

Special Publication 500-295

Revision 1

DRAFT

**Conformance Testing Methodology for
ANSI/NIST-ITL 1-2011, Data Format
for the Interchange of Fingerprint,
Facial & Other Biometric Information**

Fernando L. Podio
Dylan Yaga
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NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

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U.S. Department of Commerce
Penny Pritzker, Secretary

National Institute of Standards and Technology
Patrick Gallagher, Under Secretary for Standards and Technology and Director

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Foreword

The existence of biometric standards alone is not enough to demonstrate that products meet the technical requirements specified in the standards. Conformance testing captures the technical description of a specification and measures whether an implementation faithfully implements the specification. Conformance testing provides developers, users, and purchasers with increased levels of confidence in product quality and increases the probability of successful interoperability.

Although no conformance test can be comprehensive enough to test all the different combinations of mandatory requirements of a standard and all possible combinations of conditional and optional characteristics that could be included in ANSI/NIST-ITL 2011 (AN-2011) transactions, a well-designed conformance test tool that faithfully implements a standard conformance testing methodology could raise the level of confidence on the test results. Therefore, transactions tested with such a tool (and reported to be conformant to the standard), are more likely conform to the standard.

Introduction

This draft revised version of the Conformance Testing Methodology (CTM) for AN-2011 adds to the initial version test assertions for Section 8.18 Record Type-18: DNA record, Annex C: NIEM Conformant encoding, and Annex G: Mapping to the NIEM IEPD. Modifications to existing assertions in NIST SP 295 were made to address errors and clarify the syntax. A comprehensive list of changes is documented in [Annex B: Version History](#).

This document includes comprehensive tables of AN-2011 requirements and assertions for the selected Record Types supported by this publication. The tables of requirements and assertions indicate which assertions apply to the Traditional encoding format, which apply to the National Information Exchange Model (NIEM)-compliant encoding format, and which apply to both encoding formats. Test assertion syntax is specified to clearly define the assertions associated with each requirement. Some requirements are not supported by the testing methodology, and are identified as exceptions. When an exception is present, the requirement is listed in the tables, but no assertions are defined for that requirement. Justification is provided for each exception.

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1 Scope

This draft conformance testing methodology includes the concepts and test types necessary to test transactions for conformance to the AN-2011 standard. It defines three levels of conformance testing: Level 1, Level 2, and Level 3 conformance testing (see [Sec. 5.3](#)). This version of the conformance testing methodology specifies requirements and test assertions for the following sections and Record Types of the AN-2011 standard:

- Section 5: Data Conventions
- Section 7: Information Common to Several Record Types
- Section 8.1 Record Type-1: Transaction information record
- Section 8.4 Record Type-4: Grayscale fingerprint image
- Section 8.10 Record Type-10: Facial, other body part and SMT image record
- Section 8.13 Record Type-13: Friction-ridge latent image record
- Section 8.14 Record Type-14: Fingerprint image record
- Section 8.15 Record Type-15: Palm print image record
- Section 8.17 Record Type-17: Iris image record
- Section 8.18 Record Type-18: DNA record (new in this version)
- Annex B: Traditional Encoding
- Annex C: NIEM Conformant encoding (new in this version)
- Annex G: Mapping to the NIEM IEPD (new in this version)

Requirements and assertions for the deprecated Record Types 3, 5, and 6 are also included to ensure nonexistence of the deprecated records. Additionally, an assertion is specified that checks for the nonexistence of reserved Record Types 11, 12, and 22 through 97.

A complete description of support for Record Types and interrelated fields is provided in [Annex A](#). Tables of terms, operands, and operators that are used in specifying the test assertions are included. The assertion tables identify requirements for Level 1 and 2 conformance testing. In addition, the assertion tables identify requirements for Level 3 only when it is necessary to clarify that the requirement is categorized as Level 3.

Only test assertions for Level 1 and Level 2 conformance testing are part of the scope of this conformance testing methodology. Implementation exceptions are identified in [Sec. 6.21](#). Type-A and Type-B conformance testing are defined. Only Type-A testing is specified. Type-B conformance testing is outside of the scope of this edition of the CTM.

This conformance testing methodology does not establish tests of characteristics (i.e., performance, acceptance, security, robustness) of products that generate the transactions.

2 Conformance

AN-2011 conformance test tools that claim conformance to this conformance testing methodology shall satisfy the requirements of the testing methodology specified in [Sec. 5](#) and shall follow the procedures defined by Level 1 and Level 2 test assertions as specified in [Sec. 6](#).

3 Normative references

NIST Special Publication 500-290, ANSI/NIST-ITL 1-2011, November 2011, *Information Technology: American National Standard for Information Systems - Data Format for the Interchange of Fingerprint, Facial & Other Biometric Information*

JPEG (Joint Photographic Experts Group), *JPEG File Interchange Format, Version 1.02*. Available at <http://www.jpeg.org/public/jfif.pdf>

ISO/IEC 15444-1, *JPEG 2000, Information Technology - Digital Compression and Coding of Continuous-Tone Still Images Part 1: Requirements and Guidelines*.

ISO/IEC 15444-2, *Information technology — JPEG 2000 image coding system: Extension*, available at: <http://www.jpeg.org/metadata/15444-2.PDF>

ISO/IEC 15948:2004 *Information Technology -- Computer graphics and image processing -- Portable Network Graphics (PNG): Functional specification*.

IAFIS-IC-0110 (V3.1) *WSQ Gray-scale Fingerprint Image Compression Specification*, October 4, 2010.

4 Terms and definitions

assertion

A test procedure that represents a specific aspect of a requirement found in the base standard. The assertion is expressed using the operator and operand syntax defined by the conformance testing methodology.

base standard

ANSI/NIST-ITL 1-2011, *Data Format for the Interchange of Fingerprint, Facial & Other Biometric Information*, NIST Special Publication 500-290.

conformance

The adherence of an implementation to all specified requirements as defined in the base standard.

CTA

Conformance Testing Architecture.

CTM

Conformance Testing Methodology.

CTS

Conformance Testing Suite.

implementation

An ANSI-NIST-ITL 1-2011 transaction.

IUT

Implementation under test. The implementation supplied by a vendor to a laboratory for conformance testing.

test

Also known as a conformance test or assertion test, it is the execution of the testing procedure defined by an assertion or set of assertions in order to obtain a statement of conformance. The result of the test is a Boolean value that determines the implementation's conformity for the assertion. For a given requirement, if all tests pass for the associated assertions, then the implementation is considered to be conformant for that requirement.

Type-A testing

Type-A conformance testing checks the conformance of AN-2011 transactions to the requirements in the base standard.

Type-B testing

Type-B testing checks the ability to use an AN-2011, for example in a software application.

5 Conformance testing methodology

The conformance testing methodology defined in this draft publication addresses only Level 1 and 2 testing and Type-A testing. While some Level-3 requirements are identified in the tables of requirements and assertions, testing methodologies are provided for Level-1 and Level-2 conformance testing only (see "Hierarchy of conformance tests" for information regarding the three levels of conformance testing). Type-B testing is not defined.

5.1 Functional documentation of requirements

The tables of requirements and assertions included in this publication identify requirements defined in the base standard and provide a succinct listing of the information necessary to

facilitate the development of conformance testing tools. Extracting the requirements from the base standard improves the efficiency of conformance test tool development by providing the information required in a consolidated manner.

Each requirement identified in this publication is associated with one or more assertions which collectively form the complete set of test procedures required to test an implementation for conformance to that requirement.

5.2 Limitations and exceptions

While conformance of an implementation to relevant requirements can be determined (e.g., content and relationships between elements), no test tool is guaranteed to be comprehensive and prove that a given system generating or using AN-2011 transactions is conformant under all possible circumstances. Well-designed conformance tests can, however, test the most likely sources of problems and demonstrate non-conformity (i.e., if errors are found, non-conformance of the transaction shall be proven), but the absence of detected errors does not necessarily imply full conformance to the standard.

The tables of requirements and assertions define all normative requirements as well as optional and conditional (dependent) requirements for selected Record Types found in the base standard (AN-2011). Some of the AN-2011 requirements in the tables do not have an associated assertion or set of related assertions due to the fact that some conformance tests require additional research, or that the test of that requirement is not feasible at the present time.

5.3 Hierarchy of conformance tests

Three levels of conformance testing are defined below. See also expanded discussions on these levels of conformance tests in Section 2 of NIST Special Publication 500-290. For each assertion included in the tables of requirements and assertions, a level of conformance testing is indicated.

Level 1 conformance testing

Level 1 conformance testing deals with the form and structure of the internal content and verifies that data structures exist and have allowable values. Specifically, it checks for the presence, structure, and value of each field, subfield, and information item in a transaction for conformance with the specification of the standard, both in terms of ranges and cardinality. Since Level 1 testing can be performed by a simple field-by-field reading of the standard and comparison to known values and their encoding, only the AN-2011 transactions are required for conformance testing, and not any hardware or software components used to create those transactions.

Level 2 conformance testing

Level 2 conformance testing deals with explicit requirements that check for internal consistency. Specifically, morphological conformance checks the relationships between fields, subfields, or information items within a transaction, including comparisons of values, as specified in the AN-2011 standard. Level 2 tests involve interactions between multiple values from different parts of the standard and sometimes from implicit observations that are not explicitly stated in the base standard. Thus, Level 2 tests require more complex validation than Level 1. Similar to Level 1 testing, Level 2 conformance testing only requires an AN-2011 transaction(s).

Level 3 conformance testing

Level 3 conformance testing checks if the biometric transaction is a faithful representation of the parent biometric data and ensures requirements are satisfied that are not merely Level 1 and Level 2 tests. Individual fields may have explicit semantic requirements for which conformance testing is significantly difficult or even impossible to test. Unlike Level 1 and Level 2 testing, Level 3 testing may require software and hardware components used to create the AN-2011 transactions, and may also require the subject and samples from which the biometric information stored in the transaction was collected. The requirements and assertion tables indicate whether Level 1 or Level 2 conformance testing is required to address the assertion identified in the test assertion. Required Level 3 conformance tests are not performed but they are identified in the tables to indicate that the requirement is not addressed or that it is not currently testable.

5.4 Conformance statements

In addition to providing a succinct list of the requirements in the AN-2011 standard, the tables of requirements and assertions provide the means for the developers of implementations under test (IUT) to claim in the tables the list of all the requirements supported including:

- Transaction information
- Encoding requirements
- Each Record Type included in the Transaction
 - Fields
 - Subfields
 - Information Items

This information is useful to the IUT supplier as a checklist on the content of their implementations and also useful to testing laboratories that would evaluate conformance of these IUTs against the supplier's claims. Two columns in the tables are included to provide this information: Implementation Support column (YES/NO/Partial) and Supported Range column (if Implementation Support is "Partial", the supported range should be provided).

If the IUTs are sent to a testing laboratory, the IUT provider shall also submit the information below to the laboratory:

- Provider name
- Provider address
- Transaction identifier
- Transaction version number
- Additional implementation information (optional)

- Submission date
- For each claimed Record Type, provide the Record Type number and whether or not (Yes or No) there are any known deviations from (or exceptions to) the requirements found in the base standard and identified in the Conformance Testing Methodology for the associated Record Types in the IUT. For specific exceptions, the Implementation Support column of the tables of requirements and assertions shall be used to indicate the difference on a per-assertion basis. In addition, if the deviation is general and applies to the entire Record Type, a description shall be provided. This option is useful for cases where there have been modifications to the base standard that are not reflected in the conformance testing methodology, where the IUT provider believes there is a defect in the base standard or conformance testing methodology, and other instances where the implementation does not fully conform to the AN-2011 standard requirements.

The testing laboratory may use testing tools that implement or conform to this conformance testing methodology to provide a determination of the level of conformance of the IUT to the AN-2011 standard.

5.5 Test Assertion Syntax

Test assertions are expressed according to the operators and operands found in the tables of Operator Definitions and Operand Definitions, except for those instances where the assertion cannot be clearly or easily represented in a mathematical format. In those cases, English is used to express the assertion, and the text is contained within the < > characters.

Operators

The table below includes a complete description of the operators used throughout the requirements and assertion tables.

Table 5.1 - Assertion Syntax: Operator Definitions

Operator Definitions		
Operator	Name	Description
AND	Logical And	Tests if both values are true.
ELSE	Else	Combined with the IF operator to specify what expressions are evaluated when the IF expression is false.
EQ	Equal To	Tests for equality between two values.
GT	Greater Than	Tests if the first value is greater than the second value
GTE	Greater Than or Equal To	Tests if the first value is greater than or equal to the second value.
IF	Logical If	Determines if the value or expression is true or false.
IFF	IF and Only IF	Tests the bi-conditional where each of the first and second expressions implies the other.
in	Container Specification	For X in Y, selects only those X found in Y.
LT	Less Than	Tests if the first value is less than the second value.
LTE	Less Than or Equal To	Tests if the first value is less than or equal to the second value.

MO	Member Of	Tests if the value is contained within the set.
MOD	Modulo	For X MOD Y, provides the remainder of X divided by Y.
NEQ	Not Equal To	Tests for non-equality between two values.
NOT	Negate	Negates any operator or expression that follows.
OR	Logical Or	Tests if either value is true
P:N in Q	Query	Selects the Nth occurrence of P in Q.
ST	Such That	Enforces a condition upon the specified value or expression.
THEN	Then	Combined with the IF operator to specify what expressions are evaluated when the IF expression is true.
XOR	Exclusive Logical Or	Tests if either value is exclusively true (both cannot be true)
to	Range Selection	For X to Y, selects a set of values Z ST Z GTE X AND LTE Y
#	All	Provides all valid values.
:	Data Element Selection	For X:N, selects the Nth element in X.
,	Range Concatenation	For X,Y, represents the set of values containing both X and Y.
.	Field Selection	For X.Y, selects the field specified by Y in Record X.
<>	English Expression	Contains English text that could not be reasonably expressed mathematically.
{ }	Value	For {X}, provides the value of X.
[]	Set	The set to be tested.

Terms

The table below provides a complete description of the terms used throughout the requirements and assertion tables.

Table 5.2 - Assertion Syntax: Terms

Term Definitions		
Term	Name	Description
Element	XML Element	An XML Element defined in Annex G of the AN-2011 standard or the associated XML Schema file.
Field(s)	Field	Field structure as defined by the AN 1-2011 standard.
InfoItem	US Separated Information Item	Information Item separated by the ASCII US (0x1F) separator character
Integers	Integer Set	Set of all integers.
NA	Not Applicable	The test or condition is not applicable.
Unsupported	Unsupported	The requirement is not supported in this version of the CTM. This may be the result of the related conformance test requiring additional research, or the result of the test being infeasible (level 3 only).
Record(s)	Record	Record structure as defined by the AN 1-2011 standard.
Subfield	RS Separated Subfield	Subfield separated by the ASCII RS (0x1E) separator character
Transaction	Transaction	Transaction structure as defined by the AN 1-2011 standard.
TRUE	True	The test always evaluates to true because there is no defined value for testing, or there is no value for which the test will fail.

Operands

The table below includes a complete description of the operands used throughout the requirements and assertion tables. The parameter X may represent any combination of operands, terms, and operators.

Table 5.3 - Assertion Syntax: Operand Definitions

Operand Definitions		
Operand	Name	Description
All(X)	All Occurrences	Returns all occurrences of X.
ASCII(X)	ASCII Values	Specifies that all values represented by X are ASCII values. Ex. ASCII(a) is 0x61
Bytes(X)	Byte Data	Returns the set of bytes contained in X.
Cardinality(X)	Cardinality	For use with NIEM-XML encoding only. Returns the Cardinality of the XElm as specified in Annex G of the standard.
Count(X)	Count Occurrences	Returns the number of occurrences of X.
DataLength(X)	Length Of (without Special Characters)	Returns the length of X without counting the characters ASCII(US, RS, FS).
FieldNumber(X)	Field Number	Returns the field number of X.
First(X)	First Occurrence	Returns the first occurrence of X.
For(X EQ A to B) {Expression(s)}	For Loop	Evaluates each Expression for the range specified by A to B.
ForEach(X) {Expression(s)}	For Each	Evaluates each Expression for every occurrence of X found.
Last(X)	Last Occurrence	Returns the last occurrence of X.
Length(X)	Length Of	Returns the length of X.
Max(X)	Maximum Value	Returns the maximum value in the set X.
Min(X)	Minimum Value	Returns the minimum value in the set X.
Next(X)	Next Occurrence	Returns the next occurrence of X. Only for use within ForEach Operand's Expression(s).
Pair(A,B) of X	Pair	Returns all pairs of X. Only for use as a parameter in a ForEach Operand.
ParentField(X)	Parent Field	Returns the Field that contains X.
ParentRecord(X)	Parent Record	Returns the Record that contains X.
Present(X)	Value Present	Returns TRUE if X is present, FALSE otherwise. For subfields and information items in Traditional Encoding, the US and RS separators are always present. Therefore the Present(X) operand returns TRUE if the value between the separators is present.
Previous(X)	Previous Occurrence	Returns the previous occurrence of X. Only for use within ForEach Operand's Expression(s).
Second(X)	Second Occurrence	Returns the second occurrence of X.
Type(X)	Record Type	Returns the Record Type of X.
Var(X) {Selection Statement}	Variable	Assigns the entity specified by the Selection Statement to the name X. The assignment is valid for the remainder of the assertion text.
XElm(X)	XML Element	Returns the XML Element with name X.

5.6 Tables of requirements and assertions - Table headers

The following describe the headings of the tables of requirements and assertions found in Section 6:

- **Requirement # and ID:** Defines a unique requirement number and a unique identifier for the requirement and associated assertion or set of assertions. For Record Type requirements, the Requirement # is in the form RTN.M, where N is the Record Type and M is the sequential number of the requirement (for requirements in the annexes the form is AN followed the Annex letter). For sections not associated with a record type and annexes, the prefix is SEC followed by the section number. If additional requirements must be entered in the future, the new requirement number will be specified using an additional number, as in RTN.M.A, where A is the additional number. The Requirement ID provides reference to the type of requirement (e.g., transaction, record, and field), and is in the form of “Type: Description” where type may be “Transaction”, “Record”, or “Field”. For requirements found in Annex B of the AN-2011 standard, the Requirement ID is preceded by “Traditional-”. For requirements found in Annexes C and G of the AN-2011 standard, the Requirement ID is preceded by “NIEM-”.
- **Ref. in Base Std. (Reference in Base Standard):** Identifies the clause (or section) where the requirement is included in the AN-2011 standard. In some cases the reference includes additional information such as a Table number.
- **Requirement Summary:** Provides a summary of the requirement detailed as textual information or an interpretation of the requirement in the standard. It provides the essentials of the requirement but may not provide all the text necessary to understand it. The < > operator is used in the Requirement Summary column of the tables to represent text not found in the standard, but that may help indicate what requirement is being represented.
- **Level:** Indicates whether Level 1 or Level 2 conformance testing is required to address the assertion identified in the Assertion ID column of the same row. Level 3 conformance tests are indicated only when necessary to show that the requirement is not currently testable or addressed.
- **Status:** Reflects the status specified in the AN-2011 standard:
 - M: Mandatory
 - O: Optional
 - D: Dependent
 - M†: Mandatory within the optional field/subfield
 - O†: Optional within the optional field/subfield
 - -: Varying statuses. The assertion addresses many fields or subfields of multiple statuses.
- **Assertion ID:** Defines an identifier of a specific test assertion within the set of test assertions associated with a requirement.

- **Test Assertion:** Provides, whenever possible, a mathematical equation or a procedure using the language specified by the [operators](#), [operands](#), and [terms](#).
 - The <> operator is used to contain plain text whenever a mathematical formula or simple procedure cannot be detailed.
- **Test Note:** Contains the ID of the test note. Test notes provide additional information related to the assertion and are included below the tables.
- **Imp. Support (Implementation Support):** Denotes a supplier’s implementation support of a particular requirement (“Y”/”N”). A note can follow the table when providing more details of implementation support (or the lack of it) is required.
- **Supported Range:** Indicates a range of values supported, especially when it is different than the full range of values specified in the standard. When an information item is specified as a single value, or does not address a range of values, a N/A should be used.
- **Test Result:** This column is used to denote the test results. For file and record-level results the results are either “Pass” or “Fail”. The field-level results should be indicated as “Ok”, “Error”, “Warning” and “Note”. Explanatory notes can be added below the table.
- **Applicable to (T, X, B, B* or X*) – (Applicability):** This table header indicates which assertions differ (in values required or conditions) between Traditional and NIEM encoding. This table header does not indicate which assertions are addressed by the XML Schema and which will need to be addressed in code. Valid values are:
 - T: The assertion only applies to the Traditional encoding as described in Annex B of AN-2011.
 - X: The assertion only applies to the NIEM-conformant (XML) encoding as described in Annex C of AN-2011.
 - B: The assertion is applicable to both Traditional and NIEM (XML) encoding.
 - Following the conventions in the AN-2011 standard, test Assertions are expressed using constructs (fields, records, etc.) found in Traditional encoding (such as xx.002 for the second field of each record type). The same assertion applies for the XML elements that correspond to the Traditional constructs. For example, 10.006 in Traditional Encoding corresponds to XML Element <biom:ImageHorizontalLineLengthPixelQuantity>.
 - Some assertions reference subfields, however, NIEM encoding uses nested elements. Expression of Test Assertions that include subfields in the XML encoding requires further review. These assertions are listed with the following applicability values:
 - X* indicates that the assertion applies only to NIEM-conformant (XML) encoding.
 - B* indicates that the assertion is applicable to both Traditional and NIEM (XML) encodings.

For the NIEM-conformant assertions, indicated by X or B, the following values indicate the coverage of those assertions by the Schema:

- C: Covered - the assertion is fully tested by the Schema.
- P: Partial – the assertion is partially tested by the Schema, but not fully covered. If part of assertion is correctly tested and another part is incorrectly tested, it shall be marked as “I” (Incorrect), not “P” (Partial). However, if part is correctly tested, and another part is omitted, then it is Partial.
- I: Incorrect – an attempt to test for the assertion is made by the Schema, but the test is incorrect.
- O: Omitted – the assertions is not tested or addressed by the Schema, nor is there any attempt by the Schema to test for the assertion.

Examples:

- X-C: the assertion is for XML encoding only, and it is fully tested by the Schema.
- B-O: the assertion is for both encodings, but it is omitted by the Schema.
- X*-P: the assertion is for XML encoding, includes nested XML elements, and is only partially tested by the Schema.
- T-C: invalid. This assertion is for traditional encoding and should not have information related to the Schema.

6 Requirements and assertions for AN-2011

6.1 Scope of requirements and test assertions specified in the CTM

The CTM documents requirements and test assertions for the following Sections and selected Record Types of the ANSI/NIST-ITL 2011 standard:

- Section 5: Data Conventions
- Section 7: Information Associated with Several Record Types
- Section 8.1 Record Type-1: Transaction information record
- Section 8.4 Record Type-4: Grayscale fingerprint image
- Section 8.10 Record Type-10: Facial, other body part and SMT image record
- Section 8.13 Record Type-13: Friction-ridge latent image record
- Section 8.14 Record Type-14: Fingerprint image record
- Section 8.15 Record Type-15: Palm print image record
- Section 8.17 Record Type-17: Iris image record
- Section 8.18 Record Type-18: DNA record (new in this version)
- Annex B: Traditional Encoding
- Annex C: NIEM Conformant encoding (new in this version)
- Annex G: Mapping to the NIEM IEPD (new in this version)

Tables for the deprecated Record Types 3, 5, and 6 are also included to check for nonexistence of these Record Types. Additionally an assertion is specified that checks for the nonexistence of reserved Record Types 11, 12, and 22 through 97.

6.2 Field Definitions and Structures

ANSI/NIST-ITL 1-2011 contains several field types:

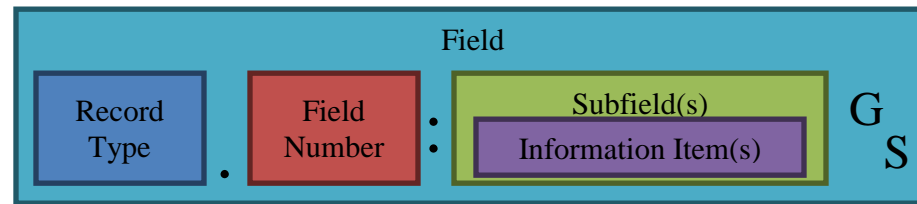
- Single Information Item (Field with data)
- Multiple Information Items (Field with multiple Information Items)
- Subfields Repeating Sets of Info Items

- Subfields Repeating Values

The tables of requirements and assertions represent all field types as a field that contains a list of one or more subfields, each of which contains a list of one or more information items. Fig. 6.1 is a representation of how each field type is represented in the tables.

- Single Information Item: Field with one subfield containing one information item.
- Multiple Information Items: Field with one subfield containing multiple information items.
- Subfields Repeating Sets of Information Items: Field with one or more subfields, each containing sets of one or more information items.
- Subfields Repeating Values: Field with one or more subfields, each containing one information item.

Figure 6.1 - Generic AN-2011 Field Structure



Unless otherwise stated, the tables of requirements and assertions express all field structures using the Traditional notation of record type and field number (e.g., 1.001) as well as subfield and information item indices when appropriate. However, the NIEM-XML encoding has no concept of subfields or information items. Instead, the XML encoding uses subelements. Annex G of the base standard can be used to translate the listed values for Traditional structures to the XML equivalent. In some cases the tables of requirements and assertions lists the XML element names when necessary for clarifying an assertion.

6.3 Section 5: Data Conventions

Table 6.1 - Assertions for Data Conventions

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
5: Data Conventions											
SECS.1 - Transaction: Required Record Types	5.1, Table 3	There shall be at least one other record type from Table 3 accompanying a Record Type-1.	1	M	Transaction-Required Records	Present(Record ST Type(Record) EQ 1) AND Present(Record ST Type(Record) MO [2 to 99]) AND NOT MO [3,5,6,11,12,22 to 97])		NA			T
			1	M	NIEM-Transaction-Required Records	Count(XElm(itl:PackageInformationRecord) in Transaction) EQ 1 AND Count(Records ST Record NEQ XElm(itl:PackageInformationRecord) in Transaction) GTE 1		Y			X-P <Does not test for additional record type other than Type-1>
SECS.2 - Transaction: Single Subject	5.1	All records in a transaction shall pertain to a single subject. Biometric data used to identify another individual requires a separate transaction.	3	M	Transaction-Single Subject	<Unsupported.>	t-1				B
SECS.3 - Transaction: Records Transmitted Together	5.1	All of the records belonging to a single transaction shall be transmitted together.	3	M	Transaction-Records Together	<Unsupported.>	t-1				B
SECS.4 - Transaction: Record Occurrences	5.1	There may be multiple records in a transaction of each record type other than Type-1.	1	M	Transaction-Record Occurrences	TRUE		Y			B-C
SECS.5 - Transaction: Size	5.2	Although the 2007 and 2008 versions of the standard stated "... there is no upper limit on the number of logical records that may be present in a file..." there was an effective upper limit due to the field size limits specified in the 2007 version (but not the 2008 version). This limit was 3 ASCII 2 characters for the information item holding the total number of records of type 2 through 99; thus an upper limit of	1	M	Transaction-Size	Count(Records in Transaction) LTE 1000		Y			B-O

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
5: Data Conventions											
		999 such records. With the addition of a Type-1 record, the maximum number of records in a transaction was thus restricted to 1000. This upper limit of 1000 records is maintained in this version of the standard to ensure backward compatibility with the 2007 version.									
SEC5.6 - Transaction: Reserved Records	5.3 Table 3	11 Voice Data (future) 12 Dental Record (future) 22-97 reserved for future use.	1	M	Transaction-Records Reserved	NOT Present(Records ST Type(Records) MO [11,12,22 to 97])		NA			T
			1	M	NIEM-Transaction-Records Reserved	{All(XElm(<biom:RecordCategoryCode>))} NOT MO [11,12,22 to 97]		Y			X-C
SEC5.7 - Transaction: Type1-Occurrences	5.3.1, Annex G	Transmissions to be exchanged are required to contain one and only one Type-1 record per transaction. Itl:PackageInformationRecord Cardinatlity 1..1	1	M	Transaction-Type1-OccursOnce	Count(Records in Transaction ST Type(Record) EQ 1) EQ 1		NA			T
			1	M	NIEM-Transaction-Type1-OccursOnce	Count(XElm(itl:PackageInformationRecord)) EQ 1		Y			X-C
SEC5.8 - Transaction: Type1-Record_First	5.3.1	The Type-1 record shall always be the first record within the transaction.	1	M	Transaction-Type1-First	Type(First(Record in Transaction)) EQ 1		NA			T
			1	M	NIEM-Transaction-Type1-First	First(Record in Transaction) EQ XElm(itl:PackageInformationRecord) AND {XElm<RecordCategoryCode> in Record} EQ 1		Y			X-C
SEC5.9 - Transaction: Type1- One More Record	5.3.1	At least one more record shall be present in the file.	1	M	Type1-One More Record	<See Requirement ID " Transaction: Required Record Types ">	t-2				
SEC5.10 - Record: Type1-Contents	5.3.1	The Type-1 record shall provide information describing type and use or purpose for the transaction involved, a listing of each record included in the transaction, the originator or source of the physical record, and other useful and required information items.		M	Type1-Contents	<The test assertions are included under assertions for Record Type-1: Transaction Information Record .>	t-2				

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
5: Data Conventions											
SEC5.11 - Record: Type2-Contents	5.3.2	Type-2 records shall contain user-defined textual fields providing identification and descriptive information associated with the subject of the transaction.		M	Type2-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-2: User-defined descriptive text record >	t-2				
SEC5.12 - Record: Type2-DOM/APS	5.3.2	Each entry in a Type-2 record shall have a definition and format that is listed with the Domain owner. Data contained in this record shall conform in format and content to the specifications of the domain name(s) as listed in Field 1.013 Domain name / DOM found in the Type-1 record, if that field is in the transaction. The default domain is NORAM. Field 1.016 Application profile specifications / APS allows the user to indicate conformance to multiple specifications. If Field 1.016 is specified, the Type-2 record must conform to each of the application profiles.	3	M	Type2-DOM/APS	<Unsupported.>	t-3	NA			B-O
SEC5.13 - Transaction: Type3-Deprecated	5.3.3, Table 3	Record Type-3 shall not be contained in transactions conforming to this version of the standard.		M	Type3-Unsupported	<The test assertions are included under assertions for Record Type-3: DEPRECATED. >	t-2				
SEC5.14 - Record: Type4-Contents	5.3.4	Type-4 records were designed to convey fingerprint images captured by an Automated Fingerprint Identification System (AFIS) live-scan reader, or other image capture devices operating at a nominal scanning resolution of 500 pixels per inch (ppi). Many systems still use this record type and it will remain an integral part of the standard.		M	Type4-Contents	<The test assertions are included under assertions for Record Type-4: Grayscale fingerprint image. >	t-2				
SEC5.15 - Transaction: Type5-	5.3.5, Table 3	Record Type-5 shall not be contained in transactions conforming to this version of the standard.		M	Type5-Unsupported	<The test assertions are included under assertions for Record Type-5: DEPRECATED. >	t-2				

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
5: Data Conventions											
Deprecated											
SEC5.16 - Transaction: Type6-Deprecated	5.3.6, Table 3	Record Type-6 shall not be contained in transactions conforming to this version of the standard.		M	Type6-Unsupported	<The test assertions are included under assertions for Record Type-6: DEPRECATED. >	t-2				
SEC5.17 - Transaction: Type7-Contents	5.3.7	Type-7 is a legacy record type. It was intended as a temporary measure to enable the exchange of image data that would be defined by specific record types in later versions of the standard. Since some older systems still use this record type, it is included in the standard.		M	Type7-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-7: User-defined image record .>	t-2				
SEC5.18 - Record: Type8-Contents	5.3.8	Type-8 records shall be used for scanned binary or vectored signature image data. Each Type-8 record shall contain data representing the signature of the subject from whom the biometric sample is being collected and/or the operator capturing biometric data.		M	Type8-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-8: Signature image record.>	t-2				
SEC5.19 - Record: Type9-Contents	5.3.9	Type-9 records shall contain and be used to exchange minutiae or other friction ridge feature data. Each record shall represent the processed (automated and/or manual) image data from which the characteristics are stated. The primary use of this record type shall be for remote searching of latent prints. New to this version of the standard is the Extended Feature Set (EFS) for latent print markups. There is also a capability to have additional vendor-specified feature sets. Workstation logs may also now be transmitted in this record type.		M	Type9-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-9: Minutiae data record .>	t-2				
SEC5.20 - Record:	5.3.10, Table 58	Type-10 image records shall contain and be used to exchange textual and image		M	Type10-Contents	<The test assertions are included under assertions for Record Type-10: Facial, other body	t-2				

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
5: Data Conventions											
Type10-Contents		data from the face, scars, (needle) marks, and tattoos (SMT). New to this version of the standard is the extension of the record type to handle images of other body parts. See Table 58 for a list of the images types possible in a Type-10 record. Textual and analytic information pertinent to the digitized image is also contained in this record type.				part and SMT image record .>					
SEC5.21 - Transaction: Type11-Reserved	5.3.11	Type-11 records are reserved for future use.		M	NA	<See Requirement ID " Transaction: Reserved Records ">	t-2				
SEC5.22 - Transaction: Type12-Reserved	5.3.12	Type-12 records are reserved for future use.		M	NA	<See Requirement ID " Transaction: Reserved Records ">	t-2				
SEC5.23 - Record: Type13-Contents	5.3.13	Type-13 image records shall contain and be used to exchange variable-resolution latent friction ridge image data (fingerprint, palmprint and/or plantar) together with fixed and user defined textual information fields pertinent to the digitized image. In all cases, the scanning resolution for latent images shall be at least 39.37 ppm (1000 ppi). The variable resolution latent image data contained in the Type-13 record shall be uncompressed or may be the output from a lossless compression algorithm.		M	Type13-Contents	<The test assertions are included under assertions for Record Type-13: Friction-ridge latent image record . >	t-2				
SEC5.24 - Record: Type14-Contents	5.3.14	Type-14 image records shall contain fingerprint image data. It should be noted that as the class resolution is increased, more detailed ridge and structure information becomes available in the fingerprint image. However, in all cases the class resolution shall be at least 19.69		M	Type14-Contents	<The test assertions are included under assertions for Record Type-14: Fingerprint image record .>	t-2				

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
5: Data Conventions											
		ppmm (500 ppi).									
SEC5.25 - Record: Type15-Contents	5.3.15	Type-15 image records shall contain and be used to exchange palm print image data together with fixed and user-defined textual information fields pertinent to the digitized image. ...in all cases the class resolution shall be at least 19.69 ppmm (500 ppi) The variable-resolution palm print image data contained in the Type-15 record may be in a compressed form.		M	Type15-Contents	<The test assertions for this type are included under assertions for Record Type-15: Palm print image record. >	t-2				
SEC5.26 - Record: Type16-Contents	5.3.16	The Type-16 image record is designed for developmental purposes and for the exchange of miscellaneous images. This record shall contain and be used to exchange image data together with textual information fields pertinent to the digitized image.		M	Type16-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-16: User-defined testing image record.>	t-2				
SEC5.27 - Record: Type17-Contents	5.3.17	Type-17 image records shall contain iris image data. Field 17.018 (Global unique identifier) from the 2007 and 2008 version of the standard has been deprecated in this version.		M	Type17-Contents	<The test assertions are included under assertions for Record Type-17: Iris image record .>	t-2				
SEC5.28 - Record: Type18-Contents	5.3.18	The Type-18 record (new to this version of the standard) shall contain and be used to exchange DNA and related data. It was developed to provide a basic level of interoperability with the draft format of the <i>ISO/IEC 19794-14 DNA data interchange format</i> . With full consideration to privacy, this standard only uses the non-coding regions of DNA. The regions of the DNA that encode phenotypic information are deliberately avoided.		M	Type18-Contents	<The test assertions are included under assertions for Record Type-18: DNA record. >	t-2				
SEC5.29 - Record:	5.3.19	Type-19 image records (new to this version of the standard) shall contain and		M	Type19-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are	t-2				

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
5: Data Conventions											
Type19-Contents		be used to exchange variable-resolution plantar print image data together with fixed and user-defined textual information fields pertinent to the digitized image. ...in all cases the scanning resolution used to capture a plantar image shall be at least as great as the minimum scanning resolution of 19.69 ppmm (500 ppi). The variable-resolution plantar image data contained in the Type-19 record may be in a compressed form.				supported, they are included under assertions for Record Type-19: Plantar record.>					
SEC5.30 - Record: Type20-Contents	5.3.20	The Type-20 record (new to this version of the standard) shall contain the source representation(s) from which other Record Types were derived. Typically, one Type-20 source representation is used to generate one or more representations for use in other record types. When a source representation (in a Type-20 record) is processed and the derived representation is to be used as the source for further derivations, then the derived representation is contained in a Type-20 record.		M	Type20-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-20: Source representation record.>	t-2				
SEC5.31 - Record: Type21-Contents	5.3.21	The Type-21 record shall contain an associated context image, audio / visual recording or other related data. This record type does NOT contain information used to derive biometric information contained in other records. Record Type-20 serves that function. Record Type-21 may be used to convey contextual information, such as an image of the area where latent fingerprints were captured.		M	Type21-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-21: Associated context record.>	t-2				
SEC5.32 - Record: Type98-	5.3.22	The Type-98 record shall contain security information that allows for the assurance of the authenticity and/or integrity of the		M	Type98-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for	t-2				

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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5: Data Conventions

Contents		transaction, including such information as binary data hashes, attributes for audit or identification purposes, and digital signatures.				Record Type-98: Information assurance record.>					
SEC5.33 - Record: Type99-Contents	5.3.23	Type-99 records shall contain and be used to exchange biometric data that is not supported by other ANSI/NIST-ITL record types. This provides a basic level of interoperability and harmonization with other biometric interchange formats. This is accomplished by using a basic record structure that is conformant with <i>ANSI INCITS 398-2005, the Common Biometric Exchange Formats Framework (CBEFF)</i> and a biometric data block specification registered with the International Biometrics Industry Association (IBIA).		M	Type99-Contents	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-99: CBEFF biometric data record.>	t-2				
SEC5.34 - Transaction: Deprecated Entities	5.4	Deprecated records for this version are Record Types 3, 5 and 6. Field 17.018 is deprecated. There are two deprecated values in Field 17.016: Image property code / IPC (2: for interlace frame, and 3: for interlace field).	1	M	Deprecated Entities	<See Requirement IDs: " Field: Type17-CondCode " and " Field: 17.016-Image Property Code Value ".> <See Sections " 8.3: Record Type-3: DEPRECATED ", " 8.5: Record Type-5: DEPRECATED ", and " 8.6: Record Type-6: DEPRECATED ". >	t-2				
SEC5.35 - Transaction: Legacy Entities	5.4	There is a special category called 'legacy' for a record type, field, subfield, information item or value that was valid in previous versions of the standard, but shall not be used for new data. 'Legacy' indicates that if there is existing data using this record type, field, information item or value it may still be transmitted in a transaction conformant to this version of the standard. In this version 'legacy' applies to Fields 9.005 through 9.012, Field 10.022 and to the value '1' in Table 4	3	M	Legacy Entities	<Warning provided only. It is not feasible to determine if the data is new or legacy. However, a warning will be displayed if legacy entities are present for the supported record types. >	t-2	NA			

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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5: Data Conventions

		Character encoding.									
SEC5.36 - Transaction: Reserved Character Types	5.6, Table 93	<Table 93 specifies a set of reserved character types. The characters are reserved for all encodings as stated in 5.6.>	1	M	Transaction-Reserved Character Types	ForEach(Record in Transaction ST Type(Record) NOT MO [4, 7, 8]) { ForEach(Field in Record ST FieldNumber(Field) NEQ 999) { ForEach(Subfield in Field) { Bytes(All(Infoltems in Subfield)) NOT MO [0x02, 0x03, 0x1C, 0x1D, 0x1E, 0x1F] } } }		NA			T
			1	M	NIEM-Reserved Character Types	(All(Character)) NOT MO [0x02, 0x03, 0x1C, 0x1D, 0x1E, 0x1F]		Y			X-O
SEC5.37 - Record: Type1-ASCII	5.6, Table 93	Record Type-1 shall always be recorded in all encodings using the characters that can be represented by the 7-bit American National Standard Code for Information Interchange (ASCII) found in table 93 with the exception of the reserved values.	1	M	Type1-ASCII	ForEach(Field in Record ST Type(Record) EQ 1) { ForEach(Infoltem in Field) { {Bytes(Infoltem)} MO [0x20 to 0x7E] } }		Y			B*-O
	C.4.1, 5.6	For compatibility with existing implementations of the standard, implementers may wish to limit content to the 128 characters that can be represented by 7-bit ASCII. Nevertheless, senders and receivers of XML packages using this standard may agree on other character sets, including international character sets. The default in XML is UTF-8	1	M	NIEM-Type1-User Defined	TRUE	t-4	Y			X-C

Req. # - ID	Ref.in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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5: Data Conventions

SEC5.38 - Transaction: Encoding-Base64	5.6	Base-64 shall be used for converting non-ASCII text into ASCII form, where required and noted in the standard.	1	M	Data-Encoding-Base-64	<These assertions are addressed in the record type tables where Base-64 encoding is required.>					
SEC5.39 - Field: SEC5.40 - Encoding-CharSets	5.6, Table 4	Field 1.015 Character encoding/DCS is an optional field that allows the user to specify an alternate character encoding... Field 1.015 Character encoding/DCS contains three information items: the character encoding set index/ CSI, the character encoding sent name/CSN, and the character encoding set version/CSV. The first two items (CSI and CSN) are selected from the appropriate columns of Table 4 .	3	O	Data-Encoding-CharSets	<Unsupported.>	t-4	NA			B

6.4 Section 6: Implementation Domain and Application Profiles

Table 6.2 - Assertions for Implementation Domain & Application Profiles

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
6: Implementation Domain and Application Profiles											
SEC6.1 - Field: Domain	6	An implementation domain, coded in Field 1.013 Domain name / DOM of a Type-1 record as an optional field, is a group of agencies or organizations that have agreed to use preassigned data fields with specific meanings (typically in Record Type-2) for exchanging information unique to their installations. The implementation domain is usually understood to be the primary application profile of the standard.	3	O	Fields-Domain	<Unsupported.>	t-3	NA			B
SEC6.1 - Field: APS	6	Field 1.016 Application profile specifications / APS allows multiple application profiles to be referenced. The organization responsible for the profile, the profile name and its version are all mandatory for each application profile specified. A transaction must conform to each profile that is included in this field.	3	O	Fields-APS	<Unsupported.>	t-3	NA			B

6.5 Section 7: Information Associated with Several Records

Table 6.3 - Assertions for Information Associated with Several Records

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
7: Information Associated with Several Records											
SEC7.1 - Field: xx.001-Record Header	7.1 C.4.7, C.7	The record header appears as the first field (xx.001) in each Record Type. It contains information particular to the encoding format chosen, in order to enable proper reading of the record. In Traditional encoding, this field contains the record length in bytes (including all information separators). Record Length. There is no corresponding XML element. See Section 7.1. In NIEM-conformant XML encoding, this field contains the <i>RecordCategoryCode</i> , which is the numeric representation of the Record Type. The first element in all XML encoded records shall be labeled <biom:RecordCategoryCode> and contain the type (category) number of the record.	1	M	Typexx-Field001First	ForEach(Record in Transaction) { FieldNumber(First(Field in Record)) EQ 1 }		NA			T
			1	M	NIEM- Typexx-Field001First	ForEach(Record in Transaction) { First(Field in Record) EQ XElm(<biom:RecordCategoryCode>) }		Y			X-C
			2	M	Typexx-Field001EqualsRecord Length	ForEach(Record in Transaction) { {Record.001} EQ Length (Record) }		NA			T
			1	M	NIEM-xx.001-Value	< These assertions are included under assertions for the associated record types.>	t-2				
SEC7.2 - Transaction: Record Length	7.1	In the 2007 version of the standard, the record length was unrestricted for Record Type-1. It was a maximum value having up to 4-bytes in ASCII representation for Record Types 4 and 7 and 8. For Record Types 9 and above it was restricted to 8 characters (99,999,999). These values are retained in this version for Traditional encoding.	1	M	Record Lengths	< These assertions are included under assertions for the associated record types.>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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7: Information Associated with Several Records

SEC7.3 - Field: xx.999-Reserved	7.2	Field xx.999 is reserved in Record Types 10 and above for data associated with the record that is described in the other fields of the record. It is mandatory in most of these record types (It does not appear in Type-18 or Type-98). Only in Record Types 14, 15, 17 and 19 is it possible for Field xx.999 to be optional – when an amputated or missing body part is noted in the appropriate field in those record types.	M		xx.999-Reserved	< These assertions are included under assertions for the associated record types.>	t-2				
			2	M	Typexx-Field999NotPresent	ForEach(Record ST Type(Record) MO [1 to 9, 18, 98]) { Not Present(Field 999 in Record) }		NA			T
			2	M	NIEM- Typexx-Field999NotPresent	<Fields are not tagged in XML. This assertion is covered by NIEM Undefined Elements >		Y			X-C
SEC7.4 - Field: xx.002-IDC	7.3.1, Annex B, C.7	The second field shall be labeled as field “2” and contain the information designation character. (Traditional Encoding) The second element in every record other than the Type-1 record, shall be labeled <biom:ImageReferenceIdentification> and contain the Information designation character / IDC (XML Encoding). Each of the records present in a transaction, with the exception of the Type-1 record, shall include a field (xx.002) containing the information designation character / IDC6. The value of the IDC shall be a sequentially assigned positive integer starting from zero and incremented by one up to a maximum of 99. IDC references are stated in Type-1 Field 1.003 Transaction content / CNT and shall be used to relate information items in the CNT field of the Type-1 record to the other records in the transaction. Two or more records may share a single IDC solely to identify and link together records that pertain to different	1	M	Typexx-Field002Exists	ForEach(Record ST Type(Record) NEQ 1) { Present(Record.002) }		NA			T
			1	M	NIEM- Typexx-Field002Exists	ForEach(Record ST Record NEQ XElm(itl:PackageInformationRecord)) { Present(XElm(biom:ImageReferenceIdentification)) }		Y			X-C
			1	M	Typexx-Field002Second	ForEach(Record ST Type(Record) NEQ 1) { FieldNumber(Second(Field in Record)) EQ 2 }		NA			T
			1	M	NIEM- Typexx-Field002Second	ForEach(Record ST Record NEQ XElm(itl:PackageInformationRecord)) { Second(Field in Record) EQ XElm(biom:ImageReferenceIdentification) }		Y			X-C
			2	M	Transaction -	Var(IDC_Fields) {	t-20	NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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7: Information Associated with Several Records

		representations of the same biometric trait.			IDCSequentialValues	<p>All(Field in Records ST Type(Records) NEQ 1 AND FieldNumber(Field) EQ 2)</p> <p><IDC_Fields must be sorted numerically from least to greatest value before performing the following tests, although no order is required in the Transaction></p> <p>{First(Field in IDC_Fields)} EQ 0</p> <p>AND</p> <p>ForEach(Field in IDC_Fields)</p> <p>{{Next(Field)} LTE <Current Maximum IDC Value> +1</p> <p>AND {Field} MO [Integers]</p> <p>}</p>					
			1	M	xx.002-Value	<p>ForEach(Record ST Type(Record) NEQ 1)</p> <p>{</p> <p>{Record.002} MO [0 to 99]</p> <p>}</p>		Y			B-O
			2	M	NIEM-Transaction-IDC-Sequential Values	<p>Var(IDC_Fields)</p> <p>{</p> <p>All(XElm(biom:ImageReferenceIdentification))</p> <p>}</p> <p><IDC_Fields must be sorted numerically from least to greatest value before performing the following tests, although no order is required in the Transaction></p> <p>{First(Field in IDC_Fields)} EQ 0</p>	t-20	Y			X-O

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						AND ForEach(Field in IDC_Fields) { {Next(Field)} LTE <Current Maximum IDC Value> +1 }					
			2	M	Transaction - MatchingID CValues-ComparableBiometric Types	<See tables in test note.>	t-5	Y			B-O
			1	M	1.003-CNT	<These assertions are included under assertions for Record Type-1: Transaction Information Record. >	t-2				
SEC7.5 - Field: xx.002-IDCImages	7.3.1	Two or more image records may share a single IDC only when they are enhancements of a single image; such transformations shall have identical dimensions.	2	M	Transaction - MatchingID CSamelmageDimension	ForEach(Pair(A,B) of Records <with matching IDC fields>) { {A.006} EQ {B.006} AND {A.007} EQ {B.007} }		Y			B-O
			3	M	Transaction - IDCsFromSamelImage	<Unsupported: Not feasible to test if the samples are from the same image, only that the samples come from the same type of biometric trait (see Field: xx.002-IDC)>	t-1	NA			B
SEC7.6 -	7.3,	...optional field xx.997 is allowed in	2	O	Typexx-	ForEach(Field ST Type(Field) EQ 997)		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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7: Information Associated with Several Records

Field: xx.997-SOR	7.3.2	biometric data sample Record Types 10 and above that could have the biometric sample derived from a source representation in Record Type-20. The biometric data is stored in Field xx.999. Record Type-18 (DNA) does not contain a field xx.997, since it does not contain a field 18.999. Record Type-98 does not contain this field, since that is not a biometric data record type. Record Type-21 does not contain biometric data and thus does not include field xx.997. This field is comprised of one mandatory and one optional information item, as described below.			Field997NotPresent	{ Type(ParentRecord(Field)) GTE 10 AND NOT MO [18,20, 21,98] }					
			2	O	NIEM- Typexx-Field997NotPresent	ForEach(Field ST Field EQ XElm(biom:SourceRepresentation)) { {XElm(biom:RecordCategoryCode) in ParentRecord(Field)} GTE 10 AND NOT MO [18, 20, 21, 98] } See <NIEM Undefined Elements>	t-2	Y			X-P <Allows SourceRepresentation in 9, 18, 20, 21>
			1	O	xx.997 – SubfieldCount	ForEach(Field ST FieldNumber(Field) EQ 997) { Count(Subfields in Field) MO [1 to 255] }		NA			T
SEC7.7 - Field: xx.997-SOR-SRN	7.3, 7.3.2.1	The first information item contains the source representation number / SRN. This is mandatory for each Field xx.997. It contains an index to a particular instance of a Type-20 record in the transaction. This same index value appears in the appropriate instance of Record Type-20 as Field 20.021: Source representation number / SRN. The value of the SRN shall be a sequentially assigned positive integer starting from one and incremented by one, not to exceed 255.	2	M ↑	Transaction -SRN-Match	ForEach(Field ST FieldNumber(Field) EQ 997) { ForEach(Subfield in Field) { Present(Record in Transaction ST Type(Record) EQ 20 AND {Record.021} EQ { Infoltem:1 in Subfield} }) } }		Y			B*-O
			2	O	Transaction -SRN-Sequential Values	Var(SOR_Fields) { All(Fields ST FieldNumber(Fields) EQ 997) } Var(MaxSRN){2}	t-20	Y			B*-O

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7: Information Associated with Several Records

						<p><SOR_Fields must be sorted numerically from least to greatest value before performing the following tests, although no order is required in the Transaction></p> <pre>{Infoltem:1 in Subfield:1 in First(Field in SOR_Fields)} EQ 1</pre> <p>AND</p> <pre>ForEach(Field in SOR_Fields) { ForEach(Subfield in Field) { {Infoltem:1 in Subfield} LTE {MaxSRN}</pre> <p>AND IF {Infoltem:1 in Subfield} EQ {MaxSRN} THEN Var(MaxSRN) { MaxSRN + 1}</p>					
			1	O	xx.997-SRN-Value	<pre>ForEach(Field ST FieldNumber(Field) EQ 997) { ForEach(Subfield in Field) { {Infoltem:1 in Subfield} MO [1 to 255] } }</pre>		Y			B*-O
SEC7.8 - Field: xx.997-SOR-RSP	7.3, 7.3.2.2	The second information item in Field xx.997 is optional. It is the reference segment position / RSP. It contains the index to a particular set of segmentation coordinates of the source representation (There may be more than one segment, such as from an audio / visual recording,	2	O ↑	Transaction -RSP-Match	<pre>ForEach(Field ST FieldNumber(Field) EQ 997) { ForEach{Subfield in Field) { IF(Present(Infoltem:2 in Subfield) { Present(Record in Transaction ST</pre>		Y			B*-O

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7: Information Associated with Several Records

		with different frames yielding input for separate biometric data record instances in the same transaction). This same segmentation index value appears in Record Type-20 as the reference segment position / RSP in Field 20.016: Segments / SEG. There may be up to 99 segments listed in Field 20.016, but only the segment used to produce the biometric data contained in Field xx.999 of the particular instance of Record Type-xx is identified in Field xx.997.				Type(Record) EQ 20 AND {Record.021} EQ { Infoltem:1 in Subfield} AND Present Subfield in {Record.016} ST Infoltem:1 in Subfield EQ {Infoltem:2 in Field} }							
			3	O	Transaction -RSP-CorrectSegment	<Unsupported: Not feasible to test if the RSP that matches was used to produce the biometric data. >	t-1	NA				B*	
			1	O	xx.997-RSP-Value	ForEach(Field ST FieldNumber(Field) EQ 997) { ForEach(Subfield in Field) { {Infoltem:2 in Subfield} MO [1 to 99] } }			Y				B*-O
			1	O	20.016-SubfieldCount	Count(Subfields in 20.016) MO [1 to 99] AND MO [Integers]			NA				T
SEC7.9 - Field: xx.995-ASC	7.3, 7.3.3	New to this version of the standard, optional field xx.995 is contained in biometric data sample Record Types 10 and above that may have instances of Record Type-21 linked to it... This field consists of a maximum of 255 repeating subfields, each of which contains two information items, as described below.	2	O	Typexx-Field995NotPresent	ForEach(Record ST Type(Record) MO [1 to 10, 18, 98]) { Not Present(Field 995 in Record) }		NA			T		
			2	O	NIEM- Typexx-Field995NotPresent	<Fields are not tagged in XML. This assertion is covered by NIEM Undefined Elements >	t-2	Y				X-P <Allows types 9 and 21>.	
			1	O	xx.995-SubfieldCount	ForEach(Field ST FieldNumber(Field) EQ 995) { Count(Subfields in Field) MO [1 to 255] }			NA				T

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7: Information Associated with Several Records

SEC7.10 - Field: xx.995-ASC-ACN	7.3, 7.3.3.1	The first information item contains the associated context number / ACN for a particular Record Type-21. This is mandatory for each Field xx.995, when the field is used. It contains an index to a particular instance of a Type-21 record in the transaction. This same index value appears in the appropriate instance of Record Type-21 as Field 21.021: Associated context number / ACN. The value of the ACN shall be a sequentially assigned a positive integer starting from one and incremented by one, not to exceed 255.	2	M ↑	Transaction -ACN-Match	<pre> ForEach(Field ST FieldNumber(Field) EQ 995) { ForEach(Subfield in Field) { Present(Record in Transaction ST Type(Record) EQ 21 AND {Record.021} EQ { Infoltem:1 in Subfield}) } } </pre>		Y			B*-O
			2	O	Transaction -ACN-Sequential Values	<pre> Var(ASC_Fields) { All(Fields in Transaction ST FieldNumber(Fields) EQ 995) } Var(MaxACN){2} <ASC_Fields must be sorted numerically from least to greatest value before performing the following tests, although no order is required in the Transaction> {Infoltem:1 in Subfield:1 in First(Field in ASC_Fields)} EQ 1 AND ForEach(Field in ASC_Fields) { ForEach(Subfield in Field) { IF{Infoltem:1 in Subfield} EQ {MaxACN} THEN Var(MaxACN) { MaxACN + 1} </pre>	t-20	Y			B*-O

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7: Information Associated with Several Records

						} }					
			1	O	xx.995-ACN-Value	ForEach(Field ST FieldNumber(Field) EQ 995) { ForEach(Subfield in Field) { {Infoltem:1 in Subfield} MO [1 to 255] } }		Y			B*-O
SEC7.11 - Field: xx.995-ASC-ASP	7.3, 7.3.3.2	The second information item in Field xx.995 is optional. It is the associated segment position / ASP. It contains the index to a particular set of segmentation coordinates of the associated context data. This same segmentation index value appears in Record Type-21 as the associated segment position / ASP in Field 21.016: Segments / SEG. There may be up to 99 segments listed in Field 21.016, but only the relevant segment is contained in Field xx.995.	2	O ↑	Transaction -ASP-Match	ForEach(Field ST FieldNumber(Field) EQ 995) { ForEach(Subfield in Field) { VAR(AspVal) EQ Infoltem:2 in Subfield IF(Present(AspVal)) { Present(Record in Transaction ST Type(Record) EQ 21 AND {Record.021} EQ { Infoltem:1 in Subfield} AND Present Subfield in {Record.016} ST Infoltem:1 in Subfield EQ { AspVal } } } }		Y			B*-O
			1	O	xx.995-ASP-Value	ForEach(Field ST FieldNumber(Field) EQ 995) { ForEach(Subfield in Field) { {Infoltem:2 in Subfield} MO [1 to 99] } }		Y			B*-O
			3	O ↑	xx.995-ASP-CorrectSeg	<Unsupported: Not feasible to test if the ASP that matches is the	t-1	NA			B

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7: Information Associated with Several Records

					ment	one that is relevant. >					
SEC7.12 - Field: 10.039-RefNum	7.3, 7.3.4	There may be several Type-10 images of a particular part of the body. For instance, a photograph of a tattoo may cover the entire tattoo. Another may be a zoom-in shot of a portion of the tattoo. In order to link these two images, the same index number is assigned to Field 10.039: Type-10 reference number / T10, which is new to this version of the standard. Note that these images would have different IDC values.	2	D	Transaction-SameT10-DiffIDC	IF Count(Records ST Type(Records) EQ 10) GT 1 THEN ForEach(Pair (A,B) of Records ST Type(Records) EQ 10) { IF {A.039} EQ {B.039} THEN {A.002} NEQ {B.002} }		NA			T
			2	D	NIEM-Transaction-SameT10-DiffIDC	IF Count(XElm(itl:PackageFacialAndSMTImageRecord)) GT 1 THEN ForEach(Pair (A,B) of XElm(itl:PackageFacialAndSMTImageRecord) { IF { XElm(nc:IdentificationID) in XElm(biom:PhysicalFeatureReferenceIdentification) in A} EQ { XElm(nc:IdentificationID) in XElm(biom:PhysicalFeatureReferenceIdentification) in B} THEN { XElm(nc:IdentificationID) in XElm(biom:ImageReferenceIdentification) in A} NEQ { XElm(nc:IdentificationID) in XElm(biom:ImageReferenceIdentification) in B} }		Y			X-O
			3	D	Transaction-T10-	<Unsupported: Not feasible to test if the images are related to	t-1	NA			

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					SameBodyPart	the same part of the body.>						
SEC7.13 - Field: 14.026-SimCap	7.3, 7.3.5	In order to accommodate the emergence of technology that can simultaneously capture fingerprint images on separate platens or other technology that does not preserve the full relative position of the fingers to each other, Field 14.026: Simultaneous capture / SCF allows the user to specify the same reference number for all images that were simultaneously captured.	3	O	14.026-SCF	<Unsupported: Not feasible to test if the images were captured simultaneously. >	t-1	NA			B	
SEC7.14 - Field: xx.902-ANN	7.4.1	New for this version of the standard, optional field xx.902 is used to store annotation, logging, or processing information associated with one or more processing algorithms or workstations. If present, this text field shall consist of one or more subfields comprised of a set of information items. Four mandatory information items comprise a subfield: <ul style="list-style-type: none"> • The first information item is the GMT date and time / GMT when the processing occurred. (See Section 7.7.2.2) • The second information item (processing algorithm name/version / NAV) shall contain text of up to 64 characters identifying the name and version of the processing algorithm/application or workstation. • The third information item (algorithm owner / OWN) shall contain text of up to 64 characters with the contact information for the organization that developed/maintains the processing algorithm/application or latent 	1	O	xx.902-SubfieldCount	Count(Subfields in Record.902) GTE 1		NA			T	
			1	O	xx.902-InfoItemCount	ForEach(Subfield in Record.902) { Count(InfoItems in Subfield) EQ 4 }		NA				T
			1	M ↑	xx.902-GMT-Value	ForEach(Subfield in Record.902) { {InfoItem:1 in Subfield} MO [ValidUTC/GMT] }	t-6	NA				T
			1	M ↑	NIEM-xx.902-GMT-Value	ForEach(Field ST Field EQ XEIm(biom:ProcessAnnotation)) { {XEIm(biom:ProcessUTCDate) in Field} MO [NIEM-ValidUTC/GMT] }	t-6	Y				X*-I <Allows timezones, but standard specifies Z only. Also allows optional

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		workstation. • The fourth and final information item (process description / PRO) shall contain text of up to 255 characters describing a process or procedure applied to the sample in this Type-XX record.	1	M ↑	xx.902-NAV-CharCount	ForEach(Subfield in Record.902) { Length(Infoltem:2 in Subfield) MO [1 to 64] }		Y			element (nillable) > B*-O
			1	M ↑	xx.902-OWN-CharCount	ForEach(Subfield in Record.902) { Length(Infoltem:3 in Subfield) MO [1 to 64] }		Y			B*-O
			1	M ↑	xx.902-PRO-CharCount	ForEach(Subfield in Record.902) { Length(Infoltem:4 in Subfield) MO [1 to 255] }		Y			B*-O
SEC7.15 - Field: 9.901-ULA	7.4.2	This optional field, which is new to this version of the standard, exists only in Record Type- 9. The ULW has been extensively used and logs generated from it were routinely transmitted in user-defined Field 9.901 in previous versions of this standard. Thus, this version of the standard formally includes Field 9.901: Universal latent workstation annotation information / ULA to record latent processing logs formatted according to the ULW.	-	O	9.901-ULW	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-9: Minutiae data record.>	t-2				
SEC7.16 - Field: 98.900-ALF	7.4.3	If a user wishes to maintain a log of differences between transmissions,... may be used to indicate how and why a transaction was modified. Record Type-98 is new to this version of the standard.	-	O	98.900-ALF	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-98: Information assurance record.>	t-2				
SEC7.17 - Field: Comment	7.4.4	The optional Comment field appears in many record types and may be used to insert free text information. It is not	1	O	10.038-CharCount	Length(10.038) MO [1 to 126]		Y			B-O
			1	O	xx.020-	Length([13,14, 15, 16, 19, 20, 21].020) MO [1 to		Y			B-O

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7: Information Associated with Several Records

		reserved exclusively for log-related information but has historically often been used for this purpose. It is limited to a maximum of 126 characters. The comment fields are: Field 10.038 Field 13.020 Field 14.020 Field 15.020 Field 16.020 Field 17.021 Field 18.022 Field 19.020 Field 20.020 Field 21.020 The EFS comment field in Record Type-9 is limited to 200 characters. It is: Field 9.351: EFS comments / COM	1	O	17.021-CharCount	Length(17.021) MO [1 to 126]		Y			B-O
			1	O	18.022-CharCount	Length(18.022) MO [1 to 126]		Y			B-O
SEC7.18 - Field: 98.003-IA/DFO	7.5.1	The Record Type-98: Information assurance record, which is new to this version of the standard, allows special data protection procedures to ensure the integrity of the transmitted data. Field 98.003: IA data format owner / DFO and Field 98.005: IA data format type / DFT define the information assurance regime that is employed to store data in Fields 98.200-899: User-defined fields / UDF.		M	98.003-DFO	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-98: Information assurance record.>	t-2				

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7: Information Associated with Several Records											
SEC7.19 - Field: HAS	7.5.2	Optional field xx.996, which is new to this version of the standard, is designed for use in Record types 10 and above that have a Field xx.999 storing the biometric data. It is comprised of 64 characters representing hexadecimal values. Thus, each character may be a digit from "0" to "9" or a letter "A" through "F".	2	O	Typexx-Field996NotPresent	ForEach(Record ST Type(Record) MO [1 to 10, 18, 98]) { Not Present(Field 996 in Record) }		NA			T
			2	O	NIEM- Typexx-Field996NotPresent	<Fields are not tagged in XML. This assertion is covered by NIEM Undefined Elements >	t-2	Y			X-P <Allows types 9 and 18>.
			1	O	xx.996-HAS-CharType	ForEach(Field ST FieldNumber(Field) EQ 996) { Bytes(Field) MO[ASCII(0 to 9,A to F)] }		Y			B-P <Allows lowercase with pattern ([0-9a-fA-F]){64}>
			1	O	xx.996-HAS-CharCount	ForEach(Field ST FieldNumber(Field) EQ 996) { Length(Field) EQ 64 }		Y			B-C
SEC7.20 - Field: Agency Codes	7.6	In the 2007 version of the standard, Record Type-1 fields for agency identification were comprised of one information item {destination}{originating} agency identifier / DAI or ORI. The 2008 version of the standard added a second optional information item {destination}{originating} agency name / DAN or OAN, and is a text description of the organization name. In this version of the standard, the agency names (DAN and OAN) are contained in a new field (Field 1.017 Agency names / ANM) since information items cannot be	1	M	Fields: DAI/ORI	<See Record Type-1 assertions associated with Fields 1.007 and 1.008 in " 8.1: Record Type-1: Transaction Information Record ".>	t-2				B
			1	M	Fields: DAN/OAN	<See Record Type-1 assertions associated with Field 1.017 in " 8.1: Record Type-1: Transaction Information Record ".>	t-2				

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		<p>added to existing fields in Traditional encoding and still preserve backward compatibility. DAN and OAN have an unlimited maximum number of characters in this version.</p> <p>XML encoding is not dependent upon the field number, so there is no change required for compatibility with the 2008 version. Both information items in ANM are optional and may be encoded using alphanumeric characters with any special characters allowed in ASCII.</p> <p>The affected fields are: → Field 1.007 Destination agency identifier / DAI → Field 1.008 Originating agency identifier / ORI → Field 1.017 Agency names / ANM</p>									
SEC7.21 - Field: Source Agency	7.6, Table 22, Table 58, Table 70, Table 71, Table 75	In many Record types, Field xx.004 contains the SRC. This is the identifier of the agency that actually created the record and supplied the information contained in it... SRC is unlimited in size and is "U" character type.	1	M	Fields-SRC Length	Length([10,13 to 21, 98, 99].004) GTE 1		Y			B-O
			1	M	[10,13 to 21, 98, 99].004-CharType	TRUE		Y			B-C
			1	M	[10,13 to 21, 98, 99].004-Value	TRUE		Y			B-C
SEC7.22 - Field: Source Agency Name	7.6, Table 22, Table 58, Table 70, Table 71, Table 75	In order to maintain backward compatibility with the 2007 version while maintaining backward compatibility with the 2008 version, a new optional Field xx.993 has been added for the Source agency name / SAN. SAN is up to 125 characters and in "U" character type.	1	M	Fields-SAN Length	ForEach(Field ST FieldNumber(Field) EQ 993) { Length(Field) MO [1 to 125] }		Y			B-O
			1	M	xx.993-CharType	TRUE		Y			B-C
			1	M	xx.993-SAN-Value	TRUE		Y			B-C

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7: Information Associated with Several Records

SEC7.23 - Field: Device ID	7.7.1.1	<p>The DUI shall contain a string uniquely identifying the device or source of the data. This field shall be one of:</p> <ul style="list-style-type: none"> • Host MAC address, identified by the first character "M", or • Host processor ID, identified by the first character "P". <p>Fields containing the DUI are:</p> <ul style="list-style-type: none"> -Field 9.903: Device unique identifier / DUI -Field 10.903: Device unique identifier / DUI -Field 13.903: Device unique identifier / DUI -Field 14.903: Device unique identifier / DUI -Field 15.903: Device unique identifier / DUI -Field 16.903: Device unique identifier / DUI -Field 17.017: Device unique identifier / DUI -Field 19.903: Device unique identifier / DUI -Field 20.903: Device unique identifier / DUI -Field 99.903: Device unique identifier / DUI <p>The MAC address takes the form of six pairs of hexadecimal values (0 through 9 and A through F). They are represented without separators in this standard for a total of 13 characters. The processor ID may be up to 16 characters.</p>	1	O	xx.903, 17.017-Value	<pre>IF(First(Byte in [9,10,13 to 16, 19, 20, 99].903, 17.017) EQ ASCII(M) THEN { Bytes([9,10,13 to 16, 19, 20, 99].903) MO[ASCII(0 to 9, A to F)] } AND Length([9,10,13 to 16, 19, 20, 99].903) EQ 13 } IF(First(Byte in [9,10,13 to 16, 19, 20, 99].903) EQ ASCII(P) THEN { Length([10,13,14].903) EQ MO[13 to 16] } }</pre>		Y			B-O
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SEC7.24 - Field: Make Model	7.7.1.2	<p>The MMS contains the make, model and serial number for the capture device. It shall consist of three information items. Each information item shall be 1 to 50 characters. Any or all information items may indicate that information is unknown with the value "0".</p> <p>Fields containing the MMS are: -Field 9.904: Make/model/serial number -Field 10.904: Make/model/serial number -Field 13.904: Make/model/serial number -Field 14.904: Make/model/serial number -Field 15.904: Make/model/serial number -Field 16.904: Make/model/serial number -Field 17.019: Make/model/serial number -Field 19.904: Make/model/serial number -Field 20.904: Make/model/serial number -Field 99.904: Make/model/serial number</p>	1	O	xx.904-SubfieldCount	Count(Infoltems in [9, 10,13 to 16, 19, 20, 99].904) EQ 3		NA			T	
			1	O	xx.904-[MAK, MOD, SER]-CharCount	Length(Infoltems in [9, 10,13 to 16, 19, 20, 99].904) LTE 50 AND GTE 1		Y				B*-O
			1	O	17.019-SubfieldCount	Count(Infoltems in 17.019) EQ 3		NA				T
			1	O	17.019-[MAK, MOD, SER]-CharCount	Length(Infoltems in 17.019) LTE 50 AND GTE 1		Y				B*-O
SEC7.25 - Field: Device Monitoring	7.7.1.3, Table 5	<p>This field describes the level of human monitoring that was associated with the biometric sample capture. Alphabetic values are selected from Table 5. These are corresponding fields in the standard:</p> <p>-Field 10.030: Device monitoring mode / DMM -Field 14.030: Device monitoring mode / DMM -Field 15.030: Device monitoring mode / DMM -Field 16.030: Device monitoring mode / DMM -Field 17.030: Device monitoring mode / DMM -Field 19.030: Device monitoring mode / DMM</p>	1	O	xx.030-Value	{{[10,14 to 17, 19].030} MO [ASCII(CONTROLLED, ASSISTED, OBSERVED, UNATTENDED, UNKNOWN)]}		Y			B-C	

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SEC7.26 - Field: UTC	7.7.2.2	UTC has replaced GMT as the main reference time scale terminology, but the older terminology is retained in this standard for existing record types. In this standard, Field 1.014 Greenwich mean time / GMT shall be taken to mean the UTC value. Some newer record types using this format refer to the data as UTC (such as in Field 18.013: Sample collection date / SCD). This time is independent of the actual time zone where the time and date is recorded. The data is YYYYMMDDhhmmssZ, where the Z indicates the zone description of 0 hours.	-	M	Fields-UTC	<This requirement applies to any field that contains a date or time value. The assertions will be applied individually for those fields. >	t-2, t-6				
SEC7.27 - Field: TIX	7.7.2.5, Table 86, Table 89	For Type-20 or Type-21 records containing video or audio, this field shall contain two information items, time index start /TIS and time index end / TIE for the start and end times of segments within a video or audio file, measured in hh:mm:ss.sss where ss.sss refers to the seconds and milliseconds. Thus, the allowed special characters are the colon and the period. TIX is comprised of one or more subfields. Each subfield corresponds to a single segment, with a starting and end time as separate information items.	-	D	Fields-TIX	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-98: Information assurance record.>	t-2				
SEC7.28 - Field: Geographic	7.7.3, Table 57, Table 70, Table 71,	New to this version of the standard, this optional field (xx.998) is used in most Record Types 10 and above. It specifies the coordinated universal time (UTC) and	2	O	Typexx-Field998NotPresent	ForEach(Record ST Type(Record) MO [1 to 10, 18, 98]) { Not Present(Field 998 in Record)		NA			T

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Table 73, Table 74, Table 75, Table 79, Table 85, Table 86, Table 91	the location where the biometric sample was collected. All of this information is contained in up to fifteen information items.	2	O	NIEM- Typexx-Field998NotPresent	} <Fields are not tagged in XML. This assertion is covered by NIEM_ Undefined Elements >	t-2	Y			X-C
		1	O	xx.998-InfoltemCount	ForEach(Field ST FieldNumber(Field) EQ 998) { Count(Infoltems in Field) LTE 15 }		NA			T
		1	O	xx.998-SubfieldCount	ForEach(Field ST FieldNumber(Field) EQ 998) { Count(Subfields in Field) EQ 1 }		NA			T
		1	O	xx.998-[LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN]-CharType	ForEach(Field ST FieldNumber(Field) EQ 998) { Bytes(Infoltem:1 in Field) MO [0x30 to 0x39, 0x5A] AND Bytes(Infoltem:2,5,8 in Field) MO [0x2D,0x2E,0x30 to 0x39] AND Bytes(Infoltem:3,4,6,7 in Field) MO [0x2E, 0x30 to 0x39] AND Bytes(Infoltem:11,12 Field) MO [0x30 to 0x39] AND Bytes(Infoltem:9,10 in Field) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A]}		Y			B
		1	O	xx.998-[GRT, OSI, OCV]-CharType	TRUE		Y			B
		1	O	xx.998-UTE-CharType	ForEach(Field ST FieldNumber(Field) EQ 998) { Bytes(Infoltem:1 in Field) MO [0x30 to 0x39, 0x5A]		NA			T

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			1	O	NIEM-xx.998-UTE-CharType	Bytes(XElm(biom:CaptureUTCDateTime)) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]		Y			X*-I <Allows whitespace >	
			1	O	xx.998-[LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharCount	ForEach(Field ST FieldNumber(Field) EQ 998) { Length(Infoltem:2 in Field) MO [1 to 9] AND Length(Infoltem:3,4,6 to 8,12 in Field) MO [1 to 8] AND Length(Infoltem:5,14 in Field) MO [1 to 10] AND Length(Infoltem:9 in Field) MO [3 to 6] AND Length(Infoltem:10 in Field) MO [2, 3] AND Length(Infoltem:11 in Field) MO [1 to 6] AND Length(Infoltem:13 in Field) MO [1 to 150] AND Length(Infoltem:15 in Field) MO [1 to 126] }		Y			B*-O	
			1	O	xx.998-UTE-CharCount	ForEach(SubField in xx.998) { Length(Infoltem:1 in SubField) EQ 15 }		NA				T
			1	O	NIEM-xx.998-UTE-CharCount	Length(XElm(biom:CaptureUTCDateTime) in xx.998) EQ 20		Y				X-O
			1	O	xx.998 - UTE-Value	ForEach(Field ST FieldNumber(Field) EQ 998) { {Infoltem:1 in Field} MO [ValidUTC/GMT] }	t-6	NA				T
SEC7.29 - Field: Geographic-Subfield 1	7.7.3	The first information item is optional. It is the coordinated universal time entry /UTE. See Section 7.7.2.2.	1	O	NIEM-xx.998-	{XElm(biom:CaptureUTCDateTime) in xx.998} MO [NIEM-ValidUTC/GMT]	t-6	Y			X-I <Allows	

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				↑	UTE-Value						timezones, but standard specifies Z only. Also allows optional element (nillable) >
SEC7.30 - Field: Geographic-Conditional	7.7.3	<p>The next eight information items (information items 2 through 9) comprise the Geographic Coordinate Latitude/Longitude. As a group, they are optional. However, latitude degree value / LTD and longitude degree value / LGD are co-conditional, so they shall both be present if either is present. Further, “minutes” values LTM and LGM can only be present if their corresponding “degrees” values are present. LTS and LGS can only be present if their corresponding “minutes” value is present. The other entries are optional.</p> <p>If a decimal value is used in a particular information item, the more granular information item shall be empty (e.g., if Longitude minutes equals 45.27, Longitude seconds shall be empty).</p> <p>LTM and LGM are co-conditional, so they shall both be present if either is present.</p> <p>LTS and LGS are co-conditional, so they shall both be present if either is present. If LTM is present, then LGM shall be present. If LTS is present, then LGS shall be</p>	2	-	xx.998-LTD-LGD-Conditional	<pre>ForEach(Field ST FieldNumber(Field) EQ 998) { Present(Infoltem:2 in Field) IFF Present (Infoltem:5 in Field) }</pre>		Y			B*-O
			2	-	xx.998-LTM-LGM-Conditional	<pre>ForEach(Field ST FieldNumber(Field) EQ 998) { Present(Infoltem:3 in Field) IFF Present (Infoltem:6 in Field) }</pre>		Y			B*-O
			2	-	xx.998-LTS-LGS-Conditional	<pre>ForEach(Field ST FieldNumber(Field) EQ 998) { Present(Infoltem:4 in Field) IFF Present (Infoltem:7 in Field) }</pre>		Y			B*-O
			2	-	xx.998-GCM-GCE-GCN-Conditional	<pre>ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present(Infoltem:10 OR Infoltem:11 OR Infoltem:12 in Field) THEN Present(Infoltem:10 AND Infoltem:11 AND Infoltem:12 in Field) }</pre>		Y			B*-O
			2	O	xx.998-LTS-LTM-Conditional	<pre>ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present (Infoltem:4 in Field) THEN Present(Infoltem:3 in Field) }</pre>		Y			B*-O

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		present. The tenth, eleventh and twelfth information items are treated as a group and are optional. These three information items together are a coordinate which represents a location with a Universal Transverse Mercator (UTM) coordinate. If any of these three information items is present, all shall be present. A fifteenth optional information item is the geographic coordinate other system value / OCV. It shall only be present if OSI is present in the record.	2	O	xx.998-LTM-LTD-Conditional	ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present(Infoltem:3 in Field) THEN Present (Infoltem:2 in Field) }		Y			B*-O
			2	O	xx.998-LGS-LGM-Conditional	ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present(Infoltem:7 in Field) THEN Present (Infoltem:6 in Field) }		Y			B*-O
			2	O	xx.998-LGM-LGD-Conditional	ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present(Infoltem:6 in Field) THEN Present (Infoltem:5 in Field) }		Y			B*-O
			2	O	xx.998-LGD-LGM-LGS-Conditional	ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present(ASCII(0x2E) in Infoltem:2 in Field) THEN NOT Present(Infoltem:3 in Field) AND NOT Present(Infoltem:4) AND IF Present(ASCII(0x2E) in Infoltem:3 in Field) THEN NOT Present(Infoltem:4 in Field) }		NA			T
			2	O	NIEM-xx.998-LGD-LGM-LGS-Conditional	ForEach(XEIm(biom:CaptureLocation)) { IF Present(ASCII(0x2E) in XEIm(LongitudeDegreeValue)) THEN NOT Present XEIm(LongitudeMinuteValue) AND NOT Present XEIm(LongitudeSecondValue) AND		Y			X-O

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						IF Present(ASCII(0x2E) in XElm(LongitudeMinuteValue)) THEN NOT Present XElm(LongitudeSecondValue) }						
					2	O	xx.998-LTD-LTM-LTS-Conditional	ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present(ASCII(0x2E) in Infoltem:5 in Field) THEN NOT Present(Infoltem:6 in Field) AND NOT Present(Infoltem:7 in Field) AND IF Present(ASCII(0x2E) in Infoltem:6 in Field) THEN NOT PresentInfoltem:7 in Field) }		NA		T
					2	O	NIEM-xx.998-LTD-LTM-LTS-Conditional	ForEach(XElm(biom:CaptureLocation)) { IF Present(ASCII(0x2E) in XElm(LatitudeDegreeValue)) THEN NOT Present XElm(LatitudeMinuteValue) AND NOT Present XElm(LatitudeSecondValue) AND IF Present(ASCII(0x2E) in XElm(LatitudeMinuteValue)) THEN NOT Present XElm(LatitudeSecondValue)}		Y		X-O
					2	O	xx.998-OCV-OSI-Conditional	ForEach(Field ST FieldNumber(Field) EQ 998) { IF Present(Infoltem:14 in Field) THEN Present (Infoltem:13 in Field) }		Y		B*-O
SEC7.31 - Field: Geographic-Values-	7.7.3	The second information item is latitude degree value / LTD. This is a value that specifies the degree of latitude. The value shall be between -90 (inclusive) and +90	1	-	xx.998-[LTD, LTM, LTS, LGD, LGM, LGS,	ForEach(Field ST FieldNumber(Field) EQ 998) { {Infoltem:2 in Field} GTE -90 AND LTE 90		Y		B*-O		

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Subfield Count 2 to 8	(inclusive).	ELE]-Value			AND					
	<p>The third information item is latitude minute value / LTM. This is a value that specifies a minute of a degree. The value shall be between 0 (inclusive) to 60 (exclusive).</p> <p>The fourth information item is the latitude second value / LTS. This is a value that specifies a second of a minute. The integer shall be 0 (inclusive) to 60 (exclusive).</p> <p>The fifth information item is the longitude degree value / LGD. It is a value that specifies the degree of a longitude. The value shall be between -180 (inclusive) and +180 (inclusive).</p> <p>The sixth information item is the longitude minute value / LGM. It is a value that specifies a minute of a degree. The value shall be from 0 (inclusive) to 60 (exclusive).</p> <p>The seventh information item is the longitude second value / LGS. This is a value that specifies a second of a minute. The integer shall be 0 (inclusive) to 60 (exclusive).</p> <p>The eighth information item is elevation / ELE. It is expressed in meters. It is a numeric value. It is between -422 meters (Dead Sea) and 8848 meters (Mount</p>				<p>{InfoItem:3 in Field} GTE 0 AND LT 60</p> <p>AND</p> <p>{InfoItem:4 in Field} GT 0 AND LT 60</p> <p>AND</p> <p>{InfoItem:5 in Field} GTE -180 AND LTE 180</p> <p>AND</p> <p>{InfoItem:6 in Field} GTE 0 AND LT 60</p> <p>AND</p> <p>{InfoItem:7 in Field} GT 0 AND LT 60</p> <p>AND</p> <p>{InfoItem:8 in Field} GT -422 AND LT 8848</p> <p>}</p>					

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SEC7.32 - Field: Geographic-Values-SubField 9	7.7.3, Table 6	Everest). The ninth information item is the geodetic datum code / GDC. It is an alphanumeric value of 3 to 6 characters in length. This information item is used to indicate which coordinate system was used to represent the values in information items 2 through 7. If no entry is made in this information item, then the basis for the values entered in the first eight information items shall be WGS84, the code for the <i>World Geodetic Survey 1984 version - WGS 84 (G873)</i> . See Table 6 for values.	1	O	xx.998-GDC-Value	ForEach(Field ST FieldNumber(Field) EQ 998) { {Infoltem:9 in Field} MO [ASCII(AIRY, AUST, BES, BESN, CLK66, CLK80, EVER, FIS60, FIS68, GRS67, HELM, HOUG, INT, KRAS, AIRYM, EVERM, FIS60M, SA69, WGS60, WGS66, WGS72, WGS84)] OR Length(Infoltem:9 in Field) MO [3 to 6] AND Bytes(Infoltem:9 in Field) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A] }	t-7	NA			T
			1	O	NIEM-xx.998-GDC-Value	ForEach(XElm(biom:CaptureLocation)) { {XElm(biom:GeodeticDatumCoordinateSystemCode)} MO [ASCII(AIRY, AUST, BES, BESN, CLK66, CLK80, EVER, FIS60, FIS68, GRS67, HELM, HOUG, INT, KRAS, AIRYM, EVERM, FIS60M, SA69, WGS60, WGS66, WGS72, WGS84)] OR Length(XElm(biom:GeodeticDatumCoordinateSystemName) MO [3 to 6] AND Bytes(Infoltem:9 in Field) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A] }	t-7	Y			B*-P <Tests for GeodeticDatumCoordinateSystemCode are valid, but tests for user-defined GeodeticDatumCoordinateSystemName are missing>.
SEC7.33 - Field: Geographic-Values-SubField 10	7.7.3	The tenth information item is the geographic coordinate universal transverse Mercator zone / GCM. It is an alphanumeric value of 2 to 3 characters. This is a one or two digit UTM zone number followed by the 8 degree latitudinal band designator (which is a single letter). Valid latitudinal band designators include C through X, omitting	1	O	xx.998-GCM-Value	ForEach(Field ST FieldNumber(Field) EQ 998) { Length(Infoltem:10 in Field) EQ 2 OR 3 AND IF Length(Infoltem:10 in Field) EQ 2 THEN	t-8	Y			B*-O

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		I and O.				<pre>{Bytes:1 in Infoltem:10 in Field} MO [1 to 9] AND {Bytes:2 in Infoltem:10 in Field} MO [ASCII(C to X)] AND NOT MO [ASCII(I,O)] ELSE IF Present(Infoltem:10 in Field) {Bytes:1,2 in Infoltem:10 in Field} MO [10 to 60] AND {Bytes:3 in Infoltem:10 in Field} MO [ASCII(C to X)] AND NOT MO [ASCII(I,O)] }</pre>					
SEC7.34 - Field: Geographic-Values-SubField 11 to 15	7.7.3	The eleventh information item is the geographic coordinate universal transverse Mercator easting / GCE. It is an integer of 1 to 6 digits. The twelfth information item is the geographic coordinate universal transverse Mercator northing / GCN. It is an integer of 1 to 8 digits. The thirteenth information item is optional. It is the geographic reference text / GRT. This information item is an alphanumeric entry of up to 150 characters. It is a free form text describing a street address or other physical location (such as aband of Washington and Madison, Geneva,	1	D	xx.998-[GCE, GCN, GRT, OSI, OCV]-Value	TRUE		Y			B*-C

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		NYison, Geneva, NYNYdress or other physical lgeographic coordinate other system identifier / OSI allows for other coordinate systems. This information item specifies the system identifier. It is up to 10 characters in length. A fifteenth optional information item is the geographic coordinate other system value / OCV. It shall only be present if OSI is present in the record. It can be up to 126 characters in length.									
SEC7.35 - Field: Impression-Values	7.7.4.1, Table 7, 8.4.3, 8.9.3, 8.13.3, 8.14.3, 8.15.3, 8.19.3	This field contains a code from Table 7 for how the friction ridge sample was collected. It has been expanded in this version of the standard to include plantars and unknowns.	1	M	[4,9,13,14,15,19].003-IMP	<The test assertions for these types vary for this requirement, and therefore included under assertions for the specific Record Types.>	t-2				
SEC7.36 - Field: FGP-Values	7.7.4.2, Table 8, 8.4.4, 8.9.5.9, 8.13.13, 8.14.13, 8.15.13, 8.19.13	FGP is used in Record types dealing with friction ridges. It specifies which friction ridge biometric sample was collected. Note that for codes 1-40 and 60-84, the Table 8 specifies recommended MAXIMUM width and height. (Individual implementation domains and application profiles may use different values.) In previous versions of this standard, FGP was used for finger position, and PLP for palmprint position. They are now in one table, along with the codes added in the ANSI/NIST-ITL 1a-2009 amendment. New to this version, plantar codes are included in the table. In order to cover all of these	1	M	4.004, 9.134, [13,14,15,19].013-FGP	<The test assertions for these types vary for this requirement, and therefore included under assertions for the specific Record Types.>	t-2				

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		cases, the name was changed to friction ridge generalized position / FGP.									
SEC7.37 - Field: PPD Conditional	7.7.4.3	For exemplar fingerprints contained in Type-14 records, if the impression is known to be an entire joint image (EJI), full finger view (FFV), or extreme tip (TIP), then Field 14.013: Friction ridge generalized position / FGP shall be set to 19, and Field 14.014: Print position descriptors / PPD shall be specified; Field 14.015: Print position coordinates / PPC may be (optionally) specified.	2	D	Type14-14.013-14.014-Conditional	Present(14.014) IFF Present(Infoltem in 14.013 ST {Infoltem} EQ 19)		NA			T
			2	D	NIEM-Type14-14.013-14.014-Conditional	Present(XElm(biom:FingerPositionCode) in XElm(FingerprintImageMajorCasePrint) AND XElm(biom:MajorCasePrintCode) in XElm(FingerprintImageMajorCasePrint))IFF {XElm(FingerPositionCode) in XElm(biom:FingerImpressionImage)} EQ 19)		Y			X-O
			2	D	Type14-14.013-14.015-Conditional	IF Present(14.015) THEN Present(Infoltem in 14.013) ST {Infoltem} EQ 19		NA			T
			2	D	Type14-14.013-14.015-Conditional	Present(XElm(biom:MajorCasePrintSegmentOffset) in XElm(FingerprintImageMajorCasePrint)) IFF {XElm(FingerPositionCode) in XElm(biom:FingerImpressionImage)} EQ 19)		Y			X-O
SEC7.38 - Field: SPD,PPC Conditional	7.7.4.3	For latent prints contained in Type-13 records, if all or part of the impression should be compared against the medial or proximal segments or the extreme tips, then Field 13.013: Friction ridge generalized position / FGP shall be set to 19, and Field 13.014: Search position descriptors / SPD shall be specified; Field 13.015: Print position coordinates / PPC may be (optionally) specified.	2	D	Type13-13.013-13.014-Conditional	Present(13.014) IFF Present(Infoltem in 13.013 ST {Infoltem} EQ 19)		NA			T
			2	D	NIEM-Type13-13.013-13.014-Conditional	Present(XElm(biom:FingerPositionCode) in XElm(FingerprintImageMajorCasePrint) AND XElm(biom:MajorCasePrintCode) in XElm(FingerprintImageMajorCasePrint)) IFF {XElm(FingerPositionCode)} OR {XElm(PalmPositionCode)} or {XElm(PlantarPositionCode)} OR {XElm(FrictionRidgePositionCode)} EQ 19)		Y			X-O
			2	D	Type13-13.013-13.015-Conditional	IF Present(13.015) THEN Present(Infoltem in 13.013) ST {Infoltem} EQ 19)		NA			T
			2	D	NIEM-	Present(XElm(biom:MajorCasePrintSegmentOffs		Y			X-O

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					Type13-13.013-13.015-Conditional	et) in XElm(FingerprintImageMajorCasePrint)) IFF {XElm(FingerPositionCode)} OR {XElm(PalmPositionCode)} or {XElm(PlantarPositionCode)} OR {XElm(FrictionRidgePositionCode)} EQ 19)					
SEC7.39 - Field: SPD,PPD Values	7.7.4.3, Table 8, Table 9	<p>The position descriptor, in Field 13.014: Search position descriptors / SPD or Field 14.014: Print position descriptors / PPD contains two mandatory information items:</p> <p>For a Type-13 record (latent prints), the first information item (probable decimal finger position code / PDF) (0-10, 16 or 17) is taken from Table 8. A "0" indicates that all the fingers of a possible candidate should be searched. For a Type-14 record (known exemplars), the first information item is the decimal finger position code / DFP. It is also taken from Table 8 with a value of 1 to 10, inclusive or 16 or 17.</p> <p>The second information item (finger image code / FIC) is the code taken from Table 9 to indicate the portion of the database to search. Full-length finger joint images use codes FV1 through FV4. Figure 4 is an illustration of the Entire Joint Image for a middle finger with each of the full finger views and constituent parts identified. Multiple portions of the EJI may be listed in a separate subfield.</p>	1	D	13.014-PDF-Value	ForEach(Subfield in 13.014) { {Infoltem:1 in Subfield} MO [0 to 10, 16,17] AND MO [Integers] }		Y			B*-P <Tests for a finger position code, but not specific range indicated>
			1	D	14.014-DFP-Value	ForEach(Subfield in 14.014) { {Infoltem:1 in Subfield} MO [1 to 10, 16,17] }		Y			B*-P <Tests for a finger position code, but not specific range indicated>
			1	D	[13,14].014-FIC-Value	ForEach(Subfield in [13,14].014) { {Infoltem:2 in Subfield} MO [ASCII(EJI,TIP,FV1,FV2,FV3,FV4,PRX,DST,MED)] }		Y			B*-I <Allows NA and UNK>
SEC7.40 - Field: PPC-Subfield Occurrences	7.7.4.4, Table 9, Table 70, Table 71	When used, Field 13.015: Print position coordinates / PPC or Field 14.015: Print position coordinates / PPC shall consist of six (6) mandatory information items	1	O	[13,14].015-SubfieldCount	Count(Subfields in [13,14].015) MO [1 to 12]		NA			T

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		describing the type or portion of the image contained in this record and its location within an EJI... Individual full finger or segment definitions may be repeated as repeating sets of information items.	1	O	[13,14].015 - InfoltemCount	ForEach(Subfield in [13,14].015) { Count(Infoltems in Subfield) EQ 6 }		NA			T
SEC7.41 - Field: PPC-Subfield 1	7.7.4.4, Table 9, Table 70, Table 71	The first information item is the full finger view / FVC with values of "FV1" through "FV4". Values of "FV1" to "FV4" specify the perspective for each full finger view. For the case of a fingertip, the first information item shall be "TIP". FVC will contain the code "NA" if only a proximal, distal or medial segment is available.	1	M ↑	[13,14].015 - FVC-Value	ForEach(Subfield in [13,14].015) { {Infoltem:1 in Subfield} MO [ASCII(FV1, FV2, FV3, FV4, TIP, NA)] }		Y			B*-I <Allows EJI>
SEC7.42 - Field: PPC-Subfield 2	7.7.4.4, Table 9, Table 70, Table 71	The second information item is used to identify the location of a segment / LOS within a full finger view. LOS will contain the <i>not applicable</i> code "NA" if the image portion refers to a full finger view, tip or to the entire joint image locations. Otherwise, it shall contain "PRX", "DST", "MED" for a proximal, distal, or medial segment, respectively.	1	M ↑	[13,14].015 - LOS-Value	ForEach(Subfield in [13,14].015) { {Infoltem:2 in Subfield} MO [ASCII(PRX, DST, MED, NA)] }		Y			B*-I <Allows UNK>
SEC7.43 - Field: PPC-Subfield Count 3,4	7.7.4.4, Table 9, Table 70, Table 71	The third information item is the left horizontal coordinate / LHC. It is the horizontal offset in pixels to the left edge of the bounding box relative to the origin positioned in the upper left corner of the image. The fourth information item is the right horizontal coordinate / RHC. It is the horizontal offset in pixels to the right edge of the bounding box relative to the origin positioned in the upper left corner	1	M ↑	[13,14].015-LHC-Value	ForEach(Subfield in [13,14].015) { {Infoltem:3 in Subfield} GTE 0 AND LTE 99999 }		Y			B*-O
			2	M ↑	Type[13,14]-[13,14].015-LHC-ValueDependent	ForEach(Subfield in [13,14].015) { {Infoltem:3 in Subfield} GTE 0 AND LTE {[13,14].006} AND MO [Integers] }		Y			B*-O
			1	M	[13,14].015-	ForEach(Subfield in [13,14].015) {		Y			B*-O

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		of the image.		↑	RHC-Value	{Infoltem:4 in Subfield} GTE 0 AND LTE 99999 }						
			2	M	Type[13,14]-[13,14].015-RHC-ValueDependent	ForEach(Subfield in [13,14].015) { {Infoltem:4 in Subfield} GTE {Infoltem:3 in Subfield} AND LTE {[13,14].006} AND MO [Integers]}		Y			B*-O	
SEC7.44 - Field: PPC-SubfieldCount 5,6	7.7.4.4, Table 9, Table 70, Table 71	The fifth information item is the top vertical coordinate / TVC is the vertical offset (pixel counts down) to the top of the bounding box.	1	M	[13,14].015-TVC-Value	ForEach(Subfield in [13,14].015) { {Infoltem:5 in Subfield} GTE 0 AND LTE 99999 }		Y			B*-O	
			2	M	Type[13,14]-[13,14].015-TVC-ValueDependent	ForEach(Subfield in [13,14].015) { {Infoltem:5 in Subfield} GTE 0 AND LTE {[13,14].007} AND MO [Integers]}		Y			B*-O	
		The sixth information item is the bottom vertical coordinate / BVC. It is the vertical offset from the upper left corner of the image down to the bottom of the bounding box. It is counted in pixels.	1	M	[13,14].015-BVC-Value	ForEach(Subfield in [13,14].015) { {Infoltem:6 in Subfield} GTE 0 AND LTE 99999 }		Y				B*-O
			2	M	Type[13,14]-[13,14].015-BVC-ValueDependent	ForEach(Subfield in [13,14].015) { {Infoltem:6 in Subfield} GTE {Infoltem:5 in Subfield} AND LTE {[13,14].007} AND MO [Integers]}		Y				B*-O
SEC7.45 - Field: SAP Conditional	7.7.5, 8.10.13	SAP codes are mandatory in Type-10 records with a face image. FAP is optional in Type-14. IAP is optional in Type-17 records. The Subject Acquisition Profile (SAP) is a mandatory field when Field 10.003: Image type / IMT contains "FACE". Otherwise, it shall not be entered.	2	D	Type10-10.013-CondCodeDependent-IMT	Present(10.013) IFF {10.003} EQ ASCII (FACE)		Y			B-O	
SEC7.46 -	7.7.5.1,	Field 10.013: Subject acquisition profile /	1	D	10.013-	{10.013} MO [0,1,10 to 15,20,30,32,40,42,50 to		Y			B-O	

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Field: SAP Values	Table 10	SAP has the SAP level code for face in Table 10. The SAP codes 32, 42 and 52 are new to this version of the standard.			Values	52]					
SEC7.47 - Field: SAP-Level Requirements	7.7.5.1.1 to 7.7.5.1.10, Table 11, Annex E	<Sections 7.7.5.1.1 to 7.7.5.1.10 describe requirements for the image for various SAP Levels.>	3	D	10.013-Levels	<Unsupported: Determining the condition under which the image was captured to verify the SAP Level is not feasible at this time.>	t-9	NA			
SEC7.48 - Field: FAP Values	7.7.5.2, Table 12	The profile levels for fingerprint acquisition are optional and are based upon those listed in the <i>Mobile ID Best Practice Recommendation</i> . They are entered in Field 14.031: Subject acquisition profile – fingerprint / FAP, which is new to this version of the standard.	1	O	14.031-FAP-Value	{14.031} MO [10,20,30,40,45,50,60]		Y			B-I <Allows whitespace >
SEC7.49 - Field: FAP-Level Requirements	7.7.5.2, Table 12	<Section 7.7.5.2 and Table 12 describe requirements for the image for various FAP Levels.>	3	O	14.031-Levels	<Unsupported: Determining the condition under which the image was captured to verify the FAP Level is not feasible at this time.>	t-9	NA			
SEC7.50 - Field: IAP Values	7.7.5.3, Table 75	The profile levels for iris acquisition, which are new to this version of the standard, are optional and are based upon those listed in the <i>Mobile ID Best Practice Recommendation (BPR)</i> (See Annex G: Bibliography) . They are entered in Field 17.031: Subject acquisition profile – iris / IAP.	1	O	17.031-IAP-Value	{17.031} MO [20,30,40]		Y			B-I <Allows whitespace >
SEC7.51 - Field: IAP-Level Requirements	7.7.5.3	<Section 7.7.5.3 describes requirements for the image for various IAP Levels.>	3	M	17.031-IAP Levels	<Unsupported: Determining the condition under which the image was captured to verify the IAP Level is not feasible.>	t-9	NA			
SEC7.52 - Field: Image-	7.7.6	Each image formatted in accordance with this standard shall appear to have been	3	M	Images-Coordinate	<Not directly tested, but this convention is used when testing for conformance in each of the	t-2	NA			

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Coordinates		captured in an upright position and approximately centered horizontally in the field of view...The y-coordinate (vertical) position shall increase positively from the origin to the bottom of the image.			s	assertions related to images>					
SEC7.53 - Record: Type4-Resolution 500 Only	7.7.6	All record types containing images are variable resolution except for Type-4, which has a fixed resolution. Record Type-4 shall not be used for anything but the 500 ppi class.	2	M	Transaction -[1.011, 1.012]- Conditional	IF(Present(Record ST Type(Record) EQ 4) THEN {1.011, 1.012} GTE 19.30 AND LTE 20.08 ELSE {1.011, 1.012} EQ 00.00		Y			T
		In this version, NSR and NTR only apply to Record Type-4: Grayscale fingerprint image...	2	M	NIEM-Transaction -[1.011, 1.012]- Conditional	IF(Present(XElm(tl:PackageHighResolutionGrayscaleImageRecord)) THEN {1.011, 1.012} GTE 19.30 AND LTE 20.08 ELSE {1.011, 1.012} EQ 00.00 or 0.00		Y			X
SEC7.54 - Field: Resolution Tolerance	7.7.6.1, 7.7.6.3, Table 14	For Appendix F certified devices, resolution accuracy shall not vary more than 1% from the class resolution. A class resolution of 19.69 ppm (500 ppi) has a lower bound of 19.49 ppm (495ppi) and an upper bound of 19.89 ppm (505ppi). For Personal Identity Verification (PIV) certified devices with fingerprint subject application profile (FAP) Levels 10 to 40 only resolution accuracy shall not vary more than 2% from the class Resolution. For example, a class resolution of 19.69 ppm (500 ppi) has a lower bound of 19.30 ppm (490ppi) and an upper bound of 20.08 ppm (510ppi).	1	M	Field-Resolution Tolerance	<This requirement specifies a tolerance for all resolution values expressed throughout the standard. If there is a resolution requirement for a type, the resolution must follow the 1% or 2% tolerance as described in the standard. This requirement will be applied to each applicable resolution requirement.>	t-2				

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		<p>Tolerance requirements shall apply to the class and nominal resolution requirements throughout this standard.</p> <p>This transmitting resolution does not have to be the same as the scanning resolution. However, the transmitting resolution shall be within the range of permissible resolution values for that record type.</p>									
SEC7.55 - Field: NSR Conditional	7.7.6.2.1, Table 14	<p>If Type-4 records are included in the transaction, Field 1.011 Native scanning resolution / NSR contains five characters specifying the native scanning resolution in pixels per millimeter. It is expressed as two numeric characters followed by a decimal point and two more numeric characters (e.g. 19.69). This field is set to "00.00" if no Type-4 records are present in the transaction. With the deprecation of Record Types-3, 5 and 6, NSR only directly applies to Record Type-4 in this version of the standard. New to this version of the standard, NSR does not apply to Type-7 records, unless specified as such by an implementation domain.</p> <p>Record Type-14 shall be used if scanning a fingerprint image at the 1000 ppi class or above. It can also be used for the 500 ppi class. Record</p>	1	M	1.011-NSR-Length	Length(1.011) EQ 5		NA			T
			1	M	NIEM-1.011-NSR-Length	Length(1.011) EQ 4 OR 5		Y			X-O
			1	M	1.011-NSR-Value	Bytes:1,2,4,5 in 1.011 MO [0 to 9] AND Byte: 3 in 1.011 EQ "."		NA			T
			1	M	NIEM-1.011-NSR-Value	<Value in the form x.xx or xx.xx, where x is a digit 0 through 9>		Y			X-O
SEC7.56 - Field: Exemplar	7.7.6.2.3	The migration path to higher scanning resolutions for image capturing devices with a native scanning resolution of the	2	M	Fields-Exemplar Valid Scan	<Scanning resolutions for Record Types 14,15,16,17,19 and 20 must migrate at a rate of 100% with a minimum of 500 ppi. These	t-2				

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Scan Resolution		500 ppi class shall be at a rate of 100% of the current native scanning resolution. Capture devices with native scanning resolutions not in step with this migration path shall provide (through subsampling, scaling, or interpolating downward) a nominal resolution that matches the next lower interval in the migration path. For example, a device with native scanning resolution of 47.24 ppm (1200 ppi) shall provide a class resolution of 39.37 ppm (1000 ppi)..			Resolutions	assertions are included under assertions for the specific Record Types.>					
SEC7.57 - Field: Latent Resolution	7.7.6.2.2, 7.7.6.1	Latent images shall have a minimum class scanning resolution of 1000 ppi. ... resolution accuracy shall not vary more than 1% from the class resolution.	2	M	Type13-13.008-Conditional-SHPS	IF {13.008} EQ 1 THEN { IF Present(13.016), THEN {13.016} GTE 990 } ELSE IF {13.008} EQ 2 THEN { IF Present(13.016) THEN {13.016} GTE 390 }		Y			B-O
			2	M	Type13-13.008-Conditional-SVPS	IF {13.008} EQ 1 THEN { IF Present(13.017), THEN {13.017} GTE 990 } ELSE IF {13.008} EQ 2 THEN { IF Present(13.017) THEN {13.017} GTE 390 }		Y			B-O
SEC7.58 - Field: Transmitting Resolution	7.7.6.3	Each image to be exchanged shall have a specific resolution associated with the transmitted data. This transmitting resolution does not have to be the same	-	M	Fields-Tx Resolution Required Type4	<The test assertions are included under assertions for the respective record types.>	t-2				

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Required		as the scanning resolution. However, the transmitting resolution shall be within the range of permissible resolution values for that record type.									
SEC7.59 - Field: Type4 NTR	7.7.6.3.1	Field 1.012 Nominal resolution / NTR shall specify the transmitting resolution in pixels per millimeter. It is expressed as two numeric characters followed by a decimal point and two more numeric characters (e.g. 19.69). The transmitting resolution shall be within the range 19.30 ppm (490 ppi) to 20.08 ppm (510 ppi) for a Type-4 record . This range reflects the 2% tolerance from 500 ppi allowed for PIV certified devices. (SeeTable 14). For example, a sensor that scans natively at 508 ppi would list both NSR and NTR as 20 ppm (= 508 ppi). These images should not be sampled down to exactly 500 ppi. This field is set to "00.00" if no Type-4 records are present in the transaction. Given that the transmitting resolution shall not be greater than the scanning resolution, images meant for identification applications, such as those from Appendix F certified devices (See Table 14) are restricted to a 1% deviance from 500 ppi.	1	M	1.012-CharCount	Length(1.012) EQ 5		NA			T
			1	M	NIEM-1.021-NTR-Length	Length(1.011) EQ 4 OR 5		Y			X-O
			1	M	1.012-Value	Bytes:1,2,4,5 in 1.012 MO [0 to 9] AND Byte: 3 in 1.012 EQ "."		NA			T
			1	M	NIEM-1.012-NTR-Value	<Value in the form x.xx or xx.xx, where x is a digit 0 through 9>		Y			X-O
			2	M	1.012-NTR 500 ppi	<See Requirement ID: " Record: Type4-Resolution 500 Only ".>	t-2				B
			2	M	Type1-NTR LTE NSR	{1.012} LTE {1.011}		Y			B-O
SEC7.60 - Field: Variable Resolution THPS,TVPS	7.7.6.3.2	For variable-resolution friction ridge images (those in Record Types 13, 14, 15, 19 and possibly in Record Types 16 and 20), the transmitting resolution shall be at least as great as the class resolution of 500 ppi. There is no upper limit on the variable-resolution rate for transmission. However, the transmitting resolution shall	-	M	Fields-VarResoluti on	<The test assertions are included under assertions for the respective record types.>	t-2				

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		not be greater than the scanning resolution. For variable resolution records, the Transmitted horizontal pixel scale / THPS and the Transmitted vertical pixel scale / TVPS shall be specified. (See Sections 7.7.8.4 and 7.7.8.5).									
SEC7.61 - Field: Sample Quality Occurrences	7.7.7	Many of the Record Types contain optional quality metric information. In addition to the three information items described here, a quality field may contain other information items. Each of the information items is contained in a subfield. Multiple subfields may be present, each indicating a different quality algorithm, up to a maximum of 9 times. Fields using this structure are: -Field 9.135: M1 friction ridge quality data / FQD -Field 9.316: EFS friction ridge quality metric / FQM -Field 10.024: Subject quality score / SQS -Field 13.024: Latent quality metric / LQM -Field 14.023: Segmentation quality metric / SQM -Field 14.024: Fingerprint quality metric / FQM -Field 15.024: Friction ridge quality metric / FQM -Field 16.024: User-defined image quality metric / FQM -Field 17.024: Image quality score / IQS -Field 19.024: Friction ridge - plantar print quality metric / FQM -Field 99.102: Biometric data quality / BDQ	1	-	[10, 13, 14, 15, 16, 17, 19].024, 9.135, 9.316, 14.023, 99.102-SubfieldCount	ForEach(Field in [9.135, 9.316, 10.024,13.024,14.023,14.024, 15.024, 16.024,17.024, 19.024, 99.102]) { Count(Subfields) MO [1 to 9] }		NA			T
SEC7.62 - Field:	7.7.7	The first information item shall be a quantitative expression of the predicted	1	-	[10, 13, 14, 15, 16, 17,	ForEach(Field in [9.135, 9.316, 10.024, 16.024, 17.024, 99.102])		Y			B*-O

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Sample Quality Subfield 1		matching performance of the biometric sample, which is a quality value / QVU. This information item shall contain the integer image quality score between 0 and 100 (inclusive) assigned to the image data by a quality algorithm. Higher values indicate better quality. An entry of "255" shall indicate a failed attempt to calculate a quality score. An entry of "254" shall indicate that no attempt to calculate a quality score was made.		19].024, 9.135, 9..316, 14.023, 99.102-QVU-Value	{ ForEach(Subfield in Field) { {Infoltem:1 in Subfield} MO [0 to 100, 254,255] AND MO [Integers] } } AND ForEach(Field in [13.024, 14.023, 14.024, 15.024, 19.024]) { ForEach(Subfield in Field) { {Infoltem:2 in Subfield} MO [0 to 100, 254,255] AND MO [Integers] } } }						
SEC7.63 - Field: Sample Quality Subfield 2	7.7.7	A second information item shall specify the ID of the vendor of the quality algorithm used to calculate the quality score, which is an algorithm vendor identification / QAV. This 4-digit hex value (See Section 5.5 Character types) is assigned by IBIA and expressed as four characters. The IBIA maintains the Vendor Registry of CBEFF Biometric Organizations that map the value in this field to a registered organization.	1	-	[10, 13, 14, 15, 16, 17, 19].024, 9.135, 9..316, 14.023, 99.102-QAV-Value	ForEach(Field in [9.135, 9.316, 10.024, 16.024, 17.024, 99.102]) { ForEach(Subfield in Field) { {Infoltem:2 in Subfield} MO [0x0000 to 0xFFFF] } } AND ForEach(Field in [13.024, 14.023, 14.024, 15.024, 19.024]) ForEach(Subfield in Field) { {Infoltem:3 in Subfield} MO [0x0000 to 0xFFFF]	t-10	Y			B*-O

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						} }					
			1	-	[10, 13, 14, 15, 16, 17, 19].024, 9.135, 9..316, 14.023, 99.102-QAV-CharCount	ForEach(Field in [9.135, 9.316, 10.024, 16.024, 17.024, 99.102]) { ForEach(Subfield in Field) { Length(Infoltem:2 in Subfield) EQ 4 } } AND ForEach(Field in [13.024, 14.023, 14.024, 15.024, 19.024]) ForEach(Subfield in Field) { Length(Infoltem:3 in Subfield) EQ 4 } }		Y			B*-O
			1	-	[10, 13, 14, 15, 16, 17, 19].024, 9.135, 9..316, 14.023, 99.102-QAV-CharType	ForEach(Field in [9.135, 9.316, 10.024, 16.024, 17.024, 99.102]) { ForEach(Subfield in Field) { Bytes(Infoltem:2 in Subfield) MO [ASCII(A to F, 0 to 9)] } } AND ForEach(Field in	t-10	Y			B*-O

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						[13.024, 14.023, 14.024, 15.024, 19.024] ForEach(Subfield in Field) { Bytes(Infoltem:3 in Subfield) MO [ASCII(A to F, 0 to 9)] } }					
SEC7.64 - Field: Sample Quality Subfield 3	7.7.7	A third information item shall specify a numeric product code assigned by the vendor of the quality algorithm, which may be registered with the IBIA, but registration is not required. This is the algorithm product identification / QAP that indicates which of the vendor's algorithms was used in the calculation of the quality score. This information item contains the integer product code and should be within the range 1 to 65,535.	1	-	[10, 13, 14, 15, 16, 17, 19].024, 9.135, 9.316, 14.023, 99.102-QAP-Value	ForEach(Field in [9.135, 9.316, 10.024, 16.024, 17.024, 99.102]) { ForEach(Subfield in Field) { {Infoltem:3 in Subfield} MO [1 to 65,535] AND MO [Integers] } } AND ForEach(Field in [13.024, 14.023, 14.024, 15.024, 19.024]) { ForEach(Subfield in Field) { {Infoltem:4 in Subfield} MO [1 to 65,535] AND MO [Integers] } } }		Y			B*-O
SEC7.65 - Field:	7.7.7, 8.13.19,	In addition to the three information items described here, a quality field may	1	O	13.024-FRMP-	ForEach(Subfield in 13.024) {		Y			B*-I <Allows whitespace

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Sample Quality Additional Subfield	Table 70, 8.14.22, 8.14.23, Table 71, 8.15.17, Table 73, 8.19.18 Table 85	contain other information items.			Value	{Infoltem:1 in Subfield} MO Table 8					>
			1	O	14.023-FRQP-Value	ForEach(Field in [14.023]) { ForEach(Subfield in Field) { {Infoltem:1 in Subfield} MO [1 to 10, 16, 17] } }		Y			B*-I <Allows any finger position code>
			1	O	14.024-FRMP-Value	ForEach(Field in [14.024]) { ForEach(Subfield in Field) { {Infoltem:1 in Subfield} MO [1 to 10, 16, 17] } }		Y			B*-I <Allows any finger position code>
			1	O	15.024-FRMP-Value	ForEach(Subfield in 15.024) { {Infoltem:1 in Subfield} MO [20 to 38, 81 to 84] }		Y			B*-I <Allows whitespace >
			1	O	19.024-FRMP-Value	ForEach(Subfield in 19.024) { {Infoltem:1 in Subfield} MO [60 to 79] }		Y			B*-I <Allows whitespace>
SEC7.66 - Field: Image HLL Value	7.7.8.1	The maximum horizontal size is limited to 65,535 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.	1	M	[4,8].006-Value	{[4,8].006} MO [10 to 65535] AND MO [Integers]		Y			B-O
			1	M	9.128-Value	{9.128} MO [10 to 99,999]		NO (Not yet supported)			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
7: Information Associated with Several Records											
			1	M	xx.006-Value	{{[10,13 to 17, 19, 20].006} MO [10 to 99,999] AND MO [Integers]}		Y			B-O
SEC7.67 - Field: Image HLL Metadata	7.7.8.1	<HLL should be checked against the image metadata to test for conformance.>	-	M	Fields-HLL Metadata	<The test assertions are included under assertions for the respective record types.>	t-2				
SEC7.68 - Field: Image Size	7.7.8.1	The total image size (HLL times VLL) must be able to be accommodated in Field xx.001 for Traditional encoding.	3	M	xx.006,xx.007- Image Size	<Not testable due to image compression. The calculation is not simply HLL * VLL * BPX / 8.>	t-1	NA			B
SEC7.69 - Field: Image VLL Value	7.7.8.2	The maximum vertical size is limited to 65,535 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.	1	M	[4,8].007-Value	{{[4,8].007} MO [10 to 65535] AND MO [Integers]}		Y			B-O
			1	M	9.129-Value	{9.129} MO [10 to 99,999]		NO (Not yet supported)			B-O
			1	M	xx.007-Value	{{[10,13 to 17, 19, 20].007} MO [10 to 99,999] AND MO [Integers]}		Y			B-O
SEC7.70 - Field: Image VLL Metadata	7.7.8.2	<VLL should be checked against the image metadata to test for conformance.>	-	M	Fields-VLL Metadata	<The test assertions are included under assertions for the respective record types.>	t-2				
SEC7.71 - Field: Image SLC Value	7.7.8.3, Table 27, Table 57, Table 70, Table 75, Table 85, Table 86	The image sampling frequency (pixel density). <Tables related to each Record Type provide constraints on the value of SLC.>	1	M	xx.008-Value	{{[10,13 to 17, 19, 20].008} MO [0,1,2] AND MO [Integers]}		Y			B-I <Allows whitespace >
			1	M	9.130-Value	{9.130} MO [0,1,2] AND MO [Integers]}		NO (Not yet supported)			B-I <Allows whitespace >
SEC7.72 -	7.7.8.3	A value of "1" shall indicate pixels per	-	M	Fields-SLC	<The test assertions are included under	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
7: Information Associated with Several Records											
Field: Image SLC Metadata		<p>inch. A value of "2" shall indicate pixels per centimeter. A value of "0" in this field indicates that no scale is provided, and the quotient of THPS/TVPS shall provide the pixel aspect ratio.</p> <p><SLC should be checked against the image metadata to test for conformance.></p>			Metadata	assertions for the respective record types.>					
SEC7.73 - Field: Image SLC Contact/Contactless	7.7.8.3	For contact exemplar friction ridge images, a value of 1 or 2 shall be specified. ..For non-contact images of body parts, SLC shall be set to 0 unless the object being imaged is a fixed distance from the capture device...	-	M	Fields-SLC-Contact/Contactless	<Unsupported: Not feasible to test if the exemplar is a contact or non-contact capture.>	t-1				
SEC7.74 - Field: Image THPS Value	7.7.8.4, Table 27, Table 57, Table 70, Table 75, Table 85, Table 86	<Tables related to each Record Type provide constraints on the value of THPS.>	1	M	xx.009-Value	{[10,13 to 17, 19, 20].009} MO [1 to 99,999] AND MO [Integers]	t-19	Y			B-O
			1	M	9.131-Value	{9.131} MO [1 to 99,999] AND MO [Integers]	t-19	NO (Not yet supported)			B-O
SEC7.75 - Field: Image THPS Metadata	7.7.8.4	<p>This is the integer pixel density used in the horizontal direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the horizontal component of the pixel aspect ratio, up to 5 digits.</p> <p><THPS should be checked against the image metadata to test for conformance.></p>	-	M	Fields-THPS Metadata	<The test assertions are included under assertions for the respective record types.>	t-2				
SEC7.76 -	7.7.8.5,	If SLC is 1 or 2, then TVPS shall equal	1	M	xx.010-	{[10,13 to 17, 19, 20].010} MO [1 to 99,999] AND	t-19	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
7: Information Associated with Several Records											
Field: Image TVPS Value	Table 27, Table 57, Table 70, Table 75, Table 85, Table 86	THPS. <Record layout tables related to each Record Type provide constraints on the value of TVPS.>			Value	MO [Integers]					
			1	M	9.132-Value	{9.132} MO [1 to 99,999] AND MO [Integers]	t-19	NO (Not yet supported)			B-O
			2	M	Typexx-SLC-THPS-TVPS-Conditional	IF {[10,13 to 17, 19, 20].008} EQ 1 OR 2 THEN {[10,13 to 17, 19, 20].010} EQ {[10,13 to 17, 19, 20].009}		Y			
SEC7.77 - Field: Image TVPS Metadata	7.7.8.5	This is the integer pixel density used in the vertical direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the vertical component of the pixel aspect ratio, up to 5 integer digits. <TVPS should be checked against the image metadata to test for conformance.>	-	M	Fields-TVPS Metadata	<The test assertions are included under assertions for the respective record types.>	t-2				
SEC7.78 - Field: Image BPX Value	7.7.8.6, 7.7.9	Some record types have a mandatory field Bits per pixel / BPX. This contains the number of bits used to represent a pixel. This field shall contain an entry of "8" for normal grayscale values of "0" to "255". Any entry in this field greater than "8" shall be used to represent a grayscale pixel with increased proportion. A maximum of 2 digits is allowed for this field. Regardless of the compression algorithm used, the image shall be represented as an array of n rows by m columns by at least 8-bit pixels. Each pixel in a gray-scale image shall be represented by eight or more bits.	1	M	xx.012-Value	{[13 to 17, 19, 20].012} MO [8 to 99] AND MO [Integers]		Y			B-O
SEC7.79 - Field: Image	7.7.8.6	<BPX should be checked against the image metadata to test for	-	M	Fields-BPX Metadata	<The test assertions are included under assertions for the respective record types.>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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7: Information Associated with Several Records

BPX Metadata		conformance.>									
SEC7.80 - Field: Image SHPS Value	7.7.8.7	The horizontal pixel density used for the scanning of the original image / impression providing that the SLC field contains a "1" or "2". Otherwise, this shall indicate the horizontal component of the pixel aspect ratio, up to 5 integer digits. This field is used if the transmission pixel scale differs from the original image scale, as listed in Transmitted horizontal pixel scale / THPS . Note that density is directly related to resolution.	1	O	xx.016-Value	{{[10,13 to 16, 19, 20].016} MO [1 to 99,999] AND MO [Integers]}	t-19	Y			B-O
			1	O	20.017-Value	{20.017} MO [1 to 99,999] AND MO [Integers]}	t-19	Y			B-O
			1	O	17.022-Value	{17.022} MO [1 to 99,999] AND MO [Integers]}	t-19	Y			B-O
SEC7.81 - Field: Image SVPS Value	7.7.8.8	The vertical pixel density used for the scanning of the original image / impression providing that the SLC field contains a "1" or "2". Otherwise, this shall indicate the vertical component of the pixel aspect ratio, up to 5 integer digits. This field is used if the transmission pixel scale differs from the original image scale, as listed in Transmitted vertical pixel scale /TVPS . Note that density is directly related to resolution. If SLC is 1 or 2 and SHPS is entered, then SVPS shall equal SHPS.	1	O	xx.017-Value	{{[10,13 to 16, 19].017} MO [1 to 99,999] AND MO [Integers]}	t-19	Y			B-O
			1	O	20.018-Value	{20.018} MO [1 to 99,999] MO [Integers]}	t-19	Y			B-O
			1	O	17.023	{17.023 MO [1 to 99,999] AND MO [Integers]}	t-19	Y			B-O
			2	O	[Typexx-SLC-SHPS-SVPS-Conditional	IF {[10,13 to 16, 19].008} EQ 1 OR 2 THEN IF Present([10,13 to 15].017 AND ([10,13 to 15].016) THEN {[10,13 to 15].017} EQ {[10,13 to 15].016}		Y			B-O
			2	O	[20.008, 20.017, 20.018]-Conditional	IF {20.008} EQ 1 OR 2 THEN IF Present(20.017, 20.018) THEN {20.018} EQ {20.017}		Y			B-O
			2	O	[17.008, 17.022,17.023]-	IF {17.008} EQ 1 OR 2 THEN IF Present(17.022, 17.023) THEN		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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7: Information Associated with Several Records

					Conditional	{17.023} EQ {17.022}					
SEC7.82 - Field: Image Bit Depth Value	7.7.9	Regardless of the compression algorithm used, the image shall be represented as an array of n rows by m columns by at least 8-bit pixels. Each pixel in a gray-scale image shall be represented by eight or more bits.	-	M	Fields-Image Compression	<See Requirement ID " Field: Image BPX Value ">	t-2				
SEC7.83 - Field: Image Format	7.7.9	Color images shall be represented as a series of sequential samples of a red, green, and blue intensity for each pixel. (Other color spaces are also possible. See Section 7.7.10.3). The image shall be organized in row-major order, with the lowest address corresponding to the upper left corner of the image. If the image is captured in grayscale, then only the luminance component shall be compressed and transmitted.	3	M	Fields-Image Format	<Unsupported: The actual image data is not tested; only metadata.>	t-1				
SEC7.84 - Field: Image JFIF	7.7.9	For JPEG, the data shall be formatted in accordance with the <i>JPEG File Interchange Format, Version 1.02 (JFIF)</i> .	-	M	Fields-Image JFIF	<This requirement applies to all instances where a JPEG image format is used. The test assertions are included under assertions for the respective record types.>	t-2				
SEC7.85 - Field: Image Compression Algorithm Value	7.7.9.1, Table 15	For each of these fields, the entry corresponds to the appropriate <i>Label</i> entry in Table 15: -Field 13.011: Compression algorithm / CGA -Field 14.011: Compression algorithm / CGA -Field 15.011: Compression algorithm / CGA -Field 16.011: Compression algorithm / CGA (when containing a friction ridge image) -Field 19.011: Compression algorithm /	1	M	[13 to 16,19,20].011-Value	{{[13 to 16, 19, 20].011} MO [ASCII(NONE, WSQ20, JPEGB,JPEGL, JP2,JP2L,PNG)]		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
7: Information Associated with Several Records											
		CGA -Field 20.011: Compression algorithm /CGA (when containing a friction ridge image)									
SEC7.86 - Field: Image Compression Algorithm Metadata	7.7.9.1	<CGA should be checked against the image metadata to test for conformance.>	-	M	Fields-CGA Metadata	<The test assertions are included under assertions for the respective record types.>	t-2				
SEC7.87 - Field: Latent Lossless Compression	7.7.9.1	Latent images shall not be compressed with any lossy compression algorithm. It is required that images be stored uncompressed, or that PNG or other totally lossless compression algorithm be used for latent images.	-	M	Fields-Latent Lossless Compression	<See Requirement ID's: "Field: 13.011-Compression Algorithm Value".>	t-2				
SEC7.88 - Field: Image WSQ 500ppi Exemplar	7.7.9.1	The following paragraphs apply to the exemplar images. Wavelet Scalar Quantization (WSQ) shall be used for compressing grayscale friction ridge data at 500 ppi class for new systems. In order to maintain backwards compatibility, legacy systems may use JPEGB or JPEGL for compressing 500 ppi class images. WSQ shall not be used for other than the 500 ppi class.	-	M	Fields-Image WSQ 500ppi Exemplar	<See Requirement ID's: " Field: 4.008-Compression Algorithm Value " and " Field: 14.011-Compression Algorithm Value ".>	t-2				
SEC7.89 - Field: Image WSQ 2.0	7.7.9.1	WSQ version 3.1 or higher shall be used for WSQ compression of grayscale fingerprint data at the 500 ppi class with a platen of 2 inches or greater in height. WSQ 2.0 or higher may be used for 500 ppi class data taken from a platen of less than 2 inches in height. WSQ shall not be used for other than the 500 ppi class.	-	M	Fields-Image WSQ 2.0 or Higher	<See Requirement ID's: " Field: 4.009-Image WSQ Version 2.0 " and " Field: 14.999-Image WSQ Version 2.0 ".>	t-2, t-16				
SEC7.90 - Field: Image	7.7.9.1	For friction ridge images at the 1000 ppi class, JPEG 2000 shall be used according	-	M	Fields: Image JPEG	<See Requirement ID: " Field: 14.011-Compression Algorithm Value ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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7: Information Associated with Several Records

JPEG 2000 1000ppi Exemplar		to the specifications and options contained in "Profile for 1000 ppi Fingerprint Compression".			2000 1000ppi Exemplar						
SEC7.91 - Field: Type17 Compression	7.7.9.2	<p>For iris images, images may be uncompressed or compressed. The compression code shall be one of the following, entered in Field 17.011: Compression algorithm / CGA:</p> <ul style="list-style-type: none"> - NONE – An entry of "NONE" indicates that the data contained in this record is uncompressed. - PNG – This supports lossless compression. PNG is formally standardized (ISO/IEC 15948) and implementations are freely available25 (libpng). -JP2 and JP2L - As with other biometrics, while lossless compression is preferred, iris images can be lossy-compressed. The image type (Field 17.032: Iris storage format / ISF) should be selected appropriately, and the compression ratio should be set to satisfy some known quantified storage or transmission bandwidth limitation. <p>The baseline JPEG algorithm (ISO/IEC 10918) is not acceptable for iris images and shall not be used. It has been shown that false match rates increase due to the presence of tiling artifacts. While JPEG was allowed in prior versions of this standard for iris compression, it is not allowed for this version. Implementers may want to support JPEG decoding for handling legacy images.</p>	1	M	17.011-Value	{17.011} MO [ASCII(NONE, JP2,JP2L,PNG)]		Y			B-O
SEC7.92 -	7.7.9.3,	When Record Type-10 contains facial	3	M	Fields: Type	<Unsupported: Not feasible to determine if the	t-9				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Field: Type10 Facial Compression	E.6.1	image, the conditions described in Annex E: E.6.1 Compression algorithm apply.			10 Facial Compression	images are non-frontal or conform to the SAP level.>					
SEC7.93 - Field: Type10 Compression	7.7.9.4	For non-facial images contained in Record Type-10, Field 10.011: Compression algorithm/ CGA may be set to any value in Table 15, except WSQ20.	1	M	10.011-CGA-Value	{10.011} MO ASCII(NONE, WSQ20, JPEGB, JPEGL, JP2, JP2L, PNG)		Y			
			2	M	10.011-CGA-ValueDependent	IF {10.003} NEQ ASCII(FACE) THEN {10.011} MO [ASCII(NONE, JPEGB, JPEGL, JP2,JP2L,PNG)] AND IF {10.003} EQ ASCII(FACE) THEN <Depends on SAP Level, Currently Not Supported-Provide Warning>		Y			B-O
SEC7.94 - Field: Type16 Compression	7.7.9.4	Non-friction ridge images contained in Record Type-16 shall specify the file extension (suffix) corresponding to the compression used, such as OOG, JPG, WAV, and PNG in Field 16.011: Compression algorithm / CGA. A value of "NONE" indicates that the data is uncompressed.		M	16.011-Value	<The test assertions for this type may not be supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-16: User-defined testing image record. >	t-2				
SEC7.95 - Field: Image CSP Value	7.7.10.3, Table 16	Several image record types have a field Color space / CSP. It shall contain an entry from the CODE column of Table 16. If the color image type cannot be determined, an entry of "RGB" shall be entered in this field.	1	M	10.012-Value	{10.012} MO [ASCII(UNK, GRAY, RGB, SRGB, YCC, SYCC)]		Y			B-I <Allows whitespace >
			1	M	xx.013-Value	{[16,17,20].013} MO [ASCII(UNK, GRAY, RGB, SRGB, YCC, SYCC)]		Y			B-I <Allows whitespace >
SEC7.96 - Field: Image ECL Value	7.7.11, Table 17	This information appears in Field 10.027: Subject eye color / SEC and in Field 17.020: Eye color / ECL. The eye color describes the eye color of the subject as seen in the	1	-	10.027,17.020-Value	{10.027} AND {17.020} MO [ASCII(BLK, BLU, BRO, GRY,GRN,HAZ,MAR,MUL, PNK, XXX)]		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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		image. If unusual or unnatural, such as is the case when colored contact lenses are present and the 'real' eye color cannot be ascertained, then the color shall be labeled as "XXX". For near infra-red (NIR) images, if this field is entered, it shall be 'XXX'. Values for these fields shall be the alphabetic entries in the "Attribute code" column of Table 17.									
SEC7.97 - Field: Image-Paths	7.7.12	A path may not have any sides crossing. No two vertices may occupy the same position. There may be up to 99 vertices. An open path is a series of connected line segments that do not close or overlap. A closed path (polygon) completes a circuit. The closed path side defined by the last vertex and the first vertex shall complete the polygon. A polygon shall have at least 3 vertices. The contours in Record Type-17: Iris image record can be a circle or ellipse. A circle only requires 2 points to define it (See Table 19). There are two different approaches to the paths in this standard. The 2007 and 2008 version of the standard used paths for Field 14.025: Alternate finger segment position(s) / ASEG. That approach has been retained in this version for all paths except in the Extended Feature Set (EFS) of Record Type-9.	-	-	Fields-Image-Paths	<The test assertions are included under assertions for the respective record types.>	t-2				
SEC7.98 - Field: Image-EFS Paths	7.7.12.1 Table 30	The vertices for paths in the EFS Type-9 records are defined in a single information item27 for each of the following fields (See Table 30 Type-9	-	-	Fields-Image-EFS Paths	<The test assertions are included under assertions for the respective record types.>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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		<p>Fields for EFS). If multiple paths are present, they are stored within separate subfields. Each vertex is expressed as an (X,Y) pair of positive integers in units of 10 micrometers (0.01mm).</p> <p>The Extended Feature Set used in the Record Type-9: Minutiae data record was developed as a separate encoding structure that has been incorporated into this standard. In order to avoid conflicts with systems that had already programmed using the EFS method of specifying paths, that structure is retained in this standard. EFS fields using closed paths, and requiring at least 3 vertices, are:</p> <ul style="list-style-type: none"> • Field 9.300: EFS region of interest / ROI • Field 9.302: EFS finger – palm – plantar position / FPP • Field 9.360: EFS area of correspondence / AOC <p>An open path is a series of</p> <ul style="list-style-type: none"> • Field 9.324: EFS distinctive features / DIS • Field 9.357: EFS local quality issues / LQI <p>An open path is a series of connected points in which there is not an implicit connection between the last and first vertices. Within EFS, open paths are used in Field 9.373: EFS ridge path segments / RPS.</p>										
SEC7.99 - Field: Image-Other Paths	7.7.12.2, Tables 18 to 21	The first information item is dependent upon the Record Type and field. The common format is prefixed by no, one or two information items, depending upon the field.	-	-	Fields-Image-Other Paths	<The test assertions are included under assertions for the respective record types.>	t-2					

6.6 Record Type-1: Transaction Information Record

Table 6.4 - Assertions for Record Type 1- Transaction Information Record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
RT1.1 - Transaction: Type1 Mandatory	8.1	Record Type-1 is mandatory. Only one Type-1 record is present per transaction.		M	Type1-Mandatory	<See Requirement ID " Transaction: Type1-Occurrences ">	t-2				
RT1.2 - Record: Type1 7-bit ASCII	8.1	Note that since the alternate character encoding is specified in this record, there must be specified characters agreed upon in order to read this Record Type, particularly with Traditional encoding, and the characters that can be represented by the 7-bit ASCII code are those characters (see Table 93 for these characters).		M	Type1-ASCII	<The assertions check for the more specific character types allowed by Table 22. See Requirement IDs: " Field: Type1-Char Type " and " Field: Type1-Subfield Char Type ".>	t-2				
RT1.3 - Field: Type1-Subfield Occurrence	Table 22, Annex G	<Table 22 specifies which fields contain subfields as well as the number of occurrences permitted.> <The tables in Annex G specify the cardinality for the XML elements and their mapping to the Traditional fields>.	1	M	1.[001, 002, 004 to 015, 017]-SubfieldCount	Count(Subfields in 1.[001, 002, 004 to 015, 017]) EQ 1		NA			T
			1	M	1.[001, 002, 004 to 012]-InfoltemCount	Count(Infoltems in Subfield:1 in 1.[001, 002, 004 to 012, 014]) EQ 1		NA			T
			1	M	1.003-InfoltemCount	ForEach(Subfield in 1.003) { Count(Infoltems in Subfield) EQ 2 }		NA			T
			1	M	1.003-SubfieldCount	Count(Subfields in 1.003) GTE 2		NA			T
			1	O	1.013-	Count(Infoltems in 1.013) EQ 1 OR 2		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.1: Record Type-1: Transaction information record

					InfoltemCount						
			1	O	1.015-InfoltemCount	Count(Infoltems in 1.015) MO [2, 3]		NA			T
			1	O	1.015-SubfieldCount	Count(Subfields in 1.015) EQ 1		NA			T
			1	O	1.016-InfoltemCount	Count(Infoltems in 1.016) EQ 3 * Count(Subfields in 1.016)		NA			T
			1	O	1.016-SubfieldCount	Count(Subfields in 1.016) MO [1 to 99]		NA			T
			1	O	1.017-InfoltemCount	Count(Infoltems in 1.017) LTE 2		NA			T
RT1.4 - Field: Type1-CondCode	Table 22	<Table 22 specifies the Condition Code for each field.>	1	M	Type1-MandatoryCondCode	Present(1.001 to 1.005, 1.007 to 1.009, 1.011, 1.012)		NA			T
			1	M	NIEM-Type1-MandatoryCondCode	Foreach(XElm in <AnnexG: Type-1 Table> ST {Min(Cardinality(XElm))} GTE 1) { Present(XElm) }		Y			X-C
			1	M	Type1-Reserved	NOT Present(1.018 to 1.999)		NA			T
RT1.5 - Field: Type1-CharType	8.1, Table 22	<Table 22 specifies the Character Type for each field that contains no subfields.>	1	-	1.[001, 002, 006]-CharType	Bytes(1.[001, 002, 006]) MO [0x30 to 0x39]		Y			B-I <Allows '+' in 1.001>
			1	-	1.004-CharType	Bytes(1.004) [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B-I <Allows whitespace>
			1	M	1.005-CharType	Bytes(1.005) MO [0x30 to 0x39]		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
			1	M	NIEM-1.005-CharType	Characters(1.005) MO [0x30 to 0x39, 0x2D] Characters (XElm(nc:Date) in XElm(biom:TransactionDate)) MO [0x30 to 0x39, 0x2D] Characters(XElm(nc:YearMonth) in XElm(biom:TransactionDate)) MO [0x30 to 0x39, 0x2D] Characters({XElm(nc:Year) in XElm(biom:TransactionDate)) Mo MO [0x30 to 0x39]		Y			X-I <Allows whitespace>
			1	M	1.007, 1.008-CharType	Bytes(1.007, 1.008) MO [0x20 to 7E]		Y			B-O
			1	-	1.009, 1.010-CharType	Bytes(1.[009,010]) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B-O
			1	-	1.011, 1.012-CharType	Bytes(1.[011,012]) MO [0x30 to 0x39, 0x2E]		Y			B-I <Allows '-' negative sign>
			1	O	NIEM-1.014-CharType	Bytes(1.014) MO [0x30 to 0x39,0x2D, 0x3A, 0x54, 0x5A]		Y			X-I <Allows whitespace>
			1	O	1.014-CharType	Bytes(1.014) MO [0x30 to 0x39,0x5A]		NA			T
			RT1.6 - Field: Type1-Subfield CharType	8.1, Table 73	<Table 22 specifies the Character Type for each subfield.>	1	O	1.003-[FRC, CRC, REC, IDC]-CharType	Bytes(All(Subfields in 1.003)) MO [0x30 to 0x39]		Y
			1	O	1.013-[DNM, DVM]-CharType	ForEach(Infoltem in 1.013) { Bytes(Infoltem) MO [0x20 to 0x7E] }		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)	
8.1: Record Type-1: Transaction information record											
			1	O	NIEM-1.013-[DNM, DVM]-CharType	Bytes(XElm(biom:DomainVersionNumberIdentification) AND (XElm(biom:TransactionDomainName)) MO [0x20 to 0x7E])		Y			X-O
			1	-	1.015-CSI-CharType	Bytes(InfoItem:1 in 1.015) MO [0x30 to 0x39]		Y			B*-I <Allows only 0 to 4>
			1	-	1.015-[CSN, CSV]-CharType	Bytes(InfoItem:2,3 in 1.015) MO [0x20 to 0x7E])		NA			T
			1	-	NIEM-1.015-[CSN, CSV]-CharType	Bytes(XElm(biom:CharacterSetCommonNameCode) AND XElm(nc:IdentificationID in biom:CharacterSetVersionIdentification)) MO [0x20 to 0x7E])		Y			X-O
			1	-	1.016-[APO, APN, APV]-CharType	Bytes(All(Subfields in 1.016)) MO [0x20 to 0x7E])		NA			T
			1	-	NIEM-1.016-[APO, APN, APV]-CharType	Bytes(<subelements> in XElm(biom:TransactionApplicationProfile) MO [0x20 to 0x7E])		Y			X-O
			1	-	1.017-[DAN, OAN]-CharType	Bytes(All(Subfields in 1.017)) MO [0x20 to 0x7E])		NA			T
			1	-	NIEM-1.017-[DAN, OAN]-CharType	Bytes(XElm(nc:OrganizationName) in XElm(biom:TransactionDestinationOrganization) AND XElm(biom:TransactionOriginatingOrganization) MO [0x20 to 0x7E])		Y			X-O
RT1.7 - Field: Type1-	Table 22	<Table 22 specifies the Character Count for each field that contains no subfields.>	1	M	1.001-CharCount	DataLength(1.001) GTE 2		NA		T	

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
CharCount			1	M	NIEM-1.001-CharCount	Length(1.001) EQ 1		Y			X-O
			1	M	1.002-CharCount	DataLength(1.002) EQ 4		NA			T
			1	M	NIEM-1.002-CharCount	Length(XElm(biom:TransactionMajorVersionValue)) EQ 1 OR 2 AND Length(XElm(biom:TransactionMinorVersionValue)) EQ 2		Y			X-O
			1	M	1.004-CharCount	DataLength(1.004) GTE 1 AND LTE 16		Y			B-I <Defines a set of values no longer than 4 characters>
			1	M	1.005-CharCount	DataLength(1.005) EQ 8		NA			T
			1	M	NIEM-1.005-CharCount	DataLength(XElm(nc:Date) in XElm(biom:TransactionDate)) EQ 10 DataLength(XElm(nc:YearMonth) in XElm(biom:TransactionDate)) EQ 7 DataLength({XElm(nc:Year) in XElm(biom:TransactionDate)}) EQ 4		Y			X-O
			1	O	1.006-CharCount	DataLength(1.006) EQ 1		Y			B-O
			1	O	1.007-CharCount	DataLength(1.007) GTE 1		Y			B-O
			1	O	1.008-CharCount	DataLength(1.008) GTE 1		Y			B-O
			1	M	1.009-CharCount	DataLength(1.009) GTE 1		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
			1	O	1.010-CharCount	DataLength(1.010) GTE 1		Y			B-O
			1	M	1.011-CharCount	DataLength(1.011) EQ 5		NA			T
			1	M	NIEM-1.011-CharCount	Length(1.011) EQ 4 OR 5		Y			X-O
			1	M	1.012-CharCount	DataLength(1.012) EQ 5		NA			T
			1	M	NIEM-1.012-CharCount	Length(1.012) EQ 4 OR 5		Y			X-O
			1	O	1.014-CharCount	DataLength(1.014) EQ 15		NA			T
			1	O	NIEM-1.014-CharCount	DataLength(1.014) EQ 20		Y			X-O
RT1.8 - Field: Type1-Subfield CharCount	Table 22	<Table 22 specifies the Character Count for each subfield.>	1	M	1.003-FRC-CharCount	Length(InfoItem:1 in Subfield:1 in 1.003) EQ 1		Y			B*-O
			1	M	1.003-CRC-CharCount	Length(InfoItem:2 in Subfield:1 in 1.003) GTE 1 AND LTE 3		Y			B*-O
			1	M	1.003-[REC, IDC]-CharCount	ForEach(Subfield in 1.003 ST Subfield NOT Subfield:1 in 1.003) { Length(InfoItem:1,2 in Subfield) GTE 1 AND LTE 2 }		Y			B*-O
			1	O	1.013-[DNM, DVN]-CharCount	Length(InfoItems in 1.013) GTE 1		Y			B*-O
			1	O	1.015-CSI-CharCount	Length(InfoItem:1 in 1.015) GTE 1 AND LTE 3		Y			B*-O
			1	O	1.015-[CSN, CSV]-	Length(InfoItem:2,3 in 1.015) GTE 1 AND LTE 16		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
					CharCount						
			1	O	1.016-[APO, APN, APV]-CharCount	ForEach(Subfield in 1.016) { Length(Infoltems in Subfield) GTE 1 }		Y			B*-O
			1	O	1.017-[DAN,OAN]-CharCount	Length(Infoltems in 1.017) GTE 1		Y			B*-O
RT1.9 - Field: Type1-Field Occurrence	Table 22	<Table 22 specifies the Field Occurrence for each field.>	2	M	NIEM-Type1-Cardinality	<The Type-1 table in Annex G of the base standard specifies the type and number of fields required.>		Y			X-I <Allows missing fields with cardinality "1..1": 1.007, 1.008-nc:OrganizationIdentification>
			1	M	Type1-FieldOccurrences	Count(1.001 to 1.005, 1.007 to 1.009) EQ 1 AND Count(1.006, 1.010, 1.013 to 1.017) LEQ 1		NA			T
RT1.10 - Field: 1.001-Record Header Value	8.1.1, Table 22, 7.1	Field 1.001 Record header. In Traditional encoding, this field contains the record length in bytes (including all information separators)	2	M	1.001-Record Header	<See Requirement ID " Field: xx.001-Record Header ">	t-2				
	8.1.1, C.10.1	The XML name for the Type-1 record is <itl:PackageInformationRecord>, and its <biom:RecordCategoryCode> element shall have a value of "1".	1	M	NIEM-1.001-Value	ForEach(XElm(itl:PackageInformationRecord) { XElm(biom:RecordCategoryCode)} EQ ASCII(1) }		Y			X-I <Tests for 1 with any number of leading zeros>
RT1.11 - Field: 1.002-Version Number	8.1.2, Table 22	This mandatory four-character ASCII value shall be used to specify the current version number of the standard implemented by the software or system	1	M	1.002-Value	{1.002} EQ ASCII(0500)		NA			T
			1	M	NIEM-1.002-	{XElm(biom:TransactionMajorVersionValue)} EQ ASCII(05) OR ASCII (5)		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
Value		creating the transaction. The format of this field shall consist of four numeric characters. The first two characters shall specify the major version number. The last two characters shall be used to specify the minor revision number. This version of the standard has the entry "0500"			Value	AND {XElm(biom:TransactionMinorVersionValue)} EQ ASCII(00)					
RT1.12 - Field: 1.003-Transaction Content Subfields	8.1.3, Table 22	This mandatory field shall list and identify each of the records in the transaction by record type and its IDC value. It also specifies the order in which the remaining records shall appear in the file. It shall consist of two or more subfields. The first subfield shall relate to this Type-1 Transaction record.	-	M	1.003-SubfieldCount	<See Requirement ID " Field: Type1-Subfield Occurrence " and " Field: xx.002-IDC ">	t-2				
RT1.13 - Field: 1.003-Transaction Content Subfield 1 FRC Value	8.1.3, Table 22	The first information item (record category code / REC) within this subfield shall be "1". This indicates that the first record in the transaction is a Type-1 record consisting of header information.	1	M	1.003-FRC-Value	{Infoltem:1 in Subfield:1 in 1.003} EQ 1		Y			B*-I <Allows 1 with any number of leading zeros>
RT1.14 - Field: 1.003-Transaction Content Subfield 1 CRC Value	8.1.3, Table 22	The second information item of this subfield (content record count / CRC) shall be the sum of the Type-2 through Type-99 records contained in this transaction. This number is also equal to the count of the remaining subfields of Field 1.003 Transaction content / CNT. The maximum value for CRC is 999.	1	M	1.003-CRC-Value	{Infoltem:2 in 1.003} MO [Integers] AND MO [1 to 999]		Y			B*-I <Allows any positive integer>
			2	M	Transaction - CRCEqualsRecordCount	{Infoltem:2 in 1.003} EQ Count(Records in Transaction ST Type(Records) MO [2 to 99])		Y			B*-O
			2	M	1.003-CRC-Matches Subfields	{Infoltem:2 in 1.003} EQ Count(Subfields in 1.003) - 1		NA			T
			2	M	NIEM-	{XElm(biom:ContentRecordQuantity)} EQ		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
					1.003-CRC-Matches Content Records	Count(XElm(biom:ContentRecordSummary))					
RT1.15 - Field: 1.003-Transaction Content Subfield 2 REC Value	8.1.3, Table 22, Table 3	Each of the remaining subfields of Field 1.003 Transaction content / CNT corresponds to a single Type-2 through Type-99 record contained in the transaction. Two information items shall comprise each of these subfields: The first information item (record category code / REC), shall contain a number chosen from the "record identifier" column of Table 3. It also specifies the order in which the remaining records shall appear in the file.	1	M	1.003-REC-Value	ForEach(Subfield in 1.003 ST Subfield NOT Subfield:1 in 1.003) { {Infoltem:1 in Subfield} MO [2,4,7 to 10, 13 to 21, 98,99] AND MO [Integers] }		Y			B*-I <Allows any number of leading zeros>
			2	M	Transaction CNT-REC-Matches Records	ForEach(Subfield in 1.003 ST Subfield NOT Subfield:1 in 1.003) { Present(Record in Transaction ST Type(Record) EQ {Infoltem:1 in Subfield}) } <The records and associated record numbers must be in the same order.>		NA			T
			2	M	NIEM-Transaction CNT-REC-Matches Records	ForEach(Xelm(biom: ContentRecordSummary) in Xelm(biom:TransactionContentSummary)) { Present(Record in Transaction ST Type(Record) EQ {Xelm(biom:RecordCategoryCode) in Xelm(biom:ContentRecordSummary)}) } <The records and associated record numbers must be in the same order.>		Y			X-O
RT1.16 - Field: 1.003-Transaction Content Subfield 2 IDC Value	8.1.3, Table 22	The second information item (information designation character / IDC) shall be an integer equal to or greater than zero and less than or equal to 99. See Section 7.3.1.	1	M	1.003-IDC-Value	ForEach(Subfield in 1.003 ST NOT Subfield:1 in 1.003) { {Infoltem:2 in Subfield} MO [0 to 99] AND MO [Integers] }		NA			T
			1	M	NIEM-1.003-IDC-	{XElm(biom:ImageReferenceIdentification) in XElm(biom:ContentRecordSummary)} MO [0 to		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
RT1.17 - Field: 1.003-Transaction Content Subfield 2 IDC Matches	8.1.3, Table 22, 7.3.1	IDC references are stated in Type-1 Field 1.003 Transaction content / CNT and shall be used to relate information items in the CNT field of the Type-1 record to the other records in the transaction. It also specifies the order in which the remaining records shall appear in the file.	2	M	Transaction -CNT-IDC-Matches Records	Value 99] ForEach (Record in Transaction) { Present(Subfield in 1.003 ST Subfield NOT Subfield:1 in 1.003 AND {Infoltem:1 in Subfield} EQ Type(Record) AND {Infoltem:2 in Subfield} EQ {Record.002} } <The records and associated record numbers must be in the same order.>		NA			T
			2	M	NIEM-Transaction CNT-IDC-Matches Records	ForEach(Xelm(biom: ContentRecordSummary) in Xelm(biom:TransactionContentSummary)) { Present(Record in Transaction ST Type(Record) EQ {Xelm(biom:RecordCategoryCode) in Xelm(biom:ContentRecordSummary) AND Xelm(biom:ImageReferenceIdentification) in Record EQ {Xelm(biom:ImageReferenceIdentification) in Xelm(biom:ContentRecordSummary) } } <The records and associated record numbers must be in the same order.>		Y			B*-O
RT1.18 - Field: 1.004-Type of Transaction Value	8.1.4, Table 22	This mandatory field shall contain an identifier, which designates the type of transaction and subsequent processing that this transaction should be given. This shall be a maximum of 16 alphabetic characters. The TOT shall be in accordance with definitions provided by the receiving agency.) Earlier versions of this standard specifically restricted the character length of TOT to 4 characters.	1	M	1.004-TOT-Value	TRUE		Y			B-I <A list of enumerated values are allowed>
RT1.19 -	8.1.5,	This mandatory field shall contain the	1	M	1.005-DAT-	{1.005} MO [ValidLocalDate]	t-6	NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
Field: 1.005-Local Date Value	Table 22, 7.7.2.3	local date that the transaction was submitted. The local date is recorded as YYYYMMDD. Note that this may be a different date than the corresponding GMT, due to time zone differences.	1	M	Value NIEM-1.005-DAT-Value	{XElm(nc:Date) in XElm(biom:TransactionDate)} MO [NIEM-ValidLocalDate<YYYY-MM-DD>] {XElm(nc:YearMonth) in XElm(biom:TransactionDate)} MO [NIEM-ValidLocalDate<YYYY-MM>] {XElm(nc:Year) in XElm(biom:TransactionDate)} MO [NIEM-ValidLocalDate<YYYY>]	t-6	Y			X-I <Allows optional element (nillable)>
RT1.20 - Field: 1.006-Priority Value	8.1.6, Table 22	This optional field shall contain a single information character to designate the urgency with which a response is desired. The values shall range from 1 to 9, with 1 denoting the highest priority. The default value shall be defined by the agency receiving the transaction.	1	O	1.006-PRY-Value	{1.006} MO [1 to 9] AND MO [Integers]		Y			B-I <Allows any non-negative integer>
RT1.21 - Field: 1.007-Destination Agency Identifier Value	8.1.7, Table 22	This mandatory field shall contain the identifier of the administration or organization designated to receive the transmission. The size and data content of this field shall be user-defined and in accordance with the application profile.		M	1.007-DAI-Value	TRUE		Y			B-C
RT1.22 - Field: 1.008-Originating Agency Identifier Value	8.1.8, Table 22	This mandatory field shall contain the identifier of the administration or organization originating the transaction. The size and data content of this field shall be user-defined and in accordance with the application profile.		M	1.008-ORI-Value	TRUE		Y			B-C
RT1.23 - Field: 1.009-Transaction Control Number Value	8.1.9, Table 22	This mandatory field shall contain the transaction control number as assigned by the originating agency. A unique (for the originating agency) alphanumeric control number shall be assigned to each transaction. For any transaction that requires a response, the respondent shall refer to this number in communicating	1	M	1.009-TCN-Value	TRUE		Y			B-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
RT1.24 - Field: 1.010-Transaction Control Reference Value	8.1.10, Table 22	with the originating agency. This optional field shall be used for responses that refer to the TCN of a previous transaction involving an inquiry or other action that required a response.	1	O	1.010-TCR-Value	TRUE		Y			B-C
RT1.25 - Field: 1.011-Native Scanning Resolution Value	8.1.11, Table 22	This mandatory field shall be set to "00.00" if there are no Type-4 records in the transaction. When there are Type-4 records present, this field is used to specify the native scanning resolution of the friction ridge image capture device. This field shall specify the resolution in pixels per millimeter. The resolution shall be expressed as two numeric characters followed by a decimal point and two more numeric characters.	-	M	1.011-NSR	<See Requirement IDs " Field: NSR Conditional ".>	t-2				
RT1.26 - Field: 1.012-Nominal Resolution Value	8.1.12, Table 22	This mandatory field shall be set to "00.00" if there are no Type-4 records in the transaction. When there are Type-4 records present, this field specifies the nominal resolution for the image(s) being exchanged. This field shall specify the resolution in pixels per millimeter. The resolution shall be within the range 19.30 ppmm (490 ppi) to 20.08 ppmm (510 ppi).	-	M	1.012-NTR	<See Requirement IDs " Field: Type4 NTR " and " Record: Type4-Resolution 500 Only ".>	t-2				
RT1.27 - Field: 1.013-Domain Name Value	8.1.13, Table 22	The mandatory first information item (domain name / DNM) will uniquely identify the agency, entity, or implementation used for formatting the fields in the Type-2 record. The default value for the field shall be the North American Domain implementation	1	O	1.013-[DNM, DVN]-Value	TRUE		Y			B*-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
		(NORAM). An optional second information item (domain version number / DVN) shall contain the unique version of the particular implementation, such as 7.02.									
RT1.28 - Field: 1.013-Domain Name Occurs Once	8.1.13,	The domain name may only appear once within a transaction.	-	O	1.013-DOM-Occurs Once	<See Requirement ID " Field: Type1-Field Occurrence ">	t-2				
RT1.29 - Field: 1.014-Greenwich Mean Time Value	8.1.14, Table 22	This optional field provides a mechanism for expressing the date and time in terms of universal Greenwich Mean Time (GMT) units.	1	O	1.014-GMT-Value	{1.014} MO [ValidUTC/GMT]	t-6	NA			T
			1	O	NIEM-1.014-GMT-Value	ForEach(XElm(itl:PackageInformationRecord)) { XElm(nc:DateTime) in XElm(biom:TransactionUTCDate)} MO [NIEM-ValidUTC/GMT] }	t-6	Y			X-I <Allows timezones, but standard specifies Z only. Also allows optional element (nillable). >
RT1.30 - Field: 1.015-Character Encoding Subfield 1 CSI Value	8.1.15, Table 22, Table 4	The first information item (character encoding index / CSI) is the index number that references an associated character encoding. See the "Character encoding index" column of Table 4 for the valid values for this information item.	1	M ↑	1.015-CSI-Value	{Infoltem:1 in 1.015} MO [0 to 4, 128 to 999] AND MO [Integers] <If the value '1' is present, display a warning that the value is a Legacy value only.>		Y			B*-I <Only allows 0-4 and does not provide legacy warning>
RT1.31 - Field: 1.015-Character Encoding Subfield 2	8.1.15, Table 22, Table 4	The second information item (character encoding name / CSN) shall be the "Character encoding name" associated with that index number, taken from Table 4.	1	M	1.015-CSN-Value	TRUE		Y			B-C
			2	M	1.015-CSN-Dependent	IF {Infoltem:1 in 1.015} EQ 0 THEN {Infoltem:2 in 1.015} EQ ASCII(ASCII)		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.1: Record Type-1: Transaction information record

CSN Value					<p>ELSE IF {Infoltem:1 in 1.015} EQ 1 THEN {Infoltem:2 in 1.015} EQ ASCII(8-bit ASCII)</p> <p>ELSE IF {Infoltem:1 in 1.015} EQ 2 THEN {Infoltem:2 in 1.015} EQ ASCII(UTF-16)</p> <p>ELSE IF {Infoltem:1 in 1.015} EQ 3 THEN {Infoltem :2in 1.015} EQ ASCII(UTF-8)</p> <p>ELSE IF {Infoltem:1 in 1.015} EQ 4 THEN {Infoltem:2 in 1.015} EQ ASCII(UTF-32)</p> <p>ELSE TRUE</p>					
			2	M	NIEM-1.015-CSN-Dependent	<p>IF {XElm(biom:CharacterSetIndexCode)} EQ 0 THEN {XElm(biom:CharacterSetCommonNameCode)} EQ ASCII(ASCII)</p> <p>ELSE IF {XElm(biom:CharacterSetIndexCode)} EQ 1 THEN {XElm(biom:CharacterSetCommonNameCode)} EQ ASCII(8-bit ASCII)</p> <p>ELSE IF {XElm(biom:CharacterSetIndexCode)} EQ 2 THEN {XElm(biom:CharacterSetCommonNameCode)} EQ ASCII(UTF-16)</p> <p>ELSE IF {XElm(biom:CharacterSetIndexCode)} EQ 3 THEN {Infoltem :2in 1.015} EQ ASCII(UTF-8)</p> <p>ELSE IF {XElm(biom:CharacterSetIndexCode)} EQ 4 THEN {XElm(biom:CharacterSetCommonNameCode)} EQ ASCII(UTF-32)</p>		Y		

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.1: Record Type-1: Transaction information record											
						ELSE TRUE					
RT1.32 - Field: 1.015-Character Encoding Subfield 3 CSV Value	8.1.15, Table 22, Table 4	The optional third information item (character encoding version / CSV) is the specific version of the character encoding used. In the case of the use of UTF-8, the third optional information item may be used to hold the specific version used, so that the display terminal can be switched to the correct font family.	1	O ↑	1.015-CSV-Value	TRUE		Y			B*-C
RT1.33 - Field: 1.015-Character Encoding User Defined		This optional field specifies the character encoding that may appear within this transaction for data with the character type listed as "U" or 'user-defined' in the record format tables.	3	O	1.015-DCS-User Defined Encoding	<Unsupported.>	t-1, t-4	NA			
RT1.34 - Field: 1.016-Application Profile Specifications Value	8.1.16, Table 22	There may be multiple subfields, each designating an application profile to which this transaction conforms Each subfield shall consist of three mandatory information items: The first information item (application profile organization / APO) will uniquely identify the agency or entity responsible for the specification. The second information item (application profile name / APN) shall contain the name of the specification. The third information item (application profile version number / APV) shall contain the specific version of the specification.	1	O	1.016-[APO, APN, APV]-Value	TRUE		Y			B*-C
RT1.35 -	8.1.16	If multiple Application Profile	3	O	1.016-APS	<Unsupported.>	t-1, t-	NA			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.1: Record Type-1: Transaction information record

Field: 1.016-Application Profile Specifications Compliance		Specifications are included in this field, the specifications must be compatible with each other: this transaction must be in compliance with all of the cited specifications. See Section 6.			Compliance		3				
RT1.36 - Field:1.017-Agency Names Value	8.1.17	Both information items are alphanumeric and can have any special characters in the names.	1	O	1.017-[DAN, OAN]-Value	TRUE		Y			B-C

6.7 Record Type-3: Deprecated

Table 6.5 - Assertions for Record Type 3 – Deprecated

Req. # - ID	Red. In Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.3: Record Type-3: DEPRECATED											
RT3.1 - Transaction: Type3 Zero Occurrences	8.3	No instances of Record Type-3 shall be included in a transaction conformant with this version of the standard.	2	M	Transaction- Type3- Zero Occurrences	ForEach(Record in Transaction) { Type(Record) NEQ 3 }		NA			T
			2	M	NIEM- Transaction- Type3- Zero Occurrences	<An invalid record type will cause a parsing error in XML because no Record Element Tag is defined (see Table 100).> <See NIEM Undefined Elements .>		Y, Schema			X-C

6.8 Record Type-4: Grayscale Fingerprint Image

Table 6.6 - Assertions for Record Type 4 - Grayscale Fingerprint Image

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.4: Record Type-4: Grayscale fingerprint image											
RT4.1 - Record: Type4 Scan Resolution 500ppi	8.4	The Type-4 record is based on the use of a captured fingerprint image obtained using a class scanning resolution of the 500 ppi class. (See Section 7.7.6). It shall not be used for other than 500 ppi. class images.		M	Type4-Scan Resolution 500ppi	<See Requirement ID " Field: Type4 NTR ">	t-2				
RT4.2 - Record: Type4 Image Compression WSQ	8.4	All images that are compressed shall be compressed using WSQ. JPEG compression is retained solely for backwards compatibility with legacy systems and it should not be used in any new implementation.		M	Type4-CGA WSQ Only	<See Requirement IDs " Field: 4.008-Compression Algorithm Value " and " Field: 4.009-Image Data Valid ">.	t-2				
RT4.3 - Field: Type4-CondCode	Table 24, Table 98	<Table 24 specifies the Condition Code for each field.>	1	M	Type4-Mandatory CondCode	Present(4.001 to 4.009)		NA			T
			1	M	NIEM-Type4-Mandatory CondCode	Foreach(XElm in <AnnexG: Type-4 Table> ST {Min(Cardinality(XElm))} GTE 1) { Present(XElm) }		Y			X-C
RT4.4 - Field: Type4-CharType	Table 24, Table 98	Traditional format requires the data in binary form (not text) with a fixed byte length. <Table 24 specifies the Character Type for each field.>	3	M	Type4-Char Type	<Interpret Type-4 as binary during parsing.>	t-13	NA			T
			1	M	NIEM-Type4-CharType	Bytes(4.[001 to 008]) MO [0x30 to 0x39]		Y			X-I <Allows strings and '+' for integers.>
			1	M	NIEM-4.009-	<Schema tests that the BinaryBase64Object is of the correct type and length. Report that this is		Y			X-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.4: Record Type-4: Grayscale fingerprint image

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
RT4.5 - Field: Type4-ByteCount	Table 24, Table 98	<Table 98 specifies the Byte Count for each field.>			CharType	tested by the schema.>					
			1	M	4.001-ByteCount	Length(4.001) EQ 4		NA			T
			1	M	NIEM-4.001-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(XElm(biom:RecordCategoryCode)) EQ 1 }		Y			X-I <Allows any number of leading zeros and '+'>
			1	M	4.002-ByteCount	Length(4.002) EQ 1		NA			T
			1	M	NIEM-4.002-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(XElm(nc:IdentificationID) in XElm(biom:ImageReferenceIdentification)) EQ 1 OR 2 }		Y			X-O
			1	M	4.003-ByteCount	Length(4.003) EQ 1		NA			T
			1	M	NIEM-4.003-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(XElm(biom:FingerprintImageImpressionCaptureCategoryCode)) EQ 1 OR 2 }		Y			X-I <Allows any number of leading zeros, '+'>
			1	M	4.004-ByteCount	Length(4.004) EQ 1		NA			T
			1	M	NIEM-4.004-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(All(XElm(biom:FingerPositionCode) in XElm(biom:FingerprintImagePosition))) MO [1 to 3] }		Y			X-I <Allows any number of leading zeros, '+'>
1	M	4.005-ByteCount	Length(4.005) EQ 1		NA			T			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.4: Record Type-4: Grayscale fingerprint image

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
					ByteCount						
			1	M	NIEM-4.005-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(XElm(biom:CaptureResolutionCode) in XElm(biom:ImageCaptureDetail)) EQ 1 }		Y			X-I <Allows any number of leading zeros, '+'>
			1	M	4.006-ByteCount	Length(4.006) EQ 2		NA			T
			1	M	NIEM-4.006-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(XElm(biom:ImageHorizontalLineLengthPixelQuantity)) MO [2 to 5] }		Y			X-O
			1	M	4.007-ByteCount	Length(4.007) EQ 2		NA			T
			1	M	NIEM-4.007-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(XElm(biom:ImageVerticalLineLengthPixelQuantity)) MO [2 to 5] }		Y			X-O
			1	M	4.008-ByteCount	Length(4.008) EQ 1		NA			T
			1	M	NIEM-4.008-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) { Length(XElm(biom:ImageCompressionAlgorithmCode)) EQ 1 }		Y			X-I <Allows any number of leading zeros, '+'>
			2	M	4.009-ByteCount	Length(4.009) EQ {4.001} – 18		NA			T
			1	M	NIEM-4.009-CharCount	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord)) {		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.4: Record Type-4: Grayscale fingerprint image

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)								
						Length(XElm(nc:BinaryBase64Object)) GTE 1 }													
RT4.6 - Field: Type 4-Field Occurrence	Table 24	<Table24 specifies the Field Occurrence for each field.>	2	M	NIEM-Type4-Cardinality	<The Type-4 table in Annex G of the base standard specifies the type and number of fields required.>		Y			X-I <Allows missing fields with cardinality "1..1": 4.009-nc:BinaryBase64Object, 4.005-biom:ImageCaptureDetail, biom:CaptureResolutionCode, 4.008-biom:ImageCompressionAlgorithmCode, 4.006-biom:ImageHorizontalLineLengthPixelQuantity, 4.007-biom:ImageVerticalLineLengthPixelQuantity,>								
											1	M	Type4-FieldOccurrences	Count(4.[001 to 003, 005 to 009]) EQ 1		NA			T
											1	M	NIEM-	Count(4.004) MO [1 to 6]		Y			X

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.4: Record Type-4: Grayscale fingerprint image											
					Type4-Field004Ocurrence						
			1	M	Type4-Field004Ocurrence	Count(4.004) EQ 6		NA			T
RT4.7 - Field: 4.001-Record Header Value	8.4.1, Table 24, 7.1	Field 4.001 Record header. In Traditional encoding, this field contains the record length in bytes (including all information separators)	-	M	4.001-Record Header	<See Requirement ID " Field: xx.001-Record Header ">	t-2				
	8.4.1, C.10.4	The XML name for the Type-4 record is <itl:PackageHighResolutionGrayscaleImageRecord>, and its <biom:RecordCategoryCode> element shall have a value of "4".	1	M	NIEM-4.001-Value	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord) { XElm(biom:RecordCategoryCode)} EQ ASCII(4))		Y			X-I <Allows any number of leading zeros and '+'.>
	Table 24	<The value in Field 4.001 must be 19 or greater due to the character count of fields in the Type 4 Record.>	1	M	4.001-Value	{4.001} GTE 19		NA			T
RT4.8 - Field: 4.002-Information Designation Character Value	8.4.2, Table 24, 7.3.1	This mandatory field shall contain the IDC assigned to this Type-4 record as listed in the information item IDC for this record in Field 1.003 Transaction content/CNT.	-	M	4.002-Value	<See Requirement IDs " Field: xx.002-IDC and " Field: 1.003-Transaction Content Subfield 2 IDC Matches " >	t-2				
RT4.9 - Field: 4.003-Impression Type Value	8.4.3 Table 24, 7.7.4.1	This mandatory field shall indicate the manner by which the fingerprint was obtained. See Section 7.7.4.1 for details.	1	M	4.003-Value	{4.003} MO [0 to 3, 8, 20 to 29] AND MO [Integers]		Y			B-I <Allows too many values>
RT4.10 - Field: 4.004-Friction Ridge Generalized Position Value	8.4.4, Table 24,	This mandatory field shall contain the decimal code number corresponding to the finger position and shall be taken from Table 8 (only finger numbers 0-15 apply to Type-4). Up to five additional finger positions shall be referenced by entering the alternate finger positions using the same format. If fewer than five finger position references are to be used,	1	M	4.004-Value	(4.004) MO [0 to 15, 255]		NA			T
	Table 8, 7.7.4.2		1	M	NIEM-4.004-FGP	ForEach(XElm(itl:PackageHighResolutionGrayscaleImageRecord) { All(XElm(biom:FingerPositionCode) in XElm(biom:FingerprintImagePosition))) MO [0 to 15, 255] AND MO [Integers]		Y			X-I <Allows too many values>

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.4: Record Type-4: Grayscale fingerprint image											
		the unused position references shall be filled with 255. Six values shall be entered in each record.				}					
RT4.11 - Field: 4.005- Image Scanning Resolution Value	8.4.5, Table 24	The mandatory ISR field relates to the <i>scanning</i> resolution of this image. Previous versions of this standard stated that 0 in this field represents the 'minimum scanning resolution.' The minimum scanning resolution was defined in ANSI/NIST-ITL 1-2007 as "19.69 ppm plus or minus 0.20 ppm (500 ppi plus or minus 5 ppi)." Therefore, if the image scanning resolution corresponds to the Appendix F certification level (See Table 14* Class resolution with defined tolerance), a 0 shall be entered in this field. A value of 1 is entered if the actual scanning resolution (outside of the Appendix F certification range) is specified in Field 1.011 Native scanning resolution / NSR.	1	M	4.005- Value	{4.005} MO [0,1]		Y			B-I <Allows leading zeros and '+'>
			2	M	Transaction -4.005- Conditional Value	IF {1.011} LT 19.49 OR GT 19.89 THEN {4.005} EQ 1 ELSE {4.005} EQ 0		Y			B-O
RT4.12 - Field: 4.006- Horizontal Line Length Value	8.4.6, Table 24	This mandatory field shall contain the number of pixels on a single horizontal line of the transmitted image.		M	4.006- Value	<See Requirement ID " Field: Image HLL Value ">	t-2	Y			
RT4.13 - Field: 4.006- Horizontal Line Length Metadata	8.4.6, Table 24, WSQ Standard	<The HLL is verified by checking the image metadata if compression is used. >	2	M	4.006- Matches Image Metadata	IF {4.008} EQ 1 THEN {4.006} EQ {Image Width-WSQ} ELSE IF {4.008} EQ 2 OR 3 THEN {4.006} EQ {Image Width-JPEGB, JPEG}	t-11	Y			B-O
RT4.14 - Field: 4.007- Vertical Line Length	8.4.7, Table 24	This mandatory field shall contain the number of pixels on a single horizontal line of the transmitted image.		M	4.007- Value	<See Requirement ID " Field: Image VLL Value ">		Y			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.4: Record Type-4: Grayscale fingerprint image											
Value											
RT4.15 - Field: 4.007-Vertical Line Length Metadata	8.4.7, Table 24	<The VLL is verified by checking the image metadata if compression is used.>	2	M	4.007-Matches Image Metadata	IF {4.008} EQ 1 THEN {4.007} EQ {Image Height-WSQ} ELSE IF {4.008} EQ 2 OR 3 THEN {4.007} EQ {Image Height-JPEGB, JPEGL}	t-11	Y			B-O
RT4.16 - Field: 4.008-Compression Algorithm Value	8.4, 8.4.8, Table 24	All images shall be compressed using WSQ. This is a mandatory field, used to specify the type of compression algorithm used. A zero denotes no compression. Otherwise, the WSQ algorithm should be used to compress the data, and is indicated by a value of 1. Codes 2 and 3 are retained solely for backwards compatibility with those legacy systems that use JPEG compression and should not normally be used.	1	M	4.008-Value	IF {4.008} EQ 2 OR 3 <Provide Legacy Warning> ELSE {4.008} EQ 0 OR 1 AND MO [Integers]		Y			B-i <No legacy warning, and allows 0-6.>
RT4.17 - Field: 4.008-Compression Algorithm Metadata	8.4.8, Table 24	<The CGA is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	4.008-Matches Image Metadata	IF {4.008} EQ 1 THEN Present(SOI-WSQ, EOI-WSQ) AND IF {4.008} EQ 2 OR 3 THEN Present(SOI-JPEGB, JPEGL, EOI-JPEG, JPEGL)	t-11	Y			B-O
RT4.18 - Field: 4.009-Image Data Valid	8.4.9	This is a mandatory field.	2	M	4.009-Uncompressed Image Length	IF {4.008} EQ 0 THEN Length(4.009) EQ {4.006} * {4.007} ELSE		Y			B-O
			1	M	4.009-DATA-Value	True		Y			
			2	M	4.009-Valid Image Format	IF Present(SOI-WSQ) THEN		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.4: Record Type-4: Grayscale fingerprint image											
						Present(SOI-WSQ,SOF-WSQ,SOB-WSQ,EOI-WSQ) ELSE IF Present(SOI-JPEGB,JPEGL) THEN Present(JFIF, SOI-JPEGB,JPEGL, SOF-JPEGB,JPEGL, EOI-JPEG, JPEGL)					
RT4.19 - Field: 4.009-Image WSQ Version 2.0	8.4.9, 7.7.9.1	Wavelet Scalar Quantization (WSQ) shall be used for compressing grayscale friction ridge data at 500 ppi class. Only version 3.1 or higher shall be used for compressing grayscale fingerprint data at 500 ppi class with a platen area of 2 inches or greater in height. WSQ 2.0 or higher may be used for 500 ppi class data taken from a platen of less than 2 inches in height. WSQ shall not be used for other than the 500 ppi class.	3	M	4.009-Valid WSQ Specification Version	<No known method for determining the WSQ specification version.>	t-16	NA			B-O

6.9 Record Type-5: Deprecated

Table 6.7 - Assertions for Record Type 5 – Deprecated

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.5: Record Type-5: DEPRECATED											
RT5.1 - Transaction: Type5 Zero Occurrences	8.5	No instances of Record Type-5 shall be included in a transaction conformant with this version of the standard.	2	M	Transaction- Type5- Zero Occurrences	ForEach(Record in Transaction) { Type(Record) NEQ 5 }		NA			T
			2	M	NIEM- Transaction- Type5- Zero Occurrences	<An invalid record type will cause a parsing error in XML because no Record Element Tag is defined (see Table 100).> <See NIEM Undefined Elements .>		Y, Schema			X-C

6.10 Record Type-6: Deprecated

Table 6.8 - Assertions for Record Type 6 – Deprecated

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.6: Record Type-6: DEPRECATED											
RT6.1 - Transaction: Type6 Zero Occurrences	8.6	No instances of Record Type-6 shall be included in a transaction conformant with this version of the standard.	2	M	Transaction- Type6- Zero Occurrences	ForEach(Record in Transaction) { Type(Record) NEQ 6 }		NA			T
			2	M	NIEM- Transaction- Type6- Zero Occurrences	<An invalid record type will cause a parsing error in XML because no Record Element Tag is defined (see Table 100).> <See NIEM Undefined Elements .>		Y, Schema			X-C

6.11 Record Type-10: Facial, Other Body Part and SMT Image Record

Table 6.9 - Assertions for Record Type 10 - Facial, Other Body Parts & SMT Image Record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
RT10.1 - Field: Type10-Subfield Occurrence	Table 57	<Table 57 specifies which fields contain subfields as well as the number of occurrences permitted.>	1	M	10.[001 to 018, 020, 021, 023, 025, 027, 030, 031, 038, 039, 041, 903, 904, 993, 996, 998, 999]-SubfieldCount	Count(Subfields in 10.[001 to 018, 020, 021,023,025, 027, 030, 031, 038, 039, 041,903,904,993, 996,998, 999]) EQ 1		NA			T
			1	M	10.[001 to 013, 016, 017, 020, 021, 027, 030, 031, 038, 039, 903,993, 996, 999]-InfoltemCount	Count(Infoltems in Subfield: 1 in 10.[001 to 013, 016, 017, 020, 021, 027, 030, 031, 038, 039, 903,993, 996, 999]) EQ 1		NA			T
			1	D	10.014-InfoltemCount	Count(Infoltems in 10.014) EQ 4 OR 5		NA			T
			1	O	10.015-InfoltemCount	Count(Infoltems in 10.015) EQ 2 + 2* {Infoltem:2 in 10.015}		NA			T
			1	D	10.018-InfoltemCount	Count(Infoltems in 10.018) EQ 3		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

			1	D	10.019-SubfieldCount	Count(Subfields in 10.019) MO [1 to 3]		NA			T
			1	D	10.019-InfoltemCount	ForEach(Subfield in 10.019) { Count(Infoltems in Subfield) EQ 1 }		NA			T
			1	D	10.023-InfoltemCount	IF {Infoltem:1 in 10.023} EQ ASCII(VENDOR) THEN Count(Infoltems in 10.023) EQ 1 OR 2 ELSE Count(Infoltems in 10.023) EQ 1		NA			T
			1	D	10.024-SubfieldCount	Count(Subfields in 10.024) MO [1 to 9]		NA			T
			1	D	10.024-InfoltemCount	ForEach(Subfield in 10.024) { Count(Infoltems in Subfield) EQ 3 }		NA			T
			1	D	10.025-InfoltemCount	Count(Infoltems in 10.025) MO [3 to 6]		NA			T
			1	D	10.026-SubfieldCount	Count(Subfields in 10.026) MO [1 to 50]		NA			T
			1	D	10.026-InfoltemCount	ForEach(Subfield in 10.026) { Count(Infoltems in Subfield) EQ 1 }		NA			T
			1	D	10.028-SubfieldCount	Count(Subfields in 10.028) EQ 1 OR 2		NA			T
			1	D	10.028-InfoltemCount	ForEach(Subfield in 10.028) { Count(Infoltems in Subfield) EQ 1 }		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

			1	D	10.029-SubfieldCount	Count(Subfields in 10.029) MO [1 to 88]		NA			T
			1	D	10.029-InfoltemCount	ForEach(Subfield in 10.029) { Count(Infoltems in Subfield) EQ 4 }		NA			T
			1	D	10.032-SubfieldCount	Count(Subfields in 10.032) MO [1 to 88]		NA			T
			1	D	10.032-InfoltemCount	ForEach(Subfield in 10.032) { Count(Infoltems in Subfield) EQ 5 }		NA			T
			1	D	10.033-SubfieldCount	Count(Subfields in 10.033) MO [1 to 12]		NA			T
			1	D	10.033-InfoltemCount	ForEach(Subfield in 10.033) { Count(Infoltems in Subfield) EQ 2 + 2*{Infoltem:2 in Subfield} }		NA			T
			1	D	10.040-SubfieldCount	Count(Subfields in 10.040) MO [1 to 3]		NA			T
			1	D	10.040-InfoltemCount	ForEach(Subfield in 10.040) { Count(Infoltems in Subfield) EQ 1 }		NA			T
			1	D	10.041-InfoltemCount	Count(Infoltems in 10.041) EQ 2		NA			T
			1	D	10.042-SubfieldCount	Count(Subfields in 10.042) MO [1 to 9]		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

					unt						
			1	D	10.042-InfoItemContent	ForEach(Subfield in 10.042) { IF {InfoItem:1 in Subfield} MO [ASCII(TATTOO, CHEMICAL, BRANDED, CUT)] THEN Count(InfoItems in Subfield) MO [3,4] ELSE Count(InfoItems in Subfield) EQ 1 }		NA			T
			2	D	10.043-SubfieldContent	Count(Subfields in 10.043) MO [1 to 9]		NA			T
			1	D	10.043-InfoItemContent	ForEach(Subfield in 10.043) { Count(InfoItems in Subfield) MO [1 to 6] }		NA			T
			1	O	10.044-SubfieldContent	Count(Subfields in 10.044) MO [1 to 18]		NA			T
			1	O	10.044-InfoItemContent	ForEach(Subfield in 10.019) { Count(InfoItems in Subfield) EQ 1 }		NA			T
			2	D	10.045-SubfieldContent	Count(Subfields in 10.045) MO [1 to 16]		NA			T
			1	D	10.045-InfoItemContent	ForEach(Subfield in 10.045) { Count(InfoItems in Subfield) EQ 3 + 2*{ InfoItem:3 in Subfield} }		NA			T
			1	O	10.902-SubfieldContent	Count(Subfields in 10.902) GTE 1		NA			T
			1	O	10.902-	ForEach(Subfield in 10.902)		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
					InfoltemCount	{ Count(Infoltems in Subfield) EQ 4 }					
			1	O	10.904-InfoltemCount	Count(Infoltems in 10.904) EQ 3		NA			T
			1	O	10.995-SubfieldCount	Count(Subfields in 10.995) MO [1 to 255]		NA			T
			1	O	10.995-InfoltemCount	ForEach(Subfield in 10.995) { Count(Infoltems in Subfield) EQ 1 OR 2 }		NA			T
			1	O	10.997-SubfieldCount	Count(Subfields in 10.997) MO [1 to 255]		NA			T
			1	O	10.997-InfoltemCount	ForEach(Subfield in 10.997) { Count(Infoltems in Subfield) EQ 1 OR 2 }		NA			T
			1	O	10.998-SubfieldCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT10.2 - Field: Type10-CondCode	Table 57, Annex G-Table10	<Table 57 specifies the Condition Code for each field.>	1	M	Type10-Mandatory CondCode	Present(10.001 to 10.012, 10.999)		NA			T
			1	M	NIEM-Type10-Mandatory CondCode	ForEach(XElm in <AnnexG: Type-10 Table> ST {Min(Cardinality(XElm))} GTE 1) { Present(XElm) }		Y			X-I <Allows optional 10.003, to 10.012>

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8.10: Record Type-10: Facial, other body part and SMT image record

			1	M	Type10-Reserved	NOT Present(10.034 to 10.037,10.046 to 10.199, 10.901, 10.905 to 10.992, 10.994)		NA			T
RT10.3 - Field: 10.013-SAP CondCode Dependent	Table 57, 8.10.13, 8.10.22, 8.10.25, 8.10.26, 8.10.27	The Subject Acquisition Profile (SAP) is a mandatory field when Field 10.003: Image type / IMT contains "FACE". Otherwise, it shall not be entered. This field (PAS) is mandatory if the SAP entry (Field 10.013: Subject acquisition profile / SAP) is "40" or greater for face image records. (IMT=FACE only). This field (SXS) is mandatory if the SAP entry for a facial image (Field 10.013: Subject acquisition profile / SAP) is 40, 50 or 51. (IMT=FACE only). In other cases, this field is optional for facial images. (SEC, SHC) ... mandatory if the SAP entry (Field 10.013: Subject acquisition profile / SAP) is "40" or greater. For other facial images (IMT = 'FACE'), the field is optional.	2	D	Type10-10.013-CondCode Dependent-IMT	<See Requirement ID: " Field: SAP Conditional ">	t-2				
			2	D	Type10-10.013-CondCode Dependent-PAS	IF {10.013} GTE 40 THEN Present(10.023)		Y			B-O
			2	D	Type10-10.013-CondCode Dependent-SXS	IF {10.013} MO [40,50,51] THEN Present(10.026)		Y			
			2	D	Type10-10.013-CondCode Dependent-SEC	IF {10.013} GTE 40 THEN Present(10.027)		Y			
			2	D	Type10-10.013-CondCode Dependent-SHC	IF {10.013} GTE 40 THEN Present(10.028)		Y			
						2	D	Type10-10.014-CondCode Dependent-IMT	IF Present(10.014) THEN {10.003} EQ ASCII(FACE)		Y
RT10.4 - Field: 10.014-FIP CondCode Dependent	Table 57, 8.10.14	This field is only appropriate for face images (IMT = 'FACE') that do not comply with SAP Levels 30, 32, 40, 42, 50, 51 or 52, because those images shall be cropped to a "head only" or "head and shoulders" composition.	2	D	Type10-10.014-CondCode Dependent-	IF Present(10.014) THEN {10.013} NOT MO [30, 32, 40, 42, 50, 51, 52]		Y			B-O

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8.10: Record Type-10: Facial, other body part and SMT image record

8.10: Record Type-10: Facial, other body part and SMT image record											
RT10.5 - Field: 10.015-FPFI CondCode Dependent	Table 57, 8.10.15	This field is only appropriate for images that do not comply with SAP Levels 30, 32, 40, 42, 50, 51 or 52, because those images shall be cropped to a "head only" or "head and shoulders" composition.	2	D	SAP Type10-10.015-CondCode Dependent-IMT	IF Present(10.015) THEN {10.003} EQ ASCII(FACE)		Y			B-O
			2	D	Type10-10.015-CondCode Dependent-SAP	IF Present(10.015) THEN {10.013} NOT MO [30, 32, 40, 42, 50, 51, 52]		Y			B-O
RT10.6 - Field: 10.018-DIST CondCode Dependent	Table 57, 8.10.18	This optional field (which can be used only if IMT is 'FACE')...	2	D	Type10-10.018-CondCode Dependent-IMT	IF Present(10.018) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.7 - Field: 10.019-LAF CondCode Dependent	Table 57, 8.10.19	This optional field ...is only applicable to face images (IMT = 'FACE').	2	D	Type10-10.019-CondCode Dependent-IMT	IF Present(10.019) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.8 - Field: 10.020-POS CondCode Dependent	Table 57, 8.10.20, 8.10.25, 8.10.21	This optional field is to be used for the exchange of facial image data. This field (SPA) shall be present when Field 10.020: Subject pose / POS contains a "D" to indicate a set of determined 3D pose angles of the same subject for a facial image (IMT = 'FACE'). If the entry in POS is an "F", "L", or "R" this field shall not be used. This (POA) shall only be used for the exchange of facial image data (IMT = 'FACE'). It may be used if Field 10.020: Subject pose / POS contains an "A" to indicate an angled pose of the subject. The field shall not be used if the entry in POS is an "F", "R", "L" or "D".	2	D	Type10-10.020-CondCode Dependent-IMT	IF Present(10.020) THEN {10.003} EQ ASCII(FACE)		Y			B-O
			2	D	Type10-10.020-CondCode Dependent-SPA	IF {10.020} EQ ASCII(D) THEN Present(10.025) ELSE IF {10.020} MO[F,L,R] THEN Not Present(10.025)		Y			
			2	D	Type10-10.020-CondCode Dependent-POA	IF {10.020} EQ ASCII(A) THEN Present(10.021) ELSE IF {10.020} MO[F,L,R,D] THEN Not Present(10.021)		Y			B-O

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8.10: Record Type-10: Facial, other body part and SMT image record

RT10.9 - Field: 10.021-POA CondCode Dependent	Table 57, 8.10.21	This shall only be used for the exchange of facial image data (IMT = 'FACE').	2	D	Type10-10.021-CondCode Dependent-IMT	IF Present(10.021) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.10 - Field: 10.024-SQS CondCode Dependent	Table 57, 8.10.23	This optional field shall specify quality score data for facial images (IMT = 'FACE')	2	D	Type10-10.024-CondCode Dependent-IMT	IF Present(10.024) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.11 - Field: 10.025-SPA CondCode Dependent	Table 57, 8.10.24	This field shall be present ...for a facial image (IMT = 'FACE').	2	D	Type10-10.025-CondCode Dependent-IMT	IF Present(10.025) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.12 - Field: 10.026-SXS CondCode Dependent	Table 57, 8.10.25	This field is mandatory ...for a facial image...in other cases it is optional	2	D	Type10-10.026-CondCode Dependent-IMT	IF Present(10.026) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.13 - Field: 10.027-SEC CondCode Dependent	Table 57, 8.10.26	For other facial images (IMT = 'FACE'), the field is optional.	2	D	Type10-10.027-CondCode Dependent-IMT	IF Present(10.026) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.14 - Field: 10.028-SHC CondCode Dependent	Table 57, 8.10.27	For other facial image s(IMT = 'FACE'), it is optional.	2	D	Type10-10.028-CondCode Dependent-IMT	IF Present(10.026) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.15 - Field: 10.029-FFP CondCode Dependent	Table 57, 8.10.28	The optional field shall be used for the exchange of facial image data (IMT = 'FACE') feature points or landmarks.	2	D	Type10-10.029-CondCode Dependent-IMT	IF Present(10.029) THEN {10.003} EQ ASCII(FACE)		Y			B-O

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RT10.16 - Field: 10.031-TMC CondCode Dependent	Table 57, 8.10.30	This optional field describes the specific facial (IMT = 'FACE') feature points	2	D	Type10-10.031-CondCode Dependent-IMT	IF Present(10.031) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.17 - Field: 10.032-3DF CondCode Dependent	Table 57, 8.10.31	The optional field shall describe ...facial feature points of the captured facial image(IMT = 'FACE').	2	D	Type10-10.032-CondCode Dependent-IMT	IF Present(10.032) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.18 - Field: 10.033-FEC CondCode Dependent	Table 57, 8.10.32, 8.10.30	Field 10.031: This optional field describes the specific facial (IMT= 'FACE') feature points contained in Field 10.029: 2d Facial feature points/ FFP and if level 5, contours shall be contained in Field 10.033: Feature contours/ FEC.	2	D	Type10-10.033-CondCode Dependent-IMT	IF Present(10.033) THEN {10.003} EQ ASCII(FACE)		Y			B-O
			2	D	NIEM-Type10-10.031-10.029-CondCode Dependent	IF Present(XElm(biom:FacelImageFeaturePointTierCode)) OR Present(XElm(biom:FacelImageFeaturePointTierNumeric)), THEN Present(XElm(biom:FacelImageFeaturePoint))		Y			X-O
			2	D	Type10-10.031-10.029-CondCode Dependent	IF Present(10.031), THEN Present(10.029)		NA			T
			2	D	Type10-10.031-10.033-CondCode Dependent	IF {10.031} EQ 5, THEN Present(10.33)		Y			B-O
RT10.19 - Field: 10.039-T10 CondCode Dependent	Table 57, 8.10.34	This field shall only be present if multiple Type-10 records in the transaction contain the same SMT or body part.	2	D	Transaction-10.039-CondCode Dependent	IF Present(10.039) THEN Count(Records ST Type(Record) EQ 10) GTE 2		NA			T
			2	M	Transaction	IF		Y			X-O

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8.10: Record Type-10: Facial, other body part and SMT image record

					-NIEM-10.039-CondCode Dependent	Present(XElm(biom:PhysicalFeatureReferenceIdntification) THEN Count(XElm(itl:PackageFacialAndSMTImageRecord)) GTE 2					
RT10.20 - Field: 10.040-SMT CondCode Dependent	Table 57, 8.10.35	This field shall be used only when Field 10.003: Image type / IMT = "SCAR", "MARK", or "TATTOO". It is not used for other images	2	D	Type10-10.040-CondCode Dependent-IMT	IF Present(10.040) THEN {10.003} MO [ASCII(SCAR,MARK,TATTOO)]		Y			B-O
RT10.21 - Field: 10.041-SMS CondCode Dependent	Table 57, 8.10.36	This field shall be used only when Field 10.003: Image type / IMT = "SCAR", "MARK", or "TATTOO".	2	D	Type10-10.041-CondCode Dependent-IMT	IF Present(10.041) THEN {10.003} NEQ ASCII(FACE)		Y			B-O
RT10.22 - Field: 10.042-SMD CondCode Dependent	Table 57, 8.10.37	This field shall be used only when Field 10.003: Image type /IMT = "SCAR", "MARK", or "TATTOO".	2	D	Type10-10.042-SMD-CondCode Dependent-IMT	IF Present(10.042) THEN {10.003} MO [ASCII(SCAR,MARK,TATTOO)]		NA			T
			2	D	NIEM-Type10-10.042-SMD-CondCode Dependent-IMT	IF Present(XElm(PhysicalFeatureCategoryCode) OR XElm(PhysicalFeatureClassCoce) OR XElm(PhysicalFeatureDescriptionText) OR XElm(PhysicalFeatureSubClassCode)) THEN {10.003} MO [ASCII(SCAR,MARK,TATTOO)]		Y			X-O
RT10.23 - Field: 10.043-COL CondCode Dependent	Table 57, 8.10.38	This field is optional, but it can only be used when 10.042 is in the record. It shall contain one subfield corresponding to each subfield contained in Field 10.042: SMT descriptors / SMD	2	D	Type10-10.043-10.042-CondCode Dependent	IF Present(10.043) THEN Present(10.042)		NA			T
			2	D	NIEM-Type10-10.043-CondCode	IF Present(10.043) THEN Present(XElm(PhysicalFeatureCategoryCode))		Y			X-O

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8.10: Record Type-10: Facial, other body part and SMT image record

					Dependent						
			2	D	Type10-10.043-10.042-Subfield Count Matches	Count(Subfields in 10.043) EQ Count(Subfields in 10.042)		NA			T
			2	D	NIEM-Type10-10.043-10.042-Occurrence Count Matches	ForEach(XElm(biom:PhysicalFeatureDescriptionDetail)) { Count(XElm(PhysicalFeatureColorDetail)) EQ Count(XElm(PhysicalFeatureCategoryCode)) }		Y			X-C
RT10.24 - Field: 10.045-OCC CondCode Dependent	Table 57, 8.10.40	This optional field defines ...the image of the face (IMT = 'FACE').	2	D	Type10-10.045-CondCode Dependent-IMT	IF Present(10.045) THEN {10.003} EQ ASCII(FACE)		Y			B-O
RT10.25 - Field: Type10-CharType	8.10, Table 57	<Table 57 specifies the Character Type for each field that contains no subfields.. >	1	-	10.[001,002,006 to 010,013,016,017,031,039]-CharType	Bytes(10.[001,002,006 to 010,013,016,017,031,039]) MO [0x30 to 0x39]		Y			B-I <Allow leading zeros, negative and plus signs>
			1	-	10.[012,020,027,030]-CharType	Bytes(10.[012,020,027,030]) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B- I <Allows whitespace>
			1	M	10.003-CharType	Bytes(10.003) MO [0x2D, 0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B- I <Allows whitespace>
			1	M	10.004-CharType	<See Requirement ID: " Field: Source Agency " .>	t-2				
			1	M	10.005-CharType	Bytes(10.005) MO [0x30 to 0x39]		NA			T
			1	M	NIEM-	Bytes(10.005) MO [0x30 to 0x39, 0x2D]		Y			X- I <Allows

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8.10: Record Type-10: Facial, other body part and SMT image record

					10.005-CharType						whitespace>
			1	M	10.011-CharType	Bytes(10.011) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A, 0x30 to 0x39]		Y			B-O
			1	D	10.021-CharType	Bytes(10.021) MO [0x2D,0x30 to 0x39]		Y			B-I <Allows + sign, leading zeros>
			1	O	10.038-CharType	TRUE		Y			B-C
			1	O	10.903-CharType	Bytes(10.903) MO [0x20 to 0x7E]		Y			B-O
			1	M	10.993-CharType	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
			1	O	10.996-CharType	Bytes(10.996) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66]		Y			B-C
			1	M	10.999-CharType	TRUE		NA			T
			1	M	NIEM-10.999-CharType	<Schema tests that the BinaryBase64Object is of the correct type and length. Report that this is tested by the schema.>		Y			X-C
RT10.26 - Field: Type10-Subfield CharType	8.10, Table 57	<Table 57 specifies the Character Type for each subfield.>	1	D	10.014-[LHC, RHC, TVC, BVC]-CharType	Bytes(Infoltem:1 to 4 in 10.014) MO [0x30 to 0x39]		Y			B*-I <Allows plus sign>
					10.014-BBC-CharType	Bytes(Infoltem:5 in 10.014) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*-I <Allows whitespace>
			1	O	10.015-BYC-CharType	Bytes(Infoltem:1 in 10.015) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*-I <Allows whitespace>
			1	O	10.015-[NOP, HPO, VPO]-CharType	Bytes(All(Infoltems in 10.015 ST Infoltems NOT Infoltem:1 in 10.015)) MO [0x30 to 0x39]		Y			B*-I <Allows plus sign>

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			e	t							
			v	a							
			e	t							
			l	u							
			s	s							

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			1	M	10.018- [IDK, IDM, DSC]- CharType	Bytes(All(InfoItems in 10.018)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*- I <Allows whitepace>
			1	D	10.019- LAF- CharType	Bytes(All(InfoItems in 10.019)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*- I <Allows whitepace>
			1	D	10.023- PAC- CharType	Bytes(InfoItem:1 in 10.023) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A, 0x30 to 0x39]		Y			B*- I <Allows whitepace>
			1	D	10.023- VSD- CharType	TRUE		Y			B*-C
			1	D	10.024- [QVU, QAP]- CharType	ForEach(Subfield in 10.024) { Bytes(InfoItem:1,3 in Subfield) MO [0x30 to 0x39] }		Y			B*-O
			1	D	10.024- QAV- CharType	ForEach(Subfield in 10.024) { Bytes(InfoItem:2 in Subfield) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66] }		Y			B*-O
			1	D	10.025- [YAW, PIT, ROL]- CharType	Bytes(InfoItems: 1 to 3 in 10.025) MO [0x2D, 0x30 to 0x39]		Y			B*-I <Allows plus sign>
			1	D	10.025- [YAWU, PITU, ROLU]- CharType	Bytes(InfoItems: 4 to 6 in 10.025) MO [0x30 to 0x39]		Y			B*-I <Allows plus sign>
			1	D	10.026- SXS- CharType	Bytes(All(InfoItems in 10.018)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*- I <Allows whitepace>
			1	D	10.028-	Bytes(All(InfoItems in 10.028)) MO [0x20, 0x41		Y			B*- I

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8.10: Record Type-10: Facial, other body part and SMT image record

					SHC-CharType	to 0x5A, 0x61 to 0x7A]					<Allows whitespace>
1	D	10.029- [FPT, HCX, HCY]-CharType			10.029- [FPT, HCX, HCY]-CharType	ForEach(Subfield in 10.029) { Bytes(Infoltem:1,3,4 in Subfield) MO [0x30 to 0x39] }		Y			B*-I <Allows plus, minus signs>
1	D	10.029- FPC-CharType			10.029- FPC-CharType	ForEach(Subfield in 10.029) { Bytes(Infoltem:2 in Subfield) MO [0x2E, 0x30 to 0x39,0x61 to 0x7A] }		Y			B*-O
1	D	10.032- [FPT, HCX, HCY, H CZ]-CharType			10.032- [FPT, HCX, HCY, H CZ]-CharType	ForEach(Subfield in 10.032) { Bytes(Infoltem:1,3,4,5 in Subfield) MO [0x30 to 0x39] }		Y			B*-I <Allows plus and minus signs>
1	D	10.032- FPC-CharType			10.032- FPC-CharType	ForEach(Subfield in 10.032) { Bytes(Infoltem:2 in Subfield) MO [0x2E, 0x30 to 0x39,0x61 to 0x7A] }		Y			B*-O
1	D	10.033- FCC CharType			10.033- FCC CharType	ForEach(Subfield in 10.033) { Bytes(Infoltem:1 in Subfield) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A] }		Y			B*- I <Allows whitespace>
1	D	10.033- [NOP, HPO, VPO] CharType			10.033- [NOP, HPO, VPO] CharType	ForEach(Subfield in 10.033) { Bytes(All(Infoltems in Subfield ST Infoltems NOT Infoltem:1 in Subfield)) MO [0x30 to 0x39] }		Y			B*-I <Allows plus sign>
1	D	10.040- SMT-CharType			10.040- SMT-CharType	Bytes(All(Infoltems in 10.040)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*- I <Allows whitespace>
1	D	10.041- [HGT,			10.041- [HGT,	Bytes(All(Infoltems in 10.041)) MO [0x30 to 0x39]		Y			B*-I <Allows plus sign>

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8.10: Record Type-10: Facial, other body part and SMT image record

					WID]- CharType							
			1	D	10.042- [SMI, TAC, TSC]- CharType	ForEach(Subfield in 10.042) { Bytes(Infoltem:1 to 3 in Subfield) MO [0x20, 0x41 to 0x46, 0x61 to 0x66] }		Y			B*- I <Allows whitespace>	
			1	D	10.042- TDS- CharType	TRUE		Y			B*-C	
			1	D	10.043- [TC1, TC2, TC3, TC4, TC5, TC6]- CharType	Bytes(All(Infoltems in 10.043)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*- I <Allows whitespace>	
			1	O	10.044- ITX- CharType	Bytes(All(Infoltems in 10.044)) MO [0x20, 0x41 to 0x46, 0x61 to 0x66]		Y			B*- I <Allows whitespace>	
			1	D	10.045- [OCY, OCT]- CharType	ForEach(Subfield in 10.045) { Bytes(Infoltem:1,2 in Subfield) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A] }		Y			B*- I <Allows whitespace>	
			1	D	10.045- [NOP, HPO, VPO]- CharType	ForEach(Subfield in 10.045) { Bytes(All(Infoltems in Subfield ST Infoltems NOT Infoltem:1 OR infoltem:2 in Subfield)) MO [0x30 to 0x39] }		Y			B*-I <Allows plus sign>	
			1	O	10.902- [NAV, OWN, PRO]- CharType	TRUE		Y			B*-C	
			1	O	10.902- [GMT]- CharType	ForEach(Subfield in 10.902) { Bytes(Infoltem:1 in Subfield) MO [0x30 to		NA				T

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						0x39,0x5A] }					
			1	O	NIEM-10.902-GMT CharType	Bytes(XElm(biom:ProcessUTCDate) in 10.902) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]		Y			X-I <Allows plus sign, timezones, etc.>
			1	O	10.904-[MAK, MOD, SER]-CharType	TRUE		Y			B*-C
			1	O	10.995-[ACN, ASP]-CharType	Bytes(All(InfoItems in 10.995)) MO [0x30 to 0x39]		Y			B*-O
			1	O	10.997-[SRN, RSP]-CharType	Bytes(All(InfoItems in 10.997)) MO [0x30 to 0x39]		Y			B*-O
				O	10.998-[UTE, LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharType	<See Requirement ID: " Field: Geographic ">	t-2				
RT10.27 - Field: Type10-CharCount	Table 57, 7.1	<Table 57 specifies the Character Count for each field that contains no subfields.>	1	M	10.001-CharCount	DataLength(10.001) MO [1 to 8]		NA			T
			1	M	NIEM-10.001-CharCount	Length(10.001) EQ 1		Y			X-O
			1	M	10.002-CharCount	DataLength(10.002) EQ 1 OR 2		Y			B-O
			1	M	10.003-CharCount	DataLength(10.003) MO [4 to 11]		Y			B- I <Allows whitespace>
			1	M	10.004-	<See Requirement ID: " Field: Source Agency ">	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
					CharCount						
			1	M	10.005-CharCount	DataLength(10.005) EQ 8		NA			T
			1	M	NIEM-10.005-CharCount	DataLength(10.005) EQ 10		Y			X-O
			1	M	10.006-CharCount	DataLength(10.006) MO [2 to 5]		Y			B-O
			1	M	10.007-CharCount	DataLength(10.007) MO [2 to 5]		Y			B-O
			1	M	10.008-CharCount	DataLength(10.008) EQ 1		Y			B-O
			1	M	10.009-CharCount	DataLength(10.009) MO [1 to 5]		Y			B-O
			1	M	10.010-CharCount	DataLength(10.010) MO [1 to 5]		Y			B-O
			1	M	10.011-CharCount	DataLength(10.011) MO [3 to 5]		Y			B-O
			1	M	10.012-CharCount	DataLength(10.012) MO [3 to 4]		Y			B- I <Allows whitespace>
			1	D	10.013-CharCount	DataLength(10.013) MO [1 to 2]		Y			B-O
			1	O	10.016-CharCount	DataLength(10.016) MO [1 to 5]		Y			B-O
			1	O	10.017-CharCount	DataLength(10.017) MO [1 to 5]		Y			B-O
			1	D	10.019-CharCount	DataLength(10.019) EQ 1		Y			B-C
			1	D	10.020-CharCount	DataLength(10.020) EQ 1		Y			B-C
			1	D	10.021-CharCount	DataLength(10.021) MO [1 to 4]		Y			B-O
			1	D	10.027-CharCount	DataLength(10.027) EQ 3		Y			B- I <Allows whitespace>

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

			1	O	10.030-CharCount	DataLength(10.030) MO [7 to 10]		Y			B- I <Allows whitespace>
			1	D	10.031-CharCount	DataLength(10.031) MO [1 to 3]		NA			T
			1	D	10.031-TMC-CharCount	DataLength(XElm(FacelImageFeaturePointTierCode)) EQ 1 AND DataLength(XElm(FacelImageFeaturePointTierNumeric)) EQ 3		Y			X- I <Allows whitespace>
			1	O	10.038-CharCount	DataLength(10.038) MO [1 to 126]		Y			B-O
			1	D	10.039-CharCount	DataLength(10.039) MO [1 to 3]		Y			B-O
			1	O	10.903-CharCount	DataLength(10.903) MO [13 to 16]		Y			B-O
			1	O	10.993-CharCount	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
			1	O	10.996-CharCount	DataLength(10.996) EQ 64		Y			B-C
							O	10.998-CharCount	<See Requirement ID: " Field: Geographic ".>	t-2	
RT10.28 - Field: Type10-Subfield CharCount	Table 57	<Table 57 specifies the Character Count for each subfield.>	1	D	10.014-[LHC, RHC, TVC, BVC]-CharCount	Length(Infoltem:1 to 4 in 10.014) MO [1 to 5]		Y			B*-O
			1	D	10.014-[BBC]-CharCount	Length(Infoltem:5 in 10.014) EQ 1		Y			B*- I <Allows whitespace>
			1	O	10.015-BYC-CharCount	Length(Infoltem:1 in 10.015) EQ 1		Y			B*- I <Allows whitespace>
			1	O	10.015-NOP-CharCount	Length(Infoltem:2 in 10.015) EQ 1 OR 2		Y			B*-O
			1	O	10.015-[Length(All(Infoltems in 10.015 ST Infoltems NOT		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

					HPO, VPO]-CharCount	Infoltem:1 OR Infoltem:2 in 10.015) MO [1 to 5]					
			1	D	10.018-IDK-CharCount	Length(Infoltem:1 in 10.018) MO [6 to 10]		Y			B*- I <Allows whitespace>
			1	D	10.018-IDM-CharCount	Length(Infoltem:2 in 10.018) EQ 1		Y			B*- I <Allows whitespace>
			1	D	10.018-DSC-CharCount	Length>Last(Infoltem in 10.018)) MO [4 to 8]		Y			B*- I <Allows whitespace>
			1	D	10.019-LAF-CharCount	Length(All(Infoltems in 10.019) EQ 1		Y			B* I <Allows whitespace> C
			1	D	10.023-PAC-CharCount	Length(Infoltem:1 in 10.023) MO [6 to 14]		Y			B*- I <Allows whitespace>
			1	D	10.023-VSD-CharCount	Length(Infoltem:2 in 10.023) MO [1 to 64]		Y			B*-O
			1	D	10.024-QVU-CharCount	ForEach(Subfield in 10.024) { Length(Infoltem:1 in Subfield) MO [1 to 3] }		Y			B*-O
			1	D	10.024-QAV-CharCount	ForEach(Subfield in 10.024) { Length(Infoltem:2 in Subfield) EQ 4 }		Y			B*-O
			1	D	10.024-QAP-CharCount	ForEach(Subfield in 10.024) { Length(Infoltem:3 in Subfield)) MO [1 to 5] }		Y			B*-O
			1	D	10.026-SXS-CharCount	Length(All(Infoltems in 10.026)) MO [3 to 20]		Y			B*- I <Allows whitespace>
			1	D	10.028-	Length(All(Infoltems in 10.028)) EQ 3		Y			B*- I

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8.10: Record Type-10: Facial, other body part and SMT image record

					SHC-CharCount						<Allows whitespace>
			1	D	10.029-FPT-CharCount	ForEach(Subfield in 10.029) { Length(InfoItem:1 in Subfield) EQ 1 }		Y			B*-O
			1	D	10.029-FPC-CharCount	ForEach(Subfield in 10.029) { Length(InfoItem:2 in Subfield) MO [3 to 5] }		Y			B*-O
			1	D	10.029-[HCX, HCY]-CharCount	ForEach(Subfield in 10.029) { Length(InfoItem:3,4 in Subfield)) MO [1 to 5] }		Y			B*-O
			1	D	10.032-FPT-CharCount	ForEach(Subfield in 10.032) { Length(InfoItem:1 in Subfield) EQ 1 }		Y			B*-O
			1	D	10.032-FPC-CharCount	ForEach(Subfield in 10.032) { Length(InfoItem:2 in Subfield) MO [3, 5] }		Y			B*-O
			1	D	10.032-[HCX, HCY, HCZ]-CharCount	ForEach(Subfield in 10.032) { Length(InfoItem:3 to 5 in Subfield)) MO [1 to 5] }		Y			B*-O
			1	D	10.033-FCC-CharCount	ForEach(Subfield in 10.033) { Length(InfoItem:1 in Subfield) MO [4 to 14] }		Y			B*- I <Allows whitespace>
			1	D	10.033-NOP-CharCount	ForEach(Subfield in 10.033) { Length(InfoItem:2 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	D	10.033-[HPO,	ForEach(Subfield in 10.033) {		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

					VPO]-CharCount	Length((All(InfoItems in Subfield ST InfoItems NOT InfoItem:1 OR InfoItem:2 in Subfield) MO [1 to 5])					
			1	D	10.040-SMT-CharCount	Length(All(InfoItems in 10.040)) MO [3 to 10]		Y			B*- I <Allows whitespace>
			1	D	10.041-[HGT, WID]-CharCount	Length(InfoItem:1,2 in 10.041)) MO [1 to 3]		Y			B*-O
			1	D	10.042-SMI-CharCount	ForEach(Subfield in 10.042) { Length(InfoItem:1 in Subfield) MO [3 to 8] }		Y			B*- I <Allows whitespace>
			1	D	10.042-TAC-CharCount	ForEach(Subfield in 10.042) { Length(InfoItem:2 in Subfield) MO [4 to 8] }		Y			B*- I <Allows whitespace>
			1	D	10.042-TSC-CharCount	ForEach(Subfield in 10.042) { Length(InfoItem:3 in Subfield)) MO [3 to 9] }		Y			B*- I <Allows whitespace>
			1	D	10.042-TDS-CharCount	ForEach(Subfield in 10.042) { Length(InfoItem:4 in Subfield)) MO [1 to 256] }		Y			B*-O
			1	D	10.043-[TC1, TC2, TC3, TC4, TC5, TC6]-CharCount	Length(All(InfoItems in 10.043)) MO [3 to 7]		Y			B*- I <Allows whitespace>
			1	O	10.044-ITX-CharCount	Length(All(InfoItems in 10.044)) MO [3 to 11]		Y			B*- I <Allows whitespace>
			1	D	10.045-	ForEach(Subfield in 10.045)		Y			B*- I

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

					[OCY, OCT]-CharCount	{ Length(InfoItem:1,2 in Subfield) EQ 1 }					<Allows whitespace>
			1	D	10.045-NOP-CharCount	ForEach(Subfield in 10.045) { Length(InfoItem:3 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	D	10.045-[HPO, VPO]-CharCount	ForEach(Subfield in 10.045) { Length((All(InfoItems in Subfield ST InfoItems NOT InfoItem:1 OR InfoItem:2 OR InfoItem:3 in Subfield) MO [1 to 5]) }		Y			B*-O
			1	O	10.902-GMT-CharCount	ForEach(Subfield in 10.902) { Length(InfoItem:1 in Subfield) EQ 15 }		NA			T
			1	O	10.902-[NAV, OWN]-CharCount	ForEach(Subfield in 10.902) { Length(InfoItem:2,3 in Subfield) MO [1 to 64] }		Y			B*-O
			1	O	10.902-PRO-CharCount	ForEach(Subfield in 10.902) { Length(InfoItem:4 in Subfield)) MO [1 to 255] }		Y			B*-O
			1	O	NIEM-10.902-GMT-CharCount	Length(XElm(nc:DateTime) in 10.902) EQ 20		Y			X-O
			1	O	10.904-[MAK, MOD, SER]-CharCount	Length(All(InfoItems in 10.904)) MO [1 to 50]		Y			B*-O
			1	O	10.995-ACN-CharCount	ForEach(Subfield in 10.995) { Length(InfoItem:1 in Subfield) MO [1 to 3] }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
			1	O	10.995-ASP-CharCount	ForEach(Subfield in 10.995) { Length(Infoltem:2 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	O	10.997-SRN-CharCount	ForEach(Subfield in 10.997) { Length(Infoltem:1 in Subfield) MO [1 to 3] }		Y			B*-O
			1	O	10.997-RSP-CharCount	ForEach(Subfield in 10.997) { Length(Infoltem:2 in Subfield) EQ 1 OR 2 }		Y			B*-O
				O	10.998-Subfield CharCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT10.29 - Field: Type10-Field Occurrence	Table 57	<Table 57 specifies the Field Occurrence for each field.>	2	M	NIEM-Type10-Cardinality	<The Type-10 table in Annex G of the base standard specifies the type and number of sub elements required for each field.>		Y			X-I <Allows missing elements for fields with cardinatlity 1..1: 10.999, 10.005, 10.004, 10.012, 10.011, 10.006, 10.009, 10.008, 10.003, 10.007, 10.010. Allows optional "biom:Imag

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
											eCaptureDetail" and "biom:captureOrganization" Also requires element for 10.013, but its cardinality is listed as 0..1>
			1	-	Type10-FieldOccurrences	Count(10.[034 to 037, 046 to 199,901,905 to 992, 994]) EQ 0 AND Count(10.[001 to 012, 999]) EQ 1 AND Count(10.[013 to 021,023 to 033,038 to 045, 902 to 904, 993, 995 to 998]) LTE 1		NA			T
			1	M	10.022-PXS-Legacy	IF Present (10.022) <Provide Legacy Warning>.		Y			B-O
RT10.30 - Field: 10.001-Record Header Value	8.10.1, Table 57, 7.1	Field 10.001 Record header. In Traditional encoding, this field contains the record length in bytes (including all information separators)		M	10.001-Record Header	<See Requirement ID " Field: xx.001-Record Header ">	t-2				
	8.10.1, C.10.8	The XML name for the Type-10 record is <itl:PackageFacialAndSMTImageRecord>, and its <biom:RecordCategoryCode> element shall have a value of "10".	1	M	NIEM-10.001-Value	ForEach(itl:PackageFacialAndSMTImageRecord) { {XElm(biom:RecordCategoryCode)} EQ ASCII(10) }		Y			X-C
RT10.31 - Field: 10.002-Information Designation Character Value	8.10.2, Table 57, 7.3.1	This mandatory field shall contain the IDC assigned to this Type-10 record as listed in the information item IDC for this record in Field 1.003 Transaction content/CNT.		M	10.002-Value	<See Requirement IDs " Field: xx.002-IDC " and " Field: 1.003-Transaction Content Subfield 2 IDC Matches " >	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
RT10.32 - Field: 10.003-Image Type Value	8.10.3, Table 57, Table 58	This mandatory field shall be used to indicate the type of image contained in this record. It shall contain a character string from the "Image Code" column of Table 58 to indicate the appropriate image type.	1	M	10.003-IMT-Value	{10.003} MO [ASCII(SCAR,TATTOO,FACE,FRONTAL-C,REAR-C,FRONTAL-N,REAR-N,TORSO-BACK,TORSO-FRONT,CONDITION,MISSING,OTHER,CHEST,FEET,HANDS-PALM,HANDS-BACK,GENITALS,BUTTOCKS,RIGHT LEG, LEFT LEG, RIGHT ARM, LEFT ARM,MARK)]	t-1	Y			B-I <Allows whitespace >
RT10.33 - Field: 10.004-Source Agency Value	8.10.4, 7.6	The data content of this field is defined by the user and shall be in accordance with the receiving agency.		M	10.004-SRC-Value	<See Requirement ID: " Field: Source Agency ".>	t-2				
RT10.34 - Field: 10.005-Photo Capture Date Value	8.10.5, 7.7.2.3	This mandatory field shall contain the date that the image contained in the record was captured.	1	M	10.005-PHD-Value	{10.005} MO [ValidLocalDate]	t-6	NA			T
			1	M	NIEM-10.005-PHD-Value	ForEach(XElm(itl:PackageFacialAndSMTImageRecord)) { {XElm(nc:Date) in XElm(biom:CaptureDate)} MO [NIEM-ValidLocalDate] }	t-6	Y			X-I <Allows optional element (nillable).>
RT10.35 - Field: 10.006-Horizontal Line Length Value	8.10.6, Table 57, 7.7.8.1	The maximum horizontal size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.		M	10.006-HLL-Value	<See Requirement ID " Field: Image HLL Value " >	t-2				
RT10.36 - Field: 10.006-Horizontal Line Length Metadata	8.10.6, Table 57, 7.7.8.1	<The HLL is verified by checking the image metadata if compression is used.>	2	M	10.006-HLL-Matches Image Metadata	IF {10.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN {10.006} EQ {ImageWidth-JPEGB,JPEGL} ELSE IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {10.006} EQ {ImageWidth-JP2,JP2L} ELSE IF {10.011} EQ ASCII(PNG) THEN {10.006} EQ {ImageWidth-PNG}	t-11	Y			B-O
RT10.37 -	8.10.7,	The maximum vertical size is limited to		M	10.007-VLL-	<See Requirement ID " Field: Image VLL Value " >	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
Field: 10.007-Vertical Line Length Value	Table 57, 7.7.8.2	65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.			Value						
RT10.38 - Field: 10.007-Vertical Line Length Metadata	8.10.7, Table 57, 7.7.8.2	<The VLL is verified by checking the image metadata if compression is used.>	2	M	10.007-VLL Matches Image Metadata	IF {10.011} EQ ASCII(JPEG) OR ASCII(JPEGL) THEN {10.007} EQ {ImageHeight-JPEG,JPEGL} ELSE IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {10.007} EQ {ImageHeight-JP2,JP2L} ELSE IF {10.011} EQ ASCII(PNG) THEN {10.007} EQ {ImageHeight-PNG}	t-11	Y			B-O
RT10.39 - Field: 10.008-Scale Units Value	8.10.8, Table 57, 7.7.8.3	<Table 57 lists the value constraints for SLC>		M	10.008-Value	<See Requirement ID " Field: Image SLC Value " >	t-2				
RT10.40 - Field: 10.008-Scale Units Metadata	8.10.8, Table 57, 7.7.8.3	A value of "1" shall indicate pixels per inch. A value of "2" shall indicate pixels per centimeter. A value of "0" in this field indicates that no scale is provided, and the quotient of THPS/TVPS shall provide the pixel aspect ratio. <The SLC is verified by checking the image metadata if compression is used.>	2	M	10.008-SLC Matches Image Metadata	IF {10.011} EQ ASCII(JPEG) OR ASCII(JPEGL) THEN {10.008} EQ {SamplingUnits-JPEG,JPEGL} ELSE IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) <Provide Warning "Not Tested"> ELSE IF {10.011} EQ ASCII(PNG) THEN IF {10.008} EQ 1 OR 2 THEN { SamplingUnits-PNG} EQ 1, ELSE IF {10.008} EQ 0 THEN { SamplingUnits-PNG} EQ 0	t-11	Y			B-O
RT10.41 - Field: 10.009-Transmitted Horizontal Pixel Scale Value	8.10.9, Table 57, 7.7.8.4	<Table 57 lists the value constraints for THPS.>		M	10.009-THPS-Value	<See Requirement ID " Field: Image THPS Value " >	t-2				
RT10.42 - Field:	8.10.9, Table 57,	This is the integer pixel density used in the horizontal direction of the image if	2	M	10.009-THPS-	IF {10.011} EQ ASCII(JPEG) OR ASCII(JPEGL) AND {10.008} EQ 1 OR 2	t-11, t-12	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
10.009- Transmitted Horizontal Pixel Scale Metadata	7.7.8.4	SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the horizontal component of the pixel aspect ratio, up to 5 digits. <The THPS is verified by checking the image metadata if compression is used.>			Matches Image Metadata	THEN {10.009} EQ {HorizontalDensity-JPEGB,JPEGL} ELSE IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) AND {10.008} EQ 1 OR 2 THEN <Provide Warning "Not Tested"> ELSE IF {10.011} EQ ASCII(PNG) AND {10.008} EQ 1 THEN {10.009} EQ {HorizontalDensity-PNG} * 0.0254 (meters/inch), ELSE IF 10.011} EQ ASCII(PNG) AND {10.008} EQ 2 THEN {10.009} EQ {HorizontalDensity-PNG} * 0.01 (meters/cm)					
			2	M	10.009-THPS-Aspect Ratio Matches Metadata	IF {10.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {10.008} NEQ 1 OR 2 THEN {10.009}/{10.010} EQ {HorizontalDensity-JPEGB,JPEGL} / {VerticalDensity-JPEGB,JPEGL} ELSE IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) AND {10.008} NEQ 1 OR 2 THEN <Provide Warning "Not Tested"> ELSE IF {10.011} EQ ASCII(PNG) AND {10.008} NEQ 1 OR 2 THEN {10.009}/{10.010} EQ {HorizontalDensity-PNG} / {VerticalDensity-PNG}	t-11	Y		B-O	
RT10.43 - Field: 10.010- Transmitted Vertical Pixel Scale Value	8.10.10, Table 57, 7.7.8.5	<Table 57 lists the value constraints for TVPS.>		M	10.010-TVPS-Value	<See Requirement ID " Field: Image TVPS Value " >	t-2				
RT10.44 - Field:	8.10.10, Table 57,	This is the integer pixel density used in the Vertical direction of the image if SLC	2	M	10.010-TVPS-	IF {10.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {10.008} EQ 1 OR 2	t-11, t-12	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
10.010-Transmitted Vertical Pixel Scale Metadata	7.7.8.5	has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the Vertical component of the pixel aspect ratio, up to 5 digits. <The TVPS is verified by checking the image metadata if compression is used.>			Matches Metadata	THEN {10.010} EQ {VerticalDensity-JPEGB,JPEGL} ELSE IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) <Provide Warning "Not Tested"> ELSE IF {10.011} EQ ASCII(PNG) AND {10.008} EQ 1 THEN {10.010} EQ {VerticalDensity-PNG} * 0.0254 (meters/inch),					
			2	M	10.010-TVPS-Aspect Ratio Matches Image Metadata	IF {10.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {10.008} NEQ 1 OR 2 THEN {10.009}/{10.010} EQ {HorizontalDensity-JPEGB,JPEGL} / {VerticalDensity-JPEGB,JPEGL} ELSE IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) <Provide Warning "Not Tested"> ELSE IF {10.011} EQ ASCII(PNG) AND {10.008} NEQ 1 OR 2 THEN {10.009}/{10.010} EQ { HorizontalDensity - PNG} / {VerticalDensity-PNG}	t-11	Y			B-O
RT10.45 - Field: 10.011-Compression Algorithm Value	8.10.11, Table 57, 7.7.9.3, 7.7.9.4	For non-facial images conveyed in Record Type-10 Field 10.011: Compression algorithm / CGA may be set to any value in Table 15, except WSQ20.	-	M	10.011-CGA-Value	<See Requirement ID: " Field: Type10 Compression ">	t-2				
RT10.46 - Field: 10.011-Compression Algorithm Metadata	8.10.11, Table 57	<The CGA is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	10.011-CGA-Matches Image Metadata	IF {10.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN Present(SOI -JPEG,JPEGL) AND IF {10.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN Present(SigBox) AND	t-11	Y			B-O

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8.10: Record Type-10: Facial, other body part and SMT image record

						IF {10.011} EQ ASCII(PNG) THEN Present(PNGSig)					
RT10.47 - Field: 10.012-Color Space Value	8.10.12, Table 57, 7.7.10	Table 16 lists the codes and their descriptions for each of the available color spaces used within this standard. All other color spaces are to be marked as undefined.	-	M	10.012-CPS-Value	<See Requirement ID: " Field: Image CSP Value >	t-2				
RT10.48 - Field: 10.013-Subject Acquisition Profile Value	8.10.13, Table 57, 7.7.5.1	<Table 57 lists the value constraints for SAP.>	-	D	10.013-SAP-Value	<See Requirement ID: " Field: SAP Values ">	t-2				
RT10.49 - Field: 10.013-Subject Acquisition Profile Conditional	8.10.13, 7.7.5	The Subject Acquisition Profile (SAP) is a mandatory field when Field 10.003: Image type / IMT contains "FACE". Otherwise, it shall not be entered.	-	D	10.013-SAP-Conditional	<See Requirement ID: " Field: SAP Conditional ">	t-2				
RT10.50 - Field: 10.014-Face Image Bounding Box Value	8.10.14, Table 57	<Table 57 lists the value constraints for FIP.>	2	M	Type10-10.014-LHC-Value	{Infoltem:1 in 10.014} GTE 1 AND LTE {10.006} AND MO [Integers]		Y			B*-O
			2	M	Type10-10.014-RHC-Value	{Infoltem:2 in 10.014} GTE 1 AND LTE {Infoltem:1 in 10.014} AND MO [Integers]		Y			B*-O
			2	M	Type10-10.014-TVC-Value	{Infoltem:3 in 10.014} GTE 1 AND LTE {10.007} AND MO [Integers]		Y			B*-O
			2	M	Type10-10.014-BVC-Value	{Infoltem:4 in 10.014} GT {Infoltem:3 in 10.014} AND LTE {10.007} AND MO [Integers]		Y			B*-O
			1	O	10.014-BBC-Value	{Infoltem:5 in 10.014} MO [ASCII(S,H,F,N,X)]		Y			B*-I <Allows whitespace >
RT10.51 -	8.10.14	This field is only appropriate for images	2	D	10.014-FIP-	<See Requirement ID: " Field: 10.014-FIP >	t-2				

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8.10: Record Type-10: Facial, other body part and SMT image record

Field: 10.014- Face Image Position Conditional		that do not comply with SAP Levels 30, 40, 50 or 51.			Conditional	CondCode Dependent ">						
RT10.52 - Field: 10.015-Face Image Path Value	8.10.15, Table 57	<Table 57 lists the value constraints for FPF1.>	1	M ↑	10.015-BYC-Value	{Infoltem:1 in 10.015} MO [ASCII(C, E, P)] }		Y			B*-I <Allows whitespace >	
			1	M ↑	10.015-NOP-Value	{Infoltem:2 in 10.015} MO [2 to 99] AND MO [Integers]		Y			B*-O	
			1	M ↑	10.015-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 10.015}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }		NA			T	
			1	M ↑	NIEM-10.015-[HPO, VPO]-Value	{XElm(PositionHorizontalCoordinateValue) GTE 0 AND LTE 99999 AND {XElm(PositionVerticalCoordinateValue) GTE 0 AND LTE 99999		Y				X-O
			2	M ↑	10.015-HPO-ValueDependent	For(X EQ 3 to {Infoltem:2 in 10.015}) { IF X MOD 2 EQ 1 {Infoltem:X in 10.015} GTE 0 AND LTE {10.006} AND MO [Integers] }		NA				T
			2	M ↑	NIEM-10.015-HPO-ValueDependent	{XElm(PositionHorizontalCoordinateValue) GTE 0 AND LTE {10.006} AND MO [Integers]		Y				X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
			2	M ↑	10.015-VPO-ValueDependent	For(X EQ 3 to {Infoltem:2 in 10.015}) { IF X MOD 2 EQ 0 {Infoltem:X in 10.015} GTE 0 AND LTE {10.007} AND MO [Integers] }		NA			T
			2	M ↑	NIEM-10.015-VPO-ValueDependent	{XElm(PositionVerticalCoordinateValue) GTE 0 AND LTE {10.007} AND MO [Integers]		Y			X-O
RT10.53 - Field: 10.016-Scanned Horizontal Pixel Scale Value	8.10.16, Table 57	<Table 57 lists the value constraints for SHPS.>		O	10.016-SHPS-Value	<See Requirement ID: " Field: Image SHPS Value ">	t-2				
RT10.54 - Field: 10.017-Scanned Vertical Pixel Scale Value	8.10.17, Table 57	<Table 57 lists the value constraints for SVPS.>		O	10.017-SVPS-Value	<See Requirement ID: " Field: Image SVPS Value ">	t-2				
RT10.55 - Field: 10.018-Distortion Value	8.10.18, Table 57	<Table 57 lists the value constraints for DIST.>	1	M ↑	10.018-IDK-Value	{Infoltem:1 in 10.018} MO [ASCII(Barrel, Inflated, Pincushion)]		Y			B*-I <Allows whitespace>
			1	M ↑	10.018-IDM-Value	{Infoltem:2 in 10.018} EQ ASCII(E) OR ASCII(C)		Y			B*-I <Allows whitespace>
			1	M ↑	10.018-DSC-Value	{Infoltem:3 in 10.018} MO [ASCII(Mild,Moderate,Severe)]		Y			B*-I <Allows whitespace>
RT10.56 - Field: 10.019-Lighting	8.10.19, Table 57	<Table 57 lists the value constraints for LAF.>	1	D	10.019-LAF-Value	{10.019} MO [ASCII(F,H,R)]		Y			B-I <Allows whitespace>

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8.10: Record Type-10: Facial, other body part and SMT image record

Artifacts Value											
RT10.57 - Field: 10.020-Subject Pose Value	8.10.20, Table 60	When included, this field shall contain one character code selected from Table 60 to describe the pose of the subject.	1	D	10.020-POS-Value	{10.020} MO [ASCII(F,R,L,A,D)]		Y			B-I <Allows whitespace>
RT10.58 - Field: YAW POA Opposite	8.10.20	Note that the offset angle in Field 10.021: Pose offset angle / POA is opposite from the yaw angle in Field 10.025 as indicated by a minus sign.	2	D	10.025-YAW-10.021-Opposite	IF Present(InfoItem:1 in 10.025) THEN {10.021} EQ { InfoItem:1 in 10.025} * -1		Y			B*-O
RT10.59 - Field: 10.021- Pose Offset Angle Value	8.10.21, Table 57	When included, this field shall contain one character code selected from Table 60 to describe the pose of the subject.	1	D	10.021-POA-Value	{10.021} GTE -180 AND LTE 180 AND {10.021} MO [Integers]		Y			B-O
RT10.60 - Field: 10.022-Deprecated	Table 57	Not to be used in new transactions.		-	10.022-Deprecated	<See Requirement ID: " Field: Type10-CondCode >.	t-2				
RT10.61 - Field: 10.023-Photo Acquisition Source Value	8.10.22, Table 57, Table 57	When included, the first information item in this field shall contain an attribute code selected from Table 61 to describe the source of captured image data.	1	M	10.023-PAC-Value	{InfoItem:1 in 10.023} MO [ASCII(UNSPECIFIED, UNKOWN PHOTO, DIGITAL CAMERA, SCANNER, UNKNOWN VIDEO, ANALOG VIDEO, DIGITAL VIDEO, VENDOR, TYPE20, OTHER)]		Y			B*-I <Allows whitespace>
			1	D	10.023-VSD-Value	TRUE		Y			B*-C
RT10.62 - Field: 10.023-Photo Acquisition Source VENDOR	8.10.22, Table 57, Table 57	When "VENDOR" is specified in photo attribute code / PAC, a second free-format information item (vendor-specific description VSD) may be entered with up to 64 characters ...	2	D	10.023-PAS-VSD-Dependent	IF Present(InfoItem:2 in 10.023) THEN {InfoItem:1 in 10.023} EQ ASCII(VENDOR)		Y			B*-O
RT10.63 - Field:	8.10.22, Table 57,	A Record Type-20 may be used to store the original reference data. For this case,	2	D	Transaction -10.023-	IF {InfoItem:1 in 10.023} EQ ASCII(TYPE20) THEN Present(10.997) AND		Y			B*-O

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8.10: Record Type-10: Facial, other body part and SMT image record											
10.023-Photo Acquisition Source Type-20	Table 57	Field 10.997: Source representation / SOR shall be contained in this record, and the corresponding Record Type-20 shall be included in the transaction.			PAS-Conditional	Present(Record ST Type(Record) EQ 20)					
RT10.64 - Field: 10.024-Subject Quality Scores Type-20	8.10.23, Table 57, 7.7.7	<Table 57 lists the value constraints for SQS.>	-	D	10.024-SQS	<See Requirement ID: " Field: Sample Quality Subfield 1 " and " Field: Sample Quality Subfield 2 " and " Field: Sample Quality Subfield 3 ".>	t-2				
RT10.65 - Field: 10.025-Subject Pose Angles Value	8.10.24, Table 57	<Table 57 lists the value constraints for SPA.>	1	M ↑	10.025-YAW-Value	{Infoltem:1 in 10.025} GTE -180 AND LTE 180 AND MO [Integers]		Y			B*-O
			1	M ↑	10.025-PIT-Value	{Infoltem:2 in 10.025} GTE -90 AND LTE 90 AND MO [Integers]		Y			B*-O
			1	M ↑	10.025-ROL-Value	{Infoltem:3 in 10.025}} GTE -180 AND LTE 180 AND MO [Integers]		Y			B*-O
			1	O ↑	10.025-[YAWU, PITU, ROLU]-Value	{Infoltem:4 to 6 in 10.025}} GTE 0 AND LTE 90 AND MO [Integers]		Y			B*-O
RT10.66 - Field: 10.026-Subject Facial Description Value	8.10.25, Table 57, Table 62	The value should be selected from the "Attribute code" column of Table 62.	1	D	NIEM-10.026-SXS-Value	{XElm(biom:FacelImageDescriptionCode)} MO Table 62 OR MO NCIC_Codes <XElm(biom:FacelImageDescriptionText) may be any value because it is user-defined>	t-17	Y			X-I <Requires values from Table 62— but shouldn't because of user-defined possibility>
			1	D	10.026-SXS-	TRUE <Cannot check for values because the		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

RT10.67 - Field: 10.027- Subject Eye Color Value	8.10.26, Table 57, Table 17	<Table 57 lists the value constraints for SEC.>	1	D	10.027-SEC-Value	Value standard allows user-defined Alphabetic Text. > <See Requirement ID: " Field: Image ECL Value ".>	t-2				
RT10.68 - Field: 10.028- Subject Hair Color Value	8.10.27, Table 57, Table 63	<Table 57 lists the value constraints for SHC.> When the subject is predominantly bald, but hair color is discernible, then the appropriate hair color attribute code shall follow "BAL" in a second entry. For streaked hair, use "STR" in the first entry; use the second entry to describe the principal color of the hair.	1	M	10.028-SHC-Value	{Infoltems: 1, 2 in 10.028} MO [ASCII(XXX, BAL, BLK, BLN, BRO, GRY, RED, SDY, WHI, BLU, GRN, ONG, PNK, PLE, STR)]		Y			B*-I <Allows whitespace >
			1	M	10.028-SHC-SecondValue	{Infoltem:2 in 10.028} MO [ASCII(XXX, BLK, BLN, BRO, GRY, RED, SDY, WHI, BLU, GRN, ONG, PNK, PLE)]		Y			B*-O
RT10.69 - Field: 10.029- 2D Facial Feature Points Value	8.10.28, Table 57	<Table 57 lists the value constraints for FFP.> The first information item, feature point type / FPT is a one character value. It is mandatory. It shall be either 1 = Denoting an MPEG4 Feature point. 2 = Anthropometric landmark. (This is new to this version). The second information item, feature point code / FPC is 3 to 5 characters. If FPT is 1, this information item shall be "A.B" with A and B defined in Section 8.10.27.1 and illustrated in Figure 14. The allowed special character is a period. If FPT is 2, the codes are entered as shown in the "Feature Point ID" column of Table 65. This is one to four alphabetic characters.	1	M	10.029-FPT-Value	ForEach(Subfield in 10.029) { {Infoltem:1 in Subfield} EQ 1 OR 2 }		Y			B*-I <Allows whitespace, plus sign>
			1	M	10.029-FPC-Value	ForEach(Subfield in 10.029) { {Infoltem:1 in Subfield} MO [Figure 13, Figure 14, Table 65] }		Y			B*-O
			2	M	10.029-FPC-ValueDependent	ForEach(Subfield in 10.029) { IF({Infoltem:1 in Subfield} EQ 1 THEN {Infoltem:2 in Subfield} MO [Figure 13, Figure 14] ELSE {Infoltem:2 in Subfield} MO [Table 65] }		Y			B*-O

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8.10: Record Type-10: Facial, other body part and SMT image record											
			2	M ↑	10.029-HCX-ValueDependent	ForEach(Subfield in 10.029) { {Infoltem:3 in Subfield} GTE 1 AND LTE {10.006} AND MO [Integers] }		Y			B*-O
			2	M ↑	10.029-HCY-ValueDependent	ForEach(Subfield in 10.029) { {Infoltem:4 in Subfield} GTE 1 AND LTE {10.007} AND MO [Integers] }		Y			B*-O
RT10.70 - Field: 10.030-Device Monitoring Mode Value	8.10.29, Table 57,	<Table 57 lists the value constraints for DMM.>	1	O	10.030-DMM-Value	<See Requirement ID: " Field: Device Monitoring ">.	t-2				
RT10.71 - Field: 10.031-Tiered Markup Collection Value	8.10.30, Table 57,	<Table 57 lists the value constraints for TMC.>	1	D	10.031-TMC-Value	{10.031} MO [1 to 5, 100 to 999] AND MO [Integers]		NA			T
			1	D	NIEM-10.031-TMC-Value	{XElm(FacelImageFeaturePointTierCode)} MO [1 to 5] OR {XElm(FacelImageFeaturePointTierNumeric)} MO [100 to 999]		Y			X-I <Allows whitespace and plus sign>
RT10.72 - Field: 10.032- 3D Facial Feature Points Value	8.10.31, Table 57	<Table 57 lists the value constraints for 3DF.> The first information item, feature point type / FPT is a one character value. It is mandatory. It shall be either 1 = Denoting an MPEG4 Feature point, but using a Z coordinate 2 = Anthropometric landmark, with a Z coordinate.	1	M ↑	10.032-FPT-Value	ForEach(Subfield in 10.032) { {Infoltem:1 in Subfield} EQ 1 OR 2 }		Y			B*-I <Allows whitespace and plus sign>
			2	M ↑	10.032-FPC-Value	ForEach(Subfield in 10.032) { IF({Infoltem:1 in Subfield} EQ 1 THEN {Infoltem:2 in Subfield} MO [Figure 13, Figure 14] ELSE		Y			B*-O

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8.10: Record Type-10: Facial, other body part and SMT image record

		The second information item, feature point code / FPC is 3 to 5 characters. If FPT is 1, this information item shall be "A.B" with A and B defined in Section 8.10.27.1 and illustrated in Figure 14. The allowed special character is a period. If FPT is 2, the codes are entered as shown in the "Feature Point ID" column of Table 65. Note that this entry is one to four alphabetic characters.				{Infoltem:2 in Subfield} MO [Table 65]					
			2	M ↑	10.032-HCX-Value	ForEach(Subfield in 10.032) { {Infoltem:3 in Subfield} GTE 1 AND LTE {10.006} AND MO [Integers] }		Y			B*-O
			2	M ↑	10.032-HCY-Vlaue	ForEach(Subfield in 10.032) { {Infoltem:4 in Subfield} GTE 1 AND LTE {10.007} AND MO [Integers] }		Y			B*-O
			1	M ↑	10.032-HCZ-Value	ForEach(Subfield in 10.032) { {Infoltem:5 in Subfield} GTE 1 AND LTE 65535 AND MO [Integers] }		Y			B*-O
RT10.73 - Field: 10.033-Feature Contours Value	8.10.32, Table 57, Table 18	<Table 57 lists the value constraints for3DF.>	1	M ↑	10.033-FCC-Value	ForEach(Subfield in 10.033) { {Infoltem:1 in Subfield} MO [ASCII(eyetop, eyebottom, upperlip, upperlipbottom, lowerlip, lowerlipbottom, rightnostril, leftnostril, lefteyebrow, righteyebrow, chin, faceoutline)] }		Y			B*-I <Allows whitespace >
			1	M ↑	10.033-NOP-Value	ForEach(Subfield in 10.033) { {Infoltem:2 in Subfield} MO [3 to 99] AND MO [Integers] }		Y			B*-I <Allows whitespace >
			1	M	10.033-	For(X EQ 3 to {Infoltem:2 in 10.033})		NA			T

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8.10: Record Type-10: Facial, other body part and SMT image record

			↑	[HPO, VPO]-Value	{ IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }					
			1	M ↑ NIEM-10.033-[HPO, VPO]-Value	{XElm(PositionHorizontalCoordinateValue) GTE 0 AND LTE 99999 AND {XElm(PositionVerticalCoordinateValue) GTE 0 AND LTE 99999		Y			X-O
			2	M ↑ 10.033-HPO-ValueDependent	ForEach(Subfield in 10.033) { For(X EQ 3 to {Infoltem:2 in Subfield}) { IF X MOD 2 EQ 1 {Infoltem:X in Subfield} GTE 0 AND LTE {10.006} AND MO [Integers] } }		NA			T
			2	M ↑ NIEM-10.033-HPO-ValueDependent	{XElm(PositionHorizontalCoordinateValue) GTE 0 AND LTE {10.006} AND MO [Integers]		Y			X-O
			2	M ↑ NIEM-10.033-VPO-ValueDependent	{XElm(PositionVerticalCoordinateValue) GTE 0 AND LTE {10.007} AND MO [Integers]		Y			X-O
			2	M ↑ 10.033-VPO-ValueDependent	ForEach(Subfield in 10.033) { For(X EQ 3 to {Infoltem:2 in Subfield})		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
					ndent	{ IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE {10.007} AND MO [Integers] }					
RT10.74 - Field: 10.034 to 10.037-Reserved	Table 57	Reserved for future use only by ANSI/NIST-ITL.		-	10.034 to 10.037-Reserved	<See Requirement ID: " Field: Type10-CondCode ".>	t-2				
RT10.75 - Field: 10.038-Comment Value	8.10.33, 7.4.4 Table 57	<Table 57 lists the value constraints for COM.>	1	O	10.038-COM-Value	<See Requirement ID: " Field: Comment ".>	t-2				
RT10.76 - Field: 10.039-Type-10 Reference Number Value	8.10.34, Table 57	<Table 57 lists the value constraints for T10.>	1	D	10.039-T10-Value	{10.039} MO [1 to 255] AND MO [Integers]		Y			B-O
RT10.77 - Field: 10.040- NCIC SMT Code Value	8.10.35, Table 57	<Table 57 lists the value constraints for SMT.>	1	D	10.040-SMT-Value	ForEach(Infoltem in 10.040) { {Infoltem} MO [NCIC_Codes] }	t-17	Y			B*-I <Allows whitespace >
RT10.78 - Field: 10.041- SMT Size Value	8.10.36, Table 57	<Table 57 lists the value constraints for SMS.>	1	D	10.041-[HGT, WID]-Value	ForEach(Infoltem in 10.041) { {Infoltem} GTE 1 AND MO[Integers] }		Y			B*-I <Allows whitespace, leading zeros, plus sign>
RT10.79 - Field: 10.042- SMT Descriptors Value	8.10.37, Table 57, Table 58, Table 67	<Table 57 lists the value constraints for SMD.>	1	M ↑	10.042-SMI-Value	ForEach(Subfield in 10.042) { {Infoltem:1 in Subfield} MO [ASCII(SCAR,PIERCING, TATTOO, CHEMICAL, BRANDED, CUT, MARK)]		NA			T

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8.10: Record Type-10: Facial, other body part and SMT image record

			1	M	NIEM-10.042-SMI-Value	<pre> ForEach(Xelm(PhysicalFeatureDescriptionDetail)) { XElm(PhysicalFeatureCategoryCode) MO [ASCII(SCAR,PIERCING, TATTOO, CHEMICAL, BRANDED, CUT, MARK)] } </pre>		Y		X-I <Allows whitespace >
			1	D	10.042-TAC-Value	<pre> ForEach(Subfield in 10.042) { Infoltem:2 in Subfield} MO [ASCII(HUMAN, ANIMAL, PLANT, FLAG, OBJECT, ABSTRACT, SYMBOL, OTHER)] } </pre>		NA		T
			1	D	NIEM-10.042-TAC-Value	<pre> ForEach(Xelm(PhysicalFeatureDescriptionDetail)) { XElm(PhysicalFeatureClassCode) } MO [ASCII(HUMAN, ANIMAL, PLANT, FLAG, OBJECT, ABSTRACT, SYMBOL, OTHER)] } </pre>		Y		X-I <Allows whitespace >
			1	D	10.042-TSC-Value	<pre> ForEach(Subfield in 10.042) { Infoltem:3 in Subfield} MO [ASCII(MFACE,FFACE, ABFACE, MBODY, FBODY, ABBODY, ROLES, SPORT, MBPART, FBPART, ABBPART, MHUMAN, SKULL, CAT, DOG, DOMESTIC, VICIOUS, HORSE, WILD, SNAKE, DRAGON, BIRD, INSECT, ABSTRACT, PARTS, MANIMAL, NARCOTICS, REDFL, BLUEFL, YELFL, DRAW, ROSE, TULIP, LILY, MPLANT, USA, STATE, NAZI, CONFED, BRIT, MFLAG, FIRE, WEAP,PLANE,VESSEL,TRAIN,VEHICLE,MYTH,SPOR T,NATURE, MOBJECTS, FIGURE, SLEEVE, BRACE, ANKLET, NECKLC, SHIRT, BODBND, HEDBND, MABSTRACT, NATION, POLITIC, MILITARY, FRATERNAL, PROFESS, GANG, MSYMBOLS, </pre>		NA		T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

					WORDING, FREEFRM, MISC] }					
			1	D	NIEM-10.042-TSC-Value	ForEach(Xelm(PhysicalFeatureDescriptionDetail)) { {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(MFACE,FFACE, ABFACE, MBODY, FBODY, ABBODY, ROLES, SPORT, MBPART, FBPART, ABBPART, MHUMAN, SKULL, CAT, DOG, DOMESTIC, VICIOUS, HORSE, WILD, SNAKE, DRAGON, BIRD, INSECT, ABSTRACT, PARTS, MANIMAL, NARCOTICS, REDFL, BLUEFL, YELFL, DRAW, ROSE, TULIP, LILY, MPLANT, USA, STATE, NAZI, CONFED, BRIT, MFLAG, FIRE, WEAP, PLANE, VESSEL, TRAIN, VEHICLE, MYTH, SPORT, NATURE, MOBJECTS, FIGURE, SLEEVE, BRACE, ANKLET, NECKLC, SHIRT, BODBND, HEDBND, MABSTRACT, NATION, POLITIC, MILITARY, FRATERNAL, PROFESS, GANG, MSYMBOLS, WORDING, FREEFRM, MISC)] }		Y		X-I <Allows whitespace >
			2	D	10.042-TSC-ValueDependent	ForEach(Subfield in 10.042) { IF Present(Infoltem:2,3 in Subfield) THEN { IF {Infoltem:2 in Subfield} EQ ASCII(HUMAN) THEN {Infoltem:3 in Subfield} MO [ASCII(MFACE,FFACE, ABFACE, MBODY, FBODY, ABBODY, ROLES, SPORT, MBPART, FBPART, ABBPART, MHUMAN, SKULL)] ELSE IF {Infoltem:2 in Subfield} EQ ASCII(ANIMAL) THEN {Infoltem:3 in Subfield} MO [ASCII(CAT, DOG, DOMESTIC, VICIOUS, HORSE, WILD, SNAKE, DRAGON, BIRD, INSECT, ABSTRACT, PARTS,		NA		T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

					MANIMAL]) ELSE IF {Infoltem:2 in Subfield} EQ ASCII(PLANT) THEN {Infoltem:3 in Subfield} MO [ASCII(NARCOTICS, REDFL, BLUEFL, YELFL, DRAW, ROSE, TULIP, LILY, MPLANT)] ELSE IF {Infoltem:2 in Subfield} EQ ASCII(FLAG) THEN {Infoltem:3 in Subfield} MO [ASCII(USA, STATE, NAZI, CONFED, BRIT, MFLAG)] ELSE IF {Infoltem:2 in Subfield} EQ ASCII(OBJECT) THEN {Infoltem:3 in Subfield} MO [ASCII(FIRE, WEAP,PLANE,VESSEL,TRAIN,VEHICLE,MYTH,SPOR T,NATURE, MOBJECTS)] ELSE IF {Infoltem:2 in Subfield} EQ ASCII(ABSTRACT) THEN {Infoltem:3 in Subfield} MO [ASCII(FIGURE, SLEEVE, BRACE, ANKLET, NECKLC, SHIRT, BODBND, HEDBND, MABSTRACT)] ELSE IF {Infoltem:2 in Subfield} EQ ASCII(SYMBOL) THEN {Infoltem:3 in Subfield} MO [ASCII(NATION, POLITIC, MILITARY, FRATERNAL, PROFESS, GANG, MSYMBOLS)] ELSE IF {Infoltem:2 in Subfield} EQ ASCII(OTHER) THEN {Infoltem:3 in Subfield} MO [ASCII(WORDING, FREEFRM, MISC)] } }					
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Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

			2	D	NIEM-10.042-TSC-ValueDependent	<pre> ForEach(Xelm(PhysicalFeatureDescriptionDetail))) { IF Present(XElm(PhysicalFeatureClassCode) AND XElm(PhysicalFeatureSubClassCode)) THEN { IF { XElm(PhysicalFeatureClassCode) } EQ ASCII(HUMAN) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(MFACE,FFACE, ABFACE, MBODY, FBODY, ABBODY, ROLES, SPORT, MBPART, FBPART, ABBPART, MHUMAN, SKULL)] ELSE IF { XElm(PhysicalFeatureClassCode) } EQ ASCII(ANIMAL) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(CAT, DOG, DOMESTIC, VICIOUS, HORSE, WILD, SNAKE, DRAGON, BIRD, INSECT, ABSTRACT, PARTS, MANIMAL)] ELSE IF { XElm(PhysicalFeatureClassCode) } EQ ASCII(PLANT) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(NARCOTICS, REDFL, BLUEFL, YELFL, DRAW, ROSE, TULIP, LILY, MPLANT)] ELSE IF { XElm(PhysicalFeatureClassCode) } EQ ASCII(FLAG) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(USA, STATE, NAZI, CONFED, BRIT, MFLAG)] ELSE IF {XElm(PhysicalFeatureClassCode) } EQ </pre>		Y			X-O
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Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

						ASCII(OBJECT) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(FIRE, WEAP,PLANE,VESSEL,TRAIN,VEHICLE,MYTH,SPORT,NATURE, MOBJECTS)] ELSE IF {XElm(PhysicalFeatureClassCode) } EQ ASCII(ABSTRACT) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(FIGURE, SLEEVE, BRACE, ANKLET, NECKLC, SHIRT, BODBND, HEDBND, MABSTRACT)] ELSE IF {XElm(PhysicalFeatureClassCode) } EQ ASCII(SYMBOL) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(NATION, POLITIC, MILITARY, FRATERNAL, PROFESS, GANG, MSYMBOLS)] ELSE IF {XElm(PhysicalFeatureClassCode) } EQ ASCII(OTHER) THEN {XElm(PhysicalFeatureSubClassCode)} MO [ASCII(WORDING, FREEFRM, MISC)] } }					
			2	D	10.042-TAC-Conditional	ForEach(Subfield in 10.042) { Present(Infoltem:2 in Subfield) IFF {Infoltem:1 in Subfield} NOT MO [ASCII(SCAR, MARK)]		NA			T
			2	D	NIEM-10.042-TAC	ForEach(Xelm(PhysicalFeatureDescriptionDetail)) { Present(XElm(PhysicalFeatureClassCode)		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.10: Record Type-10: Facial, other body part and SMT image record											
					Conditional	IFF XElm(PhysicalFeatureCategoryCode) NOT MO [ASCII(SCAR, MARK)]					
			2	D	10.042-TSC-Conditional	ForEach(Subfield in 10.042) { Present(Infoltem:3 in Subfield) IFF {Infoltem:1 in Subfield} NOT MO [ASCII(SCAR, MARK)]		NA			T
			2	D	NIEM-10.042-TSC-Conditional	ForEach(Xelm(PhysicalFeatureDescriptionDetail)) { XElm(PhysicalFeatureSubClassCode)) IFF XElm(PhysicalFeatureCategoryCode) NOT MO [ASCII(SCAR, MARK)]		Y			X-O
			2	D	10.042-TDS-Conditional	ForEach(Subfield in 10.042) { IF Present(Infoltem:4 in Subfield) , THEN XElm(PhysicalFeatureCategoryCode) NOT MO [ASCII(SCAR, MARK)]		NA			T
			2	D	NIEM-10.042-TDS-Conditional	ForEach(Xelm(PhysicalFeatureDescriptionDetail)) { IF Present(XElm(PhysicalFeatureSubClassCode)), THEN {XElm(PhysicalFeatureCategoryCode) } NOT MO [ASCII(SCAR, MARK)]		T			X-O
			1	D	10.042-TDS-Value	TRUE		NA			T
			1	D	NIEM-10.042-TDS-Value	TRUE		Y			B*-C
RT10.80 - Field: 10.042- SMT Descriptors Subfields Dependent	8.10.37, Table 57	...does not apply to scars and marks.		D	10.042-SubfieldCo unt Dependent	<See Requirement ID: " Field: Type10-Subfield Occurrence " >	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

RT10.81 - Field: 10.043-Tattoo Color Value	8.10.38, Table 57	<Table 57 lists the value constraints for COL.>	1	-	10.043-[TC1, TC2, TC3, TC4, TC5, TC6]-Value	ForEach(Infoltem in 10.043) { {Infoltem} MO [BLACK, BROWN, GRAY, BLUE, GREEN, ORANGE, PURPLE, RED, YELLOW, WHITE, MULTI, OUTLINE] }		Y			B*-I <Allows whitespace >
			2	D	10.043-SubfieldCount Matches 10.042	Count(Subfields in 10.043) EQ Count(Subfields in 10.042)		NA			T
			2	D	NIEM-10.043-SubfieldCount Matches 10.042	<No need to test in NIEM because the fields' elements are in the same parent element, and therefore always repeat the same number of times. This assertion should not be reported.>		NA			X-C
RT10.82 - Field: 10.044-Image Transform Value	8.10.39, Table 57, Table 69	<Table 57 lists the value constraints for ITX.>	1	M ↑	10.044-ITX-Value	ForEach(Infoltem in 10.044) { {Infoltem} MO [AGE, AXIS, COLORSHIFT, CONTRAST, CROP, DIST, DOWNSAMPLE, GRAY, ILLUM, IMGFUSE, INTERPOLATE, MULTCOMP, MULTIVIEW, POSE, ROTATE, SNIR, SUPERRES, WHITE] }		Y			B*-I <Allows whitespace >
RT10.83 - Field: 10.045-Occlusions Value	8.10.40, Table 20, Table 21	<Table 57 lists the value constraints for OCC.>	1	M ↑	10.045-OCY-Value	ForEach(Subfield in 10.045) { {Infoltem:1 in Subfield} MO [ASCII(T, I, L, S)] }		Y			B*-I <Allows whitespace >
			1	M ↑	10.045-OCT-Value	ForEach(Subfield in 10.045) { {Infoltem:2 in Subfield} MO [ASCII(H,S,C,R,O)] }		Y			B*-I <Allows whitespace >
			1	M ↑	10.045-NOP-Value	ForEach(Subfield in 10.045) { {Infoltem:3 in Subfield} GTE 3 AND LTE 99 AND MO [Integers] }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

						}					
			1	M ↑	10.045-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 10.045}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }		NA			T
			1	M ↑	NIEM-10.045-[HPO, VPO]-Value	{XElm(PositionHorizontalCoordinateValue) GTE 0 AND LTE 99999 AND {XElm(PositionVerticalCoordinateValue) GTE 0 AND LTE 99999		Y			X-O
			2	M ↑	10.045-HPO-ValueDependent	ForEach(Subfield in 10.045) { For(X EQ 1 to {Infoltem:3 in Subfield}) { IF X MOD 2 EQ 1 {Infoltem:X in Subfield} GTE 0 AND LTE {10.006} AND MO [Integers] } }		NA			T
			2	M ↑	NIEM-10.045-HPO-ValueDependent	{XElm(PositionHorizontalCoordinateValue) GTE 0 AND LTE {10.006} AND MO [Integers]		Y			X-O
			2	M ↑	NIEM-10.045-VPO-ValueDependent	{XElm(PositionVerticalCoordinateValue) GTE 0 AND LTE {10.007} AND MO [Integers]		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

			2	M	10.045-VPO-ValueDependent	ForEach(Subfield in 10.045) { For(X EQ 1 to (Infoltem:3 in Subfield)) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE {10.007} AND MO [Integers] } }		NA			T
RT10.84 - Field: 10.046 to 10.199-Reserved	Table 57	Reserved for future useonly by ANSI/NIST-ITL.		-	10.046 to 10.199-Reserved	<See Requirement ID: " Field: Type10-CondCode ".>	t-2				
RT10.85 - Field: 10.200 to 10.900-User Defined	8.10.41, Table 57	User Defined Fields		-	10.200 to 10.900-User Defined	TRUE		Y			B-C
RT10.86 - Field: 10.901 Reserved	Table 57	Reserved for future useonly by ANSI/NIST-ITL.		-	10.901-Reserved	<See Requirement ID: " Field: Type10-CondCode ".>	t-2				
RT10.87 - Field: 10.902-Annotated Information Value	8.10.42, Table 57	This is an optional field, listing the operations performed on the original source in order to prepare it for inclusion in a biometric record type. See Section 7.4.1.		O	10.902-[GMT, NAV, OWN, PRO]-Value	<See Requirement ID: " Field: xx.902-ANN " >.	t-2				
RT10.88 - Field: 10.903-Device Unique Identifier Value	8.10.43, Table 57	This is an optional field. See Section 7.7.1.1.		O	10.903-DUI-Value	<See Requirement ID: " Field: Device ID " >.	t-2				
RT10.89 - Field: 10.904-	8.10.44, Table 57	This is an optional field. See Section 7.7.1.2.		O	10.904-[MAK, MOD, SER]-	<See Requirement ID: " Field: Make Model " >.	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

Make/Model/Serial Number Value					Value						
RT10.90 - Field: 10.993-Source Agency Name	8.10.45, Table 57	This is an optional field. It may contain up to 125 Unicode characters.		O	10.993-SAN-Value	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
RT10.91 - Field: 10.905 to 10.994-Reserved	Table 57	Reserved for future use only by ANSI/NIST-ITL.		-	10.905 to 10.994-Reserved	<See Requirement ID: " Field: Type10-CondCode ".>	t-2				
RT10.92 - Field: 10.995-Associated Context Value	8.10.46, Table 57	See Section 7.3.3		O	10.995-[ACN, ASP]-Value	<See Requirement IDs: " Field: xx.995-ASC " and " Field: xx.995-ASC-ACN " and " Field: xx.995-ASC-ASP ".>	t-2				
RT10.93 - Field: 10.996-Hash Value	8.10.47, Table 57	See Section 7.5.2		O	10.996-HAS-Value	<See Requirement ID: " Field: HAS ".>	t-2				
RT10.94 - Field: 10.997-Source Representation Value	8.10.48, Table 57	See Section 7.3.2		O	10.997-[SRN, RSP]-Value	<See Requirement IDs: " Field: xx.997-SOR " and " Field: xx.997-SOR-SRN " and " Field: xx.997-SOR-RSP ".>	t-2				
RT10.95 - Field: 10.998-Geographic Sample Acquisition Location	8.10.49, Table 57	See Section 7.7.3		O	10.998-[UTE, LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE,	<See Requirement IDs: " Field: Geographic ", " Field: Geographic ", " Field: Geographic-Subfield 1 " through " Field: Geographic-Values-SubField 15 ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.10: Record Type-10: Facial, other body part and SMT image record

Value					GCN, GRT, OSI, OCV]-Value						
RT10.96 - Field: 10.999-Image Data Valid	8.10.50, 7.7.9.4, Table 57	This is a mandatory field contains the image. For non-facial images conveyed in Record Type-10, Field 10.011: Compression algorithm/ CGA may be set to any value in Table 15, except WSQ20. <The image metadata is checked for validity.>	2	M	10.999- Uncompressed Image Length	IF {10.011} EQ ASCII(NONE) THEN Length(10.999) EQ {10.006} * {10.007}		Y			B-O
			2	M	10.999- Valid Image Format	IF Present(SOI-JPEGB,JPEGL) THEN Present(JFIF, SOI-JPEGB,JPEGL, SOF-JPEGB,JPEGL, EOI-JPEG, JPEGL) ELSE IF Present(SigBox) THEN Present(SigBox, HeadBox, ImgBox, EOI-JP2, JP2L) ELSE IF Present(PNGSig) THEN Present(PNGSig, IHDR, IDAT, IEND)	t-11	Y			B-O

6.12 Record Type-13: Friction-ridge Latent Image Record

Table 6.10 - Assertions for Record Type 13 - Friction-Ridge Latent Image Record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
RT13.1 - Field: Type13-Subfield Occurence	Table 70	<Table 70 specifies which fields contain subfields as well as the number of occurrences permitted.>	1	M	13.[001 to 012, 016, 017, 020, 903, 904, 993, 996, 998, 999]-SubfieldCount	Count(Subfields in 13.[001 to 012, 016, 017, 020, 903,904, 993, 996, 998, 999]) EQ 1		NA			T
			1	M	13.[001 to 012, 016, 017, 020, 903, 993, 996, 999]-InfoltemCount	Count(Infoltems in Subfield:1 in 13.[001 to 012, 016, 017, 020, 903, 993, 996, 999]) EQ 1		NA			T
			1	M	13.013-SubfieldCount	Count(Subfields in 13.013) MO [1 to 6]		NA			T
			1	M	13.013-InfoltemCount	ForEach(Subfield in 13.013) { Count(Infoltems in Subfield) EQ 1 }		NA			T
			1	D	13.014-SubfieldCount	Count(Subfields in 13.014) MO [1 to 9]		NA			T
			1	D	13.014-InfoltemCount	ForEach(Subfield in 13.014) { Count(Infoltems in Subfield) EQ 2 }		NA			T
				D	13.015-SubfieldCount		<See Requirement ID: " Field: PPC-Subfield Occurrences ">	t-2			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.13: Record Type-13: Friction-ridge latent image record

					unt						
			1	O	13.024-SubfieldCount	Count(Subfields in 13.024) MO [1 to 9]		NA			T
			1	O	13.024-InfoItemCount	ForEach(Subfield in 13.024) { Count(InfoItems in Subfield) EQ 4 }		NA			T
			1	O	13.902-SubfieldCount	Count (Subfields in 13.902) GTE 1		NA			T
			1	O	13.902-InfoItemCount	ForEach(Subfield in 13.902) { Count(InfoItems in Subfield) EQ 4 }		NA			T
			1	O	13.904-InfoItemCount	Count(InfoItems in 13.904) EQ 3		NA			T
			1	O	13.995-SubfieldCount	Count(Subfields in 13.995) MO [1 to 255]		NA			T
			1	O	13.995-InfoItemCount	ForEach(Subfield in 13.995) { Count(InfoItems in Subfield) EQ 1 OR 2 }		NA			T
			1	O	13.997-SubfieldCount	Count(Subfields in 13.997) MO [1 to 255]		NA			T
			1	O	13.997-InfoItemCount	ForEach(Subfield in 13.997) { Count(InfoItems in Subfield) EQ 1 OR 2 }		NA			T
				O	13.998-SubfieldCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT13.2 -	Table 70	<Table 70 specifies the Condition Code for	1	M	Type13-	Present(13.001 to 13.013, 13.999)		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
Field: Type13-CondCode		each field.>	1	M	Mandatory CondCode						
					NIEM-Type13-Mandatory CondCode	Foreach(XElm in <AnnexG: Type-13 Table> ST {Min(Cardinality(XElm))} GTE 1) { Present(XElm) }		Y			X-I <Allows 13.002 to 13.010, 13.012, 13.999 to be optional.>
					Type13-Reserved	NOT Present(13.018, 13.019, 13.021 to 13.023, 13.025 to 13.199, 13.901, 13.905 to 13.992, 13.994)		NA		T	
RT13.3 - Field: 13.014-Search Position Descriptors Dependent	Table 70, 8.13.14	This field shall be present if and only if the finger position code "19" appears in Field 13.013: Friction ridge generalized position / FGP.		D	13.014-CondCode Dependent	<See Requirement ID: " Field: SPD,PPC Conditional ">	t-2				
RT13.4 - Field: 13.015-Print Position Coordinates Dependent	Table 57, 8.13.15	This field may be present if and only if the finger position code "19" appears in Field 13.013: Friction ridge generalized position / FGP.		D	13.015-CondCode Dependent	<See Requirement ID: " Field: SPD,PPC Conditional ">	t-2				
RT13.5 - Field: Type13-CharType	8.13, Table 70	<Table 70 specifies the Character Type for each field that contains no subfields. Note that even though some Character Types are listed as U (user defined), they may still have character type limitations defined in the standard text. >	1	-	13.[001,002,003,006 to 010,012,016,017]-CharType	Bytes(13.[001,002,003,006 to 010,012,016,017]) MO [0x30 to 0x39]		Y			B-I <Allows whitespace and plus sign>
					13.011-CharType	Bytes(13.011) MO [0x20,0x41 to 0x5A,0x61 to 0x7A,0x30 to 0x39]		Y		B-O	
					[13.004,13.020,13.993]-CharType	TRUE		Y		B-C	

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.13: Record Type-13: Friction-ridge latent image record

			1	M	13.005-CharType	Bytes(13.005) MO [0x30 to 0x39]		NA			T
			1	M	NIEM-13.005-CharType	Bytes(13.005) MO [0x30 to 0x39, 0x2D]		Y			X-I <Allows whitespace >
			1	O	13.903-CharType	Bytes(13.903) MO [0x20 to 0x7E]		Y			B-O
			1	O	13.996-CharType	Bytes(13.996) MO [0x30 to 0x39, 0x41 to 0x46, 0x61 to 0x66]		Y			B-C
			1	M	13.999-CharType	TRUE		NA			T
			1	M	NIEM-13.999-CharType	<Schema tests that the BinaryBase64Object is of the correct type and length. Report that this is tested by the schema.>		Y			X-C
RT13.6 - Field: Type13-Subfield CharType	8.13, Table 70	<Table 70 specifies the Character Type for each subfield.>	1	M	13.013-FGP-CharType	Bytes(All(InfoItems in 13.013)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace and plus sign>
			1	D	13.014-PDF-CharType	ForEach(Subfield in 13.014) { Bytes(InfoItem:1 in Subfield) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace and plus sign>
			1	D	13.014-FIC-CharType	ForEach(Subfield in 13.014) { Bytes(InfoItem:2 in Subfield) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A] }		Y			B*-I <Allows whitespace >
			1	D	13.015-FVC-CharType	ForEach(Subfield in 13.015) { Bytes(InfoItem:1 in Subfield)) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A] }		Y			B*-I <Allows whitespace >
			1	D	13.015-LOS-CharType	ForEach(Subfield in 13.015) { Bytes(InfoItem:2 in Subfield)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A] } }		Y			B*-I <Allows whitespace >

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8.13: Record Type-13: Friction-ridge latent image record

			1	D	13.015-[LHC, RHC, TVC, BVC]-CharType	ForEach(Subfield in 13.015) { Bytes(Infoltem:3 to 6 in Subfield)) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace and plus sign>	
			1	O	13.024-[FRMP, QVU, QAP]-CharType	ForEach(Subfield in 13.024) { Bytes(Infoltem:1,2,4 in Subfield)) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace and plus sign>	
			1	O	13.024-QAV-CharType	ForEach(Subfield in 13.024) { Bytes(Infoltem:3 in Subfield)) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66] }		Y			B*-O	
			1	O	13.902-[NAV, OWN, PRO]-CharType	TRUE		Y			B*-C	
			1	O	13.902-GMT-CharType	ForEach(Subfield in 13.902) { Bytes(Infoltem:1 in Subfield) MO [0x30 to 0x39, 0x5A] }		NA			T	
			1	O	NIEM-13.902-GMT-CharType	Bytes(XElm(biom:ProcessUTCDate) in 13.902) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]		Y				X-I <Allows plus sign, timezones, etc.>
			1	O	13.904-[MAK, MOD, SER]-CharType	TRUE		Y			B*-C	
			1	O	13.995-[CAN, ASP]-CharType	Bytes(All(Infoltem:1,2 in 13.995)) MO [0x30 to 0x39]		Y			B*-O	
			1	O	13.997-	Bytes(All(Infoltem:1,2 in 13.997)) MO [0x30 to		Y			B*-O	

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.13: Record Type-13: Friction-ridge latent image record

					[SRN, RSP]-CharType	0x39]					
				O	13.998-[UTE, LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharType	<See Requirement ID: " Field: Geographic ">	t-2				
RT13.7 - Field: Type13-CharCount	Table 70	<Table 70 specifies the Character Count for each field that contains no subfields.>	1	M	13.001-CharCount	DataLength(13.001) MO [1 to 8]		NA			T
			1	M	NIEM-13.001-CharCount	Length(13.001) EQ 2		Y			X-O
			1	M	13.002-CharCount	DataLength(13.002) EQ 1 OR 2		Y			B-O
			1	M	13.003-CharCount	DataLength(13.003) EQ 1 OR 2		Y			B-O
			1	M	13.004-CharCount	<See Requirement ID: " Field: Source Agency ">	t-2				
			1	M	13.005-CharCount	DataLength(13.005) EQ 8		NA			T
			1	M	NIEM-13.005-CharCount	DataLength(13.005) EQ 10		Y			X-O
			1	M	13.006-CharCount	DataLength(13.006) MO [2 to 5]		Y			B-O
			1	M	13.007-CharCount	DataLength(13.007) MO [2 to 5]		Y			B-O
			1	M	13.008-CharCount	DataLength(13.008) EQ 1		Y			B-O
			1	M	13.009-CharCount	DataLength(13.009) MO [1 to 5]		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)	
8.13: Record Type-13: Friction-ridge latent image record												
			1	M	13.010-CharCount	DataLength(13.010) MO [1 to 5]		Y			B-O	
			1	M	13.011-CharCount	DataLength(13.011) MO [3 to 5]		Y			B-O	
			1	M	13.012-CharCount	DataLength(13.012) EQ 1 OR 2		Y			B-O	
			1	O	13.016-CharCount	DataLength(13.016) MO [1 to 5]		Y			B-O	
			1	O	13.017-CharCount	DataLength(13.017) MO [1 to 5]		Y			B-O	
			1	O	13.020-CharCount	DataLength(13.020) MO [1 to 126]		Y			B-O	
			1	O	13.903-CharCount	DataLength(13.903) MO [13 to 16]		Y			B-O	
			1	O	13.993-CharCount	<See Requirement ID: " Field: Source Agency Name ".>	t-2	Y				
			1	O	13.996-CharCount	DataLength(13.996) EQ 64		Y				B-C
			1	M	13.999-CharCount	DataLength(13.999) GTE 1		Y				B-O
RT13.8 - Field: Type13-Subfield CharCount	Table 70	<Table 70 specifies the Character Count for each subfield.>	1	M	13.013-FGP-CharCount	Length(All(InfoItems in 13.013)) EQ 1 OR 2		Y			B*-O	
			1	D	13.014-PDF-CharCount	ForEach(Subfield in 13.014) { Length(InfoItem:1 in Subfield) EQ 1 OR 2 }		Y			B*-O	
			1	D	13.014-FIC-CharCount	ForEach(Subfield in 13.014) { Length(InfoItem:2 in Subfield) EQ 3 }		Y			B*-O	
			1	D	13.015-	ForEach(Subfield in 13.015)		Y			B*-O	

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.13: Record Type-13: Friction-ridge latent image record

					[FVC, LOS]-CharCount	{ Length(Infoltem:1,2 in Subfield)) EQ 2 OR 3 }					
1	D	13.015-[LHC, RHC, TVC, BVC]-CharCount			13.015-[LHC, RHC, TVC, BVC]-CharCount	ForEach(Subfield in 13.015) { Length(Infoltem:3 to 6 in Subfield)) MO [1 to 5] }		Y			B*-O
1	O	13.024-FRMP-CharCount			13.024-FRMP-CharCount	ForEach(Subfield in 13.024) { Length(Infoltem:1 in Subfield)) EQ 1 OR 2 }		Y			B*-O
1	O	13.024-QVU-CharCount			13.024-QVU-CharCount	ForEach(Subfield in 13.024) { Length(Infoltem:2 in Subfield)) MO [1 to 3] }		Y			B*-O
1	O	13.024-QAV-CharCount			13.024-QAV-CharCount	ForEach(Subfield in 13.024) { Length(Infoltem:3 in Subfield)) EQ 4 }		Y			B*-O
1	O	13.024-QAP-CharCount			13.024-QAP-CharCount	ForEach(Subfield in 13.024) { Length(Infoltem:4 in Subfield)) MO [1 to 5] }		Y			B*-O
1	O	13.902-GMT-CharCount			13.902-GMT-CharCount	ForEach(Subfield in 13.902) { Length(Infoltem:1 in Subfield) EQ 15 }		NA			T
1	O	13.902[NAV, OWN]-CharCount			13.902[NAV, OWN]-CharCount	ForEach(Subfield in 13.902) { Length(Infoltem:2,3 in Subfield) MO [1 to 64] }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.13: Record Type-13: Friction-ridge latent image record

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			1	O	13.902-PRO-CharCount	ForEach(Subfield in 13.902) { Length(Infoltem:4 in Subfield)) MO [1 to 255] }		Y			B*-O
			1	O	NIEM-13.902-GMT-CharCount	Length(XElm(nc:DateTime) in 13.902) EQ 20		Y			X-O
			1	O	13.904-[MAK,MOD, SER]-CharCount	Length(All(Infoltems in 13.904)) MO [1 to 50]		Y			B*-O
			1	O	13.995-ACN-CharCount	ForEach(Subfield in 13.995) { Length(Infoltem:1 in Subfield) MO [1 to 3] }		Y			B*-O
			1	O	13.995-ASP-CharCount	ForEach(Subfield in 13.995) { Length(Infoltem:2 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	O	13.997-SRN-CharCount	ForEach(Subfield in 13.997) { Length(Infoltem:1 in Subfield) MO [1 to 3] }		Y			B*-O
			1	O	13.997-RSP-CharCount	ForEach(Subfield in 13.997) { Length(Infoltem:2 in Subfield) MO [1 to 2] }		Y			B*-O
				O	13.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT,	<See Requirement ID: " Field: Geographic ">	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
					OSI, OCV]-CharCount						
RT13.9 - Field: Type13-Field Occurrence	Table 70	<Table 70 specifies the Field Occurrence for each field.>	2	M	NIEM-Type13-Cardinality	<The Type-13 table in Annex G of the base standard specifies the type and number of sub elements required for each field.>		Y			X-I <Allows missing elements for fields with cardinality 1..1: 13.999, 13.012, 13.005, 13.004, 13.011, 13.006, 13.009, 13.008, 13.007, 13.010, 13.003. Allows optional "biom:ImageCaptureDetail" and "biom:captureOrganization">
			1	-	Type13-FieldOccurrences	Count(13.[018, 019, 021 to 023, 025 to 199,901,905 to 992, 994]) EQ 0 AND Count(13.[001 to 013, 999]) EQ 1 AND Count(13.[014 to 017,020, ,024, 902 to 904, 993, 995 to 998]) LTE 1		Y			T
RT13.10 -	8.13.1,	Field 13.001 Record header. In Traditional		M	13.001-	<See Requirement ID " Field: xx.001-Record "	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
Field: 13.001-Record Header Value	Table 70, 7.1	encoding, this field contains the record length in bytes (including all information separators)			Record Header	Header ">					
	8.13.1, C.10.11	The XML name for the Type-13 record is <itl:PackageLatentImageRecord>, and its <biom:RecordCategoryCode> element shall have a value of "13".	1	M	NIEM-13.001-Value	ForEach(itl:PackageLatentImageRecord) { {XElm(biom:RecordCategoryCode)} EQ ASCII(13) }		Y			X-I <Allows leading zeros and whitespace >
RT13.11 - Field: 13.002-Information Designation Character Value	8.13.2, Table 70, 7.3.1	This mandatory field shall contain the IDC assigned to this Type-13 record as listed in the information item IDC for this record in Field 1.003 Transaction content/CNT.	-	M	13.002-IDC	<See Requirement IDs " Field: xx.002-IDC and " Field: 1.003-Transaction Content Subfield 2 IDC Matches " >	t-2				
RT13.12 - Field: 13.003-Impression Type Value	8.13.3, Table 70, 7.7.4.1	This mandatory field shall indicate the manner by which the latent print was obtained. See Section 7.7.4.1 for details. Valid values are 4 through 7, 12 through 15, 28 or 29, and 32 through 39.	1	M	13.003-Value	{13.003} MO [4 to 7, 12 to 15, 28, 29, 32 to 39] AND MO [Integers]		Y			B-I <Wrong values, Allows whitespace>
RT13.13 - Field: 13.004-Source Agency Value	8.13.4, 7.6	This is a mandatory field. See Section 7.6 for details.	-	M	13.004-Value	<See Requirement ID: " Field: Source Agency ".>	t-2				
RT13.14 - Field: 13.005-Latent Capture Date Value	8.13.5, 7.7.2.3	This mandatory field shall contain the date that the latent biometric data contained in the record was captured.	1	M	13.005-Value	{13.005} MO [ValidLocalDate]	t-6	NA			T
			1	M	NIEM-13.005-Value	ForEach(XElm(itl:PackageLatentImageRecord)) { {XElm(nc:Date) in XElm(biom:CaptureDate)} MO [NIEM-ValidLocalDate] }	t-6	Y			X-I <Allows optional element (nillable)>
RT13.15 - Field: 13.006-	8.13.6, Table 70, 7.7.8.1	The maximum horizontal size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999		M	13.006-Value	<See Requirement ID " Field: Image HLL Value " >	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
Horizontal Line Length Value		for other record types. The minimum value is 10 pixels.									
RT13.16 - Field: 13.006-Horizontal Line Length Metadata	8.13.6, Table 70, 7.7.8.1	<The HLL is verified by checking the image metadata if compression is used.>	2	M	13.006-Matches Image Metadata	IF {13.011} EQ ASCII(JPEG) THEN {13.006} EQ {ImageWidth-JPEGB,JPEGL} ELSE IF {13.011} EQ ASCII(JP2L) THEN {13.006} EQ {ImageWidth-JP2,JP2L} ELSE IF {13.011} EQ ASCII(PNG) THEN {13.006} EQ {ImageWidth-PNG} ELSE IF {13.011} EQ ASCII(WSQ20) THEN {13.006} EQ {ImageWidth-WSQ}	t-11	Y			B-O
RT13.17 - Field: 13.007-Vertical Line Length Value	8.13.7, Table 70, 7.7.8.2	The maximum vertical size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.	-	M	13.007-Value	<See Requirement ID " Field: Image VLL Value ">	t-2				
RT13.18 - Field: 13.007-Vertical Line Length Metadata	8.13.7, Table 70, 7.7.8.2	<The VLL is verified by checking the image metadata if compression is used.>	2	M	13.007-VLL Metadata JPEG	IF {13.011} EQ ASCII (JPEG) THEN {13.007} EQ {ImageHeight-JPEGB,JPEGL} ELSE IF {13.011} EQ ASCII(JP2L) THEN {13.007} EQ {ImageHeight-JP2,JP2L} ELSE IF {13.011} EQ ASCII(PNG) THEN {13.007} EQ {ImageHeight-PNG} ELSE IF {13.011} EQ ASCII(WSQ20) THEN {13.007} EQ {ImageHeight-WSQ}	t-11	Y			B-O
RT13.19 - Field: 13.008-Scale Units Value	8.13.8, Table 70, 7.7.8.3	<Table 70 lists the value constraints for SLC>	-	M	13.008-Value	<See Requirement ID " Field: Image SLC Value " >	t-2				
RT13.20 - Field:	8.13.8, Table 70,	A value of "1" shall indicate pixels per inch.	2	M	13.008-Matches	IF {13.011} EQ ASCII(JPEG) THEN {13.008} EQ {SamplingUnits-JPEGB,JPEGL}	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
13.008-Scale Units Metadata	7.7.8.3	A value of "2" shall indicate pixels per centimeter. A value of "0" in this field indicates that no scale is provided, and the quotient of THPS/TVPS shall provide the pixel aspect ratio. <The SLC is verified by checking the image metadata if compression is used.>			Image Metadata	ELSE IF {13.011} EQ ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {13.011} EQ ASCII(PNG) THEN IF {13.008} EQ 1 OR 2 THEN {SamplingUnits-PNG} EQ 1, ELSE IF {13.008} EQ 0 THEN {SamplingUnits-PNG} EQ 0					
RT13.21 - Field: 13.009-Transmitted Horizontal Pixel Scale Value	8.13.9, Table 70, 7.7.8.4	<Table 70 lists the value constraints for THPS.>	-	M	13.009-Value	<See Requirement ID " Field: Image THPS Value ">	t-2				
RT13.22 - Field: 13.009-Transmitted Horizontal Pixel Scale Metadata	8.13.9, Table 70, 7.7.8.4	This is the integer pixel density used in the horizontal direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the horizontal component of the pixel aspect ratio, up to 5 digits. <The THPS is verified by checking the image metadata if compression is used.>	2	M	13.009-Matches Image Metadata	IF {13.011} EQ ASCII(JPEGL) AND {13.008} EQ 1 OR 2 THEN {13.009} EQ {HorizontalDensity-JPEGB,JPEGL} ELSE IF {13.011} EQ ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {13.011} EQ ASCII(PNG) AND {13.008} EQ 1 THEN {13.009} EQ {HorizontalDensity-PNG} * 0.0254 (meters/inch), ELSE IF {13.011} EQ ASCII(PNG) AND {13.008} EQ 2 THEN {13.009} EQ {HorizontalDensity-PNG} * 0.01 (meters/cm)	t-11, t-12	Y			B-O
			2	M	13.009-Aspect Ratio Matches Image Metadata	IF {13.011} EQ ASCII(JPEGL) AND {13.008} NEQ 1 OR 2 THEN {13.009}/{13.010} EQ {HorizontalDensity-JPEGB,JPEGL} / {VerticalDensity-JPEGB,JPEGL} ELSE IF ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested">	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.13: Record Type-13: Friction-ridge latent image record

						ELSE IF {13.011} EQ ASCII(PNG) AND {13.008} NEQ 1 OR 2 THEN {13.009}/{13.010} EQ {HorizontalDensity-PNG} / {VerticalDensity-PNG}					
RT13.23 - Field: 13.010-Transmitted Vertical Pixel Scale Value	8.13.10, Table 70, 7.7.8.5	<Table 70 lists the value constraints for TVPS.>	-	M	13.010-value	<See Requirement ID " Field: Image TVPS Value ">	t-2				
RT13.24 - Field: 13.010-Transmitted Vertical Pixel Scale Metadata	8.13.10, Table 70, 7.7.8.5	This is the integer pixel density used in the Vertical direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the Vertical component of the pixel aspect ratio, up to 5 digits. <The TVPS is verified by checking the image metadata if compression is used.>	2	M	13.010-Mathces Image Metadata	IF {13.011} EQ ASCII(JPEG) AND {13.008} EQ 1 OR 2 THEN {13.010} EQ {VerticalDensity-JPEGB,JPEG} ELSE IF ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {13.011} EQ ASCII(PNG) AND {13.008} EQ 1 THEN {13.010} EQ {VerticalDensity-PNG} * 0.0254 (meters/inch), ELSE IF {13.011} EQ ASCII(PNG) AND {13.008} EQ 2 THEN {13.010} EQ {VerticalDensity-PNG} * 0.01 (meters/cm)	t-11, t-12	Y			B-O
			2	M	13.010-Aspect Ratio Mathces Image Metadata	IF {13.011} EQ ASCII(JPEG) AND {13.008} NEQ 1 OR 2 THEN {13.009}/{13.010} EQ {HorizontalDensity-JPEGB,JPEG} / {VerticalDensity-JPEGB,JPEG} ELSE IF ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {13.011} EQ ASCII(PNG) AND {13.008} NEQ 1 OR 2 THEN {13.009}/{13.010} EQ { HorizontalDensity -	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.13: Record Type-13: Friction-ridge latent image record

RT13.25 - Field: 13.011-Compression Algorithm Value	8.13.11, Table 70, 7.7.9.1, 5.3.13	For each of these fields, the entry corresponds to the appropriate <i>Label</i> entry in Table 15: Field 13.011: Compression algorithm / CGA. The variable-resolution for latent image data contained in the Type-13 record shall be uncompressed or may be the output from a lossless compression algorithm.	1	M	13.011-Value	PNG) / {VerticalDensity-PNG} {13.011} MO [ASCII(NONE, JPEG, JP2L, PNG)]		Y			B-O
RT13.26 - Field: 13.011-Compression Algorithm Metadata	8.13.11, Table 70	<The CGA is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	13.011-Matches Image Metadata	IF {13.011} EQ ASCII(JPEG) THEN Present(SOI -JPEG, JPEG) ELSE IF {13.011} EQ ASCII(JP2L) THEN Present(SigBox) ELSE IF {13.011} EQ ASCII(PNG) THEN Present(PNGSig) ELSE IF {13.011} EQ ASCII(WSQ20) THEN Present(SOI-WSQ)	t-11	Y			B-O
RT13.27 - Field: 13.012-Bits Per Pixel Value	8.13.12, Table 70, 7.7.8.6	This field shall contain an entry of "8" for normal grayscale values of "0" to "255". Any entry in this field greater than "8" shall represent a grayscale pixel with increased proportion.	-	M	13.012-Value	<See Requirement ID " Field: Image BPX Value " >	t-2				
RT13.28 - Field: 13.012- Bits Per Pixel Metadata	8.13.12, Table 70	<The BPX is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	13.012-Matches Image Metadata	IF {13.011} EQ ASCII(JPEG) THEN {13.012} EQ {BPX-JPEG, JPEG} ELSE IF {13.011} EQ ASCII(JP2L) THEN {13.012} EQ {BPX-JP2, JP2L} ELSE IF {13.011} EQ ASCII(PNG) THEN {13.012} EQ {BPX-PNG} ELSE IF {13.011} EQ ASCII(WSQ20) THEN <Provide Warning "Not Tested">	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
RT13.29 - Field: 13.013-Friction Ridge Generalized Position Value	8.13.13, Table 70, 7.7.4.2, Table 8, Annex G	See Section 7.7.4.2 and Table 8 for details.	1	M	13.013-FGP-Value	{All(Infoltems in 13.013)} MO [0 to 38, 40 to 50, 60 to 79, 81 to 84] AND MO [Integers]		NA			T
			1	M	NIEM-13.013-FGP-Value	{XElm(FingerPositionCode)} MO [0 to 19, 33, 36, 40 to 50] OR {XElm(PalmPositionCode)} MO [20 to 38, 81 to 84] OR {XElm(PlantarPositionCode)} MO [60 to 79] OR {XElm(FrictionRidgePositionCode)} MO [0 to 38, 40 to 50, 60 to 79, 81 to 84]		Y			X-I <Allows 255 for FingerPositionCode and FrictionRidgePositionCode and does not allow 18 for FingerPositionCode>
RT13.30 - Field: 13.013-Friction Ridge Generalized Position Conditional	8.13.13, Table 70	If code 19 is used, fields 13.014 and 13.015 shall be used.	-	M	13.013-FGP-Conditional	<See Requirement ID: " Field: SPD,PPC Conditional ">	t-2				
RT13.31 - Field: 13.014-Search Position Descriptors Value	8.13.14, Table 70, 7.7.4.3	...described in Section 7.7.4.3	-	D	13.014-[PDF, FIC] Value	<See Requirement ID: " Field: SPD,PPD Values ">	t-2				
RT13.32 - Field: 13.014-Search Position Descriptors Conditional	8.13.14, Table 70	This field shall be present if and only if the finger position code "19" appears in Field 13.013: Friction ridge generalized position / FGP.	-	D	13.014-Conditional	<See Requirement ID: " Field: SPD,PPC Conditional ">	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
RT13.33 - Field: 13.015-Print Position Coordinates Value	8.13.15, Table 70, 7.7.4.4	See section 7.7.4.4	-	D	13.015-[LOS, LHC, RHC, TVC, BVC]-Value	<See Requirement IDs: " Field: PPC-Subfield 1 " through " Field: PPC-SubfieldCount 5,6 ".>	t-2				
RT13.34 - Field: 13.015- Print Position Coordinates Conditional	8.13.15, Table 70	This field may be present if and only if the finger position code "19" appears in Field 13.013: Friction ridge generalized position / FGP.	-	D	13.015-Conditional	<See Requirement ID: " Field: SPD,PPC Conditional ">	t-2				
RT13.35 - Field: 13.016-Scanned Horizontal Pixel Scale Value	8.13.16, Table 70, 7.7.8.7	See section 7.7.8.7 for details.	-	O	13.016-Value	<See Requirement IDs: " Field: Image SHPS Value ">	t-2				
RT13.36 - Field: 13.017-Scanned Vertical Pixel Scale Value	8.13.17, Table 70, 7.7.8.8	See section 7.7.8.8 for details.	-	O	13.017-Value	<See Requirement IDs: " Field: Image SVPS Value ">	t-2				
RT13.37 - Field: 13.018, 13.019-Reserved	Table 70	Reserved for future useonly by ANSI/NIST-ITL.	-	-	[13.018, 13.019]-Reserved	<See Requirement ID: " Field: Type13-CondCode ".>	t-2				
RT13.38 - Field: 13.020-Comment Value	8.13.17, Table 70, 7.4.4	See section 7.4.4 for details.	-	O	13.020-Value	<See Requirement ID: " Field: Comment ".>	t-2				
RT13.39 -	Table 70	Reserved for future useonly by	-	-	[13.021,	<See Requirement ID: " Field: Type13-	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
Field: 13.021, 13.023-Reserved		ANSI/NIST-ITL.			13.023]-Reserved	CondCode >.					
RT13.40 - Field: 13.024-Latent Quality Metric Value	Table 70, Table 8, 8.13.19	The first information item is the entry in Field 13.013: Friction ridge generalized position / FGP, as chosen from Table 8... See Section 7.7.7 for a description of the remaining three information items.	-	O	13.024-[FRMP, QVU, QAV, QAP]-Value	<See Requirement IDs: " Field: Sample Quality Subfield 1 ", " Field: Sample Quality Subfield 2 ", " Field: Sample Quality Subfield 3 ", " Field: Sample Quality Additional Subfield ">.	t-2				
RT13.41 - Field: 13.025 to 13.199-Reserved	Table 70	Reserved for future useonly by ANSI/NIST-ITL.	-	-	13.025, 13.199-Reserved	<See Requirement ID: " Field: Type13-CondCode ">.	t-2				
RT13.42 - Field: 13.200 to 13.900-User Defined	Table 70	User Defined Fields		-	13.200 to 13.900-User Defined	TRUE		Y			B-C
RT13.43 - Field: 13.901-Reserved	Table 70	Reserved for future useonly by ANSI/NIST-ITL.	-	-	13.901-Reserved	<See Requirement ID: " Field: Type13-CondCode ">.	t-2				
RT13.44 - Field: 13.902-Annotated Information Value	8.13.21, Table 70	This is an optional field, listing the operations performed on the original source in order to prepare it for inclusion in a biometric record type. See Section 7.4.1.	-	O	13.902-[GMT, NAV, OWN, PRO]-Value	<See Requirement ID: " Field: xx.902-ANN " >.	t-2				
RT13.45 - Field: 13.903-Device Unique Identifier Value	8.13.22, Table 70	This is an optional field. See Section 7.7.1.1.	-	O	13.903-DUI-Value	<See Requirement ID: " Field: Device ID " >.	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
RT13.46 - Field: 13.904-Make/Model/Serial Number Value	8.13.23, Table 70	This is an optional field. See Section 7.7.1.2.	-	O	13.904-[MAK, MOD, SER]-Value	<See Requirement ID: " Field: Make Model " >.	t-2				
RT13.47 - Field: 13.905 to 13.992-Reserved	Table 70	Reserved for future use only by ANSI/NIST-ITL.	-	-	13.905, 13.994-Reserved	<See Requirement ID: " Field: Type13-CondCode ">.	t-2				
RT13.48 - Field: 13.993-Source Agency Name	8.13.24, Table 70	This is an optional field. It may contain up to 125 Unicode characters.	-	O	13.993-SAN-Value	<See Requirement ID: " Field: Source Agency Name ">.	t-2				
RT13.49 - Field: 13.994-Reserved	Table 70	Reserved for future use only by ANSI/NIST-ITL.	-	-	13.994-Reserved	<See Requirement ID: " Field: Type13-CondCode ">.	t-2				
RT13.50 - Field: 13.995-Associated Context Value	8.13.24, Table 70	See Section 7.3.3	-	O	13.995-[ACN, ASP]-Value	<See Requirement IDs: " Field: xx.995-ASC " and " Field: xx.995-ASC-ACN " and " Field: xx.995-ASC-ASP ">.	t-2				
RT13.51 - Field: 13.996-Hash Value	8.13.25, Table 70	See Section 7.5.2	-	O	13.996-Value	<See Requirement ID: " Field: HAS ">	t-2				
RT13.52 - Field: 13.997-Source Representation Value	8.13.26, Table 70	See Section 7.3.2	-	O	13.997-[SRN, RSP]-Value	<See Requirement IDs: " Field: xx.997-SOR " and " Field: xx.997-SOR-SRN " and " Field: xx.997-SOR-RSP ">.	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
RT13.53 - Field: 13.998-Geographic Sample Acquisition Location Value	8.13.27, Table 70	See Section 7.7.3	-	O	13.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]- Value	<See Requirement IDs: " Field: Geographic ", " Field: Geographic ", " Field: Geographic-Subfield 1 " through " Field: Geographic-Values-SubField 15 " >.	t-2				
RT13.54 - Field: 13.999-Image Data Valid	8.13.28, Table 70	This is a mandatory field contains the image. <The image metadata is checked for validity.>	2	M	13.999- Uncompressed Image Length	IF {13.011} EQ ASCII(NONE) THEN Length(13.999) EQ 13.006} * {13.007}		Y			B-O
			2	M	13.999- Valid Image Format	IF Present(SOI-JPEGB,JPEGL) THEN Present(JFIF, SOI-JPEGB,JPEGL, SOF-JPEGB,JPEGL, EOI-JPEG, JPEGL) ELSE IF Present(SigBox) THEN Present(SigBox, HeadBox, ImgBox, EOI-JP2L) ELSE IF Present(PNGSig) THEN Present(PNGSig, IHDR, IDAT, IEND) ELSE IF Present(Present(SOI-WSQ) THEN		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.13: Record Type-13: Friction-ridge latent image record											
RT13.55 - Field: 13.999-Image WSQ Version 3.1	7.7.9.1	Only version 3.1 or higher shall be used for compressing grayscale fingerprint data at 500 ppi class with a platen area of 2 inches or greater in height. WSQ 2.0 or higher may be used for 500 ppi class data taken from a platen of less than 2 inches in height. WSQ shall not be used for other than the 500 ppi class.	3	M	13.999-Valid WSQ Specification Version	Present(SOI-WSQ,SOF-WSQ,SOB-WSQ,EOI-WSQ <No known method for determining the WSQ specification version.>	t-16	NA			B-O

6.13 Record Type-14: Fingerprint Image Record

Table 6.11 - Assertions for Record Type 14 - Fingerprint Image Record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
RT14.1 - Record: Type14-Fingerprint Type	8.14	The Type-14 record shall contain and be used to exchange exemplar fingerprint image data, such as a rolled tenprint, an identification flat, or a complete friction ridge exemplar. All fingerprint impressions shall be acquired from a card, a single or multiple-finger flat-capture device, contactless fingerprint sensor that outputs 2D fingerprint images, or a live-scan device. Captured images may be transmitted to agencies that will automatically extract the desired feature information from the images for matching purposes.	3	M	Type14-Fingerprint Type	<Unsupported: It is not feasible to test if the image represents an exemplar fingerprint or how the image was acquired (this is a Level 3 assertion).>	t-1				
RT14.2 - Field: Type14-Subfield Occurrence	Table 71	<Table 71 specifies which fields contain subfields as well as the number of occurrences permitted.>	1	M	14.[001 to 014, 016, 017, 020, 026, 027, 030, 031, 903,904, 993, 996, 998, 999]-SubfieldCount	Count(Subfields in 14.[001 to 014, 016, 017, 020, 026, 027, 030, 031, 903, 904,993, 996, 998, 999]) EQ 1		NA			T
			1	M	14.[001 to 012, 016, 017, 020, 026, 027, 030, 031, 903, 993, 996, 999]-InfoltemCount	Count(Infoltems in Subfield:1 in 14.[001 to 012, 016, 017, 020, 026, 027, 030, 031, 903, 993, 996, 999]) EQ 1		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

				unt						
			1	M	14.013-InfoltemCount	ForEach(Subfield in 14.013) { Count(Infotems in Subfield) EQ 1 }		NA		T
			1	D	14.014-InfoltemCount	Count(Infotems in 14.014) EQ 2		NA		T
				D	14.015-SubfieldCount	<See Requirement ID: " Field: PPC-Subfield Occurrences ">	t-2	NA		
			1	O	14.018-SubfieldCount	Count(Subfields in 14.018) MO [1 to 5]		NA		T
			1	O	14.018-InfoltemCount	ForEach(Subfield in 14.018) { Count(Infotems in Subfield) EQ 2 }		NA		T
			1	D	14.021-SubfieldCount	Count(Subfields in 14.021) MO [1 to 5]		NA		T
			1	D	14.021-InfoltemCount	ForEach(Subfield in 14.021) { Count(Infotems in Subfield) EQ 5 }		NA		T
			1	O	14.022-SubfieldCount	Count(Subfields in 14.022) MO [1 to 5]		NA		T
			1	O	14.022-InfoltemCount	ForEach(Subfield in 14.022) { Count(Infotems in Subfield) EQ 2 }		NA		T
			1	O	14.023-SubfieldCount	Count(Subfields in 14.023) MO [1 to 5]		NA		T
			1	O	14.023-	ForEach(Subfield in 14.023)		NA		T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

					InfoltemCount	{ Count(Infoltems in Subfield) EQ 4 }					
			1	O	14.024-SubfieldCount	Count(Subfields in 14.024) MO [1 to 5]		NA			T
			1	O	14.024-InfoltemCount	ForEach(Subfield in 14.024) { Count(Infoltems in Subfield) EQ 4 }		NA			T
			1	O	14.025-SubfieldCount	Count(Subfields in 14.025) MO [1 to 5]		NA			T
			1	O	14.025-InfoltemCount	ForEach(Subfield in 14.025) { Count(Infoltems in Subfield) EQ 2 + 2*{Infoltem:2 in Subfield} }		NA			T
			1	O	14.902-SubfieldCount	Count(Subfields in 14.902) GTE 1		NA			T
			1	O	14.902-InfoltemCount	ForEach(Subfield in 14.902) { Count(Infoltems in Subfield) EQ 4 }		NA			T
			1	O	14.904-SubfieldCount	Count(Infoltems in 14.904) EQ 3		NA			T
			1	O	14.995-SubfieldCount	Count(Subfields in 14.995) MO [1 to 255]		NA			T
			1	O	14.995-InfoltemCount	ForEach(Subfield in 14.995) { Count(Infoltems in Subfield) EQ 1 OR 2 }		NA			T
			1	O	14.997-	Count(Subfields in 14.997) MO [1 to 255]		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
					SubfieldCount						
			1	O	14.997-InfoItemCount	ForEach(Subfield in 14.997) { Count(InfoItems in Subfield) EQ 1 OR 2 }		NA			T
			-	O	14.998-SubfieldCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT14.3 - Field: Type14-CondCode	Table 71	<Table 71 specifies the Condition Code for each field.>	1	M	Type14-MandatoryCondCode	Present(14.001 to 14.005, 14.013)		NA			T
			1	M	NIEM-Type14-MandatoryCondCode	ForEach(XElm in <AnnexG: Type-14 Table> ST {Min(Cardinality(XElm))} GTE 1) { Present(XElm) }		Y			X-I <Allows 14.005, 14.004, 14.003 to be optional>
			1	M	Type14-Reserved	NOT Present(14.019, 14.028, 14.029, 14.032 to 14.199, 14.901, 14.905 to 14.992, 14.994)		NA			T
RT14.4 - Record: 14.006 to 14.012 Dependent	Table 71, 8.14.6 to 8.14.12	This field is mandatory if an image is present in Field 14.999. Otherwise it is absent.	2	D	Type14-[14.006 to 14.012]-CondCode Dependent	Present(14.999) IFF Present(14.006 to 14.012)		Y			B-O
RT14.5 - Field: 14.014-Print Position Descriptors Dependent	Table 71, 8.14.14	This field shall be present if and only if the finger position code "19" appears in Field 14.013: Friction ridge generalized position / FGP.	-	D	14.014-CondCode Dependent	<See Requirement ID: " Field: PPD Conditional ">	t-2				
RT14.6 - Field: 14.015-Print Position Coordinates	Table 71, 8.14.15	This field may be present if and only if the finger position code "19" appears in Field 14.013: Friction ridge generalized position / FGP.	-	D	14.015-CondCode Dependent	<See Requirement ID: " Field: PPD Conditional ">	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
Dependent											
RT14.7 - Field: 14.021- Finger Segment Position Dependent	Table 71, 8.14.20	This optional field shall contain offsets to the locations of image segments containing the individual fingers within the flat images of simultaneous fingers from each hand or the two simultaneous thumbs. (FGP = 13, 14, 15 or 40-50 from Table 8 as entered in Field 14.013: Friction ridge generalized position / FGP).	2	D	Type14-14.021-CondCode Dependent	IF Present(14.021) THEN {Infoltem:1 in Subfield:1 in 14.013} MO [13 to 15, 40 to 50]		NA			T
			2	D	NIEM-Type14-14.021-CondCode Dependent	IF Present(14.021) THEN {XElm(FingerImpressionCode) in XElm(FingerImpressionImage)} MO [13 to 15, 40 to 50]		Y			X-O
RT14.8 - Field: 14.027- Stitched Image Flag Dependent	Table 71, 8.14.26	This field signifies that images captured separately were stitched together to form a single image. This field is mandatory if an image has been stitched, and the value shall be set to 'Y'. Otherwise, this field shall not appear in the record.	3	D	14.027-CondCode Dependent	<Unsupported: It is not possible to easily detect if the image was stitched (this is a Level 3 assertion).>	t-1	NA			
RT14.9 - Field: 14.999- Palmprint Image Dependent	Table 71, 8.14.38	This field contains the palmprint image. It shall contain an image, unless Field 14.018: Amputated or bandaged / AMP has a value or "UP". In the latter case, the field is optional.	2	D	14.999-CondCode Dependent	IF {Infoltem:2 in All(Subfields in 14.018)} NEQ ASCII(UP) THEN Present(14.999)		NA			T
			2	D	NIEM-14.999-CondCode Dependent	IF {All(XElm(FingerMissingCode))} NEQ ASCII(UP) THEN Present(XElm(BinaryBase64Object) in XElm(FingerImpressionImage))		Y			X-O
RT14.10 - Field: Type14-CharType	8.14, Table 71	<Table 71 specifies the Character Type for each field that contains no subfields.>	1	-	14.[001,002,003,006 to 010,012,016,017,026,031]-CharType	Bytes(14.[001,002,003,006 to 010,012,016,017,026,031]) MO [0x30 to 0x39]		Y			B-O
			1	-	14.[027,030]) - CharType	Bytes(14.[027,030]) [0x20,0x41 to 0x5A,0x61 to 0x7A]		Y			B-I <Allows whitespace, leading zeros, plus sign>
			1	-	[14.004,14.020,14.993]-	TRUE		Y			B-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

					CharType						
			1	-	14.005-CharType	Bytes(14.005) MO [0x30 to 0x39]		NA			T
			1	-	NIEM-14.005-CharType	Bytes(14.005) MO [0x30 to 0x39, 0x2D]		Y			X-I <Allows whitespace >
			1	O	14.011-CharType	Bytes(14.011) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B-O
			1	O	14.020-CharType	TRUE		Y			B-C
			1	O	14.903-CharType	Bytes{14.903} MO [0x20 to 0x7E]		Y			B-O
			1	O	14.996-CharType	Bytes(14.996) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66]		Y			B-C
			1	D	14.999-CharType	TRUE		NA			T
			1	D	NIEM-14.999-CharType	<Schema tests that the BinaryBase64Object is of the correct type and length. Report that this is tested by the schema.>		Y			X-C
RT14.11 - Field: Type14-Subfield CharType	8.14, Table 71	<Table 71 specifies the Character Type for each subfield.>	1	M	14.013-FGP-CharType	Bytes(All(InfoItems in 14.013)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, leading zeros, plus sign>
			1	D	14.014-DFP-CharType	ForEach(Subfield in 14.014) { Bytes(InfoItem:1 in Subfield) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace, leading zeros, plus sign>
			1	D	14.014-FIC-CharType	ForEach(Subfield in 14.014) { Bytes(InfoItem:2 in Subfield) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A] }		Y			B*-I <Allows whitespace >
			1	D	14.015-FVC-	ForEach(Subfield in 14.015) {		Y			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

					CharType	Bytes(Infoltem:1 in Subfield)) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A]					>
1	D	14.015-LOS-CharType			14.015-LOS-CharType	ForEach(Subfield in 14.015) { Bytes(Infoltem:2 in Subfield)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*-I <Allows whitespace >
1	D	14.015-[LHC, RHC, TVC, BVC]-CharType			14.015-[LHC, RHC, TVC, BVC]-CharType	ForEach(Subfield in 14.015) { Bytes(Infoltem:3 to 6 in Subfield)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, leading zeros, plus sign>
1	O	14.018-FRAP-CharType			14.018-FRAP-CharType	ForEach(Subfield in 14.018) { Bytes(Infoltem:1 in Subfield)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, leading zeros, plus sign>
1	O	14.018-ABC-CharType			14.018-ABC-CharType	ForEach(Subfield in 14.018) { Bytes(Infoltem:2 in Subfield)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B*-I <Allows whitespace >
1	D	14.021-[FRSP, LHC, RHC, TVC, BVC]-CharType			14.021-[FRSP, LHC, RHC, TVC, BVC]-CharType	Bytes(All(Infoltems in 14.021)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, leading zeros, plus sign>
1	O	14.022-[FRNP, IQS]-CharType			14.022-[FRNP, IQS]-CharType	Bytes(All(Infoltems in 14.022)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, leading zeros, plus sign>
1	O	14.023-[FRQP, QVU, QAP]-CharType			14.023-[FRQP, QVU, QAP]-CharType	ForEach(Subfield in 14.023) { Bytes(Infoltem:1,2,4 in Subfield)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, leading zeros, plus

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

						}					sign>	
			1	O	14.023-QAV-CharType	ForEach(Subfield in 14.023) { Bytes(Infoltem:3 in Subfield)) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66] }		Y			B*-O	
			1	O	14.024--[FRMP, QVU, QAP]-CharType	ForEach(Subfield in 14.024) { Bytes(Infoltem:1,2,4 in Subfield)) MO [0x30 to 0x39] }		Y			B*-O	
			1	O	14.024-QAV-CharType	ForEach(Subfield in 14.024) { Bytes(Infoltem:3 in Subfield)) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66] }		Y			B*-O	
			1	O	14.025-[FRAS, NOP, HPO, VPO]-CharType	Bytes(All(Infoltems in 14.025)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, leading zeros, plus sign>	
			1	O	14.902-[NAV, OWN, PRO]-CharType	TRUE		NA			T	
			1	O	14.902-GMT-CharType	ForEach(Subfield in 14.902) { Bytes(Infoltem:1 in Subfield) MO [0x30 to 0x39,0x5A] }		NA			T	
			1	O	NIEM-14.902-GMT-CharType	Bytes(XElm(biom:ProcessUTCDate) in 14.902) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]		Y				X-I <Allows for optional element (nillable). Also allows

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
											for timezones, but standard requires Z. >
			1	O	14.904-[MAK, MOD, SER]-CharType	TRUE		Y			B*-O
			1	O	14.995-[ACN, ASP]-CharType	Bytes(All(Infoltem:1,2 in 14.995)) MO [0x30 to 0x39]		Y			B*-O
			1	O	14.997-[SRN, RSP]-CharType	Bytes(All(Infoltem:1,2 in 14.997)) MO [0x30 to 0x39]		Y			B*-O
			-	O	14.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharType	<See Requirement ID: " Field: Geographic ">	t-2				
RT14.12 - Field: Type14-CharCount	Table 71	<Table 71 specifies the Character Count for each field that contains no subfields.>	1	M	14.001-CharCount	DataLength(14.001) MO [1 to 8]		NA			T
			1	M	NIEM-14.001-CharCount	Length(14.001) EQ 2		Y			X-O
			1	M	14.002-CharCount	DataLength(14.002) EQ 1 OR 2		Y			B-O
			1	M	14.003-CharCount	DataLength(14.003) EQ 1 OR 2		Y			B-O
			1	M	14.004-CharCount	<See Requirement ID: " Field: Source Agency ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
			1	M	14.005-CharCount	DataLength(14.005) EQ 8		NA			T
			1	M	Niem-14.005-CharCount	DataLength(14.005) EQ 10		Y			X-O
			1	M	14.006-CharCount	DataLength(14.006) MO [2 to 5]		Y			B-O
			1	M	14.007-CharCount	DataLength(14.007) MO [2 to 5]		Y			B-O
			1	M	14.008-CharCount	DataLength(14.008) EQ 1		Y			B-O
			1	M	14.009-CharCount	DataLength(14.009) MO [1 to 5]		Y			B-O
			1	M	14.010-CharCount	DataLength(14.010) MO [1 to 5]		Y			B-O
			1	M	14.011-CharCount	DataLength(14.011) MO [3 to 5]		Y			B-O
			1	M	14.012-CharCount	DataLength(14.012) EQ 1 OR 2		Y			B-O
			1	O	14.016-CharCount	DataLength(14.016) MO [1 to 5]		Y			B-O
			1	O	14.017-CharCount	DataLength(14.017) MO [1 to 5]		Y			B-O
			1	O	14.020-CharCount	DataLength(14.020) MO [1 to 126]		Y			B-O
			1	O	14.026-CharCount	DataLength(14.026) MO [1 to 3]		Y			B-O
			1	D	14.027-CharCount	DataLength(14.027) EQ 1		Y			B-I <Allows length 1, 4, or 5>
			1	O	14.030-CharCount	DataLength(14.030) MO [7 to 10]		Y			B-O
			1	O	14.031-CharCount	DataLength(14.031) EQ 2		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

			1	O	14.903-CharCount	DataLength(14.903) MO [13 to 16]		Y			B-O
			1	O	14.993-CharCount	<See Requirement ID: " Field: Source Agency Name ".>	t-2	Y			
			1	O	14.996-CharCount	DataLength(14.995) EQ 64		Y			B-C
			1	M	14.999-CharCount	DataLength(14.999) GTE 1		Y			B-O
RT14.13 - Field: Type14-Subfield CharCount	Table 71	<Table 71 specifies the Character Count for each subfield.>	1	M	14.013-FGP-CharCount	Length(All(InfoItems in 14.013)) EQ 1 OR 2		Y			B*-O
			1	D	14.014-DFP-CharCount	Length(InfoItem:1 in 14.014) EQ 1 OR 2		Y			B*-O
			1	D	14.014-FIC-CharCount	Length(InfoItem:2 in 14.014) EQ 3		Y			B*-O
			1	D	14.015-FVC-CharCount	ForEach(Subfield in 14.015) { Length(InfoItem:1 in Subfield) EQ 2 OR 3 }		Y			B*-O
			1	D	14.015-LOS-CharCount	ForEach(Subfield in 14.015) { Length(InfoItem:2 in Subfield) EQ 2 OR 3 }		Y			B*-O
			1	D	14.015-[LHC, RHC, TVC, BVC]-CharCount	ForEach(Subfield in 14.015) { Length(InfoItem:3 to 6 in Subfield) MO [1 to 5] }		Y			B*-O
			1	O	14.018-FRAP-CharCount	ForEach(Subfield in 14.018) { Length(InfoItem:1 in Subfield) EQ 1 OR 2 }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

			1	O	14.018-ABC-CharCount	ForEach(Subfield in 14.018) { Length(Infoltem:2 in Subfield) EQ 2 }		Y			B*-O
			1	D	14.021-FRSP-CharCount	ForEach(Subfield in 14.021) { Length(Infoltem:1 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	D	14.021-[LHC, RHC, TVC, BVC]-CharCount	ForEach(Subfield in 14.021) { Length(Infoltem:2 to 5 in Subfield) MO [1 to 5] }		Y			B*-O
			1	O	14.022-FRNP-CharCount	ForEach(Subfield in 14.022) { Length(Infoltem:1 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	O	14.022-IQS-CharCount	ForEach(Subfield in 14.022) { Length(Infoltem:2 to 5 in Subfield)) MO [1 to 3] }		Y			B*-O
			1	O	14.023-FRQP-CharCount	ForEach(Subfield in 14.023) { Length(Infoltem:1 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	O	14.023-QVU-CharCount	ForEach(Subfield in 14.023) { Length(Infoltem:2 in Subfield) MO [1 to 3] }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
			1	O	14.023-QAV-CharCount	ForEach(Subfield in 14.023) { Length(Infoltem:3 in Subfield) EQ 4 }		Y			B*-O
			1	O	14.023-QAP-CharCount	ForEach(Subfield in 14.023) { Length(Infoltem:4 in Subfield) MO [1 to 5] }		Y			B*-O
			1	O	14.024-FRMP-CharCount	ForEach(Subfield in 14.024) { Length(Infoltem:1 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	O	14.024-QVU-CharCount	ForEach(Subfield in 14.024) { Length(Infoltem:2 in Subfield) MO [1 to 3] }		Y			B*-O
			1	O	14.024-QAV-CharCount	ForEach(Subfield in 14.024) { Length(Infoltem:3 in Subfield) EQ 4 }		Y			B*-O
			1	O	14.024-QAP-CharCount	ForEach(Subfield in 14.024) { Length(Infoltem:4 in Subfield) MO [1 to 5] }		Y			B*-O
			1	O	14.025-[FRAS, NOP]-CharCount	ForEach(Subfield in 14.025) { Length(Infoltem:1,2 in Subfield) EQ 1 OR 2 A}		Y			B*-O
			1	O	14.025-[HPO, VPO]-	ForEach(Subfield in 14.025) { ForEach(Infoltem in Subfield ST Infoltem NOT		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

					CharCount	InfoItem:1 OR InfoItem:2 in Subfield) { Length(InfoItem) MO [1 to 5] }					
			1	O	14.902-GMT-CharCount	ForEach(Subfield in 14.902) { Length(InfoItem:1 in Subfield) EQ 15 }		NA			T
			1	O	14.902-[NAV, OWN]-CharCount	ForEach(Subfield in 14.902) { Length(InfoItem:2,3 in Subfield) MO [1 to 64] }		Y			B*-O
			1	O	14.902-[PRO]-CharCount	ForEach(Subfield in 14.902) { Length(InfoItem:4 in Subfield) MO [1 to 255] }		Y			B*-O
			1	O	NIEM-14.902-GMT-CharCount	Length(XElm(nc:DateTime) in 14.902) EQ 20		Y			X*-O
			1	O	14.904-[MAK, MOD, SER]-CharCount	Length(All(InfoItems in 14.904) MO [1 to 50]		Y			B*-O
			1	O	14.995-ACN-CharCount	ForEach(Subfield in 14.995) { Length(InfoItem:1 in Subfield) MO [1 to 3] }		Y			B*-O
			1	O	14.995-ASP-CharCount	ForEach(Subfield in 14.995) { Length(InfoItem:2 in Subfield) EQ 1 OR 2 }		Y			B*-O
			1	O	14.997-SRN-CharCount	ForEach(Subfield in 14.997) { Length(InfoItem:1 in Subfield) MO [1 to 3] }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
			1	O	14.997-RSP-CharCount	ForEach(Subfield in 14.997) { Length(Infoltem:2 in Subfield) EQ 1 OR 2 }		Y			B*-O
			-	O	14.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT14.14 - Field: Type14-Field Occurrence	Table 71	<Table 71 specifies the Field Occurrence for each field.>	2	M	NIEM-Type14-Cardinality	<The Type-14 table in Annex G of the base standard specifies the type and number of sub elements required for each field.>		Y			X-I <Allows missing elements for fields with cardinatlity 1..1: 14.005, 14.004, 14.003. Allows optional "biom:ImageCaptureDetail" and "biom:captureOrganization">
			1	-	Type14-FieldOccurrences	Count(14.[019,028, 029, 032 to 199,901,905 to 992, 994]) EQ 0 AND Count(14.[001 to 005, 013]) EQ 1		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
						AND Count(14.[006 to 012, 014 to 018,020 to 027,030, 031, 902 to 904, 993, 995 to 999]) LTE 1					
RT14.15 - Field: 14.001-Record Header Value	8.14.1, Table 71, 7.1	Field 14.001 Record header. In Traditional encoding, this field contains the record length in bytes (including all information separators)	-	M	14.001-Record Header	<See Requirement ID " Field: xx.001-Record Header ">	t-2				
	8.14.1, C.10.12	The XML name for the Type-14 record is <itl:PackageFingerprintImageRecord>, and its <biom:RecordCategoryCode> element shall have a value of "14".	1	M	NIEM-14.001-Value	ForEach(XElm(itl:PackageFingerprintImageRecord) { {XElm(biom:RecordCategoryCode)} EQ ASCII(14) })		Y			X-i <Allows whitespace >
RT14.16 - Field: 14.002-Information Designation Character Value	8.14.2, Table 71, 7.3.1	This mandatory field shall be the IDC of this Type-14 record as found in the information item IDC of Field 1.003 Transaction content/CNT.	-	M	14.002-IDC	<See Requirement IDs " Field: xx.002-IDC " and " Field: 1.003-Transaction Content Subfield 2 IDC Matches " >	t-2				
RT14.17 - Field: 14.003-Impression Type Value	8.14.3, Table 71, 7.7.4.1	This mandatory field shall indicate the manner by which the latent print was obtained. See Section 7.7.4.1 for details. <Table 71 lists the valid values for IMP.>	1	M	14.003-Value	{14.003} MO [0 to 3, 8, 20 to 29] MO [Integers]		Y			B-I <Allows 0 to 8, 10 to 15, 20 to 39>
RT14.18 - Field: 14.004-Originating Agency Value	8.14.4, 7.6	This is a mandatory field. See Section 7.6 for details.	-	M	14.004-Value	<See Requirement ID: " Field: Source Agency ">	t-2				
RT14.19 - Field: 14.005-Fingerprint Capture	8.14.5, 7.7.2.3	This mandatory field shall contain the date that the fingerprint data contained in the record was captured.	1	M	14.005-Value	{14.005} MO [ValidLocalDate]	t-6	NA			T
			1	M	NIEM-14.005-Value	ForEach(XElm(itl:PackageFingerprintRecord)) { {XElm(nc:Date) in XElm(biom:CaptureDate)} MO	t-6	Y			X-I <Allows optional

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
Date Value						[NIEM-ValidLocalDate] }					element (nillable)>
RT14.20 - Field: 14.006-Horizontal Line Length Value	8.14.6, Table 71, 7.7.8.1	The maximum horizontal size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.	-	M	14.006-Value	<See Requirement ID " Field: Image HLL Value " >	t-2				
RT14.21 - Field: 14.006-Horizontal Line Length Metadata	8.14.6, Table 71, 7.7.8.1	<The HLL is verified by checking the image metadata if compression is used.>	2	M	14.006-Matches Image Metadata	IF {14.011} EQ ASCII(JPEG) OR ASCII(JPEGL) THEN {14.006} EQ {ImageWidth-JPEG,JPEGL} ELSE IF {14.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {14.006} EQ {ImageWidth-JP2,JP2L} ELSE IF {14.011} EQ ASCII(PNG) THEN {14.006} EQ {ImageWidth-PNG} ELSE IF {14.011} EQ ASCII(WSQ20) THEN {14.006} EQ {ImageWidth-WSQ}	t-11	Y			B-O
RT14.22 - Field: 14.007-Vertical Line Length Value	8.14.7, Table 71, 7.7.8.2	The maximum vertical size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.	-	M	14.007-Value	<See Requirement ID " Field: Image VLL Value " >	t-2				
RT14.23 - Field: 14.007-Vertical Line Length Metadata	8.14.7, Table 71, 7.7.8.2	<The VLL is verified by checking the image metadata if compression is used.>	2	M	14.007-Matches Image Metadata	IF {14.011} EQ ASCII(JPEG) OR ASCII(JPEGL) THEN {14.007} EQ {ImageHeight-JPEG,JPEGL} ELSE IF {14.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {14.007} EQ {ImageHeight-JP2,JP2L} ELSE IF {14.011} EQ ASCII(PNG) THEN {14.007} EQ {ImageHeight-PNG} ELSE IF {14.011} EQ ASCII(WSQ20) THEN	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

RT14.24 - Field: 14.008-Scale Units Value	8.14.8, Table 71, 7.7.8.3	<Table 71 lists the value constraints for SLC>		M	14.008-Value	{14.007} EQ {ImageHeight-WSQ} <See Requirement ID " Field: Image SLC Value " >	t-2				
RT14.25 - Field: 14.008-Scale Units Metadata	8.14.8, Table 71, 7.7.8.3	A value of "1" shall indicate pixels per inch. A value of "2" shall indicate pixels per centimeter. A value of "0" in this field indicates that no scale is provided, and the quotient of THPS/TVPS shall provide the pixel aspect ratio. <The SLC is verified by checking the image metadata if compression is used.>	2	M	14.008-Matches Image Metadata	IF {14.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN {14.008} EQ {SamplingUnits-JPEGB,JPEGL} ELSE IF {14.011} EQ ASCII{JP2} OR ASCII (JP2L) OR ASCII (WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {14.011} EQ ASCII(PNG) THEN IF {14.008} EQ 1 OR 2 THEN { SamplingUnits-PNG} EQ 1, ELSE IF {14.008} EQ 0 THEN { SamplingUnits-PNG} EQ 0	t-11	Y			B-O
RT14.26 - Field: 14.009-Transmitted Horizontal Pixel Scale Value	8.14.9, Table 71, 7.7.8.4	<Table 71 lists the value constraints for THPS.>	-	M	14.009-Value	<See Requirement ID " Field: Image THPS Value " >	t-2				
RT14.27 - Field: 14.009-Transmitted Horizontal Pixel Scale Metadata	8.14.9, Table 71, 7.7.8.4	This is the integer pixel density used in the horizontal direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the horizontal component of the pixel aspect ratio, up to 5 digits. <The THPS is verified by checking the image metadata if compression is used.>	2	M	14.009-Matches Image Metadata	IF {14.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {14.008} EQ 1 OR 2 THEN {14.009} EQ {HorizontalDensity-JPEGB,JPEGL} ELSE IF {14.011} EQ ASCII{JP2} OR ASCII (JP2L) OR ASCII (WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {14.011} EQ ASCII(PNG) AND {14.008} EQ 1 THEN {14.009} EQ {HorizontalDensity-PNG} * 0.0254 (meters/inch), ELSE IF {14.011} EQ ASCII(PNG) AND {14.008} EQ	t-11, t-12	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
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8.14: Record Type-14: Fingerprint image record

						2 THEN {14.009} EQ {HorizontalDensity-PNG} * 0.01 (meters/cm)					
			2	M	14.009-Aspect Ratio Matches Image Metadata	IF {14.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {14.008} NEQ 1 OR 2 THEN {14.009}/{14.010} EQ {HorizontalDensity-JPEGB,JPEGL} / {VerticalDensity-JPEGB,JPEGL} ELSE IF {14.011} EQ ASCII{JP2} OR ASCII (JP2L) OR ASCII (WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {14.011} EQ ASCII(PNG) AND {14.008} NEQ 1 OR 2 THEN {14.009}/{14.010} EQ {HorizontalDensity-PNG} / {VerticalDensity-PNG}	t-11	Y			B-O
RT14.28 - Field: 14.010-Transmitted Vertical Pixel Scale Value	8.14.10, Table 71, 7.7.8.5	<Table 71 lists the value constraints for TVPS.>	-	M	14.010-Value	<See Requirement ID " Field: Image TVPS Value ">	t-2				
RT14.29 - Field: 14.010-Transmitted Vertical Pixel Scale Metadata	8.14.10, Table 71, 7.7.8.5	This is the integer pixel density used in the Vertical direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the Vertical component of the pixel aspect ratio, up to 5 digits. <The TVPS is verified by checking the image metadata if compression is used.>	2	M	14.010-Matches Image Metadata	IF {14.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND{14.008} EQ 1 OR2 THEN {14.010} EQ {VerticalDensity-JPEGB,JPEGL} ELSE IF {14.011} EQ ASCII{JP2} OR ASCII (JP2L) OR ASCII (WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {14.011} EQ ASCII(PNG)) AND {14.008} EQ 1 THEN {14.010} EQ {VerticalDensity-PNG} * 0.0254 (meters/inch), ELSE IF {14.011} EQ ASCII(PNG)) AND {14.008} EQ	t-11, t-12	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
						2 THEN {14.010} EQ {VerticalDensity-PNG} * 0.01 (meters/cm)					
			2	M	14.010-Aspect Ratio Matches Image Metadata	IF {14.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {14.008} NEQ 1 OR 2 THEN {14.009}/{14.010} EQ {HorizontalDensity-JPEGB,JPEGL} / {VerticalDensity-JPEGB,JPEGL} ELSE IF {14.011} EQ ASCII{JP2} OR ASCII (JP2L) OR ASCII (WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {14.011} EQ ASCII(PNG) AND{14.008} NEQ 1 OR 2 THEN {14.009}/{14.010} EQ {HorizontalDensity - PNG} / {VerticalDensity-PNG}	t-11	Y		B-O	
RT14.30 - Field: 14.011-Compression Algorithm Value	8.14.11, Table 71, 7.7.9.1	For each of these fields, the entry corresponds to the appropriate <i>Label</i> entry in Table 15: Field 14.011: Compression algorithm / CGA. Wavelet Scalar Quantization (WSQ) shall be used for compressing grayscale friction ridge data at 500 ppi class for new systems. In order to maintain backward compatibility, legacy systems may use JPEGB or JPEGL for compressing 500 ppi class images. WSQ shall not be used for other than the 500 ppi class. For friction ridge images at the 1000 ppi class, JPEG 2000 shall be used according to the specifications and options contained in Profile for 1000 ppi	1	M	14.011-Value	{14.011} MO ASCII(NONE, WSQ20, JPEGB, JPEGL, JP2, JP2L, PNG)		Y			B-O
			2	M	Type14-14.011-ValueDependent	<Note: 19.49 and 19.89 are ppm. The units for 14.016 and 14.017 depend on 14.008.> IF Present(14.011, 14.008, 14.016, 14.017) THEN { IF {14.016} AND {14.017} GTE 19.49 AND LTE 19.89 THEN { IF {14.011} MO [ASCII(JPEGB, JPEGL)] THEN <Provide Legacy Warning> ELSE {14.011} EQ ASCII(WSQ20) } ELSE IF {14.016} AND {14.017} GTE 38.98 AND LTE 39.76 { {14.011} EQ [ASCII(JP2, JP2L)] }		Y		B-O	

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
		Fingerprint Compression.				ELSE { {14.011} MO [ASCII(NONE, JPEGB, JPEGL, JP2, JP2L, PNG)] } }					
RT14.31 - Field: 14.011-Compression Algorithm Metadata	8.14.11, Table 71	<The CGA is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	14.011-Matches Image Metadata	IF {14.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN Present(SOI -JPEG,JPEGL) ELSE IF {14.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN Present(SigBox) ELSE IF {14.011} EQ ASCII(PNG) THEN Present(PNGSig) ELSE IF {14.011} EQ ASCII(WSQ20) THEN Present(SOI-WSQ)	t-11	Y			B-O
RT14.32 - Field: 14.012-Bits Per Pixel Value	8.14.12, Table 71, 7.7.8.6	This field shall contain an entry of "8" for normal grayscale values of "0" to "255". Any entry in this field greater than "8" shall represent a grayscale pixel with increased proportion.	1	M	14.012-Value	<See Requirement ID " Field: Image BPX Value " >	t-2				
RT14.33 - Field: 14.012- Bits Per Pixel Metadata	8.14.12, Table 71	<The BPX is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	14.012-Matches Image Metadata	IF {14.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN {14.012} EQ {BPX-JPEG, JPEGL} ELSE IF {14.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {14.012} EQ {BPX-JP2,JP2L} ELSE IF {14.011} EQ ASCII(PNG) THEN {14.012} EQ {BPX-PNG} ELSE <Provide Warning "Not Tested">	t-11	Y			B-O
RT14.34 - Field: 14.013-	8.14.13, Table 71, 7.7.4.2,	See Section 7.7.4.2 for details.	1	M	14.013-FGP-Value	{Infoltem: 1 in Subfield: 1 in 14.013} MO [0 to 19, 33, 36, 40 to 50] AND MO [Integers]		Y			B-I <Allows 255>

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
Friction Ridge Generalized Position Value	Table 8										
RT14.35 - Field: 14.014-Print Position Descriptors Value	8.14.14, Table 71, 7.7.4.3	...described in Section 7.7.4.3	-	D	14.014-[DFP, FIC]-Value	<See Requirement ID: " Field: SPD,PPD Values ">	t-2				
RT14.36 - Field: 14.014- Print Position Descriptors Conditional	8.14.14, Table 71	This field shall be present if and only if the finger position code "19" appears in Field 14.013: Friction ridge generalized position / FGP.	-	D	14.014-Conditional	<See Requirement ID: " Field: PPD Conditional ">	t-2				
RT14.37 - Field: 14.015-Print Position Coordinates Value	8.14.15, Table 71, 7.7.4.4	See section 7.7.4.4	-	D	14.015-[FVC, LOS, LHC, RHC, TVC, BVC]-Value	<See Requirement IDs: " Field: PPC-Subfield 1 " through " Field: PPC-SubfieldCount 5,6 ".>	t-2				
RT14.38 - Field: 14.015- Print Position Coordinates Conditional	8.14.15, Table 71	This field may be present if and only if the finger position code "19" appears in Field 14.013: Friction ridge generalized position / FGP.	-	D	14.015-Conditional	<See Requirement ID: " Field: SPD,PPC Conditional ">	t-2				
RT14.39 - Field: 14.016-Scanned Horizontal Pixel Scale Value	8.14.16, Table 71, 7.7.8.7	See section 7.7.8 for details.	-	O	14.016-Value	<See Requirement IDs: " Field: Image SHPS Value ">	t-2				
RT14.40 -	8.14.17,	See section 7.7.8 for details.	-	O	14.017-	<See Requirement IDs: " Field: Image SVPS ">	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
Field: 14.017-Scanned Vertical Pixel Scale Value	Table 71, 7.7.8.8				Value	Value ">					
RT14.41 - Field: 14.018-Amputated Or Bandaged Value	8.14.18, Table 71, Table 72	<Table 71 lists the value constraints for AMP.>	1	M	14.018-FRAP-Value	ForEach(Subfield in 14.018) { {Infoltem:1 in Subfield} MO [1 to 10, 16,17] }		Y			B*-I <Allows 0 to 19, 33, 36, 40 to 50, 255>
			1	M	14.018-ABC-Value	ForEach(Subfield in 14.018) { {Infoltem:2 in Subfield} MO [ASCII(XX,UP)] }		Y			B*-I <Allows whitespace >
RT14.42 - Field: 14.019-Reserved	Table 71	Reserved for future use only by ANSI/NIST-ITL.	-	-	14.019-Reserved	<See Requirement ID: " Field: Type14-CondCode ".>	t-2				
RT14.43 - Field: 14.020-Comment Value	8.14.19, Table 71, 7.4.4	See section 7.4.4 for details.	-	O	14.020-Value	<See Requirement ID: " Field: Comment ".>	t-2				
RT14.44 - Field: 14.021-Fingerprint Segment Position Value	8.14.20, Table 71, Table 8	<Table 71 lists the value constraints for SEG.>	1	M	14.021-FRSP-Value	ForEach(Subfield in 14.021) { {Infoltem:1 in Subfield} MO [1 to 10, 16,17] }		Y			B*-I <Allows 0 to 19, 33, 36, 40 to 50, 255>
			1	M	14.021-[LHC,RHC,BVC,TVC]-Value	ForEach(Subfield in 14.021) { {All(Infoltems in Subfield)} MO [0 to 99999] }		Y			B-O
			2	M	Type14-14.021-LHC-ValueDependent	IF Present(14.006) THEN ForEach(Subfield in 14.021) { {Infoltem:2 in Subfield} GTE 0 AND LTE {14.006} AND MO [Integers] }		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)	
8.14: Record Type-14: Fingerprint image record											
			2	M ↑	NIEM-Type14-14.021-LHC-ValueDependent	IF Present(XElm(ImageHorizontalLineLengthPixelQuantity)) THEN ForEach(XElm(FingerprintImageSegmentPosition Square)) { XElm(SegmentLeftHorizontalCoordinateValue)} GTE 0 AND LTE {XElm(ImageHorizontalLineLengthPixelQuantity)} AND MO [Integers] }			Y		X-O
			2	M ↑	Type14-14.021-RHC-ValueDependent	IF Present(14.006) THEN ForEach(Subfield in 14.021) { {Infoltem:3 in Subfield} LTE {14.006} AND GT {Infoltem:2 in Subfield} MO [Integers] }			NA		T
			2	M ↑	NIEM-Type14-14.021-RHC-ValueDependent	IF Present(XElm(ImageHorizontalLineLengthPixelQuantity)) THEN ForEach(XElm(FingerprintImageSegmentPosition Square)) { XElm(SegmentRightHorizontalCoordinateValue)} } LTE {XElm(ImageHorizontalLineLengthPixelQuantity)} AND GT { XElm(SegmentLeftHorizontalCoordinateValue)} } MO [Integers] }			Y		X-O
			2	M ↑	Type14-14.021-TVC-ValueDependent	IF Present(14.007) THEN ForEach(Subfield in 14.021) { {Infoltem:4 in Subfield} GTE 0 AND LTE {14.007} AND MO [Integers] }			NA		T
			2	M	NIEM-	IF			Y		X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record										
			↑	Type14-14.021-TVC-ValueDependent	Present(XElm(ImageVerticalLineLengthPixelQuantity) THEN ForEach(XElm(FingerprintImageSegmentPositionSquare)) {XElm(SegmentTopVerticalCoordinateValue)} GTE 0 AND LTE { XElm(ImageVerticalLineLengthPixelQuantity)} AND MO [Integers] }					
			2 ↑	M Type14-14.021-BVC-ValueDependent	IF Present(14.007) THEN ForEach(Subfield in 14.021) { {Infoltem:5 in Subfield} LTE {14.007} AND GT {Infoltem:4 in Subfield} MO [Integers] }		NA			T
			2 ↑	M NIEM-Type14-14.021-BVC-Value	IF Present(XElm(ImageVerticalLineLengthPixelQuantity) THEN ForEach(XElm(FingerprintImageSegmentPositionSquare)) {SegmentBottomVerticalCoordinateValue} LTE { XElm(ImageVerticalLineLengthPixelQuantity) } AND GT { XElm(SegmentTopVerticalCoordinateValue)} } MO [Integers] }					X-O
RT14.45 - Field: 14.021-Fingerprint Segment Position Conditional	8.14.20, Table 71	This optional field shall contain offsets to the locations of image segments containing the individual fingers within the flat images of simultaneous fingers from each hand or the two simultaneous thumbs. (FGP = 13, 14, 15 or 40-50 from Table 8 as entered in Field 14.013: Friction ridge generalized position / FGP).	-	D 14.021-Conditional	<See Requirement ID: " Field: 14.021-Fingerprint Segment Position Dependent ">	t-2				
RT14.46 - Field: 14.022-NIST	8.14.21, Table 71, Table 86	<Table 71 lists the value constraints for NQM.>	1 ↑	M 14.022-FRNP-Value	ForEach(Subfield in 14.022) { {Infoltem:1 in Subfield} MO [1 to 10, 16,17]		Y			B*-I <Allows 0 to 19, 33, 36, 40 to

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
Quality Metric Value			1	M	14.022-IQS-Value	} ForEach(Subfield in 14.022) { {Infoltem:2 in Subfield} MO [1 to 5, 254, 255] MO [Integers] }		Y			50, 255> B*-O
RT14.47 - Field: 14.023-Segmentation Quality Metric Value	8.14.22, Table 71, Table 68	<Table 71 lists the value constraints for SQM.>	-	M	14.023-[FRQP, QVU, QAV, QAP]-Value	<See Requirement ID: " Field: Sample Quality Occurrences ", " Field: Sample Quality Subfield 1 ", " Field: Sample Quality Subfield 2 ", and " Field: Sample Quality Subfield 3 ".>	t-2				
RT14.48 - Field: 14.024-Finger Quality Metric Value	8.14.23, Table 71, Table 8	<Table 71 lists the value constraints for FQM.>	-	O	14.024-[FRMP, QVU, QAV, QAP]-Value	<See Requirement ID: " Field: Sample Quality Occurrences ", " Field: Sample Quality Subfield 1 ", " Field: Sample Quality Subfield 2 ", and " Field: Sample Quality Subfield 3 ".>	t-2				
RT14.49 - Field: 14.025-Alternate Finger Segment Position(s) Value	8.14.24, Table 71, Table 8	<Table 71 lists the value constraints for ASEG.>	1	M	14.025-FRAS-Value	ForEach(Subfield in 14.025) { {Infoltem:1 in Subfield} MO [1 to 10, 16, 17] }		Y			B*-I <Allows 0 to 19, 33, 36, 40 to 50, 255>
			1	M	14.025-NOP-Value	ForEach(Subfield in 14.025) { {Infoltem:2 in Subfield} MO [3 to 99] }		Y			B*-O
			1	M	14.025-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 14.025}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record										
			1	M ↑	NIEM-14.025-[HPO, VPO]-Value	{XElm(PositionHorizontalCoordinateValue) GTE 0 AND LTE 99999 AND {XElm(PositionVerticalCoordinateValue) GTE 0 AND LTE 99999		Y		X-O
			2	M ↑	14.025-[HPO, VPO]-ValueDependent	ForEach(Subfield in 14.025) { For(X EQ 3 to {Infoltem:2 in Subfield}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE {14.007} AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE {14.006} AND MO [Integers] } }		NA		T
			2	M ↑	NIEM-14.025-[HPO, VPO]-ValueDependent	ForEach(XElmbiom(FingerprintImageSegmentPositionPolygon) in 14.025) { {All(XElmbiom(PositionVerticalCoordinateValue)) GTE 0 AND LTE {14.007} MO [Integers] AND {All(XElmbiom(PositionHorizontalCoordinateValue)) GTE 0 AND LTE {14.006} MO [Integers] } }		Y		B*-O
RT14.50 - Field: 14.025-Alternate Finger Segment Position(s) Polygon	8.14.24, Table 71, Section 7.8	No two vertices may occupy the same location.	2	O	14.025-ASEG-Vertices unique	<Each Vertex (X, Y) is unique>		Y		B*-O
		The order of the vertices shall be in their consecutive order around the perimeter of the polygon, either clockwise or counterclockwise. The polygon side defined by the last vertex and the first vertex shall complete	2	O	14.025-ASEG-Polygon	<Unsupported.>	t-14	NA		

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
		the polygon. The polygon shall be a simple, plane figure with no sides crossing and no interior holes.									
RT14.51 - Field: 14.026-Simultaneous Capture Value	8.14.25, Table 71	<Table 71 lists the value constraints for SCF.>	1	O	14.026-Value	{14.026} MO [1 to 255] MO [Integers]		Y			B-O
RT14.52 - Field: 14.027-Stitched Image Flag Value	8.14.26, Table 71	<Table 71 lists the value constraints for SCF.>	1	D	14.027-Value	{14.027} EQ ASCII(Y)		Y			B-I <Requires Boolean values (true, false, 0, 1)>
RT14.53 - Field: 14.027-Stitched Image Flag Conditional	8.14.26, Table 71	This field signifies that images captured separately were stitched together to form a single image. This field is mandatory if an image has been stitched, and the value shall be set to 'Y'. Otherwise, this field shall not appear in the record.	-	D	14.027-Conditional	<See Requirement ID: " Field: 14.027-Stitched Image Flag Dependent ">	t-2				
RT14.54 - Field: 14.028, 14.029-Reserved	Table 71	Reserved for future use only by ANSI/NIST-ITL.	-	-	14.028, 14.029 Reserved	<See Requirement ID: " Field: Type14-CondCode ">.	t-2				
RT14.55 - Field: 14.030-Device Monitoring Mode Value	8.14.27, Table 71	<Table 71 lists the value constraints for DMM.>	1	O	14.030-Value	{14.030} MO ASCII(CONTROLLED, ASSISTED, OBSERVED, UNATTENDED, UNKNOWN)		Y			B-I <Allows whitespace >
RT14.56 - Field: 14.031-Subject	8.14.28, Table 71	<Table 71 lists the value constraints for FAP.>	1	O	14.031-Value	{14.031} MO [10, 20, 30, 40, 45, 50, 60] MO [Integers]		Y			B-I <Allows whitespace, plus sign, leading

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
Acquisition Profile-Fingerprint Value											zeros>
RT14.57 - Field: 14.032 to 14.199-Reserved	Table 71	Reserved for future useonly by ANSI/NIST-ITL.	-	-	14.032 to 14.199 Reserved	<See Requirement ID: " Field: Type14-CondCode >.	t-2				
RT14.58 - Field: 14.200 to 14.900-User Defined	Table 71	User Defined Fields	-	-	14.200 to 14.900-User Defined	TRUE		Y			B-C
RT14.59 - Field: 14.901-Reserved	Table 71	Reserved for future useonly by ANSI/NIST-ITL.	-	-	14.901-Reserved	<See Requirement ID: " Field: Type14-CondCode >.	t-2				
RT14.60 - Field: 14.902-Annotated Information Value	8.14.30, Table 71	This is an optional field, listing the operations performed on the original source in order to prepare it for inclusion in a biometric record type. See Section 7.4.1.	-	O	14.902-[GMT, NAV, OWN, PRO]-Value	<See Requirement ID: " Field: xx.902-ANN " >.	t-2				
RT14.61 - Field: 14.903-Device Unique Identifier Value	8.14.31, Table 71	This is an optional field. See Section 7.7.1.1.	-	O	14.903-DUI-Value	<See Requirement ID: " Field: Device ID " >.	t-2				
RT14.62 - Field: 14.904-Make/Model/Serial Number Value	8.14.32, Table 71	This is an optional field. See Section 7.7.1.2.	-	O	14.904-[MAK, MOD, SER]-Value	<See Requirement ID: " Field: Make Model " >.	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
RT14.63 - Field: 14.905 to 14.992-Reserved	Table 71	Reserved for future use only by ANSI/NIST-ITL.	-	-	14.905 to 14.992-Reserved	<See Requirement ID: " Field: Type14-CondCode ".>	t-2				
RT14.64 - Field: 14.993-Source Agency Name	8.14.33, Table 71	This is an optional field. It may contain up to 125 Unicode characters.	-	O	14.993-SAN-Value	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
RT14.65 - Field: 14.994-Reserved	Table 71	Reserved for future use only by ANSI/NIST-ITL.	-	-	14.994-Reserved	<See Requirement ID: " Field: Type14-CondCode ".>	t-2				
RT14.66 - Field: 14.995-Associated Context Value	8.14.34, Table 71	See Section 7.3.3	-	O	14.995-[ACN, ASP]-Value	<See Requirement IDs: " Field: xx.995-ASC " and " Field: xx.995-ASC-ACN " and " Field: xx.995-ASC-ASP ".>	t-2				
RT14.67 - Field: 14.996-Hash Value	8.14.35, Table 71	See Section 7.5.2	-	O	14.996-Value	<See Requirement ID: " Field: HAS ".>	t-2				
RT14.68 - Field: 14.997-Source Representation Value	8.14.36, Table 71	See Section 7.3.2	-	O	14.997-[SRN, RSP]-Value	<See Requirement IDs: " Field: xx.997-SOR " and " Field: xx.997-SOR-SRN " and " Field: xx.997-SOR-RSP ".>	t-2				
RT14.69 - Field: 14.998-Geographic Sample Acquisition Location	8.14.37, Table 71	See Section 7.7.3	-	O	14.998-[UTE, LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE,	<See Requirement IDs: " Field: Geographic ", " Field: Geographic ", " Field: Geographic-Subfield 1 " through " Field: Geographic-Values-SubField 15 ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
Value					GCN, GRT, OSI, OCV]-Value						
RT14.70 - Field: 14.999-Image Data Valid	8.14.38, Table 71	This is a mandatory field contains the image. <The image metadata is checked for validity.>	2	M	14.999- Uncompressed Image Length	IF {14.011} EQ ASCII(NONE) THEN IF Present(14.999, 14.006, 14.007) THEN Length(14.999) EQ {14.006} * {14.007}		Y			B
			2	M	14.999- Valid Image Format	IF Present(SOI-JPEGB,JPEGL) THEN Present(JFIF, SOI-JPEGB,JPEGL, SOF-JPEGB,JPEGL, EOI-JPEG, JPEGL) ELSE IF Present(SigBox) THEN Present(SigBox, HeadBox, ImgBox, EOI-JP2,JP2L) ELSE IF Present(PNGSig) THEN Present(PNGSig, IHDR, IDAT, IEND) ELSE IF Present(SOI-WSQ) THEN Present(SOI-WSQ,SOF-WSQ,SOB-WSQ,EOI-WSQ)	t-11	Y			B-O
RT14.71 - Field: 14.999-Image WSQ Version 2.0	7.7.9.1	Only version 3.1 or higher shall be used for compressing grayscale fingerprint data at 500 ppi class with a platen area of 2 inches or greater in height. WSQ 2.0 or higher may be used for 500 ppi class data taken from a platen of less than 2 inches in height. WSQ shall not be used for	3	M	14.999- Valid WSQ Specification Version	<No known method for determining the WSQ specification version.>	t-16	NA			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L e v e l	S t a t u s	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B* or X*)
8.14: Record Type-14: Fingerprint image record											
		other than the 500 ppi class.									

6.14 Record Type-15: Palm Print Image Record

Table 6.12 - Assertions for Record Type 15 - Palm Print Image Record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
RT15.1 - Record: Type15-Palm Print Image	8.15	The Type-15 record shall contain and be used to exchange palm print image data together with fixed and user-defined textual information fields pertinent to the digitized image. The image data shall be acquired directly from a subject using a live-scan device, a palmprint card, or other media that contains the subject using a live-scan device, a palmprint card, or other media that contains the subject's palm and / or wrist prints.	3	M	Type15-Palm Print Image	<Unsupported: It is not feasible to test if the image represents a palm print or how the image was captured.>	t-1				
RT15.2 - Record: Type15-Palm Print Area	8.15	Any method used to acquire the palm print images shall be capable of capturing a set of images for each hand. This set may include the writer be capable of capturing a set of and the entire area of the full palm extending from the wrist bracelet to the tips of the fingers as one or two scanned images. (See Figure 3) If two images are used to represent the full palm, the lower image shall extend from the wrist bracelet to the top of the interdigital area (third finger joint) and shall include the thenar, and hypothenar areas of the palm. The upper image shall extend from the bottom of the interdigital area to the upper tips of the fingers. This provides an adequate amount of overlap between the two images.	3	M	Type15-Palm Print Area	<Unsupported: It is not feasible to test which area of the palm is represented in the image.>	t-1				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.15: Record Type-15: Palm print image record

RT15.3 - Field: Type15-Subfield Occurrence	Table 73	<Table 73 specifies which fields contain subfields as well as the number of occurrences permitted.>	1	M	15.[001 to 013, 016, 017, 020, 030, 903, 904, 993, 996, 998, 999]-SubfieldCount	Count(Subfields in 15.[001 to 013, 016, 017, 020, 030, 903, 904, 993, 996, 998, 999]) EQ 1		NA			T
			1	M	15.[001 to 005, 013, 016, 017, 020, 030, 903, 993, 996, 999]-InfoltemCount	Count(Infoltems in Subfield:1 in 15.[001 to 005, 013, 016, 017, 020, 030, 903, 993, 996, 999]) EQ 1		NA			T
			1	O	15.018-SubfieldCount	Count(Subfields in 15.018) MO [1 to 9]		NA			T
			1	O	15.018-InfoltemCount	ForEach(Subfield in 15.018) { Count(Infoltems in Subfield) EQ 2 }		NA			T
			1	O	15.024-SubfieldCount	Count(Subfields in 15.024) MO [1 to 9]		NA			T
			1	O	15.024-InfoltemCount	ForEach(Subfield in 15.024) { Count(Infoltems in Subfield) EQ 4 }		NA			T
			1	O	15.902-SubfieldCount	Count(Subfields in 15.902) GTE 1		NA			T
			1	O	15.902-InfoltemCount	ForEach(Subfield in 15.902) { Count(Infoltems in Subfield) EQ 4 }		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
			1	O	15.904-InfoItemCount	Count(InfoItems in 15.904) EQ 3		NA			T
			1	O	15.995-SubfieldCount	Count(Subfields in 15.995) MO [1 to 255]		NA			T
			1	O	15.995-InfoItemCount	ForEach(Subfield in 15.995) { Count(InfoItems in Subfield) EQ 1 OR 2 }		NA			T
			1	O	15.997-SubfieldCount	Count(Subfields in 15.997) MO [1 to 255]		NA			T
			1	O	15.997-InfoItemCount	ForEach(Subfield in 15.997) { Count(InfoItems in Subfield) EQ 1 OR 2 }		NA			T
			O	15.998-Subfields	<See Requirement ID: " Field: Geographic ">	t-2					
RT15.4 - Field: Type15-CondCode	Table 73	<Table 73 specifies the Condition Code for each field.>	1	-	Type15-Mandatory CondCode	Present(15.001 to 15.005, 15.013)		NA			T
			1	M	NIEM-Type15-Mandatory CondCode	ForEach(XElm in <AnnexG: Type-15 Table> ST {Min(Cardinality(XElm))} GTE 1) { Present(XElm) }		Y			X-I <Allows 15.004, 15.005 to be optional>
			1	-	Type15-Reserved	NOT Present(15.014, 15.015, 15.019, 15.021 to 15.023, 15.025 to 15.029, 15.031 to 15.199, 15.901, 15.905 to 15.992, 15.994)		NA			T
RT15.5 - Record: 15.006 to	Table 73, 8.15.6 to 8.15.12	This field is mandatory if an image is present in Field 15.999. Otherwise it is absent.	2	D	Type15-[15.006 to 15.012]-	Present(15.999) IFF Present(15.006 to 15.012)		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.15: Record Type-15: Palm print image record

15.012 Dependent					CondCode Dependent						
RT15.6 - Field: 15.999- Palmprint Image Dependent	Table 73, 8.15.29	This field contains the palmprint image. It shall contain an image, unless Field 15.018: Amputated or bandaged / AMP has a value or "UP". In the latter case, the field is optional.	2	D	15.999-CondCode Dependent	IF {Infoltem:2 in All(Subfield in 15.018)} NEQ ASCII(UP) THEN Present(15.999)		Y			B-O
			2	D	NIEM-15.999-CondCode Dependent	IF {All(XElm(PalmMissingAreaReasonCode))} NEQ ASCII(UP) THEN Present(XElm(BinaryBase64Object) in XElm(PalmprintImage))		Y			X-O
RT15.7 - Field: Type15-CharType	8.15, Table 73	<Table 73 specifies the Character Type for each field that contains no subfields.>	1	-	15.[001 to 003, 006 to 010, 012, 013, 016, 017]-CharType	Bytes(15.[001 to 003, 006 to 010, 012, 013, 016, 017]) MO [0x30 to 0x39]		Y			B-O
			1	-	15.030-CharType	Bytes(15.030) [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B-I <Allows whitespace >
			1	-	[15.004, 15.020, 15.993]-CharType	TRUE		Y			B-C
			1	M	15.005-CharType	Bytes(15.005) MO [0x30 to 0x39]		NA			T
			1	M	NIEM-15.005-CharType	Bytes(15.005) MO [0x30 to 0x39, 0x2D]		Y			X-I <Allows whitespace, plus sign>
			1	M	15.011-CharType	Bytes(15.011) MO [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B-O
			1	O	15.903-CharType	Bytes{15.903} MO [0x20 to 0x7E]		Y			B-O
			1	O	15.996-CharType	Bytes(10.996) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66]		Y			B-C
			1	D	15.999-CharType	TRUE		NA			T
			1	D	NIEM-	<Schema tests that the BinaryBase64Object is of		Y			X-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.15: Record Type-15: Palm print image record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
					15.999-CharType	the correct type and length. Report that this is tested by the schema.>					
RT15.8 - Field: Type15-Subfield CharType	8.15, Table 73	<Table 73 specifies the Character Type for each subfield.>	1	O	15.018-FRAP-CharType	ForEach(Subfield in 15.018) { Bytes(Infoltem:1 in Subfield) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace, plus sign>
			1	O	15.018-ABC-CharType	ForEach(Subfield in 15.018) { Bytes(Infoltem:2 in Subfield)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A] }		Y			B*-I <Allows whitespace >
			1	O	15.024-[FRMP, QVU, QAP]-CharType	ForEach(Subfield in 15.024) { Bytes(Infoltem:1,2,4 in Subfield) MO [0x30 to 0x39] }		Y			B*-O
			1	O	15.024-QAV-CharType	ForEach(Subfield in 15.024) { Bytes(Infoltem:3 in Subfield)) MO [0x30 to 0x39,0x41 to 0x46, 0x61 to 0x66] }		Y			B*-O
			1	O	15.902-[NAV, OWN, PRO]-CharType	TRUE		Y			B-C
			1	O	15.902-GMT-CharType	ForEach(Subfield in 15.902) { Bytes(Infoltem:1 in Subfield) MO [0x30 to 0x39,0x5A] }		NA			T
			1	O	NIEM-15.902-GMT-CharType	Bytes(XElm(biom:ProcessUTCDate) in 15.902) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]		Y			X-I <Allows whitespace, plus and negative sign>
			1	O	15.904-	TRUE		Y			B*-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.15: Record Type-15: Palm print image record

					[MAK, MOD, SER]-CharType						
			1	O	15.995-[ACN, ASP]-CharType	Bytes(All(Infoltem:1,2 in 15.995)) MO [0x30 to 0x39]		Y			B*-O
			1	O	15.997-[SRN, RSP]-CharType	Bytes(All(Infoltem:1,2 in 15.997)) MO [0x30 to 0x39]		Y			B*-O
				O	15.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharType	<See Requirement ID: " Field: Geographic ">	t-2				
RT15.9 - Field: Type15-CharCount	Table 73	<Table 73 specifies the Character Count for each field that contains no subfields.>	1	M	15.001-CharCount	DataLength(15.001) MO [1 to 8]		NA			T
			1	M	NIEM-15.001-CharCount	Length(15.001) EQ 2		Y			X-O
			1	M	15.002-CharCount	DataLength(15.002) EQ 1 OR 2		Y			B-O
			1	M	15.003-CharCount	DataLength(15.003) EQ 2		Y			B-O
			1	M	15.004-CharCount	<See Requirement ID: " Field: Source Agency ".>	t-2				
			1	M	15.005-CharCount	DataLength(15.005) EQ 8		NA			T
			1	M	NIEM-15.005-CharCount	DataLength(15.005) EQ 10		Y			X-O
			1	M	15.006-	DataLength(15.006) MO [2 to 5]		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
					CharCount						
			1	M	15.007-CharCount	DataLength(15.007) MO [2 to 5]		Y			B-O
			1	M	15.008-CharCount	DataLength(15.008) EQ 1		Y			B-O
			1	M	15.009-CharCount	DataLength(15.009) MO [1 to 5]		Y			B-O
			1	M	15.010-CharCount	DataLength(15.010) MO [1 to 5]		Y			B-O
			1	M	15.011-CharCount	DataLength(15.011) MO [3 to 5]		Y			B-O
			1	M	15.012-CharCount	DataLength(15.012) EQ 1 OR 2		Y			B-O
			1	M	15.013-CharCount	DataLength(15.013) EQ 2		Y			B-O
			1	O	15.016-CharCount	DataLength(15.016) MO [1 to 5]		Y			B-O
			1	O	15.017-CharCount	DataLength(15.017) MO [1 to 5]		Y			B-O
			1	O	15.020-CharCount	DataLength(15.020) MO [1 to 126]		Y			B-O
			1	O	15.030-CharCount	DataLength(15.030) MO [7to 10]		Y			B-O
			1	O	15.903-CharCount	DataLength(15.903) MO [13 to 16]		Y			B-O
			1	O	15.993-CharCount	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
			1	O	15.996-CharCount	DataLength(15.995) EQ 64		Y			B-C
			1	M	15.999-CharCount	DataLength(15.999) GTE 1		Y			B-O
RT15.10 - Field: Type15-	Table 73	<Table 73 specifies the Character Count for each subfield.>	1	O	15.018-FRAP-CharCount	ForEach(Subfield in 15.018) { Length(InfoItem:1 in Subfield) EQ 1 OR 2		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.15: Record Type-15: Palm print image record

Subfield CharCount										
					}					
	1	O	15.018-ABC-CharCount		ForEach(Subfield in 15.018) { Length(Infoltem:2 in Subfield) EQ 2 }		Y			B*-O
	1	O	15.024-FRMP-CharCount		ForEach(Subfield in 15.024) { Length(Infoltem:1 in Subfield)) EQ 1 OR 2 }		Y			B*-O
	1	O	15.024-QVU-CharCount		ForEach(Subfield in 15.024) { Length(Infoltem:2 in Subfield)) MO [1 to 3] }		Y			B*-O
	1	O	15.024-QAV-CharCount		ForEach(Subfield in 15.024) { Length(Infoltem:3 in Subfield)) EQ 4 }		Y			B*-O
	1	O	15.024-QAP-CharCount		ForEach(Subfield in 15.024) { Length(Infoltem:4 in Subfield)) MO [1 to 5] }		Y			B*-O
	1	O	15.902-GMT-CharCount		ForEach(Subfield in 15.902) { Length(Infoltem:1 in Subfield) EQ 15 }		NA			T
	1	O	15.902-[NAV,OWN]-CharCount		ForEach(Subfield in 15.902) { Length(Infoltem:2,3 in Subfield) MO [1 to 64] }		Y			B*-O
	1	O	15.902-PRO-CharCount		ForEach(Subfield in 15.902) { Length(Infoltem:4 in Subfield)) MO [1 to 255] }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)	
8.15: Record Type-15: Palm print image record											
					}						
			1	O	NIEM-15.902-GMT-CharCount	Length(XElm(nc:DateTime) in 15.902) EQ 20			Y		X*-O
			1	O	15.904-[MAK, MOD, SER]-CharCount	Length(All(InfoItems in 15.904)) MO [1 to 50]			Y		B*-O
			1	O	15.995-ACN-CharCount	ForEach(Subfield in 15.995) { Length(InfoItem:1 in Subfield) MO [1 to 3] }			Y		B*-O
			1	O	15.995-ASP-CharCount	ForEach(Subfield in 15.995) { Length(InfoItem:2 in Subfield) EQ 1 OR 2 }			Y		B*-O
			1	O	15.997-SRN-CharCount	ForEach(Subfield in 15.997) { Length(InfoItem:1 in Subfield) MO [1 to 3] }			Y		B*-O
			1	O	15.997-RSP-CharCount	ForEach(Subfield in 15.997) { Length(InfoItem:2 in Subfield) EQ 1 OR 2 }			Y		B*-O
				O	15.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT15.11 - Field:	Table 73	<Table 73 specifies the Field Occurrence for each field.>	2	M	NIEM-Type15-	<The Type-15 table in Annex G of the base standard specifies the type and number of sub			Y		X-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
Type15-Field Occurrence					Cardinality	elements required for each field.>					
			1	-	Type15-FieldOccurrences	Count(15.[014, 015, 019, 021 to 023, 025 to 029, 031 to 199,901,905 to 992, 994]) EQ 0 AND Count(15.[001 to 005, 013]) EQ 1 AND Count(15.[006 to 012, 016, 017, 018, 020, 024, 030, 902 to 904, 993, 995 to 999]) LTE 1		NA			T
RT15.12 - Field: 15.001-Record Header Value	8.15.1, Table 73, 7.1	Field 15.001 Record header. In Traditional encoding, this field contains the record length in bytes (including all information separators)		M	15.001-Record Header	<See Requirement ID " Field: xx.001-Record Header ">	t-2				
	8.15.1, C.10.13	The XML name for the Type-15 record is <itl:PackagePalmpprintImageRecord>, and its <biom:RecordCategoryCode> element shall have a value of "15".	1	M	NIEM-15.001-Value	ForEach(XElm(itl:PackagePalmprintImageRecord) { XElm(biom:RecordCategoryCode) EQ ASCII(15) })		Y			X-I <Allows leading zeros, whitespace >
RT15.13 - Field: 15.002-Information Designation Character Value	8.15.2, Table 73, 7.3.1	This mandatory field shall be the IDC assigned to this Type-15 record as listed in the information item IDC for this record in Field 1.003 Transaction content/CNT.		M	15.002-IDC	<See Requirement IDs " Field: xx.002-IDC " and " Field: 1.003-Transaction Content Subfield 2 IDC Matches " >	t-2				
RT15.14 - Field: 15.003-Impression Type Value	8.15.3, Table 73, 7.7.4.1, Table 7	This mandatory field shall indicate the manner by which the latent print was obtained. See Section 7.7.4.1 for details. <Table 73 lists the valid values for IMP.>	1	M	15.003-Value	{15.003} MO [10, 11, 28, 29]		Y			B-I <Allows a larger range of values>
RT15.15 - Field: 15.004-Source Agency Value	8.15.4, 7.6	This is a mandatory field. See Section 7.6 for details.		M	15.004-Value	<See Requirement ID: " Field: Source Agency ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
RT15.16 - Field: 15.005-Palmpoint Capture Date Value	8.15.5, 7.7.2.3	This mandatory field shall contain the date that the fingerprint data contained in the record was captured.	1	M	15.005-Value	{15.005} MO [ValidLocalDate]	t-6	NA			T
			1	M	NIEM-15.005-Value	ForEach(XElm(itl:PackagePalmpointRecord)) { XElm(nc:Date) in XElm(biom:CaptureDate)} MO [NIEM-ValidLocalDate]	t-6	Y			X-I <Allows optional element (nillable)>
RT15.17 - Field: 15.006-Horizontal Line Length Value	8.15.6, Table 73, 7.7.8.1	The maximum horizontal size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.		M	15.006-Value	<See Requirement ID " Field: Image HLL Value " >	t-2				
RT15.18 - Field: 15.006-Horizontal Line Length Metadata	8.15.6, Table 73, 7.7.8.1	<The HLL is verified by checking the image metadata if compression is used.>	2	M	15.006-Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN {15.006} EQ {ImageWidth-JPEGB,JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {15.006} EQ {ImageWidth-JP2,JP2L} ELSE IF {15.011} EQ ASCII(PNG) THEN {15.006} EQ {ImageWidth-PNG} ELSE IF {15.011} EQ ASCII(WSQ20) THEN {15.006} EQ {ImageWidth-WSQ}	t-11	Y			B-O
RT15.19 - Field: 15.007-Vertical Line Length Value	8.15.7, Table 73, 7.7.8.2	The maximum vertical size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.		M	15.007-Value	<See Requirement ID " Field: Image VLL Value " >	t-2				
RT15.20 - Field: 15.007-Vertical Line Length Metadata	8.15.7, Table 73, 7.7.8.2	<The VLL is verified by checking the image metadata if compression is used.>	2	M	15.007-Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN {15.007} EQ {ImageHeight-JPEGB,JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {15.007} EQ {ImageHeight-JP2,JP2L} ELSE IF {15.011} EQ ASCII(PNG) THEN {15.007} EQ {ImageHeight-PNG}	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
						ELSE IF {15.011} EQ ASCII(WSQ20) THEN {15.007} EQ {ImageHeight-WSQ}					
RT15.21 - Field: 15.008-Scale Units Value	8.15.8, Table 73, 7.7.8.3	<Table 73 lists the value constraints for SLC>		M	15.008-Value	<See Requirement ID " Field: Image SLC Value " >	t-2				
RT15.22 - Field: 15.008-Scale Units Metadata	8.15.8, Table 73, 7.7.8.3	A value of "1" shall indicate pixels per inch. A value of "2" shall indicate pixels per centimeter. A value of "0" in this field indicates that no scale is provided, and the quotient of THPS/TVPS shall provide the pixel aspect ratio. <The SLC is verified by checking the image metadata if compression is used.>	2	M	15.008-Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN {15.008} EQ {SamplingUnits-JPEGB,JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {15.011} EQ ASCII(PNG) THEN IF {15.008} EQ 1 OR 2 THEN { SamplingUnits-PNG} EQ 1, ELSE IF {15.008} EQ 0 THEN { SamplingUnits-PNG} EQ 0	t-11	Y			B-O
RT15.23 - Field: 15.009-Transmitted Horizontal Pixel Scale Value	8.15.9, Table 73, 7.7.8.4	<Table 73 lists the value constraints for THPS.>		M	15.009-Value	<See Requirement ID " Field: Image THPS Value " >	t-2				
RT15.24 - Field: 15.009-Transmitted Horizontal Pixel Scale Metadata	8.15.9, Table 73, 7.7.8.4	This is the integer pixel density used in the horizontal direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the horizontal component of the pixel aspect ratio, up to 5 digits. <The THPS is verified by checking the image metadata if compression is used.>	2	M	15.009-Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {15.008} EQ 1 OR 2 THEN {15.009} EQ {HorizontalDensity-JPEGB,JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {15.011} EQ ASCII(PNG) AND {15.008} EQ 1 THEN {15.009} EQ {HorizontalDensity-PNG} * 0.0254 (meters/inch), ELSE IF {15.011} EQ ASCII(PNG) AND {15.008} EQ 2	t-11, t-12	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
						THEN {15.009} EQ {HorizontalDensity-PNG} * 0.01 (meters/cm)					
			2	M	15.009- Aspect Ratio Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {15.008} NEQ 1 OR 2 THEN {15.009}/{15.010} EQ {HorizontalDensity-JPEGB,JPEGL} / {VerticalDensity-JPEGB,JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {15.011} EQ ASCII(PNG) AND {15.008} NEQ 1 OR 2 THEN {15.009}/{15.010} EQ {HorizontalDensity-PNG} / {VerticalDensity-PNG}	t-11	Y			B-O
RT15.25 - Field: 15.010- Transmitted Vertical Pixel Scale Value	8.15.10, Table 73, 7.7.8.5	<Table 73 lists the value constraints for TVPS.>		M	15.010- Value	<See Requirement ID " Field: Image TVPS Value ">	t-2				
RT15.26 - Field: 15.010- Transmitted Vertical Pixel Scale Metadata	8.15.10, Table 73, 7.7.8.5	This is the integer pixel density used in the Vertical direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the Vertical component of the pixel aspect ratio, up to 5 digits. <The TVPS is verified by checking the image metadata if compression is used.>	2	M	15.010- Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {15.008} EQ 1 OR 2 THEN {15.010} EQ {VerticalDensity-JPEGB,JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {15.011} EQ ASCII(PNG) AND {15.008} EQ 1 THEN {15.010} EQ {VerticalDensity-PNG} * 0.0254 (meters/inch), ELSE IF {15.011} EQ ASCII(PNG) AND {15.008} EQ 2 THEN {15.010} EQ {VerticalDensity-PNG} * 0.01 (meters/cm)	t-11, t-12	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
			2	M	15.010-Aspect Ratio Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) AND {15.008} NEQ 1 OR 2 THEN {15.009}/{15.010} EQ {HorizontalDensity-JPEGB,JPEGL} / {VerticalDensity-JPEGB,JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) OR ASCII(WSQ20) THEN <Provide Warning "Not Tested"> ELSE IF {15.011} EQ ASCII(PNG) AND {15.008} NEQ 1 OR 2 THEN {15.009}/{15.010} EQ { HorizontalDensity - PNG} / {VerticalDensity-PNG}	t-11	Y			B-O
RT15.27 - Field: 15.011-Compression Algorithm Value	8.15.11, Table 73, 7.7.9.1	For each of these fields, the entry corresponds to the appropriate <i>Label</i> entry in Table 15: Field 15.011: Compression algorithm / CGA.	1	M	15.011-Value	{15.011} MO [ASCII(NONE, JPEGB, JPEGL, JP2, JP2L, PNG, WSQ)]		Y			B-O
RT15.28 - Field: 15.011-Compression Algorithm Metadata	8.15.11, Table 73	<The CGA is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	15.011-Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN Present(SOI-JPEG,JPEGL) ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN Present(SigBox) ELSE IF {15.011} EQ ASCII(PNG) THEN Present(PNGSig) ELSE IF {15.011} EQ ASCII(WSQ20) THEN Present(SOI-WSQ)	t-11	Y			B-O
RT15.29 - Field: 15.012-Bits Per Pixel Value	8.15.12, Table 73, 7.7.8.6	This field shall contain an entry of "8" for normal grayscale values of "0" to "255". Any entry in this field greater than "8" shall represent a grayscale pixel with increased proportion.		M	15.012-Value	<See Requirement ID " Field: Image BPX Value " >	t-2				
RT15.30 - Field: 15.012- Bits Per Pixel Metadata	8.15.12, Table 73	<The BPX is verified by checking the image metadata for the compression type signature if compression is used.>	2	M	15.012-Matches Image Metadata	IF {15.011} EQ ASCII(JPEGB) OR ASCII(JPEGL) THEN {15.012} EQ {BPX-JPEG, JPEGL} ELSE IF {15.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
						15.012} EQ {BPX-JP2,JP2L} ELSE IF {15.011} EQ ASCII(PNG) THEN {15.012} EQ {BPX-PNG} ELSE <Provide Warning "Not Tested">					
RT15.31 - Field: 15.013-Friction Ridge Generalized Position Value	8.15.13, Table 73, 7.7.4.2, Table 6	See Section 7.7.4.2 for details.	1	M	15.013-Value	{15.013} MO [20 to 38, 81 to 84]		Y			B-I <Allows whitespace, plus sign>
RT15.32 - Field: 15.014, 15.015-Reserved	Table 73	Reserved for future use only by ANSI/NIST-ITL.		-	15.014, 15.015 Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.33 - Field: 15.016-Scanned Horizontal Pixel Scale Value	8.15.14, Table 73, 7.7.8.7	See section 7.7.8 for details.		O	15.016-SHPS Value	<See Requirement IDs: " Field: Image SHPS Value ">	t-2				
RT15.34 - Field: 15.017-Scanned Vertical Pixel Scale Value	8.15.15, Table 73, 7.7.8.8	See section 7.7.8 for details.		O	15.016-Value	<See Requirement IDs: " Field: Image SVPS Value ">	t-2				
RT15.35 - Field: 15.018-Amputated or Bandaged	8.15.16, Table 8, Table 72	The first item is ... between 21 and 38 or 81 through 84 as chosen from Table 8. Table 72 is a list of allowable indicators for the AMPCD.	1	M	15.018-FRAP-Value	ForEach(Subfield in 15.018) { {Infoltem:1 in Subfield} MO [21 to 38, 81 to 84] }		Y			B*-I <Allows whitespace, plus sign>
			1	M	15.018-	ForEach(Subfield in 15.018)		Y			B*-I <Allows

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record										
Value			↑	ABC-Value	{ {Infoltem:2 in Subfield} MO [ASCII(XX,UP)] }					whitespace >
RT15.36 - Field: 15.019-Reserved	Table 73	Reserved for future useonly by ANSI/NIST-ITL.	-	15.019 Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.37 - Field: 15.020-Comment Value	8.15.16, Table 73, 7.4.4	See section 7.4.4 for details.	O	15.020-Value	<See Requirement ID: " Field: Comment ".>	t-2				
RT15.38 - Field: 15.021 to 15.023-Reserved	Table 73	Reserved for future useonly by ANSI/NIST-ITL.	-	15.021 to 15.023 Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.39 - Field: 15.024-Palm Quality Metric Value	8.15.17, Table 73, Table 6	<Table 73 lists the value constraints for PQM.>	O	15.024-[FRMP, QVU, QAV, QAP]-Value	<See Requirement IDs: " Field: Sample Quality Occurrences ", to " Field: Sample Quality Additional Subfield ".>	t-2				
RT15.40 - Field: 15.025 to 15.029-Reserved	Table 73	Reserved for future useonly by ANSI/NIST-ITL.	-	15.025 to 15.029 Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.41 - Field: 15.030-Device Monitoring Mode Value	8.15.27, Table 73	<Table 73 lists the value constraints for DMM.>	1 O	15.030-Value	{15.030} MO ASCII(CONTROLLED, ASSISTED, OBSERVED, UNATTENDED, UNKNOWN)		Y			B-I <Allows whitespace >
RT15.42 - Field: 15.031 to 15.199-Reserved	Table 73	Reserved for future useonly by ANSI/NIST-ITL.	-	15.031 to 15.199 Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.43 -	Table 73	User Defined Fields	-	15.200 to	TRUE					B-C

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
Field: 15.200 to 15.900-User Defined					15.900-User Defined						
RT15.44 - Field: 15.901-Reserved	Table 73	Reserved for future useonly by ANSI/NIST-ITL.		-	15.901-Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.45 - Field: 15.902-Annotated Information Value	8.15.20, Table 73	This is an optional field, listing the operations performed on the original source in order to prepare it for inclusion in a biometric record type. See Section 7.4.1.		O	15.902-[GMT, NAV, OWN, PRO]-Value	<See Requirement ID: " Field: xx.902-ANN " >.	t-2				
RT15.46 - Field: 15.903-Device Unique Identifier Value	8.15.31, Table 73	This is an optional field. See Section 7.7.1.1.		O	15.903-DUI-Value	<See Requirement ID: " Field: Device ID " >.	t-2				
RT15.47 - Field: 15.904-Make/Model/Serial Number Value	8.15.32, Table 73	This is an optional field. See Section 7.7.1.2.		O	15.904-[MAK, MOD, SER]-Value	<See Requirement ID: " Field: Make Model " >.	t-2				
RT15.48 - Field: 15.905 to 15.992-Reserved	Table 73	Reserved for future useonly by ANSI/NIST-ITL.		-	15.905, 15.992-Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.49 - Field: 15.993-Source Agency	8.15.24, Table 73	This is an optional field. It may contain up to 125 Unicode characters.		O	15.993-SAN-Value	<See Requirment ID: " Field: Source Agency Name ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
RT15.50 - Field: 15.994-Reserved	Table 73	Reserved for future use only by ANSI/NIST-ITL.		-	15.994-Reserved	<See Requirement ID: " Field: Type15-CondCode ".>	t-2				
RT15.51 - Field: 15.995-Associated Context Value	8.15.33, Table 73	See Section 7.3.3		O	15.995-[ACN, ASP]-Value	<See Requirement IDs: " Field: xx.995-ASC " and " Field: xx.995-ASC-ACN " and " Field: xx.995-ASC-ASP ".>	t-2				
RT15.52 - Field: 15.996-Hash Value	8.15.34, Table 73	See Section 7.5.2		O	15.996-Value	<See Requirement ID: " Field: HAS ".>	t-2				
RT15.53 - Field: 15.997-Source Representation Value	8.15.35, Table 73	See Section 7.3.2		O	15.997-[SRN, RSP]-Value	<See Requirement IDs: " Field: xx.997-SOR " and " Field: xx.997-SOR-SRN " and " Field: xx.997-SOR-RSP ".>	t-2				
RT15.54 - Field: 15.998-Geographic Sample Acquisition Location Value	8.15.36, Table 73	See Section 7.7.3		O	15.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-Value	<See Requirement IDs: " Field: Geographic ", " Field: Geographic ", " Field: Geographic-Subfield 1 " through " Field: Geographic-Values-SubField 15 ".>	t-2				
RT15.55 - Field: 15.999-Image Data Valid	8.15.37, Table 73	This field contains the palmprint image. <The image metadata is checked for validity.>	2	D	15.999-Uncompressed Image Length	IF {15.011} EQ ASCII(NONE) THEN Length(15.999) EQ 15.006 * {15.007}		Y			B-O
			2	D	15.999-Valid Image	IF Present(SOI-JPEGB,JPEGL) THEN	t-11	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.15: Record Type-15: Palm print image record											
					Format	Present(JFIF, SOI-JPEGB,JPEGL, SOF-JPEGB,JPEGL, EOI-JPEG, JPEGL) ELSE IF Present(SigBox) THEN Present(SigBox, HeadBox, ImgBox, EOI-JP2,JP2L) ELSE IF Present(PNGSig) THEN Present(PNGSig, IHDR, IDAT, IEND) ELSE IF Present(SOI-WSQ) THEN Present(SOI-WSQ,SOF-WSQ,SOB-WSQ,EOI-WSQ)					
RT15.56 - Field: 15.999-Image WSQ Version 3.1	7.7.9.1	Only version 3.1 or higher shall be used for compressing grayscale fingerprint data at 500 ppi class with a platen area of 2 inches or greater in height. WSQ 2.0 or higher may be used for 500 ppi class data taken from a platen of less than 2 inches in height. WSQ shall not be used for other than the 500 ppi class.	3	D	15.999-Valid WSQ Specification Version	<No known method for determining the WSQ specification version.>	t-16	NA			B-O

6.15 Record Type-17: Iris Image Record

Table 6.13 - Assertions for Record Type 17 - Iris Image Record

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)	
8.17: Record Type-17: Iris image record											
RT17.1 - Field: Type17-Subfield Occurrence	Table 75	<Table 75 specifies which fields contain subfields as well as the number of occurrences permitted.>	1	M	17.[001 to 017, 019 to 023, 025 to 028, 030 to 036, 040, 041, 993, 996, 998, 999]-SubfieldCount	Count(Subfields in 17.[001 to 017, 019 to 023, 025 to 028, 030 to 036, 040, 041, 993, 996,998,999]) EQ 1		NA			T
			1	M	17.[001 to 005, 015, 017, 019 to 023, 025 to 028, 030 to 032, 040, 041, 993, 996]-InfoltemCount	Count(Infoltems in Subfield:1 in 17.[001 to 015, 017, 019 to 023, 025 to 028, 030 to 032, 040, 041, 993, 996]) EQ 1		NA			T
			1	O	17.016-InfoltemCount	Count(Infoltems in 17.016) EQ 3		NA			T
			1	O	17.019-InfoltemCount	Count(Infoltems in 17.019) EQ 3		NA			T
			1	O	17.024-SubfieldCount	Count(Subfields in 17.024) MO [1 to 9]		NA			T
			1	O	17.024-	ForEach(Subfield in 17.024)		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

					InfoltemCount	{ Count(Infoltems in Subfield) EQ 3 }					
			1	O	17.027-InfoltemCount	Count(Infoltems in 17.027) EQ 2		NA			T
			2	O	17.033-InfoltemCount	Count(Infoltems in 17.033) EQ 2 + 2*{Infoltem:2 in 17.033}		NA			T
			2	O	17.034-InfoltemCount	Count(Infoltems in 17.034) EQ 2 + 2*{Infoltem:2 in 17.034}		NA			T
			2	O	17.035-InfoltemCount	Count(Infoltems in 17.035) EQ 2 + 2*{ Infoltem:2 in 17.035}		NA			T
			2	O	17.036-InfoltemCount	Count(Infoltems in 17.036) EQ 2 + 2*{ Infoltem:2 in 17.036}		NA			T
			2	O	17.037-SubfieldCount	Count(Subfields in 17.037) GTE 1		NA			T
			2	O	17.037-InfoltemCount	Foreach(Subfield in 17.037) { Count(Infoltems in Subfield) EQ 3 + 2*{Infoltem:3 in Subfield} }		NA			T
			1	O	17.902-SubfieldCount	Count(Subfields in 17.902) GTE 1		NA			T
			1	O	17.902-InfoltemCount	ForEach(Subfield in 17.902) { Count(Infoltems in Subfield) EQ 4 }		NA			T
			1	O	17.995-SubfieldCount	Count(Subfields in 17.995) MO [1 to 255]		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
			1	O	17.995- InfoltemCo unt	ForEach(Subfield in 17.995) { Count(Infoltems in Subfield) EQ 1 OR 2 }		NA			T
			1	O	17.997- SubfieldCo unt	Count(Subfields in 17.997) MO [1 to 255]		NA			T
			1	O	17.997- InfoltemCo unt	ForEach(Subfield in 17.997) { Count(Infoltems in Subfield) EQ 1 OR 2 }		NA			T
				O	17.998- Subfields	<See Requirement ID: " Field: Geographic ">	t-2				
RT17.2 - Field: Type17- CondCode	Table 75	<Table 75 specifies the Condition Code for each field.>	1	-	Type17- Mandatory CondCode	Present(17.001 to 17.005)		NA			T
			1	M	NIEM- Type17- Mandatory CondCode	ForEach(XElm in <AnnexG: Table-17 Table> ST {Min(Cardinality(XElm))} GTE 1) { Present(XElm) }		Y			X-I <Allows 17.004 and 17.005 to be optional>
			1	-	Type17- Reserved	NOT Present(17.018, 17.029, 17.038, 17.039, 17.042 to 17.199, 17.901, 17.903 to 17.992, 17.994)		NA			T
RT17.3 - Record: 17.006 to 17.012 Dependent	Table 75, 8.17.6 to 8.17.12	This field is mandatory if an image is present in Field 17.999. Otherwise it is absent.	2	D	Type17- [17.006 to 17.012]- CondCode Dependent	Present(17.999) IFF Present(17.006 to 17.012)		Y			B-O
RT17.4 - Field: 17.015- Rotation Uncertainty Dependent	Table 75, 8.17.15	This field is mandatory if Field 17.014: Rotation angle of eye / RAE is present.	2	D	Type17- 17.015- CondCode Dependent	IF Present(17.014) THEN Present(17.015)		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)	
8.17: Record Type-17: Iris image record												
RT17.5 - Field: 17.027-Specified Spectrum Dependent	Table 75, 8.17.26	This field shall only be present if Field 17.025: Effective acquisition spectrum / EAS has a value of 'DEFINED'.	2	D	Type17-17.027-CondCode Dependent	IF Present(17.027) THEN IF Present(17.025) THEN {17.025} EQ ASCII(DEFINED)		NA			T	
			2	D	NIEM-Type17-17.027-CondCode Dependent	IF Present(XElm(AcquisitionLightingSpectrumLower Measure) OR XElm(AcquisitionLightingSpectrumUpperMeasure)) THEN IF Present(XElm(AcquisitionLightingSpectrumCode)) THEN { XElm(AcquisitionLightingSpectrumCode) } EQ ASCII(DEFINED)		Y			X-O	
RT17.6 - Field: 17.999-Iris Image Dependent	Table 75, 8.17.45	This field contains the iris image. It shall contain an image, unless ...Field 17.028: Damaged or missing eye / DME is in this record...in which case DATA is optional.	2	D	Type17-17.999-CondCode Dependent	IF NOT Present(17.028) THEN Present(17.999)		Y			B-O	
RT17.7 - Field: Type17-CharType	8.17, Table 75	<Table 75 specifies the Character Type for each field that contains no subfields.>	1	-	17.[001,002,003, 006 to 010, 012, 022, 023, 026, 031, 032, 040, 041]-CharType	Bytes(17.[001,002,003, 006 to 010, 012, 022, 023, 026, 031, 032, 040, 041]) MO [0x30 to 0x39]		Y			B-I <Allows whitespace, plus sign, except for 17.002, which allows any string>	
			1	-	17.[013, 020, 025, 028, 030]-CharType	Bytes(17.[013, 020, 025, 028, 030]) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y			B-I <Allows whitespace>	
			1	-	17.011-CharType	Bytes(17.011) [0x30 to 0x39, 0x20, 0x41 to 0x5A, 0x61 to 0x7A]		Y				B-O
			1	-	17.[014, 015]-	Bytes(17.[014, 015]) [0x30 to 0x39, 0x41 to 0x46, 0x61 to 0x66]		Y				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

					CharType						
			1	M	17.004-CharType	<See Requirement ID: " Field: Source Agency ".>	t-2				
			1	M	17.005-CharType	Bytes(17.005) MO [0x30 to 0x39]		NA			T
			1	M	NIEM-17.005-CharType	Bytes(17.005) MO [0x30 to 0x39, 0x2D]		Y			X-I <Allows whitespace >
			1	O	17.017-CharType	Bytes(17.017) MO [0x20 to 0x7E]		Y			B-O
			1	O	17.993-CharType	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
			1	O	17.996-CharType	Bytes(17.996) MO [0x30 to 0x39, 0x41 to 0x46, 0x61 to 0x66]		Y			B-C
			1	D	17.999-CharType	TRUE		NA			T
			1	D	NIEM-17.999-CharType	<Schema tests that the BinaryBase64Object is of the correct type and length. Report that this is tested by the schema.>		Y			X-C
RT17.8 - Field: Type17-Subfield CharType	8.17, Table 75	<Table 75 specifies the Character Type for each subfield.>	1	O	17.016-[IHO, IVO, IST]-CharType	Bytes(All(InfoItems in 17.016)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, plus sign>
			1	O	17.019-[MAK, MOD, SER]-CharType	TRUE		Y			B*-C
			1	O	17.024-[QVU, QAP]-CharType	ForEach(Subfield in 17.024) { Bytes(InfoItem:1,3 in Subfield)) MO [0x30 to 0x39] }		Y			B*-O
			1	O	17.024-QAV-CharType	ForEach(Subfield in 17.024) { Bytes(InfoItem:2 in Subfield)) MO [0x30 to 0x39, 0x41 to 0x46, 0x61 to 0x66] }		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

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			1	O	17.027-[LOW, HIG]-CharType	Bytes(All(Infoltems in 17.027)) MO [0x30 to 0x39]		Y			B*-I <Allows whitespace, plus sign>
			1	M	17.033-BYC-CharType	Bytes(Infoltem:1 in 17.033)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]]		Y			B*-I <Allows whitespace >
			1	M	17.033-[NOP, HPO, VPO]-CharType	For(X EQ 2 to Count(Infoltems in 17.033)) { Bytes(Infoltem:X in 17.033) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace >
			1	O	17.034-BYC-CharType	Bytes(Infoltem:1 in 17.034)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]]		Y			B*-I <Allows whitespace >
			1	O	17.034-[NOP, HPO, VPO]-CharType	For(X EQ 2 to Count(Infoltems in 17.034)) { Bytes(Infoltem:X in 17.034) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace >
			1	O	17.035-BYC-CharType	Bytes(Infoltem:1 in 17.035)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]]		Y			B*-I <Allows whitespace >
			1	O	17.035-[NOP, HPO, VPO]-CharType	For(X EQ 2 to Count(Infoltems in 17.035)) { Bytes(Infoltem:X in 17.035) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace >
			1	O	17.036-BYC-CharType	Bytes(Infoltem:1 in 17.036)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]]		Y			B*-I <Allows whitespace >
			1	O	17.036-[NOP, HPO, VPO]-CharType	For(X EQ 2 to Count(Infoltems in 17.036)) { Bytes(Infoltem:X in 17.036) MO [0x30 to 0x39] }		Y			B*-I <Allows whitespace >

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
			1	O	17.037-[OCY, OCT]-CharType	ForEach(Subfield in 17.037) { Bytes(Infoltem:1,2 in Subfield)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]] }		Y			B*-I <Allows whitespace >
			1	O	17.037-[NOP, HPO, VPO]-CharType	ForEach(Subfield in 17.037) { For(X EQ 3 to Count(Infoltems in Subfield)) { Bytes(Infoltem:X in Subfield) MO [0x30 to 0x39] } }		Y			B*-I <Allows whitespace >
			1	O	17.902-GMT-CharType	ForEach(Subfield in 17.902) { Bytes(Infoltem:1 in Subfield) MO [0x30 to 0x39,0x5A] }		NA			T
			1	O	17.902-[NAV, OWN, PRO]-CharType	TRUE		Y			B-C
			1	O	NIEM-17.902-GMT-CharType	Bytes(XEIm(biom:ProcessUTCDate) in 17.902) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]		Y			X*-I <Allows whitespace, plus and negative sign>
			1	O	17.995-[ACN, ASP]-CharType	Bytes(All(Infoltem:1,2 in 17.995)) MO [0x30 to 0x39]		Y			B*-O
			1	O	17.997-[SRN, RSP]-CharType	Bytes(All(Infoltem:1,2 in 17.997)) MO [0x30 to 0x39]		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

				O	17.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharType	<See Requirement ID: " Field: Geographic ">	t-2				
RT17.9 - Field: Type17-CharCount	Table 75	<Table 75 specifies the Character Count for each field that contains no subfields.>	1	M	17.001-CharCount	DataLength(17.001) MO [1 to 8]		NA			T
			1	M	NIEM-17.001-CharCount	Length(17.001) EQ 2		Y			X-O
			1	M	17.002-CharCount	DataLength(17.002) EQ 1 OR 2		Y			B-O
			1	M	17.003-CharCount	DataLength(17.003) EQ 1		Y			B-O
			1	M	17.004-CharCount	<See Requirement ID: " Field: Source Agency ".>	t-2	Y			
			1	M	17.005-CharCount	DataLength(17.005) EQ 8		Y			B-O
			1	M	NIEM-17.005-CharCount	DataLength(17.005) EQ 10		Y			X-O
			1	M	17.006-CharCount	DataLength(17.006) MO [2 to 5]		Y			B-O
			1	M	17.007-CharCount	DataLength(17.007) MO [2 to 5]		Y			B-O
			1	M	17.008-CharCount	DataLength(17.008) EQ 1		Y			B-O
			1	M	17.009-CharCount	DataLength(17.009) MO [1 to 5]		Y			B-O
			1	M	17.010-CharCount	DataLength(17.010) MO [1 to 5]		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

			1	M	17.011-CharCount	DataLength(17.011) MO [3 to 4]		Y			B-O
			1	M	17.012-CharCount	DataLength(17.012) EQ 1 OR 2		Y			B-O
			1	M	17.013-CharCount	DataLength(17.013) MO [3 to 4]		Y			B-O
			1	O	17.014-CharCount	DataLength(17.014) MO [1 to 4]		Y			B-O
			1	D	17.015-CharCount	DataLength(17.015) MO [1 to 4]		Y			B-O
			1	O	17.017-CharCount	DataLength(17.017) MO [13 to 16]		Y			B-O
			1	O	17.020-CharCount	DataLength(17.020) EQ 3		Y			B-O
			1	O	17.021-CharCount	DataLength(17.021) MO [1 to 126]		Y			B-O
			1	O	17.022-CharCount	DataLength(17.022) MO [1 to 5]		Y			B-O
			1	O	17.023-CharCount	DataLength(17.023) MO [1 to 5]		Y			B-O
			1	O	17.025-CharCount	DataLength(17.025) MO [3 to 9]		Y			B-O
			1	O	17.026-CharCount	DataLength(17.026) MO [2 to 4]		Y			B-O
			1	O	17.028-CharCount	DataLength(17.028) EQ 2		Y			B-O
			1	O	17.030-CharCount	DataLength(17.030) MO [7 to 10]		Y			B-O
			1	O	17.031-CharCount	DataLength(17.031) EQ 2		Y			B-O
			1	O	17.032-CharCount	DataLength(17.032) EQ 1		Y			B-O
			1	O	17.040-CharCount	DataLength(17.040) MO [1 to 7]		Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

			1	O	17.041-CharCount	DataLength(17.041) EQ 1 OR 2		Y			B-O
			1	O	17.993-CharCount	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
			1	O	17.996-CharCount	DataLength(17.995) EQ 64		Y			B-C
			1	M	17.999-CharCount	DataLength(17.999) GTE 1		Y			B-O
RT17.10 - Field: Type17-Subfield CharCount	Table 75	<Table 75 specifies the Character Count for each subfield.>	1	O	17.016-[IHO, IVO, IST]-CharCount	Length(All(Infoltems in 17.016)) EQ 1		Y			B*-O
			1	O	17.019-[MAK, MOD, SER]-CharCount	Length(All(Infoltems in 17.019)) MO [1 to 50]		Y			B*-O
			1	O	17.024-QVU-CharCount	ForEach(Subfield in 17.024) { Length(Infoltem:1 in Subfield)) MO [1 to 3] }		Y			B*-O
			1	O	17.024-QAV-CharCount	ForEach(Subfield in 17.024) { Length(Infoltem:2 in Subfield)) EQ 4 }		Y			B*-O
			1	O	17.024-QAP-CharCount	ForEach(Subfield in 17.024) { Length(Infoltem:3 in Subfield)) MO [1 to 5] }		Y			B*-O
			1	O	17.027-[LOW, HIG]-CharCount	Length(All(Infoltems in 17.027)) EQ 3 OR 4		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
			1	O	17.033-BYC-CharCount	ForEach(Subfield in 17.033) { Length(Infoltem:1 in Subfield)) EQ 1 }		Y			B*-O
			1	O	17.033-NOP-CharCount	ForEach(Subfield in 17.033) { Length(Infoltem:2 in Subfield)) EQ 1 OR 2 }		Y			B*-O
			1	O	17.033-[HPO, VPO]-CharCount	ForEach(Subfield in 17.033) { ForEach(Infoltem in Subfield ST Infoltem NOT Infoltem:1 OR Infoltem:2 in Subfield) { Length(Infoltem) MO [1 to 5] } }		Y			B*-O
			1	O	17.034-BYC-CharCount	ForEach(Subfield in 17.034) { Length(Infoltem:1 in Subfield)) EQ 1 }		Y			B*-O
			1	O	17.034-NOP-CharCount	ForEach(Subfield in 17.034) { Length(Infoltem:2 in Subfield)) EQ 1 OR 2 }		Y			B*-O
			1	O	17.034-[HPO, VPO]-CharCount	ForEach(Subfield in 17.034) { ForEach(Infoltem in Subfield ST Infoltem NOT Infoltem:1 OR Infoltem:2 in Subfield) { Length(Infoltem) MO [1 to 5] } }		Y			B*-O
			1	O	17.035-BYC-CharCount	ForEach(Subfield in 17.035) { Length(Infoltem:1 in Subfield)) EQ 1 }		Y			B*-O
			1	O	17.035-	ForEach(Subfield in 17.035)		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

					NOP-CharCount	{ Length(Infoltem:2 in Subfield)) EQ 1 OR 2 }					
			1	O	17.035-[HPO, VPO]-CharCount	ForEach(Subfield in 17.035) { ForEach(Infoltem in Subfield ST Infoltem NOT Infoltem:1 OR Infoltem:2 in Subfield) { Length(Infoltem) MO [1 to 5] } }		Y			B*-O
			1	O	17.036-BYC-CharCount	ForEach(Subfield in 17.036) { Length(Infoltem:1 in Subfield)) EQ 1 }		Y			B*-O
			1	O	17.036-NOP-CharCount	ForEach(Subfield in 17.036) { Length(Infoltem:2 in Subfield)) EQ 1 OR 2 }		Y			B*-O
			1	O	17.036-[HPO, VPO]-CharCount	ForEach(Subfield in 17.036) { ForEach(Infoltem in Subfield ST Infoltem NOT Infoltem:1 OR Infoltem:2 in Subfield) { Length(Infoltem) MO [1 to 5] } }		Y			B*-O
			1	O	17.037-[OCY, OCT]-CharCount	ForEach(Subfield in 17.037) { Length(Infoltem:1,2 in Subfield)) EQ 1 AND }		Y			B*-O
			1	O	17.037-NOP-CharCount	ForEach(Subfield in 17.037) { Length(Infoltem:3 in Subfield)) MO [1 to 2] }		Y			B*-O
			1	O	17.037-	ForEach(Subfield in 17.037)		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

					[HPO, VPO]-CharCount	{ ForEach(Infoltem in Subfield ST Infoltem NOT Infoltem:1 OR Infoltem:2 in Subfield) { Length(Infoltem) MO [1 to 5] } }					
1	O	17.902-GMT-CharCount			17.902-GMT-CharCount	ForEach(Subfield in 17.902) { Length(Infoltem:1 in Subfield) EQ 15 }		NA			T
1	O	17.902-[NAV, OWN]-CharCount			17.902-[NAV, OWN]-CharCount	ForEach(Subfield in 17.902) { Length(Infoltem:2,3 in Subfield) MO [1 to 64] }		Y			B*-O
1	O	17.902-PRO-CharCount			17.902-PRO-CharCount	ForEach(Subfield in 17.902) { Length(Infoltem:4 in Subfield)) MO [1 to 255] }		Y			B*-O
1	O	NIEM-17.902-Subfield CharCount			NIEM-17.902-Subfield CharCount	Length(XElm(biom:ProcessUTCDate) in 17.902) EQ 20		Y			X*-O
1	O	17.995-ACN-CharCount			17.995-ACN-CharCount	ForEach(Subfield in 17.995) { Length(Infoltem:1 in Subfield) MO [1 to 3] }		Y			B*-O
1	O	17.995-ASP-CharCount			17.995-ASP-CharCount	ForEach(Subfield in 17.995) { Length(Infoltem:2 in Subfield) MO [1,2] }		Y			B*-O
1	O	17.997-SRN-CharCount			17.997-SRN-CharCount	ForEach(Subfield in 17.997) { Length(Infoltem:1 in Subfield) MO [1 to 3] }		Y			B*-O
1	O	17.997-RSP-			17.997-RSP-	ForEach(Subfield in 17.997) {		Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record										
				CharCount	Length(Infoltem:2 in Subfield) EQ 1 OR 2 }					
			O	17.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT17.11 - Field: Type17-Field Occurrence	Table 75	<Table 75 specifies the Field Occurrence for each field.>	2	M	NIEM-Type17-Cardinality	<The Type-17 table in Annex G of the base standard specifies the type and number of sub elements required for each field.>	Y			X-I <Allows 17.024-QAV & QAP to be optional. Allows 2 ore more instances of biom:Image FeatureVertex for 17.035 & 17.036, but Annex G states 3..99>
			1	-	Type17-FieldOccurrences	Count(17.[018 , 029, 038, 039, 042 to 199,901,903 to 992, 994]) EQ 0 AND Count(17.[001 to 005]) EQ 1 AND Count(17.[006 to 017, 019 to 028, 030 to 037, 040, 041, 902, 993, 995 to 999]) LTE 1	NA		T	
RT17.12 - Field:	8.17.1, Table 75,	Field 17.001 Record header. In Traditional encoding, this field contains the record		M	17.001-Record	<See Requirement ID " Field: xx.001-Record Header ">	t-2			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
17.001-Record Header Value	7.1	length in bytes (including all information separators)			Header						
	8.17.1, C.10.15	The XML name for the Type-17 record is <itl:PackageIrisImageRecord>, and its <biom:RecordCategoryCode> element shall have a value of "17".	1	M	NIEM-17.001-Value	ForEach(XElm(itl:PackageIrisImageRecord) {XElm(biom:RecordCategoryCode)} EQ ASCII(17) }		Y			X-O
RT17.13 - Field: 17.002-Information Designation Character Value	8.17.2, Table 75, 7.3.1	This mandatory field shall contain the IDC assigned to this Type-17 record as listed in the information item IDC for this record in Field 1.003 Transaction content/CNT.		M	17.002-IDC	<See Requirement IDs " Field: xx.002-IDC " and " Field: 1.003-Transaction Content Subfield 2 IDC Matches " >	t-2				
RT17.14 - Field: 17.003-Eye Label Value	8.17.3, Table 75, 7.7.4.1	<Table 75 lists the valid values for ELR.>	1	M	17.003-Value	{17.003} MO [0 to 2]		Y			B-I <Allows whitespace, plus sign>
RT17.15 - Field: 17.004-Source Agency Value	8.17.4, 7.6	This is a mandatory field. See Section 7.6 for details.		M	17.004-Value	<See Requirement ID: " Field: Source Agency ".>	t-2				
RT17.16 - Field: 17.005-Iris Capture Date Value	8.17.5, 7.7.2.3	This mandatory field shall contain the date that the iris biometric data contained in the record was captured.	1	M	17.005-Value	{17.005} MO [ValidLocalDate]	t-6	NA			T
			1	M	NIEM-17.005-Value	ForEach(XElm(itl:PackageIrisImageRecord)) {XElm(nc:Date) in XElm(biom:CaptureDate)} MO [NIEM-ValidLocalDate] }	t-6	Y			X-I <Allows optional element (nillable).>
RT17.17 - Field: 17.006-Horizontal Line Length	8.17.6, Table 75, 7.7.8.1	The maximum horizontal size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.		D	17.006-Value	<See Requirement ID " Field: Image HLL Value " >	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
Value											
RT17.18 - Field: 17.006- Horizontal Line Length Metadata	8.17.6, Table 75, 7.7.8.1	<The HLL is verified by checking the image metadata if compression is used.>	2	D	17.006- Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {17.006} EQ {ImageWidth-JP2,JP2L} ELSE IF {17.011} EQ ASCII(PNG) THEN {17.006} EQ {ImageWidth-PNG}	t-11	Y			B-O
RT17.19 - Field: 17.007- Vertical Line Length Value	8.17.7, Table 75, 7.7.8.2	The maximum vertical size is limited to 65,534 pixels in Record Types-4 and 8, and to 99,999 for other record types. The minimum value is 10 pixels.		D	17.007- Value	<See Requirement ID " Field: Image VLL Value " >	t-2				
RT17.20 - Field: 17.007- Vertical Line Length Metadata	8.17.7, Table 75, 7.7.8.2	<The VLL is verified by checking the image metadata if compression is used.>	2	D	17.007- Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {17.007} EQ {ImageHeight-JP2,JP2L} ELSE IF {17.011} EQ ASCII(PNG) THEN {17.007} EQ {ImageHeight-PNG}	t-11	Y			B-O
RT17.21 - Field: 17.008-Scale Units Value	8.17.8, Table 75, 7.7.8.3	<Table 75 lists the value constraints for SLC>		D	17.008- Value	<See Requirement ID " Field: Image SLC Value " >	t-2				
RT17.22 - Field: 17.008-Scale Units Metadata	8.17.8, Table 75, 7.7.8.3	A value of "1" shall indicate pixels per inch. A value of "2" shall indicate pixels per centimeter. A value of "0" in this field indicates that no scale is provided, and the quotient of THPS/TVPS shall provide the pixel aspect ratio. <The SLC is verified by checking the image metadata if compression is used.>	2	D	17.008- Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN <Provide Warning "Not Tested"> ELSE IF {17.011} EQ ASCII(PNG) THEN IF {17.008} EQ 1 OR 2 THEN { SamplingUnits-PNG} EQ 1, ELSE IF {17.008} EQ 0 THEN { SamplingUnits-PNG} EQ 0		Y			B-O
RT17.23 - Field: 17.009- Transmitted	8.17.9, Table 75, 7.7.8.4	<Table 75 lists the value constraints for THPS.>		M	17.009- Value	<See Requirement ID " Field: Image THPS Value " >	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
Horizontal Pixel Scale Value											
RT17.24 - Field: 17.009- Transmitted Horizontal Pixel Scale Metadata	8.17.9, Table 75, 7.7.8.4	This is the integer pixel density used in the horizontal direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the horizontal component of the pixel aspect ratio, up to 5 digits. <The THPS is verified by checking the image metadata if compression is used.>	2	D	17.009- Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN <Provide Warning "Not Tested"> ELSE IF {17.011} EQ ASCII(PNG) AND {17.008} EQ 1 THEN {17.009} EQ {HorizontalDensity-PNG} * 0.0254 (meters/inch) ELSE IF {17.011} EQ ASCII(PNG) AND {17.008} EQ 2 THEN {17.009} EQ {HorizontalDensity-PNG} * 0.01 (meters/cm)	t-11, t-12	Y			B-O
			2	D	17.009- Aspect Ratio Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN <Provide Warning "Not Tested"> ELSE IF {17.011} EQ ASCII(PNG) AND {17.008} NEQ 1 OR 2 THEN {17.009}/{17.010} EQ {HorizontalDensity-PNG} / {VerticalDensity-PNG}		Y			B-O
RT17.25 - Field: 17.010- Transmitted Vertical Pixel Scale Value	8.17.10, Table 75, 7.7.8.5	<Table 75 lists the value constraints for TVPS.>		M	17.010- Value	<See Requirement ID " Field: Image TVPS Value " >	t-2				
RT17.26 - Field: 17.010- Transmitted Vertical Pixel Scale Metadata	8.17.10, Table 75, 7.7.8.5	This is the integer pixel density used in the Vertical direction of the image if SLC has a value of "1" or "2". If SLC has a value of "0", this information item shall contain the Vertical component of the pixel aspect ratio, up to 5 digits. <The TVPS is verified by checking the image metadata if compression is used.>	2	D	17.010- Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN <Provide Warning "Not Tested"> ELSE IF {17.011} EQ ASCII(PNG) AND {17.008} EQ 1 THEN {17.010} EQ {VerticalDensity-PNG} * 0.0254 (meters/inch), ELSE IF {17.011} EQ ASCII(PNG) AND {17.008} EQ 2	t-11, t-12	Y			B-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
						THEN {17.010} EQ {VerticalDensity-PNG} * 0.01 (meters/cm)					
			2	D	17.010- Aspect Ratio Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN <Provide Warning "Not Tested"> ELSE IF {17.011} EQ ASCII(PNG) AND {17.008} NEQ 1 OR 2 THEN {17.009}/{17.010} EQ { HorizontalDensity - PNG} / {VerticalDensity-PNG}		Y			B-O
Field: RT17.27 - 17.011-Compression Algorithm Value	8.17.11, Table 75, 7.7.9.1	For each of these fields, the entry corresponds to the appropriate <i>Label</i> entry in Table 15: Field 17.011: Compression algorithm / CGA.		D	17.011- Value	<See Requirement ID " Field: Type17 Compression ".>	t-2				
RT17.28 - Field: 17.011-Compression Algorithm Metadata	8.17.11, Table 75	<The CGA is verified by checking the image metadata for the compression type signature if compression is used.>	2	D	17.011- Matches Image Meta Data	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN Present(SigBox) ELSE IF {17.011} EQ ASCII(PNG) THEN Present(PNGSig)	t-11	Y			B-O
RT17.29 - Field: 17.012-Bits Per Pixel Value	8.17.12, Table 75, 7.7.8.6	This field shall contain an entry of "8" for normal grayscale values of "0" to "255". Any entry in this field greater than "8" shall represent a grayscale pixel with increased proportion.		D	17.012- Value	<See Requirement ID " Field: Image BPX Value " >	t-2				
RT17.30 - Field: 17.012- Bits Per Pixel Metadata	8.17.12, Table 75	<The BPX is verified by checking the image metadata for the compression type signature if compression is used.>	2	D	17.012- Matches Image Metadata	IF {17.011} EQ ASCII(JP2) OR ASCII(JP2L) THEN {17.012} EQ {BPX-JP2,JP2L} ELSE IF {17.011} EQ ASCII(PNG) THEN {17.012} EQ {BPX-PNG}	t-11	Y			B-O
RT17.31 - Field: 17.013-Color Space Value	8.17.13, Table 75, 7.7.10	Table 16 lists the codes and their descriptions for each of the available color spaces used within this standard. All other color spaces are to be marked as undefined.		D	17.013- Value	<See Requirement ID: " Field: Image CSP Value ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
RT17.32 - Field: 17.014-Rotation Angle of Eye Value	8.17.14, Table 75	The in-plane eye rotation angle shall be recorded as angle = round (65535 * angle / 360) modulo 65535. The value "FFFF" indicates that rotation angle of eye is undefined. <Table 75 lists the value constraints for RAE.>	1	O	17.014-Value	{17.014} MO [0x0000 to 0xFFFF]		Y			B-O
RT17.33 - Field: 17.015-Rotation Uncertainty Value	8.17.15, Table 75	The rotation uncertainty is non-negative and equal to [round (65535* uncertainty / 180)]. The uncertainty is measured in degrees and is the absolute value of maximum error. The value "FFFF" indicates that uncertainty is undefined. <Table 75 lists the value constraints for RAU.>	1	D	17.015-Value	{17.015} MO [0x0000 to 0xFFFF]		Y			B-O
RT17.34 - Field: 17.015-Rotation Uncertainty Conditional	8.17.15, Table 75	This optional field shall indicate the uncertainty in the in-plane eye rotation given in Field 17.014: Rotation angle of eye / RAE. This field is mandatory if Field 17.014: Rotation angle of eye / RAE is present.		D	17.015-Conditional	<See Requirement ID: " Field: 17.015-Rotation Uncertainty Dependent ".>	t-2				
RT17.35 - Field: 17.016-Image Property Code Value	8.17.16, Table 75	<Table 75 lists the value constraints for IPC.>	1	O	17.016-[IHO, IVO]-Value	{Infoltem:1,2 in 17.016} MO [0 to 2] AMD MO [Integers]		Y			B*-I <Allows whitespace, plus sign>
			1	O	17.016-IST-Value	{Infoltem:3 in 17.016} EQ 0 OR 1		Y			B*-I <Allows whitespace, plus sign>
RT17.36 - Field: 17.017-Device Unique Value	8.17.17, Table 75	See Section 7.7.1.1 for details. <Table 75 lists the value constraints for DUI.>		O	17.017-Value	<See Requirement ID: " Field: Device ID ".>	t-2				
RT17.37 - Field:	Table 75	Deprecated; See ANSI/NIST-ITL 1-2007 for a description of this field. Not to be used		-	17.018-Deprecated	<See Requirement ID: " Field: Type17-CondCode ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
17.018-Deprecated		for any new transactions.									
RT17.38 - Field: 17.019-Make/Mode I/Serial Number Value	8.17.18, 7.7.1.2, Table 75	See Section 7.7.1.2 for details. <Table 75 lists the value constraints for MMS.>		O	17.019-[MAK, MOD, SER]-Value	<See Requirement ID: " Field: Make Model ".>	t-2				
RT17.39 - Field: 17.020-Eye Color Value	8.17.19, 7.7.11, Table 75, Table 17	See Section 7.7.11 and Table 17 for details on entering values to this field. <Table 75 lists the value constraints for ECL.>		O	17.020-Value	<See Requirement ID: " Field: Image ECL Value ".>	t-2				
RT17.40 - Field: 17.021-Comment Value	8.17.20, Table 75, 7.4.4	See section 7.4.4 for details.		O	17.021-Value	<See Requirement ID: " Field: Comment ".>	t-2				
RT17.41 - Field: 17.022-Scanned Horizontal Pixel Scale Value	8.17.21, 7.7.8.7, 7.4.4	See section 7.7.8.7 for details.		O	17.022-Value	<See Requirement ID: " Field: Image SHPS Value ".>	t-2				
RT17.42 - Field: 17.023-Scanned Vertical Pixel Scale Value	8.17.22, 7.7.8.8, 7.4.4	See section 7.7.8.8 for details.		O	17.023-Value	<See Requirement ID: " Field: Image SVPS Value ".>	t-2				
RT17.43 - Field: 17.024-Image	8.17.23, Table 75	<Table 75 lists the value constraints for IQS.>		O	17.024-[QVU, QAV, QAP]-Value	<See Requirement ID: " Field: Sample Quality Occurrences ", " Field: Sample Quality Subfield 1 ", " Field: Sample Quality Subfield 2 " " Field: Sample Quality Subfield 3 ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
Quality Score Value											
RT17.44 - Field: 17.025-Effective Acquisition Spectrum Value	8.17.24, Table 75, Table 76	<Table 75 lists the value constraints for EAS.>	1	O	17.025-Value	{17.025} MO [ASCII(NIR, DEFINED, VIS, RED, UNDEFINED)]		Y			B*-I <Allows whitespace >
RT17.45 - Field: 17.026-Iris Diameter Value	8.17.25, Table 75, Table 76	<Table 75 lists the value constraints for IRD.>	1	O	17.026-Value	{17.026} MO [10 to 9999] AND MO [Integers]		Y			B-O
RT17.46 - Field: 17.027-Specified Spectrum Value	8.17.26	<Table 75 lists the value constraints for SSV.>	1	M ↑	17.027-LOW-Value	{Infoltem:1 in 17.027} GTE 500 AND {Infoltem:1 in 17.027} MOD 10 EQ 0		Y			B*-O
			1	M ↑	17.027-HIG-Value	Infoltem:1 in 17.027} GTE 510 AND {Infoltem:1 in 17.027} MOD 10 EQ 0		Y			B*-O
RT17.47 - Field: 17.028-Damaged or Missing Eye Value	8.17.27	<Table 75 lists the value constraints for DME.>	1	O	17.028-Value	{17.028} MO ASCII(MA, UC)		Y			B*-I <Allows whitespace >
RT17.48 - Field: 17.029 Reserved	Table 75	Reserved for future useonly by ANSI/NIST-ITL.		-	17.029 Reserved	<See Requirement ID: " Field: Type17-CondCode ".>	t-2				
RT17.49 - Field: 17.030-Device Monitoring Mode Value	8.17.28, 7.7.1.3, Table 75, Table 5	See Section 7.7.1.3 for details. <Table 75 lists the value constraints for DMM.>		O	17.030-Value	<See Requirement ID: " Field: Device Monitoring ">.	t-2				
RT17.50 - Field:	8.17.29	<Table 75 lists the value constraints for IAP.>		O	17.031-Value	<See Requirement ID: " Field: IAP Values ">.	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
17.031-Subject Acquisition Profile-Iris Value											
RT17.51 - Field: 17.032-Iris Storage Format Value	8.17.30	<Table 75 lists the value constraints for ISF.>	1	O	17.032-Value	{17.032} MO [1 to 3, 7]		Y			B-I <Allows whitespace, plus sign>
RT17.52 - Field: 17.033-Iris Pupil Boundary Value	8.17.31, Table 75, Table 19	<Table 75 lists the value constraints for IPB.>	1	M ↑	17.033-BYC-Value	{Infoltem:1 in 17.033} MO [ASCII(C,E,P)]		Y			B*-I <Allows whitespace >
			1	M ↑	17.033-NOP-Value	{Infoltem:2 in 17.033} MO [2 to 99] AND MO [Integers]		Y			B*- I <Allows whitespace, plus sign>
			1	M ↑	17.033-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 17.033}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }		NA			T
			1	M ↑	NIEM-17.033-[HPO, VPO]-Value	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers] AND { XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers]		Y			
			2	M ↑	17.033-[HPO,	For(X EQ 3 to {Infoltem:2 in 17.033}) {		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
					VPO]-ValueDependent	IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE {17.007} AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE {17.006} AND MO [Integers] }					
			2	M ↑	NIEM-17.033-[HPO, VPO]-ValueDependent	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE {17.007} AND {XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE {17.006}		Y			X-O
RT17.53 - Field: 17.034-Iris Sclera Boundary Value	8.17.32, Table 75, Table 19	<Table 75 lists the value constraints for ISB.>	1	M ↑	17.034-BYC-Value	{Infoltem:1 in 17.034} MO [ASCII(C,E,P)]		Y			B*- I <Allows whitespace >
			1	M ↑	17.034-NOP-Value	{Infoltem:2 in 17.034} MO [2 to 99] AND MO [Integers]		Y			B*- I <Allows whitespace, plus sign>
			1	M ↑	17.034-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 17.034}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }		NA			T
			1	M ↑	NIEM-17.034-[HPO, VPO]-Value	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers] AND { XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers]		Y			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
			2	M ↑	17.034-[HPO, VPO]-ValueDependent	For(X EQ 3 to {Infoltem:2 in 17.034}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0AND LTE {17.007} AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE {17.006} AND MO [Integers] }		NA			T
			2	M ↑	NIEM-17.034-[HPO, VPO]-ValueDependent	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE {17.007} AND {XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE {17.006}		Y			X-O
RT17.54 - Field: 17.035-Upper Eyelid Boundary Value	8.17.33, Table 75, Table 19	<Table 75 lists the value constraints for UEB.>	1	M ↑	17.035-BYC-Value	{Infoltem:1 in 17.035} EQ [ASCII(P)]		Y			B*-I <Allows whitespace >
			1	M ↑	17.035-NOP-Value	{Infoltem:2 in 17.035} MO [2 to 99] AND MO [Integers]		Y			B*-I <Allows whitespace, plus sign>
			1	M ↑	17.035-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 17.035}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }		NA			T
			1	M ↑	NIEM-17.035-[HPO, VPO]-Value	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers] AND		Y			

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record										
				VPO]-Value	{ XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers]					
			2	M ↑	17.035-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 17.035}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE {17.007} AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE {17.006} AND MO [Integers] }	NA			T
			2	M ↑	NIEM-17.035-[HPO, VPO]-ValueDependent	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE {17.007} AND {XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE {17.006}	Y			X-O
RT17.55 - Field: 17.036-Lower Eyelid Boundary Value	8.17.34, Table 75, Table 19	<Table 75 lists the value constraints for LEB.>	1	M ↑	17.036-BYC-Value	{Infoltem:1 in 17.036} EQ [ASCII(P)]	Y			B*- I <Allows whitespace >
			1	M ↑	17.036-NOP-Value	{Infoltem:2 in 17.036} MO [2 to 99] AND MO [Integers]	Y			B*- I <Allows whitespace, plus sign>
			1	M ↑	17.036-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 17.036}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] }	Y			B*-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

			1	M ↑	NIEM-17.036-[HPO, VPO]-Value	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers] AND { XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers]		Y			X-O
			2	M ↑	17.036-[HPO, VPO]-Value	For(X EQ 3 to {Infoltem:2 in 17.036}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE {17.007} AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE {17.006} AND MO [Integers] }		NA			T
			2	M ↑	NIEM-17.036-[HPO, VPO]-ValueDependent	{XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE {17.007} AND {XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE {17.006}		Y			X-O
RT17.56 - Field: 17.037-Non-Eyulid Occlusions Value	8.17.35, Table 75, Table 20, Table 21	<Table 75 lists the value constraints for NEO.>	1	M ↑	17.037-OCY-Value	ForEach(Subfield in 17.037) { {Infoltem:1 in Subfield} MO [ASCII(T,I,L,S)] }		Y			B*-I <Allows whitespace >
			1	M ↑	17.037-OCT-Value	ForEach(Subfield in 17.037) { {Infoltem:2 in Subfield} MO [ASCII(L,S,C,R,O)] }		Y			B*-I <Allows whitespace >
			1	M ↑	17.037-NOP-Value	ForEach(Subfield in 17.037) { {Infoltem:3 in Subfield} MO [3 to 99] AND MO [Integers]		Y			B*-I <Allows whitespace, plus sign>

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

						}					
			1	M ↑	17.037-[HPO, VPO]-Value	<pre> ForEach(Subfield in 17.037) { For(X EQ 4 to {Infoltem:2 in Subfield}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE 99999 AND MO [Integers] } } </pre>		Y			B*-O
			1	M ↑	NIEM-17.037-[HPO, VPO]-Value	<pre> {XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers] AND {XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE 99999 AND MO [Integers] </pre>		Y			X-O
			2	M ↑	NIEM-17.037-[HPO, VPO]-ValueDependent	<pre> {XElm(PositionVerticalCoordinateValue)} GTE 0 AND LTE {17.007} AND {XElm(PositionHorizontalCoordinateValue)} GTE 0 AND LTE {17.006} </pre>		Y			X-O
			2	M ↑	17.037-[HPO, VPO]-Value	<pre> ForEach(Subfield in 17.037) { For(X EQ 4 to {Infoltem:2 in Subfield}) { IF X MOD 2 EQ 0 {Infoltem:X in Subfield} GTE 0 AND LTE {17.006} AND MO [Integers] ELSE {Infoltem:X in Subfield} GTE 0 AND LTE {17.007} </pre>		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
						AND MO [Integers] } }					
RT17.57 - Field: 17.038, 17.039 Reserved	Table 75	Reserved for future useonly by ANSI/NIST-ITL.		-	17.038,17.039 Reserved	<See Requirement ID: " Field: Type17-CondCode ".>	t-2				
RT17.58 - Field: 17.040-Range Value	8.17.36, Table 75	<Table 75 lists the value constraints for RAN.>	1	O	17.040-Value	{17.040} MO [1 to 9999999]	t-19	Y			B- I <Allows whitespace, leading zeros>
RT17.59 - Field: 17.041-Frontal Gaze Value	8.17.37, Table 75	<Table 75 lists the value constraints for GAZ.>	1	O	17.041-Value	{17.041} MO [0 to 90] AND MO [Integers]		Y			B-O
RT17.60 - Field: 17.042 to 17.199 Reserved	Table 75	Reserved for future useonly by ANSI/NIST-ITL.		-	17.042 to 17.199 Reserved	<See Requirement ID: " Field: Type17-CondCode ".>	t-2				
RT17.61 - Field: 17.200 to 17.900-User Defined	Table 75	User Defined Fields		-	17.200 to 17.900-User Defined	TRUE		Y			B-C
RT17.62 - Field: 17.901 Reserved	Table 75	Reserved for future useonly by ANSI/NIST-ITL.		-	17.901 Reserved	<See Requirement ID: " Field: Type17-CondCode ".>	t-2				
RT17.63 - Field: 17.902-Annotated Information Value	8.17.39, Table 75, 7.4.1	This is an optional field, listing the operations performed on the original source in order to prepare it for inclusion in a biometric record type. See Section 7.4.1.		O	17.902-[GMT, NAV, OWN, PRO]-Value	<See Requirement ID: " Field: xx.902-ANN " >.	t-2				
RT17.64 -	Table 75	Reserved for future useonly by		-	17.903 to	<See Requirement ID: " Field: Type17-	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.17: Record Type-17: Iris image record											
Field: 17.903 to 17.992 Reserved		ANSI/NIST-ITL.			17.992 Reserved	CondCode >.					
RT17.65 - Field: 17.993-Source Agency Name	8.17.40, Table 75	This is an optional field. It may contain up to 125 Unicode characters.		O	17.993-Value	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
RT17.66 - Field: 17.994 Reserved	Table 75	Reserved for future useonly by ANSI/NIST-ITL.		-	17.994 Reserved	<See Requirement ID: " Field: Type17-CondCode ".>	t-2				
RT17.67 - Field: 17.995-Associated Context Value	8.17.41, Table 75	See Section 7.3.3		O	17.995-[ACN, ASP]-Value	<See Requirement IDs: " Field: xx.995-ASC " and " Field: xx.995-ASC-ACN " and " Field: xx.995-ASC-ASP ".>	t-2				
RT17.68 - Field: 17.996-Hash Value	8.17.42, Table 75	See Section 7.5.2		O	17.996-Value	<See Requirement ID: " Field: HAS ".>	t-2				
RT17.69 - Field: 17.997-Source Representation Value	8.17.43, Table 75	See Section 7.3.2		O	17.997-[SRN, RSP]-Value	<See Requirement IDs: " Field: xx.997-SOR " and " Field: xx.997-SOR-SRN " and " Field: xx.997-SOR-RSP ".>	t-2				
RT17.70 - Field: 17.998-Geographic Sample Acquisition Location Value	8.17.44, Table 75	See Section 7.7.3		O	17.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-	<See Requirement IDs: " Field: Geographic ", " Field: Geographic ", " Field: Geographic-Subfield 1 " through " Field: Geographic-Values-SubField 15 ".>	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.17: Record Type-17: Iris image record

					Value						
RT17.71 - Field: 17.999-Image Data Valid	8.17.45, Table 75	This field contains the iris image. <The image metadata is checked for validity.>	2	D	17.999- Uncompressed Image Length	IF {17.011} EQ ASCII(NONE) THEN Length(17.999) EQ 17.006} * {17.007}		Y			B-O
			2	D	17.999- Valid Image Format	IF Present(SigBox) THEN Present(SigBox, HeadBox, ImgBox, EOI-JP2,JP2L) ELSE IF Present(PNGSig) THEN Present(PNGSig, IHDR, IDAT, IEND)	t-11	Y			B-O

6.16 Record Type-18: DNA Record

Table 6.14 - Assertions for Record Type 18 - DNA Record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)	
8.18: Record Type-18: DNA record												
RT18.1 - Field: Type18-Subfield Occurrence	Table 79	<Table 79 specifies which fields contain subfields as well as the number of occurrences permitted.>	1	M	NIEM-Type18-Cardinality-SubElements	<The Type-18 table in Annex G of the base standard specifies the type and number of sub elements required for each field.>					X	
			1	M	18.[001 to 010, 012 to 015, 017, 020, 022, 993, 998]-SubfieldCount	Count(Subfields in 18.[001 to 010, 012 to 015, 017, 020, 022, 993, 998]) EQ 1					T	
			1	M	18.[001, 002, 004, 005, 007, 008, 012 to 014, 020, 022, 993]-InfoltemCount	Count(Infoltems in Subfield:1 in 18.[001, 002, 004, 005, 007, 008, 012 to 014, 020, 022, 993]) EQ 1					T	
			1	M	18.003-InfoltemCount	Count(Infoltems in 18.003) MO [1 to 7]						T
			1	M	18.006-InfoltemCount	Count(Infoltems in 18.006) MO [1 to 8]						T
			1	O	18.009-InfoltemCount	Count(Infoltems in 18.009) MO [4 to 7]						T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

			1	M	18.010- InfoltemCo unt	Count(Infoltems in 18.010) MO [1, 2]					T
			1	M	18.011- InfoltemCo unt	Foreach(Subfield in 18.011) { Count(Infoltems in Subfield) EQ 1 }					T
			1	M	18.015- InfoltemCo unt	Count(Infoltems in 18.015) MO [2 to 5]					T
			1	D	18.016- SubfieldCo unt	Count(Subfields in 18.016) GTE 1					T
			1	D	18.016- InfoltemCo unt	ForEach(Subfield in 18.016) { Count(Infoltems in Subfield) MO [6 to 15] }					T
			1	D	18.017- InfoltemCo unt	Count(Infoltems in 18.017) EQ 8					T
			1	D	18.018- SubfieldCo unt	Count(Subfields in 18.018) GTE 1					T
			1	D	18.018- InfoltemCo unt	Foreach(Subfield in 18.018) { Count(Infoltems in Subfield) GTE 1 }					T
			1	D	18.019- SubfieldCo unt	Count(Subfields in 18.019) GTE 1					T
			1	D	18.019- InfoltemCo unt	Foreach(Subfield in 18.019) { Count(Infoltems in Subfield) MO [4 to 5] }					T
			1	D	18.021- SubfieldCo	Count(Subfields in 18.021) GTE 1					T

Req. # - ID	Ref. in Base Std.	Requirement Summary	Level	Status	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
					unt						
			1	D	18.021-InfoItemCount	Foreach(Subfield in 18.021) { Count(InfoItems in Subfield) EQ 3 }					T
			1	D	18.023-SubfieldCount	Count(Subfields in 18.023) GTE 1					T
			1	D	18.023-InfoItemCount	Foreach(Subfield in 18.023) { Count(InfoItems in Subfield) MO [4 to 5] }					T
			1	O	18.902-SubfieldCount	Count(Subfields in 18.902) GTE 1					T
			1	O	18.902-InfoItemCount	ForEach(Subfield in 18.902) { Count(InfoItems in Subfield) EQ 4 }					T
			1	O	18.995-SubfieldCount	Count(Subfields in 17.995) MO [1 to 255]					T
			1	O	18.995-InfoItemCount	ForEach(Subfield in 17.995) { Count(InfoItems in Subfield) MO [1,2] }					T
			-	O	18.998-Subfields	<See Requirement ID: " Field: Geographic ">	t-2				
RT18.2 - Field: Type18-CondCode	Table 79	<Table 79 specifies the Condition Code for each field.>	1	-	[18.001 to 18.006, 18.010, 18.011, 18.013 to 18.015]-Mandatory CondCode	Present(18.001 to 18.006, 18.010, 18.011, 18.013 to 18.015)					B

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
			1	-	[18.024 to 18.199, 18.901, 18.903 to 18.992, 18.994, 18.996, 18.997, 18.999]-Reserved	NOT Present(18.024 to 18.199, 18.901, 18.903 to 18.992, 18.994, 18.996, 18.997, 18.999)					B
RT18.3 - Record: 18.007 Dependent	Table 79, 8.18.7	This field is mandatory if the value of DSD is equal to 1.	2	D	18.007-CondCode Dependent	IF {Infoltem:1 in 18.005} EQ 1 THEN Present(18.007)					B
RT18.4 - Record: 18.008 Dependent	Table 79, 8.18.8	This field is optional and ... is only filled in if DSD = 1.	2	D	18.008-CondCode Dependent	IF Present(18.008), THEN {Infoltem:1 in 18.005} EQ 1					B
RT18.5 - Record: 18.016 Dependent	Table 79, 8.18.16	This optional field ... is only present if Field 18.011: Sample typing information / STI has a subfield with the value 0.	2	D	18.016-CondCode Dependent	IF Present(18.016), THEN Present(Subfield in 18.011 ST {Infoltem:1 in Subfield} EQ 0)					B
RT18.6 - Record: 18.017 Dependent	Table 79, 8.18.17	This is an optional field...This field is only present if Field 18.011: Sample typing information / STI has a subfield with the value 1.	2	D	18.017-CondCode Dependent	IF Present(18.017), THEN Present(Subfield in 18.011 ST {Infoltem:1 in Subfield} EQ 1)					B
RT18.7 - Record: 18.018 Dependent	Table 79, 8.18.18	This optional field ... is only present if Field 18.011: Sample typing information / STI has a subfield with the value 4.	2	D	18.018-CondCode Dependent	IF Present(18.018), THEN Present(Subfield in 18.011 ST {Infoltem:1 in Subfield} EQ 4)					B
RT18.8 - Record: 18.019 Dependent	Table 79, 8.18.19	This optional field ... is only present if Field 18.011: Sample typing information / STI has a subfield with the value 2.	2	D	18.019-CondCode Dependent	IF Present(18.019), THEN Present(Subfield in 18.011 ST {Infoltem:1 in Subfield} EQ 2)					B
RT18.9 - Record: 18.021	Table 79, 8.18.21	This field is only present if Field 18.020: DNA genotype distribution / DGD has a Value.	2	D	18.021-CondCode Dependent	IF Present(18.021) THEN Present(18.020) AND DataLength(18.020) GT 0					B

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
Dependent											
RT18.10 - Record: 18.023 Dependent	Table 79, 8.18.23	This optional field ... is only present if Field 18.011: Sample typing information / STI has a subfield with the value 3.	2	D	18.023-CondCode Dependent	IF Present(18.023), THEN Present(Subfield in 18.011 ST {Infoltem:1 in Subfield} EQ 3)					B
RT18.11 - Field: Type18-CharType	8.18, Table 79	<Table 79 specifies the Character Type for each field that contains no subfields.>	1	-	18.[001, 002,005, 007, 008, 020]-CharType	Bytes(18.[001, 002, 005, 007, 008, 020]) MO [0x30 to 0x39]					B
			1	-	18.[012, 022]-CharType	TRUE					B
			1	M	18.004-CharType	<See Requirement ID: " Field: Source Agency ".>	t-2				
			1	M	18.013-CharType	Bytes(18.013) MO [0x30 to 0x39]					T
			1	M	NIEM-18.013-CharType	Bytes(18.013) MO [0x30 to 0x39, 0x2D]					X
			1	M	18.014-CharType	Bytes(18.014) MO [0x30 to 0x39]					T
			1	M	NIEM-18.014-CharType	Bytes(18.014) MO [0x30 to 0x39, 0x2D]					X
			1	O	18.993-CharType	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
RT18.12 - Field: Type17-Subfield CharType	8.17, Table 75	<Table 75 specifies the Character Type for each subfield.>	1	M	18.003-UTY-CharType	Bytes(Infoltem:1 in 18.003) MO [0x30 to 0x39]					B*
			1	D	18.003-LTY-CharType	Bytes(Infoltem:2 in 18.003) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]					B*
			1	D	18.003-ACC-CharType	Bytes(Infoltem:3 in 18.003) MO [0x30 to 0x39, 0x44, 0x4D, 0x4E, 0x4F, 0x2C]					T
			1	D	NIEM-	Bytes(XElm(biom:DNALaboratoryAccreditationLe					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
					18.003-ACC-CharType	velCode) MO [0x30 to 0x39] OR Bytes(XElm(biom:DNALaboratoryAccreditationScopeCode) MO [0x44, 0x4D, 0x4E, 0x4F, 0x2C])					
			1	O	18.003-[NOO, POC, ION]-CharType	TRUE					B*
			1	O	18.003-CSC-CharType	Bytes(InfoItem:6 in 18.003) MO [0x20, 0x30 to 0x39, 0x41 to 0x5A, 0x61 to 0x7A]					T
			1	O	NIEM-18.003-CSC-CharType	Bytes(XElm(biom:DNALaboratoryProcessingCountryISO3166Alpha2Code)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A] OR Bytes(XElm(biom:DNALaboratoryProcessingCountryISO3166Alpha3Code)) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A] OR Bytes(XElm(biom:DNALaboratoryProcessingCountryISO3166NumericCode)) MO [0x30 to 0x39]					X
			1	-	18.006-[DSD,DRA, SDS]-CharType	Bytes(InfoItem:1, 7, 8 in 18.006) MO [0x30 to 0x39]					B*
			1	O	18.006-[EGP, LLC]-CharType	TRUE					B*
			1	O	18.006-GID-CharType	Bytes(InfoItem:2 in 18.006) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]					B*
			1	O	18.006-[DLC,DOB]-CharType	Bytes(InfoItem:3,4 in 18.006) MO [0x30 to 0x39]					T
			1	O	NIEM-18.006-	Bytes(XElm(nc:PersonBirthDate), XElm(biom:DNADonorLastContactDate)) MO [0x30 to					X

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

					[DLC,DOB]-CharType	0x39, 0x2D]					
			1	-	18.009-[PID, PMI, SID, PCM]-CharType	TRUE					B*
			1	M	18.009-PMS-CharType	Bytes(Infoltem:3 in 18.009) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]					B*
			1	O	18.009-[FID,MID]-CharType	Bytes(Infoltem:5, 6 in 18.009) MO [0x30 to 0x39]					B*
			1	M	18.010-SCT-CharType	Bytes(Infoltem:1 in 18.010) MO [0x30 to 0x39]					B*
			1	O	18.010-SMO-CharType	Bytes(Infoltem:2 in 18.010) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A]					B*
			1	M	18.011-CharType	ForEach(SubField in 18.011) { Bytes(Infoltem:1 in SubField) MO [0x30 to 0x39] }					B*
			1	-	18.015-[PTP, RES]-CharType	Bytes(Infoltem:1, 2 in 18.015) MO [0x30 to 0x39]					B*
			1	-	18.015-[PRF, SUP, DPC]-CharType	TRUE					B*
			1	M	18.016-[DST, DLR, ALL, LAI, PCDT, KID]-CharType	ForEach(SubField in 18.016) { Bytes(Infoltem: 1 to 5, 12 in SubField) MO [0x30 to 0x39] }					B*
			1	D	18.016-[AL1, AL2,	ForEach(SubField in 18.016) {					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
					AL3]-CharType	Bytes(Infoltem: 6 to 8 in SubField) MO [0x30 to 0x39, 0x2E]					
			1	-	18.016-[BID, ECR, LCR, KNM, KMF, KDS]-CharType	TRUE					B*
			1	M	18.017-[MT1, MT2]-CharType	Bytes(Infoltem: 1, 2 in 18.017) MO [0x20, 0x41 to 0x5A, 0x61 to 0x7A, 0x2D]					B*
			1	M	18.017-[BSP, BEP, BCA, BCG, BCC, BCT]-CharType	Bytes(Infoltem: 3 to 8 in 18.017) MO [0x30 to 0x39]					B*
			1	M	18.018-CharType	TRUE					B*
			1	M	18.019-[EIR, EST, IDD]-CharType	TRUE					B*
			1	-	18.019-[ELPD, EPS]-CharType	ForEach(SubField in 18.019) { Bytes(Infoltem: 4,5 in SubField) MO [0x30 to 0x39, 0x41 to 0x5A, 0x61 to 0x7A, 0x2B, 0x2F, 0x3D] }					B*
			1	M	18.021-GLR-CharType	ForEach(SubField in 18.021) { Bytes(Infoltem:1 in SubField) MO [0x30 to 0x39] }					B*
			1	M	18.021-ALP-CharType	ForEach(SubField in 18.021) { Bytes(Infoltem:2 in SubField) MO [0x2C, 0x2E, 0x30 to 0x39] }					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
						}					
			1	M	18.021-GNW-CharType	ForEach(SubField in 18.021) { Bytes(Infoltem:3 in SubField) MO [0x2E, 0x30 to 0x39] }					B*
			1	M	18.023-[LIR, LST, LDD]-CharType	TRUE					B*
			1	-	18.023-[LEPD, LES]-CharType	ForEach(SubField in 18.023) { Bytes(Infoltem: 4,5 in SubField) MO [0x30 to 0x39, 0x41 to 0x5A, 0x61 to 0x7A, 0x2B, 0x2F, 0x3D] }					B*
			1	M	18.902-[NAV, OWN, PRO]-CharType	TRUE					B*
			1	M	18.902-GMT-CharType	ForEach(Subfield in 18.902) { Bytes(Infoltem:1 in Subfield) MO [0x30 to 0x39,0x5A] }					T
			1	M	NIEM-18.902-GMT-CharType	Bytes(XElm(biom:ProcessUTCDate) in 18.902) MO [0x30 to 0x39, 0x3A, 0x54, 0x5A]					X
			1	-	18.995-[ACN, ASP]-CharType	Bytes(All(Infoltem:1,2 in 18.995)) MO [0x30 to 0x39]					B*
			-	-	18.998-[UTE, LTD, LTM, LTS, LGD,	<See Requirement ID: " Field: Geographic ">	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
					LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharType						
RT18.13 - Field: Type18-CharCount	Table 79	<Table 79 specifies the Character Count for each field that contains no subfields.>	1	M	18.001-CharCount	DataLength(18.001) MO [1 to 8]					T
			1	M	NIEM-18.001-CharCount	Length(18.001) EQ 2					X
			1	M	18.002-CharCount	DataLength(18.002) EQ 1 OR 2					B
			1	M	18.004-CharCount	<See Requirement ID: " Field: Source Agency ".>	t-2				
			1	M	18.005-CharCount	DataLength(18.005) EQ 1					B
			1	D	18.007-CharCount	DataLength(18.007) EQ 1					B
			1	D	18.008-CharCount	DataLength(18.008) EQ 1					B
			1	O	18.012-CharCount	DataLegnth(18.012) MO [1 to 255]					B
			1	M	18.013-CharCount	DataLegnth(18.013) EQ 8					B
			1	M	NIEM-18.013-CharCount	DataLegnth(18.013) EQ 10					B
			1	M	18.014-CharCount	DataLegnth(18.014) EQ 8					B
			1	M	NIEM-18.014-CharCount	DataLegnth(18.014) EQ 10					B
			1	O	18.020-CharCount	DataLegnth(18.020) EQ 1					B
			1	O	18.022-	DataLegnth(18.022) MO [1 to 126]					B

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)		
					CharCount								
			1	O	18.993-CharCount	<See Requirement ID: " Field: Source Agency Name ".>	t-2						
RT18.14 - Field: Type19-Subfield CharCount	Table 79	<Table 79 specifies the Character Count for each subfield.>	1	-	18.003-[UTY, LTY]-CharCount	Length(Infoltem:1,2 in 18.003) EQ 1					B*		
			1	D	18.003-ACC-CharCount	Length(Infoltem:3 in 18.003) MO [1 to 35]					T		
			1	D	NIEM-18.003-ACC-CharCount	Length(XElm(biom:DNALaboratoryAccreditationLevelCode) MO [1 to 3]) AND Length(XElm(biom:DNALaboratoryAccreditationScopeCode) EQ 1					X		
			1	O	18.003-NOO-CharCount	Length(Infoltem:4 in 18.003)) GTE 1						B*	
			1	O	18.003-POC-CharCount	Length(Infoltem:5 in 18.003)) MO [1 to 200]						B*	
			1	O	18.003-CSC-CharCount	Length(Infoltem:6 in 18.003)) MO [2, 3]						T	
			1	O	18.003-CSC-CharCount	Length(XElm(biom:DNALaboratoryProcessingCountryISO3166Alpha2Code)) EQ 2 OR Length(XElm(biom:DNALaboratoryProcessingCountryISO3166Alpha3Code)) EQ 3 OR Length(XElm(biom:DNALaboratoryProcessingCountryISO3166NumericCode)) EQ 3						X	
			1	O	18.003-ION-CharCount	Length(Infoltem:7 in 18.003)) MO [1 to 100]						B*	
			1	-	18.006-[DSD,GID,D	Length(Infoltem:1,2,6,8 in 18.006) EQ 1							B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

					RA, SDS]-CharCount						
			1	-	18.006-[DLC, DLB]-CharCount	Length(Infoltem:3,4 in 18.006) EQ 8	t-6				T
			1	O	NIEM-18.006-[DLC, DLB]-CharCount	Length(XElm(nc:PersonBirthDate), XElm(biom:DNADonorLastContactDate) in 18.006) EQ 10	t-6				X
			1	O	18.006-EGP-CharCount	Length(Infoltem:5 in 18.006) MO [1 to 50]					B*
			1	O	18.006-LLC-CharCount	Length(Infoltem:7 in 18.006) MO [1 to 4000]					B*
			1	M	18.009-[PID,SID]-CharCount	Legnth(Infoltem:1, 4 in 18.009) MO [1 to 24]					B*
			1	M	18.009-PMI-CharCount	Legnth(Infoltem:2 in 18.009) MO [1 to 6]					B*
			1	M	18.009-PMS-CharCount	Legnth(Infoltem:3 in 18.009) EQ 1					B*
			1	O	18.009-[FID,MID]-CharCount	Legnth(Infoltem:5,6 in 18.009) MO [1 to 3]					B*
			1	O	18.009-PCM-CharCount	Legnth(Infoltem:7 in 18.009) MO [1 to 2000]					B*
			1	M	18.010-SCT-CharCount	Legnth(Infoltem:1 in 18.010) MO [1 to 2]					B*
			1	O	18.010-SMO-CharCount	Legnth(Infoltem:2 in 18.010) EQ 2					B*
			1	M	18.011-	Legnth(All(Infoltems in 18.011)) EQ 1					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
					CharCount						
			1	M	18.015-PTP-CharCount	Legnth(Infoltem:1 in 18.015) EQ 1					B*
			1	O	18.015-RES-CharCount	Legnth(Infoltem:2 in 18.015) MO [1,2]					B*
			1	M	18.015-PRF-CharCount	Legnth(Infoltem:3 in 18.015) MO [1 to 64]					B*
			1	O	18.015-[SUP,DPC]-CharCount	Legnth(Infoltem:5,6 in 18.015) MO [1 to 100]					B*
			1	M	18.016-[DST,ALL,LA I,PCDT]-CharCount	ForEach(SubField in 18.016) { Legnth(Infoltem:1,3,4,5 in SubField) EQ 1 }					B*
			1	M	18.016-[DLR, KID]-CharCount	ForEach(SubField in 18.016) { Legnth(Infoltem:2,12 in SubField) MO [1 to 3] }					B*
			1	D	18.016-[AL1, AL2, AL3]-CharCount	ForEach(SubField in 18.016) { Legnth(Infoltem:6,7,8 in SubField) MO [1 to 4] }					B*
			1	-	18.016-[BID, KNM, KMF]-CharCount	ForEach(SubField in 18.016) { Legnth(Infoltem:9,13,14 in SubField) MO [1 to 32] }					B*
			1	O	18.016-[ECR,LCR]-CharCount	ForEach(SubField in 18.016) { Legnth(Infoltem:10,11 in SubField) MO [1 to 8] }					B*
			1	D	18.016-KDS-	ForEach(SubField in 18.016) {					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

					CharCount	Legnth(Infoltem:15 in SubField) MO [1 to 128]					
			1	M	18.017-MT1-CharCount	Legnth(Infoltem:1 in 18.017) MO [546 to 646]					B*
			1	M	18.017-MT1-CharCount	Legnth(Infoltem:2 in 18.017) MO [576 to 976]					B*
			1	M	18.017-[BSP, BEP]-CharCount	Legnth(Infoltem:3,4 in 18.017) MO [1 to 5]					B*
			1	M	18.017-[BCA, BCG, BCC, BCT]-CharCount	Legnth(Infoltem:5,6,7,8 in 18.017) MO [1,2]					B*
			1	M	18.018-CharCount	TRUE					B*
			1	M	18.019-EIR-CharCount	ForEach(SubField in 18.019) { Legnth(Infoltem:1 in SubField) MO [1 to 8] }					B*
			1	M	18.019-EST-CharCount	ForEach(SubField in 18.019) { Legnth(Infoltem:2 in SubField) MO [1 to 4] }					B*
			1	M	18.019-IDD-CharCount	ForEach(SubField in 18.019) { Legnth(Infoltem:3 in SubField) MO [1 to 200] }					B*
			1	-	18.019-[ELPD, EPS]-CharCount	ForEach(SubField in 18.019) { Legnth(Infoltem:4,5 in SubField) GTE 2 }					B*
			1	M	18.021-GLR-CharCount	ForEach(SubField in 18.021) { Legnth(Infoltem:1 in SubField) MO [1 to 3] }					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

						}					
			1	M	18.021-ALP-CharCount	ForEach(SubField in 18.021) { Legnth(InfoItem:2 in SubField) MO [3 to 9] }					B*
			1	M	18.021-GNW-CharCount	ForEach(SubField in 18.021) { Legnth(InfoItem:3 in SubField) MO [1 to 5] }					B*
			1	M	18.023-LIR-CharCount	ForEach(SubField in 18.023) { Legnth(InfoItem:1 in SubField) MO [1 to 8] }					B*
			1	M	18.023-LST-CharCount	ForEach(SubField in 18.023) { Legnth(InfoItem:2 in SubField) MO [1 to 4] }					B*
			1	M	18.023-LDD-CharCount	ForEach(SubField in 18.023) { Legnth(InfoItem:3 in SubField) MO [1 to 200] }					B*
			1	-	18.023-[LEPD,LES]-CharCount	ForEach(SubField in 18.023) { Legnth(InfoItem:4,5 in SubField) GTE 2 }					B*
			1	M	18.902-[NAV,OWN]-CharCount	ForEach(Subfield in 18.902) { Length(InfoItem:2,3 in Subfield) MO [1 to 64] }					T
			1	M	18.902-PRO-CharCount	ForEach(Subfield in 18.902) { Length(InfoItem:4 in Subfield)) MO [1 to 255] }					T
			1	M	18.902-GMT-CharCount	ForEach(SubField in 18.902) { Length(InfoItem:1 in SubField) EQ 15 }	t-6				T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
						}					
			1	M	NIEM-18.902-GMT-CharCount	Length(XElm(biom:ProcessUTCDate) in 18.902) EQ 20	t-6				X
			1	M	18.995-ACN-CharCount	ForEach(Subfield in 18.995) { Length(Infoltem:1 in Subfield) MO [1 to 3] }					B*
			1	O	18.995-ASP-CharCount	ForEach(Subfield in 18.995) { Length(Infoltem:2 in Subfield) MO [1,2] }					B*
			-	O	18.998-[UTE, LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-CharCount	<See Requirement ID: " Field: Geographic ">	t-2				
RT18.15 - Field: Type18-Field Occurrence	Table 79	<Table 79 specifies the Field Occurrence for each field.>	1	-	18.[024 to 199,901,903 to 992, 994, 996, 997, 999]-Occurrence	Count(18.[024 to 199,901,903 to 992, 994, 996, 997, 999]) EQ 0					B
			1	M	87.[001 to 006, 010, 011, 013 to 015]-Occurrence	Count(18.[001 to 006, 010, 011, 013 to 015]) EQ 1					B
			1	-	18.[007 to 009, 012, 016 to 023, 902, 993, 995, 998] LTE 1	Count(18.[007 to 009, 012, 016 to 023, 902, 993, 995, 998]) LTE 1					B

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
					902, 993, 995, 998]--Occurrence						
RT18.16 - Field: 18.001-Record Header Value	8.18.1, Table 79	Field 18.001 Record header. In Traditional encoding, this field contains the record length in bytes (including all information separators)		M	18.001-Record Header	<See Requirement ID " Field: xx.001-Record Header ">	t-2				
	8.18.1, C.10.16	The XML name for the Type-18 record is <itl:PackageDNARecord>, and its <biom:RecordCategoryCode> element shall have a value of "18".	1	M	NIEM-18.001-Value	ForEach(XElm(itl:PackageDNARecord) { XElm(biom:RecordCategoryCode)} EQ ASCII(18) }					X
RT18.17 - Field: 18.002-Information Designation Character Value	8.18.2, Table 79, 7.3.1	This mandatory field shall contain the IDC assigned to this Type-18 record as listed in the information item IDC for this record in Field 1.003 Transaction content/CNT.		M	18.002-IDC	<See Requirement IDs " Field: xx.002-IDC " and " Field: 1.003-Transaction Content Subfield 2 IDC Matches " >	t-2				
RT18.18 - Field: 18.003-DNA Laboratory Setting Value	8.18.3, Table 79	<Table 79 lists the valid values for DLS.>	1	M	18.003-UTY-Value	{Infoltem:1 in 18.003} MO [1 to 4]					B*
			1	D	18.003-LTY-Value	{Infoltem:2 in 18.003} MO [ASCII(G,I,O,U)]					B*
			1	D	18.003-ACC-Value	<Parse Infoltem:3 in 18.003 into strings separated by commas.> Count(<strings>) MO [1 to 6] AND ForEach(<string>) { <Number at start of string> MO [0 to 6, 255] AND IF <Number at start of string> EQ 255 THEN Length(string) EQ 3 ELSE IF <Number at start of string> EQ 0 THEN Length(string) EQ 1 ELSE <Number at start of string followed by string of				T	

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
						N,M,D,O (non-repeating, length 1 to 4)> }					
			1	D	NIEM-18.003-ACC-Value	ForEach(XElm(biom:DNALaboratoryAccreditation)) { {XElm(biom:DNALaboratoryAccreditationLevelCode)} MO [0 to 6, 255] AND IF {XElm(biom:DNALaboratoryAccreditationLevelCode)} EQ 0 OR 255 THEN Count(XElm(biom:DNALaboratoryAccreditationScopeCode)) EQ 0 ELSE Bytes in {XElm(biom:DNALaboratoryAccreditationScopeCode)} MO ASCII(N,M,D,O) }					X
			1	O	18.003-[NOO,POC,ION]-Value	TRUE					B*
			1	O	18.003-CSC-Value	{Infoltem:6 in 18.003} MO <Alpha2, Alpha3, and Numeric Values from ISO-3166-1.>					T
			1	O	NIEM-18.003-CSC-Value	{XElm(biom:DNALaboratoryProcessingCountryISO3166Alpha2Code)} MO <Alpha2 Values from ISO-3166-1.> OR {XElm(biom:DNALaboratoryProcessingCountryISO3166Alpha3Code)} MO <Alpha3 Values from ISO-3166-1.> OR {XElm(biom:DNALaboratoryProcessingCountryISO3166NumericCode)} MO <Numeric Values from ISO-3166-1.>					X
RT18.19 -	8.18.3	The second information item is the lab	1	D	18.003-	Present(Infoltem:2 in 18.003) IFF					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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8.18: Record Type-18: DNA record

Field: 18.003-DNA Laboratory Setting Dependent Values		type / LTY. It is mandatory if the value for UTY is 1 or 2. It is not entered otherwise. The third information item is the accreditation information / ACC. It is mandatory if the value for UTY is 1 or 2. It shall not be entered otherwise.			Dependent LTY	{Infoltem:1 in 18.003} MO [1,2]						
	1	D	18.003-Dependent ACC	Present(Infoltem:3 in 18.003) IFF {Infoltem:1 in 18.003} MO [1,2]						B*		
RT18.20 - Field: 18.004-Source Agency Value	8.18.4	This is a mandatory field. See Section 7.6 for details.	1	M	18.004-Value	<See Requirement ID: " Field: Source Agency ".>	t-2					
RT18.21 - Field: 18.005-Number Of Analyses Flag Value	8.18.5	<Table 79 lists the valid values for NAL.>	1	M	18.005-Value	{18.005} EQ 0 OR 1					B	
RT18.22 - Field: 18.006-Sample Donor Information Value	8.18.6	<Table 79 lists valid values for SDI.>	1	M	18.006-DSD-Value	{Infoltem:1 in 18.006} MO [0 to 2]					B*	
			1	O	18.006-GID-Value	{Infoltem:2 in 18.006} MO [ASCII(M,F,U)]					B*	
			1	O	18.006-[DLC,DOB]-Value	{Infoltem:3,4 in 18.006} MO [ValidLocalDate]	t-6				T	
			1	O	NIEM-18.006-[DLC,DOB]-Value	{XElm(nc:PersonBirthDate, biom:DNADonorLastContactDate)}MO [NIEM-ValidLocalDate]	t-6				X	
			1	O	18.006-[EGP, LLC]-Value	TRUE						B*
			1	D	18.006-DRA-Value	{Infoltem:6 in 18.006} MO [0 to 2]						B*
			1	O	18.006-	{Infoltem:8 in 18.006} MO [0 to 2]						B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
					SDS-Value						
RT18.23 - Field: 18.006-Sample Donor Information Dependent Value	8.18.6	This information item shall be entered only if DSD=0.	1	D	18.006-Dependent-DSD	Present({Infoltem:6 in 18.006}) IFF {Infoltem:1 in 18.006} EQ 0					B*
RT18.24 - Field: 18.007-Claimed Or Purported Relationship Value	8.18.7	<Table 79 lists valid values for COPR.>	1	D	18.007-Value	{18.007} MO [1 to 7]					B
RT18.25 - Field: 18.007-Claimed Or Purported Relationship Dependent Value	8.18.7	This field is mandatory if the value for DSD is equal to 1.	1	D	18.007-Dependent	IF {Infoltem:1 in 18.006} EQ 1, Then Present (18.007)					B
RT18.26 - Field: 18.008-Validated Relationship Value	8.18.8	<Table 79 lists valid values for VRS.>	1	D	18.008-Value	{18.008} MO [1 to 7]					B
RT18.27 - Field: 18.008-Validated Relationship Dependent Value	8.18.8	This field is optional and...is only filled in if DSD = 1.	1	D	18.008-Dependent	IF Present (18.008), Then {Infoltem:1 in 18.006} EQ 1					B

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
RT18.28 - Field: 18.009- Pedigree Information Value	8.18.9	<Table 79 lists valid values for PED.>	1	-	18.009-[PID, PMI, SID, FID, MID, PCM]-Value	TRUE					B*
			1	M	18.009-PMS-Value	{Infoltem:3 in 18.009} MO [ASCII(K, U)]					B*
RT18.29 - Field: 18.010- Sample Type Value	8.18.10	<Table 79 lists valid values for STY.>	1	M	18.010-SCT-Value	{Infoltem:1 in 18.010} MO [0 to 11]					B*
			1	O	18.010-SMO-Value	{Infoltem:2 in 18.010} MO [ASCII(NS, WB, BP)]					B*
RT18.30 - Field: 18.011- Sample Typing Information Value	8.18.11	<Table 79 lists valid values for STI.>	1	M	18.011-Value	ForEach(SubField in 18.011) { {Infoltem:1 in SubField} MO [0 to 4] }					B*
RT18.31 - Field: 18.012- Sample Collection Method Value	8.18.12	<Table 79 lists valid values for SCM.>	1	O	18.012-Value	TRUE					B
RT18.32 - Field: 18.013- Sample Collection Date Value	8.18.13	<Table 79 lists valid values for SCD.>	1	M	18.013-Value	{18.013} MO [ValidUTC/GMT]	t-6				T
			1	M	NIEM-18.013-Value	{18.013} MO [NIEM-ValidUTC/GMT]	t-6				X
RT18.33 - Field: 18.014- Profile Storage Date	8.18.14	<Table 79 lists valid values for PSD.>	1	M	18.014-Value	{18.014} MO [ValidUTC/GMT]	t-6				T
			1	M	NIEM-18.014-Value	{18.014} MO [NIEM-ValidUTC/GMT]	t-6				X

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)	
8.18: Record Type-18: DNA record												
Value												
RT18.34 - Field: 18.015-DNA Profile Data Value	8.18.15	<Table 79 lists valid values for DPD.>	1	M	18.015-PTP-Value	{Infoltem:1 in 18.015} MO [0,1]					B*	
			1	O	18.015-RES-Value	{Infoltem:2 in 18.015} MO [0,10]					B*	
			1	-	18.015-[PRF,SUP,DPC]-Value	TRUE						B*
RT18.35 - Field: 18.016-Autosomal STR, X-STR and Y-STR Value	8.18.16	<Table 79 lists the value constraints for STR.>	1	M	18.016-DST-Value	ForEach(SubField in 18.016) { {Infoltem:1 in SubField} MO [0,1,2] }						B*
			1	M	18.016-DLR-Value	ForEach(SubField in 18.016) { {Infoltem:2 in SubField} MO [1 to 200] }						B*
			1	M	18.016-[ALL, LAI, PCDT]-Value	ForEach(SubField in 18.016) { {Infoltem:3,4,5 in SubField} MO [0,1] }						B*
			1	D	18.016-[AL1,AL2,AL3]-Value	ForEach(SubField in 18.016) { {Infoltem:6,7,8 in SubField} GTE 0 AND IF Present(ASCII(.) in Infoltem: 6,7,8 in SubField) Then Count(<number digits following> ASCII(.) in Infoltem: 6,7,8 in SubField) EQ 1 }	t-18					B*
			1	-	18.016-[BID,ECR,LCR,KNM,KMF,KDS]-Value	TRUE						

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
			1	M	18.016-KID-Value	ForEach(SubField in 18.016) { {Infoltem:12 in SubField} MO [0 to 999] }					B*
RT18.36 - Field: 18.016-Autosomal STR, X-STR and Y-STR Dependent Value		<p>“The sixth information item shall have a value if ALL is 1. It shall be empty if ALL is 0.”</p> <p>“The seventh information item is conditional upon the value of ALL being 1. It may appear only if AL1 is used.”</p> <p>“The eighth information item is optional but shall not appear unless ALL = 1. The information item allele call 3 / AL3 shall only appear if information items AL1 and AL2 are present”</p> <p>“KNM shall be entered if KID = 0”</p> <p>“KMF shall be entered if KID = 0”</p> <p>“KDS shall be entered if KID = 0”</p>	1	D	18.016-Dependent-AL1	ForEach(SubField in 18.016) { IF {Infoltem:3 in SubField} EQ 1, Then Present(Infoltem:6 in SubField) AND IF {Infoltem:3 in SubField} EQ 0, Then NOT Present(Infoltem:6 in SubField) }					B*
			1	D	18.016-Dependent-AL2	ForEach(SubField in 18.016) { IF NOT Present(Infoltem:6 in SubField) Then NOT Present(Infoltem:7 in SubField) ELSE IF {Infoltem:3 in SubField} EQ 1, Then Present(Infoltem:7 in SubField) AND IF {Infoltem:3 in SubField} EQ 0, Then NOT Present(Infoltem:7 in SubField) }					B*
			1	D	18.016-Dependent-AL3	ForEach(SubField in 18.016) { IF NOT Present(Infoltem:6,7 in SubField) Then NOT Present(Infoltem:8 in SubField) ELSE IF {Infoltem:3 in SubField} EQ 1, Then Present(Infoltem:8 in SubField) AND IF {Infoltem:3 in SubField} EQ 0, Then NOT Present(Infoltem:8 in SubField) }					B*
			1	D	18.016-Dependent-[KNM,	ForEach(SubField in 18.016) { IF {Infoltem:12 in SubField} EQ 0 Then					

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
					KMF, KDS]	Present(InfoItem:13,14,15 in SubField)					
RT18.37 - Field: 18.017-Mitochondrial DNA Data Value	8.18.17	<Table 79 lists the value constraints for DMD.>	1	M	18.017-[MT1,MT2]-Value	All(Bytes(InfoItem:1,2 in 18.017)) MO [ASCII(R,Y,M,K,S,W,H,B,V,D,N,-,A,G,C,T)]					B*
			1	M	18.017-[BSP,BCA,B CG,BCC,BCT]-Value	{InfoItem:3,5,6,7,8 in 18.017} GTE 0 AND MO [Integers]					B*
			2	M	18.017-BEP-Value	{InfoItem:4 in 18.017} GT {InfoItem:3 in 18.017} GT 0 AND MO[Integers]					
RT18.38 - Field: 18.018-DNA User-Defined Profile Data Value	8.18.18	<Table 79 lists the value constraints for UDP.>	1	M	18.018-Value	TRUE					B
RT18.39 - Field: 18.019-Electropherogram Description Value	8.18.19	<Table 79 lists the value constraints for EPD.>	1	-	18.019-Value	TRUE					B*
RT18.40 - Field: 18.020-DNA Genotype Distribution Value	8.18.20	<Table 79 lists the value constraints for DGD.>	1	O	18.020-Value	{18.020} EQ 0 OR 1					B
RT18.41 - Field: 18.021- DNA Genotype Allele Pair Value	8.18.21	<Table 79 lists the value constraints for GAP.>	1	M	18.021-GLR-Value	ForEach(SubField in 18.021) {InfoItem:1 in SubField} MO [1 to 200]					B*
			1	M	18.021-ALP-Value	ForEach(SubField in 18.021) {					B*

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
						Count(<numbers separated by commas> in Infoltem:2 in SubField) EQ 2 AND ForEach (<number separated by comma in Infoltem:2 in SubField>) { <number> GTE 0 AND IF Present(ASCII(.) in <number>) Then Count(<digits after> ASCII(.) in <number>) EQ 1 }					
			1	M	18.021-GNW-Value	ForEach(SubField in 18.021) { {Infoltem:3 in SubField} GTE 0 AND LTE 1 AND IF Present(ASCII(.) in Infoltem:3 in SubField) Then Count(<digits after> ASCII(.) in Infoltem:3 in SubField) MO [1 to 3] }					B*
RT18.42 - Field: 18.022-Comment Value	8.18.22	<Table 79 lists the value constraints for COM.>	1	O	18.022-Value	TRUE					B
RT18.43 - Field: 18.023 Electropherogram Ladder Value	8.18.23	<Table 79 lists the value constraints for EPL.>	1	M	18.023-Value	TRUE					B*
RT18.44 - Field: 18.200 to 18.900-User Defined Value	8.18.24	User Defined Fields	-	-	18.200 to 18.900-Value	TRUE					B
RT18.45 - Field: 18.902-Annotated	8.18.25	This is an optional field, listing the operations performed on the original source in order to prepare it for inclusion in a biometric record type. See Section		O	18.902-[GMT, NAV, OWN, PRO]-Value	<See Requirement ID: " Field: xx.902-ANN " >.	t-2				

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
8.18: Record Type-18: DNA record											
Information Value		7.4.1.									
RT18.46 - Field: 18.993-Source Agency Name Value	8.18.26	This is an optional field. It may contain up to 125 Unicode characters.		O	18.993-Value	<See Requirement ID: " Field: Source Agency Name ".>	t-2				
RT18.47 - Field: 18.995-Associated Context Value	8.18.27	See Section 7.3.3		O	18.995-[ACN, ASP]-Value	<See Requirement IDs: " Field: xx.995-ASC " and " Field: xx.995-ASC-ACN " and " Field: xx.995-ASC-ASP ".>	t-2				
RT18.48 - Field: 18.998-Geographic Sample Acquisition Location Value	8.18.28	See Section 7.7.3		O	18.998-[UTE, LTD,LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]-Value	<See Requirement IDs: " Field: Geographic ", " Field: Geographic ", " Field: Geographic-Subfield 1 " through " Field: Geographic-Values-SubField 15 ".>	t-2				

6.17 Annex B: Traditional Encoding

Table 6.15 - Assertions for Annex B - Traditional Encoding

Req. # - ID	Ref. in Base Std.	Requirement Summary	L e v e l	S t a t u s	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex B: Traditional Encoding											
ANB.1 - Traditional-Field: xx.001-Length, First	Annex B	The first field in all records shall contain the length in bytes of the record. For all ASCII or ASCII/Binary records the first field shall also be labeled as field "1:".		M	Traditional: xx.001-Length, First	<See Requirement ID: " Field: xx.001-Record Header ".>	t-2	NA			T
ANB.2 - Traditional-Field: xx.002-IDC	Annex B	With the exception of the Type-1 record (See Section 8.1), the second field shall be labeled as field "2" and contain the information designation character / IDC.		M	Traditional: xx.002-IDC	<See Requirement ID: " Field: xx.002-IDC ".>	t-2	NA			T
ANB.3 - Traditional-Record: Type1-7-bit ASCII	Annex B	The data in the Type-1 record shall always be recorded in variable length fields using the 7-bit American Standard Code for Information Interchange (ASCII) as described in <i>ISO/IEC 64656</i> . For purposes of compatibility, the eighth (leftmost) bit shall contain a value of zero. All field numbers and information separators shall be recorded in 7-bit ASCII as described in <i>ISO/IEC 646</i> .		M	Traditional: Type-1-ASCII	<See Requirement ID: " Record: Type1-ASCII ".>	t-2	NA			T
ANB.4 - Traditional-Field: xx.001, xx.002, xx.999 Ordered	Annex B	Textual fields in Record Types 2 and 9-99 may occur in any order after the first two fields and contain the information as described for that particular numbered field, except for field 999, which shall be the concluding field, when it is included in a record.		M	Traditional: xx.001-First	<See Requirement ID: " Field: xx.001-Record Header ".>	t-2	NA			T
				M	Traditional: xx.002-Second	<See Requirement ID: " Field: xx.002-IDC ".>	t-2	NA			T
			1	M	Traditional: xx.999-Last	ForEach(Record in Transaction ST Type(Record) MO [1,2,9 to 99]) { IF(Present(Field in Record ST FieldNumber(Field) EQ 999) THEN Field EQ Last(Field in Record)		NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex B: Traditional Encoding											
ANB.5 - Traditional-Transaction: Separators	Annex B, Table 93	In the Type-1, Type-2, Type-9 through Type-99 records, information is delimited by the four ASCII information separators. The delimited information may be items within a field or subfield, fields within a logical record, or multiple occurrences of subfields.	1	M	Traditional: Separators FS	ForEach(Record in Transaction ST Type(Record) MO [1,2,9 to 99]) { Last(Byte in Record) EQ 0x1C }		NA			T
			1	M	Traditional: Separators GS	<Use the GS separator as an identifier for the separation of fields during parsing.>	t-13	NA			T
			1	M	Traditional: Separators RS,US	<Use the RS and US separators as identifiers for separating subfields and information items respectively during parsing.>	t-13	NA			T
ANB.6 - Traditional-Transaction: FS Separator	Annex B	Multiple records within a transaction are separated by the “FS” character, which signals the end of a logical record.		M	Traditional: FS Separator	<See Requirement ID: “Traditional-Transaction: Separators” .>	t-2	NA			T
ANB.7 - Traditional-Transaction: US, RS, GS, Separators	Annex B	The “US” separator shall separate multiple items within a field or subfield; the “RS” separator shall separate multiple subfields, and the “GS” separator shall separate information fields.		M	Traditional: US, RS, GS Separators	<See Requirement ID: “Traditional-Transaction: Separators” .>	t-2	NA			T
ANB.8 - Traditional-Transaction: US Separator Present	Annex B	In general, if one or more mandatory or optional information items are unavailable for a field or subfield, then the appropriate number of separator characters should be inserted. It is possible to have side-by-side combinations of two or more of the four available separator characters. When data are missing or unavailable for information items, subfields, or fields, there shall be one fewer separator characters present than the number of data items, subfields, or fields required.	1	M	Traditional: US Present	<All Information Items, Mandatory and Optional, defined in the standard are separated by the US character—even if the value is missing. All “Presence” and “Count” tests for Information Items first check for the US separator, and then that there is data. For Information Items, presence is defined by the presence of data and the US separator. For Optional Information Items, the US separator is required, but not the data, since their presence is not required.>		NA			T
ANB.9 - Traditional-Transaction:	B.1	Each information item, subfield, field, and logical record shall contain one or more bytes of data	1	M	Traditional: Data Length	<This assertion is tested during the Character Count and Byte Length testing for each Record Type, which test for 1 byte of data at a	t-2	NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex B: Traditional Encoding											
Data Length Minimum					Minimum	minimum. See the following Type-10 Requirement ID's as an example: Field: Type10-CharCount and Field: Type10-Subfield CharCount .>					
ANB.10 - Traditional-Transaction: Big-Endian	B.1.1	Within a file, the order for transmission of both the ASCII and the binary representations of bytes shall be most significant byte first and least significant byte last otherwise referred to as Big-Endian format. Within a byte, the order of transmission shall be the most significant bit first and the least significant bit last.	2	M	Traditional: Data Big-Endian	<Use Big-Endian format when processing transactions. Also, provide warning if Little-Endian format is discovered.>	t-13	NA			T
ANB.11 - Traditional-Transaction: Date Format	B.1.2	Dates shall appear as eight digits in the format YYYYMMDD. The YYYY characters shall represent the year of the transaction; the MM characters shall be the tens and units values of the month; and the DD characters shall be the day in the month.	1	M	Traditional: Date Format	<This assertion is tested for each field or subfield that requires a date entry. For example, see Requirement ID " Field: 1.005-Local Date Value ".>	t-2	NA			T
ANB.12 - Traditional-Field: Agency Code Subfield 2	B.1.3	The 2007 version of the standard included only agency identifier fields (See Section 7.6). The 2008 added the option of entering an organization name. This capability of the 2008 version is retained in this version of the standard by adding new fields (Field 1.017 Agency names / ANM and Fields xx.993 Source agency name / SAN)		M	Traditional: Agency Code Subfield 2	<See Requirement ID: " Field: Agency Codes ".>		NA			T
ANB.13 - Traditional-Transaction: GMT/UTC	B.1.4	GMT/UTC shall be represented as YYYYMMDDHHMMSSZ, a 15-character string that is the concatenation of the date with the time and concludes with the character 'Z'. The YYYY characters shall represent the year of the transaction. The MM characters shall be the tens and units values of the		M	Traditional: GMT/UTC	<This assertion is tested for each field or subfield that requires a GMT/UTC entry. For example, see Requirement ID " Field: Geographic-Subfield 1 ".>	t-2	NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Annex B: Traditional Encoding

		month. The DD characters shall be the tens and units values of the day of the month. The HH characters represent the hour; the MM the minute; and the SS represents the second.									
ANB.14 - Traditional-Transaction: Field Numbering	B.1.5	For the Type-1, Type-2, Type-9 through Type-99 records, each information field that is used shall be numbered in accordance with this standard. The format for each field shall consist of the logical record type number followed by a period ".", a field number followed by a colon ":", followed by the information appropriate to that field. The field number may be any one to nine-digit number occurring between the period "." and the colon ":". It shall be interpreted as an unsigned integer field number. This implies that a field number of "2.123:" is equivalent to and shall be interpreted in the same manner as a field number of "2.000000123:".	1	M	Traditional: Field Numbering	<When parsing the fields, the record type number is the information before the period. The field number (up to 9 digits) comes after the period and before the colon. >	t-13	NA			T
ANB.15 - Traditional-Record: Types 1,2,9 ASCII	B.1.5	Logical Type-1, Type-2, and Type-9 records contain only ASCII textual data fields. The ASCII File Separator "FS" control character (signifying the end of the logical record or transaction) shall follow the last byte of ASCII information and shall be included in the length of the record.		M	Traditional: Type1-ASCII	<See Requirement ID: " Record: Type1-ASCII ".>	t-2	NA			T
			1	M	Traditional: Types 2,9-ASCII	ForEach(Field in Record ST Type(Record) EQ 2 OR 9) { {Bytes(Field)} MO [0x02, 0x03, 0x1C to 0x7E] }		NA			T
				M	Traditional: Types 1,2,9-FS Separator	<See Requirement ID: " Traditional-Transaction: Separators ".>	t-2	NA			
ANB.16 - Traditional-Record: Types 4,8	B.1.5	The Record Type-4: Grayscale fingerprint image, the Record Type-7: User-defined image record and the Record Type-8: Signature image record contain only		M	Traditional: Type4-Binary	<See Requirement ID: " Field: Type4-CharType ".>	t-2	NA			T
				M	Traditional:	<The test assertions for this type may not be	t-2	NA			

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Annex B: Traditional Encoding

Binary		binary data recorded as ordered fixed-length binary fields. The entire length of the record shall be recorded in the first four-byte binary field of each record. For these binary records, neither the record number with its period, nor the field identifier number and its following colon, shall be recorded. Furthermore, as all the field lengths of these three records are either fixed and specified, none of the four separator characters ("US", "RS", "GS", or "FS") shall be interpreted as anything other than binary data. For these binary records, the "FS" character shall not be used as a record separator or transaction terminating character.			Type8-Binary	supported in this version of the CTM. If they are supported, they are included under assertions for Record Type-8: Signature image record.>					
ANB.17 - Traditional-Record: Types 10 to 99 Format	B.1.5	The Type-10 through Type-99 records combine ASCII fields with a single binary sample field. Each ASCII field contains a numeric field identifier and its descriptive data. When Field 999 is present in a record it shall appear as the last entry in the record and shall contain the data placed immediately following the colon (er and its descriptive data. When record length field shall contain the length of the record. The ASCII File Separator "FS" control character shall follow the last byte of the compressed or uncompressed sample data. The "FS" character shall signify the end of the logical record or transaction and shall be included as part of the record length.	M	Traditional: Types 10 to 99, xx.999 last	<See Requirement ID: " Traditional-Field: xx.001, xx.002, xx.999 Ordered " .>	t-2	NA				T
			M	Traditional: Types 10 to 99, Record Length	<See Requirement ID: " Field: xx.001-Record Header ".>	t-2	NA				T
			M	Traditional: Types 10 to 99, FS Separator	<See Requirement ID: " Traditional-Transaction: Separators ".>	t-2	NA				T
ANB.18 - Traditional-Transaction: Base 64	B.1.5	The Base-64 encoding scheme (See Annex A: Character encoding information) shall be used for converting non-ASCII text into ASCII form. The field number including			Traditional: Base 64	<Unsupported.>	t-4	NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex B: Traditional Encoding											
		the period and colon, for example "2.001:", in addition to the "US", "RS", "GS", and "FS" information separators shall appear in the transaction as 7-bit ASCII characters without conversion to Base-64 encoding.									
ANB.19 - Traditional-Transaction: Encoding Sets	B.1.6	In order to effect data and transaction interchanges between non-English speaking or foreign-based agencies, a technique is available to encode information using character encoding sets other than 7-bit ASCII.			Traditional: Additional Encoding Sets	<Unsupported.>	t-4	NA			T
ANB.20 - Traditional-Field: 1.001 Record Header	B.2.1	Field 1.001 Record header shall begin with d header ecode is renamed UTF-16, a record including every character of every field contained in the record and the information separators. The cter of every field contained in the record and theng setsField 1.001 from the next field.	M		Traditional: 1.001-Record Length	<See Requirement ID " Field: xx.001-Record Header ">	t-2	NA			T
			M		Traditional: 1.001-GS Separator	<See Requirement ID: " Traditional-Transaction: Separators ">.	t-2	NA			T
ANB.21 - Traditional-Field: 1.005 Date Format	B.2.1	The year, month, and day values in Field 1.005 Date / DAT are concatenated "YYYYMMDD"		M	Traditional: 1.005-Date Format	<See Requirement ID " Field: 1.005-Local Date Value ">.	t-2	NA			T
ANB.22 - Traditional-Field: 1.013 DOM	B.2.1	In Field 1.013 Domain name / DOM, the default is "1.013:NORAM'US'GS'"			Traditional: 1.013-DOM	<Unsupported.>	t-3	NA			T
ANB.23 - Traditional-Transaction: FS Separator Replaces GS	B.2.1	Immediately following the last information item in the Type-1 record (See Section 8.1), an tFSFSn 8.1 following the last information item in the from the next logical record. This "FS" character shall replace the "GS" character that is normally used between information fields. This is the case with all Record Types.		M	Traditional: FS Replaces GS	<See Requirement ID: " Traditional-Transaction: Separators ">.	t-2	NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex B: Traditional Encoding											
ANB.24 - Traditional-Record: Type4-Fields Fixed	B.2.2	The order of fields for Type-4 records is fixed. All fields and data in this record type shall be recorded as binary information.	2	M	Traditional: Type4 Fields Fixed	<Parse Type 4 as unnumbered binary data in the order presented in Table 24>.	t-13	NA			T
ANB.25 - Traditional-Record: Type7-Requirements TBD	B.2.3	<This section contains requirements regarding Type-7 records. If this type is supported by the CTM, the requirements will be added.>		-	Traditional: Type7 Assertions TBD	<This section contains requirements regarding Type-7 records. If this type is supported by the CTM, the assertions will be added.>	t-15	NA			T
ANB.26 - Traditional-Record: Type8-Requirements TBD	B.2.4	<This section contains requirements regarding Type-8 records. If this type is supported by the CTM, the requirements will be added.>		-	Traditional: Type8 Assertions TBD	<This section contains requirements regarding Type-8 records. If this type is supported by the CTM, the assertions will be added.>	t-15	NA			T
ANB.27 - Traditional-Record: Type9-Requirements TBD	B.2.5	<This section contains requirements regarding Type-9 records. If this type is supported by the CTM, the requirements will be added.>		-	Traditional: Type9 Assertions TBD	<This section contains requirements regarding Type-9 records. If this type is supported by the CTM, the assertions will be added.>	t-15	NA			T
ANB.28 - Traditional-Transaction: Type11-Reserved	B.2.7	This Record Type is reserved for future use as Voice data.		M	Traditional: Type11-Reserved	<See Requirement ID: " Transaction: Reserved Records ".>	t-2	NA			T
ANB.29 - Traditional-Transaction: Type12-Reserved	B.2.8	This Record Type is reserved for future use as Dental data.		M	Traditional: Type12-Reserved	<See Requirement ID: " Transaction: Reserved Records ".>	t-2	NA			T
ANB.30 - Traditional-Field: 13.014 RS	B.2.9	For Field 13.014: Search position descriptors / SPD, multiple portions of the EJI may be listed and separated by the "RS" character.		M	Traditional: 13.014-RS Separated	<See Requirement ID: " Field: SPD,PPD Values ".>	t-2	NA			T

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Annex B: Traditional Encoding

Separated											
ANB.31 - Traditional-Field: 13.015 Subfields	B.2.9	For Field Field 13.015: Print position coordinates / PPC, the six information items within the field are separated by five sUS PPCDDental data.SUBblock shall belowed by tedal definitions may be repeated as subfields separated by the dRSblock shall		M	Traditional: 13.015-Subfields	<See Requirement ID: " Field: PPC-Subfield Occurrences ".>	t-2	NA			T
ANB.32 - Traditional-Field: 13.024 Subfields	B.2.9	Field Field 13.024: Latent quality metric / LQM may contain one or more subfields, each consisting of four information items separated by the "US" character. The subfield may be repeated for each latent image and quality algorithm used, separated by the "RS" character.		M	Traditional: 13.024-Subfields	<See Requirement IDs: " Field: Sample Quality Occurrences " to " Field: Sample Quality Additional Subfield ".>	t-2	NA			T

6.18 Annex C: NIEM-conformant Encoding Rules

Table 6.15 - Assertions for Annex C – NIEM-conformant Encoding

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex C: NIEM-conformant Encoding											
ANC.1 - NIEM-Transaction: Schema Validation	C.2, C.4, C.5.1	The XML schema referenced for this encoding define the structure and order of the elements in the information exchange package. To the extent possible, the schema define data types and constraints that enforce the allowable content rules of the base standard. Nevertheless, the XML schema may not strictly enforce the allowable content. The base standard defines allowable content, and its requirements shall be met by implementers regardless of encoding method. All of this standard’s required elements shall be present in a conforming instance document even if the schema referenced by this annex do not strictly enforce the requirement. The base standard defines allowable content, and its requirements shall be met by implementers regardless of encoding method.	2	M	NIEM-Schema Valdiation	<Perform and report Schema validation. Note that the schema does not strictly enforce the standard, so the conformance of a transaction cannot be claimed from the result of schema validation.>		Y			X-O
ANC.2 - NIEM-Element Presence	C.3	All of this standard’s required elements shall be present in a conforming instance document even if the schema referenced by this annex do not strictly enforce the requirement.	1	M	NIEM-Element Presence	<The validation of the schema is not enough to test for requirements for element presence. Test the presence of the elements independently.>		Y			X-O
ANC.3 -	C.4.1	Each XML information element, tags and	1	M	NIEM- XML	<Encoding specified in XML Declaration> MO		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex C: NIEM-conformant Encoding											
NIEM-Transaction: XML Encoding		data content, shall be represented by a character set that is a subset of Unicode and that is allowable by W3C XML. Characters shall be transmitted using a Unicode encoding.			Encoding	["UTF-8", "UTF-16", "UTF-32"]					
ANC.4 - NIEM-Transaction: XML Declaration	C.4.1	XML packages shall include an XML declaration that specifies the encoding.	1	M	NIEM- XML Declaration	First(XElm in Transaction) EQ <XML Declaration>		Y			X-O
ANC.5 - NIEM-Transaction: Image Base-64	C.4.2, C.4.3, C.5.8	Binary data so constructed as to represent a grayscale image shall be converted to ASCII characters prior to transmission using Base-64 encoding. Binary image data may be constructed in either compressed or uncompressed form, then shall be converted to ASCII characters prior to transmission using Base-64 encoding. Image data shall be converted to ASCII characters using the Base-64 encoding algorithm.	1	M	NIEM-Image Base-64	<Interpret all images as Base-64>		NA			X-O
ANC.6 - NIEM-Transaction Required Record Types	C.5.1, C.6.3	An exchange package shall consist of two or more logical records. This exchange package shall contain two or more logical records. One of those records shall be the Type-1 "<itl:PackageInformationRecord>".	1	M	NIEM-Required Record Types	<See Transaction: Required Record Types >	t-2				X-O
ANC.7 - NIEM-Transaction Well-Formed XML	C.5.2, C.5.3	All separators are defined by the W3C XML recommendations. The characters "<" and ">" are reserved exclusively for enclosing XML element names. Every element with a start tag <Name> shall have an end tag of format </Name>. For all logical records – including Types 4, 7, and 8 that do not have field tags in the traditional encoding -- data elements are	1	M	NIEM-Well-Formed XML	<Test that the XML is well-formed according to W3C XML recommendations. This includes record types that do not have field tags in Traditional Encoding (4, 7, 8).>		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex C: NIEM-conformant Encoding											
		tagged according to XML rules. The format for each element shall consist of a start tag enclosed in angle brackets followed by data followed by an end tag.									
ANC.8 - NIEM-Transaction Element Hierarchy	C.5.3	The ordering of elements is strict. The schema referenced by this annex define the order and nesting structure of elements. The schema also provide a W3C representation of the order and hierarchical structure of the XML content.	2	M	NIEM-Element Hierarchy	<Use the schema validation to test for XML element hierarchy and ordering.>		Schema			X-C
ANC.9 - NIEM-Transaction Common Date	C.5.4	Common dates (other than GMT) shall be represented in the form YYYY-MM-DD, YYYY-MM, or YYYY.	1	M	NIEM-Common Date	<This assertion is addressed on a per-field basis.>	t-2, t-6				X-I <The schema allows UTC/GMT formats for common dates.>
ANC.10 - NIEM-Transaction UTC/GMT Date	C.5.5	GMT date/time values shall be represented in the form YYYY-MM-DDThh:mm:ssZ	1	M	NIEM-UTC/GMT Date	<This assertion is addressed on a per-field basis.>	t-2, t-6				X-I <The schema allows common date format for UTC/GMT dates.>
ANC.11 - NIEM-Transaction Abstract Elements	C.5.6	The abstract elements listed in Section C.3 Scope, purpose, and conformance allow implementers to extend the specification by supplying substitution elements of their own design. Implementers shall define, in an extension schema, a substitution element containing user-defined child elements.	2	O	NIEM-Abstract Elements	<The user-defined schema shall be used to validate elements substituted for abstract elements. Note: Conformance for user-defined elements are not part of the scope of this CTM.>	t-3				X-P
ANC.12 - NIEM-	C.6	If the base specification and schema define an element as optional, it should	1	M	NIEM-Optional	<All elements present in a transaction shall be tested for conformance, even optional		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex C: NIEM-conformant Encoding											
Transaction Optional Elements		be omitted altogether rather than transmitting the element tags without any data content.			Elements	elements.>					
ANC.13 - NIEM-Transaction Optional Element Tags	C.6	If the base specification and schema define an element as optional, it should be omitted altogether rather than transmitting the element tags without any data content.	1	M	NIEM-Optional Elements	<Optional element tags shall be present only when they contain data. For missing optional data, the element tags are not present.>		Y			X-O
ANC.14 - NIEM-Transaction Mandatory Element Tags	C.6	For mandatory elements, in all cases, the element tags shall appear in the instance package.	1	M	NIEM-Mandatory Elements	<Mandatory element tags shall always be present.>		Y			X-P < Schema allows some mandatory elements to be optional (and vica versa)>
ANC.15 - NIEM-Transaction Mandatory Values	C.6	When there is no information to be transmitted for a mandatory element, prior agreement shall be made with the recipient agency or organization before constructing and transmitting an instance package. For cases where an agreement is made to accept records with missing mandatory data, the following recommendations are made.	1	M	NIEM-Mandatory Values	<It is outside the scope of the CTM to test for special cases for omitted mandatory data. In all cases, when mandatory elements are present, those elements' values shall be tested for conformance based upon the requirements in the base standard per the statement in Section C.5.1: The base standard defines allowable content, and its requirements shall be met by implementers regardless of encoding method. >					X-P
ANC.16 - NIEM-Transaction Domains and Profiles	C.6.3, C.8	Certain portions of the exchange package, such as Record Type-2, shall be in accordance with definitions set according to the implementation domain or application profile. Each user-defined XML element shall also have a definition and data type associated with it. Each domain or application profile created shall have a point of contact responsible for keeping the	1	O	NIEM-Domains and Profiles	<Not supported: outside the scope of the CTM.>	t-3				X-P

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Annex C: NIEM-conformant Encoding

		documentation on the content of the user-defined data blocks within their domain. The contact shall serve as a registrar and maintain a repository including documentation for all the common and user-specific Type-2 content contained within the substitution block for <itl:DomainDefinedDescriptiveDetail>.									
ANC.17 - NIEM-Transaction Contents	C.6.3	All of the logical records belonging to a single package shall be contained within a single <itl:NISTBiometricInformationExchangePackage>	3	M	NIEM-Contents	<Not able to test that all records are present in the transaction.>	t-1				X-O
ANC.18 - NIEM-Record Category Code	C.7	The first element in all XML encoded records shall be labeled <biom:RecordCategoryCode> and contain the type (category) number of the record.	1	M	NIEM-Record Category Code	<Test that the first element in each Record is the Record Category Code element during parsing. The value tests are handled on a per assertion basis.>	t-2				X-P
ANC.19 - NIEM-Information Designation Character	C.7	The second element in every record other than the Type-1 record, shall be labeled <biom:ImageReferenceIdentification> and contain the Information designation character / IDC.	1	M	NIEM-Information Designation Character	<Test that thesecond element in each Record other than Type-1 is the Infomration Designation Character element during parsing. The value tests are handled on a per assertion basis.>	t-2				X-P
ANC.20 - NIEM-Record Elements	C.7	The remaining XML elements in each record shall be present in the order defined by the schema and contain data described in the base standard for that particular element.	1	M	NIEM-Record Elements	<Use the schema validation to check for errors in ordering of the elements and test for this order during parsing. The data contraits defined by the base standard are addressed on a per-assertion basis in the CTM.>	t-2				X-P
ANC.21 - NIEM-Elements Value Format	Schema	<The Schema defines Niem Core (nc) elements that are sometimes used to contain values such as: nc:Date, nc:DateTime, nc:IdentificationID, nc:MeasurePointValue, nc:Year, and nc:YearMonth These elements are not listed in Annex G, and therefore do not have a listed	1	M	NIEM-ValuePresent	Foreach(Xelm in Transaction ST Xelm <is required to contain a value> { Count(<Child Elements> in Xelm) EQ 1 AND		Y			X-P

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Annex C: NIEM-conformant Encoding

		cardinality. However, these elements must be present (cardinality is 1...1) to avoid omitting required values. In addition, any element that is required to contain a value must have only one child element—the value expected, or one of the Niem Core elements defined by the Schema.>				If <Schema defines Niem Core element> THEN <Child Element> in Xelm EQ <defined Niem Core Element> AND Count(<Child Elements> in <Niem Core Element>) EQ 1 AND <Is Text> ELSE <Child Element Is Text> }					
ANC.22 - NIEM-WhiteSpace	NONE	<The nature of XML allows leading and trailing whitespace due to formatting preferences. This whitespace (including spaces, linefeeds, newline characters, etc) should not be tested as data unless it occurs in a field marked with Character Type ANS or U. Also, for Image data (BinaryBase64Object), it is common for whitespace to be present in the data for formatting. This whitespace should be ignored.>	1	M	NIEM-WhiteSpace	IF <CharacterType of XElm> NOT EQ “ANS” OR “U” THEN <Provide Warning if leading or trailing whitespace present and ignore the whitespace for all other assertions.> <Whitespace for Base64 is handled by the Schema.>		Y			X
ANC.23 - NIEM-LeadingZeros	NONE	<XML Values representing numbers shall not have leading zeros unless indicated by the standard.>	1	M	NIEM-LeadingZeros	IF <CharacterType of XElm> EQ “N” OR “NS” THEN NOT Present <Leading Zeros in XElm>		Y			X

6.19 Annex G: Mapping to the NIEM IEPD

Table 6.15 - Assertions for Annex G – Mapping to the NIEM IEPD

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex G: Mapping to the NIEM IEPD											
ANG.1 - NIEM-Cardinality	Annex G Tables	<The tables in Annex G list Cardinality values for each element.>	1	M	NIEM-Cardinality	<These assertions are addressed on a per-record basis. See assertions in the Record-specific assertion tables.>	t-2				X-P
			1	M	NIEM-Mandatory Elements	<These assertions are addressed on a per-record basis. See assertions in the Record-specific assertion tables.>	t-2				X-P
ANG.2 - NIEM-Undefined Elements	Annex G Tables	<Annex G defines the allowable elements for the XML transaction. Note that Niem-Core (nc) such as nc:IdentificationID and nc:Date are not listed in Annex G.>	1	M	NIEM-Undefined-ElementUn defined	<If an element is not defined in Annex G (with the exception of the Niem-Core elements that contain values as child elements) report an error>.		Y			
ANG.3 - NIEM-Transaction MajorVersionValue	Annex G Note 77	This element contains the first 2 characters of Field 1.002 Version number / VER	1	M	NIEM-MajorVersionValue	<See NIEM-1.001-Value>	t-2				X-O
ANG.4 - NIEM-Transaction MinorVersionValue	Annex G Note 78	This element contains the last 2 characters of Field 1.002 Version number / VER	1	M	NIEM-MinorVersionValue	<See NIEM-1.001-Value>	t-2				X-O
ANG.5 - NIEM-TransactionCategory	Annex G Foot Note 79	This element is abstract and must be substituted either with biom:TransactionCategoryCode or a user-defined element that is in the substitution group of biom:TransactionCategory	1	M	NIEM-TransactionCategory	<It is outside the scope of this CTM to define assertions for user-defined data. To conform to the base standard and original Schema, the transaction must use biom:TransactionCategoryCode>		Y			X-P
ANG.6 - NIEM-UserDefined	Annex G Notes 81, 95, 107, 114, 115,116,	This element is abstract and must be substituted with a user-defined element.	1	M	NIEM-UserDefined	<It is outside the scope of this CTM to define assertions for user-defined data. >	t-3				X-P

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
Annex G: Mapping to the NIEM IEPD											
	117,118, 123, 124, 130, 132										
ANG.7 - NIEM-FacelImageDependent	Annex G Foot Note 96	If the IMT field contains the value "FACE", this element is mandatory; otherwise it shall not appear.	2	M	NIEM-Type10-FacelImageDependent	Present (XElm(biom:FacelImage)) IFF {XElm(biom:ImageCategoryCode)} EQ ASCII(FACE)		Y			X-O
ANG.8 - NIEM-FaceOrPhysicalImageOnly	Annex G Foot Note 97	One and only one of biom:FacelImage or biom:PhysicalFeatureImage must appear.	2	M	NIEM-Type10-FaceOrPhysicalFeatureImage	Present (XElm(biom:FacelImage)) XOR Present (XElm(biom:PhysicalFeatureImage))		Y			X-O
ANG.9 - NIEM-PhysicalFeatureImageDependent	Annex G Foot Note 98	If the IMT field does not contain the value "FACE", this element is mandatory; otherwise it shall not appear.	2	M	NIEM-PhysicalFeatureImageDependent	Present (XElm(biom:PhysicalFeatureImage)) IFF {XElm(biom:ImageCategoryCode)} NEQ ASCII(FACE)		Y			X-O
ANG.10 - NIEM-GeodeticDatumSystemCode	Annex G Foot Note 99	Used for specific values in Table 6.	1	M	NIEM-GeodeticDatumSystemCode	<See NIEM-xx.998-GDC-Value>	t-2	Y			X-O
ANG.11 - NIEM-GeodeticDatumSystemName	Annex G Foot Note 100	Used for user-defined "other" values (entries up to 6 characters).	1	M	NIEM-GeodeticDatumSystemName	<See NIEM-xx.998-GDC-Value>	t-2	Y			X-O
ANG.12 - NIEM-FacelImageAttribute-Legacy	Annex G Foot Note 101	For legacy use only.	1	M	NIEM-FacelImageAttribute-Legacy	<See 10.022-PXS-Legacy >	t-2	Y			X-O
ANG.13 - NIEM-FacelImageDescriptionCode	Annex G Foot Note 102	Use this element when the value is explicitly specified in Table 62 Subject facial description codes , or is a physical characteristic from Annex D: NCIC code	1	M	NIEM-FacelImageDescriptionCode	< See NIEM-10.026-SXS-Value>	t-2	Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Annex G: Mapping to the NIEM IEPD

de		table.									
ANG.14 - NIEM-FacelImageDescriptionText	Annex G Foot Note 103	Use this element when the value is unformatted text (identified as "Other characteristics" in Table 62 Subject facial description codes.	1	M	NIEM-FacelImageDescriptionText	<See NIEM-10.026-SXS-Value>	t-2	Y			X-O
ANG.15 - NIEM-FacelImageFeaturePointTierCode	Annex G Foot Note 104	Use this element when the value is explicitly listed in Table 66 Tiered markup collections (frontal) .	1	M	NIEM-FacelImageFeaturePointTierCode	<See NIEM-10.031-Value >	t-2	Y			X-O
ANG.16 - NIEM-FacelImageFeaturePointTierNumeric	Annex G Foot Note 105	Use this element for user-defined values.	1	M	NIEM-FacelImageFeaturePointTierNumeric	<See NIEM-10.031-Value >	t-2	Y			X-O
ANG.17 - NIEM-FingerImpressionImageDependent	Annex G Foot Note 108	This element is used if the IMP field contains one of the values 4 through 7, 28 or 29	2	M	NIEM-Type13-FingerImpressionImageDependent	IF Present(XElm(biom:FingerImpressionImage)) THEN {XElm(biom:FingerprintImageImpressionCaptureCategoryCode)} MO [4 to 7, 28, 29]		Y			X-O
ANG.18 - NIEM-OnlyOneLatentImageType	Annex G Foot Note 109	One and only one of biom:FingerImpressionImage, biom:PalmpPrintImage, biom:PlantarImage or biom:FrictionRidgeImage must appear.	2	M	NIEM-Type13-OnlyOneLatentImageType	Present (XElm(biom:FingerImpressionImage)) XOR Present (XElm(biom:PalmpPrintImage)) XOR Present (XElm(biom:PlantarImage)) XOR Present (XElm(biom:FrictionRidgeImage))		Y			
ANG.19 - NIEM-PalmpPrintImageDependent	Annex G Foot Note 110	This element is used if the IMP field contains one of the values 12 through 15, 28 or 29	2	M	NIEM-Type13-PalmpPrintImageDependent	IF Present(XElm(biom: biom:PalmpPrintImage)) THEN {XElm(biom:FingerprintImageImpressionCaptureCategoryCode)} MO [12 to 15, 28, 29]		Y			X-O
ANG.20 - NIEM-	Annex G Foot	This element is used if the IMP field contains one of the values 32 through 35,	2	M	NIEM-Type13-	IF Present(XElm(biom:PlantarImage)) THEN {XElm(biom:FingerprintImageImpressionCapture		Y			X-O

Req. # - ID	Ref. in Base Std.	Requirement Summary	L	S	Assertion ID	Test Assertion	Test Note	Imp. Support	Supported Range	Test Result	Applicable to (T, X, B, B*, or X*)
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Annex G: Mapping to the NIEM IEPD

PlantarImageDependent	Note 111	28 or 29			PlantarImageDependent	CategoryCode)) MO [32 to 35, 28, 29]					
ANG.21 - NIEM-FrictionRidgeImage Dependent	Annex G Foot Note 112	This element is used if the IMP field contains one of the values 4 through 7, 12 through 15, 28, 29, or 32 through 39.	2	M	NIEM-Type13-FrictionRidgeImage Dependent	IF Present(XElm(biom: FrictionRidgeImage)) THEN {XElm(biom:FingerprintImageImpressionCapture CategoryCode)) MO [4 to 7,12 to 15, 28, 29, 32 to 39]		Y			X-O

6.20 Test notes

The following test notes provide clarification of the assertion text provided in the Test Assertion column. The test notes contain various types of information including:

- Additional information to help clarify complex assertions such as image metadata and IDC comparisons.
- Explanations of decisions made when the base standard is not clear or contains possible discrepancies.
- “Exception” which refers to any AN-2011 requirement that does not have an associated assertion defined in this document.

t-1. Semantic (Level 3) assertions are not included in the tables except to intentionally clarify that the assertion is L3. An explanation may be given regarding the assertion’s categorization as L3.

t-2. The assertions for this requirement are listed in another section of the table as described in the “Test Assertion” column.

t-3. Assertions related to Domain Names, Application Profile Specifications, and other user-defined types are outside the scope of this CTM.

t-4. Assertions related to Character Sets other than 7-bit ASCII or binary are not addressed in the tables.

t-5. For fields with matching IDC’s, refer to the tables below to determine the test result based upon the biometric sample types being compared. For matching IDC’s that belong to record types not listed below, the test reports a warning.

Table 6-16 - IDC ID Location Comparison

IDC: ID Location Comparison		
Record Type	Biometric	Field For Comparison ID
4	FINGER	{Byte:1 in 4.004}
9	MINUTIAE	NA
10	{10.003} <SCAR, MARK, TATTOO, or FACE>	IF {10.003} MO [ASCII(SCAR,MARK, TATTOO)] THEN {Infoltem:1 in 10.040}
13	FRICIONRIDGE	{Infoltem:1 in SubField:1 in 13.013}

14	FINGER	{Infoltem:1 in SubField:1 in 14.013}
15	PALM	{15.013}
17	IRIS	{17.003}
19	PLANTAR	{19.013}

Table 6-17 - IDC Comparison Results

IDC: Comparison Results				
First Record	Second Record	Comparison IDs	Notes	Result
FINGER	FINGER	Same		Ok
FINGER	FINGER	Different		Error
FINGER	MINUTIAE	NA		Ok
FINGER	FRICIONRIDGE	Same		Ok
FINGER	FRICIONRIDGE	Different		Error
FINGER	PALM	All EQ 33 OR All EQ 36	33 and 36 are hypothenar codes (palm) but are part of the extended fingerprint set	Ok
FINGER	PALM	Any NEQ 33 OR Any NEQ 36	33 and 36 are hypothenar codes (palm) but are part of the extended fingerprint set	Error
FINGER	NOT MO[FINGER, MINUTIAE, FRICIONRIDGE, PALM]	NA		Error
FACE	FACE	NA		Ok
FACE	NEQ FACE	NA		Error

FRICTIONRIDGE	FRICTIONRIDGE, FINGER, PALM, or PLANTAR	Same		Ok
FRICTIONRIDGE	FRICTIONRIDGE, FINGER, PALM, or PLANTAR	Different		Error
FRICTIONRIDGE	MINUTIAE	NA		Ok
FRICTIONRIDGE	NEQ FRICTIONRIDGE, FINGER, PALM, PLANTAR, MINUTIAE	NA		Error
IRIS	IRIS	Same		Ok
IRIS	IRIS	Different		Error
IRIS	NEQ IRIS	NA		Error
SCAR	SCAR	Same		Ok
SCAR	SCAR	Different		Warning
SCAR	MARK or TATTOO	Same or Different		Warning
SCAR	NEQ SCAR, MARK, or TATTOO	NA		Error
MARK	MARK	Same		Ok
MARK	MARK	Different		Warning
MARK	SCAR Or TATTOO	Same or Different		Warning
MARK	NEQ SCAR, MARK, or TATTOO	NA		Error
MINUTIAE	MINUTIAE	NA		Ok
MINUTIAE	FINGER, PALM, or PLANTAR and optional FRICTIONRIDGE	NA		Ok
MINUTIAE	NEQ MINUTIAE, FINGER, FRICTIONRIDGE, PALM, or PLANTAR	NA		Error
TATTOO	TATTOO	Same		Ok
TATTOO	TATTOO	Different		Warning
TATTOO	SCAR Or MARK	Same or Different		Warning
TATTOO	NEQ SCAR, MARK, or	NA		Error

	TATTOO			
PALM	PALM	Same		Ok
PALM	PALM	Different		Error
PALM	FRICTIONRIDGE	Same		Ok
PALM	FRICTIONRIDGE	Different		Error
PALM	MINUTIAE	NA		Ok
PALM	FINGER	Same AND Both EQ 33 OR 36	33 and 36 are hypothenar codes (palm) but are part of the extended fingerprint set	Ok
PALM	FINGER	Different OR Both NEQ 33 OR 36	33 and 36 are hypothenar codes (palm) but are part of the extended fingerprint set	Error
PALM	NEQ PALM, MINUTIAE, FRICTIONRIDGE, OR FINGER	NA		Error
PLANTAR	PLANTAR	Same		Ok
PLANTAR	PLANTAR	Different		Error
PLANTAR	FRICTIONRIDGE	Same		Ok
PLANTAR	FRICTIONRIDGE	Different		Error
PLANTAR	MINUTIAE	NA		Ok
PLANTAR	NOT MO [PLANTAR, FRICTION RIDGE, MINUTIAE]	NA		Error
UNKNOWN	ANY	NA	UNKNOWN represents any types that are currently not supported.	Warning
ANY	UNKNOWN	NA	UNKNOWN represents any types that are currently not supported.	Warning

- t-6. UTC has replaced GMT. Date and time are defined in section 7.7.2 of the standard. The set of values ValidUTC/GMT is described in section 7.7.2.2 of the standard and is always less than the current date and time. ValidUTC/GMT is in the form YYYYMMDDHHMMSSZ; NIEM-ValidUTC/GMT is in the form YYYY-MM-DDThh:mm:ssZ. The ValidLocalDate is in the form YYYYMMDD; NIEM-ValidLocalDate is in the form YYYY-MM-DD, YYYY-MM, or YYYY.
- t-7. Assertions for alternate coordinate systems are not included in the tables.
- t-8. Refer to <http://earth-info.nga.mil/GandG/coordsys/grids/utm.html> to determine valid values for the band of latitude and grid zone.
- t-9. L2 and L3 assertions associated with SAP, FAP, and IAP are not included in the tables. Some of the assertions, such as determining the conditions under which the samples were collected to ensure the SAP, FAP, or IAP levels, are not feasible to test.
- t-10. IBIA Vendor Registry is a registry that maps the QAV value to a registered CBEFF Biometric Organization. Since the standard does not require that the value be registered with IBIA, the test assertions will accept any values for QAV.
- t-11. All assertions associated with compressed image types use the image metadata and not the image data itself. Metadata features from each image type are defined in the “Image Metadata” table below. Combining the “Term” with the “Image Type” provides the specific implementation. For example, {Image Height-PNG} is equivalent to “2nd parameter of the IHDR chunk”. Note that for NIEM encoding, the image data must first be converted from Base-64.

Table 6-18 - Image Metadata

Image Metadata		
Term	Image Type(s)	Implementation
Image Width	JPEG, JPEGL	4 th parameter of the Frame Header not counting the SOF marker
	JP2, JP2L	2 nd parameter of Image Header box
	PNG	1 st parameter of IHDR chunk
	WSQ	5 th parameter of SOF not counting the SOF marker
Image Height	JPEG, JPEGL	3 rd parameter of the Frame Header not counting the SOF marker
	JP2, JP2L	1 st parameter of Image Header box
	PNG	2 nd parameter of IHDR chunk
	WSQ	4 th parameter of SOF not counting the SOF marker

Sampling Units	JPEG, JPEGL	4 th parameter in JFIF Header not counting the APP0 Marker
	JP2, JP2L	Undefined
	PNG	3 rd parameter of PHYS chunk
	WSQ	Undefined
Horizontal Density	JPEG, JPEGL	5 th parameter in JFIF Header not counting the APP0 Marker
	JP2, JP2L	Undefined
	PNG	1 st parameter in PHYS Chunk
	WSQ	Undefined
Vertical Density	JPEG, JPEGL	6 th parameter in JFIF Header not counting the APP0 Marker
	JP2, JP2L	Undefined
	PNG	2 nd parameter in PHYS Chunk
	WSQ	Undefined
BPX	JPEG, JPEGL	2nd parameter of the Frame Header not counting the SOF marker
	JP2, JP2L	7 LSB of 4 th parameter of ImgBox + 1 if 4 th parameter of ImgBox is not 255
	PNG	3 rd parameter of IHDR chunk
	WSQ	Undefined
CSP	JPEG, JPEGL	Undefined
	JP2, JP2L	4 th parameter of Colour Specification box
	PNG	4 th parameter of IHDR chunk
	WSQ	Undefined
SOI	JPEG, JPEGL	Start of JPEG type image.
	WSQ	Start of WSQ image.
SOF	JPEG, JPEGL	Start of frame in a JPEG type image.
	WSQ	Start of WSQ image.
EOI	JPEG, JPEGL	End of a JPEG image.
	JP2, JP2L	End of JP2 image.
	WSQ	End of WSQ image.
SOB	WSQ	Start of block in a WSQ image.
SigBox	JP2,JP2L	Signature Box that marks the start of a JP2 type image.
HeadBox	JP2,JP2L	Header Box in a JP2 type image.
ImgBox	JP2, JP2L	Image Header Box in a JP2 type image.
PNGSig	PNG	Signature of a PNG image.
IHDR	PNG	Image Header Chunk in a PNG image.
IDAT	PNG	Image Data Chunk in a PNG image.
IEND	PNG	Image End Chunk in a PNG image.

JFIF Header	JPEG, JPEGL	Frame for specifying JPEG type image metadata. Its inclusion is required by the standard.
PHYS Chunk	PNG	An optional Chunk in a PNG image that may be used if present to verify image attributes.

- t-12. Some image formats (such as PNG) use scale units other than pixels per inch (ppi) or pixels per centimeter (ppc), which are the measurements used in the requirements of the base standards. For those image formats, the use of a conversion factor is necessary to convert the pixel scale to the correct units (either ppi or ppc). This conversion may result in a decimal value that cannot be held in the THPS or TVPS fields, which hold Integer values only. In all such cases, the AN-2011 standard does not state which method should be used to round the result. The CTM suggests using both the mathematical floor and ceiling functions of the converted value as acceptable values for comparison to the field value to account for various rounding methods.
- t-13. The assertion is addressed during parsing.
- t-14. Further research is needed to determine the feasibility of testing for ASEG requirements related to the polygon structure.
- t-15. These requirements are related to record types currently not supported.
- t-16. WSQ specification version 2.0 or higher is required, but there is no known method for determining the specification version of a WSQ image. Therefore, this is a level 3 requirement. The Ev field specifies the encoder version, but there is no requirement for WSQ specification versions to contain certain encoder versions (other than 3.1 containing an Ev of 2).
- t-17. The NCIC codes are available at <http://oregon.gov/OSP/CJIS/NCIC.shtml>. Any values found in Annex E of NIST SP 500-271 are also valid.
- t-18. Table 79 in NIST SP 500-290 lists possible values as “integer > 0; or real number with one digit to the right of the decimal”. Negative integer values are a subset of real numbers and would conflict with the requirement “integer > 0”, so negative values are not allowed by this conformance testing methodology.
- t-19. Some Value Constraints in the record layout tables in NIST SP 500-290 list “positive integer” or “integer” but do not define the minimum value for these terms. In this case, the CTM assumes the minimum value to be 1.
- t-20. The term “sequentially assigned” has several interpretations. The first version (Release 1.0) of this CTM indicated that the values must be in sequential order within the Transaction. The CTM now clarifies that order within the Transaction is not important. However, when rearranged and viewed in numeric order, the values must be sequential and incremented by 1.

6.21 Test assertions exceptions table

An “exception” refers to any AN-2011 requirement that does not have an associated assertion defined in this document. Table 6.19 identifies and provides justification for all exceptions present in the tables.

Table 6.19 - Exceptions Table

Exception	Section	Requirement Summary	Justification
<p style="text-align: center;">Domain Names / Application Profile Specifications</p>	5.3.2	<p>Data contained in this record shall conform in format and content to the specifications of the domain name(s) as listed in Field 1.013 Domain name / DOM found in the Type-1 record, if that field is in the transaction. The default domain is NORAM. Field 1.016 Application profile specifications / APS allows the user to indicate conformance to multiple specifications. If Field 1.016 is specified, the Type-2 record must conform to each of the application profiles.</p> <p>A DOM or APS reference uniquely identifies data contents and formats. Each domain and application profile shall have a point of contact responsible for maintaining this list. The contact shall serve as a registrar and maintain a repository including documentation for all of its common and user-specific Type-2 data fields. As additional fields are required by specific agencies for their own applications, new fields and definitions may be registered and reserved to have a specific meaning. When this occurs, the domain or application profile registrar is responsible for registering a single definition for each number used by different members of the domain or application profile.</p>	<p>The format and content of the record are defined by the DOM or APS. Each DOM and APS has related record-content definitions that may be updated. The evolving nature of the DOM and APS definitions and nature of using registrars means that the requirements are not defined in the base standard.¹</p>
	6	<p>An implementation domain, coded in Field 1.013 Domain name / DOM of a Type-1 record as an optional field, is a group of agencies or organizations that have agreed to use preassigned data fields with specific meanings (typically in Record Type-2) for exchanging information unique to their installations. The implementation domain is usually understood to be the primary application profile of the standard.</p> <p>New to this version of the standard, Field 1.016 Application profile specifications / APS allows multiple application profiles to be referenced. The organization responsible for the profile, the profile name and its version are all mandatory for each application profile specified. A transaction must conform to each profile that is included in this field. It is possible to use Field 1.016 and / or Field 1.013. A specified implementation domain and specified application profiles must all</p>	<p>Since the “transaction must conform to each profile” included in the field, and those profiles are defined by the listed agency, the CTS would have to retrieve the latest requirements from the agency.¹</p>

¹ Requirements related to user, profile, or domain-specific information are not within the scope of this CTM.

		have the same definition for fields, subfields and information items that are contained in the transaction.	
Alternate Character Sets	5.6, Table 2	Field 1.015 Character encoding/DCS is an optional field that allows the user to specify an alternate character encoding... Field 1.015 Character encoding/DCS contains three information items: the character encoding set index/ CSI, the character encoding sent name/CSN, and the character encoding set version/CSV. The first two items are selected from the appropriate columns of Table 2.	Table 2 lists ASCII, UTF-16, UTF-8, and UTF-32 as possible encodings. However, the table also allows “User-defined” character encoding sets. ¹
Alternate Coordinate System	7.7.3, Table 4	The ninth information item is the geodetic datum code / GDC10. It is an alphanumeric value of 3 to 6 characters in length. This information item is used to indicate which coordinate system was used to represent the values in information items 2 through 7. If no entry is made in this information item, then the basis for the values entered in the first eight information items shall be WGS84, the code for the <i>World Geodetic Survey 1984 version - WGS 84 (G873)</i> . See Table 4 for values.	Table 4 lists 22 coordinate systems and the option to include “Other” types as well. It is not feasible for the CTM to define conformance to coordinate systems listed by the user under “Other”. ¹ The CTM lists requirements for conformance to WGS84 because it is the default coordinate system used in the base standard.
	7.7.3	<p>A fourteenth optional information item geographic coordinate other system identifier / OSI allows for other coordinate systems. This information items specifies the system identifier. It is up to 10 characters in length. Examples are:</p> <ul style="list-style-type: none"> • MGRS (Military Grid Reference System) • USNG (United States National Grid) • GARS (Global Area Reference System) • GEOREF (World Geographic Reference) • LANDMARK (e.g. hydrant) and position relative to the landmark. <p>A fifteenth optional information item, is the geographic coordinate other system value / OCV. It shall only be present if OSI is present in the record. It can be up to 126 characters in length. If OSI is LANDMARK, OCV is free text and may be up to 126 characters. For details on the formatting of OCV for the other coordinate systems shown in OSI as examples, see http://earth-info.nga.mil/GandG/coordsys/grids/referencesys.html</p>	While some examples of other coordinate systems are listed in the standard (MGRS, USNG, GARS, GEOREF, LANDMARK), those values are not all-inclusive, and the user may indicate other coordinate systems that are not listed. ¹

<p align="center">Subject Acquisition Profiles SAP/FAP/IAP</p>	<p>7.7.5, Table 8, Table 9, Table 10</p>	<p>A subject acquisition profile is used to describe a set of characteristics concerning the capture of the biometric sample. These profiles have mnemonics SAP for face, FAP for fingerprints and IAP for iris records.</p>	<p>It is not feasible to test if the image was captured under the conditions specified by the SAP, FAP or IAP level as defined in Tables 10 through 13. However, the fields will be tested for valid level values (with the exception of Type 10 Compression values, which are dependent upon the SAP level and are not currently tested).</p>
<p>Open and Closed Paths</p>	<p>7.8</p>	<p>Several Record Types define open paths (also called contours or polylines) and / or closed paths (polygons) on an image. They are comprised of a set of vertices. For each, the order of the vertices shall be in their consecutive order along the length of the path, either clockwise or counterclockwise. (A straight line of only two points may start at either end). A path may not have any sides crossing. No two vertices shall occupy the same position.</p> <p>There may be up to 99 vertices.</p> <p>An open path is a series of connected line segments that do not close or overlap. A closed path (polygon) completes a circuit. The closed path side defined by the last vertex and the first vertex shall complete the polygon. A polygon shall have at least 3 vertices. The contours in Record Type-17: Iris image record can be a circle or ellipse. A circle only requires 2 points to define it (See Table 16).</p> <p>There are two different approaches to the paths in this standard. The 2007 and 2008 version of the standard used paths for Field 14.025: Alternate finger segment position(s) / ASEG.</p> <p>That approach has been retained in this version for all paths except in the Extended Feature Set (EFS) of Record Type-9. The EFS adopted an approach expressing the path in a single information item, which is different than that used in other record types.</p>	<p>Further research is needed to determine the feasibility of testing for:</p> <ul style="list-style-type: none"> -simple, plane figure -no sides crossing -no interior holes

Annex A: Support for AN-2011 Record Types and Interrelated Field

A.1 Support for Record Types

The following table outlines the conformance testing support for each of the record types defined by the AN-2011 standard.

Table A.1 - AN-2011 Record Type Support

Support for AN-2011 Record Types		
Number	Record Contents	Support
1	Transaction Information	Full Support. See Record Type-1: Transaction information record .
2	User-defined descriptive text	None.
3	Low-resolution grayscale fingerprint image (Deprecated)	Deprecated requirement only. See Record Type-3: DEPRECATED .
4	High-resolution grayscale fingerprint image	Full Support. See Record Type-4: Grayscale fingerprint image .
5	Low-resolution binary fingerprint image (Deprecated)	Deprecated requirement only. See Record Type-5: DEPRECATED .
6	High-resolution binary fingerprint image (Deprecated)	Deprecated requirement only. See Record Type-6: DEPRECATED .
7	User-defined image	None.
8	Signature image	None.
9	Minutiae data	None.
10	Face, other body part, or scar, mark tattoo (SMT) image	Full Support. See Record Type-10: Facial, other body part and SMT image record .
11	Voice Data (future addition to the standard)	Reserved requirement only. See Reserved Record Types .
12	Dental record data (future addition to the standard)	Reserved requirement only. See Reserved Record Types .
13	Variable-resolution latent friction ridge image	Full Support. See Record Type-13: Friction-ridge latent image record .
14	Variable-resolution fingerprint image	Full Support. See Record Type-14: Fingerprint image record .
15	Variable-resolution palmprint image	Full Support. See Record Type-15: Palm print image record .
16	User-defined variable-resolution testing image	None.
17	Iris Image	Full Support. See Record Type-17: Iris image record .
18	DNA data	Full Support. See Record Type-18: DNA record .
19	Variable-resolution plantar image	None.
20	Source representation	None.
21	Associated context	None.
22-97	Reserved for future use	Reserved requirement only. See Reserved Record Types .
98	Information assurance	None.
99	CBEFF biometric data record	None.

It is necessary to provide support for some fields contained in unsupported record types because of structural requirements and relationships to supported record types. These fields are outlined in the table below.

A.2 Interrelated Field Support

Table A.2 - AN-2011 Interrelated Field Support

Support for AN-2011 Interrelated Fields		
Number	Field Contents	Support
xx.001	Record header	All Record Types. See Field: xx.001-Record Header
xx.002	Information designation character / IDC	All Record Types except Record Type-1. See Field: xx.002-IDC
xx.995	Associated Context / ASC	Record Types 10 and above, not including 21 and 98. See Field: xx.995-ASC through Field: xx.995-ASC-ASP
xx.997	Source Representation / SOR	Record Types 10 and above, not including 18, 21, and 98. See Field: xx.997-SOR through Field: xx.997-SOR-RSP
xx.016	Segments / SEG	Record Types 20 and 21. See Field: xx.997-SOR-RSP and Field: xx.995-ASC-ASP
xx.021	SRN, ACN	Record Types 20 and 21. See Field: xx.997-SOR-SRN and Field: xx.995-ASC-ACN

Annex B: Version History

B.1 Release 1.0, August 2012

- Initial version of the conformance testing methodology which specified requirements and test assertions for the following sections and Record Types of the AN-2011 standard:
 - Section 5: Data Conventions
 - Section 7: Information Common to Several Record Types
 - Section 8.1 Record Type-1: Transaction information record
 - Section 8.4 Record Type-4: Grayscale fingerprint image
 - Section 8.10 Record Type-10: Facial, other body part and SMT image record
 - Section 8.13 Record Type-13: Friction-ridge latent image record
 - Section 8.14 Record Type-14: Fingerprint image record
 - Section 8.15 Record Type-15: Palm print image record
 - Section 8.17 Record Type-17: Iris image record
 - Annex B: Traditional Encoding

B.2 Release 1.1, October 2013

- Specified requirements and test assertions for the following sections and Record Types of the AN-2011 standard that were not included in Release 1.0:
 - Section 8.18 Record Type-18: DNA record
 - Annex C: NIEM Conformant encoding
 - Annex G: Mapping to the NIEM IEPD
- For all assertions named “Valid WSQ Encoder Version”:
 - Changed assertion name to “Valid WSQ Specification Version”
 - Changed test level to 3
 - Modified test note t-16 to describe the reason for the changes
- Name changes for all assertions:
 - The prefix Transaction denotes that the data is referenced from multiple Record Types (and/or entities within several Record Types) to determine the result of the assertion.

- The prefix TypeXX, where XX is a Record Type, denotes that data is referenced from multiple entities within the Record Type to determine the result of the assertion.
- Added test note t-20 to describe a change related to “sequentially assigned” values (IDC, SRN, ACN). The order of the values in the Transaction is no longer important, but the sequential nature of the values after being viewed in numeric order is still important.
- Added “Notes” column to table in test note t-5 to explain comparisons of matching IDC values.
- Reformatted Section 6 to facilitate navigation of the tables of requirements and assertions:
 - Repeated the table headers for the Tables of requirements and assertions on each page
 - Placed each table of requirements and assertions into its own section. An entry for each table was added to the table of contents
- The Assertion ID description in section 5.6 was modified to provide more information on the formatting of Assertion ID’s.
- Added Cardinality(X) the Table 5.3 (Test Assertion Syntax Operands) for use with XML cardinality values in Annex G or the base standard.
- Added XOR to “Table 5.1 - Assertion Syntax: Operator Definitions”.
- Added Element to “Table 5.2 - Assertion Syntax: Terms”.
- Added test note t-19 to address undefined terms “positive integer” and “integer”
- Added “Type10-10.031-10.029-CondCode Dependent” with assertion text “IF Present(10.031), THEN Present(10.029)”
- Modifications of test assertions
 - Reviewed all Level-2 assertions to determine whether or not the presence of the entity (field, XML Elements, etc.) is required before assessing the assertion. In all such cases, the presence conditions were added. For example, “10.025-YAW- 10.021- Opposite” was modified to include “IF Present(10.021)” so that the assertion is only tested if field 10.021 is present.
 - Split “Type13-13.008-Conditional” into two separate assertions: “Type13-13.008-Conditional-SHPS” and “Type13-13.008-Conditional-SVPS”
 - Renamed “Transaction-IDCsRelate” to “Transaction- MatchingIDCValues-ComparableBiometricTypes”
 - Added NIEM-xx.999-CharType and NIEM-4.009-CharType assertions.
 - Removed WSQ20 from “13.011-Value” allowable values because WSQ20 is not a lossless type.
 - Table 6-17 - IDC Comparison Results: added support for allowing Type-9: Minutiae data records to share IDC values with Type-4, Type-13, Type-14, Type-15, and Type-19 records (Finger, Palm, Plantar, and Friction Ridge). Also added support for Friction Ridge (Type-13) to share IDC values with Type-4, Type-9, Type-14, Type-15, and Type-19.
 - “17.995-InfoItemCount”: Changed to allow 1 or 2 information items per subfield, not 2 or 3 as stated in the previous version
 - “[17.001 to 17.005, 17.013]- Mandatory CondCode”: changed name to “[17.001 to 17.005]- Mandatory CondCode”

- “Field: Originating Agency”: changed name to “Field: Source Agency” and added assertion “[10,13 to 21, 98, 99].004-CharType”.
- “Field: Source Agency Name”: added assertion “xx.993-CharType”
- “NIEM-xx.902- Subfield CharType” (where xx is 10, 13, 14, 15, 17) name changed to “NIEM-xx.902-GMT-CharType” and assertion text changed to: “Bytes(XElm(biom:ProcessUTCDate) in xx.902) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]”
- “NIEM-xx.998- Subfield CharType” name changed to “NIEM-xx.998-UTE- CharType” and assertion text changed to: “Bytes(XElm(biom:CaptureUTCDateTime) in xx.998) MO [0x30 to 0x39, 0x2D, 0x3A, 0x54, 0x5A]”
- “NIEM-xx.998-UTE-Value” assertion text changed to: “{XElm(biom:CaptureUTCDateTime) in xx.998} MO [NIEM-ValidUTC/GMT]”
- “NIEM-xx.998-Subfield CharCount” name changed to “NIEM-xx.998-UTE- CharCount” and assertion text changed to: “Length(XElm(biom:CaptureUTCDateTime) in xx.998) EQ 20”.
- “xx.998-[UTE, LTD, LTM, LTS, LGD, LGM, LGS, ELE, GDC, GCM, GCE, GCN, GRT, OSI, OCV]” removed UTE, added separate assertion: “xx.998-UTE- CharCount”
- “NIEM-17.902- Subfield CharCount” name changed to “NIEM-17.902- GMT- CharCount” and assertion text changed to: “Length(XElm(biom:ProcessUTCDate) in 17.902) EQ 20”
- “17.995-ASP-CharCount” changed to test for range 1 to 2, not 1 to 3 as stated in the previous version.
- “17.995-ACN-CharCount” changed to test for range 1 to 3, not 1 to 2 as stated in the previous version.
- Occurrence assertions for Type-10, Type-15, and Type-17 were updated to allow field xx.993 to occur one or fewer times.
- RecordCategoryCode value restrictions for Type-1, Type-2, and Type-4 were changed from “01”, “02” and “04” to “1”, “2”, and “4”.
- Added “Schema Coverage” to the “Applicability” column of the tables of requirements and assertions found in section 6.3.
- In Requirement “Field:xx.002-IDC”, assertion “NIEM- IDCSeqValues” level was changed from 1 to 2.
- In Requirement “Field:xx.002-IDC”, assertion “xx.002-Value” changed to address all record types except Type-1.
- “13.024-FRMP-Value” updated to allow any value from Table 8.
- “NIEM-T10-DiffDC” changed to "NIEM-T10-DiffIDC" and the assertion was altered to state that the IDC values are NEQ.
- “NIEM-xx.902-ANN-GMT” changed to “NIEM-xx.902-GMT-Value” and assertion text changed to test for valid GMT/UTC value.
- “18.902- GMT- CharCount” changed to T (Traditional) and “NIEM-18.902- GMT- CharCount” changed to X (XML).

- “NIEM-xx.996-RecordTypes” and “xx.996-RecordTypes” changed to allow record type to be “MO [10, 13 to 17,19,20,21,99]” instead of “GTE 10”
- All record, field, subfield, and information item count assertions changed to T rather than X or B.
- All record, field, subfield, and information item count assertions: added cardinality for XML elements based on Annex G.
- “14.031- Values” Added value 45.
- “Type10-10.031-10.033-CondCode Dependent” assertion changed from “{10.031} EQ 5 IFF Present(10.33)” to “IF {10.031} EQ 5, THEN Present(10.033)”
- “13.024-FRMP-Value” removed values 60 to 79, 81 to 84.
- “[xx.008,xx.016, xx.017]-Conditional” changed to level 2.
- “[20.008, 20.017, 20.018]-Conditional” and “[17.008, 17.022, 17.023]-Conditional” changed to level 2.
- “10.011-Value” changed to level 2.
- Added “NIEM-xx.998-GDC-Value” assertion.
- Text added to the end of Section 6.2: “Unless otherwise stated, the tables of requirements and assertions express all field structures using the Traditional notation of record type and field number (eg. 1.001) as well as subfield and information item indices when appropriate. However, the NIEM-XML encoding has no concept of subfields or information items. Instead, the XML encoding uses subelements. Annex G of the base standard can be used to translate the listed values for Traditional structures to the XML equivalent. In some cases the tables of requirements and assertions use the XML element names when necessary for clarifying an assertion.”
- “10.019-CharCount” changed from “MO [1 to 3]” to “EQ 1”
- “Transaction: Encoding-Base64” changed text to “<These assertions are addressed in the record type tables where Base-64 encoding is required.>” instead of “<unsupported>”
- Changed “10.023-Value” to “10.023-PAC-Value”, added “10.023-VSD-Value”.
- Changed “[13.004, 13.020, 13.993]- CharType” to TRUE.
- Removed “15.025-CharType”.
- Requirements and assertions table added for Annex C
- Modified test note t-6 to include YYYY-MM and YYYY for NIEM-ValidLocalDate.
- All UTC/GMT values were modified to allow the “-“ character (ASCII value 0x2D).
- Assertions for Requirement ID “Field: xx.999-Reserved” changed from Level 1 to Level 2.
- “17.040-Value” was changed to allow value 1 to 9999999 instead of 0 to 9999999
- The following assertions changed from Level 1 to Level 2:
 - xx.995-RecordTypes
 - xx.996-RecordTypes

- xx.997-RecordTypes
 - xx.998-RecordTypes
 - xx.999-RecordTypes
- Assertion “NIEM-ImageRecordCategoryCode” renamed to “NIEM-xx.999-RecordType” and changed from Level 1 to Level 2
- Assertion “NIEM-SOR-RecordTypes” renamed to “NIEM-xx.997-RecordType” and changed from Level 1 to Level 2
- Assertion “NIEM-ASC-RecordTypes” renamed to “NIEM-xx.995-RecordType” and changed from Level 1 to Level 2
- Assertion “NIEM-HAS-RecordTypes” renamed to “NIEM-xx.996-RecordType” and changed from Level 1 to Level 2
- Assertion “NIEM-GEO-RecordTypes” renamed to “NIEM-xx.998-RecordType” and changed from Level 1 to Level 2
- Changed name and assertion text:
 - xx.995-RecordTypes to Type[ActualRecordType]-Field995NotPresent
 - xx.996-RecordTypes to Type[ActualRecordType]-Field996NotPresent
 - xx.997-RecordTypes to Type[ActualRecordType]-Field997NotPresent
 - xx.998-RecordTypes to Type[ActualRecordType]-Field998NotPresent
 - xx.999-RecordTypes to Type[ActualRecordType]-Field999NotPresent
- Applicability changed from B to T, and new XML-versions were created for each of the following assertions:
 - “[1.001,1.012]-Conditional Applicability”
 - “1.011-NSR-Length”
 - “1.011-NSR-Value”
 - “1.012-CharCount” -RecordTypes
 - “1.012-Value”
- Assertion ID “1.013-DOM-Value” changed to “1.013-[DVM, DVN]-Value”
- Assertion ID “1.015-DCS-CSI-Value” changed to “1.015-CSI-Value”
- Assertion ID “1.015-DCS-CSN-Value” changed to “1.015-CSN-Dependent”. In addition, the Test Assertion text was modified to use If/Else statements and to allow user-defined values.
- New Assertion “1.015-CSN-Value” added.
- Assertion ID “1.015-DCS-CSV-Value” changed to “1.015-CSV-Value”
- Assertion ID “1.016-APS-Value” changed to “1.016-[APO, APN, APV]-Value”
- Assertion ID “1.017-ANM” changed to “1.017-[DAN,OAN]-Value”
- Assertion IDs “NIEM-4.[001 to 009]-ByteCount” renamed to “NIEM-4.[001 to 009]-CharCount”.
- Added Assertion “NIEM-4.004-Occurrence”.
- Added Assertion “4.009-DATA-Value”
- Modified Test Assertion text in Assertion “NIEM-Transaction-Required Records”.

- Modified “NIEM-1.005-CharType”, “NIEM-1.005-CharCount”, and “NIEM-1.005-Value” to account for Date, YearMonth, or Year format allowed in NIEM encoding.
- Changed Assertion “1.003-REC-Matches Records” to Level 2
- Changed Assertions “NIEM-Records Reserved” and “Records-Reserved” to “Transaction-NIEM-Records Reserved” and “Transaction-Records Reserved” respectively.
- Split assertion “Reserved Character Types” into one Assertion for Traditional and one for XML to provide clarification for XML encoding, now found in “NIEM-Reserved Character Types”.
- Appended “TypeX-” to the beginning of Record-level assertions for consistent naming.
- Changed the following assertion names for consistency:
 - “NIEM- IDCExists” to “NIEM-Typexx-Field002-Exists”
 - “NIEM-RecordCategory First” to “NIEM-Typexx-Field001-First”
 - “NIEM-IDC-Second” to “NIEM-Typexx-Field002-Second”
 - “IDCSequentialValues” to “Transaction-IDCSequentialValues”
 - xx.002-IDCRelate to Transaction-IDCsRelate
 - xx.002-SameDimension to Transaction-MatchingIDCSameImageDimension
 - xx.995-ASC-ACN to Transaction-ASC-ACN-Match
 - xx.995-ASC-ASP to Transaction-ASC-ASP-Match
 - xx.995-ASC-ACN-SeqValues to Transaction-ASC-ACN-SequentialValues
 - xx.997-SOR-SRN to Transaction-SOR-SRN-Match
 - xx.997-SOR-RSP to Transaction-SOR-RSP-Match
 - Type1-Occur Once to Transaction-Type1-OccursOnce
 - Type1-First to Transaction-Type1-First
 - Type3-Zero Occurrences to Transaction-Type3-ZeroOccurrences
 - Type5-Zero Occurrences to Transaction-Type5-ZeroOccurrences
 - Type6-Zero Occurrences to Transaction-Type6-ZeroOccurrences
 - 10.039-T10-DiffIDC to Transaction-SameT10-DiffIDC
 - 1.003-CRC-Transaction Record Count to Transaction-CRCEqualsRecordCount
 - xx.001-Record Header to Typexx-Field001EqualsRecordLength
 - xx.001-First to Typexx-Field001First
 - xx.002-Exists to Typexx-Field002Exists
 - xx.002-Second to Typexx-Field002Second
 - 1.xxx-Mandatory CondCode to Typexx-MandatoryCondCode (and added NIEM-Typexx-MandatoryCondCode based on cardinality in Annex G)

- 1.xxx-Occurrence to Typexx-FieldOccurrences
- Assertions 1.001 to 1.017-Occurrence were condensed and named Type1-FieldOccurrences
- 10.022-Occurrence Legacy to 10.022-PXS-Legacy
- 4.004-Occurrence to Type4-Field004Occurrence
- Field Record Type to xx.xxx-FieldNumberMatchesRecordType
- 10.011-Value to 10.011-ValueDependent
- 14.011-Value to 14.011-ValueDependent
- Added new Level 1 10.011-Value and 14.011-Value assertions
- Changed “xx.997-SRN-OneTo255” to “xx.997-SRN-Value”
- Changed “xx.997-RSP-OneTo99” to “xx.997-RSP-Value”
- Modified “10.042-TSC-Value” to test only Level 1 values
- Added “10.042-TSC-ValueDependent” to test Level 2 previously found in 10.042-TSC-Value

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<http://www.nist.gov/itl/csd/biometrics/ansi-nist.cfm>

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