International Standard

ISO/IEC 18013-4

Personal identification — ISO-compliant driving licence —

Part 4: Test methods

AMENDMENT 1: Test methods for compact encoding

Second edition
2019-11

AMENDMENT 1
2024-01

Reference number
ISO/IEC 18013-4:2019/Amd. 1:2024(en)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and https://patents.iec.ch. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and security devices for personal identification*.

A list of all parts in the ISO/IEC 18013 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Personal identification — ISO-compliant driving licence —

Part 4:
Test methods

AMENDMENT 1: Test methods for compact encoding

Clause 2 Normative references

Add the date of publication to the reference to ISO/IEC 18013-2 as follows:

ISO/IEC 18013-2:2020

Replace all the occurrences of ISO/IEC 18013-2 in the document to the dated version.

Clause 4

Add the following abbreviated term after CA

CE compact encoding

Subclause 6.2.2.1

Replace

"One IUT is defined as an IDL with SE for SIC (see ISO/IEC 18013-2:—, Annex C)"

by

"One IUT is defined as an IDL with SE for SIC (see ISO/IEC 18013-2:2020, Annex C) or an IDL with CE (see ISO/IEC 18013-2:2020, Annex B) "

Subclause 6.3.1.3

Replace the full text by

"All equipment described in Annexes A to D pertinent to the machine-readable technology supported by the IUT shall be available."

Subclause 7.1

Replace the second sentence by

"Test requirements for Commands and LDS tests conformity are defined in Annexes A to D."

Subclause 7.3

Add the following subclause:

"7.3.3 Compact encoding (CE)

Test case specifications for CE cover are as follows:

— Data structure tests for CE and commands tests (applicable to CE on SIC). The tests shall be carried out as specified in Annex D."

Subclause A.3.2.19

In row "References", replace

"ISO/IEC 18013-2:—, A.5.1"

by "ISO/IEC 18013-2: 2020, A.4.1".

Subclause A.3.2.20

In row "References", replace

ISO/IEC 18013-2:—, A.5.1

by

ISO/IEC 18013-2: 2020, A.4.1

Subclause A.3.2.21

In row "References", replace " ISO/IEC 18013-2:—, A.5.1"

by

"ISO/IEC 18013-2: 2020, A.4.1

Add following new Annex D after Annex C.

Annex D
(normative)

Test case specification for Compact Encoding (CE)

D.1 General

This annex specifies the test cases for CE.

D.2 General test requirements

D.2.1 Preconditions for testing

The tests in this annex require a fully personalized IDL. This means that all mandatory data groups shall be present. This annex tests all mandatory and optional data groups.

All tests are mandatory unless marked as optional or conditional.

D.2.2 Test setup

For setting up these tests, any read device able to read all data at the same time can be used.

D.2.3 Implementation conformance statement

In order to set up the tests properly, Tables D.1 and D.2 shall be completed.

The ISO/IEC 18013-2 and ISO/IEC 18013-3 specifications define several optional elements that an IDL can support.

Since these elements are optional, it is not possible to define the corresponding tests as mandatory for each IDL. Therefore, this document specifies a set of profiles. Each profile covers a specific optional element. A tested IDL shall be assigned to the supported profiles in the ICS, and a test shall only be performed if the IDL supports this profile.

Table D.1 — Implementation conformance statement

Profile	Information for test setup	Applicable (YES or NO)
SIC	Contact ICC or PICC storage media	
BAP	Basic Access Protection	
PACE	Password Authenticated Connection Establishment	
NO-SIC	All technologies excluding ICs	
DG2	IDL contains Data Group 2	
DG3	IDL contains Data Group 3	
DG4	IDL contains Data Group 4	
DG7	IDL contains Data Group 7	
DG11	IDL contains Data Group 11	
SOD	IDL contains SOD	

Table D.1 *(continued)*

Profile	Information for test setup	Applicable (YES or NO)
SOD2	IDL contains DG.SOD.2, but no DG.SOD.3	
SOD23	IDL contains DG.SOD.2 and DG.SOD.3	
NMA	IDL contains Data Group 12	

Table D.2 — Configuration information

Supported profile	Configuration information
DG11	Indicate whether DG11 is a type 1 or type 2 data group. If DG11 is a type 2 data group, indicate the length in bytes of the data-group.
SOD, SOD2 not supported, SOD23 not supported	Provide the public key value and the curve identifier for the verification of the signature in the SOD. For allowed values for the curve identifier, see ISO/IEC 18013-3:2017, Table 3.
SOD, SOD2, SOD23 not supported	Provide the curve identifier for the verification of the signature in the SOD. For allowed values for the curve identifier, see ISO/IEC 18013-3:2017, Table 3.

D.3 Test layer CE

D.3.1 Test unit CE_FILE — Compact encoding (CE) file structure tests

D.3.1.1 Test case CE_FILE_001

Test Case-ID	CE_FILE_001
Purpose	This test checks the template tag of the encoded LDS element.
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	SIC
Preconditions	1. Encoded EF.CE object in binary format (as read from the IDL)
Test scenario	1. Check the very first byte of the EF.CE element
Expected results	1. First byte shall be ‘53’

D.3.1.2 Test case CE_FILE_002

Test Case-ID	CE_FILE_002
Purpose	This test checks the absence of EF.COM for CE
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	SIC
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test scenario	1. Check the presence of EF.COM
Expected results	1. EF.COM shall not be present

D.3.1.3 Test case CE_FILE_003

Test Case-ID	CE_FILE_003
Purpose	This test checks the file structure for CE
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	
Preconditions	1. Encoded CE Constructed Data Object in binary format (as read from the IDL; without the SIC template tag, if applicable)
Test scenario	1. Check the first byte of the CE constructed data object 2. Check the last byte of the CE constructed data object
Expected results	1. The first byte shall be 'A0' 2. The last byte shall be the End of File Delimiter 'B6'

D.3.2 Test unit CE_HEADER — Compact encoding (CE) header tests

D.3.2.1 Test case CE_HEADER_001

Test Case-ID	CE_HEADER_001
Purpose	This test checks the Application Identifier referred by the header element
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	NO-SIC
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test scenario	1. Check the AID bytes (first 7 bytes) of the Header element
Expected results	1. AID shall be 'A0 0000 02 48 01 00'

D.3.2.2 Test Case CE_HEADER_002

Test Case-ID	CE_HEADER_002
Purpose	This test checks the Application Identifier referred by the header element
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	SIC
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the AID bytes (first 7 bytes) of the Header element
Expected Results	1. AID shall be 'A0 00 00 02 48 03 00'

D.3.2.3 Test Case CE_HEADER_003

Test Case-ID	CE_HEADER_003
Purpose	This test checks the Version referred by the header element
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	

Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the number of bytes of the Version 2. Check the first byte of the Version of the Header element 3. Check the second byte of the Version of the Header element
Expected Results	1. The number of bytes is two 2. The first byte of the Version shall be '01' 3. The second byte of the Version shall contain a valid BCD encoded number

D.3.2.4 Test Case CE_HEADER_004

Test Case-ID	CE_HEADER_004
Purpose	This test checks the Length encoded in the header element
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Analyze the encoding of the Length bytes in the Header Element 2. Verify the length of the data file
Expected Results	1. The Length shall contain a valid length encoding according to ASN.1 encoding rules 2. The encoded length shall equal the total number of bytes from (and including) the data group delimiter between the header and Data Group 1, up to and including the last character of the LDS (i.e. the end of file delimiter)

D.3.3 Test Unit CE_DG1 – Compact encoding (CE) DG1 tests

D.3.3.1 Test Case CE_DG1_001

Test Case-ID	CE_DG1_001
Purpose	This test checks the encoded DG1 for CE according to Type 1 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the byte following the length encoding in the header, i.e. the byte preceding Data Group 1.
Expected Results	1. The byte shall be 'D7' ("×")

D.3.3.2 Test Case CE_DG1_002

Test Case-ID	CE_DG1_002
Purpose	This test checks the Field Delimiters of DG1 for CE according to Type 1 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the number of Field Delimiters in DG1
Expected Results	1. The number of Field Delimiters shall be 8

D.3.3.3 Test Case CE_DG1_003

Test Case-ID	CE_DG1_003
Purpose	This test checks the encoding of the Family Name referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020 ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Family Name field length 3. Verify the Family Name.
Expected Results	1. DG1 shall be present. 2. The number of bytes shall not exceed 36 3. Family Name shall not contain numeric characters

D.3.3.4 Test Case CE_DG1_004

Test Case-ID	CE_DG1_004
Purpose	This test checks the encoding of the Given Name referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020 ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Given Name field length 3. Verify the Given Name.
Expected Results	1. DG1 shall be present. 2. The number of bytes shall not exceed 36 3. Given Name shall not contain numeric characters

D.3.3.5 Test Case CE_DG1_005

Test Case-ID	CE_DG1_005
Purpose	This test checks the encoding of the Date of Birth referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Date of Birth field length 3. Check the Date of Birth encoding 4. Check that the Date of Birth element contains a valid date.
Expected Results	1. DG1 shall be present. 2. Date of Birth field length shall be 4 bytes long 3. Date of Birth shall be encoded in YYYYMMDD BCD format 4. The Date of Birth shall be reasonable. It shall specify an existing day and it should be in the past.

D.3.3.6 Test Case CE_DG1_006

Test Case-ID	CE_DG1_006
Purpose	This test checks the encoding of the Date of Issue referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Date of Issue field length 3. Check the Date of Issue encoding 4. Check that the Date of Issue element contains a valid date.
Expected Results	1. DG1 shall be present. 2. Date of Issue field length shall be 4 bytes long 3. Date of Issue shall be encoded in YYYYMMDD BCD format 4. The Date of Issue shall be reasonable. It shall specify an existing day and it should be in the past.

D.3.3.7 Test Case CE_DG1_007

Test Case-ID	CE_DG1_007
Purpose	This test checks the encoding of the Date of Expiry referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	

Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Date of Expiry field length 3. Check the Date of Expiry encoding 4. Check that the Date of Expiry element contains a valid date.
Expected Results	1. DG1 shall be present. 2. Date of Expiry field length shall be 4 bytes long 3. Date of Expiry shall be encoded in YYYYMMDD BCD format 4. The Date of Expiry shall specify an existing day and shall be later than the Date of Issue.

D.3.3.8 Test Case CE_DG1_008

Test Case-ID	CE_DG1_008
Purpose	This test checks the encoding of the Issuing Country referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020 ISO/IEC 8859-1 ISO 3166-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Issuing Country field length 3. Check the Issuing Country encoding 4. Check Issuing Country
Expected Results	1. DG1 shall be present. 2. Issuing Country field length shall be 3 bytes long 3. Issuing Country shall be encoded in Alpha characters only 4. Issuing Country shall be a valid value as defined in ISO 3166-1

D.3.3.9 Test Case CE_DG1_009

Test Case-ID	CE_DG1_009
Purpose	This test checks the encoding of the Issuing Authority referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020 ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Issuing Authority field length 3. Check the Issuing Authority format
Expected Results	1. DG1 shall be present. 2. The number of bytes shall not exceed 65 3. The Issuing Authority shall be coded according to ISO/IEC 8859-1 and contain only A, N, and S characters

D.3.3.10 Test Case CE_DG1_010

Test Case-ID	CE_DG1_010
Purpose	This test checks the encoding of the Licence Number referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020 ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Verify the Licence Number field length 3. Check Licence Number encoding
Expected Results	1. DG1 shall be present. 2. The number of bytes shall not exceed 25 3. Licence Number shall not contain special characters

D.3.3.11 Test Case CE_DG1_011

Test Case-ID	CE_DG1_011
Purpose	This test checks the number of sub-fields in the Categories of Vehicles/ Restrictions/Conditions referred by the DG1 element.
Version	0.3
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Check the number of sub fields in the value of the Categories of Vehicles/Restrictions/Conditions field.
Expected Results	1. DG1 shall be present. 2. The value of the Categories of Vehicles/Restrictions/Conditions field shall contain a multiple of 6 sub-fields (n*6 with n≥1) which may be empty; the sub-fields are separated by a ";" ('3B' hex).

D.3.3.12 Test Case CE_DG1_012

Test Case-ID	CE_DG1_012
Purpose	This test checks the Vehicle Category Code of a single entry from the Categories of Vehicles/Restrictions/Conditions referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Check the Vehicle Category Code value for all entries
Expected Results	1. DG1 shall be present. 2. The Vehicle Category Code contains Alpha-Numeric characters only

D.3.3.13 Test Case CE_DG1_013

Test Case-ID	CE_DG1_013
Purpose	This test checks the Date of Issue (if present) of a single entry from the Categories of Vehicles/Restrictions/Conditions referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Check the encoding of the Date of Issue value for all entries 3. Check the Date of Issue value
Expected Results	1. DG1 shall be present. 2. Date of Issue shall be 4 bytes long and shall be encoded in YYYYMMDD BCD format 3. The Date of Issue shall be reasonable. It shall specify an existing day and it should be in the past.

D.3.3.14 Test Case CE_DG1_014

Test Case-ID	CE_DG1_014
Purpose	This test checks the Date of Expiry (if present) of a single entry from the Categories of Vehicles/Restrictions/Conditions referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Check the encoding of the Date of Expiry value for all entries 3. Check the Date of Expiry value
Expected Results	1. DG1 shall be present. 2. Date of Expiry shall be 4 bytes long and shall be encoded in YYYYMMDD BCD format 3. The Date of Expiry shall specify an existing day and shall be later than the Date of Issue.

D.3.3.15 Test Case CE_DG1_015

Test Case-ID	CE_DG1_015
Purpose	This test checks the Code of a single entry from the Categories of Vehicles/Restrictions/Conditions referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	

Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Check the encoding of the Code value for all entries 3. Check the Code value
Expected Results	1. DG1 shall be present. 2. The length of the Code shall not exceed 5 bytes length 3. The value of the Code is one of the values specified in ISO/IEC 18013-2:2020, A.4.1 (i.e. "01", "03", "78", "S01", "S02", "S03", "S04" or "S05").

D.3.3.16 Test Case CE_DG1_016

Test Case-ID	CE_DG1_016
Purpose	This test checks the Sign (if present) of a single entry from the Categories of Vehicles/Restrictions/Conditions referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Check the format of the Sign 3. Check the value of the Sign 4. Check the Sign only occurs in combination with an applicable Code 5. Check the Sign only occurs in combination with a Value field
Expected Results	1. DG1 shall be present 2. Sign shall be encoded in Special characters 3. The value of the Sign is one of the values specified in ISO/IEC 18013-2:2020, A.4.1 (i.e. "<","<",">","<=","=<","<>","><",">=","=>","==") 4. The value of the Code is one of the following values specified in ISO/IEC 18013-2:2020, A.4.1 (i.e. "S01", "S02", "S03" or "S04") 5. The Value field is not empty

D.3.3.17 Test Case CE_DG1_017

Test Case-ID	CE_DG1_017
Purpose	This test checks the Value (if present) of a single entry from the Categories of Vehicles/Restrictions/Conditions referred by the DG1 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for DG1 2. Check the format of the Value 3. Check the Value only occurs in combination with a Code 4. Check the Value only occurs in combination with a Sign
Expected Results	1. DG1 shall be present. 2. The Value field shall be encoded in ANS format 3. The Code field is not empty 4. The Sign field is not empty

D.3.4 Test Unit CE_DG2 – Compact encoding (CE) DG2 tests

D.3.4.1 Test Case CE_DG2_001

Test Case-ID	CE_DG2_001
Purpose	This test checks that the Data Group Delimiter preceding DG2 is present
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the byte following the last byte of Data Group 1, i.e. the byte preceding Data Group 2.
Expected Results	1. The byte shall be 'D7' ("×")

D.3.4.2 Test Case CE_DG2_002

Test Case-ID	CE_DG2_002
Purpose	This test checks the Field Delimiters of DG2 for CE according to Type 1 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	DG2
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the number of Field Delimiters in DG2
Expected Results	1. The number of Field Delimiters shall be 6

D.3.4.3 Test Case CE_DG2_003

Test Case-ID	CE_DG2_003
Purpose	This test checks the encoding of Gender referred by the DG2 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG2
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Gender element data in DG2 2. Verify the length of the Gender 3. Check the value of Gender
Expected Results	1. The Gender element data may be present in DG2 2. If present, the length of Gender shall be 1 byte length 3. If present, the value of Gender shall be '00' (Unknown), '01' (Male), '02' (Female), or '09' (Not applicable) encoded in BCD format (as per ISO/IEC 5218)

D.3.4.4 Test Case CE_DG2_004

Test Case-ID	CE_DG2_004
Purpose	This test checks the encoding of Height referred by the DG2 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG2
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Height element data in DG2 2. Verify the length of the Tag Height 3. Check the encoding of Height
Expected Results	1. The Height element data may be present in DG2 2. If present, the length of Height shall be 2 byte length 3. If present, the value of Height shall be encoded in BCD format

D.3.4.5 Test Case CE_DG2_005

Test Case-ID	CE_DG2_005
Purpose	This test checks the encoding of Weight referred by the DG2 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG2
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Weight element data in DG2 2. Verify the length of the Weight 3. Check the encoding of Weight
Expected Results	1. The Weight element data may be present in DG2 2. If present, the length of Weight shall be 2 byte length 3. If present, the value of Weight shall be encoded in BCD format

D.3.4.6 Test Case CE_DG2_006

Test Case-ID	CE_DG2_006
Purpose	This test checks the encoding of Eye Colour referred by the DG2 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG2
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Eye Colour element data in DG2 2. Verify the length of the Eye Colour 3. Check the encoding of Eye Colour
Expected Results	1. The Eye Colour element data may be present in DG2 2. If present, the length of Eye Colour shall be 3 byte length 3. If present, the value of Eye Colour shall be defined per ISO/IEC 18013-2:2020, 8.3 (i.e. "BLK", "BLU", "BRO", "GRY", "GRN", "HAZ", "MAR", "PNK", "DIC", or "UNK").

D.3.4.7 Test Case CE_DG2_007

Test Case-ID	CE_DG2_007
Purpose	This test checks the encoding of Hair Colour referred by the DG2 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG2
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Hair Colour element data in DG2 2. Verify the length of the Hair Colour 3. Check the encoding of Hair Colour
Expected Results	1. The Hair Colour element data may be present in DG2 2. If present, the length of Hair Colour shall be 3 byte length 3. If present, the value of Hair Colour shall be defined per ISO/IEC 18013-2:2020, 8.3 (i.e. "BAL", "BLK", "BLN", "BRO", "GRY", "RED", "SDY", "WHI", or "UNK").

D.3.4.8 Test Case CE_DG2_008

Test Case-ID	CE_DG2_008
Purpose	This test checks the encoding of Place of Birth referred by the DG2 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG2
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Place of Birth element data in DG2 2. Verify the length and format of the Place of Birth 3. Verify the content of Place of Birth
Expected Results	1. The Place of Birth element data may be present in DG2 2. If present, the Place of Birth field shall be encoded as ADNS on 2 - 35 bytes. 3. If present, Place of Birth shall contain 3 sub-fields (City; State/Province or District; Country) that are that are separated with a sub-field delimiter (";").

D.3.4.9 Test Case CE_DG2_009

Test Case-ID	CE_DG2_009
Purpose	This test checks the encoding of Normal Place of Residence referred by the DG2 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG2

Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Normal Place of Residence element data in DG2 2. Verify the length and format of the Normal Place of Residence 3. Verify the content of Normal Place of Residence
Expected Results	1. The Normal Place of Residence element data may be present in DG2 2. If present, the Place of Residence field shall be encoded as ADNS on 5 - 113 bytes. 3. If present, Normal Place of Residence shall contain 6 sub-fields (Street Address Line 1; Street Address Line 2; City; State/Province or District; Postal Code; Country) that are separated with a sub-field delimiter (";").

D.3.5 Test Unit CE_DG3 – Compact encoding (CE) DG3 tests

D.3.5.1 Test Case CE_DG3_001

Test Case-ID	CE_DG3_001
Purpose	This test checks that the Data Group Delimiter preceding DG3 is present
Version	0.3
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. If DG2 is present, check the byte following the last byte of Data Group 2 If DG2 is not supported, check the byte following the data group delimiter that precedes the empty DG2
Expected Results	1. The byte shall be 'D7' ("×")

D.3.5.2 Test Case CE_DG3_002

Test Case-ID	CE_DG3_002
Purpose	This test checks the Field Delimiters of DG3 for CE according to Type 1 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	DG3
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the number of Field Delimiters in DG3
Expected Results	1. The number of Field Delimiters shall be 3

D.3.5.3 Test Case CE_DG3_003

Test Case-ID	CE_DG3_003
Purpose	This test checks the encoding of Administrative Number referred by DG3 element
Version	0.2
References	ISO/IEC 18013-2:2020 ISO/IEC 8859-1
Profile	DG3
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Administrative Number element data in DG3. 2. Verify the length of the Administrative Number 3. Verify the encoding of the Administrative Number
Expected Results	1. The Administrative Number element data may be present. 2. If present, the length of Administrative Number shall not exceed 25 bytes length 3. If present, the Administrative Number shall be as coded as ANS

D.3.5.4 Test Case CE_DG3_004

Test Case-ID	CE_DG3_004
Purpose	This test checks the encoding of Document Discriminator referred by DG3 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG3
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Document Discriminator element data in DG3. 2. Verify the length of the Document Discriminator 3. Verify the encoding of the Document Discriminator
Expected Results	1. The Document Discriminator element data may be present. 2. If present, the length of Document Discriminator shall be one byte. 3. If present, the value of Document Discriminator shall be encoded in BCD format

D.3.5.5 Test Case CE_DG3_005

Test Case-ID	CE_DG3_005
Purpose	This test checks the encoding of Data Discriminator referred by DG3 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG3

Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Data Discriminator element data in DG3. 2. Verify the length of the Data Discriminator 3. Verify the encoding of the Data Discriminator
Expected Results	1. The Data Discriminator element data may be present. 2. If present, the length of Data Discriminator shall be one byte. 3. If present, the value of Data Discriminator shall be encoded in BCD format

D.3.5.6 Test Case CE_DG3_006

Test Case-ID	CE_DG3_006
Purpose	This test checks the encoding of ISO Issuer ID Number referred by DG3 element
Version	0.2
References	ISO/IEC 18013-2:2020
Profile	DG3
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Search for the Issuer ID Number element data in DG3. 2. Verify the length of the Issuer ID Number 3. Check the encoding of the Issuer ID Number
Expected Results	1. The Issuer ID Number element data may be present. 2. If present, the length of Issuer ID Number shall be 4 bytes length 3. If present, the value of Issuer ID Number shall be encoded in BCD format

D.3.6 Test Unit CE_DG4 – Compact Encoding (CE) DG4 tests

D.3.6.1 Test Case CE_DG4_001

Test Case-ID	CE_DG4_001
Purpose	This test checks that the Data Group Delimiter preceding DG4 is present
Version	0.3
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. If DG3 is present, check the byte following the last byte of Data Group 3 If DG3 is not supported, check the byte following the data group delimiter that precedes the empty DG3
Expected Results	1. The byte shall be ‘D7’ (“×”)

D.3.6.2 Test Case CE_DG4_002

Test Case-ID	CE_DG4_001
Purpose	This test checks the encoded DG4 for CE according to Type 2 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	DG4
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the first byte (Type of Image) after the Data Group Delimiter 2. Analyze the encoding of the bytes that follow the Type of Image 3. Verify the length of the Image object
Expected Results	1. Value of Type of Image shall be a valid image type indicated in ISO/IEC 18013-2:2020, 8.5 (i.e. '03' or '04') 2. The bytes that follow the Type of Image shall contain a valid length encoding (according to ASN.1 encoding rules). 3. The encoded length shall match the size of the given Image object

D.3.6.3 Test Case CE_DG4_003

Test Case-ID	CE_DG4_003
Purpose	This test checks that only 1 portrait image is encoded in DG4 for CE according to Type 2 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	DG4
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the number of portrait images in DG4
Expected Results	1. The number of portrait image encoded in DG4 shall be 1

D.3.7 Test Unit CE_DG7 – Compact Encoding (CE) DG7 tests

D.3.7.1 Test Case CE_DG7_001

Test Case-ID	CE_DG7_001
Purpose	This test checks that the Data Group Delimiter preceding DG7 is present
Version	0.3
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. If DG4 is present, check the byte following the last byte of Data Group 4 If DG4 is not supported, check the byte following the data group delimiter that precedes the empty DG4
Expected Results	1. The byte shall be ‘D7’ (“×”)

D.3.7.2 Test Case CE_DG7_002

Test Case-ID	CE_DG7_002
Purpose	This test checks the structure of the encoded DG7 for CE according to Type 2 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	DG7
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the presence of the BDB Format Owner and Format Type 2. Analyze the encoding of the bytes that follow the Format Type element 3. Verify the length of the Biometric Data Block object
Expected Results	1. The Data Group Delimiter shall be followed by 4 BCD encoded bytes 2. The bytes that follow the BDB Format Type shall contain a valid length encoding (according to ASN.1 encoding rules). 3. The length of the Biometric Data Block object shall match the encoded length

D.3.7.3 Test Case CE_DG7_003

Test Case-ID	CE_DG7_003
Purpose	This test checks the encoding of the CBEFF element BDB Format Owner in DG7 for CE
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	DG7
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the length of the BDB Format Owner value 2. Verify the BDB Format Owner value
Expected Results	1. The length of the value field shall be 2 bytes 2. The value of the BDB Format Owner shall be a registered CBEFF format owner. It shall be '01 01'

D.3.7.4 Test Case CE_DG7_004

Test Case-ID	CE_DG7_004
Purpose	This test checks the encoding of the CBEFF element BDB Format Type in DG7 for CE
Version	0.2
References	ISO/IEC 18013-2:2020, Annex B
Profile	DG7
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the length of the BDB Format Type value 2. Verify the BDB Format Type value
Expected Results	1. The length of the value field shall be 2 bytes 2. The value of the "format type" shall be a registered CBEFF format type. It shall be one of the values ‘00 01’, ‘00 02’, ‘00 03’, ‘00 04’, ‘00 05’, ‘00 06’ or ‘00 0A’

D.3.8 Test Unit CE_DG11 – Compact Encoding (CE) DG11 tests

D.3.8.1 Test Case CE_DG11_001

Test Case-ID	CE_DG11_001
Purpose	This test checks that the Data Group Delimiter preceding DG11 is present
Version	0.3
References	ISO/IEC 18013-2:2020, Annex B ISO/IEC 8859-1
Profile	
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. If DG7 is present, check the byte following the last byte of Data Group 7 If DG7 is not supported, check the byte following the data group delimiter that precedes the empty DG7
Expected Results	1. The byte shall be 'D7' ("×")

D.3.8.2 Test Case CE_DG11_002

Removed

D.3.8.3 Test Case CE_DG11_003

Test Case-ID	CE_DG11_003
Purpose	This test checks that the LDS data is correctly terminated by the end of file delimiter and that the length encoded in the header matches the length of the encoded LDS data.
Version	0.3
References	ISO/IEC 18013-2:2020, Annex B
Profile	DG11 NMA not supported, SOD not supported, SOD2 not supported, SOD23 not supported
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL) 2. The length has been extracted from the header
Test Scenario	1. Verify that DG11 is followed by the end of file delimiter 2. Check that the length information extracted from the header matches the length of the LDS data up to this end of file delimiter.
Expected Results	1. The last byte of DG11 is followed by the byte'B6'. 2. The length of data from (and including) the data group delimiter between the header and the first data group, up to and including this end of file delimiter matches the length information extracted from the header.

D.3.8.4 Test Case CE_DG11_004

Test Case-ID	CE_DG11_004
Purpose	This test checks that the LDS data is correctly terminated by the end of file delimiter and that the length encoded in the header matches the length of the encoded LDS data.
Version	0.3
References	ISO/IEC 18013-2:2020, Annex B
Profile	DG11 not supported NMA not supported, SOD not supported, SOD2 not supported, SOD23 not supported
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL) 2. The length has been extracted from the header
Test Scenario	1. Verify that the data group delimiter preceding DG11 is followed by the end of file delimiter 2. Check that the length information extracted from the header matches the length of the LDS data up to this end of file delimiter.
Expected Results	1. The data group delimiter preceding DG11 is followed by the byte 'B6'. 2. The length of data from (and including) the data group delimiter between the header and the first data group, up to and including this end of file delimiter matches the length information extracted from the header.

D.3.9 Test Unit CE_DG12 – Compact Encoding (CE) DG12 tests

D.3.9.1 Test Case CE_DG12_001

Test Case-ID	CE_DG12_001
Purpose	This test checks that the Data Group Delimiter preceding DG12 is present
Version	0.3
References	ISO/IEC 18013-2:2020 ISO/IEC 18013-3:2017 ISO/IEC 8859-1
Profile	NMA and / or SOD
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. If DG11 is present, check the byte following the last byte of Data Group 11 If DG11 is not supported, check the byte following the data group delimiter that precedes the empty DG11
Expected Results	1. The byte shall be ‘D7’ (“×”)

D.3.9.2 Test Case CE_DG12_002

Test Case-ID	CE_DG12_002
Purpose	This test checks the Field Delimiters of DG12 for CE according to Type 1 Data Group encoding rules
Version	0.2
References	ISO/IEC 18013-3:2017 ISO/IEC 8859-1
Profile	NMA
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the number of Field Delimiters in DG12
Expected Results	1. The number of Field Delimiters shall be 1

D.3.9.3 Test Case CE_DG12_003

Removed

D.3.9.4 Test Case CE_DG12_004

Test Case-ID	CE_DG12_004
Purpose	This test checks the encoding of SAI Reference String referred by DG12 element
Version	0.3
References	ISO/IEC 18013-3:2017
Profile	NMA
Preconditions	1. Encoded LDS Data in binary format (as read from the IDL)
Test Scenario	1. Check the value of the SAI Reference String 2. If the SAI Reference String starts with '00', check the value of the subsequent bytes of the SAI Reference String 3. If the SAI Reference String starts with '01', check the value of the subsequent bytes of the SAI Reference String 4. If the SAI Reference String starts with '01', check the value of the subsequent bytes of the SAI Reference String 5. If the SAI Reference String starts with '01', check the value of the subsequent bytes of the SAI Reference String
Expected Results	1. The first byte of the SAI Reference String shall be '00' or '01' 2. The subsequent bytes of the SAI Reference String shall be encoded in accordance with ISO/IEC 8859-1 3. The subsequent bytes of the SAI Reference String shall be 2 BCD encoded bytes 4. The second byte of the SAI Reference String shall refer to an existing Data Group in the IDL 5. The third byte of the SAI Reference String shall refer to a field in an existing Data Group in the IDL that is available outside the ICC (i.e. DG1 Field 1..9, DG2 Field 1..7), or DG3 Field 1..4)