



Administrative Process for Test Tool Validation

Version 1.2.04

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[ADMIN_PROC_TTV]

NFC Forum™

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1 Introduction

The NFC Forum Certification Program provides consistency in the behavior of NFC Forum devices by confirming that products conform to the [DEVREQS]. Specialized tools are essential to the formal NFC Forum certification testing process. An independent validation house, selected by the NFC Forum, will formally assess or validate the tool functionality to ensure that the test tools are suitable for their intended purpose.

Requirements for Test Tool Validation [TTV_REQS]) is a document that describes the Forum's requirements and expectations for test tools in order to help the validation house evaluate test tools on behalf of the NFC Forum. The document also includes the steps required from laboratories for test tool validation.

After successful validation, a tool may be approved by the NFC Forum for certification testing and appear on the Forum's list of approved certification test tools, subject to the rules and considerations contained in this document.

After evaluating a test tool, the third-party validation house is required to provide the NFC Forum with a comprehensive evaluation report. The NFC Forum will review the report to determine whether the test tool Validation Objectives (see [TTV_REQS], Section 2.1) have been met in full and to consider any issues raised, inefficiencies identified, requirements not met, test cases not implemented, etc.

This document anticipates some of the scenarios that may occur and provides solutions. It distinguishes between shortcomings that preclude approval in their entirety versus those cases where provisional approval could be achieved if issues are addressed within the given timeframes.

1.1 Audience

The audience for this document includes:

- The NFC Forum Test Tool Validation Administrator (TVA) responsible for managing the test tool validation results
- The Test Tool Validation Review Committee (TVRC), as part of the NFC Forum Certification Issue Resolution Panel (NCIRP) responsible for technical and process support to the TVA
- The Testing Working Group (TWG)
- The Compliance Committee (CC)
- Selected validation house(s) and test tool vendors

This document must be read in conjunction with [TTV_REQS], [CERTIFICATION], and other test-related documents.

1.2 Applicable Documents or References

[CERTIFICATION] NFC Forum Certification Policy,
NFC Forum.

[DEVREQS] Device Requirements,
Latest version as identified on the Certification Program website,
NFC Forum

- [TTV_REQS] Requirements for Test Tool Validation,
NFC Forum.
- [RFC2119] Key words for use in RFCs to Indicate Requirement Levels, RFC
2119,
S. Bradner,
March 1997,
Internet Engineering Task Force
- [RFTTV_REQS]

1.3 Administration

The Administrative Process for Test Tool Validation is supported by the Near Field Communication Forum, Inc. (NFC Forum), located at:

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The NFC Forum, Inc. maintains this document.

1.4 Special Word Usage

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

1.5 Glossary

Engineering Sample

A prototype, commercial, or certified NFC Forum Device. In the context of test tool validation, it is a sample used to verify that the tool correctly executes a test case.

NFC Forum Device

A device that is capable of operating, either in NFC Forum Peer-to-Peer Mode or in NFC Forum Reader/Writer Mode. It may also be capable of operating in NFC Forum Card Emulation Mode.

Sub-cases

A set of scenarios within a test case.

Test Case

A description of the testing of one or more requirements derived from a specification.

Test Case Categories List (TCCL)

A listing of test cases categorized in terms of the conditions under which they are to be used in Certification testing. See [CERTIFICATION], Section 8.2.1.

Test Plan

A collection of Test Cases in one document.

Test Script

The implementation of a Test Case into a specific test tool using a scripting language. Depending on the test tool, the Test Script can be contained in a single file, distributed over several files, or be parameter driven, or it can be in text form, giving the operator test instructions.

Tool Validation Administrator (TVA)

Someone appointed by the NFC Forum to manage the test tool validation process through approval of the test tool for certification testing.

Tool Validation Review Committee (TVRC)

A group of at least three subject matter experts providing technical and process support to the TVA in matters relating to the test tool validation process.

Validation House

An independent third-party test laboratory selected by the NFC Forum for conducting the test tool validation process.

2 Test Tool Validation Overview

At the heart of any certification program are the quality, reliability, and integrity of the test tools used for certification testing, as well as the accuracy and consistency of the test results that the tools are capable of producing.

For this reason, all prospective NFC Forum test tools must go through a formal validation process conducted by a validation house selected by the NFC Forum. This process assesses the degree to which the requirements are met.

A Test Tool Validation Administrator (TVA), an independent third party appointed by the NFC Forum, is responsible for the initial review of the evaluation results provided by the validation house, and determines whether the Validation Objectives (defined in [TTV_REQS]) have been met. The Test Tool Validation Review Committee (TVRC) provides technical support to the TVA in technical and process matters relating to test tool validation where needed.

Once the TVA and TVRC are satisfied that the test tool fully meets the Validation Objectives, they will recommend that the NFC Forum Compliance Committee approve the test tool and list it as an NFC-Forum-approved test tool.

If not all Validation Objectives are met, the NFC Forum Compliance Committee may either provisionally approve the tool, subject to the deficiencies being addressed within an agreed period of time, or decline to approve the tool until all deficiencies have been addressed and validated. See Section **Error! Reference source not found.** for details on approving, provisionally approving, or declining a test tool.

2.1 Mandatory Validation

All prospective test tools for the NFC Forum Certification Program must go through a formal validation process conducted by a validation house selected by the NFC Forum. This process assesses the degree to which the requirements, defined in [TTV_REQS], Section 3, are met, and requires evaluation of the test tool's features, functionality, and measurement precision.

2.2 Validation Objectives

The Validation Objectives are listed in [TTV_REQS], Section 2.1.

2.2.1 Confirm Support for All NFC Forum Test Cases and Sub-Test Cases

All Test Cases and Sub-cases that the NFC Forum defines for any given Certification Release or contained in a Test Release must be confirmed to have been implemented by the tool vendor (see [CERTIFICATION], Section 4.1). The exception to this rule is that, at the time of test tool validation, test cases categorized as “D” or “I” in the Test Case Category List (TCCL) (see [CERTIFICATION], Section 8.2.1) do not need to be supported by the test tool.

2.2.2 Verify Correct Implementation of NFC Forum Test Cases Based on Test Script Review

The validation house is responsible for ensuring that all test cases of the particular Certification Release are supported by the test tool implementation under evaluation during the Desk Study (see [TTV_REQS], Section 2.4.1). The validation house must further identify the Test Scripts corresponding to each of the test cases in the Certification Release. Any omissions must be noted. The validation house is also responsible for reviewing the test tool scripts to ensure each one correctly reflects the logic and intent of the particular test case.

The validation house must note any discrepancies between the NFC Forum test cases and the test tool scripts, and must rate the severity of each issue as “severe”, “moderate”, or “minor” in the evaluation report (see [TTV_REQS], Section 2.4.1).

The NFC Forum TVA will review the reported discrepancies and the severity assigned.

- “Severe” issues must be addressed and revalidated prior to test tool approval, unless it is determined by the NFC Forum that the particular test cases should be re-categorized in terms of the TCCL as “D” or “I”.
- “Moderate” issues allow provisional approval of the tool with agreement of when resolution and full validation would be completed.
- “Minor” issues should not have an impact on the approval decision, provided that all other requirements are met.

2.2.3 Confirm that Test Script Implementation Ensures Consistent Repeatability

Repeatability with a predictable result is an important criterion for test scripts. Even though the test objective discussed in [TTV_REQS], Section 2.4.2, may appear to be met when the test scripts match the test case logic and procedure, the validation house must be vigilant in attempts to identify test scripts that may yield slightly different results when run multiple times or on different devices.

2.2.4 Verify Same Test Results for Device Under Test Regardless of the Test Tool

A key objective for the NFC Forum is to demonstrate repeatability and reliability within and across test tools:

- Repeatability: the tool returns the same results multiple times, for a given test script, using the same engineering sample.
- Reliability: the tool returns consistent results, for a given test script, when modifying the test environment, such as using different engineering samples.

Therefore, for each tool, each test script is executed a minimum of four times: two times with the same engineering sample to demonstrate repeatability and two more times with a different engineering sample to demonstrate reliability.

Another aspect of reliability is consistency across tools. To demonstrate consistency, the results from one test tool must be compared to that of other test tools validated with the identical samples.

As the validation house and the respective test tool vendors will be the first to know of any discrepancies, the NFC Forum requires that all discrepancies are reported immediately to the TVA and that participants must cooperate in investigating and resolving any issues.

2.2.5 Confirm Test Tool Complies with NFC Forum Test Tool Requirements

All the criteria listed in [TTV_REQS], Section 3, must be assessed by the validation house and recorded as observed. The test tool requirements are designed in such a way that they can all be assessed objectively. Additionally, the validation house is required to provide comments as to the general suitability of the test tool for certification testing and suggest test tool improvements as part of the evaluation report.

The validation house shall verify whether the test tool has been implemented the TCMT correctly or not, it shall be verified go through choosing three different ICS values randomly so that validation test report shall be pointed out significantly whether required test cases are selected correctly

2.3 Validation Considerations

Remember the following considerations during and after execution of the test tool validation process.

2.3.1 Validation Focus

The focus of the test tool validation process is to evaluate any given test tool and ensure that it meets the NFC Forum's test tool requirements. Although engineering samples will be used as 'tools' to verify correctness of a test tool implementation, these are not being tested for certification purposes. The engineering sample supplier will gain from having an early assessment of the device but this is not certification testing, which can only be conducted by an authorized laboratory using test tools validated and approved for this purpose by the NFC Forum.

Given the validation focus, the engineering sample supplier does not need to be actively involved in the validation process, but must be willing to provide engineering sample support to the validation house and participating tool vendor(s). As a courtesy, the engineering sample supplier should be informed of any issues identified in the engineering samples. However, this should not have any impact on the test tool validation testing as long as the test tool produces a legitimate pass or fail result. The engineering sample supplier is required to provide point of contact information to the validation house and test tool vendor should any questions regarding the implementation arise and to provide the sample vendor with the testing results.

2.3.2 Engineering Samples

Test tool validation is heavily dependent on the availability of engineering samples with sufficient functionality coverage to exercise the test case scripts implemented in test tools.

During the early stages of the implementation of a new specification, engineering samples are generally not readily available. Even where engineering samples have been created, manufacturers are not necessarily keen to step forward and make a prototype available for the purpose of validating a test tool. Reasons for this include that only limited functionality may have been implemented, engineering support is required for any issues encountered with the sample, confidentiality reasons, etc.

Reference Samples

Where possible, the NFC Forum will facilitate an arrangement with a sample supplier whereby the supplier make available to the validation house and test tool vendors samples of the NFC Forum implementation, as well as engineering support. In such case, the validation house and participating tool vendors are required to enter into a confidentiality agreement with the sample supplier. Engineering samples sourced and managed by the NFC Forum are referred to as “reference samples”.

Proprietary Samples

The NFC Forum encourages participating tool vendors to assist with the identification of appropriate engineering samples. Where a sample supplier is unwilling to work with multiple parties (i.e., validation house and tool vendors), the supplier may be willing to work with a single tool vendor under a confidentiality agreement. A sample obtained by the tool vendor in this fashion is referred to as a “proprietary sample”.

A tool vendor may—subject to authorization of the sample supplier—conduct validation testing under supervision of the validation house using a proprietary sample, or where not possible, submit test logs generated by the test tool under validation as evidence of test script execution using the proprietary sample.

It is the tool vendor’s responsibility to ensure that a proprietary sample is based on a chipset different from any available reference sample(s) or other proprietary samples being used by the tool vendor for validation testing. If details of the proprietary sample cannot be disclosed, the tool vendor must confirm to the validation house that the logs submitted for review originates from a proprietary sample with a chipset different from existing reference or proprietary samples used for validating the vendor’s tool.

The validation house analyzes the test logs and establishes whether the results are acceptable to apply to the tool vendor’s test tool.

Sample Selection Sequence

Depending on sample availability, the preference for sample selection for test case validation is as follows:

1. NFC Forum sourced and managed samples (reference samples)
2. Test Tool vendor sourced samples (proprietary samples)
3. Tool vendor-generated test logs as evidence of testing performed for samples used

The validation house is required to manage sample selection based on sample availability, while ensuring that samples used for validation testing are based on different chipsets, if possible.

2.3.3 Validation Testing Coverage

Validation Testing ([TTV_REQS], Section 2.4.2) occurs after the Desk Study ([TTV_REQS], Section 2.4.1). During the Desk Study, two test engineers review the test scripts for correct interpretation and implementation of all the test cases associated with a given Certification Release.

[TTV_REQS], Sections 2.4.3 through 2.4.7, requires that a minimum of two engineering samples be used for test tool validation testing. Multiple samples are used to ensure greater test script coverage, and consistent test script execution and repeatability.

In reality, an engineering sample may not necessarily implement all functionality for which test cases exist. Additional samples (more than two) may therefore be required to ensure sufficient coverage to validate all of the test tool scripts by exercising each script at least twice using a different sample for each.

The following Validation Testing scenarios are anticipated:

- **Sufficient Coverage**
Two engineering samples based on different chipsets per test script are available, allowing all test tool scripts to be run completely using two samples to exercise each test script.
- **Partial Coverage**
Fewer than two engineering samples per test script are available.
- **No Coverage**
No engineering samples to exercise the test script(s) are available.

If more than two engineering samples are used to validate a test script and the results from subsequent tests are different from those achieved using the first two samples, the validation house is expected to review the test script again to ensure that its logic reflects the intent of the particular test case. If the issue points to an incorrectly implemented test script, incorrect sample behavior, or any other discrepancy, the validation house informs the test tool vendor or the engineering sample vendor of the issue for resolution. If in doubt on the cause of the discrepancy, the matter is referred to the TVA that then consults with the TVRC to provide support in resolving the issue.

If there is partial coverage, the validation of that test script is put on hold. As soon as additional engineering samples become available, validation of the particular test script must be resumed. However, when the final validation report is produced, partial and "no coverage" test cases must be included.

2.3.4 Test Case Prioritization

As a way of ensuring that the most important test cases are validated first, test cases for any given test specification may be prioritized as indicated. Prioritization is done by the NFC Forum task force responsible for defining the test cases for a technical specification and approved by the TWG.

- **Priority 1:** Test cases deemed critical to ensuring that vital functionality is correctly implemented and comply with the underlying technical specifications.
- **Priority 2:** Test cases intended to test functionality that is optional or conditional in the technical specification.
- **Priority 3:** Test cases that are useful to confirm correctly implemented non-critical functionality.

It is not implied that a test specification will necessarily contain all three priorities. Some test specifications may only have Priority 1 test cases, while others may only have Priority 1 and 2.

Where feasible, and depending on engineering sample availability, test case validation must be executed for all test cases in priority sequence, and reported as such by the validation house in the tool evaluation report.

2.3.5 Partial or Phased Validation

Every test tool is required to complete the entire validation process before approval by the NFC Forum is possible. However, one or more obstacles may emerge, preventing full completion of the validation process within the required timeframes. The following situations may occur:

- The test cases for a Certification Release may be complete and approved, but the test tool manufacturers may not have implemented all of the test cases.
- All test cases may be implemented in the test tools, but issues or errors are identified that may prevent successful completion of the validation process.
- Engineering samples may not be sufficient in number or functionality to perform or complete validation testing, resulting in incomplete test tool script validation.

Provisions must be made for partial or phased validation with the understanding that the full approval of a test tool by the NFC Forum cannot be achieved until all steps have been completed successfully (see Section **Error! Reference source not found.**). This requires a commitment from both the test tool vendor and the validation house that the validation process will be resumed as soon as possible after any obstacles have been removed. This means that regression testing may need to be performed by the validation house to ensure that previously-assessed functionality did not change.

2.3.6 Issue Resolution

In most cases, the validation house and test tool vendors will be able to resolve any issues identified during the validation process to the point where it is clear that either the test tool script is at fault or an interpretation or other error exists.

If it appears that the test case definition is not clear, the issue needs to be referred to the TVA for review by the TVRC. Where necessary, the TVRC will channel the issue to the TWG for clarification and modification of the test case.

2.3.7 Updates to Test Tools

When updates to a test tool are required as a result of severity A or B issues identified during the validation process, the test tool manufacturer's cooperation is needed to update the scripts in question as early as possible. The validation house is required to start revalidation after the test tool vendor has updated the scripts. The timing and magnitude of new script releases (i.e., what is included in a new release, etc.) must be closely coordinated and agreed on between the validation house and the test tool vendor to ensure efficiency for all parties involved.

If a modification is required to the test tool platform supporting test case functionality and test scripts, such as a change to the test bench configuration, replacement of an important component, operating system upgrade, etc., an assessment must be conducted by the validation house in collaboration with the test tool vendor to determine the appropriate amount of regression testing to be conducted to ensure that functionality already validated has not changed as a result of the change to the platform.

Until the tool passes the validation process and is approved by the NFC Forum, it is not deemed fit for NFC Forum certification testing.

2.4 Results Submission

When the test tool validation process is complete, the validation house must provide the NFC Forum with a written evaluation report after the validation results have been shared with the test tool vendor. This report must be accompanied by the NFC Forum validation results sheet and any other supplementary information (see <http://nfc-forum.org/our-work/compliance/certification-program/>). The NFC Forum may request audit trails and detailed test results, which must be readily available from the validation house upon request.

The NFC Forum may also request an interim evaluation report from the validation house in order to assess whether sufficient validation has been done to warrant early or provisional approval. Additionally, the validation house is expected to provide progress reports to the NFC Forum on a weekly basis.

The TVA serves as the central point of contact in all information exchanges between the NFC Forum, the validation house, and test tool vendors, and ensures that the information provided in the results report and other materials is kept confidential. The TVA ensures that only information needed for the technical review, issue resolution, and approval is shared with the TVRC, Testing Working Group, and Compliance Committee.

2.5 Results Review

The TVA undertakes an initial review of the validation house's submission, consisting of validation results, evaluation sheet, and any other supporting information, and assesses whether sufficient evidence has been provided to prove that all of the Validation Objectives have been met.

The TVA removes any sensitive information before distributing any materials to any other NFC Forum group (e.g., the TVRC, the Testing Working Group, and the Compliance Committee). The TVA, supported by the TVRC, reviews the results contained in the validation house's evaluation report within 14 calendar days of receipt. The TVA and TVRC's review ensures that the validation house followed all the validation steps defined in the [TTV_REQS] and recorded the results correctly. The TVA will also verify that the validation results fully support the Validation Objectives (see Section **Error! Reference source not found.**).

If any issues are identified during review, the TVA consults the TVRC. The TVRC attempts to resolve the issues or clarify interpretations, but can involve the TWG should any correction, further interpretation, or clarification be necessary.

2.6 Test Tool Approval

2.6.1 Approval Recommendation

If the tool fully meets the Validation Objectives, the TVA and TVRC make a joint recommendation to the NFC Forum Compliance Committee to approve the test tool for certification testing and have it listed in the NFC Forum's Approved Test Tools section (<http://nfc-forum.org/our-work/compliance/certification-program/labs-test-tools/approved-test-tools/>).

When all other Validation Objectives are met, but validation testing is not fully complete owing to a lack of engineering sample functionality, the TVA and TVRC may recommend to the Compliance Committee to approve a test tool if sufficient evidence is available:

For Digital Protocol, LLCP, and SNEP Tools:

- No less than **80 percent** of all Priority 1 test cases have been successfully validated by the validation house using two or more engineering samples (reference or proprietary)
- At least **80 percent** of the validated test cases were also successfully validated in at least one other test tool
- **100 percent** of any other measurements defined as required by the NFC Forum as defined in [TTV_REQS]

For RF Tools:

- **100 percent** of the validated test cases have been validated by the validation house using two or more engineering samples (reference or proprietary) were also successfully validated in at least one other test tool for (Analog test tools)
- **100 percent** of the validated test cases were also successfully validated in at least two other RF test tools
- **100 percent** of any other measurements defined as required by the NFC Forum as defined in [TTV_REQS]

Validation of any remaining Priority 1 test cases and any other Priority 2 or 3 test cases must resume as soon as engineering samples supporting the needed functionality become available. Updates to the test tool resulting from incremental testing done to complete tool validation will be done in subsequent maintenance releases (see Section 2.8).

2.6.2 Provisional Approval Recommendation

If the Validation Objectives are not fully met, the TVA and TVRC will further analyze the validation results and supporting materials to determine the nature of any deficiencies. Depending on the severity of the deficiencies, the TVA and TVRC may recommend that the Compliance Committee either provisionally approve the test tool, subject to the shortcomings being addressed within a given time period, or recommend that the approval of the test tool be declined.

If the TVA and TVRC recommend provisional approval, the Compliance Committee reviews the information provided and either accepts or rejects the recommendation.

2.7 Validation Results Review and Approval

Upon receipt of the validation results, the TVA will start reviewing the validation results within five calendar days and refer any problem areas to the TVRC for resolution within ten calendar days from the review start date.

The TVA, in collaboration with the TVRC, will formulate an approval/decline recommendation for the Compliance Committee within seven calendar days from the review end date.

The Compliance Committee will review and may approve or decline the TVA/TVRC recommendation within 14 calendar days after the NCIRP has made a recommendation.

Once approved by the Compliance Committee, the tool will be listed on the website within five calendar days from the approval date. Test tool information posted on the NFC Forum's Approved Test Tools list must be limited to details agreed on with the test tool vendors and typically include:

- Provider and Contact Information
- Tool
- Function (Spec Name)
- Hardware/Firmware/Software Version
- NFC Forum Certification Release Supported
- Approved for Use

2.8 Test Tool Maintenance

Even though a test tool is approved for Certification testing, it may need updates or maintenance from time-to-time outside the NFC Forum validation cycles.

For example, a tool vendor may:

- Update a tool to correct a test script deficiency identified during incremental validation after approval based on the percentage Priority 1 test cases validated
- Implement test case corrections (errata) applicable to test tools only and approved by the NFC Forum
- Implement corrections due to a Problem Report that identifies a test tool deficiency
- Optimize the platform performance without changing test scripts.

If an interim update to an already approved test tool is necessary, its distribution to tool users must be carefully coordinated with the NCF Forum in order not to have test results rejected by the Certification Administrator. The Certification Administrator uses the approved tool version number displayed on the Certification page to validate that any incoming test results originate from an approved test tool.

Prior to distributing a test tool maintenance release, a tool vendor must:

- Submit a request to distribute a maintenance release
- Provide a detailed explanation as to why an interim release is necessary
- Provide full details of modifications made and test cases impacted (if any)
- Confirm that no other validated functionality is affected by the updates and no incremental validation is required
- In case of test script corrections, provide documentary proof that the validation house has revalidated the test cases
- In case of an operating system upgrade (for example, from Windows XP to Windows 7) or other platform improvement, confirm that all of the previously validated test cases have been executed on the newly upgraded platform and cross-checked with the old platform to ensure that there is no change in tool behavior or test result outcomes. All test logs and results must be retained by the tool vendor and available to the Forum for inspection upon request.

The test tool vendor request and all listed information must be submitted to the TVA. Upon receipt of the request, the TVA will review the submission and verify that all needed information is provided. Any questions or issues for clarification will be discussed with the TVRC. If there are no concerns from the TVRC, the TVA proceeds with a request to update the tool version number on the Certification page.

Once the version number is updated on the Certification page, the tool vendor is informed and authorized to distribute the maintenance release. The CA is also informed so that from that point on, test results generated using the updated version of the test tool will be acceptable. Test results generated with the previous version of the test tool will be accepted by the CA for a period not exceeding 45 days from the date the maintenance release was approved and updated on the Certification page.

2.8.1 Maintenance Validation

An Errata or Change Request shall give guidelines as to whether a correction is needed to be validated at a validation house or if it can be validated by the test tool vendor itself. For other reasons for change, it is up to the TVRC to make an appropriate decision about this. The following examples are guidelines for the TVRC.

The validation can be done by the test tool vendor for the following updates

- Operating System upgrades
- Updates of User Interface
- Firmware updates

The following examples are a guideline when the validation shall be done by the test tool validation house.

- Changes in logic of a test script
- Updates of incorrect timing

An Errata shall be implemented in a test tool in due time, but at least within 1 month from its publication.

The test tool manufacturer MUST report to the TVA the release date of the new version of software / firmware with the list of implemented Errata. As soon as the new test tool version is available and published at the NFC Forum webpage, the old version will be non-applicable within 6 weeks.

The TVA will relay that information to the CA and ATL within 5 days.

2.9 Meeting Attendance Requirement for Validation Labs

Validation Labs shall participate in all NFC Forum Compliance Working Groups and Task Force meetings under all 3 member meetings annual basis so that they can communicate with the responsible Working Groups and Task Forces, which will effectively speed up the validation progress. Also Validation Lab shall participate more than 50% of Working Group and Task Forces conference call.

2.10 Test Tool Delisting

A previously approved test tool that is no longer able to fulfill all requirements as specified in this document or is not updated with an Errata in due time, or for any reason does not manage to pass a revalidation of a new Test Release, shall be delisted. When it is acknowledged, NIRC will inform the test tool vendor about this. The tool vendor will now have 2 weeks to respond with a 12-week plan to again fulfill the requirements. If the tool vendor accepts that their tool will be delisted or fails to fulfill all requirements within a 12-week period, their name will be removed from the NFC Forum portal.

A. Revision History

The following table provides the revision history of Administrative Process for Test Tool Validation.

Table 1: Revision History

Document Name	Revision & Release Date	Status	Change Notice	Supersedes
Administrative Process for Test Tool Validation	Version 1.0, July 2010	Final		
Administrative Process for Test Tool Validation	Version 1.2.01, May 3, 2013	Final		Version 1.0
Administrative Process for Test Tool Validation	Version 1.2.02, November 2013	Draft		Version 1.0.01
Administrative Process for Test Tool Validation	Version 1.2.03, April 30, 2015	Draft	Added Section 2.8.1 Maintenance Validation	Version 1.2.02
Administrative Process for Test Tool Validation	Version 1.2.04, 2016-10-20	Final	Relaxing on meeting attendance requirement for validation Lab, TCMT verification requirement	Version 1.2.03