Smart Ticketing Alliance - Certification Working Group

Contactless Interface Certification for Public Transport Products - Certification Procedure -

Author:	Editor:
Smart Ticketing Alliance	AFIMB

REVISION LIST

Version	Date	Comments / Modifications
1.0	20/10/2016	Approved by the STA CWG on October 20th 2016
1.1	10/01/2019	Conservation of PCD reference samples mandated by COFRAC for ISO 17065 conformance of the certification program. Minor editorial amendments.

Table of Contents

Acronyms

CB	Certification Body
CWG	Certification Working Group
ICS	Implementation Conformance Statement
PCD	Proximity Coupling Device
PICC	Proximity Integrated Circuit Card
STA	Smart Ticketing Alliance

Terms and Definition

Accreditation body: External Authority that acknowledges entities that are allowed to perform certification.

Certification Body: Third-party entity, member of the STA or sponsored by a STA member, in charge of the certification process as described in the ISO 17065:2012.

Certification Committee: Committee organised by a Certification Body consisting of representatives involved at different levels in certification, meeting to agree or refuse the issue of a certificate for a candidate product or system based on defined elements such as the Laboratory's Test Results, Audit or Analysis Report and the Certification Body's Certification Report.

Certification Letter: Document issued by the Certification Body to the vendor when specific conditions are fulfilled (valid test, audit or analysis report, valid and positive Test Report, explanation, product or system compliance towards specifications).

Certification Report: Document issued by the Certification Body to the vendor assessing the compliance of the Product with the Standard.

Evaluation: Process defining compliance level of the product or functional system, based on the Laboratory test, audit or analysis report, laboratory explanation and certification requirements conformity.

Implementation Conformance Statement: document used for detailed identification of a product or system.

Product: Product, system or solution for which the certification of compliance with the Standard is requested.

Reference Sample: sample of a Product under test to be delivered to any Applicant Laboratory. The same Reference Sample shall be sent to each laboratory in order to ensure the consistency of results.

Reference Test Results: measurements established after a first round-robin test of Reference Samples by chosen laboratories. These measurements will be considered as the reference for future Applicant Laboratories.

Standards (or Specifications): Ensemble of defined documents detailing requirements to be met by individual Products.

Test Laboratory (or Test Lab): entity performing the Evaluation of a Product.

Test Report: Report produced by the Test Laboratory as defined in clause 3.3. of the Technical Guidelines (see above [REF 3]).

Test Results: set of measurements produced by Applicant Laboratories after Product testing.

Test Tools: set of test apparatus and test circuits used for testing the contactless communication of Products.

Vendor: Provider of the Product which is candidate for certification.

Waiver: agreement, given by the STA, that Vendors do not have to comply with a certain specific requirement making it optional for implementation and certification.

1 Scope of this document

This document describes the actors and actions of the STA certification process for contactless products and their distinctive actions. The contactless products considered in this document are the Public Transport contactless objects and the Public Transport contactless readers.

Any other element is not in the scope of this document.

This Certification Procedure is applicable to every Certification Body of the STA and to all their attached Test Labs. The Certification Body can use the current procedure as such or can complement the current procedure to refine its operational process or to integrate it into its own management system, without modifying or withdrawing the STA certification requirements.

2 References

The following documents, in whole or in part, are referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

The STA documents are available in the STA repository (www.smart-ticketing.org).

The complete list of documents making up the certification scheme is listed in the Terms of Reference of the STA Group of Certification Bodies.

[REF1] CEN TS 16794, « Public transport — Communication between contactless readers and fare media — Part 1: Implementation requirements"

[REF2] CEN TS 16794, « Public transport — Communication between contactless readers and fare media — Part 2: Test plan"

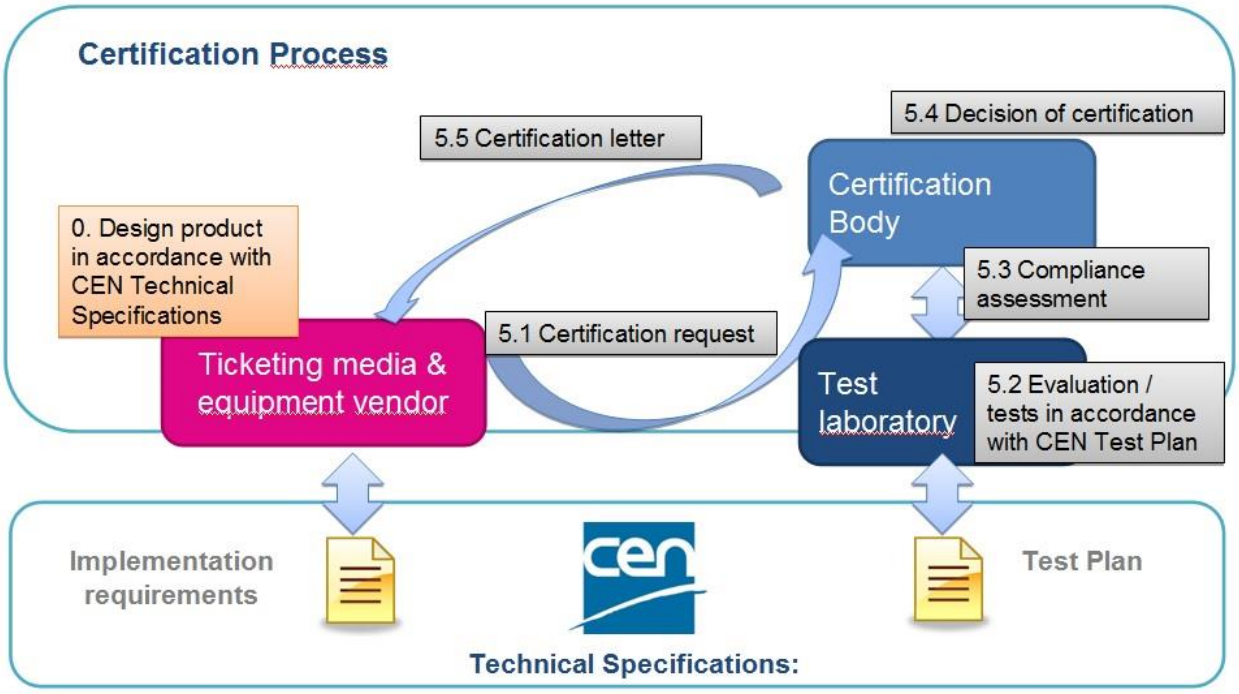
[REF3] STA Contactless Interface Certification for Public Transport Products - Technical Guidelines

[REF4] ISO/IEC 17065:2012 General requirements for the certification of products, services and process

3 Pre-requisite to the certification process

- The CB has been approved to operate by the STA.
- The CB can use internal evaluation resources or has contracted with an external Test Laboratory to operate the evaluation tasks.
  Test laboratories shall be accredited against ISO/IEC 17025 for the evaluation of industrial products designed according to CEN TS 16794.
- Signature of a certification contract legally binding the Certification Body with the Vendor as described in [REF4]. Once signed, the vendor becomes a Registered Vendor.

4 Figure 1: Certification Process



5 Certification Process

5.1 Certification Request

- **Application**

  When the Registered Vendor is ready to submit a Product for formal Certification, they complete and submit a Certification Application to the Certification Body in advance of their planned Certification Test.

  This task may be delegated by the CB to the labs in accordance to the ISO/IEC 17065.

The application will include:

- Description of the Product (in the certification process it will be known as Product). The description will include the identification of software and hardware components and whether the Product Under Test (PUT) will be supplied complete or as a set of sub-modules.
- A list of the standards, functionality, and media types supported by the Product.
- Whether the application is resulting from a change to a previously Certified Product or the use of an approved sub-assembly; change in build standard (as applicable).
- The Implementation Conformance Statement (ICS) as specified in [REF1] detailing the characteristics the product (PICC or PCD) will support, determines the selection of tests that need to be carried out. This list is the STA Test Scope and is used to determine the basis of the Contract between the Vendor and Test Lab for the Test Session.
- The Vendor will report on previous certifications for previous versions of the Product, and whether previous versions are or have been withdrawn.
- The Vendor will be required to report on the status of any other certifications completed for the Product or any components within the Product; e.g. (inter)national regulations for electrical and telecommunication equipment, EMV Level 1 for physical and electromechanical aspects of the chip card reader, European Commission Low Voltage Directive 73/23/EEC for electrically powered equipment etc.
- Intellectual Property Rights (IPR) protect certain standards. Where this is the case the Vendor has to confirm its rights to the IPR and has to prove the rights to the satisfaction of the Certification Body.

The Certification Body will have in place a legally enforceable commitment to preserve the confidentiality of the documents provided by the Vendor.

- **Application review**

  Where the application is from an existing registered Vendor for an alternative embodiment of a previously Certified Product of their own manufacture, and where the module is being used without change, the Vendor may apply for a new updated version of their [already] existing certificate. In these circumstances, the Product will only be required to undergo limited regression testing. The Certification Body will submit a list of non-regression tests to be passed, to the STA and inform the Vendor of the validation of this non-regression reduced

test scope. The reduced test scope will identify the tests that are not-applicable in [REF2] for a given Product.

For a new Vendor applying for the first certification of a Product or a version of another different Vendor's Product, or a module or sub-assembly thereof, they must first apply to become a registered Vendor, then apply and pay for certification as above. The Certification Body will require a confirmation from the registered Vendor who has supplied the Certified Product module that the new Vendor has permission to use the other's module or sub-assembly, and any IPR associated with it, in the new Product.

Under these circumstances, and assuming the Product incorporates the earlier Certified Product module unchanged and in its entirety, then the level of testing required for the new version may be reduced. The Certification Body will submit a list of tests to be passed to the STA and inform the Vendor of the validation of this reduced test scope.

Full testing is required under all other circumstances.

The Certification Body will send a written notification to the Vendor to inform the Vendor that the Application has been accepted and to confirm when a reduced Test Scope has been defined. The acceptance of the application implies the validation of ICS by the Certification Body.

In the case where an Application is rejected by the Certification Body, the Vendor will correct it appropriately in order to resubmit it to the Certification Body.

5.2 Evaluation of the Product

- **Evaluation of the Product by a Test Lab**

  If the Product under Test has not previously been tested, then the Test Lab will be required to undertake all Tests identified in the Test Scope, at the Test Lab premises in close co-operation with the Vendor's representative. The tests carried out will be derived directly from the Test Scope applicable to the Product.

  Where there are any General Requirements (such as safety, EMC) the Testing laboratory must first check these have been complied with.

  As soon as the Vendor fulfils its financial obligations in accordance with the Testing Laboratory Terms and Conditions then the test session can start with the Vendor delivering the following to the Test Lab, applying the technical guidelines as detailed in [REF3]:

  - The numbered Reference Samples specified in the contract.
  - The specification of the Product.
  - The Product's installation instructions.
  - User manual(s).
  - The optional provision of a specialist member of staff (e.g. Engineer, Programmer etc.) in order to assist with operating the Product or software under test.
  - On a regular basis, the Test Lab will publish Test Reports to the Vendor.

- When the Vendor submits a new revision of hardware or software, the following has to be provided to the Test Lab:
  - A full description of the new software to be installed (if not already installed).
  - Corrected or amended documentation (if applicable).
  - The Test Report will accumulate or refer to the results of each previous Test Session.

When the evaluation of the Product is completed, in order to initiate the Review of the Evaluation Results, the Test Lab will send the Test Report to:

- The Vendor, who will thereafter send the Test Report to the Certification Body; or
- The Certification Body, with prior consent from the Vendor.

Notes:

- If the documentation provided by the Vendor for the specification, installation, or operation of the Product is insufficiently detailed, then the testing time will be extended. This may result in additional cost to the Vendor.
- The Test Lab provides a testing service only and is not contracted to undertake fault finding. Therefore in cases where the Product has not been sufficiently pre-tested by the Vendor, then the testing time may be significantly extended, resulting in additional cost to the Vendor. In severe instances the testing may need to be suspended.
- The Test Lab shall store the PICC Reference Samples for the same duration as defined for the validity of a certificate as specified in section §9.1.
  The Test Lab shall store the PCD Reference Samples for a duration of 7 years.
- Under certain circumstances (e.g. large Products), the Test Lab may agree to carry out some or all of the tests on a set of sub-modules of the Product containing a PC or remote server running the software plus a GUI / HMI and media reader (as appropriate). In specific circumstances, the Test Lab may agree to carry out testing at the Vendor's premises, at the Vendor's expense.
- In those circumstances where the Product is only available off-site (i.e. it cannot easily be transported to the Test Lab, normally due to bulky or heavy equipment), the Test Lab may arrange for a Tester to attend at the Vendor's premises to execute the necessary Tests (as applicable).

5.3 Review of the evaluation results

When the **Test Report** has been issued by the Testing Laboratory, the Certification Body assigns at least one person, who has not been involved in the evaluation process, to review it.

The Laboratory remains at the disposal of the Certification Body for any information required about the results quoted in the Test Report.

If the Test Report notes one or several discrepancies, the Certification Body proceeds to their classification:

- The Certification Body evaluates that the discrepancy does not impact the interoperability of the Product. The Certification Body evaluates this non-conformity as “minor”.
- The Certification Body evaluates that the discrepancy impacts the interoperability of the Product. The Certification Body evaluates this non-conformity as “major”.
- If one or several discrepancies are classified as “major”, the Certification Body states, for each discrepancy, if a Waiver is possible.
- For the major discrepancies for which a Waiver is requested, the Certification Body proceeds to Waiver creation and justification.
- Any other discrepancies are declared “critical”.

For major discrepancies for which a Waiver is possible, the Vendor may be requested to give the elements that could lead to acceptance of the Product’s behaviour on this particular point.

A Waiver may also be the source of a modification of the specification.

These elements will be quoted in the **Certification Report**.

The Laboratory may also provide additional information on Waiver applicability. This information will also be quoted in the Certification Report.

5.4 Decision of certification

- If there is no discrepancy or only minor discrepancies in the Certification Report the Certification Body will take the decision to certify according to the [REF4] requirements and will issue the certification Report and the Certification Letter (as in §7.7).
- If there is at least one critical discrepancy in the Certification Report, the Certification Body will take the decision not to certify and will send the Certification Report to the Vendor.
- In the case where the Certification Report contains non-critical discrepancies, after having sent the Certification Report to its members, the Certification Body may convene a **Certification Committee** in order to decide whether to grant (or not) the Certification to the candidate Product.
- In the case where Waivers are requested in the Certification Report, the Certification Committee shall inform the BoM and may request its support. A representative of the

Laboratory that performed the evaluation shall be requested to attend the Certification Committee.

- A representative from The Certification Body leads the Certification Committee.
- In the light of the elements supplied in the Certification Report, the Certification Committee decides on a consensus base to pronounce (or not) the creation of a Waiver for each major discrepancy identified. These decisions must be added to the Certification Report.
- For each Waiver granted to the Vendor, the Certification Committee may specify a precise use, scope and period of validity. When the Waiver implies a modification of the specification, the Certification Committee informs STA.
- The Certification Body sends the amended Certification Report to the Vendor whatever the status given on the certification.
- If the decision is not favourable to grant a certification, the Certification Body informs the Vendor of the decision taken by the Certification Committee and must justify this decision in the Certification Report.

5.5 Certification of the Product

If the decision of the Certification Committee is favourable to the candidate Product, STA grants the Vendor a **Certification Letter** for that specific Product and the standards used as reference.

The Certification Letter is issued by the Certification Body, using a document template provided by the STA, that contains the following information:

- Issue date (date when the certification is granted).
- Validity period for the certificate as defined by the STA.
- Certificate number.
- Vendor's name and address.
- Commercial name or identifier of the Product.
- Certified Product type and form factor.
- Version of the specifications against which the Product has been certified.
- Name and address of the evaluation laboratory.
- Name and address of the Certification Body.
- Certification Body's representative signature.
- On behalf of STA + STA logo.

STA produces and maintains an updated list of Certified Products accessible on the STA website.

STA Certified Products will not feature any related certification mark.

5.6 Directory of Certified Products

The Certification Body produces and maintains updated a list of Certified Products and systems containing at least all the information listed in §5.5. This list must be available upon request to STA members or during the accreditation process.

The CB can decide to publish on its own website the list of the Products it has certified.

The (mandatory) publication on STA website will be the master and will take precedence over a listing on the CB website (which is optional).

6 Certification records

The Certification Body shall keep a Certification Record for all Products for which a Certification has been requested as described in §5.1.

A Certification Record is constituted at least by successive versions of the following documents in paper or electronic format:

- Validated ICS (for the Product).
- Test Report.
- Certification Report.
- Signed certification Letter (in case the Product has been certified).

The Certification Body shall keep secret the Certification Records, as only authorized Certification Body personnel shall have access to this information. The Certification Record will not be divulged to any parties except for the purpose of an audit of the CB or following written agreement by the Vendor.

The Certification Body shall keep all Certification Records for duration of at least 12 years.

7 Surveillance

The STA will initiate surveillance of the Certified Products that are deployed in the field.

The Certification Body shall cooperate upon request with the STA when information is requested to operate this surveillance.

The Certification Body shall insert into their agreement with Test Lab an article stipulating that the Test Lab shall provide support to redo some evaluation tests or to participate in round-robin tests, once a year, on a free of charge basis upon STA demand.

When surveillance utilizes evaluation, review or a certification decision, the Certification Body shall fulfil the requirements listed in §5.2, §5.3 and §5.4 respectively.

8 Changes affecting the certification

8.1 In case of a modification of the Standard or Specification

The Certification Body will inform the Vendor of any new or revised Standards or Specifications that affect the Vendor.

The Certification Body shall verify the implementation of the changes by its clients (labs, vendors…) and shall take actions required by the STA.

8.2 In case of a modification of a Certified Product

If a change occurs in a Certified Product or in any component of a Certified Product that may impact the compliance to the defined specifications or the interoperability of the system, the Vendor must notify The Certification Body of this fact in a written statement.

The Certification Body will carry out an impact evaluation of the changes to the Certified Product and inform the Vendor of the actions required. (The outcome of the evaluation could range from no action required to a full retest.)

The Certification Body may, based on this impact evaluation, request a new evaluation or certification as described in §5.2, §5.3 and §5.4 respectively.

In this situation, the Certification Body must provide the Vendor with a rationale providing justification of this decision.

Should the Vendor not agree with the Certification Body's decision; a conciliatory meeting will be organized by the STA between Vendor's and the Certification Body's representatives in order to agree on the process to be followed.

9 Life cycle of the certification

9.1 Validity of a certificate

Certification letters for contactless Products will be valid for a duration of seven (7) years following the issue date of the Certification.

The validity period of certificates may be extended following an explicit request submitted by the Vendor to the Certification Body.

The Certification Body will examine whether the conditions of certification, reference specifications for Certification have changed or not.

In case the conditions have not changed the Certification Body will renew the Certification for another period of seven (7) years.

In case the conditions have changed the Vendor will be required to submit a new certification request to the Certification Body, mentioning that this is a renewal of an existing Certificate, as described in chapter §5.1 of the present document.

9.2 Termination

If the validity of a Product certification expires or if a Certification is terminated by written request of the Vendor, the Certification Body shall take the following actions specified hereafter to ensure it provides no indication that the Product continues to be certified:

- Update the Certification Report and the directory of Certified Product accordingly.
- Un-publish the Certified Product from the Certification Body's web site.
- Inform the STA and request to un-publish the Product from the STA web site.
- Confirm to the Vendor that the Product's certification has been terminated (in the case where the termination was requested by the Vendor).

9.3 Non-compliance affecting a certification

When a non-conformity with certification requirements is substantiated, either as a result of surveillance or otherwise, the certification body shall inform the STA.

The STA will determine the appropriate action to be taken by the Certification Body whether it is:

- Increased surveillance by the STA as described in §6
- Reduction in the scope or in the duration of the Certification
- Suspension of the Certification pending remedial action by the Vendor.
- Withdrawal of the Certification.

The Certification Body shall then take the appropriate action as required by the STA's Certification procedure.

9.4 Reduction of Certification

If a Certification is being reduced the Certification Body shall take the following actions specified hereafter:

- Update the Certification Report and the directory of Certified Products accordingly.
- Issue a Certification Letter clearly specifying the reduced scope or reduced duration of the Certification.
- Update the Certified Product list from the Certification Body's web site accordingly.
- Inform the STA and request an update to the certification of the Product on the STA's web site accordingly
- Confirm to the Vendor that the Product's certification has been reduced by sending the new version of the Certification Letter.

9.5 Suspension of a Certification

If a certification has been suspended the Certification Body shall take the following actions:

- Notify the Vendor of the suspension and inform the Vendor of the required time frame to correct the causes that have led to the suspension.
- Temporarily un-publish the Certified Product from the Certification Body's web site.
- Inform the STA and request to temporarily un-publish the Product from the STA's web site.

In the case where no correction could be implemented by the Vendor during the time frame notified by the Certification Body, the Product's certification will be withdrawn.

9.6 Withdrawal of a certification

If a Certification has been withdrawn the Certification Body shall take the following actions and ensure it provides no indication that the Product continues to be certified:

- Update the Certification Report and the directory of Certified Products accordingly.
- Un-publish the Certified Product from the Certification Body's web site.
- Inform the STA and request to un-publish the Product from the STA's web site.
- Confirm to the Vendor that the Product's certification has been withdrawn.

10 Complaints

The CB will maintain a record of complaints as well as actions undertaken to resolve them and will contact the STA if appropriate.

The Certification Body will be responsible for gathering and verifying all necessary information to resolve the complaint and will give formal notice of the outcome of the complaint to the Vendor.

11 Appeal

The CB will maintain a record of appeals as well as actions undertaken to resolve them and will contact the STA if appropriate.

In the case where a Vendor is not satisfied with the outcome of his complaint he may choose to appeal.

The Certification Body must inform the Vendor that all appeals shall be addressed to the Chairman of the STA as defined in the contact section of Smart Ticketing Alliance website.

The CB will duly respond to requests from the STA for information to progress the appeal to a resolution.

At the end of the appeal process STA will provide formal notice of the outcome of the appeal to the Vendor (with a copy to the CB) and communicate to the relevant parties any subsequent action to be taken.