INTERNATIONAL STANDARD

ISO/IEC 19794-14

Information technology — Biometric data interchange formats —

Part 14:
DNA data

AMENDMENT 1: Conformance testing and clarification of defects

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

Partie 14: Données ADN

AMENDEMENT 1: Essais de conformité et clarification des défauts

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ISO/IEC 19794-14:2013/Amd 1:2016
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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 document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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

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Information technology — Biometric data interchange formats — Part 14 - DNA data –

Amendment 1 : Conformance testing and clarification of defects

Page v, Introduction

Add the following text to the "Introduction":

"The definition of conformance testing in Annex A is distinct from the ISO/IEC 29109, which addressed conformance testing only of the first edition of ISO/IEC 19794. This annex addresses the ISO/IEC 19794-14:2013 revision conformance testing.

Additionally, this part of the ISO/IEC 19794 supports XML encoding, to support a spectrum of user requirement. With XML, this part will meet the requirements of modern IT architectures. Annex B specifies the schema that XML encoded DNA data records must conform to, and Annex E provides an example of a valid XML encoded finger image record. "

Page 1, Clause 1, Scope

Add the following text to the "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 DNA data format (Type A Level 1 as defined in ISO/IEC 19794-1:2011/Amdt. 1:2013), 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 19794-1:2011/Amdt. 1:2013).

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 or consume data records not conforming to the requirements of this part of ISO/IEC 19794.

The conformance testing level 1 and level 2 are defined in this Amendment, and the conformance testing level 3 will be defined in ISO/IEC 19794-14/Amdt 2."

Page 1, Clause 2, Conformance

Add the following text to the "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 Clause 6.

The description of the conformance testing methodology for ISO/IEC 19794-14 DNA data should reflect the general characteristics of a BDIR structure as specified in the ISO/IEC 19794-1/Amdt. 1. However, the implementations of ISO/IEC 19794-14 DNA data may include

examples in conformance testing with biometric data record (BDB) embedded in a patron format, e.g. CBEFF in this part of ISO/IEC 19794.

The included implementations do not necessarily need to conform to all possible aspects of this part of ISO/IEC 19794, but only to those requirements supported by an Implementation Conformance Statement (ICS) in accordance with Clause A.3 of ISO/IEC 19794-1:2011 Amdt. 1:2013 and Table A.1 of Annex A of this part of ISO/IEC 19794."

Page 4, subclause 6.3, 5th paragraph

Replace:

"The CBEFF_BDB_format_type shall be specified by the CBEFF BDB format type identifier assigned by ISO/IEC JTC1/SC37 to this DNA record format. This value is the sixteen bit value 0x0008."

With:

"The CBEFF_BDB_format_type shall be specified by the CBEFF BDB format type identifier assigned by ISO/IEC JTC1/SC37 to this DNA record format. This value is the sixteen bit value 0x0020."

Page 13, 6.4.3.2.1, "STR DNA Profile"

Add the following text to the "STR DNA Profile" subclause:

"Because "allele call number #1" contain float number only, in case of the locus marker is "Amelogenin", the value of "allele call number #1" shall be "0" instead of "X" or "1" instead of "Y"."

Page 19, Annex A

Replace Annex A with the following one.

Annex A
(normative)

Conformance Testing Methodology

The testing methodology specified in Clauses A.1, A.2 and A.3 of ISO/IEC 19794-1/Amdt. 1 shall apply. The content of the tables below is based on the conformance testing methodology outlined in 19794-1/Amdt. 1 and shall only be used in the context of that testing methodology.

A.1. Table of requirements in the base standard for conformance testing level 1 and 2

The normative requirements of ISO/IEC 19794-14 Biometric Data Interchange Format – Part 14 DNA Data are listed in 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.

This table, A.1, may extend over multiple pages.

Table A.1 – Table of Requirements of the Base Standard (19794-14)

Requirement ID	Reference in Base Standard	Requirement Summary	Level	Status	IUT Support	Supported Range	Test Result	XML Applicability
R-1	6.3 BDB	The biometric data record represented using the DNA record format may be embedded in the biometric data block (BDB) of the CBEFF patron format compliant with ISO/IEC 19785-1:2004. If a CBEFF header is used, the following specifications apply: The CBEFF patron format requests to specify both CBEFF_BDB_format_owner and CBEFF_BDB_format_type as mandatory elements in the CBEFF Header. The CBEFF_BDB_format_owner shall be specified by the CBEFF biometric organization identifier issued by the CBEFF registration authority to ISO/IEC JTC1/SC37. This value is the sixteen bit value 0x0101. The CBEFF_BDB_format_type shall be specified by the CBEFF BDB format type identifier assigned by ISO/IEC JTC1/SC37 to this DNA record format. This value is the sixteen bit value 0x0008	2	O-x				No
R-2	6.3 BDIR	The structure of a BDIR consisting of one mandatory General Header and one or more Representation parts	2	M				Yes
R-3	6.4.1.1	The **format identifier** field shall be the string "DNA"	2	M				Yes
R-4	6.4.1.2	The **version** field shall be the Major version 3 and Minor version 0	2	M				Yes
R-5	6.4.1.3	The **communication direction** field shall contain a string listed in Table 2 of this standard.	2	M				Yes
R-6	6.4.1.4	The NationalityCode of **sending party** field shall contain a valid ISO 3166-2 code entry.	2	M				Yes
R-7	6.4.1.4	The Name of Entity of **sending party** field shall contain a valid ISO 3166-2 code entry.	1	M				Yes
R-8	6.4.1.4	The Name of Person of **sending party** field shall contain a valid ISO 3166-2 code entry.	1	M				Yes
R-9	6.4.1.5	The NationalityCode of **receiving party** field shall contain a valid ISO 3166-2 code entry.	2	M				Yes
R-10	6.4.1.5	The Name of Entity of **receiving party** field shall contain a valid ISO 3166-2 code entry.	1	M				Yes
R-11	6.4.1.5	The Name of Person of **receiving party** field shall contain a valid ISO 3166-2 code entry.	1	M				Yes
R-12	6.4.1.6	The **entity type** field shall be in accordance with clause 6.4.1.6	2	M				Yes
R-13	6.4.1.7	The **date and time of data exchange** field shall be in accordance with 19794-1 AMD2	2	M				Yes

R-14	6.4.2.1	The **sample collection date** field shall be in accordance with 19794-1 AMD2	2	M				Yes
R-15	6.4.2.2.	The **sample category** field shall be in accordance with Table 5.	2	M				Yes
R-16	6.4.2.3.	The **sample cellular type** field shall be in accordance with Table 6.	2	M				Yes
R-17	6.4.2.4	The **sample typing technology** field shall be in ccordance with Table 7.	2	M				Yes
R-18	6.4.2.5	The **specimen contributor** field shall be in accordance with Table 8.	2	M				Yes
R-19	6.4.2.6	The **sample collection method** field shall be in string	1	M				Yes
R-20	6.4.2.7	The **sample collection location** field shall be in string	1	M				Yes
R-21	6.4.2.8	The **sample collection Geo-Location** fields shall be in accordance with Table 9 and WGS 84.	2	M				Yes
R-22	6.4.2.9	The **pedigree tree** field shall be in accordance with clause 6.4.2.9	2	M				Yes
R-23	6.4.3.1.1	The **date and time** field shall be in accordance with 19794-1 AMD2	2	M				Yes
R-24	6.4.3.1.2	The **batch ID** field shall be in string	1	M				Yes
R-25	6.4.3.1.3	The **dna profile ID** field shall be in string	1	M				Yes
R-26	6.4.3.1.4	The **kit ID** field shall be in string	1	M				Yes
R-27	6.4.3.1.5	The **lab certification** field shall be in accordance with clause 6.4.3.1.5 and contain values from Table 15.	2	M				Yes
R-28	6.4.3.1.6	The **scope of accreditation** field shall be in accordance with clause 6.4.3.1.6 and contain values from table 17.	2	M				Yes
R-29	6.4.3.1.7	The **request type** field shall be in accordance with clause 6.4.3.1.7 and contain values from Table 19.	2	M				Yes
R-30	6.4.3.1.7	The **request type** field shall be mandatory when the communication direction is "R" (request), otherwise optional.	2	M				Yes
R-31	6.4.3.1.8	The **result** field shall be in accordance with clause 6.4.3.1.8 and contain values from Table 21.	2	M				Yes
R-32	6.4.3.1.8	The **result** type field shall be mandatory when the communication direction is "A" (Answer), otherwise optional.	2	M				Yes
R-33	6.4.3.1.9	The **error message** field shall be in string	1	M				Yes
R-34	6.4.3.1.10	The **supplementary message** field shall be in string	1	M				Yes
R-35	6.4.3.2.1	The **STR DNA profile** field shall be in accordance with clause 6.4.3.2.1.	2	M				Yes
R-36	6.4.3.2.1	The **STR DNA profile** field shall mandatory when the sample typing technology is "STR", otherwise optional. See Table 22.	2	M				Yes

4

R-37	6.4.3.2.2	The **Y-STR DNA profile** field shall be in accordance with clause 6.4.3.2.2	2	M				Yes
R-38	6.4.3.2.2	The **Y-STR DNA profile** field shall mandatory when the sample typing technology is "Y-STR", otherwise optional. See Table 22.	2	M				Yes
R-39	6.4.3.2.3	The **mitochondrial DNA data** field shall be in accordance with clause 6.4.3.2.3	2	M				Yes
R-40	6.4.3.2.3	The **mitochondrial DNA data type** field shall mandatory when the sample typing technology is "mtDNA", otherwise optional. See Table 22.	2	M				Yes
R-41	6.4.3.2.4	The **electropherogram data** field shall be in accordance with clause 6.4.3.2.4	2	M				Yes
R-42	6.4.3.2.4	The **electropherogram data** field shall mandatory when the sample typing technology is "Electropherogram", otherwise optional. See Table 22.	2	M				Yes
R-43	6.4.3.2.5	The **user defined DNA Data** field shall be in accordance with table 42.	2	M				Yes

Note. For R-1 requirement, 'O-x' means that CBEFF conformance testing is out of scope of this document.

A.2. Table Conformance Test Assertions

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

This table, A.1, may extend over multiple pages.

Table A.2 – XML Encoded Conformance Test Assertions

Test No.	Section	Requirement ID	Level	Field Name	Operator	Operand	Test Note	Status	IUT Support	Supported Range	Test Result
1	6 DNA format specification	R-2	2	Entire field	EQ	BDIR has one general header and at least one representation					
2	6.4.1 DNA Record General Header	R-3	2	Format Identifier	EQ	"DNA"					
3	6.4.1 DNA Record General Header	R-4	2	Version – Major version	EQ	3					

4	6.4.1 DNA Record General Header	R-4	2	Version – Minor version	EQ	0					
5	6.4.1 DNA Record General Header	R-5	2	Communication Direction	EQ	"Request" or "Answer"					
6	6.4.1 DNA Record General Header	R-6	2	Sending Party : Nationality Code	EQ	Nationality code defined in ISO 3166-2					
7	6.4.1 DNA Record General Header	R-7	1	Sending Party : Name of Entity	GTE	Length ≥ 0					
8	6.4.1 DNA Record General Header	R-8	1	Sending Party : Name of Person	GTE	Length ≥ 0					
9	6.4.1 DNA Record General Header	R-9	2	Receiving Party : Nationality Code	EQ	Nationality code defined in ISO 3166-2					
10	6.4.1 DNA Record General Header	R-10	1	Receiving Party : Name of Entity	GTE	Length ≥ 0					
11	6.4.1 DNA Record General Header	R-11	1	Receiving Party : Name of Person	GTE	Length ≥ 0					
12	6.4.1 DNA Record General Header	R-12	2	Entity Type	EQ	"G", "GM", "GR", "I", "IM", "IR", "O", "OM", "OR", "U", "UM" or "UR"					
13	6.4.1 DNA Record General Header	R-13	2	Date and Time of Data Processing : Year	EQ	1 to 65534					
14	6.4.1 DNA Record General Header	R-13	2	Date and Time of Data Processing: Month	EQ	1 to 12					
15	6.4.1 DNA Record General Header	R-13	2	Date and Time of Data Processing : Day	EQ	1 to 31					
16	6.4.1 DNA Record General Header	R-13	2	Date and Time of Data Processing : Hour	EQ	0 to 23					
17	6.4.1 DNA Record General Header	R-13	2	Date and Time of Data Processing : Minute	EQ	0 to 59					
18	6.4.1 DNA Record General Header	R-13	2	Date and Time of Data Processing : Second	EQ	0 to 59					

19	6.4.1 DNA Record General Header	R-13	2	Date and Time of Data Processing : Millisecond	EQ	0 to 999					
20	6.4.2 Representation Metadata	R-14	2	Sample Collection Date : Year	EQ	1 to 65534					
21	6.4.2 Representation Metadata	R-14	2	Sample Collection Date : Month	EQ	1 to 12					
22	6.4.2 Representation Metadata	R-14	2	Sample Collection Date : Day	EQ	1 to 31					
23	6.4.2 Representation Metadata	R-14	2	Sample Collection Date : Hour	EQ	0 to 23					
24	6.4.2 Representation Metadata	R-14	2	Sample Collection Date : Minute	EQ	0 to 59					
25	6.4.2 Representation Metadata	R-14	2	Sample Collection Date : Second	EQ	0 to 59					
26	6.4.2 Representation Metadata	R-14	2	Sample Collection Date : Millisecond	EQ	0 to 999					

| 27 | 6.4.2 Representation Metadata | R-15 | 2 | Sample Category | EQ | "Arrestee", "Claimed Biological Child", "Claimed Biological Father", "Claimed Biological Mother", "Claimed Biological Sibling", "Claimed Biological Spouse", "Actual Biological Child", "Actual Biological Father", "Actual Biological Mother", "Actual Biological Sibling", "Actual Biological Spouse", "Adoptive Biological Child", "Adoptive Biological Father", "Adoptive Biological Mother", "Adoptive Biological Sibling", "Adoptive Biological Spouse", "Convicted Offender", "Forensic, Unknown", "Insurgent", "Known Suspected Terrorist", "Maternal Relative", "Missing Person", "Paternal Relative", "Suspect, Known", "Unidentified Living", "Unidentified Dead", "Victim, Known", "Detainee", "Other" or "Unspecified" | | | | | |

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28	6.4.2 Representation Metadata	R-16	2	Sample Cellular Type	EQ	"Blood", "Bone", "Commingled Biological Material", "Hair", "Saliva", "Semen", "Skin", "Sweat/Fingerprint", "Tissue", "Tooth (including Pulp)", "Other", "Unknown" or "Unspecified"					
29	6.4.2 Representation Metadata	R-17	2	Sample Typing Technology	EQ	"STR", "Y-STR", "mtDNA", "Electropherogram" or "User Defined Typing"						
30	6.4.2 Representation Metadata	R-18	2	Specimen Contributor	EQ	"Known" or "Unknown"						
31	6.4.2 Representation Metadata	R-19	1	Sample Collection Method	GTE	Length ≥ 0						
32	6.4.2 Representation Metadata	R-20	1	Sample Collection Location	GTE	Length ≥ 0						
33	6.4.2 Representation Metadata	R-21	2	Sample Collection Geo-Location : Latitude	EQ	-90.0 ≤ latitude ≤ +90.0						
34	6.4.2 Representation Metadata	R-21	2	Sample Collection Geo-Location : Longitude	EQ	-180.0 ≤ longitude ≤ +180.0						
35	6.4.2 Representation Metadata	R-22	2	Pedigree Tree : Pedigree Member ID	GT	0						
36	6.4.2 Representation Metadata	R-22	2	Pedigree Tree : Specimen ID	LTE	Length ≤ 24						
37	6.4.2 Representation Metadata	R-22	2	Pedigree Tree : Mother ID	GT	0						
38	6.4.2 Representation Metadata	R-22	2	Pedigree Tree : Father ID	GT	0						

39	6.4.2 Representation Metadata	R-22	2	Pedigree Tree : Specimen ID	EQ	"Known" or "Unknown"					
40	6.4.2 Representation Metadata	R-22	2	Pedigree Tree : Specimen ID	EQ	"Male" or "Female"					
41	6.4.3.1 DNA Typing Data	R-23	2	Date and Time of Analysis : Year	EQ	1 to 65534					
42	6.4.3.1 DNA Typing Data	R-23	2	Date and Time of Analysis : Month	EQ	1 to 12					
43	6.4.3.1 DNA Typing Data	R-23	2	Date and Time of Analysis : Day	EQ	1 to 31					
44	6.4.3.1 DNA Typing Data	R-23	2	Date and Time of Analysis : Hour	EQ	0 to 23					
45	6.4.3.1 DNA Typing Data	R-23	2	Date and Time of Analysis : Minute	EQ	0 to 59					
46	6.4.3.1 DNA Typing Data	R-23	2	Date and Time of Analysis : Second	EQ	0 to 59					
47	6.4.3.1 DNA Typing Data	R-23	2	Date and Time of Analysis : Millisecond	EQ	0 to 999					
48	6.4.3.1 DNA Typing Data	R-24	1	Batch ID	GTE	Length ≥ 0					
49	6.4.3.1 DNA Typing Data	R-25	1	DNA Profile ID	GTE	Length ≥ 0					
50	6.4.3.1 DNA Typing Data	R-26	1	Kit ID	GTE	Length ≥ 0					
51	6.4.3.1 DNA Typing Data	R-27	2	Lab Certification	EQ	"No validation", "ISO/IEC 17025 (KOLAS) certification", "GLP validation", "AABB certification", "ISO/ILAC Guild 19 accreditation", "Unknown" or "Unspecified"					
52	6.4.3.1 DNA Typing Data	R-28	2	Scope of Accreditation	EQ	"Nuclear", "Mitochondrial", "Database", "Other" or "Unspecified"					

53	6.4.3.1 DNA Typing Data	R-29	2	Request Type	EQ	"Data submission", "Data submission and Search", "Search", "User Defined"					
54	6.4.3.1 DNA Typing Data	R-30	2	(Request Type field == Mandatory)	C	Communication direction, "Request"					
55	6.4.3.1 DNA Typing Data	R-31	2	Result	EQ	"Unable to Process", "No Hit", "Hit User Defined", "User Defined"					
56	6.4.3.1 DNA Typing Data	R-32	2	(Result field == Mandatory)	C	Communication direction, "answer"					
57	6.4.3.1 DNA Typing Data	R-33	1	Error Message	GTE	Length ≥ 0					
58	6.4.3.1 DNA Typing Data	R-34	1	Supplementary Message	GTE	Length ≥ 0					
59	6.4.3.2 DNA Typing	R-35	2	STR DNA Profile : Locus infomation : Locus header : Name of Locus marker	EQ	Name of Locus marker in Annex D					
60	6.4.3.2 DNA Typing	R-35	2	STR DNA Profile : Locus infomation : Locus header : Status	EQ	"Normal", "Silent allele", "Not determined", or "Not analyzed"					
61	6.4.3.2 DNA Typing	R-35	2	STR DNA Profile : Locus infomation : Allele call : Operator	EQ	"Equal", "Lower-limit", "Upper-limit" or "Range"					
62	6.4.3.2 DNA Typing	R-35	1	STR DNA Profile : Locus infomation : Allele call : Allele call number #1							
63	6.4.3.2 DNA Typing	R-35	2	STR DNA Profile : Locus infomation : Allele call : Allele call number #2	C	STR DNA Profile : Locus infomation : Allele call : Operator, "Range"					