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Information technology — Biometric data interchange formats —

Part 11: Signature/sign processed dynamic data

AMENDMENT 1: Conformance test assertions

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

Partie 11: Données dynamiques traitées de signature/signe

AMENDEMENT 1: .

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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The committee responsible for this document is ISO/IEC JTC 1, *Information Technology*, Subcommittee SC 37, *Biometrics*.

Information technology — Biometric data interchange formats —

Part 11:
Signature/sign processed dynamic data

AMENDMENT 1: Conformance test assertions

Page 1, Clause 1

Add the following text to the existing Scope:

"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 of the signature/sign processed dynamic data format (Type A Level 1 as defined in ISO/IEC 19794-1X AMD 1), test assertions pertaining to internal consistency of the types of values that may be contained within each field (Type A Level 2 as defined in ISO/IEC 19794-1X AMD 1), and semantic test assertions (Type A Level 3 as defined in ISO/IEC 19794-1X 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."

Page 1, Clause 2

Add the following text to the existing "Conformance" clause:

"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 clauses X, Y, and Z. Specifically, they shall use the test methodology specified in Clauses A, B, and C of ISO/IEC 19794-1x AMD 2, and all Level 1, Level 2 and Level 3 tests shall use the assertions defined in Table N of Clause M in this part of ISO/IEC 19794.

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 Clause K of ISO/IEC 19794-1x AMD 1 and Table K of Clause R of this part of ISO/IEC 19794."

Page 17, Annex A

Replace the existing Annex A by the following:

Annex A
(normative)

Conformance test assertions

A.1 Introduction

This normative annex specifies elements of conformance testing methodology, test assertions, and test procedures as applicable to signature/sign processed dynamic data.

The normative annex establishes

— conformance test assertions on the structure and internal consistency of signature/sign processed dynamic data as specified in this part of ISO/IEC 19794 (Type A Level 1 and Level 2 as defined in ISO/IEC 19794-1X AMD 1),

— semantic conformance test assertions on signature/sign processed dynamic data as specified in this part of ISO/IEC 19794.

This normative annex does not establish

— conformance test assertions on CBEFF structures embedding signature/sign processed dynamic data,

— test assertions on other characteristics of biometric products (e.g. acceptance, performance, robustness, security),

— conformance test assertions on systems that do not produce signature/sign processed dynamic data as specified in this part of ISO/IEC 19794.

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

The conformance test assertions are listed in the order in which the corresponding fields are required to appear, if present, in a conforming record.

A.2 Table of requirements

The normative requirements of this part of ISO/IEC 19794 are listed in the Table A.1. The supplier of the IUT shall explain which optional components of the standard are supported and the testing laboratory shall note the results of the test.

Table A.1 — Requirements of the Base Standard

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-1	2	Satisfies all of the normative requirements related to the data structure, data values and the relationships between its data elements, as specified in Clause 8 of this part of ISO/IEC 19794		O			
R-2	2	Satisfies all of the normative requirements related to the relationship between its data values and the input biometric data from which the biometric data record was generated, as specified in Clause 8 of this part of ISO/IEC 19794		O			
R-3	5.1	The coordinate system used to express the pen position shall be a two-dimensional Cartesian coordinate system.		O			
R-4	5.1	The x-axis shall be the horizontal axis of the writing plane, with the x coordinates increasing to the right starting at 0.		O			
R-5	5.1	The y-axis shall be the vertical axis of the writing plane, with y coordinates increasing upwards starting at 0.		O			
R-6	5.2	The more significant bytes of any multi-octet quantity are stored at lower addresses in memory than (and are transmitted before) less significant bytes.		O			
R-7	7.2	The X, Y coordinates, pressure F, time T, and type of event shall be recorded		O			
R-8	8.1	Each record shall pertain to a single subject		O			
R-9	8.1	Each record shall contain a signature/sign processed dynamic record (consisting of one or more representations)		O			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-10	8.2	The format identifier shall be recorded in four bytes. The format identifier shall consist of three characters "SPD" followed by a zero byte as a NULL string terminator.	1	M			
R-11	8.2	The number for the version of that part of ISO/IEC 19794 used for constructing 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. The version number shall be "010" – Version 1 revision 0.	1	M			
R-12	8.2	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 representation records.	2	M			
R-13	8.2	The total number of representation records contained in the BDIR shall be recorded in two bytes. A minimum of one representation is required.	2	M			
R-14	8.2	The one-byte certification flag shall indicate whether each Representation Header includes a certification block. Its value shall be 00_{Hex} to indicate that no representation contains a certification block.	1	M			
R-15	8.3.1	The Representation Length recorded in 4 bytes shall denote the length in bytes of the representation header including the representation header fields.	2	M			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-16	8.3.1	The capture date and time field shall indicate when the capture of this representation started in Coordinated Universal Time (UTC). The capture date and time field shall consist of 9 bytes. Its value shall be encoded in the form given in ISO/IEC 19794-1.	1	M			
R-17	8.3.1	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 captured biometric sample. A value of 00_{Hex} indicates unknown or unspecified technology.	1	M			
R-18	8.3.2	Capture device technology ID shall be encoded in 1 byte where: 00_{Hex} is Unknown or unspecified 01_{Hex} is Electromagnetic 02_{Hex} is Semiconductor 04_{Hex} is Special pen with acceleration sensors 08_{Hex} is Special pen with optical sensors	1	M			
R-19	8.3.1	The capture device vendor identifier shall identify the biometric organization that owns the product that created the BDIR. The capture device algorithm vendor identifier shall be encoded in two bytes carrying a CBEFF biometric organization identifier (registered by IBIA or other approved registration authority). A value of all zeros shall indicate that the capture device vendor is unreported.	1	M			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-20	8.3.1	The capture device type identifier shall be encoded in two bytes and shall identify the product type that created the BDIR. It shall be assigned by the registered product owner or other approved registration authority. A value of all zeros shall indicate that the capture device type is unreported.	1	M			
R-21	8.3.1	A quality record shall consist of a length field followed by zero or more quality blocks. The length field shall consist of one byte. It shall represent the number of quality blocks as an unsigned integer.	1	M			
R-22	8.3.3	Each quality block shall consist of – a quality score, – a quality algorithm vendor identifier, and – a quality algorithm identifier.	1	M			
R-23	8.3.3	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			
R-24	8.3.3	The quality algorithm vendor identifier shall identify the provider of the quality algorithm. The quality algorithm vendor identifier shall be encoded in two bytes carrying a CBEFF biometric organization identifier (registered by IBIA or other approved registration authority). A value of all zeros shall indicate that the quality algorithm vendor is unreported.	1	M			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-25	8.3.3	The quality algorithm identifier shall identify the vendor's quality algorithm that created the quality score. It shall be assigned by the provider of the quality algorithm or an approved registration authority. 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			
R-26	8.3.4	An X scaling value that shall consist of 2 bytes. The 5 most significant bits of the first byte shall constitute the exponent field *E*, and the remaining 11 bits shall constitute the fraction field *F*.	1	M			
R-27	8.3.4	A Y scaling value that shall consist of 2 bytes. The 5 most significant bits of the first byte shall constitute the exponent field *E*, and the remaining 11 bits shall constitute the fraction field *F*.	1	M			
R-28	8.3.4	A T scaling value that shall consist of 2 bytes. The 5 most significant bits of the first byte shall constitute the exponent field *E*, and the remaining 11 bits shall constitute the fraction field *F*.	1	M			
R-29	8.3.4	An F scaling value that shall consist of 2 bytes. The 5 most significant bits of the first byte shall constitute the exponent field *E*, and the remaining 11 bits shall constitute the fraction field *F*.	1	M			
R-30	8.3.4	Number of Dynamic-event data records field shall be encoded in 4 bytes and shall represent the total number of Pen-stroke data records in the signature/sign representation.	1	M			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-31	8.3.4	Number of samples for moving average filter shall be encoded in 1 byte and represent the odd number of samples for moving average.	1	M			
R-32	8.4	Any dynamic signature/ sign event shall result in Dynamic-event data being recorded		O			
R-33	8.4	X coordinates shall be recorded as 2 bytes. Integer values in the range from 32768 to 32767 are allowed. These values shall be encoded as unsigned integers after adding 32768 to each value. Hence, for non-negative numbers, bit 8 of the most significant byte has the value 1; for negative numbers, bit 8 of the most significant byte has the value 0. For decoding these values, 32768 is to be subtracted from each recorded value.	2	M			
R-34	8.4	Y coordinates shall be recorded as 2 bytes. Integer values in the range from 32768 to 32767 are allowed. These values shall be encoded as unsigned integers after adding 32768 to each value. Hence, for non-negative numbers, bit 8 of the most significant byte has the value 1; for negative numbers, bit 8 of the most significant byte has the value 0. For decoding these values, 32768 is to be subtracted from each recorded value.	2	M			
R-35	8.4	Pressure shall be recoded as 2 bytes. Integer values in the range 0 to 65535 are allowed. These values shall be encoded as unsigned integers. If pressure is not measured then the values are set to 0.	2	M			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-36	8.4	Time shall be recorded as 2 bytes. Integer values in the range from 0 to 65535 are allowed. These values shall be encoded as unsigned integers	2	M			
R-37	8.4	Type of Event shall be recorded as 1 byte where: Bit 1 is Pen-up Bit 2 is Pen-down Bit 3 is X turning point Bit 4 is Y turning point Bit 5 is F turning point Bit 6 is Type of X turning point Bit 7 is Type of Y turning point Bit 8 is Type of F turning point When each event ever happens it shall be encoded with the value 1. For turning point, types of turning point shall be encoded with the value 0 for type-1 and the value 1 for type-2.	1	M			
R-38	8.5	Total time shall be recorded as two bytes. Integer values in the range 0 to 65535 are allowed. These values shall be encoded as unsigned integers.	2	M			
R-39	8.5	Mean X shall be recorded as 2 bytes. Integer values in the range from 32768 to 32767 are allowed. These values shall be encoded as unsigned integers after adding 32768 to each value. Hence, for non-negative numbers, bit 8 of the most significant byte has the value 1; for negative numbers, bit 8 of the most significant byte has the value 0. For decoding these values, 32768 is to be subtracted from each recorded value.	2	M			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-40	8.5	Mean Y shall be recorded as 2 bytes. Integer values in the range from 32768 to 32767 are allowed. These values shall be encoded as unsigned integers after adding 32768 to each value. Hence, for non-negative numbers, bit 8 of the most significant byte has the value 1; for negative numbers, bit 8 of the most significant byte has the value 0. For decoding these values, 32768 is to be subtracted from each recorded value.	2	M			
R-41	8.5	Mean pressure shall be recorded as 2 bytes. Integer values in the range 0 to 65535 are allowed. These values shall be encoded as unsigned integers.	2	M			
R-42	8.5	X standard deviation shall be recorded as 2 bytes. Integer values in the range 0 to 65535 are allowed. These values shall be encoded as unsigned integers.	2	M			
R-43	8.5	Y standard deviation shall be recorded as 2 bytes. Integer values in the range from 0 to 65535 are allowed. These values shall be encoded as unsigned integers	2	M			
R-44	8.5	Pressure standard deviation shall be recorded as 2 bytes. Integer values in the range from 0 to 65535 are allowed. These values shall be encoded as unsigned integers	2	M			

Table A.1 *(continued)*

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result
R-45	8.5	The correlation coefficient shall be recorded as 2 bytes. Integer values in the range 1 to 65535 are allowed. These values shall be encoded as unsigned integers.	2	M			
R-46	8.6	The extended data length field shall indicate the number of contents bytes in the optional extended data field. The length field shall consist of 2 bytes, representing the number of subsequent contents bytes as an unsigned integer	2	M			

A.3 Table of Test Assertions

Table A.2 — Test assertions

Test	Section	Requirement ID	Level	Field	Operator	Operands	Test Note	Status	IUT Support	Supported Range	Test Result
1	General Record Header	R-10	1	Format Identifier	EQ	0x53504400		M			
2		R-11	1	Version	EQ	0x30313000		M			
3.1		R-12	2	Length of Record	EQ	0x2F to 0xFFFFFFFF		M			
3.2		R-12	2	Length of Record	C	Total Record Data Read		M			
3.3		R-12	2	Length of Record	C	Total Record Data Expected		M			
4.1		R-13	2	Number of Representations	EQ	0x01 to 0xFFFF		M			
4.2		R-13	2	Number of Representations	C	Total Representations Read		M			
4.3		R-13	2	Number of Representations	C	Total Representations Expected		M			
5		R-14	1	Certification Flag	EQ	0x00		M			
6.1	Representation header	R-15	2	Representation Length	EQ	0x20 to 0xFFFFFFFF		M			
6.2		R-15	2	Representation Length	C	Number of representation bytes read		M			
6.3		R-15	2	Representation Length	C	Number od representation bytes expected		M			

Table A.2 — *(continued)*

7.1		R-16	2	Capture Date Time – Year	EQ	Date and Time in format in ISO/IEC ISO/IEC 19794-1X, 12.3.2		M			
7.2		R-16	2	Capture Date Time – Month	EQ	Date and Time in format in ISO/IEC ISO/IEC 19794-1X, 12.3.2		M			
7.3		R-16	2	Capture Date Time – Day	EQ	Date and Time in format in ISO/IEC ISO/IEC 19794-1X, 12.3.2		M			
7.4		R-16	2	Capture Date Time – Hour	EQ	Date and Time in format in ISO/IEC ISO/IEC 19794-1X, 12.3.2		M			
7.5		R-16	2	Capture Date Time – Minute	EQ	Date and Time in format in ISO/IEC ISO/IEC 19794-1X, 12.3.2		M			
7.6		R-16	2	Capture Date Time - Second	EQ	Date and Time in format in ISO/IEC ISO/IEC 19794-1X, 12.3.2		M			
7.7		R-16	2	Capture Date Time – Tenths of Millisecond	EQ	Date and Time in format in ISO/IEC ISO/IEC 19794-1X, 12.3.2		M			
8		R-17, R-18	2	Capture device technology identifier	EQ	0x00, 0x01, 0x02, 0x04, 0x08		M			
9		R-19	2	Capture device vendor identifier	EQ	0x00 to 0xFFFF		M			
10		R-20	2	Capture device type identifier	EQ	0x00 to 0xFFFF		M			
11.1		R-21	2	Number of Quality Blocks	EQ	0x00 to 0xFF		M			

Table A.2 — *(continued)*

11.2		R-21	2	Number of Quality Blocks	C	Number of Quality Blocks Read		M			
11.3		R-21	2	Number of Quality Blocks	C	Number of Quality Blocks Expected		M			
12.1	Quality block	R-22, R-23	2	Quality score	EQ	0x00 to 0x64, 0xFF		O			
12.2		R-22, R-24	2	Quality algorithm vendor identifier	EQ	0x00 to 0xFFFF		O			
12.3		R-22, R-25	2	Quality algorithm identifier	EQ	0x00 to 0xFFFF		O			
13.1	Representation header (Scaling Values)	R-26	2	X Scaling Value Exponent	EQ	0x00 to 0x1F		M			
13.2		R-26	2	X Scaling Value Fraction	EQ	0x00 to 0x7FF		M			
14.1		R-27	2	Y Scaling Value Exponent	EQ	0x00 to 0x1F		M			
14.2		R-27	2	Y Scaling Value Fraction	EQ	0x00 to 0x7FF		M			
15.1		R-28	2	T Scaling Value Exponent	EQ	0x00 to 0x1F		M			
15.2		R-28	2	T Scaling Value Fraction	EQ	0x00 to 0x7FF		M			
16.1		R-29	2	F Scaling Value Exponent	EQ	0x00 to 0x1F		M			
16.2		R-29	2	F Scaling Value Fraction	EQ	0x00 to 0x7FF		M			

Table A.2 *(continued)*

17.1	Representation header	R-30	2	Number of Dynamic event data records	EQ	0x00 to 0xFFFFFFFF		M			
17.2		R-30	2	Number of Dynamic event data records	C	Number of Dynamic event data records Read		M			
17.3		R-30	2	Number of Dynamic event data records	C	Number of Dynamic event data records Expected		M			
18		R-31	1	Number of samples for moving average filter	EQ	0x01 to 0xFF		M			
19	Dynamic-events	R-32, R-33	2	X	EQ	0x00 to 0xFFFF		M			
20		R-32, R-34	2	Y	EQ	0x00 to 0xFFFF		M			
21		R-32, R-35	2	F	EQ	0x00 to 0xFFFF		M			
22		R-32, R-36	2	T	EQ	0x00 to 0xFFFF		M			
23		R-32, R-37	2	Type of event	EQ	0x00 to 0xFE		M			