding technique and coded character sets. It takes into consideration both human and machine aspects and states minimum requirements.

Coercivity influences many of the quantities specified in this part of ISO/IEC 7811 but is not itself specified. The main characteristic of the high coercivity magnetic stripe is its improved resistance to erasure. This is achieved with minimal probability of damage to other magnetic stripes by contact while retaining read compatibility with magnetic stripes as defined in ISO/IEC 7811-2.

This standard provides for a card capacity of approximately 10 times that of a card conforming to ISO/IEC 7811-6. The number of tracks has been increased to 6, each track being approximately half the width of tracks conforming to ISO/IEC 7811-6, located so that readers designed to read these high density tracks will also be able to read cards conforming to ISO/IEC 7811-2 and ISO/IEC 7811-6. Data is encoded in 8 bit bytes using the MFM encoding technique. Data framing is used to limit error propagation and error correction techniques further improve reliability of reading.

It is the purpose of this series of standards to provide criteria to which cards shall perform. No consideration is given within these standards to the amount of use, if any, experienced by the card prior to test. Failure to conform to specified criteria should be negotiated between the involved parties.

ISO/IEC 10373-2 specifies the test procedures used to check cards against the parameters specified in this part of ISO/IEC 7811.

NOTE Numeric values in the SI and/or Imperial measurement system in this part of ISO/IEC 7811 may have been rounded off and therefore are consistent with, but not exactly equal to, each other. Either system may be used, but the two should not be intermixed or reconverted. The original design was made using the Imperial measurement system.

10.9 ISO/IEC 7812-1

This part of ISO/IEC 7812 specifies a numbering system for the identification of issuers of identification cards used in international and/or inter-industry interchange.

10.10 ISO/IEC 7812-2

This part of ISO/IEC 7812 describes the application and registration procedures for numbers issued in accordance with ISO/IEC 7812-1.

ISO/IEC 7812-1 specifies the numbering system for the identification of issuers of identification cards used in international and/or inter-industry interchange.

10.11 ISO/IEC 7813

This International Standard specifies the physical characteristics, data structure and data content of ID-1 type cards used in financial transactions. It takes into consideration both human and machine aspects and states minimum requirements of conformity. It references layout, recording techniques, numbering systems, registration procedures, but not security requirements.

ISO/IEC 10373 specifies the test procedures used to check cards against the parameters specified in this International Standard.

10.12 ISO/IEC 7816-1

This part of ISO/IEC 7816 specifies the physical characteristics of integrated circuit(s) cards with contacts. It applies to identification cards of the ID-1 card type which may include embossing and/or a magnetic stripe as specified in ISO/IEC 7811, parts 1 to 6.

This part of ISO/IEC 7816 applies to cards which have a physical interface with electrical contacts. It does not, however, define the nature, number and position of the integrated circuits in the cards.

10.13 ISO/IEC 7816-2

This part of ISO/IEC 7816 specifies the dimensions, locations and assignment for each of the contacts on integrated circuit cards of an ID-1 card type.

This part of ISO/IEC 7816 is to be used in conjunction with ISO/IEC 7816-1.

10.14 ISO/IEC 7816-3

This part of ISO/IEC 7816 specifies the power and signal structures, and information exchange between an integrated circuit(s) card and an interface device such as a terminal.

It also covers signal rates, voltage levels, current values, parity convention, operating procedure, transmission mechanisms and communication with the card. It does not cover information and instruction content, such as identification of issuers and users, services and limits, security features, journaling and instruction definitions.

10.15 ISO/IEC 7816-4

This part of ISO/IEC 7816 specifies:

- the content of the messages, commands and responses, transmitted by the interface device to the card and conversely,
- the structure and content of the historical bytes sent by the card during the answer to reset,
- the structure of files and data, as seen at the interface when processing interindustry commands for interchange,
- access methods to files and data in the card,
- a security architecture defining access rights to files and data in the card,
- methods for secure messaging,

— access methods to the algorithms processed by the card. It does not describe these algorithms.

It does not cover the internal implementation within the card and/or the outside world.

It allows further standardization of additional interindustry commands and security architectures.

10.16 ISO/IEC 7816-5

This part of ISO/IEC 7816 specifies a numbering system for application identifiers and a registration procedure for application provider identifiers.

The numbering system described in this standard provides a means for an application and related services offered by a provider to identify if a given card contains the components required by its application and related services.

An application identifier (AID) is used to address an application in the card.

This part of ISO/IEC 7816 specifies the coding of application identifiers together with means and mechanisms for addressing application parts in cards.

This part of ISO/IEC 7816 establishes the authorities and procedures to ensure and optimize the reliability of the corresponding registration.

10.17 ISO/IEC 7816-6

This part of ISO/IEC 7816 specifies directly or by reference the Data Elements (DE), including composite DEs, used in interindustry interchange, based on integrated circuit cards (ICCs).

It identifies the following characteristics of each DE:

- Identifier
- Name
- Description and ISO reference
- Format and coding (if not available in other ISO standards or parts of ISO/IEC 7816).

The layout of each DE is described as seen at the interface between the interface device (IFD) and the ICC. This part of ISO/IEC 7816 defines the means of retrieval of the DEs in the card (historical bytes, reset, command(s) to perform and commands defined in this international standard).

This part of ISO/IEC 7816 provides the definition of DEs without consideration of any restrictions on the usage of the DEs.

It is intended that new interindustry data objects be incorporated into this standard; see clause 7 for the procedure to be followed.

10.18 ISO/IEC 7816-7

This part of the standard specifies

- the concept of a SCQL database (SCQL=Structured Card Query Language based on SQL, see ISO 9075) and
- the related interindustry enhanced commands.

10.19 ISO/IEC 7816-8

This part of ISO/IEC 7816 specifies:

- security protocols for use in cards;
- secure messaging extensions;
- the mapping of the security mechanisms on to the card's security functions/services, including a description of the in-card security mechanisms;

- data elements for security support;
- the use of algorithms implemented on the card (though the algorithms themselves are not described in detail);
- the use of certificates;
- security related commands.

This part of ISO/IEC 7816 does not cover the internal implementation within the card and/or the outside world.

The choice and conditions of use of cryptographic mechanisms may affect card exportability. The evaluation of the suitability of algorithms and protocols is outside the scope of this part of ISO/IEC 7816.

10.20 ISO/IEC 7816-9

This part of ISO/IEC 7816 specifies

- a description and coding of the life cycle of cards and related objects;
- a description and coding of security attributes of card related objects;
- functions and syntax of additional interindustry commands;
- data elements associated with these commands;
- a mechanism for initiating card-originated messages.

This part of ISO/IEC 7816 does not cover the internal implementation within the card and / or the outside world.

10.21 ISO/IEC 7816-10

This part of ISO/IEC 7816 specifies the power, signal structures, and the structure for the answer to reset between an integrated circuit(s) card with synchronous transmission and an interface device such as a terminal.

The specifications in ISO/IEC 7816-3 apply where appropriate, unless otherwise stated here.

It also covers signal rates, operating conditions, and communication with the integrated circuit(s) card.

This part of ISO/IEC 7816 specifies two types of synchronous cards: type 1 and type 2.

10.22 ISO/IEC 7816-11

This part of ISO/IEC 7816 specifies security related interindustry commands to be used for personal verification with biometric methods in integrated circuit(s) cards. It also defines data elements to be used with biometric methods.

Identification of persons using biometric methods is outside the scope of this standard.

10.23 ISO/IEC 7816-12

This part of ISO/IEC 7816 specifies the operating conditions of an integrated circuit card that provides a USB interface. The figure shows the assignment of the contact fields for a USB interface and, to illustrate interoperability, the assignment as used in ISO/IEC 7816-3.

10.24 ISO/IEC 7816-12

This part of ISO/IEC 7816 specifies the multi-application environment for the card and the commands required for Application management. This part of ISO/IEC 7816 covers the entire Application life cycle in a multi-application card, including pre-issuance (before the card has been issued to the cardholder) and post-issuance (after the card has been issued to the cardholder or after the card has expired). It does not cover the internal implementation within the card and / or the outside world.

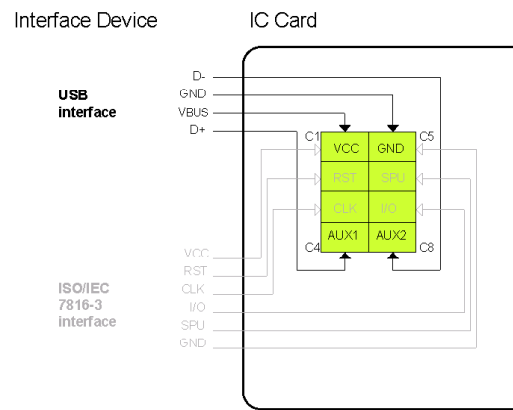


Figure — USB connections

10.25 ISO/IEC 7816-15

This part of ISO/IEC 7816 specifies an application in a card. This application contains information on cryptographic functionality. This part of ISO/IEC 7816 defines a common syntax and format for the cryptographic information and mechanisms to share this information whenever appropriate.

The objectives of this part of ISO/IEC 7816 are to:

- facilitate interoperability among components running on various platforms (platform neutral);
- enable applications in the outside world to take advantage of products and components from multiple manufacturers (vendor neutral);
- enable the use of advances in technology without rewriting application-level software (application neutral); and
- maintain consistency with existing, related standards while expanding upon them only where necessary and practical.

It supports the following capabilities:

- storage of multiple instances of cryptographic information in a card; use of the cryptographic information;
- retrieval of the cryptographic information, a key factor for this is the notion of "Directory Files," which provides a layer of indirection between objects on the card and the actual format of these objects;
- cross-referencing of the cryptographic information with DOs defined in ISO/IEC 7816 when appropriate;
- different authentication mechanisms; and
- multiple cryptographic algorithms (the suitability of these is outside the scope of this part of ISO/IEC 7816).

This International Standard does not cover the internal implementation within the card and/or the outside world. It shall not be mandatory for implementations complying with this International Standard to support all options described.

In case of discrepancies between ASN.1 definitions in the body of the text and the module in Annex A, Annex A takes precedence.

10.26 ISO/IEC 10373-1

ISO/IEC 10373 defines test methods for characteristics of identification cards according to the definition given in ISO/IEC 7810. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification cards applications.

NOTE 1 Criteria for acceptability do not form part of ISO/IEC 10373 but will be found in the International Standards mentioned above.

NOTE 2 Test methods described in ISO/IEC 10373 are intended to be performed separately. A given card is not required to pass through all the tests sequentially.

This part of ISO/IEC 10373 defines test methods which are common to one or more card technologies. Other parts of ISO/IEC 10373 define technology-specific test methods.

10.27 ISO/IEC 10373-2

ISO/IEC 10373 defines test methods for characteristics of identification cards according to the definition given in ISO/IEC 7810. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification cards applications.

NOTE 1 Criteria for acceptability do not form part ISO/IEC 10373 but will be found in the International Standards mentioned above.

NOTE 2 Test methods described in ISO/IEC 10373 are intended to be performed separately. A given card is not required to pass through all the tests sequentially.

This part of ISO/IEC 10373 defines test methods which are specific to magnetic stripe technology. ISO/IEC 10373-1, General characteristics, defines test methods which are common to one or more card technologies and other parts deal with other technology-specific tests.

10.28 ISO/IEC 10373-3

This part of ISO/IEC 10373 defines test methods for characteristics of integrated circuit(s) cards with contacts and related interface devices according to the definition given in ISO/IEC 7816. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification card applications.

NOTE 1 Criteria for acceptability do not form part of this International Standard but will be found in the International Standards mentioned above.

This part of ISO/IEC 10373 deals with test methods, which are specific to integrated circuit technology with contacts. ISO/IEC 10373-1 deals with test methods which are common to one or more card technologies and other parts deal with other technology-specific tests.

Test methods described in this part of ISO/IEC 10373 are intended to be performed separately and independently. A given card is not required to pass through all the tests sequentially. The test methods described in this part of ISO/IEC 10373 are based on specifications defined or to be defined in ISO/IEC 7816.

Conformance of ICCs and IFDs determined using the test methods defined in this part of ISO/IEC 10373 do not preclude failures in the field. Reliability testing is outside the scope of this part of ISO/IEC 10373.

10.29 ISO/IEC 10373-5

ISO/IEC 10373 defines test methods for characteristics of identification cards according to the definition given in ISO/IEC 7810. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification cards applications.

NOTE 1 Criteria for acceptability do not form part of ISO/IEC 10373 but will be found in the International Standards mentioned above.

NOTE 2 Test methods described in ISO/IEC 10373 are intended to be performed separately. A given card is not required to pass through all the tests sequentially.

This part of ISO/IEC 10373 deals with test methods which are specific to optical memory card technology. ISO/IEC 10373-1, General characteristics, deals with test methods which are common to one or more card technologies and other parts deal with other technology-specific tests.

10.30 ISO/IEC 10373-6

This International Standard defines test methods for characteristics of identification cards according to the definition given in ISO/IEC 7810. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification cards applications.

NOTE 1 Criteria for acceptability do not form part of this International Standard but will be found in the International Standards mentioned above.

NOTE 2 Test methods described in this International Standard are intended to be performed separately. A given card is not required to pass through all the tests sequentially.

This part of ISO/IEC 10373 deals with test methods which are specific to contactless integrated circuit(s) card technology (Proximity cards). ISO/IEC 10373-1, General characteristics, deals with test methods which are common to one or more ICC technologies and other parts deal with other technology-specific tests.

Unless otherwise specified, the tests in this part of ISO/IEC 10373 shall be applied exclusively to Proximity cards defined in ISO/IEC 14443-1 and ISO/IEC 14443-2.

10.31 ISO/IEC 10373-7

This International Standard defines test methods for characteristics of identification cards according to the definition given in ISO/IEC 7810. Each test method is cross-referenced to one or more base standards, which may be ISO/IEC 7810 or one or more of the supplementary standards that define the information storage technologies employed in identification cards applications.

NOTE 1 Criteria for acceptability do not form part of this International Standard but will be found in the International Standards mentioned above.

NOTE 2 Test methods described in this International Standard are intended to be performed separately. A given card is not required to pass through all the tests sequentially.

This part of ISO/IEC 10373 deals with test methods which are specific to contactless integrated circuit(s) card technology (vproximity cards). ISO/IEC 10373-1, General characteristics, deals with test methods which are common to one or more ICC technologies and other parts deal with other technology-specific tests.

Unless otherwise specified, the tests in this part of ISO/IEC 10373 shall be applied exclusively to Vicinity cards defined in ISO/IEC 15693-1 and ISO/IEC 15693-2.

10.32 ISO/IEC 10536-1

This part of ISO/IEC 10536 specifies the physical characteristics of close-coupled cards (CICC). It applies to identification cards of the type ID-1 operating either in a slot or on the surface of a coupling device.

This part of ISO/IEC 10536 shall be used in conjunction with later part of ISO/IEC 10536.

10.33 ISO/IEC 10536-2

This part of ISO/IEC 10536 specifies the dimensions, location, nature and assignment of each of the coupling areas to be provided for interfacing slot or surface card coupling devices (CCDs) with contactless integrated circuit(s) cards (CICCs) of the ID-I card type.

This part of ISO/IEC 10536 does not specify:

- the dimensions, location and assignment of coupling elements on the CICC;
- the dimensions, location and assignment of coupling elements on the CCD;
- the means of generating coupling fields.

This part of ISO/IEC 10536 is to be used in conjunction with ISO/IEC 10536-1.

Annex A shows the determination of the X and Y axes which are used in relating the field locations to the CICC.

Annex B shows examples of coupling elements in both a CICC and a CCD.

The dimensions used throughout this part of ISO/IEC 10536 are shown as nominal and expressed in millimetres; the figures shown are not drawn to scale.

NOTE Other types of contactless integrated circuit(s) cards, formats or interfaces, which offer a variety of operating distances, may be developed in the future, which will call for additions to be made to this part of ISO/IEC 10536 or, will require other International Standards to be prepared.

10.34 ISO/IEC 10536-3

This part of ISO/IEC 10536 specifies the nature and characteristics of the fields to be provided for power and bi-directional communications between card coupling devices (CCDs) and contactless integrated circuit(s) cards (CICCs) of the ID-1 type in slot or surface operation.

This part of ISO/IEC 10536 does not specify the means of generating coupling fields, nor the means of compliance with electromagnetic radiation regulations.

This part of ISO/IEC 10536 is to be used in conjunction with ISO/IEC 10536-1 and ISO/IEC 10536-2.

NOTE 1 Other types of contactless integrated circuit(s) cards, formats or interfaces, which operate at various distances may be developed in the future, which may call for additions to be made to this part of ISO/IEC 10536 or may require other International Standards to be written.

10.35 ISO/IEC 11693

This International Standard provides information necessary to store data on cards, to read data from cards, and for the physical, optical, and data interchangeability of optical memory cards in information processing systems.

It defines the general characteristics of optical memory cards including card materials, construction, characteristics, dimensions, and test environments which have been determined to be common to all types of optical memory cards regardless of recording method employed.

The intent of this International Standard is to provide necessary information for card manufacturers, card issuers and card users interested in interchanging digital information encoded on optical memory cards.

This International Standard can serve as a guide to companies who plan to develop equipment and systems using optical memory cards. The data content and use of the cards depend upon the applications developed by each industry group.

10.36 ISO/IEC 11694-1

This part of ISO/IEC 11694 defines the physical characteristics of optical memory cards using the linear recording method.

10.37 ISO/IEC 11694-2

This part of ISO/IEC 11694 defines the dimensions and location of the accessible optical area of optical memory cards with ID-1 dimensions using the linear recording method.

10.38 ISO/IEC 11694-3

This part of ISO/IEC 11694 defines the optical properties and characteristics of optical memory cards using the linear recording method.

10.39 ISO/IEC 11694-4

This part of ISO/IEC 11694 specifies the logical data structures for optical memory cards necessary to allow compatibility and interchange between systems using the linear recording method.

10.40 ISO/IEC 14443-1

This part of ISO/IEC 14443 specifies the physical characteristics of proximity cards (PICC). It applies to identification cards of the card type ID-1 operating in proximity of a coupling device.

This part of ISO/IEC 14443 shall be used in conjunction with later parts of ISO/IEC 14443.

10.41 ISO/IEC 14443-2

This part of ISO/IEC 14443 specifies the characteristics of the fields to be provided for power and bi-directional communication between proximity coupling devices (PCDs) and proximity cards (PICCs).

This part of ISO/IEC 14443 is intended to be used in conjunction with other parts of ISO/IEC 14443.

This part of ISO/IEC 14443 does not specify the means of generating coupling fields, nor the means of compliance with electromagnetic radiation and human exposure regulations which can vary according to country.

10.42 ISO/IEC 14443-3

This part of ISO/IEC 14443 describes:

- polling for proximity cards (PICCs) entering the field of a proximity coupling device (PCD);
- the byte format, the frames and timing used during the initial phase of communication between PCDs and PICCs;
- the initial Request and Answer to Request command content;
- methods to detect and communicate with one PICC among several PICCs (anticollision);
- other parameters required to initialize communications between a PICC and PCD;
- optional means to ease and speed up the selection of one PICC among several PICCs based on application criteria.

Protocol and commands used by higher layers and by applications and which are used after the initial phase are described in ISO/IEC 14443-4.

This part of ISO/IEC 14443 is applicable to PICCs of Type A and of Type B (as described in ISO/IEC 14443-2).

NOTE Part of the timing of data communication is defined in ISO/IEC 14443-2.

10.43 ISO/IEC 14443-4

This part of ISO/IEC 14443 specifies a half-duplex block transmission protocol featuring the special needs of a contactless environment and defines the activation and deactivation sequence of the protocol.

This part of ISO/IEC 14443 is intended to be used in conjunction with other parts of ISO/IEC 14443 and is applicable to proximity cards of Type A and Type B.

10.44 ISO/IEC 15457-1

Thin flexible cards, the subject of this International Standard, are used to automate the controls for access to goods or services such as mass transit, highway toll systems, car parks vouchers, stored value, etc.

For these applications, data can be written and/or read by machines using various recording techniques such as magnetic stripe, optical character recognition (OCR), bar code, etc.

This part of ISO/IEC 15457 specifies the physical characteristics of thin flexible cards at two points in the card life cycle:

1. at the point of loading into the card issuing equipment;
2. at the point of issue to the public.

It takes into consideration both human aspects and states the minimum requirements.

The principal card sizes are identified and the characteristics and dimensions are specified.

Guidance concerning the storage and use of cards under various environmental conditions is given.

NOTE Thicker cards, for example ID-1 cards, specified in ISO/IEC 7810, do not come within this scope.

10.45 ISO/IEC 15457-2

Thin flexible cards, the subject of this International Standard, are used to automate the controls for access to goods or services such as mass transit, highway toll systems, car parks vouchers, stored value, etc.

For these applications, data can be written and/or read by machines using various recording techniques such as magnetic stripe, optical character recognition (OCR), bar code, etc.

This part of ISO/IEC 15457 specifies the magnetic stripe and encoding characteristics of thin flexible cards at two points in the card life cycle:

1. at the point of loading into the card issuing equipment;
2. at the point of issue to the public.

Guidance concerning the storage and use of cards finished cards (including magnetic stripe cards) under various environmental conditions is given.

10.46 ISO/IEC 15457-3

Thin flexible cards, the subject of this International Standard, are used to automate the controls for access to goods or services such as mass transit, highway toll systems, car parks, vouchers, stored value, etc.

For these applications, data can be written and/or read by machines using various recording techniques such as magnetic stripe, optical character recognition (OCR), bar code, etc.

This part of ISO/IEC 15457 specifies the test methods and procedures required to carry out measurements of the magnetic stripe and encoding characteristics thin flexible cards.

Many of the standard methods available for checking physical properties of base materials are intended to be applied to samples cut from continuous material or large sheets. However, all test methods given herein, unless explicitly stated otherwise, apply to finished cards.

The test methods described are to be performed on separate samples. It is not intended that any individual card should pass through more than one test procedure, unless explicitly stated.

Acceptance criteria do not form part of this standard.

10.47 ISO/IEC 15693-1

This part of ISO/IEC 15693 specifies the physical characteristics of vicinity cards (VICC). It applies to identification cards of the card type ID-1 operating in vicinity of a coupling device.

This part of ISO/IEC 15693 shall be used in conjunction with later parts of ISO/IEC 15693.

10.48 ISO/IEC 15693-2

This part of ISO/IEC 15693 specifies the nature and characteristics of the fields to be provided for power and bi-directional communications between vicinity coupling devices (VCDs) and vicinity cards (VICCs).

This part of ISO/IEC 15693 shall be used in conjunction with other parts of ISO/IEC 15693.

This part of ISO/IEC 15693 does not specify the means of generating coupling fields, nor the means of compliance with electromagnetic radiation and human exposure regulations which can vary according to country regulations and/or standards.

10.49 ISO/IEC 15693-3

This part of ISO/IEC 15693 describes:

- protocol and commands,
- other parameters required to initialize communications between a VICC and a VCD,
- methods to detect and communicate with one card among several cards ("anticollision"),
- optional means to ease and speed up the selection of one among several cards based on application criteria.

10.50 ISO/IEC 18013-1

This International Standard establishes guidelines for the design format and data content of an ISO compliant driving licence (IDL) in regard to both visual human-readable features and ISO machine-readable technologies. It creates a common basis for international use and mutual recognition of the IDL without impeding individual national/community/regional motor vehicle authorities in taking care of their specific needs.

The design approach of the IDL ISO ID-1 size card and accompanying booklet with sleeve insert pocket is intended to replace the IDP paper document (see annex G).

The basis of document design premises includes:

- A minimum common mandatory data element set.
- A common layout for ease of recognition.
- Minimum security requirements.

At the discretion of national/community/regional motor vehicle authorities:

- Allows for inclusion of supplementary optional data elements to meet the needs of specific national/community/regional requirements apart from the minimum common mandatory data element set.
- Allows for the incorporation of ISO/IEC JTC1/SC17 machine-readable technologies including magnetic stripe, integrated circuit with contacts, contactless integrated circuit and optical memory technology, and ISO/IEC JTC1/SC31 1-dimensional / 2-dimensional bar codes, at the option of national/community/regional authorities.
- Allows for the incorporation of current and future technologies (including biometrics, cryptography, data compression) at the option of national/community/regional authorities.
- Allows for additional document physical security elements at the option of national/community/regional authorities, and facilitates international procurements.

A major benefit of these design premises is that a single card may serve a dual purpose of both a national/community/regional licence as well as an internationally recognized licence. Therefore, one card, in some cases, can replace the need for two documents. Alternatively, those countries that choose to maintain their individual domestic design can issue a second card with or without ISO machine-readable technologies to replace the current IDP paper document.

This new IDL design yields a document that:

- Is more secure from counterfeiting and alteration than the previous IDP document.
- Allows authorities to verify the authenticity of the document.
- Integrates the personal data into a secure ID-1 size medium.
- Allows a more reliable identification of the licence holder.
- Allows for machine-readable technologies.
- Facilitates information exchange and mutual recognition among motor vehicle authorities.
- Allows the domestic driving licence (DDL) that meets this Standard to serve simultaneously as an ISO compliant driving licence (IDL).

10.51 ISO/IEC 18013-2

This International Standard establishes guidelines for the design format and data content of an ISO compliant driving licence (IDL) in regard to both human-readable features and ISO machine-readable technologies. It creates a common basis for international use and mutual recognition of the IDL without impeding individual national/community/regional motor vehicle authorities in taking care of their specific needs.

10.52 ISO/IEC 18013-3

Not yet available

10.53 ISO/IEC 20060

This document is one of several documents containing the Implementation Specification of Europay's Open Terminal Architecture. Other volumes in this series specify the Forth and C language programming interfaces, as well as the EMV application library and the Terminal Kernel Test Program (see related publications).

The overall architecture of the Open Terminal Architecture is described in Appendix F, "System Architecture," and is based on a Virtual Machine (VM) that can be programmed using high-level languages such as Forth or C. For compactness and efficiency a tokenised form has been developed for delivering compiled programs to terminals of all CPU types. This and other Virtual Machine related issues are explained in Section 3.

This International Standard describes a set of functions to be implemented in terminals in terms of instructions for a Virtual Machine. With these functions the application programmer is able to generate application software that is compact, portable and certifiable on all OTA terminals.

The inclusion of a function is determined by three main criteria:

- core compactness,
- execution speed,
- security requirements.

This International Standard provides the specifications for the standard OTA kernel in several layers:

- definition of the Virtual Machine (VM) (Section 3);
- description of the services provided by the VM to terminal programmers (Section 4);
- specification of a set of tokens representing the native machine language of the VM (Section 5);
- specification of the format in which token modules are delivered to an OTA kernel for processing (Section 6).

10.54 ISO/IEC 24727-1

This part of ISO/IEC 24727 specifies

- overarching architecture
- a capabilities discovery mechanism
- security rationale

It does not address any implementation within the card and / or the outside world. This document is independent from the physical interface technology. It applies to cards accessed by one or more of the following methods: contact, close coupling and radio frequency.

10.55 ISO/IEC 24727-2

The generic card edge defined by this part of ISO/IEC 24727 is presented as four groups of interface functionality:

- command-response pairs for interoperability
- card-application capability description

The technical methods employed to enable an integrated circuit card to realize these generic card edge capabilities is not specified nor is the communication protocol used to access these capabilities when realized by these technical methods. ISO/IEC 24727 Part 2 is based on both the ISO/IEC 7816 and ISO/IEC 14443 series of standards.

10.56 ISO/IEC 24727-3

The problem addressed is an application (program) accessing computational support from, or transacting services with, a separate, remote application (program). The OSI Reference Model suggests that for this computational model, an interface should exist within an application that defines the desired actions requested of a cooperating application, along with the salient information necessary to effect a connection between the applications and a means to transfer semantically rich information between the two.

ISO/IEC 24727-3 is the application interface of the OSI Reference Model. This part of the ISO/IEC 24727 standard provides a high-level interface to an application making use of information storage and processing operations on an ICC. ISO/IEC 24727 Part 3 does not mandate a specific implementation methodology for this interface.