# Verification and Validation Report: Measuring Microstructure Changes During Thermal Treatment

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# 1 Revision History

| Date | Name | Notes |
|---|---|---|
| Mar 8 2023 | Edwin Do | Added usability test results |
| Mar 8 2023 | Edwin Do | Added Traceability matrices |
| Mar 8 2023 | Tyler Magarelli | Added survey results table |

# 2 Symbols, Abbreviations and Acronyms

change capacity to size

| symbol | description |
|--------|-------------|
| T      | Test        |

[symbols, abbreviations or acronyms – you can reference the SRS tables if needed —SS]

# Contents

# List of Tables

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This document ... Section 11 Code Coverage Metrics is removed.

# 3 Functional Requirements Evaluation

# 4 Nonfunctional Requirements Evaluation

In the section

## 4.1 Usability

The table below shows the results of our usability tests based on the tests in the V&V plan based on the requirements mentioned in the SRS. Each requirement can be traced to multiple unit tests and the usability survey used can be found in the Appendix.

| Usability Tests | | | | |
|---|---|---|---|---|
| Test Requirement | Related Unit Tests | Description | Expected Result | Result |
| NF-UT1 | AF | Completing tasks without additional assistance. | User will be complete tasks successfully | PASS |
| NF-UT2 | AX | Interact with interace to modify parameters. | User will be able to modify the parameters accurately and quickly. | PASS |
| NF-UT3 | AL | Completing all tasks with limited number of mistakes | User will be able to complete all tasks with $MAX\_MISTAKE$ | PASS |
| NF-UT3 | AL | Verifying if interacting with the application previously improves ease of use (learnability) | User will be able to complete the tasks more quickly and accurately the second time | PASS |
| NF-UT5 | AS | Verifying how calculations are performed is hidden | User will not know how calculations are performed after doing the set of tasks | PASS |
| NF-UT6 | AS | Verifying appropriate application size upon installation | User will install application onto computer and verify that the application size is less than or equal to $MAX\_SIZE$ | PASS |

## 4.2 Performance

## 4.3 etc.

# 5 Comparison to Existing Implementation

This section will not be appropriate for every project.

# 6 Unit Testing

# 7 Changes Due to Testing

# 8 Automated Testing

# 9 Trace to Requirements

| Traceability Matrix to Non Functional Requirements | | | |
|---|---|---|---|
| Requirement Type | Requirement(SRS) | Test Requirement | Related Unit Tests |
| Non Functional | NFR-U1 | NF-UT1 | U |
| Non Functional | NFR-U2 | NF-UT2 | U |
| Non Functional | NFR-U3 | NF-UT3 | U |
| Non Functional | NFR-U4 | NF-UT4 | U |
| Non Functional | NFR-U5 | NF-UT5 | U |
| Non Functional | NFR-U6 | NF-UT6 | U |

| Traceability Matrix to Functional Requirements | | | |
|---|---|---|---|
| Requirement Type | Requirement(SRS) | Test Requirement | Related Unit Tests |
| Functional | FR1 | FR-T1 | U |
| Functional | FR2 | FR-T2 | U |
| Functional | FR3 | FR-T3 | U |
| Functional | FR4 | FR-T4 | U |
| Functional | FR5 | FR-T5 | U |
| Functional | FR6 | FR-T6 | U |

# 10 Trace to Modules

# Appendix — Survey Results

| User Experience Survey Results | | | | | |
|---|---|---|---|---|---|
| Survey Question | 5/Strongly Agree/Yes | 4/Agree | 3/Neither | 2/Disagree | 1/Strongly Dis-agree/No | %Accepted |
| How easy was the system to use with no additional instruction? | 7 | 2 | 1 | 0 | 0 | 90% |
| How would you rate the installation of the application in terms of simplicity? | 8 | 1 | 0 | 1 | 0 | 90% |
| The graphics and wording are culturally and visually appropriate. | 10 | 0 | 0 | 0 | 0 | 100% |
| In your opinion does the application cause/pose any health concerns or risks. | 0 | 0 | 1 | 0 | 9 | 90% |
| How would you rate the graphical interface in terms of organization, usage of space, and visual appeal? | 3 | 7 | 0 | 0 | 0 | 100% |
| Were you aware of how the calculations were being done when the data was being displayed? | 1 | - | - 6 | - | 9 | 90% |

# Appendix — Reflection

The information in this section will be used to evaluate the team members on the graduate attribute of Lifelong Learning. Please answer the following questions:

1.

2.