CFCF Terminal and Acquirer Certification Policy based on nexo Specifications

Annex 3

Procedure for Test Tool Validation
based on nexo Specifications

Version 3.0, May 2019

Table of Contents

1 Glossary and abbreviations

Definitions are described in the Glossary section (section 1) of the "CFCF General Test and certification Policy" [CFCF Policy]

Abbreviations are described in the Abbreviation section (section 2) of the "CFCF General Test and certification Policy" [CFCF Policy]

2 References

Reference documents are listed Annex 4 of "CFCF General Test and Certification Policy" [CFCF Policy].

The current document is annex 3 of the "CFCF General Test and certification Policy" [CFCF Policy] describing in detail the CFCF procedure to validate the Test Tools used by the Test Laboratories operating in the CFCF Certification infrastructure.

Detailed information linked to the certification phases, can be found in the "CFCF General Test and certification Policy" [CFCF Policy] and in the "CFCF Certification Administrative Process" [CFCF Process], which is annex 1 of the [CFCF Policy].

Detailed information linked to the Evaluation phases and the process to accredit Test Laboratories, can be found in the "CFCF General Test Description for Terminal and Acquirer Systems" [CFCF Evaluation], which is annex 2 of the [CFCF Policy].

3   Introduction

The Laboratories must use a Validated Test Tool to perform the Certification test of a Certification Object based on nexo Specifications.

Test tools must be validated by a Test Tool Validation Manager recognized by the Certification Committee.

This document also describes the roles of the different stakeholders involved. The involved parties are:

- The Certification Committee and the accredited Certification Body(ies)

- Qualified Auditors

- Test Tool supplier(s)

- Test Tool Validation Manager

- Test Tool evaluator

4 Test tool validation

According to [CFCF Policy] the validation of test tools is covered by both the Certification Committee and the Certification Body.

The Certification Committee manages the test tool validation process.

The Certification Body participates in the test tool validation as a Test Tool Validation Manager and reports the results of the validation to the Certification Committee.

4.1 Types of validation

A test tool supplier must obtain and maintain current validation for its test tool. Therefore, several types of validation reviews may be required:

- Initial Validation

- Incremental Validation following an Update

- Interim Proficiency Review .

4.1.1 Initial Validation

When a test tool supplier initially requests validation for its test tool, the test tool supplier provides the Certification Body, he has elected as Validation Manager, and the Certification Committee with documentation about the company which includes an overview of their abilities to meet the CFCF validation requirements described in section 4.4.
The test tool submitted for Initial Validation must implement the most current CFCF validated version of the nexo test cases [nexo Test] as defined in [CFCF References]. Once the Certification Body, selected as a Test Tool Validation Manager, has reviewed the documents supplied and has accepted the test tool for potential validation, a validation campaign is required to demonstrate that the nexo test cases have been correctly implemented. The validation campaign report is described in section 4.4.5.

The validation campaign will be executed using the validation method described in section 4.2. The Certification Body will act as the Validation Manager or will select a Test Tool evaluator, e.g. an independent, impartial entity to perform the validation campaign as the Validation Manager.

4.1.2 Incremental Validation

The same procedure as the one described above for an Initial Validation (section 4.1.1) is used except that the Certification Body will define a subset of Test Scripts that will have to be validated during the validation campaign.

The incremental validation will apply to the following cases :

- Incremental Validation for nexo Test Cases Update

- Incremental Validation for Test Suite Update

- Incremental Validation for Test Tool Engine Update

- Incremental Validation for Additional Type of Testing

4.1.3 Interim proficiency review

The same procedure as the one described above for an Initial Validation (section 4.1.1) is used except that the Certification Committee will define with the Certification Bodies as the Test Tool Validation Managers, a subset of Test Scripts that will have to be passed during proficiency review campaign.

4.2 Test tool validation process

For the 1st validation loops, or entry phase, the following methods for test tool validation will apply :

4.2.1   HAP Application Test Tool Validation method

- For HAP Application Test Tools : *"tool vs simulator"* method :
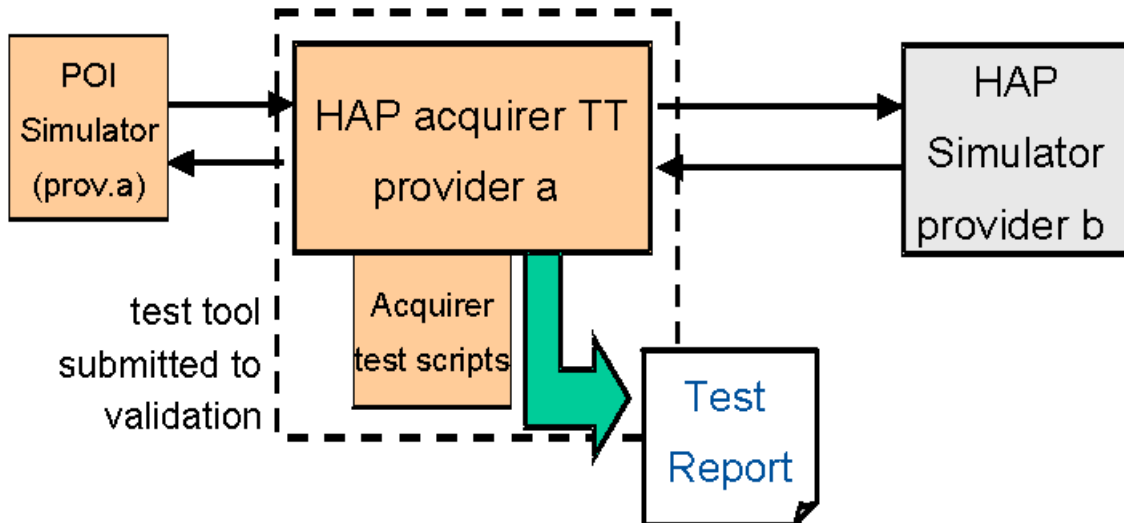
The HAP application Test Tool (or HAP Acquirer TT in the above figure) is composed of a Test Tool Engine and a Test Suite. The HAP application Test Tool is to be evaluated in connection with a HAP application Simulator (or HAP Acquirer Simulator in the above figure), preferably developed by another Test Tool provider. The validation campaign consists in performing all the Test scripts selected by the Test Tool Validation Manager.

The Test tool evaluator reviews all test logs resulting from the test scripts to assess their consistency with the [ACQ Test Plan], as defined in [CFCF References], and the output of the Validation Campaign is a Test Report edited by the Test tool evaluator.

The Test Report is reviewed by the Test Tool Validation Manager following a method described in chapters 4.4.5 and 4.4.6.
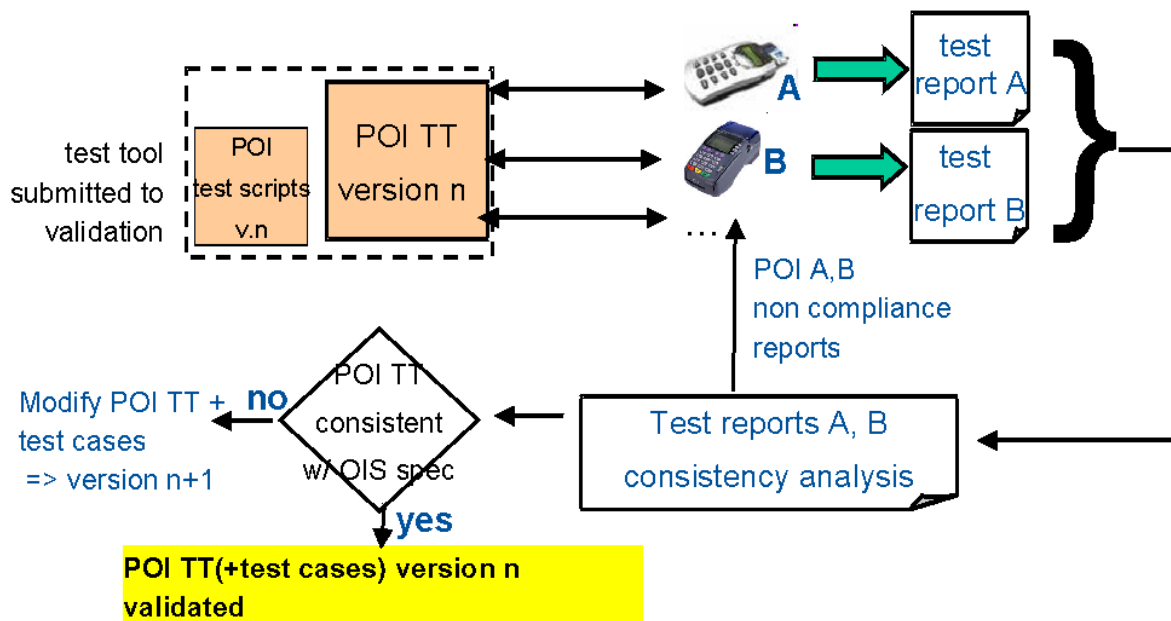
When a reference POI application (e.g. a valid certified POI application) is available, it may replace the "POI simulator" in the above test architecture.

4.2.2   POI Application Test Tool Validation method

- For POI test tools : *"cross testing"* method:
Validation of a POI Test Tool vs (at least) 2 POI applications.

The POI application Test Tool (or POI TT in the above figure) is composed of a Test Tool Engine and a Test Suite. The POI application Test Tool is evaluated in connection with at least 2 different types of POI applications provided by different POI vendors (identified as A or B in the above figure). The validation campaign requires to perform all the Test Case scripts selected by the Test Tool Validation Manager with at least 2 types of POI applications. The output of the Validation Campaign is a set of at least 2 Test Reports edited by the Test tool evaluator.

The Test Report consistency, as well as test logs resulting from the test scripts to assess their consistency with the [POI Test Plan], as defined in [CFCF References] in [CFCF References], are reviewed by the Test Tool Validation Manager following a method described in chapters 4.4.5 and 4.4.6.

4.2.3 Common Validation Process

Test Tool Supplier

- Sends request to Certification Body to start the validation process; the request should include the following:

- Type(s) of testing for which test tool is to be validated:

  - POI APPLICATION

  - ACQ APPLICATION

- Executive and financial summary

- Technical expertise summary, including experience with test tools and EMV specifications

- Test tool supplier background including sponsor letter from an authorized Laboratory

- Written evidence of conformance as described in section 4.4.5

- Certification Registration Request form

Certification Body

- Evaluates whether the test tool qualifies to be accepted for consideration as a potential Validated Test Tool

- Ensures test tool supplier meets all requirements detailed in section 4.4

- Assesses test tool supplier's skills and knowledge of the relevant specifications, test cases, as defined in [CFCF References], and processes

- Informs test tool supplier whether their tool may proceed with validation

- Provides test tool supplier with a confirmation of Registration including a Registration Number, to be used on all communication and reports sent to Certification Bodies.

Test Tool Supplier

- Implements the nexo test cases

- Submits any questions about the test cases to Certification Body

- Contacts Test Tool Validation Manager when the test tool is ready for validation

- Pays Test Tool Certification Body and Validation Manager the required fee for the validation campaign

Certification Body (as a Test Tool Validation Manager)

- Informs test tool supplier of validation campaign requirements and dates

- Coordinates execution of the validation campaign and works with the test tool supplier to resolve any outstanding issues

Test Tool Supplier

- Authorizes Test Tool Validation Manager to send the Validation Campaign Report to Certification Body

- Provides a completed Request for Validation form to Certification Body

Certification Body (as a Test Tool Validation Manager)

- Provides a Validation Campaign Report.

Certification Body (as a Test Tool Validation Manager)

- Reviews Validation Campaign Report

- Determines whether the test tool may be validated

If test tool is acceptable to Certification Body:

- Sends the test tool supplier a confirmation of Validation and copy it to the Certification Committee.

- Adds the test tool to the list of Validated Test Tools. The test tool's listing will include the contact information of the test tool supplier as well as the type(s) of testing and test cases version numbers for which the test tool is validated.

If test tool needs to be improved:

- Transmits the test tool incident reports to the Certification Committee
- Informs the test tool supplier to make improvements for a validation campaign with the new version of the test tool
- The version of the test tool resubmitted for a validation campaign must implement the version of the test cases which is authorized by the CFCF Consortium for current use defined in [CFCF References]

If test tool is not acceptable to Certification Body:

- Instructs the test tool supplier to return all CFCF and nexo property and confidential information as described in section 4.3.

4.3   Non conformance, modification or termination of validation

4.3.1   Non conformance

At any time, the Certification Body, at its discretion, may require a Non conformance Investigation to ensure that results from Certification objects tested at a laboratory using the test tool are correct.

A Laboratory may also identify a non conformance during a test session and informs Certification Body and the test tool supplier.

Conversely, through their own due diligence, a test tool supplier may identify a non conformance.

If after investigation, the non conformance is determined to be a defect in the test tool supplier's implementation of the test cases, the test tool supplier must notify the Certification Body which informs all its Laboratories and the Certification Committee of the defect and an

estimated date when a fix for the defect will be available. The Certification Committee informs the other Certification Bodies.

Based on the results of the Nonconformance Investigation, one of the following may occur:

If the test tool is acceptable to the Certification Body:

- No further action required for the test tool supplier. Test tool maintains its validation status.

- Certification Body may submit a request to the Certification Committee to update [nexo test] or eventually the [nexo IS] documentation via the CFCF liaison with the specification provider.

If Certification Body requires a fix to be made to the test tool, Certification Body will inform the test tool supplier:

- the Certification Committee is to be informed in order to agree on a Certification policy for already certified POI and market impacts.

- If the fix is critical, it must be distributed to the Laboratories immediately.

- If the fix is non-critical, it has to be distributed to the Laboratories during a timeframe to be determined by the Certification Body following consultation with the Certification Committee.

4.3.2   Modification or Termination

At any time, a test tool's validation may be modified or terminated:

- A test tool supplier may decide to add or cease offering a specific type of testing.

- A test tool supplier may decide to terminate their tool validation.

- The Certification Committee may decide to suspend or revoke a test tool validation.

At any time, a test tool supplier may decide to change the type or scope of testing it offers. An Incremental Validation Review is then required. If a test tool supplier decides to cease offering a type of testing, the test tool supplier must send a request to Certification Body that acted as Test Tool Validation Manager. Upon receipt of such request, Certification Body will modify accordingly and re-issue the confirmation of Validation, notify the Certification Committee, Accredited Laboratories, and update the list of Validated Test Tools. Accredited Laboratories may continue to use the test tool as long as the version of the nexo test cases implemented in the test tool is still valid.

At any time, a test tool supplier may request termination of their validation.

Upon receipt of such request, the Certification Body will confirm the termination notify the Certification Committee, accredited Laboratories, and remove the test tool's name from the list of Validated Test Tools. accredited Laboratories may continue to use the test tool as long as the version of the nexo test cases implemented in the test tool is still valid.

At any time and at the Certification Body's own discretion, the Certification Body may revoke a test tool's validation:

- Based upon a Validation Campaign Report

- If a test tool supplier fails to notify the Certification Body or Accredited Laboratories using the test tool that an update has been made to the test tool

- If the test tool supplier is in breach of the conditions set forth in the Letter of Validation

The Certification Body will send the test tool supplier a Letter of Revocation, notify all Accredited Laboratories, and remove the test tool's name from the list of Validated Test Tools.

No laboratory will be allowed to submit a test report for a Certification object that was tested using this test tool.

The test tool supplier must also promptly return to Certification Body all CFCF property and all confidential information. Alternatively, if so directed by Certification Body, the test tool supplier must destroy all confidential information, and all copies thereof, in the test tool supplier's possession or control, and must provide a statement signed by an officer of the test tool supplier that certifies such destruction.

4.4 Test tools requirements

4.4.1 Business requirements

This section describes the overall business requirements a test tool supplier must meet.

Sponsorship

The test tool supplier must be sponsored by an Accredited Laboratory or by a laboratory authorized to start the CFCF Accreditation Process in order to apply to CFCF for validation of a test tool.

Financial

The test tool supplier must conduct business in a manner that is consistent with the highest ethical standards and with practices that minimize risk. The test tool supplier may be subject to a review, with the primary focus of identifying and mitigating potential financial and goodwill risks.

- The test tool supplier must have a sound financial basis.

- The test tool supplier must adhere to ethical business standards and practices.

- The test tool supplier must be free of any past fraudulent or criminal activity.

Legal

The test tool supplier must be recognized as a legal entity and must be (or must be part of) an organization that is registered as a tax-paying business or as having a tax exempt status or as a legal entity in some form with a national body.

The test tool supplier must be able to sign and abide by all legal agreements for test tool suppliers.

Public Communications

The test tool supplier must agree to abide by CFCF's policy that a test performed by any Validated Test Tool is acceptable for CFCF Certification, and must make no claims to the contrary in their marketing material.

The test tool supplier must not, under any circumstances, communicate nor disclose to any third party, including to a Certification applicant, that the Certification applicant's product has or has not been certified by Certification Body. The Certification Body, not the test tool supplier, shall be the final party to determine whether a particular product conforms to the nexo specifications.

The test tool supplier must comply with the conditions detailed in the CFCF Certification Policy about public communications/advertising/marketing.

Independence

The test tool supplier must be able to demonstrate independence from the Certification objects under test.

- The test tool supplier must receive communication and direction related to the CFCF Certification Processes from the Certification Committee.

- The test tool supplier must disclose to the Certification Body in writing when their company is owned or partially owned by a Certification Applicant involved in the creation of a POI application or a ACQ application.

Change in Contact Information

The test tool supplier must inform the Certification Body if the company name, ownership, legal entity status, address, or contact information changes from that which is stated on the test tool supplier's Request for Registration and Test Document License Agreement.

Changes impacting company name, ownership, or legal status may require a new Agreement with the Certification Body. Generally, Letters of Validation are not reissued when name changes are the result of corporate mergers or sales.

Modifications to company addresses and contact information will be applied to subsequent communication (e.g. notification of test cases updates, validation notification, etc.). Contact information changes will be applied to all listed Validated Test Tools unless specifically stated on the request.

4.4.2 Security requirements

The test tool supplier must maintain and comply with a logical security policy that includes, at a minimum, the following requirements.

Classified Materials and Information

Test samples, documents, test cases, specifications, and Validation Campaign Reports must be handled with particular care and kept within the company such that they are accessible only to persons appointed by the business management. These materials must be controlled and stored securely whether in electronic or paper format.

Disclosure of Certification Bodies or laboratory or Certification applicant data and documents to third parties must be authorized in writing by an officer of the company that owns the data or documents to be released. Receipt of restricted information must be acknowledged by signature of the company's official representative.

The test tool supplier must hold in strict confidence any classified information received from the Certification Bodies, laboratory and Certification applicant. Classified documents must be

stored according to their classification level. When an entity grants permission to the test tool supplier to release classified information to the Certification Bodies, this information may be released only to the Certification Bodies. The Certification Bodies may release the information to appropriate working group members within the CFCF Consortium.

Test Tool Access

Personnel not involved in test development must not be able to modify or tamper with the test tool development environment nor the test tool itself, including the test suite and test tool engine.

Networks

Any computers used to store secure information (sensitive data, laboratory data, Certification applicant data, etc.) must not be connected to an external network or to an internal network that allows unauthorized personnel access.

If the test tool supplier uses a non-dedicated network, then suitable controls must be in place to protect the integrity of the data within the test tool supplier's company. These controls include the use of firewalls and routers that offer sufficient security levels for the data being handled.

Networks that link separate test tool supplier premises must use the network controls described above and all security sensitive data must be encrypted when using such networks.

The test tool supplier must have a secure method of transferring sensitive data to its systems and computers that does not introduce security risks or vulnerabilities.

4.4.3 Quality Assurance requirements

This section describes the quality assurance requirements that a test tool supplier must meet.

The test tool supplier must have software configuration management or version control, providing documented procedures defining processes to ensure a high quality of development, maintenance, and upgrades.

Test Equipment Hardware and Software Upgrades

Test equipment hardware, hardware systems, and software must be protected from unauthorized modification. There must be a documented procedure signing the equipment over to development and authorizing the equipment for release to customers.

With each modification made to the test suite or test tool engine, the test tool supplier must increment the corresponding version number.

The test tool supplier must maintain documentation of any change to test equipment hardware and software, including test cases, test suite, and test tool engine, in a Change History Table, as described below. This documentation must provide detailed information concerning the nature of the change to the test equipment, the reason for the change, and the date of notification to the Certification Body (or the Certification Committee). The Change History Table must be sent to the Certification Body, acting as a Test Tool Validation Manager, during the validation process.

Any change made to the test tool, including the test suite or test tool engine, must be communicated to all Accredited Laboratories using the test tool and may require an incremental validation and their associated Certification Bodies.

CFCF Documentation Update and Implementation

The test tool supplier must have procedures in place and must maintain records for nexo specifications, test cases, and implementation dates authorized by the CFCF Consortium.

The test tool supplier must implement any updates to the nexo test cases according to the CFCF Consortium's decisions only.

Change History Table

The test tool supplier must identify and communicate test tool implementation updates to Certification Body using a Change History Table immediately. The Change History Table has to be a reference table describing all changes made for each test script and for each version of the test tool released to customers, beginning with the most recent version. This will allow Certification Body to track each version, and to understand which version was applied to a particular test report for a Certification Object and to understand what kind of impact changes of the test tool version has.

4.4.4 Technical requirements

This section describes the technical requirements for a test tool supplier.

Technical Expertise

Test tool supplier must be familiar with ISO smart card and terminal standards, EMV specifications, nexo Specification and CFCF Process documentations, and must have an understanding of the payments industry and software testing.

Test scripts Version Numbering

Test cases are version numbered in the [nexo Test]. Test scripts shall also be version numbered. It is recommended that the test tool supplier bases its test script version numbering on the [nexo Test] test case numbering. If the test tool supplier chooses to

implement a different numbering, the test tool supplier must fully document the mapping from their numbering to nexo's numbering.

Validation Campaign

The test tool of the test tool supplier must pass a validation campaign as requested by the Certification Body. The validation campaign, defined by the Certification Body, may include positive and negative tests to verify that the test tool has the ability to correctly identify whether a Certification Object passes or fails each individual nexo test case.

4.4.5 Validation review requirements

In order to prove conformance to the test tool supplier requirements in section 4.4, the test tool supplier must do the following:

- Provide written evidence to the Certification Body

- Complete a validation campaign

This section describes information that the test tool supplier is required to supply to the Certification Body. The Certification Body, in reviewing the documentation, may request additional information from the test tool supplier prior to the validation campaign.

The Validation Campaign Report that the Certification Body receives from the Test Tool Validation Manager, in case they are two separate entities, must meet the requirements specified in this section.

Written Evidence

In case the test tool supplier is also providing EMVCo qualified test tools, the written evidence provided to EMVCo can be reused for the CFCF test tool validation process. The reusability of EMVCo written evidences does not apply to the written evidence of Technical Compliance as the scope of nexo and EMVCo specifications is different.

Business Conformance

The test tool supplier provides the Certification Body with evidence of conformance to the test tool supplier business requirements. This evidence may be in the form of a written report describing:

- Services of the organization

- If applicable, disclosure that the company is owned by a Certification applicant involved in the creation of a POI application or ACQ application

- Organization legal information

- Certificate of ownership and/or tax identification number

- In addition, the test tool supplier must provide Certification Body with the following:

- Audited financial statements for the company

- Official Annual Report as required by national or international law and/or regulation

Security Conformance

The test tool supplier provides to the Certification Body evidence of logical security conformance. This evidence must be in one of the following forms:

1. Included within test tool supplier procedures and documentation, or

2. A written report describing:

- Test tool supplier security policy with particular focus on the logical network security measures

- Confidential data protection practices

Quality Assurance Conformance

The test tool supplier provides to the Certification Body evidence of quality assurance conformance. This evidence may be in the form of a written report describing:

- Test tool supplier's procedures for development, maintenance, and upgrades of the test suite and test tool engine

- Test tool supplier's procedures for nexo test cases updates

Technical Conformance[1]

The test tool supplier provides to Certification Body evidence of technical conformance. This evidence may be in the form of a summary of technical expertise.

<u>Validation Campaign Requirements</u>

Each version of the test tool supplier's test tool must complete a validation campaign. The results from the validation campaign must be compiled in a Validation Campaign Report for

---

[1] *EMVCo written evidences cannot be reused to assess the technical compliance of CFCF Test Tools*

the Certification Body. For the validation of POI application test tool, the Validation Campaign report shall at least contain test session results based, at least, from 2 types of POI.

The Validation Campaign Report sent to Certification Body must meet the following requirements:

- Cover page must specify to the Certification Body the test cases version number, test suite version number, and test tool engine version number

- No missing results

- Only one result per test case (or test script)

- Tests marked as "Fail" will be reviewed in detail. If the Object under test non-compliance is confirmed, the test log and analysis will be passed on to the POI or ACQ applications provider. If the Object under test non-compliance cannot be evidenced, then the status will be updated to "NOCO".

- All tests marked as "Pass" or "NOCO" (Not Conclusive)

- Each "NOCO" must be explained in detail (e.g. § 4.4.6)

- Report must be stored securely. If the report is stored electronically, it must be in an industry-recognized protected form. All back-up processes must be appropriately managed according to industry standards for recovery purposes.

- When sending an electronic report, the report must be password-protected using CFCF approved technique. Passwords must never be sent in the same email as the actual report. Passwords by/for the Certification Body may not be shared with third parties, including Certification applicant or other laboratories.

4.4.6   Resolution of the Not Conclusive (NOCO) test status

If some NOCO status remain in a Validation Campaign Report, the Certification Body must follow the following process:

- Transmit the NOCO test logs and analysis to the Certification Committee and eventually liaise with nexo

  If the test logs evidence some inconsistency in the nexo test cases, then the resolution will lead to an update of t the [nexo Test] document

Else

  If the test logs evidence some inconsistency in the nexo specification, then the resolution will lead to an update of the [nexo IS] document

Else the test status will be confirmed as NOCO and the resolution may be traced accordingly by the CFCF or nexo.

nexo will inform the CFCF Certification Bodies and/or the CFCF Certification Committee of the outcome of the resolution of the NOCO status.

4.5   Roles & Responsibilities

4.5.1   CFCF Certification Bodies

Certification Bodies provide the following services:

- Define, and maintain the CFCF documentations

- Communicate any specification or test cases updates and their effective dates following the CFCF Consortiums decisions

- Define test tool validation requirements together with the Certification Committee

- Select a Validation Tool Supplier to develop a tool to automate the process of verifying that test tools have properly implemented the nexo test cases. For an entry phase a specific process agreed by both parties can be defined if the automation of the process if not yet ready.

- Select a Test Tool Validation Manager, if necessary, to coordinate execution of validation campaigns

- Determine whether a test tool should be granted CFCF validation

- Notify Accredited Laboratories when a test tool has been validated for a new version of the test cases including the new validation reference number of the test tool

- Notify Accredited Laboratories when the validation of a test tool has been terminated, suspended, or revoked

- Maintains a list of CFCF validated test tools including the version numbers of the test cases they are validated to test

- Maintains a list of Accredited Laboratories

- Informs the Certification Committee about test tool evaluations and validations

- Transmits the test tool incident reports to the Certification Committee.

As a Test Tool Validation Manager the Certification Body must:

- Provide feedback on the specifications and test cases to Certification Committee and confirm feasibility of the Effective Date of the test cases updates

- Inform the test tool supplier of the validation campaign requirements and dates

- Coordinate execution of the validation campaign

- Provide the Validation Campaign Report to Certification Body after receiving authorization from the test tool supplier

- Keep the Validation Campaign Report and logs until at least 5 years

4.5.2   Test tools suppliers

The test tool supplier must:

- Register with Certification Body

- Notify Certification Body of any change in contact information

- Satisfy all test tool supplier requirements in this document

- Implement the nexo test cases and test cases updates defined in [CFCF References] and according to the CFCF decision

- Complete the validation processes steered by the Certification Body, as a Test Tool Validation Manager, to demonstrate that the test cases have been correctly implemented

- Pay the Test Tool Validation Manager the required fee for each validation campaign

- Authorise the Test Tool Validation Manager to send Validation Campaign Reports to CFCF Certification Bodies

- Provide feedback on the specifications and test cases to Certification Body and confirm feasibility of the Effective Date of the test cases updates

- Notify Certification Body and all Laboratories using the test tool of any changes made to the test suite

- Maintain a Change History Table

- Inform Certification Body of any issues found with its validated tool after having been validated.

- Obtain Certification Body's prior written approval for all advertising and promotion of the test tool

- Prominently state the version of the test cases the test tool is validated for in all advertising and promotion of the test tool

4.5.3   Test Tool Evaluator

The Test Tool Evaluator must:

- Perform the validation campaign following the instruction of the Test Tool Validation Manager e.g. the Certification Body

- Edit and deliver to the Test Tool Validation Manager an evaluation report summing-up the results of the validation campaign