INTERNATIONAL STANDARD

ISO/IEC
19794-2

Second edition
2011-12-15
AMENDMENT 1
2013-12-01

Information technology — Biometric data interchange formats —

Part 2:
Finger minutiae data

AMENDMENT 1: Conformance testing methodology and clarification of defects

Technologies de l'information — Formats d'échange de données biométriques —

Partie 2: Données du point caractéristique du doigt

AMENDEMENT 1

© ISO/IEC 2013

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 19794-2:2011/Amd 1:2013
https://standards.iteh.ai/catalog/standards/sist/095c40d3-dfcb-4772-aaa8-
1cfd8df69f63/iso-iec-19794-2-2011-amd-1-2013

COPYRIGHT PROTECTED DOCUMENT

Foreword

ISO (the International Organization for Standardization) and IEC (the 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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to ISO/IEC 19794-2:2011 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

ISO/IEC 19794-2:2011/Amd 1:2013
https://standards.iteh.ai/catalog/standards/sist/095c40d3-dfcb-4772-aaa8-
1cfd8df69f63/iso-iec-19794-2-2011-amd-1-2013

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Information technology — Biometric data interchange formats — Part 2: Finger minutiae data

Amendment 1: Conformance testing methodology and clarification of defects

1. *The following text is to be added to the "Introduction" clause of ISO/IEC 19794-2:2011:*

Annex A addresses conformance testing of ISO/IEC 19794-2:2011. Annex A is distinct from ISO/IEC 29109-2:2010, which addressed conformance testing only of ISO/IEC 19794-2:2005.

2. *The following text is to be added to the "Scope" clause of ISO/IEC 19794-2:2011:*

This part of ISO/IEC 19794 also specifies elements of conformance testing methodology, test assertions, and test procedures as applicable to this part of ISO/IEC 19794. It establishes test assertions pertaining to the structure and internal consistency of the finger minutiae data formats defined in this part of ISO/IEC 19794 (Type A Level 1 and 2 as defined in ISO/IEC 19794-1:2011 AMD 1) and semantic test assertions (Type A Level 3 as defined in ISO/IEC 19794-1:2011 AMD 1).

The conformance testing methodology specified in this part of ISO/IEC 19794 does not establish:

— tests of other characteristics of biometric products or other types of testing of biometric products (e.g. acceptance, performance, robustness, security),

— tests of conformance of systems that do not produce data records conforming to the requirements of this part of ISO/IEC 19794.

3. *The following text is to be added to the "Conformance" clause of ISO/IEC 19794-2:2011:*

Biometric data interchange format conformance tests conform to this part of ISO/IEC 19794 if they satisfy all of the normative requirements set forth in Annex A. Specifically, all Level-1, Level-2 and Level-3 tests shall use the assertions defined in Table A.2 and Table A.3 of clause A.3 in conformity with the concept and rules set in ISO/IEC 19794-1:2011 AMD 1.

Implementations of this part of ISO/IEC 19794 tested according to the specified methodology shall be able to claim conformance only to those biometric data record (BDB) requirements specified in this part of ISO/IEC 19794 that are tested by the test methods established by this methodology.

Implementations of this part of ISO/IEC 19794 do not necessarily need to conform to all possible aspects of this part of ISO/IEC 19794, but only to those requirements that are claimed to be supported by the implementation in an implementation conformance statement (ICS), filled out in accordance with Annex A of ISO/IEC 19794-1:2011 AMD 1 and Table A.1 of clause A.2 of this part of ISO/IEC 19794.

4. *Replace annex A of ISO/IEC 19794-2:2011 with the following one.*

Annex A
(normative)
Conformance testing methodology

A.1 Introduction

This normative annex specifies elements of conformance testing methodology, test assertions, and test procedures as applicable to finger minutiae data.

The conformance testing methodology specified in ISO/IEC 19794-1:2011 AMD 1 shall apply. The content of the tables below is to be interpreted based on ISO/IEC 19794-1:2011 AMD 1 and shall only be used in the context of that conformance testing methodology.

A.2 Table of requirements

The normative requirements of the main body of this part of ISO/IEC 19794 are listed in Table A.1. The supplier of the IUT should use Table A.1 to explain which optional components of this part of ISO/IEC 19794 are supported and the testing laboratory should use Table A.1 to note the results of the test. The entries in the status column indicate whether the requirement is mandatory (M) or optional (O). The entries in the format type applicability columns indicate whether requirements are (Y) or are not (N) applicable for a format type.

Table A.1 – Table of requirements

Require-ment ID	Reference in main body	Requirement summary	Level	Status	Applicable to format type		IUT sup-port	Supported range	Test re-sult
					Record	On-card			
R-1	8.3.1	The format identifier shall be recorded in four bytes. The format identifier shall consist of three characters "FMR" followed by a zero byte as a NULL string terminator.	1	M	Y	N			
R-2	8.3.2	The number for the version of this part of ISO/IEC 19794 used for construct-ing the BDIR shall be placed in four bytes. This version number shall consist of three ASCII numerals followed by a zero byte as a NULL string terminator. The first and second character will represent the major version number and the third character will represent the minor revision number.	1	M	Y	N			
R-3	8.3.3	The length (in bytes) of the entire BDIR shall be recorded in four bytes. This count shall be the total length of the BDIR including the general record header and one or more finger representation records.	2	M	Y	N			
R-4	8.3.4	The total number of finger representation records contained in the BDIR shall be recorded in two bytes. A minimum of one finger representation is required.	2	M	Y	N			
R-5	8.3.5	The one-byte certification flag shall indicate whether each Representation Header includes a certification record. A value of 00_{Hex} shall indicate that no finger representation contains a certification record. A value of 01_{Hex} shall indi-cate that all finger representations contain a certification record.	2	M	Y	N			
R-6	8.4.1	A Representation Header shall precede each representation of finger data providing information for that finger representation. There shall be one finger header for each finger representation contained in the finger minutiae record.	1	M	Y	N			
R-7	8.4.2	The total number of bytes in the entire finger representation, including the representation header, shall be recorded in four bytes.	2	M	Y	N			
R-8	8.4.3	The Gregorian calendar year of the capture date and time field shall be en-coded in the form given in ISO/IEC 19794-1.	1	M	Y	N			
R-9	8.4.3	The month of the capture date and time field shall be encoded in the form given in ISO/IEC 19794-1.	1	M	Y	N			
R-10	8.4.3	The day of the capture date and time field shall be encoded in the form given in ISO/IEC 19794-1.	1	M	Y	N			
R-11	8.4.3	The hour of the capture date and time field shall be encoded in the form given in ISO/IEC 19794-1.	1	M	Y	N			

Require-ment ID	Reference in main body	Requirement summary	Level	Status	Applicable to format type		IUT sup-port	Supported range	Test re-sult
					Record	On-card			
R-12	8.4.3	The minute of the capture date and time field shall be encoded in the form given in ISO/IEC 19794-1.	1	M	Y	N			
R-13	8.4.3	The second of the capture date and time field shall be encoded in the form given in ISO/IEC 19794-1.	1	M	Y	N			
R-14	8.4.3	The millisecond of the capture date and time field shall be encoded in the form given in ISO/IEC 19794-1.	1	M	Y	N			
R-15	8.4.3	The capture date and time field shall indicate when the capture of this finger representation started in Coordinated Universal Time (UTC).	3C	O-1	Y	N			N/A
R-16	8.4.4	The capture device technology ID shall be encoded in one byte. This field shall indicate the class of capture device technology used to acquire the cap-tured biometric sample. A value of 00_{Hex} indicates unknown or unspecified technology. See Table 5 for the list of possible values.	1	M	Y	N			
R-17	8.4.4	The capture device technology ID shall indicate the class of capture device technology used to acquire the captured biometric sample.	3C	O-1	Y	N			N/A
R-18	8.4.5	The capture device vendor identifier shall be encoded in two bytes. A value of all zeros shall indicate that the capture device vendor is unreported.	1	M	Y	N			
R-19	8.4.5	The capture device vendor identifier shall be registered by IBIA or other approved registration authority.	3C	O-1	Y	N			N/A
R-20	8.4.6	The capture device type identifier shall be encoded in two bytes. A value of all zeros shall indicate that the capture device type is unreported.	1	M	Y	N			
R-21	8.4.6	The capture device type identifier shall be assigned by the registered product owner or other approved registration authority.	3C	O-1	Y	N			N/A
R-22	8.4.7.2	A quality record shall begin with a length field. The length field shall consist of one byte. It shall represent the number of quality blocks as an unsigned integer.	2	M	Y	N			
R-23	8.4.7.3	A quality score shall be encoded in one byte as an unsigned integer. Allowed values are – 0 to 100 with higher values indicating better quality, – 255, i.e. ff_{Hex}, for indicating that an attempt to calculate a quality score failed.	1	M	Y	N			

Require-ment ID	Reference in main body	Requirement summary	Level	Status	Applicable to format type		IUT sup-port	Supported range	Test re-sult
					Record	On-card			
R-24	8.4.7.4	The quality algorithm vendor identifier shall be encoded in two bytes. A value of all zeros shall indicate that the quality algorithm vendor is unreported.	1	M	Y	N			
R-25	8.4.7.4	The quality algorithm vendor identifier shall be registered by IBIA or other approved registration authority.	3C	O-1	Y	N			N/A
R-26	8.4.7.5	The quality algorithm identifier shall be encoded in two bytes. A value of all zeros shall indicate that the quality algorithm is unreported.	1	M	Y	N			
R-27	8.4.7.5	The quality algorithm identifier shall be registered by IBIA or other approved registration authority.	3C	O-1	Y	N			N/A
R-28	8.4.8.2	A certification record shall begin with a length field. The length field shall consist of one byte. It shall represent the number of certification blocks as an unsigned integer.	2	M	Y	N			
R-29	8.4.8.3	The certification authority identifier shall be encoded in two bytes. A value of all zeros shall indicate that the certification authority is unreported.	1	M	Y	N			
R-30	8.4.8.3	The certification authority identifier shall be registered by IBIA or other approved registration authority.	3C	O-1	Y	N			N/A
R-31	8.4.8.4	The certification scheme identifier shall be encoded in one byte. A list of current certification scheme identifiers is contained in Table 6.	1	M	Y	N			
R-32	8.4.9	The finger position shall be recorded in one byte.	1	M	Y	N			
R-33	8.4.10	The number associated with the specific representation shall be recorded in one byte.	1	M	Y	N			
R-34	8.4.10	If there is more than one finger representation from the same finger in a finger minutiae record, each finger representation shall have a unique representation number. The combination of finger location and representation number shall uniquely identify a particular finger representation within a minutiae record.	2	M	Y	N			
R-35	8.4.10	Multiple finger representations from the same finger shall be numbered with increasing representation numbers, beginning with 0. Where only one finger representation is taken from each finger, this field shall be set to 0.	2	M	Y	N			

5

Require-ment ID	Reference in main body	Requirement summary	Level	Status	Applicable to format type		IUT sup-port	Supported range	Test re-sult
					Record	On-card			
R-36	8.4.11	The horizontal spatial sampling rate of the minutiae coordinate system shall be recorded in two bytes having the units of pixels per centimeter. The value of the X spatial sampling rate shall not be less than 98.45 pixels per centi-meter (250 pixels per inch).	1	M	Y	N			
R-37	8.4.12	The vertical spatial sampling rate of the minutiae coordinate system shall be recorded in two bytes having the units of pixels per centimeter. The value of the Y spatial sampling rate shall not be less than 98.45 pixels per centimeter (250 pixels per inch).	1	M	Y	N			
R-38	8.4.13	The impression type of the finger images from which the minutiae data was derived shall be recorded in this one-byte field.	1	M	Y	N			
R-39	8.4.14	The value for the size of the scanned image in x direction shall be written in a two-byte binary field. It shall be used to specify the number of pixels con-tained on a single horizontal line of the transmitted image. The range of allowed values is 0000_{Hex} to $3FFF_{Hex}$ for compatibility with the Minutia, Core, and Delta Position fields.	1	M	Y	N			
R-40	8.4.15	The value for the size of the scanned image in y direction shall be written in a two-byte binary field. It shall be used to specify the number of horizontal lines contained in the transmitted image. The range of allowed values is 0000_{Hex} to $3FFF_{Hex}$ for compatibility with the Minutia, Core, and Delta Position fields.	1	M	Y	N			
R-41	8.4.16	The number of bytes required to describe each minutia shall be recorded in the four high-order (most significant) bits of the byte. Allowed values are 5 (to indicate a 5-byte minutia format with no quality information, or 6 to indicate a 6-byte minutia format, including a 1-byte quality field.	1	M	Y	N			
R-42	8.4.17	The method used to determine the location of a ridge ending shall be rec-orded in the four low-order (least significant) bits of the byte.	1	M	Y	N			
R-43	8.4.18	The number of minutiae extracted and encoded for the finger shall be rec-orded in this one byte.	2	M	Y	N			
R-44	8.4.19.1.2	The type of minutia shall be recorded in the upper two bits of the first byte of the minutia representation.	1	M	Y	N			
R-45	8.4.19.1.2, 9.2.4	'00' shall represent a minutia of "other" type.	3C	O-1	Y	Y			N/A

Require-ment ID	Reference in main body	Requirement summary	Level	Status	Applicable to format type		IUT sup-port	Supported range	Test re-sult
					Record	On-card			
R-46	8.4.19.1.2, 9.2.4	'01' shall represent a ridge ending.	3C	O-1	Y	Y			N/A
R-47	8.4.19.1.2, 9.2.4	'10' shall represent a ridge bifurcation.	3C	O-1	Y	Y			N/A
R-48	8.4.19.1.3	The X coordinate of the minutia shall be recorded in the lower fourteen bits of the first two bytes of the minutia representation.	1	M	Y	N			
R-49	8.4.19.1.3	The upper two bits of the next byte of the minutia representation shall be set to '00'.	1	M	Y	N			
R-50	8.4.19.1.3	The Y coordinate of the minutia shall be recorded in the lower fourteen bits of the third and fourth byte of the minutia representation.	1	M	Y	N			
R-51	8.4.19.1.4	The angle of the minutia shall be recorded in one byte.	1	M	Y	N			
R-52	8.4.19.1.4	The angle of the minutia shall be recorded in units of 1,40625 (360/256) degrees.	3C	O-1	Y	N			N/A
R-53	8.4.19.1.5	The quality of the minutia shall be recorded in one byte. The quality value shall range from 100 as a maximum to 0 as a minimum. A value of 254 indi-cates the quality was not reported and a value of 255 indicates a failure to acquire a quality score.	1	M	Y	N			
R-54	6.3.2	A minutia point shall be encoded once. A minutia point is uniquely identified by the location and angle.	2	M	Y	Y			
R-55	8.5.1.1	The extended data length field shall consist of two bytes.	1/2	M	Y	N			
R-56	8.5.1.2	The extended data area type code shall be recorded in two bytes. A value of zero in both bytes shall not be used.	1	O	Y	N			
R-57	8.5.1.3	The length of the extended data section shall be recorded in two bytes.	1/2	O	Y	N			
R-58	8.5.2.1	Each ridge count area shall begin with a single byte indicating the ridge count extraction method. Allowed values are 00$_{Hex}$, 01$_{Hex}$, and 02$_{Hex}$.	1	O	Y	N			
R-59	8.5.2.1	Each ridge count area shall begin with a single byte indicating the ridge count extraction method. A value of 00$_{Hex}$ shall indicate no specific ridge count extraction method. A value of 01$_{Hex}$ shall indicate the four-neighbour ridge count extraction method. A value of 02$_{Hex}$ shall indicate the eight-neighbour ridge count extraction method.	3C	O-1	Y	N			N/A