



## **NFC Forum Compliance Committee Test Case and Document Maintenance**

NFC Forum™

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CC-MaintProcs

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**CONFIDENTIAL**

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## Contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Overview .....	1
1.2	Applicable Documents or References .....	3
1.3	Administration .....	3
1.4	Name and Logo Usage .....	3
1.5	Intellectual Property .....	4
1.6	Special Word Usage.....	4
1.7	Abbreviations .....	4
1.8	Glossary .....	4
<b>2</b>	<b>Commenting a Document .....</b>	<b>5</b>
2.1	Creating Comments .....	5
2.2	Reason to Comment .....	5
2.3	Creating Comments .....	6
2.4	Comment Analysis and Assignment .....	6
2.5	Resolution.....	6
2.6	Closing .....	7
<b>3</b>	<b>Controlled Documents.....</b>	<b>8</b>
3.1	Draft Status.....	8
3.2	Approved Status .....	8
3.3	Working with Approved Documents .....	8
3.3.1	Storing, Editing, and Approving the Document .....	8
3.3.2	Making New Comments.....	9
3.3.3	Incorporating CRs and Errata in Approved Documents .....	9
3.3.4	Tracking CRs and Errata.....	9
<b>4</b>	<b>Test Cases Maintenance .....</b>	<b>10</b>
4.1	Introduction .....	10
4.2	Life cycle of a test case .....	10
4.3	Test Case Category Change List.....	11
4.4	Category Recording Mechanism .....	11
4.5	Notifications of TCCL changes .....	12
4.6	Category change details .....	12
4.6.1	Initial Category .....	12
4.6.2	Modifications of Test Cases .....	13
4.6.3	Downgrade of Test Cases and Sub-Cases .....	13
4.6.4	Valid test cases pending revalidation.....	14
4.6.5	Implementation of test cases or corrections .....	14
4.6.6	Review of validation results .....	14
4.6.7	Grace period .....	15
<b>A.</b>	<b>Revision History .....</b>	<b>16</b>

## Figures

Figure 1:	Maintenance Process Flowchart.....	2
Figure 2:	Creating Comments Flowchart .....	5

**Tables**

Table 1: Abbreviations .....4  
Table 2: Comments Status .....6  
Table 3: Test Cases Categories .....11  
Table 4: Revision History .....16

# 1 Introduction

This procedure describes how to control the changes made to documents under the responsibility of the Compliance Committee (CC) and its sub-groups, and also describes how the consequent changes in the implemented test cases are controlled.

A controlled document is any document that has normative information and that evolves over time. Being a normative document, it will affect the way test tools, devices and the test execution are made. To assure an orderly and timely introduction of changes, a procedure ruling these, has to be well known and accepted by the organization.

## 1.1 Overview

Figure 1 shows an overview of the maintenance process in the CC.

The process can be divided in three sub-processes with specific rules on each:

- The sub-process for handling comments made to documents using the NFC Forum web tool Kavi (Kavi Domain)
- The sub-process for handling changes into the CC controlled documents and that most of the times happen after comments made in Kavi (Documentation Domain)
- The sub-process to handle the test cases implemented on the NFC Forum approved test tools (Test Cases Domain)

Maintenance Process Overview

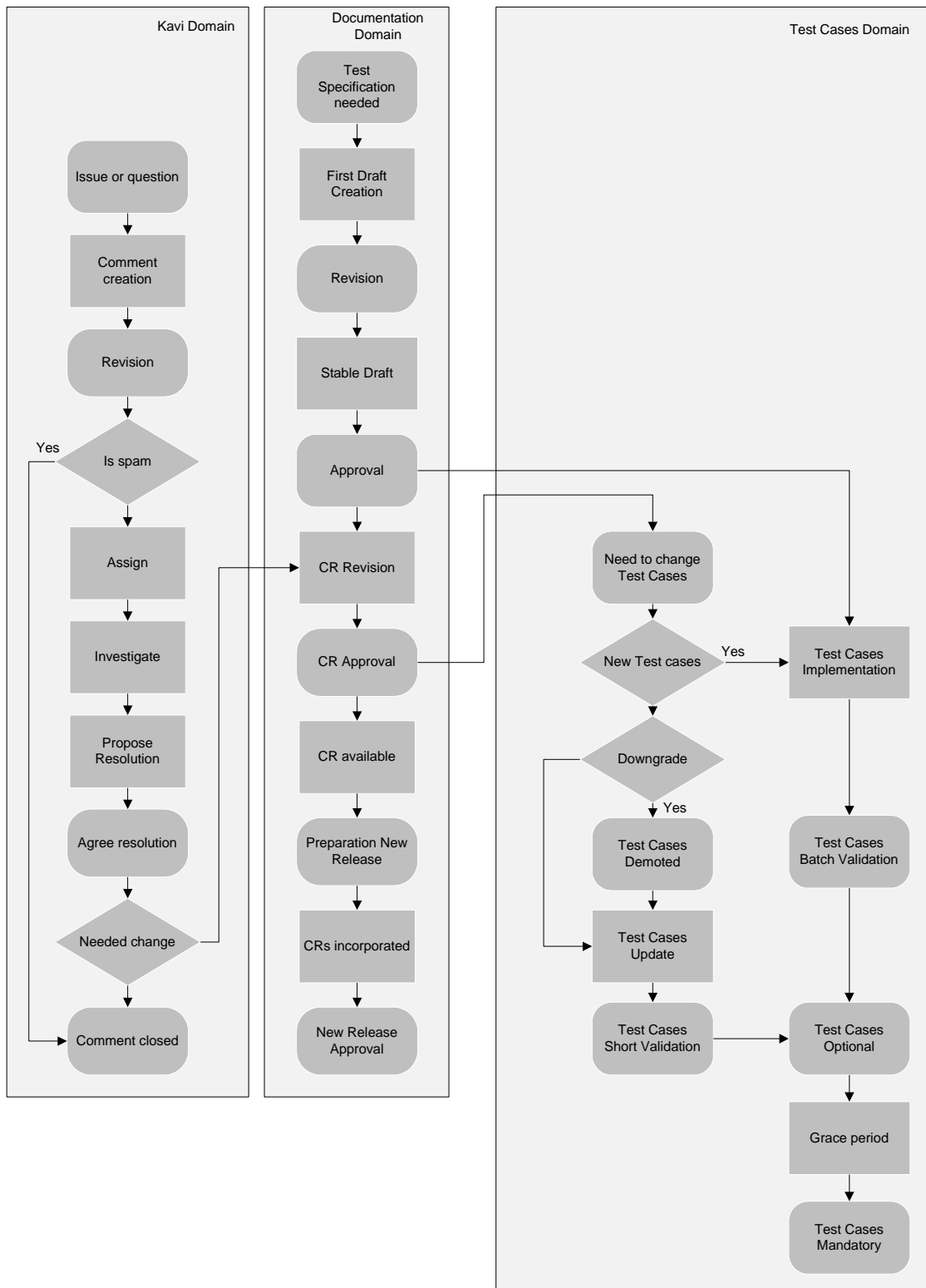


Figure 1: Maintenance Process Flowchart

## 1.2 Applicable Documents or References

[RFC2119]	Key words for use in RFCs to Indicate Requirement Levels, RFC 2119, S. Bradner, March 1997, Internet Engineering Task Force
[DocDevProc]	Document Development Process
[AdminValTools]	Administrative Process for Test Tool Validation

## 1.3 Administration

The NFC Forum NFC Forum Compliance Committee Test Case and Document Maintenance is an internal document supported by the Near Field Communication Forum, Inc., located at:

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The Compliance Committee maintains this specification.

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- Any company MAY claim compatibility with NFC Forum specifications, whether a member of the NFC Forum or not.
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## 1.6 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].

## 1.7 Abbreviations

The abbreviations as used in this document are defined in Table 1.

**Table 1: Abbreviations**

Abbreviation	Description
CC	Compliance Committee
TC	Technical Committee
EC	Ecosystem Committee
CR	Change Request
WG	Working Group of the Compliance Committee
TWG	Testing Working Group, the WG responsible to manage the test cases
TVA	Tool Validation Administrator (part of TVRC)
TVRC	Tool Validation Review Committee
TCCL	Test Cases Category List

## 1.8 Glossary

### *Kavi*

Website where the NFC Forum stores all documentation

### *Controlled documents*

Any document where the changes made through its life time have to be track and formally approved by CC

### *Comment tool*

Web pages in Kavi workspace of each Working Group owning documents

### *Certification list*

Email address used to several purposes described elsewhere and also to notify interested subscribers that a change on the TCCL was made and is in effect from that moment on at a date indicated in the TCCL

## 2 Commenting a Document

### 2.1 Creating Comments

The processing of comments uses the flowchart in Figure 2.

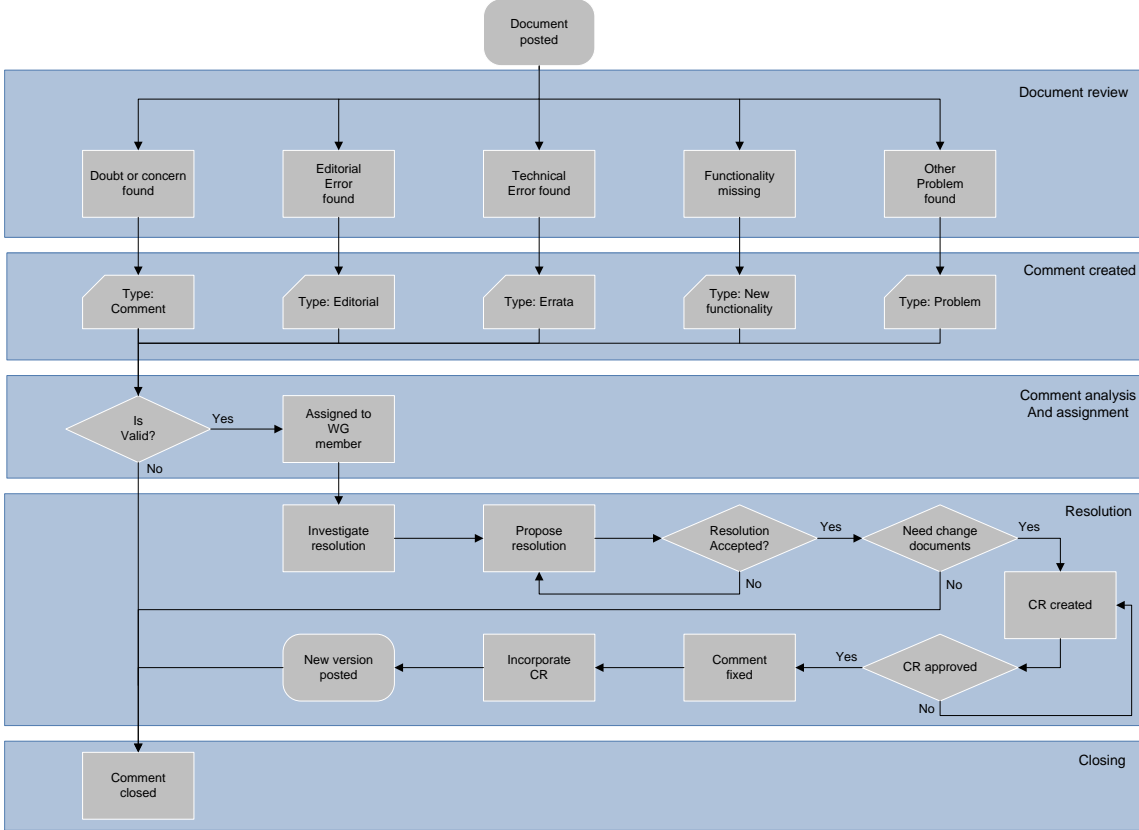


Figure 2: Creating Comments Flowchart

### 2.2 Reason to Comment

Comments are primarily made during the review of an existing controlled document. Comments can also be made after any issue or doubt is found with the CC specification, procedures and regulating for the certification or interoperability programs as long as that issue can be referred to a controlled document.

Making comments on a document is permitted at any stage of the document’s lifetime, but is expected to occur more frequently when:

- Revising the contributions to the initial draft
- Reviewing a final draft for approval
- Finding issues during implementation or testing of document content
- Other reasons as applicable

## 2.3 Creating Comments

Depending on the status of the document, the review details in Table 2 apply.

**Table 2: Comments Status**

Status	Location	Comments	Changes	Tracking	Version Upgrade
Initial Draft	In a folder in WG Kavi space	Sent via email	Submitted via email	Excel spreadsheet if required	Date suffix
Stable Draft	“Test Cases Drafts” in WG Kavi space	Submitted via comment tool in WG Kavi space	Inside the comments or via a document of type CR	Kavi comments tool	Date suffix
Approved	“Approved Documents” in WG Kavi space	Submitted via comments tool in WG Kavi space	Via a CR document	Kavi comments tool	Remove date suffix

The permitted types of comments are indicated on the flowchart in Section 2.1. The submitter assigns the initial comment type. The WG can change the type later, when reviewing the comment.

When a document is created, its initial status is “Draft”. When all the existing comments are resolved and addressed, the document is in “Stable Draft” status. When a document is approved by the higher group required in its approval path, it is in “Approved” status.

## 2.4 Comment Analysis and Assignment

After the comment has been submitted, the relevant chair (WG or Tiger Team) analyzes it to see if the comment is relevant.

- If the comment is invalid, the chair closes the investigation with the resolution of “rejected”.
- If the comment is valid, the chair assigns the comment to a WG member and changes the status of the comment to “assigned”.

## 2.5 Resolution

The assigned person analyzes any proposed solution or investigates how to solve the problem or answers the question as required for the comment.

The resolution is proposed to the WG, which accepts it or requests further investigation.

If the document is a Stable Draft, the resolution can be based on the comment proposal, but the actual change to the document must be made through a written document, i.e., a Change Request (CR) which describes:

- The reason for the change
- Implications to other specifications and test case implementations
- The original and modified content, with a clear indication of the section of the document

Microsoft Word Tracking SHALL be used to highlight any changes by copying only the affected section into the CR document with the proposed modifications applied. A CR can cover several issues at the same time to minimize the amount of processing associated with multiple CRs as long as the different changes are correctly separated.

If a CR was generated for a comment, the CR number and link to Kavi MUST be added to the comment details.

After a CR is approved, the WG chair MUST change the comment status to “fixed” and, if desired, the resolution to “answered”. The WG chair MUST check the box “Notify all members of Testing Working Group” when changing the status.

The editor of the document periodically incorporates the CRs into the affected documents and submits them as a new release to the WG for approval. The time between different releases of the documents SHALL be defined by WG in accordance with resource availability. However, a period of six months is recommended.

If changes originate from a comment of the type “new functionality”, a new release of the document can be submitted immediately for CC re-approval, subject to a formal review as described in [DevProc].

The approved CR template MUST be used.

## **2.6 Closing**

After the new release of documents has been approved by the CC, the WG chair must process again all comments. The WG chair MUST change the comments status to “closed” and the response to “published” for all comments in respect of which approved CRs were incorporated in the new release. The WG chair MUST check the box to “Notify all members of Working Group” when closing comments.

## 3 Controlled Documents

### 3.1 Draft Status

A document is considered to be in Draft status when it has modifications that were not yet approved by the applicable working group or committee.

There are two entry points for the Draft status on a document: during its first composition and any changes approved for an Approved status document.

A document leaves the Draft status only when it is approved by the last approval on its approval path. It changes to Approved status and keeps that status indefinitely for that specific version. Deprecation of documents is outside of the scope of this procedure.

The suffix on the file name of the document has to indicate the version using the format A.B.XX, where A, B and XX are numbers, followed by a date suffix in the format YYMMDD. If the document is dependent on a specific TC, EC or even CC specification, the major version A and minor version B MUST correlate to the same version numbers of the technical specification upon which the CC document is based.

When a first version of a CC document is created after a new A.B version of specific TC, EC or CC dependent document, this consequent CC document is called the First Draft. The XX from the version ID starts 00 and it is incremented to 01 when the first Stable Draft is created. When working on the First Draft, the owner group do not need to create CR documents do capture any proposed changes and it is left to the editor and / or chair to define and put in place a suitable mechanism to track contributions, changes and even comments.

Until the CC approves a document (ending Draft status), any new version of a draft document published in Kavi MUST have its file name changed by updating only the date suffix.

The document history section must capture every date change, indicating the modified section and / or the CRs added.

### 3.2 Approved Status

When approved, the version of the document is identified only with the suffix A.B.XX, with the date suffix removed from the file name.

Changes to the document should be summarized in the document history section.

### 3.3 Working with Approved Documents

#### 3.3.1 Storing, Editing, and Approving the Document

After the approval of a document, it must be copied to the folder in the WG Kavi space called "Approved test documents". The date suffix is maintained while the NFC Forum Editor reviews the document. On documents requiring CC approval the document is submitted to CC after all changes by the NFC Forum Editor have been made. After the CC approval the document goes to the BoD for approval if required. After the last required group approval, the date suffix is removed. This document should be used for the next version's First Draft.

### 3.3.2 Making New Comments

To request new changes to a document (being editorial, corrections, additions or deletions), a comment SHOULD be created via the comment tool in Kavi and processed as described in Section 2.

To expedite the process, a change can be proposed directly through a Change Request (CR), saving the Kavi comment processing overhead, but losing the visibility and notification support the comment tool provides. The CR SHALL be uploaded to the folder WG CRs using latest approved CR template. The name of the CR should include the reference to the corresponding comment.

### 3.3.3 Incorporating CRs and Errata in Approved Documents

To minimize the number of approved versions of a document, changes will be grouped in releases. The Task Force, Working Group, or Committee that owns the document will determine the time frame for accumulating changes. This time period SHOULD NOT be longer than six months.

### 3.3.4 Tracking CRs and Errata

Until the next version of a controlled document is published and in order to allow early implementations of approved CRs and also to track CRs, a tracking document per controlled document MUST be exist in Kavi listing all the submitted but not yet incorporated CRs.

This document MUST be called <document\_title>\_CRs\_and Errata\_Tracking\_List\_YYMMDD. The date MUST be updated every time a CR is entered or its information is changed.

The document SHALL have a table that lists the CR names and web links, the related Kavi comment(s) they cover, the dates when the CR was submitted, approved and incorporated, the test cases affected and if any test case was downgraded.

## 4 Test Cases Maintenance

### 4.1 Introduction

One of the most important types of CC documents is the test specification, especially the ones detailing test cases used in certification programs.

After the publication of a test specification and if that test specification is included on a certification program, it is expected that it will be implemented on one or several test tools.

The introduction into, or the removal of, a test case from a certification program has important implications on the certification results and so needs to be controlled carefully and in great detail.

This section describes how the test cases are managed inside the CC, and consequently in the NFC Forum.

### 4.2 Life cycle of a test case

Test cases are defined in a test specification. The detail **MUST** be sufficient to allow a correct implementation by a test tool vendor.

Usually new test cases are grouped in batches that can be the first test cases approved to a specific certification program or a major upgrade or update.

At that time they are made available to the test tool vendors for implementation followed by the validation of the implementation.

Validated test cases will still wait for the expiration of a grace period during which applicants to certification **SHOULD** prepare their devices for compliance testing.

After the grace period, the validated test cases become a requirement for successful execution in order to be granted a compliance certificate.

If problems are found with a test case or its implementation in test tools, the TWG **MAY** decide to downgrade, which means that the test case is temporarily or permanently removed from the certification program.

There **MAY** be test cases that are correct and validated but that are not relevant to the certification program. Execution of those test cases is optional and the result is not critical to the compliance decision. These test cases are still made public to support the development of compliant devices.

Each of the phases briefly described above represents a test case category and is assigned a unique identifier (letter) for reference purposes in the Test Case Category List (TCCL).

### 4.3 Test Case Category Change List

Table 3 summarizes the existing categories, the entry and exit criteria, time restrictions and possible preceding and succeeding categories.

**Table 3: Test Cases Categories**

Cat	Description	From	Entry Criteria	Time In	To	Exit Criteria	Time Out
A	<b>Applicable</b> Test case is validated and is grace period is expired	V	Grace Period expired	120 days	D, P or I	TWG approves downgrade	Immediately
V	<b>Validated</b> Test case validated	C	Successful Validation	5 days after validation results are published and not contested	A	Grace Period expired	120 days
C	<b>Candidate</b> Test case approved by CC for validation	D, P or other	New test case or correction approved	Immediately	V or I	Test case validated	5 days after validation results are published and not contested
D	<b>Demoted</b> Test case downgraded	A or P	TWG approves downgrade	Immediately	C or I	Test case correction approved validated	Immediately
P	<b>Partially Demoted</b> Test case applicable but <b>scenario</b> or <b>sub-case</b> demoted	A	TWG approves partial downgrade	Immediately	C	Scenario or sub-case correction approve	Immediately
I	<b>Informational</b> Test case validated but not relevant	C	Test validated but TWG don't mandate it	5 days after validation results are published and not contested	A or D	TWG agrees to include or downgrade	Immediately

### 4.4 Category Recording Mechanism

The Test Case Category List (TCCL) is a document listing all the applicable test cases and sub-cases (scenarios) for the Certification Program. The Certification Program requires that the TCCL **MUST** exist, and **MUST** be available to all members via the Certification Program page.

The TCCL manager has the responsibility for updating the category of the test cases and sub-cases as needed within two business days of a category change.

The TCCL document **MUST** follow the versioning rules described above, e.g., the TCCL file name, changed on the 1<sup>st</sup> of December in 2011, for the Digital Protocol version 1.0 certification, must end in 1.0.01\_111201. The third number, above called XX will always be 01 since the TCCL is expected to be a dynamic document with frequent changes and never needing to be constantly approved.

When a new test case is approved by the TWG it **MUST** be added to the TCCL as category C including the date it was approved.



When the validation house informs the NFC Forum that a test case(s) has been successfully validated, the TCCL manager updates a draft of the TCCL, changing the test case and sub-cases category from C (Candidate) to a V (Validated) while also capturing the date of validation. The TCCL manager requests the TWG, with a courtesy copy to the CC, to review the updated draft within a period of five days. Once the review period is over and all comments have been resolved, the TCCL manager will assume implicit approval by the TWG and post the updated version of the TCCL on the Certification Program page.

Each change in category of a test case and sub-cases in the TCCL is recorded with the date of the latest change.

## **4.5 Notifications of TCCL changes**

When the TCCL manager uploads an updated version of the TCCL file, the TCCL manager SHALL send an email via the Certification Mailing List informing all subscribers that there was a change of test case categories in the TCCL. All companies subscribing to the distribution list can then download the new version and search for the latest changed test cases.

For the purpose of email list subscription and automatic notification Kavi tool can be used with details available below.

Currently the page where interested parties can subscribe to be notified of TCCL changes can be found at <http://visitor.r20.constantcontact.com/d.jsp?llr=arezcrdab&p=oi&m=1103306199584>.

## **4.6 Category change details**

### **4.6.1 Initial Category**

After a test case is approved by the NFC Forum, the TCCL manager MUST add it to the TCCL with category C and the approval date. The TWG or the TCCL manager MUST announce the updates with the new test cases test tool manufacturers that a new test case(s) was(were) added to the certification program for implementation in test tools.

The TCCL notification email list can be used to inform the test tool vendors and others that new test cases need to be implemented.

The approval of a test case by the NFC Forum implies that the test case will be part of the certification program so only test cases relevant to compliance should be approved.

In order to minimize certification costs, and in that way maximize the success of the NFC Forum devices penetration, it is strongly recommended to minimize the number of test cases required to verify compliance.

## 4.6.2 Modifications of Test Cases

As referred in Section 3, when a test case that is part of a CC test specification is changed, the Change Request (CR) MUST be used. It MUST be indicated in the CR if the modifications are expected to have impact and at what level in the test cases implementation namely in the scripts that implement the test case steps in the test tool.

As for the test case implementation, the possible situations are:

- I. The test case is invalid and need corrections.
- II. The test case is valid but needs to be improved or extended.
- III. The test case is partially valid, but deficient sub-cases (scenarios) can be removed without affecting the others.
- IV. The test case remains valid as the CR does not affect any steps from a device implementation perspective (e.g., editorial changes, or changes affecting the test tool implementation only).

The following actions MUST be taken for each situation:

- For I. above, downgrade the test case immediately and inform the TCCL manager of the decision.
- For II. above, do not change the category but inform the TCCL manager a new version of the test case is expected.
- For III. above, do a partial downgrade affecting only the deficient sub-cases and inform the TCCL manager of the decision.
- For IV. above, no action is needed regarding the TCCL.

For all of these situations, the Errata document with the list of existing CRs MUST be updated with the corresponding decision and the date on which the action was taken. The Errata update should be synchronized with the TCCL update.

## 4.6.3 Downgrade of Test Cases and Sub-Cases

To correctly manage the important decision of whether or not a test case(s) should be downgraded during a CR review, the applicable sections of the CR template should be completed by the CR author, listing all the test cases affected with a technical explanation why the test cases need to be downgraded. When only some sub-cases are downgraded those sub-cases need to be identified also.

The TWG MUST consider the CR together with whether a downgrade is needed. If there is agreement on the changes to the test case details but not on the downgrade, a new revision of the CR MUST be produced with a new test cases disposition that is acceptable to the TWG without downgrade for final agreement. For the sub-cases downgrade, the same rule applies.

The TWG MUST notify the TCCL manager immediately that one or several test cases or sub-cases were downgraded.

The TCCL manager or his delegate will publish a new TCCL version within two working days and will send an email notification as described in the above paragraphs. All the test laboratories, test tool manufactures, validation houses and other persons involved on the certification management and operation MUST be member of the notification mailing list above referred.

For the downgrade of sub-cases it will be changed on the specific column the category of the downgrade sub-cases.

In case of a sub-case downgrade, the test case will still be executed except the downgraded sub-case.

If the full test case is downgraded, the test case will not be taken into consideration for certification purposes during the time from the decision to downgrade until the test case is reintroduced with the correct category. A downgraded test case will also be removed immediately from any ongoing tool validation process.

In the event that the TWG approves a CR, and decides not to downgrade the test case(s) listed in the CR because of it being an editorial error or modification only affecting the test tool (see section 4.6.2, situation IV), the approved CR is treated as 'errata' and effective immediately for tool implementation and validation purposes.

#### **4.6.4 Valid test cases pending revalidation**

Those test cases that were agreed to be modified but do not need to be downgraded (see section 4.6.2, situation II) will be kept in the same category.

In the TCCL, it will be recorded that a new version of the test case is pending.

The new version of the test case, after implementation by the test tool vendor **MUST** be revalidated.

After the revalidation, the validation house will notify the Tool Validation Administrator (TVA) that a review period will follow, followed by a grace period before the new version becomes applicable to execute as described above.

The TCCL **MUST** identify clearly the version of the test case currently in use and the date from when it becomes applicable to use the future version in certification.

#### **4.6.5 Implementation of test cases or corrections**

The approved test tool vendor, after being notified that new test cases or modifications were approved **SHOULD** inform the TVA of expected time to implement the new test cases or changes.

When the implementation of the new test cases or modifications is complete the test tool vendor **MUST** inform the TVA and send the implemented material to the validation house for validation within 2 business days.

#### **4.6.6 Review of validation results**

After the validation of a new version or a new test case, the validation house **MUST** notify the TWG and the TVA of the result.

If the result is unsuccessful, the TVA will contact the respective test tool manufacturer in order to resolve the reasons for failure and assure a successful validation as soon as possible.

If the result is successful, the TVA will notify the TWG that they will have five working days to dispute the validation results.

After the five working days have expired, and if no explicit objection was made, the TCCL manager will update the date from which onwards the test case will enter category A, meaning when the grace period will expire. Until the grace period expiration date the category of the test case is V for Validated test case or I for Informational test case if TWG decides to remove it from the certification for reasons other than correctness of the test case implementation.

#### **4.6.7 Grace period**

In order to ensure that the implementers have enough time to prepare the devices for certification, a grace period is provided during which an approved and recently validated test case will not yet be in effect for certification purposes.

The grace period is:

- 120 days for all types of changes validated or revalidated (section 4.6.2 – situation I, II and III)
- No grace period applies to editorial errors and changes only affecting test tool implementations (section 4.6.2 – situation IV)

The TCCL manager will calculate the end of the grace period using the rules above using calendar days and will record the end date in the TCCL.

After expiration of the grace period, the TCCL manager will update the category of the test case. However, the test cases will become effective on the date indicated as the end of the grace period irrespective of whether the category was updated or not, and using the time zone of the test lab where the test cases are executed.

## A. Revision History

The following table outlines the revision history of NFC Forum Compliance Committee Test Case and Document Maintenance.

**Table 4: Revision History**

<b>Document Name</b>	<b>Revision and Release Date</b>	<b>Status</b>	<b>Change Notice</b>	<b>Supersedes</b>
Compliance Committee Test Case and Document Maintenance	Version 1.0, September 14, 2012	Release	Board Approved Release	