# Report of the February 2009 XAdES / CAdES Remote Plugtest Event (2009-02) – Partly Anonymous version

Reference

<Workitem>

Keywords

<keyword>

**ETSI**

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00   Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

***Important notice***

Individual copies of the present document can be downloaded from:
http://www.etsi.org

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at
http://portal.etsi.org/tb/status/status.asp

If you find errors in the present document, please send your comment to one of the following services:
http://portal.etsi.org/chaircor/ETSI_support.asp

***Copyright Notification***

# Authors

Juan Carlos Cruellas, UPC cruellas@ac.upc.edu

Konrad Lanz, A-SIT Konrad.Lanz@iaik.tugraz.at

Peter Kremer, ETSI Peter.Kremer@etsi.org

Kenji Urushima, ENTRUST Japan Co., Ltd. Kenji.Urushima@ENTRUST.COM

Gregory Sun, Macau Post eSignTrust Certification Services
gregsun@ESIGNTRUST.COM

## Editors:

Juan Carlos Cruellas, UPC cruellas@ac.upc.es

Konrad Lanz, A-SIT Konrad.Lanz@iaik.tugraz.at

# Contents

# Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web Server http://webapp.etsi.org/IPR/home.asp.

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

# Abstract

This document is the report of the 2009 February Remote Plugtest Event on XAdES and CAdES, organized by ETSI within the Framework of STF-351 and conducted using the ETSI portal supporting remote interoperability plugtests.

# Status of this Document

This document is provided by ETSI Interopolis Services. For further details on Plugtests services, please see ETSI Plugtests.

# 1 Introduction

The present document aims at reporting the 2009 February Remote Plugtest© Event on XAdES and CAdES.

In September / October 2008, a report was griten providing details on the specification, design and implementation of the portal supporting Remote Plugtests© Events on XAdES specification, including an overview of the contents of the portal as well as the on-line PKI-related services provided to the participants of the 2008 September Remote Plugtest on XAdES.

The present report provides details on:

- Specification, design and implementation of those new parts of the portal for supporting not Orly Remote Plugtests© Events on XAdES but also Remote Plugtest© Events on CAdES. This includes an overview of the new contents of the portal as well as the re-structuration of the old contents.

- The Remote Plugtest© Event on XAdES and CAdES organized by ETSI and held from Monday 16th February to Friday 27 February 2009 (although restricted usage of the portal was actually extended until Tuesday 3rd March 2009).

The present document is organized as indicated below.

Section 2 provides details on how the material of the portal is organized and the kind of services it provides to the participants of the Plugtest© Events.

Section 3 lists the participants to the February 2009 XAdES and CAdES Remote Plugtest© Event.

Section 4 provides an overview of the most interesting results and conclusions of the plugtest.

Section 5 provides details on a number of issues related to the XAdES specification as identified by the participants. These issues will be sent to the ESI TC for this to take into consideration for future XAdES standardization activities.

Finally section 6 shows the interoperability matrixes for the test-cases that were defined for the plugtest event, and for both specifications XAdES and CAdES.

# 2 Organization and contents of the portal

As it was reported in the previous report, the portal has two different parts, namely one public part, that anybody may visit, and a private part accessible only for the participants subscribed to the plugtest event.

Public part has remained identical to the one that the portal had during the September 2008 Remote Plugtest© Event on XAdES.

The private part has been re-structured since then because of the incorporation of a new part providing support to interoperability tests on CAdES.

## 2.1 Public part of the portal

As mentioned above, this part remains as in the 2008 September Remote Plugtest© on XAdES. It incluyes the following contents:

- The XAdES/CAdES Plugtest page, providing some more details on the February 2009 Plugtest© Event itself, namely targetted specification, targetted audience, etc.
- The Mailing List page, providing some details on participants' mailing list support provided by the portal for facilitating exchange of information during the plugtest.
- The Registration page, providing details on the plugtest registration process.
- The Login to Plugtest Area page,access to the protected area of the portal.

## 2.2 Private part of the portal

This part is visible only for the participants of the plugtest event. It is structured in three main areas:

- **Common area**. This area contains a number of pages that provide generic information to the participants, which is relevant to participants of both XAdES and CAdES interoperability tests.
- **XAdES specific area**. This area contains a number of pages that support the interoperability tests on XAdES.
- **CAdES specific area**. This area contains a number of pages that support the interoperability tests on CAdES.

Sub-clauses below provide details of the contents of these pages.

### 2.2.1 Contents of Common area of Private part

#### 2.2.1.1 Conducting plugtests information pages

The Conducting Plugtest page is the first of a set of four pages providing detailed explanations on how to conduct interoperability tests on both XAdES and CAdES during this event.

This first page details the two types of interoperability tests provided at this plugtest:

- **Generation and cross-verification tests**. Each participant is invited to generate a certain set of valid XAdES and / or CAdES signatures with certain characteristics (generation). The rest of participants are invited afterwards to verify these signatures (cross-verification). The Plugtest© Portal automatically generates an updated set of interoperability matrixes that all the participants may access.

- **Only-verification tests**. ETSI has generated a number of invalid XAdES and CAdES signatures (the so-called "negative testcases") by different reasons. Each participant may, at her own discretion, try to verify these signatures, checking in this way that the corresponding tool actually detects that the signature is not valid.

It also provides high level description of the steps that participants must perform for conducting the two different types of interoperability tests aforementioned.

The rest of pages of the set provide details on:

- How to download material from the portal for starting conducting the plugtest (**Downloading material page**). This material is usually a zip file enclosing a well defined folder structure containing both signatures and verification reports on signatures.

- How to generate XAdES and/or CAdES signatures and uploading them to the corresponding section of the portal so that the rest of participants at the interoperability tests may download and verify them (**Generating Signatures page**).

- How to verify other participants' signatures, report on verification results and uploading of these reports to the portal so that the portal keeps track of the current status of the plugtest (**Verifying Signatures page**).

#### 2.2.1.2 Cryptographic material pages

The Cryptographic Material page is the first one of a set of three pages providing details on the cryptographic material handed to the participants at the begining of the plugtest.

The portal deployed a **Trust Framework** consisting in a certification hierarchy of three levels with a root CA and two subsidiary CAs in **two levels**.

Each CA also provided **OCSP** responses reporting the status of the certificates issued by that CA. In addition to that, each CA issued **CRLs** reporting the revoked certificates.

The portal also includes a **Timestamping Authority** able to generate time-stamp tokens on request by the participants.

It must be mentioned that the portal did not include an Attribute Authority able to generate Attribute Certificates, required for certain test-cases in both XAdES and CAdES. ENTRUST Japan Co., Ltd., was so kind as to generate **attribute certificates** for those participants that requested them.

**The Scenario SCOK page** provides details of the first scenario supported by the portal for the Trust Framework aforementioned, namely, a scenario where all the certificates are valid.

**The Scenario SC1 page** provides details of the second scenario supported by the portal for the Trust Framework aforementioned, namely, a scenario where a revoked end-entity certificate and an expired end-entity certificate exist for being used in some of the **only-verification test cases**.

#### 2.2.1.3 Online PKI-related services page

The current version of the plugtest portal incorporates a number of online PKI-related services.

The **Online PKI services details page** describe all of them and provides details on how the participants may access them.

This page also contains a link to a Java class implementing basic login/password authentication mechanism required for accessing these services, so that participants had not to develop such a mechanisms in their tools.

#### 2.2.1.4 Online PKI services access page

The Online PKI Services access page allows to access to most of the on-line PKI-related services provided by the portal, namely: access to the CA software for requesting generation of a key-pair an the corresponding end-entity certificate for generating signatures, connection details for accessing the LDAP server where CRLs and CA certificates are stored, etc.

#### 2.2.1.5 Online TSA services access page

The Online TSP Services access page allows to access to the TSA server deployed in the server for requesting generation of time-stamp tokens.

#### 2.2.1.6 Attribute certificate issuance page

At present, the Remote Plugtest© Portal does not incorporate an Attribute Authority module. As it has been already reported, ENTRUST Japan Co., Ltd. very kindly offered its resources for generating attribute certificates to those participants interested in those XAdES and CAdES test cases dealing with attribute certificates.

The attribute certificate issuance page provides details on:

- The trust Framework completed with the Attribute Authority at ENTRUST Japan Co., Ltd.'s headquarters in Japan that issued attribute certificates for this Plugtest©.
- The procederes to be followed by participants for requesting to ENTRUST Japan Co., Ltd. the issuance of an attribute certificate.

#### 2.2.1.7 Participants' List page

This page lists the details of all the companies and people that participated in the Plugtest© as well as their coordinates.

#### 2.2.1.8 Meeting Support page

The Meeting Support page contains all the information related to the meetings that took place during the plugtest event. It includes:

- Introduction presentation. This presentation was made available before the start of the plugtest, and it provides the most relevant information on the event, including structure of the portal, relevant URLs, rules to be followed during the participation, etc
- Calendar for the meetings (conference calls).
- Dialing details for the phone bridge.
- URL for accessing a chat server accessible through a Web browser were the calls were minuted and participants could write their comments, questions and statements.
- The agenda for each meeting.
- Links to the minutes of each meeting..

#### 2.2.1.9 Presentations pages

The Presentations page is the first of a set of pages containing presentations. At present, there are two presentations available:

- A presentation on the ETSI ESI TC , the body in charge of standardizing XAdES.
- A presentation on the history of XAdES , which includes details on the different published versions.

#### 2.2.1.9 Mailing list

A Electronic mail list with archival capabilities, whose use was restricted to the participants in the Plugtest©, was set up for supporting exchange of messages among them.

#### 2.2.1.10 Chat page

The Chat page provides access to a web-based chat that participants use during the conference calls for sharing notes. It is also used for taking notes of the meetings. These notes are the core component of the meetings minutes.

#### 2.2.1.11 Site map page

This page displays the current hierarchical structure of the Plugtest© Portal, and provides links for all the pages shown in the map.

### 2.2.2 Contents of XAdES and CAdES Specific areas of Private part

The portal contains, within the private part of the portal, a specific area for each specification (XAdES and CAdES) that is tested in this Plugtest©.

The contents for each of these areas are tailored for the specification supported by that area.

Sub-clauses below provide details of the pages appearing within each specific area. Each sub-clause actually provides details on two pages, one within the XAdES specific area and one within the CAdES specific area, including those aspects that have in common and those aspects where they are different.

#### 2.2.2.1 Test Cases pages

These are pages containing documents with the complete specification of the test cases for each specification (XAdES or CAdES).

The documents are written in XML and incorporate XSLT stylesheets and javascript technologies. These technologies allow:

- To browse the aforementioned test definition documents and build pieces of text and tables corresponding to each test case within this document.
- To browse reports of verification (simple XML documents) of each single XAdES and / or CAdES signature verified by each participant, process them and keep up to date the interoperability matrixes, which show what signatures of each participant have been verified by what other participants and the results of such verifications.

The XAdES test case document actually incorporates the whole set of interoperability matrixes resulting from the uploading of the participants of their verification report. It is worth to mention that XSLT and javascript technologies allow that each time a participant uploads a set of signatures and/or verification reports, the interoperability matrixes shown within the XAdES test case document, are updated, so that participants always see the up to date information on interoperability tests carried so far.

The CAdES test case document does not incorporate the interoperability matrixes. Instead, they may be accessed in a different document of the portal. As with matrixes within the XAdES test case document, the CAdES interoperability matrixes are also updated whenever any participant uploads a package with new signatures and / or verification reports.

#### 2.2.2.2 Individual verification reports

Both XAdES and CAdES specific areas contain a page where each participant may find its own interoperability matrixes, i.e. matrixes that report the verification results obtained by the rest of the participants after trying to verify each of his/her signatures.

These matrixes include links to the signature files and to the verification report files, as well an indication of the verification result.

Each participant access from the main page of the portal to her own verification reports page, and from there, each participant may directly access to the verification reports pages of the rest of the participants.

#### 2.2.2.3 Statistics per signature form

Both XAdES and CAdES specific areas contain a table that summarizes the number of XAdES and CAdES signatures generated at each instant of the Plugtest©.

The table shows how many signature of a certain XAdES or CAdES form has generated each participant in the Plugtest©.

#### 2.2.2.4 Upload pages

Both XAdES and CAdES specific areas contain a page that participants use for uploading their signatures and / or verification reports.

The Upload pages provide mechanisms for uploading new signatures, new verification reports or both.

Once uploaded, the portal re-builds a new downloading package in the corresponding specific area (XAdES or CAdES) and makes it available for all the participants at the corresponding Dowload page. Within this package, participants will find all the signatures and verification reports generated up to that instant in the plugtest.

As it has been already mentioned, the upload of a package has the immediate effect of updating the corresponding interoperability matrixes and the individual verification reports within the suitable specific area.

#### 2.2.2.5 Download pages

Both XAdES and CAdES specific areas contain a page that participants use for downloading the corresponding initial package that includes cryptographic material, test-definition files, and a folder structure suitable for uploading signatures and verification reports).

These pages are also used for downloading the whole material generated by the participants at a certain instant of the plugtest, including all the XAdES (or CAdES) signatures and verification reports generated so far.

#### 2.2.2.6 Test data directory pages

Both XAdES and CAdES specific areas contain a page that participants use for browsing the folders structure where the portal stores the XAdES or CAdES signatures and the verification files generated by all the participants.

This allows a detailed inspection of the files uploaded in a certain instant to the portal.

#### 2.2.2.7 Known issues pages

Both XAdES and CAdES specific areas contain a page that lists all the different issues that were raised during the event. These issues were classified in two groups, namely:

- Issues that are related to the the plugtest itself (test cases definitions, restrictions, portal infrastructures, etc).
- Issues related to the corresponding specification (XAdES or CAdES), which may impact further standardization activities.
- Issues related to both the plugtest itself and to the specification.

#### 2.2.2.8 Questions and answers pages

Both XAdES and CAdES specific areas contain a page that  collects the most relevant questions raised during the Plugtest© and their corresponding answers if they have been agreed.

### 2.2.3 Contents of XAdES Specific area of Private part

XAdES specific area contains additional information conceived as a way of offering an added value to the participants in the XAdES part of the Plugtest©. This information is contained in a page that documents around 20 issues identified since its v1.3.2 publication (most of them during one of the three Remote Plugtest© Events organized by ETSI). This page, alongside the description of each issue, reports resolution proposals to be raised to the ESI TC, which, once discussed and agreed, will be implemented in the next XAdES version.

## 3. Participants list

The present document is for public distribution. Just identities of participants that have given explicit permission to ETSI are disclosed in the list below:

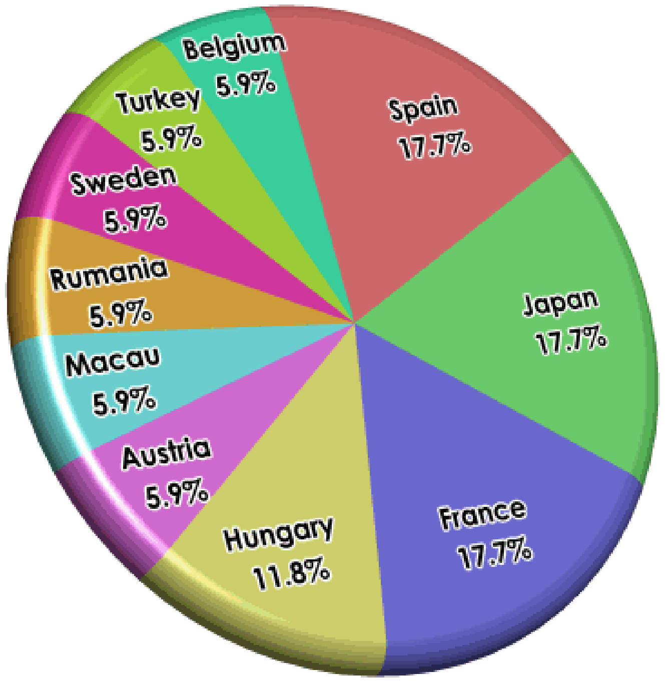
- A-SIT (IAIK) – Austria. This participant appears in the interoperability matrixes as IAIK.
- Entrust Japan Co., Ltd. This participant appears in the interoperability matrixes as ENT.
- LangEdge, Inc. This participant appears in th einteroperability matrix as LE.
- SECOM CO., LTD. This participant appears in the interoperability matrixs as SC.
- Universidad Politécnica de Cataluña (UPC). Spain. This participant appears in the interoperability matrixes as UPC.

There have been 17 different organizations and 17 persons registered in the event. With the addition of two persons from ETSI, this makes a total of 19 persons involved in the daily activities of the event.

| Disclosed Participant | Company |
|---|---|
| Kenji Urushima | Entrust Japan Co., Ltd. |
| Emmanuelle Chaulot-Talmon | ETSI |
| Péter Krémer | ETSI |

| | |
|---|---|
| Konrad Lanz | A-SIT (IAIK) - Austria |
| Naoto Miyachi | LangEdge, Inc. |
| Masashi Sato | Secom Co., Ltd. |
| Juan Carlos Cruellas | Universitat Politecnica de Catalunya |

The figure below shows the distribution of participants per country.



# 4. Plugtest conclusions

## 4.1 Scalability of the portal

From a technological point of view, the most relevant conclusion is that the portal designed **HAS PROVED TO BE EASILY SCALABLE WHEN HOSTING OF TWO PLUGTESTS© HAS BEEN REQUIRED**.

For simultaneously supporting XAdES and CAdES Remote Plugtests© events, the portal was:

1. Re-structured in its private part in a common part and as many specific parts as Plugtests© Events had to be supported, i.e. one specific part for XAdES and one specific part for CAdES.

2. Build up a new specific part on CAdES.

The portal structure and its supporting technology (XML content, XSLT and javascript technologies for transforming the aforementioned XML content), proved to a right selection and well designed.

The re-structuring of the private part was achieved by:

1. Breaking apart the former contents of the private part in two sections: the common section and the XAdES-specific section.

2. This re-structuring required a review of some files within the XAdES-specific section for adjusting links and other slight changes within XSLT files and javascript contents within the XML files.

3. Review of the common part for adjusting links and also for tuning the information to be applicable to both XAdES and CAdES Plugtests©.

The creation of the new CAdES-specific section required:

1. Copy of those XML and XSLT files dealing with the “mechanics” of the portal, namely: upload, download, Test Data directories, Known Issues, Questions & Answers, Statistics per Forms, Individual Participant Verification Reports and Individual Signature Form Interoperability Matrixes.

2. Review the Test Cases Specification Language designed for XAdES and design the corresponding Test Cases Specification Language for CAdES. The resulting language differs from the XAdES’ language in few aspects.

3. Write a brand new Test Cases document. It must be noticed that this document was fully designed and implemented by ECOM, which is deeply appreciated by the STF team. This document largely used the existing template for XAdES Test Case document, although it does not embeds the updated interoperability matrixes. Instead, these matrixes may be viewed through a different link.

4. Build up the test case definition files. This was kindly done by ECOM.

5. Specify a set of negative test cases, build up the corresponding test case definition files and produce the corresponding CAdES signatures. Again, this was kindly done by ECOM.

The STF found that what required much effort for creating the CAdES-specific section was anything related with the CAdES test cases creation and deployment (specifyint the test case definition language, producing the Test Case document, specifying the set of negative test cases and produce them). On the other hand, deploying mechanical features already deployed in XAdES-specific section (upload/download, access to up to date individual interoperability reports, access to up to date individual signature forms interoperability matrixes, etc) did not required much less effort.

In addition to that, the technology used proved also to scale well in terms of response time. No complains by participants reporting slow reaction of the portal were raised.

## 4.2 Remote vs. Face to Face

The STF team reinforces its opinion on the usefulness of Remote Plugtests© as a way of reducing costs to participants.

Nevertheless, the STF team also thinks that face to face Plugtests© less frequent than Remote Plugtests©, are also very useful for evolving technologies as much more deep discussions may easily take place under these circumpstances that may accelerate the identification of solutions for any identified problem.

## 4.3 Communication supporting technologies

It has been observed at this last plugtest that a good number of participants followed the meetings only through the chat. Voice communications are from time to time, of low quality, which discourage some participants to use it.

Pure voice on Internet technologies could be a path to be explored by organizers of Remote Events like these ones.

## 4.4 Portal usability / friendliness

The STF has noticed that the learning curve of participants has changed as the number of Remote Plugtests© increased. The time required by participants for operating without difficulties with the portal diminished with each Event. This was partly due to the fact that a good percentage of the participants in the Events had already participated in the former ones, partly due to the fact that the STF posted into the portal an introduction presentation providing details on the portal, and partly because newcomers were quickly found the required help when they faced some problem of this type.

## 4.5 Raw statistics

As it has been pointed out, the STF does not have resources for producing a deep analysis of the all the interoperability failures detected in the plugtest. As in former reports, the STF thinks that resources could be assigned for articulating such a study even after the conclusion of this STF would be interesting for maximizing the benefits of such events.

Indeed the organizing team, as well as the participants did their best for, in the days that the plugtest lasted, identifying potential sources of interoperability failures and a number of them were solved.

Nevertheless the STF team produced summaries of the interoperability tests conducted for XAdES and CAdES that are shown in the corresponding sections of this report. Some initial comments follow in the view of the figures obtained:

1. There were a similar number of participants in XAdES and CAdES Plugtests© (13 participants generated and/or verified some XAdES signatures. 11 participants generated and/or verified some CAdES signatures.

2. The number of XAdES signatures generated (290) was higher than CAdES signatures (201).

3. The number of verifications (2522) carried out of XAdES signatures was much higher than the number of verifications (1268) on CAdES signatures.

4. Percentages of global success in interoperability were higher in XAdES (87,98%) signatures than in CAdES (72,86%) signatures.

These differences may indicate:

1. Former XAdES Plugtest© Events have produced a common understanding on how XAdES implementations may be built on certain issues.

2. There seems to be less CAdES implementers than XAdES implementers within Europe.

# 5. XAdES-related Issues

## 5.1 Trust frameworks scope

The Trust Frameworks deployed in the Portal implement direct trust. That is, the CAs issuing a certain certificate also issues the information on the status of that certificate (like OCSP responses).

In addition to that, the TSA that provides the time-stamps is also certified within the same Trust Framework as the participant (end entities) certificates.

Within this somehow restrictive context, the Plugtests© have uncovered a number of interoperability issues that will impact XAdES and CAdES specifications.

ETSI should consider the possibility of expanding the scope of future Plugtests© tests to also cover not direct Trust Frameworks and situations where one or more TSAs could be present and not appertaining to the end entities' trust frameworks for checking suitability of the specifications to these more complicated environments.

## 5.1 XAdES issues

A number of XAdES issues were raised at this plugtest. Most of them had already been identified in former Plugtests©, which proved that they must to be resolved by the next XAdES version. Below follows a short summary:

I. Verification of certification path for Time-stamps. The issue of where the validation information for a time-stamp token should be included was raised again. The participants discussed a number of possible options, namely:

   1. Within the RFC-3161 time-stamp token.
   2. In a new XML element that could follow the corresponding xades timestamp (<xades:SignatureTimeStamp>, etc).
   3. Combination including 1 and 2.
   4. Within a new XML element that would be member of a new encapsulating element for time-stamps <xades:EncapsulatedTimeStamp2>.
   5. Combination including 1 and 4.

   In support of 4 was raised the argument that this would free XAdES implementations of need of going deep in the processing of CMS structures (RFC 3161 time-stamp tokens). On the other hand, some implementers of both Technologies XAdES and CAdES, were against banning option 1. A reasonable compromise seemed to be to allow 1 and 4.

II. Not very clear to participants where to include certificate (and revocation) references and values corresponding to Attribute Authorities. Next version of XAdES should clarify this issue.

III. Again the relationship between time within <xades:SigningTime> and time values within the time-stamp tokens were raised. XAdES shouldbe reworded so that if signature policy (implicit or explicit) is in place, instructs verifiers to follow its rules. If not, make it an environment-dependent issue. Wording requesting comparisons of time values with the signing time value, other than those dictated by the signature policy, should be removed.

IV. Different views on how to compute the digest value to be included within the <xades:SignaturePolicyIdentifier> property when the file defining the Signature Policy is compliant with ETSI TR 102 038 (XML format) or ETSI TR 102 272 (ASN.1 format). Within the two aforemtioned documents, the ASN.1 or XML signature policy contains a field (`signPolicyHash`) or an element (`<SignPolicyDigest >`) with a digest value computed on the signature policy. It should be clarified:

   a. Within the aforementioned TRs on what element/field this digest is computed.
   b. Whether XAdES (CAdES) <xades:SignaturePolicyIdentifier> element (signature-policy-identifier field) should contain the aforementioned digest value or the digest value should be computed on the whole ASN.1 / XML file.

# 6. XAdES Plugtest© Interoperability matrixes

## 6.1 Summaries for Positive Test Cases

| Signature [Positive Test Cases] | Total Generated | Totals Verifications | Success Absolute | Success Relative | Failure Absolute | Failure Relative | Not Applicable Absolute | Not Applicable Relative | Incomplete Absolute | Incomplete Relative |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signature-X-BES-1.xml** | 11 | 115 | 112 | 97,39 | 3 | 2,61 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-10.xml** | 6 | 53 | 50 | 94,34 | 3 | 5,66 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-11.xml** | 7 | 54 | 50 | 92,59 | 3 | 5,56 | 0 | 0,00 | 1 | 1,85 |
| **Signature-X-BES-15.xml** | 6 | 47 | 44 | 93,62 | 3 | 6,38 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-2.xml** | 10 | 104 | 104 | 100,00 | 0 | 0,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-3.xml** | 9 | 85 | 85 | 100,00 | 0 | 0,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-4.xml** | 8 | 74 | 73 | 98,65 | 1 | 1,35 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-5.xml** | 6 | 43 | 34 | 79,07 | 7 | 16,28 | 0 | 0,00 | 2 | 4,65 |
| **Signature-X-BES-6.xml** | 8 | 71 | 69 | 97,18 | 2 | 2,82 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-7.xml** | 8 | 70 | 68 | 97,14 | 2 | 2,86 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-8.xml** | 8 | 69 | 67 | 97,10 | 2 | 2,90 | 0 | 0,00 | 0 | 0,00 |
| **Signature-X-BES-9.xml** | 7 | 62 | 59 | 95,16 | 2 | 3,23 | 0 | 0,00 | 1 | 1,61 |
| | | | | | | | | | | |
| **Totals / Averages X-BES** | **94** | **847** | **815** | **95,19** | **28** | **4,14** | **0** | **0,00** | **4** | **0,68** |
| | | | | | | | | | | |
| **Signature-X-EPES-1.xml** | 8 | 75 | 60 | 80,00 | 5 | 6,67 | 10 | 13,33 | 0 | 0,00 |
| **Signature-X-EPES-2.xml** | 5 | 25 | 18 | 72,00 | 5 | 20,00 | 0 | 0,00 | 2 | 8,00 |
| | | | | | | | | | | |
| **Totals / Averages X-EPES** | **13** | **100** | **78** | **76,00** | **10** | **13,33** | **5,00** | **6,67** | **2** | **4,00** |
| | | | | | | | | | | |
| **Signature-X-T-1.xml** | 12 | 124 | 116 | 93,55 | 8 | 6,45 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |
| **Totals / Averages X-T** | **12** | **124** | **116** | **93,55** | **8** | **6,45** | **0** | **0** | **0** | **1,190769143** |

| Signature<br>[Positive Test Cases] | Total Generated | Totals Verifications | Success Absolute | Success Relative | Failure Absolute | Failure Relative | Not Applicable Absolute | Not Applicable Relative | Incomplete Absolute | Incomplete Relative |
|---|---|---|---|---|---|---|---|---|---|---|
| Signature-X-C-1.xml | 9 | 77 | 71 | 92,21 | 6 | 7,79 | 0 | 0 | 0,00 | 0,00 |
| Signature-X-C-2.xml | 9 | 77 | 71 | 92,21 | 6 | 7,79 | 0 | 0 | 0,00 | 0,00 |
| Signature-X-C-3.xml | 2 | 11 | 10 | 90,91 | 0 | 0,00 | 0 | 0 | 1,00 | 9,09 |
| | | | | | | | | | | |
| **Totals / Averages X-C** | **20** | **165** | **152** | **91,77** | **12** | **5,19** | **0** | **0,00** | **1** | **3,03** |
| | | | | | | | | | | |
| Signature-X-X-1.xml | 9 | 78 | 70 | 89,74 | 6 | 7,69 | 0 | 0 | 2 | 2,56 |
| Signature-X-X-2.xml | 9 | 69 | 63 | 91,30 | 5 | 7,25 | 0 | 0 | 1 | 1,45 |
| Signature-X-X-3.xml | 8 | 70 | 55 | 78,57 | 8 | 11,43 | 0 | 0 | 7 | 10,00 |
| Signature-X-X-4.xml | 8 | 62 | 51 | 82,26 | 8 | 12,90 | 0 | 0 | 3 | 4,84 |
| | | | | | | | | | | |
| **Totals / Averages X-X** | **34** | **279** | **239** | **85,47** | **27** | **9,82** | **0** | **0,00** | **13** | **4,71** |
| | | | | | | | | | | |
| Signature-X-XL-1.xml | 10 | 94 | 90 | 95,74 | 4 | 4,26 | 0 | 0 | 0 | 0,00 |
| Signature-X-XL-2.xml | 9 | 76 | 73 | 96,05 | 3 | 3,95 | 0 | 0 | 0 | 0,00 |
| Signature-X-XL-3.xml | 10 | 93 | 70 | 75,27 | 10 | 10,75 | 0 | 0 | 13 | 13,98 |
| Signature-X-XL-4.xml | 9 | 76 | 67 | 88,16 | 9 | 11,84 | 0 | 0 | 0 | 0,00 |
| | | | | | | | | | | |
| **Total / Averages X-XL** | **38** | **339** | **300** | **88,81** | **26** | **7,70** | **0** | **0,00** | **13** | **3,49** |
| | | | | | | | | | | |
| Signature-X-A-1.xml | 9 | 79 | 76 | 96,20 | 3 | 3,80 | 0 | 0 | 0 | 0,00 |
| Signature-X-A-2.xml | 8 | 63 | 58 | 92,06 | 5 | 7,94 | 0 | 0 | 0 | 0,00 |
| Signature-X-A-3.xml | 9 | 79 | 63 | 79,75 | 5 | 6,33 | 0 | 0 | 11 | 13,92 |
| Signature-X-A-4.xml | 8 | 63 | 51 | 80,95 | 7 | 11,11 | 0 | 0 | 5 | 7,94 |
| Signature-X-A-5.xml | 9 | 79 | 60 | 75,95 | 6 | 7,59 | 0 | 0 | 13 | 16,46 |
| Signature-X-A-6.xml | 8 | 63 | 51 | 80,95 | 6 | 9,52 | 0 | 0 | 6 | 9,52 |
| Signature-X-A-7.xml | 10 | 87 | 76 | 87,36 | 9 | 10,34 | 0 | 0 | 2 | 2,30 |
| Signature-X-A-8.xml | 9 | 78 | 68 | 87,18 | 3 | 3,85 | 0 | 0 | 7 | 8,97 |
| Signature-X-A-9.xml | 9 | 77 | 65 | 84,42 | 3 | 3,90 | 0 | 0 | 9 | 11,69 |
| | | | | | | | | | | |
| **Total / Averages X-A** | **79** | **668** | **568** | **84,98** | **47** | **7,15** | **0** | **0,00** | **53** | **7,87** |
| **TOTALS** | **290** | **2522** | **2268** | | **158** | | **5** | | **86** | |

## 6.2 Summaries for Negative Test Cases

| Signature [Negative Test Cases] | Total Generated | Totals Verifications | Failure Absolute | Failure Relative | Success Absolute | Success Relative | Not Applicable Absolute | Not Applicable Relative | Incomplete Absolute | Incomplete Relative |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signature-X-BESN-1.xml** | 1 | 4 | 0 | 0 | 4 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-BESN-2.xml** | 1 | 4 | 0 | 0 | 4 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-BESN-3.xml** | 1 | 4 | 0 | 0 | 4 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-BESN-4.xml** | 1 | 5 | 0 | 0 | 5 | 100 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |
| **Total / Averages X-BESN** | **4** | **17** | **0** | **0** | **17** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-X-EPESN-1.xml** | **1** | **2** | **0** | **0** | **2** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-X-TN-2.xml** | 1 | 4 | 0 | 0 | 4 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-TN-1.xml** | 1 | 5 | 0 | 0 | 5 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-TN-3.xml** | 1 | 5 | 0 | 0 | 5 | 100 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |
| **Total / Averages X-TN** | **3** | **14** | **0** | **0** | **14** | **75** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-X-XN-1.xml** | 1 | 2 | 0 | 0 | 2 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XN-2.xml** | 1 | 2 | 0 | 0 | 2 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XN-3.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XN-4.xml** | 1 | 4 | 0 | 0 | 4 | 100 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |
| **Total / Averages X-XN** | **4** | **11** | **0** | **0** | **11** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-X-XLN-1.xml** | 1 | 2 | 0 | 0 | 2 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XLN-2.xml** | 1 | 2 | 0 | 0 | 2 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XLN-3.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |

| Signature [Negative Test Cases] | Total Generated | Totals Verifications | Failure Absolute | Failure Relative | Success Absolute | Success Relative | Not Applicable Absolute | Not Applicable Relative | Incomplete Absolute | Incomplete Relative |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signature-X-XLN-4.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XLN-5.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XLN-6.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XLN-7.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-XLN-8.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | |
| **Total / Averages X-XN** | **8** | **22** | **0** | **0** | **22** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-X-AN-1.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-AN-2.xml** | 1 | 2 | 0 | 0 | 2 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-AN-3.xml** | 1 | 3 | 0 | 0 | 3 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-AN-4.xml** | 1 | 5 | 0 | 0 | 5 | 100 | 0 | 0 | 0 | 0 |
| **Signature-X-AN-5.xml** | 1 | 5 | 0 | 0 | 5 | 100 | 0 | 0 | 0 | 0 |
| **Total / Averages X-AN** | **5** | **18** | **0** | **0** | **18** | **100** | **0** | **0** | **0** | **0** |
| **TOTALS** | **25** | **84** | | | **84** | | | | | |

# 6.3 Interoperability Matrixes for Positive Test Cases

### Signature-X-BES-1.xml

| | P1 | P2 | P3 | ENT | P6 | IAIK | LE | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V | V | V |
| **ENT** | V | V | V | V | V | V | V | V | V | V | V |
| **P6** | V | F | V | V | V | F | V | V | V | F | V |
| **IAIK** | V | V | V | V | V | V | V | V | V | V | V |
| **LE** | V | V | V | V | V | V | V | V | V | V | V |
| **P10** | V | | V | V | V | V | | | V | V | V |
| **P11** | V | | V | V | V | | V | V | V | | V |
| **P12** | V | V | V | V | V | V | V | V | V | V | V |
| **P14** | V | V | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V | V | V | V |

## Signature-X-BES-2.xml

| | P1 | P3 | ENT | P6 | IAIK | LE | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V | V |
| **ENT** | V | V | V | V | V | V | V | V | V | V |
| **P6** | V | V | V | V | V | V | V | V | V | V |
| **IAIK** | V | V | V | V | V | V | V | V | V | V |
| **LE** | V | V | V | V | V | V | V | V | V | V |
| **P10** | | V | V | V | V | | | V | V | V |
| **P11** | | V | V | V | | V | V | V | | V |
| **P12** | V | V | V | V | V | V | V | V | V | V |
| **P14** | V | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V | V | V |

## Signature-X-BES-3.xml

| | P1 | P3 | ENT | P6 | IAIK | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V |
| **ENT** | V | V | V | V | V | V | V | V | V |
| **P6** | V | V | V | V | V | V | V | V | V |
| **IAIK** | V | V | V | V | V | V | V | V | V |
| **P10** | | V | V | V | V | | V | V | V |
| **P11** | | V | V | V | | V | V | | V |
| **P12** | V | V | V | V | V | V | V | V | V |
| **P14** | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V | V |

## Signature-X-BES-4.xml

| | P1 | ENT | P6 | IAIK | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | F |
| P3 | V | V | V | V | V | V | V | V |
| ENT | V | V | V | V | V | V | V | V |
| P6 | V | V | V | V | V | V | V | V |
| IAIK | V | V | V | V | V | V | V | V |
| P10 | | V | V | V | | V | V | V |
| P11 | | V | V | | V | V | | |
| P12 | V | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V | V |

## Signature-X-BES-5.xml

| | P1 | ENT | P6 | IAIK | P12 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | V | F | V | V | F |
| ENT | V | V | V | F | V | F |
| P6 | V | V | V | V | V | V |
| IAIK | F | V | I | V | V | I |
| P10 | | | | | | V |
| P12 | F | V | V | F | V | V |
| P14 | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V |

## Signature-X-BES-6.xml

| | P1 | P3 | ENT | P6 | IAIK | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V | V |
| ENT | V | V | V | V | V | V | V | F |
| P6 | V | V | V | V | V | V | V | V |
| IAIK | V | V | V | V | V | V | V | F |
| P10 | | V | V | V | V | V | V | V |
| P12 | V | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V | V |

## Signature-X-BES-7.xml

| | P1 | P3 | ENT | P6 | IAIK | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V | V |
| ENT | V | V | V | V | V | V | V | F |
| P6 | V | V | V | V | V | V | V | V |
| IAIK | V | V | V | V | V | V | V | F |
| P10 | | V | V | V | V | V | | V |
| P12 | V | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V | V |

## Signature-X-BES-8.xml

| | P1 | P3 | ENT | P6 | IAIK | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V | V |
| ENT | V | V | V | V | V | V | V | V |
| P6 | V | V | V | V | V | V | F | V |
| IAIK | V | V | V | V | V | V | V | F |
| P10 | | V | | V | V | V | | V |
| P12 | V | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V | V |

## Signature-X-BES-9.xml

| | P1 | P3 | ENT | P6 | IAIK | P12 | UPC |
|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V |
| ENT | V | V | V | V | V | V | F |
| P6 | V | V | V | V | V | V | F |
| IAIK | V | V | V | V | V | V | I |
| P10 | | V | V | V | V | V | V |
| P12 | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V |

## Signature-X-BES-10.xml

| | P1 | ENT | P6 | IAIK | P12 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V |
| ENT | V | V | V | V | V | F |
| P6 | V | V | V | V | V | F |
| IAIK | V | V | V | V | V | F |
| P10 | | V | V | V | V | V |
| P12 | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V |

## Signature-X-BES-11.xml

| | P1 | P3 | ENT | IAIK | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V |
| ENT | F | V | V | V | V | V | V |
| IAIK | I | V | V | V | V | V | V |
| P10 | V | V | V | | V | V | |
| P12 | F | V | V | V | V | V | V |
| P14 | F | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V |

## Signature-X-BES-15.xml

| | P1 | P3 | ENT | IAIK | P12 | UPC |
|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V |
| **ENT** | V | F | V | V | V | V |
| **IAIK** | V | F | V | V | V | F |
| **P10** | | V | V | V | V | V |
| **P12** | V | V | V | V | V | V |
| **P14** | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V |

## Signature-X-EPES-1.xml

| | P1 | P3 | ENT | IAIK | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V |
| **P3** | NA | V | NA | NA | NA | NA | NA | NA |
| **ENT** | V | V | V | V | F | V | V | V |
| **P6** | F | V | V | F | V | V | V | F |
| **IAIK** | V | V | V | V | V | V | V | V |
| **P10** | | V | V | V | | V | V | V |
| **P11** | | V | V | | V | V | | V |
| **P12** | NA | V | V | NA | V | V | V | NA |
| **P14** | V | V | V | V | V | V | V | V |
| **UPC** | V | F | V | V | V | V | V | V |

## Signature-X-EPES-2.xml

| | P1 | ENT | IAIK | P14 | UPC |
|---|---|---|---|---|---|
| P1 | V | V | V | | V |
| ENT | F | V | F | F | F |
| IAIK | F | V | V | I | I |
| P10 | | | | | V |
| P14 | V | V | V | V | V |
| UPC | V | V | V | V | V |

## Signature-X-T-1.xml

| | P1 | P2 | P3 | ENT | P6 | IAIK | LE | P11 | P12 | P14 | P16 | UPC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V | V | V | V | V | V |
| ENT | F | V | V | V | V | V | V | V | V | V | F | V |
| P6 | F | V | F | V | V | V | F | V | V | V | V | V |
| IAIK | F | V | F | V | V | V | V | V | V | V | V | V |
| LE | V | V | V | V | V | V | V | V | V | V | V | V |
| P10 | | | V | V | V | V | | | V | V | V | V |
| P11 | | | V | V | V | | V | V | V | | | V |
| P12 | V | V | V | V | V | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V | V | V | V | V | V |
| P16 | | | | | | | | | | | V | |
| UPC | V | V | V | V | V | V | V | V | V | V | F | V |

## Signature-X-C-1.xml

| | P1 | P3 | ENT | P6 | IAIK | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **P6** | F | F | V | V | V | F | V | V | V |
| **IAIK** | F | F | V | | V | V | V | V | V |
| **P11** | | V | V | V | | V | V | | V |
| **P12** | V | V | V | V | V | V | V | V | V |
| **P14** | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V | V |

## Signature-X-C-2.xml

| | P1 | P3 | ENT | P6 | IAIK | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **P6** | F | V | V | V | V | V | V | V | V |
| **IAIK** | F | V | V | | V | F | V | V | V |
| **P11** | | V | V | V | | V | V | | V |
| **P12** | V | V | V | V | V | F | V | V | V |
| **P14** | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | F | V | V | V |

## Signature-X-C-3.xml

| | ENT | P12 |
|---|---|---|
| P1 | V | V |
| P3 | V | V |
| ENT | V | V |
| IAIK | I | |
| P12 | V | V |
| UPC | V | V |

## Signature-X-X-1.xml

| | P1 | P2 | P3 | ENT | P6 | IAIK | P11 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | I | V | V |
| ENT | F | V | V | V | V | V | V | V | V |
| P6 | F | F | F | V | V | V | V | V | V |
| IAIK | F | I | F | V | V | V | V | V | V |
| P11 | | | V | V | V | | V | V | V |
| P12 | V | V | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V | V | V |

## Signature-X-X-2.xml

| | P1 | P2 | P3 | ENT | P6 | IAIK | P11 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | I | V | V |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **P6** | F | V | F | V | V | V | V | V | V |
| **IAIK** | F | V | F | V | V | V | V | V | V |
| **P11** | | | V | V | V | | V | V | V |
| **P12** | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V | V |

## Signature-X-X-3.xml

| | P1 | P3 | ENT | P6 | IAIK | P11 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V |
| **P3** | I | V | I | I | I | I | V | I |
| **ENT** | F | V | V | V | V | V | V | V |
| **P6** | F | F | V | V | V | V | V | V |
| **IAIK** | F | F | V | I | V | F | V | V |
| **P11** | | V | V | V | | V | V | V |
| **P12** | V | V | V | V | V | F | V | V |
| **P14** | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | F | V | V |

## Signature-X-X-4.xml

| | P1 | P3 | ENT | P6 | IAIK | P11 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V |
| **P3** | V | V | I | I | V | I | V | V |
| **ENT** | F | V | V | V | V | V | V | V |
| **P6** | F | F | V | V | V | V | V | V |
| **IAIK** | F | F | V | V | V | F | V | V |
| **P11** | | V | V | V | | V | V | V |
| **P12** | V | V | V | V | V | F | V | V |
| **UPC** | V | V | V | V | V | F | V | V |

## Signature-X-XL-1.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V | V |
| **ENT** | F | V | V | V | V | V | V | V | V | V |
| **P6** | F | V | V | V | V | V | V | V | V | V |
| **IAIK** | F | V | V | V | V | V | V | V | F | V |
| **P10** | | V | V | V | V | V | | V | V | V |
| **P11** | | V | V | V | | | V | V | | V |
| **P12** | V | V | V | V | V | V | V | V | V | V |
| **P14** | V | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V | V | V |

## Signature-X-XL-2.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P11 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **P6** | F | V | V | V | V | V | V | V | V |
| **IAIK** | F | V | V | V | V | V | V | V | V |
| **P10** | | V | V | V | V | V | | V | V |
| **P11** | | V | V | V | | | V | V | V |
| **P12** | V | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V | V |

## Signature-X-XL-3.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P11 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V | V |
| **P3** | I | V | V | I | I | I | I | V | V | I |
| **ENT** | F | V | V | V | V | V | F | V | V | V |
| **P6** | F | F | V | V | V | V | V | V | V | V |
| **IAIK** | F | F | V | V | V | V | F | V | F | V |
| **P10** | | V | V | V | V | V | | V | | V |
| **P11** | | V | V | V | | | V | V | | V |
| **P12** | F | V | V | V | V | V | V | V | V | V |
| **P14** | I | I | V | I | I | I | I | V | V | I |
| **UPC** | F | V | V | V | V | V | V | V | V | V |

## Signature-X-XL-4.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P11 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V | V | V |
| ENT | F | V | V | V | V | V | F | V | V |
| P6 | F | F | V | V | V | V | V | V | V |
| IAIK | F | F | V | V | V | V | F | V | V |
| P10 | | V | V | V | V | V | | V | V |
| P11 | | V | V | V | | | V | V | V |
| P12 | F | V | V | V | V | V | V | V | V |
| UPC | F | V | V | V | V | V | V | V | V |

## Signature-X-A-1.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V | V | V |
| ENT | F | V | V | V | V | V | V | V | V |
| P6 | F | V | V | V | V | V | V | V | V |
| IAIK | F | V | V | V | V | V | V | V | V |
| P10 | | V | V | V | V | V | V | | V |
| P12 | V | V | V | V | V | V | V | V | V |
| P14 | V | V | V | V | V | V | V | V | V |
| UPC | V | V | V | V | V | V | V | V | V |

## Signature-X-A-2.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V |
| **ENT** | F | V | V | V | V | V | V | V |
| **P6** | F | F | V | V | V | V | V | V |
| **IAIK** | F | F | V | V | V | V | V | V |
| **P10** | | V | V | V | V | V | V | V |
| **P12** | V | V | V | V | V | V | V | V |
| **UPC** | V | V | V | V | V | V | V | V |

## Signature-X-A-3.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | I | V | V | I | I | I | V | V | I |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **P6** | F | V | V | V | V | V | V | V | V |
| **IAIK** | F | V | V | V | V | V | V | V | V |
| **P10** | | V | V | V | V | V | V | | V |
| **P12** | F | V | V | V | V | V | V | V | V |
| **P14** | I | I | V | I | I | I | V | V | I |
| **UPC** | F | V | V | V | V | V | V | V | V |

## Signature-X-A-4.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V |
| **P3** | I | V | V | I | I | I | V | I |
| **ENT** | F | V | V | V | V | V | V | V |
| **P6** | F | F | V | V | V | V | V | V |
| **IAIK** | F | F | V | V | V | V | V | V |
| **P10** | | V | V | V | V | V | V | V |
| **P12** | F | V | V | V | V | V | V | V |
| **UPC** | F | V | V | V | V | V | V | V |

## Signature-X-A-5.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | I | V | V | I | I | I | V | V | I |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **P6** | F | F | V | V | V | V | V | V | V |
| **IAIK** | I | F | V | V | V | V | V | V | V |
| **P10** | | V | V | V | V | V | V | | V |
| **P12** | F | V | V | V | V | V | V | V | V |
| **P14** | I | I | V | I | I | I | I | V | I |
| **UPC** | F | V | V | V | V | V | V | V | V |

## Signature-X-A-6.xml

| | P1 | P3 | ENT | P6 | IAIK | P10 | P12 | UPC |
|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V |
| P3 | I | V | V | I | I | I | V | I |
| ENT | F | V | V | V | V | V | V | V |
| P6 | F | F | V | V | V | V | V | V |
| IAIK | I | F | V | V | V | V | V | V |
| P10 | | V | V | V | V | V | V | V |
| P12 | F | V | V | V | V | V | V | V |
| UPC | F | V | V | V | V | V | V | V |

## Signature-X-A-7.xml

| | P1 | P3 | ENT | IAIK | LE | P10 | P12 | P14 | P16 | UPC |
|---|---|---|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V | V | V | V |
| P3 | V | V | V | V | V | V | V | V | F | V |
| ENT | F | V | V | V | V | V | V | V | F | V |
| IAIK | F | F | V | V | V | V | V | V | F | V |
| LE | V | V | V | V | V | V | V | V | F | V |
| P10 | | V | V | V | | V | V | | | V |
| P12 | V | V | V | V | V | V | V | V | F | V |
| P14 | V | I | V | V | V | V | V | V | I | V |
| P16 | | | | | | | | | V | |
| UPC | V | V | V | V | V | V | V | V | F | V |

## Signature-X-A-8.xml

| | P1 | P3 | ENT | IAIK | LE | P10 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | V | V | V | V | V | V | V | V | V |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **IAIK** | I | F | V | V | V | V | V | V | V |
| **LE** | F | V | V | V | V | V | V | V | V |
| **P10** | | V | V | V | | V | V | | V |
| **P12** | V | V | V | V | V | V | V | V | V |
| **P14** | I | I | V | I | V | I | I | V | I |
| **UPC** | V | V | V | V | V | V | V | V | V |

## Signature-X-A-9.xml

| | P1 | P3 | ENT | IAIK | LE | P10 | P12 | P14 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | V | V | V | V |
| **P3** | I | V | V | I | V | I | V | V | I |
| **ENT** | F | V | V | V | V | V | V | V | V |
| **IAIK** | I | F | V | V | V | V | V | V | V |
| **LE** | F | V | V | V | V | V | V | V | V |
| **P10** | | V | V | V | | V | V | | V |
| **P12** | V | V | V | V | V | V | V | V | V |
| **P14** | | I | V | I | V | I | V | V | I |
| **UPC** | V | V | V | V | V | V | V | V | V |

## 6.4 Interoperability Matrixes for Negative test cases

### Signature-X-BESN-1.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P12 | F |
| UPC | F |

### Signature-X-BESN-2.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P12 | F |
| UPC | F |

### Signature-X-BESN-3.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P12 | F |
| UPC | F |

### Signature-X-BESN-4.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| LE | F |
| P12 | F |
| UPC | F |

### Signature-X-EPESN-1.xml

| | ETSI |
|---|---|
| ENT | F |
| UPC | F |

### Signature-X-TN-1.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| LE | F |
| P14 | F |
| UPC | F |

### Signature-X-TN-2.xml

| | ETSI |
|---|---|
| ENT | F |
| LE | F |
| P14 | F |
| UPC | F |

### Signature-X-TN-3.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| LE | F |
| P14 | F |
| UPC | F |

### Signature-X-XN-1.xml

| | ETSI |
|---|---|
| ENT | F |
| UPC | F |

### Signature-X-XN-2.xml

| | ETSI |
|---|---|
| ENT | F |
| UPC | F |

### Signature-X-XN-3.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| UPC | F |

### Signature-X-XN-4.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P14 | F |
| UPC | F |

### Signature-X-XLN-1.xml

| | ETSI |
|---|---|
| ENT | F |
| UPC | F |

### Signature-X-XLN-2.xml

| | ETSI |
|---|---|
| ENT | F |
| UPC | F |

### Signature-X-XLN-3.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| UPC | F |

### Signature-X-XLN-4.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| UPC | F |

### Signature-X-XLN-5.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| UPC | F |

### Signature-X-XLN-6.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| UPC | F |

### Signature-X-XLN-7.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| UPC | F |

### Signature-X-XLN-8.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| UPC | F |

### Signature-X-AN-1.xml

| | ETSI |
|---|---|
| ENT | F |
| P14 | F |
| UPC | F |

### Signature-X-AN-2.xml

| | ETSI |
|---|---|
| ENT | F |
| UPC | F |

### Signature-X-AN-3.xml

| | ETSI |
|---|---|
| ENT | F |
| P14 | F |
| UPC | F |

### Signature-X-AN-4.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| LE | F |
| P14 | F |
| UPC | F |

### Signature-X-AN-5.xml

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| LE | F |
| P14 | F |
| UPC | F |

# 7. CAdES Plugtest© Interoperability matrixes

## 7.1 Summaries for Positive Test Cases

| Signature<br>[PositiveTest Cases] | Total Generated | Total Verifications | Success Absolute | Success Relative | Failure Absolute | Failure Relative | Not Applicable Absolute | Not Applicable Relative | Incomplete Absolute | Incomplete Relative |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signature-C-BES-1.p7s** | 9 | 65 | 59 | 90,77 | 5 | 7,69 | 1 | 1,54 | 0 | 0,00 |
| **Signature-C-BES-10.p7s** | 4 | 26 | 21 | 80,77 | 1 | 3,85 | 4 | 15,38 | 0 | 0,00 |
| **Signature-C-BES-11.p7s** | 6 | 35 | 32 | 91,43 | 3 | 8,57 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-BES-15.p7s** | 4 | 23 | 14 | 60,87 | 5 | 21,74 | 4 | 17,39 | 0 | 0,00 |
| **Signature-C-BES-16.p7s** | 6 | 44 | 36 | 81,82 | 2 | 4,55 | 6 | 13,64 | 0 | 0,00 |
| **Signature-C-BES-2.p7s** | 8 | 62 | 56 | 90,32 | 5 | 8,06 | 1 | 1,61 | 0 | 0,00 |
| **Signature-C-BES-3.p7s** | 7 | 55 | 49 | 89,09 | 5 | 9,09 | 1 | 1,82 | 0 | 0,00 |
| **Signature-C-BES-4.p7s** | 2 | 12 | 10 | 83,33 | 0 | 0,00 | 2 | 16,67 | 0 | 0,00 |
| **Signature-C-BES-5.p7s** | 2 | 9 | 6 | 66,67 | 1 | 11,11 | 2 | 22,22 | 0 | 0,00 |
| **Signature-C-BES-6.p7s** | 6 | 47 | 43 | 91,49 | 4 | 8,51 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-BES-7.p7s** | 6 | 46 | 41 | 89,13 | 5 | 10,87 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-BES-8.p7s** | 6 | 41 | 35 | 85,37 | 5 | 12,20 | 1 | 2,44 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-BES** | **66** | **465** | **402** | **83,42** | **41** | **8,85** | **22** | **7,73** | **0** | **0,00** |
| | | | | | | | | | | |
| **Signature-C-EPES-1.p7s** | 5 | 25 | 16 | 64,00 | 5 | 20,00 | 4 | 16,00 | 0 | 0,00 |
| **Signature-C-EPES-2.p7s** | 4 | 20 | 12 | 60,00 | 3 | 15,00 | 5 | 25,00 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-EPES** | **9** | **45** | **28** | **62** | **8** | **17,5** | **9** | **20,5** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-C-T-1.p7s** | **10** | **71** | **65** | **91,55** | **4** | **5,63** | **2** | **2,82** | **0** | **0,00** |
| | | | | | | | | | | |
| | | | | | | | | | | |
| **Signature-C-C-1.p7s** | 7 | 38 | 32 | 84,21 | 3 | 7,89 | 3 | 7,89 | 0 | 0,00 |
| **Signature-C-C-2.p7s** | 7 | 42 | 33 | 78,57 | 6 | 14,29 | 3 | 7,14 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-C** | **14** | **80** | **65** | **81,39** | **9** | **11,09** | **6** | **7,52** | **0** | **0,00** |

| Signature<br>[PositiveTest Cases] | Total Generated | Total Verifications | Success Absolute | Success Relative | Failure Absolute | Failure Relative | Not Applicable Absolute | Not Applicable Relative | Incomplete Absolute | Incomplete Relative |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signature-C-X-1.p7s** | 6 | 33 | 23 | 69,70 | 4 | 12,12 | 6 | 18,18 | 0 | 0,00 |
| **Signature-C-X-2.p7s** | 5 | 28 | 19 | 67,86 | 3 | 10,71 | 6 | 21,43 | 0 | 0,00 |
| **Signature-C-X-3.p7s** | 6 | 39 | 25 | 64,10 | 8 | 20,51 | 6 | 15,38 | 0 | 0,00 |
| **Signature-C-X-4.p7s** | 6 | 33 | 21 | 63,64 | 6 | 18,18 | 6 | 18,18 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-X** | **23** | **133** | **88** | **66,32** | **21** | **15,38** | **24** | **18,29** | **0** | **0,00** |
| | | | | | | | | | | |
| **Signature-C-XL-1.p7s** | 7 | 45 | 33 | 73,33 | 4 | 8,89 | 8 | 17,78 | 0 | 0,00 |
| **Signature-C-XL-2.p7s** | 6 | 33 | 23 | 69,70 | 3 | 9,09 | 7 | 21,21 | 0 | 0,00 |
| **Signature-C-XL-3.p7s** | 8 | 51 | 28 | 54,90 | 14 | 27,45 | 8 | 15,69 | 1 | 1,96 |
| **Signature-C-XL-4.p7s** | 7 | 38 | 21 | 55,26 | 10 | 26,32 | 7 | 18,42 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-XL** | **28** | **167** | **105** | **63,30** | **31** | **17,94** | **30** | **18,27** | **1** | **0,49** |
| | | | | | | | | | | |
| **Signature-C-A-1.p7s** | 5 | 32 | 20 | 62,50 | 4 | 12,50 | 8 | 25,00 | 0 | 0,00 |
| **Signature-C-A-2.p7s** | 4 | 22 | 13 | 59,09 | 3 | 13,64 | 6 | 27,27 | 0 | 0,00 |
| **Signature-C-A-3.p7s** | 6 | 37 | 22 | 59,46 | 5 | 13,51 | 9 | 24,32 | 1 | 2,70 |
| **Signature-C-A-4.p7s** | 5 | 27 | 16 | 59,26 | 4 | 14,81 | 7 | 25,93 | 0 | 0,00 |
| **Signature-C-A-5.p7s** | 6 | 35 | 22 | 62,86 | 3 | 8,57 | 9 | 25,71 | 1 | 2,86 |
| **Signature-C-A-6.p7s** | 5 | 26 | 16 | 61,54 | 3 | 11,54 | 7 | 26,92 | 0 | 0,00 |
| **Signature-C-A-7.p7s** | 7 | 47 | 33 | 70,21 | 7 | 14,89 | 7 | 14,89 | 0 | 0,00 |
| **Signature-C-A-8.p7s** | 6 | 38 | 23 | 60,53 | 7 | 18,42 | 7 | 18,42 | 1 | 2,63 |
| **Signature-C-A-9.p7s** | 7 | 43 | 27 | 62,79 | 8 | 18,60 | 7 | 16,28 | 1 | 2,33 |
| | | | | | | | | | | |
| **Totals / Average C-A** | **51** | **307** | **192** | **62,03** | **44** | **14,05** | **67** | **22,75** | **4** | **1,17** |
| | | | | | | | | | | |
| **TOTALS** | **201** | **1268** | **945** | **72,86** | **158** | **12,92** | **160** | **13,98** | **5** | **0,24** |

## 7.2 Summaries for Negative Test Cases

| Signature<br>[Negative Test Cases] | Total Generated | Total Verifications | Failure Absolute | Failure Relative | Success Absolute | Success Relative | Not Applicable Absolute | Not Applicable Relative | Incomplete Absolute | Incomplete Relative |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signature-C-BESN-4.p7s** | 1 | 7 | 0 | 0,00 | 7 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-BESN-5.p7s** | 1 | 7 | 0 | 0,00 | 7 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-BESN** | **2** | **14** | **0** | **0** | **14** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-C-EPESN-1.p7s** | 1 | 3 | 0 | 0,00 | 2 | 66,67 | 1 | 33,33 | 0 | 0,00 |
| **Signature-C-EPESN-2.p7s** | 1 | 2 | 0 | 0,00 | 1 | 50,00 | 1 | 50,00 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-EPESN** | **2** | **5** | **0** | **0** | **3** | **58,33** | **2** | **41,67** | **0** | **0,00** |
| | | | | | | | | | | |
| **Signature-C-TN-2.p7s** | 1 | 4 | 0 | 0,00 | 4 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-TN-1.p7s** | 1 | 6 | 0 | 0,00 | 6 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-TN-3.p7s** | 1 | 6 | 0 | 0,00 | 6 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-TN** | **3** | **16** | **0** | **0** | **16** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-C-XN-1.p7s** | 1 | 4 | 0 | 0,00 | 4 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-XN-2.p7s** | 1 | 5 | 0 | 0,00 | 5 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-XN-3.p7s** | 1 | 4 | 0 | 0,00 | 4 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-XN** | **3** | **13** | **0** | **0** | **13** | **100** | **0** | **0** | **0** | **0** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Signature<br>[Negative Test Cases]** | **Total Generated** | **Total Verifications** | **Failure Absolute** | **Failure Relative** | **Success Absolute** | **Success Relative** | **Not Applicable Absolute** | **Not Applicable Relative** | **Incomplete Absolute** | **Incomplete Relative** |
| **Signature-C-XLN-1.p7s** | 1 | 3 | 0 | 0,00 | 3 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-XLN-2.p7s** | 1 | 3 | 0 | 0,00 | 3 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-XLN-3.p7s** | 1 | 4 | 0 | 0,00 | 4 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-XLN-4.p7s** | 1 | 3 | 0 | 0,00 | 3 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-XLN-5.p7s** | 1 | 3 | 0 | 0,00 | 3 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-XLN-6.p7s** | 1 | 4 | 0 | 0,00 | 4 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-XLN** | **6** | **20** | **0** | **0** | **20** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **Signature-C-AN-1.p7s** | 1 | 4 | 0 | 0,00 | 4 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-AN-2.p7s** | 1 | 3 | 0 | 0,00 | 3 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| **Signature-C-AN-3.p7s** | 1 | 4 | 0 | 0,00 | 4 | 100,00 | 0 | 0,00 | 0 | 0,00 |
| | | | | | | | | | | |
| **Totals / Average C-AN** | **3** | **11** | **0** | **0** | **11** | **100** | **0** | **0** | **0** | **0** |
| | | | | | | | | | | |
| **TOTALS** | **19** | **79** | **0** | **0** | **77** | **93,06** | **2** | **6,94** | **0** | **0,00** |

## 7.3 Positive Test Cases

### Signature-C-BES-1.p7s

| | P1 | P2 | P3 | ENT | P10 | SC | P14 | P15 | UPC |
|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | | V | V | V | | F | V | V |
| **P3** | F | V | V | V | V | V | V | V | F |
| **ENT** | V | V | V | V | V | V | V | V | V |
| **P10** | V | | V | V | V | V | | V | |
| **SC** | V | V | V | V | V | V | V | V | V |
| **P14** | F | V | V | V | V | V | V | V | V |
| **P15** | F | V | V | V | V | V | NA | V | V |
| **UPC** | V | | V | V | | V | V | V | V |

### Signature-C-BES-2.p7s

| | P1 | P3 | ENT | P10 | SC | P14 | P15 | UPC |
|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | F | V | V |
| **P3** | F | V | V | V | V | V | V | F |
| **ENT** | V | V | V | V | V | V | V | V |
| **P10** | V | V | V | V | V | V | V | |
| **SC** | V | V | V | V | V | V | V | V |
| **P14** | F | V | V | V | V | V | V | V |
| **P15** | F | V | V | V | V | NA | V | V |
| **UPC** | V | V | V | | V | V | V | V |

## Signature-C-BES-3.p7s

| | P1 | P3 | ENT | SC | P14 | P15 | UPC |
|---|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V | V |
| P3 | F | V | V | V | V | V | F |
| ENT | V | V | V | V | V | V | V |
| P10 | V | V | V | V | V | V | |
| SC | V | V | V | V | V | V | V |
| P14 | F | V | V | V | V | V | F |
| P15 | F | V | V | V | NA | V | V |
| UPC | V | V | V | V | V | V | V |

## Signature-C-BES-4.p7s

| | ENT | UPC |
|---|---|---|
| P1 | V | V |
| P3 | V | |
| ENT | V | V |
| P10 | V | |
| P14 | V | V |
| P15 | NA | NA |
| UPC | V | V |

## Signature-C-BES-5.p7s

| | ENT | UPC |
|---|---|---|
| P1 | V | V |
| ENT | V | F |
| P10 | V | |
| P14 | V | V |
| P15 | NA | NA |

## Signature-C-BES-6.p7s

| | P1 | P3 | ENT | SC | P15 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V |
| P3 | F | V | V | V | V | F |
| ENT | V | V | V | V | V | V |
| P10 | V | V | V | V | V | |
| SC | V | V | V | V | V | V |
| P14 | F | V | V | V | V | V |
| P15 | F | V | V | V | V | V |
| UPC | V | V | V | V | V | V |

## Signature-C-BES-7.p7s

| | P1 | P3 | ENT | SC | P15 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | | V | V | V | V |
| P3 | F | V | V | V | V | F |
| ENT | V | V | V | V | V | V |
| P10 | V | V | V | V | V | |
| SC | F | V | V | V | V | V |
| P14 | F | V | V | V | V | V |
| P15 | F | V | V | V | V | V |
| UPC | V | V | V | V | V | V |

## Signature-C-BES-8.p7s

| | P1 | P3 | ENT | P14 | P15 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | V | V | V | V | V |
| P3 | F | V | V | V | V | F |
| ENT | V | V | V | V | V | V |
| P10 | V | V | V | V | V | |
| P14 | F | V | V | V | V | V |
| P15 | F | V | V | NA | V | F |
| UPC | V | V | V | V | V | V |

## Signature-C-BES-10.p7s

| | P3 | ENT | SC | UPC |
|---|---|---|---|---|
| P1 | V | V | | V |
| P3 | V | V | V | F |
| ENT | V | V | V | V |
| P10 | V | V | V | |
| SC | V | V | V | V |
| P14 | V | V | V | V |
| P15 | NA | NA | NA | NA |

## Signature-C-BES-11.p7s

| | P1 | P3 | ENT | SC | P15 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | V | V | V | | V |
| P3 | F | V | V | V | V | F |
| ENT | V | V | V | V | V | V |
| P10 | V | V | V | V | V | |
| SC | V | V | V | V | V | V |
| P14 | | | | | V | |
| P15 | F | V | V | V | V | V |

## Signature-C-BES-15.p7s

| | P1 | P3 | ENT | UPC |
|---|---|---|---|---|
| **P1** | V | V | V | V |
| **P3** | F | V | V | F |
| **ENT** | F | V | V | V |
| **P10** | V | V | V | |
| **P14** | F | V | V | F |
| **P15** | NA | NA | NA | NA |

## Signature-C-BES-16.p7s

| | P3 | ENT | P10 | SC | P14 | UPC |
|---|---|---|---|---|---|---|
| **P1** | V | V | V | | V | V |
| **P3** | V | V | V | V | V | F |
| **ENT** | V | V | V | V | V | V |
| **P10** | V | V | V | | V | |
| **SC** | V | V | V | V | V | V |
| **P14** | V | V | F | V | V | V |
| **P15** | NA | NA | NA | NA | NA | NA |
| **UPC** | V | V | | V | V | V |

## Signature-C-EPES-1.p7s

| | P1 | P3 | ENT | P14 | P15 |
|---|---|---|---|---|---|
| **P1** | V | V | V | | V |
| **P3** | F | V | NA | V | NA |
| **ENT** | F | V | V | V | F |
| **P10** | NA | | | | |
| **P14** | F | V | V | V | V |
| **P15** | F | V | V | NA | V |

## Signature-C-EPES-2.p7s

| | P1 | P3 | ENT | P14 |
|---|---|---|---|---|
| **P1** | V | V | V | |
| **P3** | F | V | V | V |
| **ENT** | F | V | V | V |
| **P10** | NA | | | |
| **P14** | F | V | V | V |
| **P15** | NA | NA | NA | NA |

## Signature-C-T-1.p7s

| | P1 | P2 | P3 | ENT | P10 | SC | P14 | P15 | P16 | UPC |
|---|---|---|---|---|---|---|---|---|---|---|
| **P1** | V | | V | V | V | V | V | V | V | V |
| **P3** | F | | V | V | V | V | V | V | V | F |
| **ENT** | V | V | V | V | V | V | V | V | V | V |
| **P10** | V | | V | V | V | V | V | V | V | |
| **SC** | V | | V | V | V | V | V | V | V | V |
| **P14** | F | | V | V | V | V | V | V | V | V |
| **P15** | F | | V | V | V | NA | NA | V | V | V |
| **P16** | V | | V | V | V | V | V | V | V | |

## Signature-C-C-1.p7s

| | P2 | P3 | ENT | SC | P14 | P15 | UPC |
|---|---|---|---|---|---|---|---|
| **P1** | | V | V | V | V | NA | V |
| **P3** | V | V | V | V | V | V | F |
| **ENT** | F | V | V | V | V | V | V |
| **SC** | | V | V | V | V | F | V |
| **P14** | | V | V | V | V | V | V |
| **P15** | | V | V | NA | NA | V | V |

## Signature-C-C-2.p7s

| | P1 | P3 | ENT | SC | P14 | P15 | UPC |
|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | NA | V |
| **P3** | F | V | V | V | V | V | F |
| **ENT** | V | V | V | V | V | V | V |
| **SC** | V | V | V | V | V | F | F |
| **P14** | F | V | V | V | V | V | V |
| **P15** | F | V | V | NA | NA | V | V |

## Signature-C-X-1.p7s

| | P2 | P3 | ENT | SC | P15 | UPC |
|---|---|---|---|---|---|---|
| **P1** | | V | V | V | NA | V |
| **P3** | | V | V | V | NA | F |
| **ENT** | | V | V | V | F | V |
| **P10** | | V | V | V | | |
| **SC** | | V | V | V | F | V |
| **P14** | | V | V | V | F | V |
| **P15** | | NA | NA | NA | V | NA |

## Signature-C-X-2.p7s

| | P3 | ENT | SC | P15 | UPC |
|---|---|---|---|---|---|
| P1 | V | V | V | NA | V |
| P3 | V | V | V | NA | F |
| ENT | V | V | V | F | V |
| P10 | V | V | V | | |
| SC | V | V | V | F | V |
| P15 | NA | NA | NA | V | NA |

## Signature-C-X-3.p7s

| | P1 | P3 | ENT | SC | P15 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | V | V | V | NA | V |
| P3 | F | V | V | V | NA | F |
| ENT | V | V | V | V | F | V |
| P10 | | V | V | V | | |
| SC | V | V | V | V | F | F |
| P14 | F | V | V | V | F | V |
| P15 | F | NA | NA | NA | V | NA |

## Signature-C-X-4.p7s

| | P1 | P3 | ENT | SC | P15 | UPC |
|---|---|---|---|---|---|---|
| P1 | V | V | V | V | NA | V |
| P3 | F | V | V | V | NA | F |
| ENT | V | V | V | V | F | V |
| P10 | | V | V | V | | |
| SC | V | V | V | V | F | F |
| P15 | F | NA | NA | NA | V | NA |

## Signature-C-XL-1.p7s

| | P3 | ENT | P10 | SC | P14 | P15 | UPC |
|---|---|---|---|---|---|---|---|
| **P1** | V | | V | V | V | NA | V |
| **P3** | V | V | V | V | V | NA | F |
| **ENT** | V | V | V | V | V | F | V |
| **P10** | V | V | V | V | | | |
| **SC** | V | V | V | V | V | F | V |
| **P14** | V | V | V | V | V | F | V |
| **P15** | NA | NA | NA | NA | NA | V | NA |

## Signature-C-XL-2.p7s

| | P3 | ENT | P10 | SC | P15 | UPC |
|---|---|---|---|---|---|---|
| **P1** | V | | V | V | NA | V |
| **P3** | V | V | V | V | NA | F |
| **ENT** | V | V | V | V | F | V |
| **P10** | V | V | V | V | | |
| **SC** | V | V | V | V | F | V |
| **P15** | NA | NA | NA | NA | V | NA |

## Signature-C-XL-3.p7s

| | P1 | P3 | ENT | P10 | SC | P14 | P15 | UPC |
|---|---|---|---|---|---|---|---|---|
| **P1** | V | V | | V | V | V | NA | V |
| **P3** | F | V | V | F | V | V | NA | F |
| **ENT** | V | V | V | F | V | V | F | F |
| **P10** | | V | V | V | V | | | |
| **SC** | V | V | V | F | V | V | F | F |
| **P14** | F | I | V | F | V | V | F | F |
| **P15** | F | NA | NA | NA | NA | NA | V | NA |

## Signature-C-XL-4.p7s

| | P1 | P3 | ENT | P10 | SC | P15 | UPC |
|---|---|---|---|---|---|---|---|
| P1 | V | V | | V | V | NA | V |
| P3 | F | V | V | F | V | NA | F |
| ENT | V | V | V | F | V | F | F |
| P10 | | V | V | V | V | | |
| SC | V | V | V | F | V | F | F |
| P15 | F | NA | NA | NA | NA | V | NA |

## Signature-C-A-1.p7s

| | P3 | ENT | SC | P14 | P15 |
|---|---|---|---|---|---|
| P1 | V | V | V | V | F |
| P3 | V | NA | NA | NA | NA |
| ENT | V | V | V | V | F |
| P10 | | V | V | | |
| SC | V | V | V | V | F |
| P14 | V | V | V | V | F |
| P15 | NA | NA | NA | NA | V |

## Signature-C-A-2.p7s

| | P3 | ENT | SC | P15 |
|---|---|---|---|---|
| P1 | V | V | V | F |
| P3 | V | NA | NA | NA |
| ENT | V | V | V | F |
| P10 | | V | V | |
| SC | V | V | V | F |
| P15 | NA | NA | NA | V |

## Signature-C-A-3.p7s

| | P1 | P3 | ENT | SC | P14 | P15 |
|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | F |
| **P3** | NA | V | NA | NA | NA | NA |
| **ENT** | V | V | V | V | V | F |
| **P10** | | | V | V | | |
| **SC** | V | V | V | V | V | F |
| **P14** | | I | V | V | V | F |
| **P15** | F | NA | NA | NA | NA | V |

## Signature-C-A-4.p7s

| | P1 | P3 | ENT | SC | P15 |
|---|---|---|---|---|---|
| **P1** | V | V | V | V | F |
| **P3** | NA | V | NA | NA | NA |
| **ENT** | V | V | V | V | F |
| **P10** | | | V | V | |
| **SC** | V | V | V | V | F |
| **P15** | F | NA | NA | NA | V |

## Signature-C-A-5.p7s

| | P1 | P3 | ENT | SC | P14 | P15 |
|---|---|---|---|---|---|---|
| **P1** | V | V | V | V | V | |
| **P3** | NA | V | NA | NA | NA | NA |
| **ENT** | V | V | V | V | V | F |
| **P10** | | | V | V | | |
| **SC** | V | V | V | V | V | F |
| **P14** | | I | V | V | V | |
| **P15** | F | NA | NA | NA | NA | V |
| | | | | | | |

## Signature-C-A-6.p7s

| | P1 | P3 | ENT | SC | P15 |
|---|---|---|---|---|---|
| **P1** | V | V | V | V | |
| **P3** | NA | V | NA | NA | NA |
| **ENT** | V | V | V | V | F |
| **P10** | | | V | V | |
| **SC** | V | V | V | V | F |
| **P15** | F | NA | NA | NA | V |

## Signature-C-A-7.p7s

| | P3 | ENT | P10 | SC | P14 | P15 | P16 |
|---|---|---|---|---|---|---|---|
| **P1** | V | V | | V | V | F | V |
| **P3** | V | NA | NA | NA | NA | V | NA |
| **ENT** | V | V | F | V | V | F | V |
| **P10** | | V | V | V | | | |
| **SC** | V | V | F | V | V | F | V |
| **P14** | V | V | F | V | V | F | V |
| **P15** | V | V | V | NA | NA | V | V |
| **P16** | | V | | V | | | V |

## Signature-C-A-8.p7s

| | P3 | ENT | P10 | SC | P14 | P15 |
|---|---|---|---|---|---|---|
| **P1** | V | V | | V | V | F |
| **P3** | V | NA | NA | NA | NA | NA |
| **ENT** | V | V | F | V | V | F |
| **P10** | | V | V | V | | |
| **SC** | V | V | F | V | V | F |
| **P14** | I | V | F | V | V | F |
| **P15** | V | V | V | NA | NA | V |

## Signature-C-A-9.p7s

| | P1 | P3 | ENT | P10 | SC | P14 | P15 |
|---|---|---|---|---|---|---|---|
| **P1** | V | V | V | | V | V | F |
| **P3** | NA | V | NA | NA | NA | NA | V |
| **ENT** | V | V | V | F | V | V | F |
| **P10** | | | V | V | V | | |
| **SC** | V | V | V | F | V | V | F |
| **P14** | | I | V | F | V | V | F |
| **P15** | F | V | V | V | NA | NA | V |

## 7.4 Negative Test Cases

### Signature-C-BESN-4.p7s

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P10 | F |
| SC | F |
| P14 | F |
| P15 | F |
| UPC | F |

### Signature-C-BESN-5.p7s

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P10 | F |
| SC | F |
| P14 | F |
| P15 | F |
| UPC | F |

### Signature-C-EPESN-1.p7s

| | ETSI |
|---|---|
| ENT | F |
| P14 | F |
| P15 | NA |

o

### Signature-C-EPESN-2.p7s

| | ETSI |
|---|---|
| ENT | F |
| P15 | NA |

### Signature-C-TN-2.p7s

| | ETSI |
|---|---|
| ENT | F |
| SC | F |
| P14 | F |
| P15 | F |

### Signature-C-TN-1.p7s

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P10 | F |
| SC | F |
| P14 | F |
| P15 | F |

### Signature-C-TN-3.p7s

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| P10 | F |
| SC | F |
| P14 | F |
| P15 | F |

### Signature-C-XN-1.p7s

| | ETSI |
|---|---|
| ENT | F |
| P10 | F |
| SC | F |
| P15 | F |

### Signature-C-XN-2.p7s

| | ETSI |
|---|---|
| ENT | F |
| P10 | F |
| SC | F |
| P14 | F |
| P15 | F |

### Signature-C-XN-3.p7s

| | ETSI |
|---|---|
| ENT | F |
| P10 | F |
| SC | F |
| P15 | F |

### Signature-C-XLN-1.p7s

| | ETSI |
|---|---|
| ENT | F |
| SC | F |
| P15 | F |

### Signature-C-XLN-2.p7s

| | ETSI |
|---|---|
| ENT | F |
| SC | F |
| P15 | F |

### Signature-C-XLN-3.p7s

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| SC | F |
| P15 | F |

### Signature-C-XLN-4.p7s

| | ETSI |
|---|---|
| ENT | F |
| SC | F |
| P15 | F |

### Signature-C-XLN-5.p7s

| | ETSI |
|---|---|
| ENT | F |
| SC | F |
| P15 | F |

### Signature-C-XLN-6.p7s

| | ETSI |
|---|---|
| P3 | F |
| ENT | F |
| SC | F |
| P15 | F |

### Signature-C-AN-1.p7s

| | ETSI |
|---|---|
| ENT | F |
| P10 | F |
| SC | F |
| P14 | F |

### Signature-C-AN-2.p7s

| | ETSI |
|---|---|
| ENT | F |
| P10 | F |
| SC | F |

### Signature-C-AN-3.p7s

| | ETSI |
|---|---|
| ENT | F |
| P10 | F |
| SC | F |
| P14 | F |

# History

*This clause shall be the last one in the document.*

*History box entries*

<table>
<tr><th colspan="3">Document history</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
</table>