

# **Short-Term Memory System (STeMS)**

## **Software Test Report**

### **By AlphaSoft**

#### **Team Members**

Awasthi, Aaditya

Blavat, Oleksiy

Bond, Matthew

Carter, Mackenzie

Mahbobi, Sayed shah

McAllister, Charlie

McCool, Max

McLaughlin, Taylor

Powers, Michael

Weaver, Daniel

## Revision History

Date	Version	Description	Author
5 Aug 2023	1.0	Initial submission to Client	AlphaSoft

## Table of Contents

1.	Executive Summary .....	5
2.	Introduction.....	6
2.1.	Purpose.....	6
2.2.	Project Documents .....	6
2.3.	Acronyms, Definitions, and Abbreviations .....	6
3.	Scope.....	8
3.1.	In-Scope .....	8
3.2.	Out-of-Scope .....	8
4.	Testing Tools & Environment.....	9
4.1.	Tools.....	9
4.2.	Environments .....	9
5.	Test Summary .....	10
5.1.	Functional Tests .....	11
5.1.1.	TC-1 .....	11
5.1.2.	TC-2 .....	11
5.1.3.	TC-3 .....	11
5.1.4.	TC-4 .....	11
5.1.5.	TC-5 .....	11
5.1.6.	TC-6 .....	12
5.1.7.	TC-7 .....	12
5.1.8.	TC-8 .....	12
5.1.9.	TC-9 .....	12
5.1.10.	TC-10 .....	12
5.1.11.	TC-11 .....	12
5.1.12.	TC-12 .....	13
5.1.13.	TC-13 .....	13
5.1.14.	TC-14 .....	13
5.1.15.	TC-15 .....	13
5.1.16.	TC-16 .....	13
5.1.17.	TC-17 .....	13
5.1.18.	TC-18 .....	13
5.1.19.	TC-19 .....	14
5.1.20.	TC-20 .....	14
5.1.21.	TC-21 .....	14
5.1.22.	TC-22 .....	14

5.1.23. TC-23 .....	14
5.2. Test Metrics.....	14
6. Test Assessment.....	16
7. Test Results.....	17
7.1. Defects Found During Testing .....	18
8. Suggested Actions.....	19

## Figures & Tables

Table 1: Executive Summary of Test Cases .....	5
Table 2: Project Documents.....	6
Table 3: Acronyms, Definitions and Abbreviations .....	7
Table 4: Testing Tools.....	9
Table 5: List of Test Cases. ....	11
Figure 6: Proportion of Execution Types .....	15
Figure 7: Items Submitted to Test.....	15
Table 8: Test Case Results.....	17
Figure 9: Test Cases Execution Status.....	18
Table 10: Defects Found.....	18

## 1. Executive Summary

This Software Test Report (STR) contains the results of all testing that has been done on the STeMS project for the front-end of the ConvoBuddy app and the browser extension. Features of ConvoBuddy that were tested included general UI functionality, installation, recordings (making, pausing, and playback), and viewing the guided tour. The UI of the browser extension was also tested. Back-end testing was done by Team B.

All tests were conducted using standard [tools](#) in several [environments](#), allowing for efficient testing with sufficient coverage. Both manual and automated testing were conducted. 100% of the ConvoBuddy app had automated testing. The remaining 35% of the total tests executed were manually performed for the browser extension.

The ConvoBuddy application had a success ratio of 100%. Twenty-three individual test cases were created for the ConvoBuddy application (see [Functional Tests](#)), but a total of thirty-seven items were submitted to the testing team over the course of development. Twenty-nine of the items were requirements of the application while eight were [defects](#).

Test Cases	Count
Planned	23
Run	29
Passed	29
Defects Found	8
Defects Fixed	8
Total Items Handled (Run + Failed)	37
Total Passed (Passed + Fixed)	37

Table 1: Executive Summary of Test Cases

The final [assessment](#) for ConvoBuddy is that the application is reliable and stable. No defects were detected by the testing team during regression testing, which attests to the high quality of the application. Future work to improve testing includes increasing the number of automated tests and implementing an automated pipeline.

## 2. Introduction

### 2.1.Purpose

This document is a comprehensive summary of all testing efforts done by the testing team along with the results of those efforts. It also provides the stakeholders and all members of AlphaSoft with a clear overview of the testing phase. This report evaluates the testing coverage along with any risks discovered. Additionally, it evaluates the testing results (passed or failed), which helps with determining and improving the quality of the software. This report will also account for lessons learned for improving AlphaSoft's testing strategy for future projects.

### 2.2.Project Documents

The SRS document is part of a set of documents created to aid in developing the STeMS application and to provide artifacts with vital information for the application's ongoing support and operation throughout its full life cycle.

The following documentation will be included in the entire documentation package for this project.

Document Name	Version	Date
Project Plan (PP)	4.0	5 August 2023
Software Requirements Specification (SRS)	4.0	5 August 2023
Technical Design Document (TDD)	3.0	5 August 2023
Software Test Plan (STP)	3.0	5 August 2023
Programmer Guide (PG)	2.0	5 August 2023
Deployment and Operations Guide (DOG)	2.0	5 August 2023
User Guide (UG)	1.0	5 August 2023
Test Report (TR)	1.0	5 August 2023
Traceability Matrix (TM)	1.0	5 August 2023

Table 2: Project Documents

### 2.3.Acronyms, Definitions, and Abbreviations

Term	Definition
API	Application Programming Interface. The public facing side of a web service or computer system
Artifact	Any document, object, or thing that is created by the work of the team in completing the project
BESie	Back End Service. This is a web service that connects the browser extension to the mobile app.
Browser Extension	A small program that can be added to a browser to extend its functionality
CCB	Change Control Board. A group of people that decide what goes into a product and what does not
ChatGPT	An AI language model, designed to understand and generate human-like text
EULA	End User License Agreement, or the terms that the user must agree to in order to continue using the product.

Term	Definition
MVP	Minimum Viable Product. This is the minimum amount that must be done before the product can be delivered to users.
OpenAI	An artificial intelligence research organization that develops advanced language models and other AI technologies
Pipeline	Automated processes that perform tasks related to the code in multiple stages.
POC	Proof of Concept. Work that is done to provide assurance that something is possible and works as expected
PP	Project Plan. Our document that lays out the organization of the project along with many other meta-project concerns
Programmer Guide	A document that provides the reasons and rationale for why different decisions were made regarding the program
Deployment and Operations Guide	A document that explains how to deploy the program
Sprint	A time boxed set of tasks to be completed
STeMS	Short Term Memory System; this project's name.
SRS	Software Requirements Specification. A document that states what the software needs to do
STP	Software Test Plan. A document outlining the verification and validation process for the product
STR	Software Test Report. A document that summarizes all testing activities and outcomes
TDD	Technical Design Document. A document that provides details of how the project will work technically
TM	Traceability Matrix. A document that traces defects and test cases back to their requirement.
User Guide	A document that explains to a user how to use the program
UI	User Interface. What the user sees when working within the program
UX	User Experience. How the user interacts with the program
Web Service	A computer that can receive and respond to inputs from the internet

*Table 3: Acronyms, Definitions and Abbreviations*

### 3. Scope

All “must have” requirements for proper application functionality have been covered in testing and regression flow has been automated.

#### 3.1.In-Scope

The application allows users to create and manage live conversation recordings and select how they should be processed. An additional browser extension that allows the application to use processed recordings to populate webpage forms. The following features were covered by the STP and resulting manual test cases:

1. Edit recording
2. Recording
3. Delete recording
4. Process recording
5. Using the browser extension

Testing of the front-end features also included alignment of controls, useability of the app, and making sure a consistent style was used throughout the app.

#### 3.2.Out-of-Scope

The STP covers only the testing efforts required for the front-end features of the application. Back-end feature testing will be the responsibility of the corresponding test team for Team B. Additionally, features of the mobile devices, such as microphone and playback volumes, will not be tested.



## 4. Testing Tools & Environment

### 4.1.Tools

The following testing tools were used:

Tool	Summary
Android Studio (Flamingo)	Served as the primary integrated development environment for testing the Android version of ConvoBuddy. Android Studio's emulators allowed the testing team to test in a variety of environments.
APPIUM	An automation testing tool used by both the developer team and the testing team to make sure there are no regression defects during development.
Git	Used to obtain latest build of the application.
Google Chrome Internet Browser	Used to test the browser extension.
JUnit	A unit test framework used by the developer team to test their code. JUnit specializes in making sure units of code work properly.
Microsoft Excel	Spreadsheets were used to document test cases and defects. They were also used to create pie charts of testing progress.
Trello	A project management tool which was used by the team to post updates and track defects.
Visual Studio Code	Allowed for seamless integration between Git and Android Studio.

Table 4: Testing Tools

### 4.2.Environments

A variety of testing environments were used to test STeMS in order to be assured of its capabilities across many mobile devices. Emulators were used to reduce cost and increase the speed of testing. However, all testing environments did have several common properties:

- Internet Access.
- Working microphone.
- Working speakers.
- Minimum 4 GB of RAM.
- Minimum 8 GB of free hard drive space.

The main differences between the testing environments are the mobile devices' OS and OS version. The operating systems tested include:

- iPhone v15
- Android v12
- Android v13

## 5. Test Summary

The testing team included Aaditya Awasthi, Taylor McLaughlin, Sayed shah Mahbobi, and Mackenzie Carter. They started testing ConvoBuddy on June 28th, 2023, and testing concluded on August 1st, 2023. All the test cases that were created and conducted test vital functionality of the ConvoBuddy application. The features that were tested include:

- Record a new conversation
- Pause a recording
- Stop a recording
- Save a recording
- Cancel a recording
- View existing conversations
- Search existing conversations
- Viewing the guided tour

All of the test cases have been tested with manual functional testing and automated functional testing. Detailed test steps and their associated requirements can be found in the Traceability Matrix (TM) created and maintained by the AlphaSoft testing team. The results of these tests have been promising and the development of this application has been going smoothly.

Test Case ID	Test Case Description	Result
TC-1	The user can view Guided Tour on the information screen.	Passed
TC-2	The user can start recording from recording screen.	Passed
TC-3	The user can pause the recording.	Passed
TC-4	The user can see an error message when recording is paused and when they click on the back button.	Passed
TC-5	The user wants to resume a paused recording.	Passed
TC-6	The user can stop and Save recording when done.	Passed
TC-7	The user can make a new recording.	Passed
TC-8	The user can edit the information of a recording.	Passed
TC-9	The user can search for a recording.	Passed
TC-10	The user can delete a recording.	Passed
TC-11	The user can sort their recordings.	Passed
TC-12	The user can process a recording.	Passed
TC-13	BESie can correctly identify the appropriate Browser Extension request for each App instance.	Passed
TC-14	The browser extension can connect to the app.	Passed
TC-15	The app can receive and process requests from the browser extension.	Passed
TC-16	The browser extension can populate a web form.	Passed
TC-17	The user can view the text of a recorded conversation.	Passed

TC-18	Selection of a recording.	Passed
TC-19	Selection of a process for a conversation.	Passed
TC-20	The application can gather information required for processing by ChatGPT.	Passed
TC-21	The application can process results from ChatGPT.	Passed
TC-22	Associating Browser Extension requests with App instances.	Passed
TC-23	Handling Browser Extension requests without associated App instances.	Passed

Table 5: List of Test Cases.

## 5.1.Functional Tests

Details of each test case can be found in the Traceability Matrix spreadsheet.

### 5.1.1. TC-1

Verify that the user is able to make a new recording.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### 5.1.2. TC-2

Verify that user is able to start recording from recording screen.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/15/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### 5.1.3. TC-3

Verify that user is able to pause the recording.

- **Test Owner:** Taylor McLaughlin
- **Test Dates:** 06/12/2023 – 07/15/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### 5.1.4. TC-4

Verify that user is able to see error message when recording is paused and click on back button.

- **Test Owner:** Taylor McLaughlin
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### 5.1.5. TC-5

Verify That the user can resume a paused recording.

- **Test Owner:** Taylor McLaughlin
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### **5.1.6. TC-6**

Verify that user is able to stop and Save recording when done.

- **Test Owner:** Taylor McLaughlin
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### **5.1.7. TC-7**

Verify that the user is able to make a new recording.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/15/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### **5.1.8. TC-8**

Verify that the user is able edit the information of a recording.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### **5.1.9. TC-9**

Verify that the user is able to search for a recording.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/15/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### **5.1.10. TC-10**

Verify that the user is able to delete a recording.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/15/2023
- **Execution Type:** Automated
- **Test Results:** Passed

### **5.1.11. TC-11**

Verify that the user is able to sort their recordings.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Automated
- **Test Results:** Passed

**5.1.12. TC-12**

Verify that the user is able to process a recording.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Automated
- **Test Results:** Passed

**5.1.13. TC-13**

Verify that BESie can correctly identify the appropriate Browser Extension request for each App instance.

- **Test Owner:** Mackenzie Carter
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

**5.1.14. TC-14**

Verify that the browser extension can connect to an app instance.

- **Test Owner:** Mackenzie Carter
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

**5.1.15. TC-15**

Verify that the application can receive and process requests from the browser extension.

- **Test Owner:** Mackenzie Carter
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

**5.1.16. TC-16**

Verify that browser extension can populate a webpage based on recordings processed by the application.

- **Test Owner:** Mackenzie Carter
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

**5.1.17. TC-17**

Verify that recorded conversations are properly converted to text.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

**5.1.18. TC-18**

Verify that the user can select recordings from the application to be processed.

- **Test Owner:** Taylor McLaughlin
- **Test Dates:** 06/12/2023 – 07/23/2023

- **Execution Type:** Manual
- **Test Results:** Passed

### **5.1.19. TC-19**

Verify that BESie can correctly identify the appropriate Browser Extension request for each App instance.

- **Test Owner:** Mackenzie Carter
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

### **5.1.20. TC-20**

Verify that the application can gather and format all data required for processing by ChatGPT.

- **Test Owner:** Aaditya Awasthi
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

### **5.1.21. TC-21**

Verify that the application is capable of processing results returned by ChatGPT.

- **Test Owner:** Taylor McLaughlin
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

### **5.1.22. TC-22**

Verify that BESie can match each browser extension request to the correct application instance.

- **Test Owner:** Mackenzie Carter
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

### **5.1.23. TC-23**

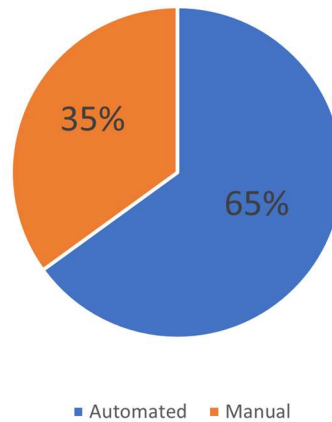
Verify that BESie can identify browser extension request that lacks an associated application instance.

- **Test Owner:** Mackenzie Carter
- **Test Dates:** 06/12/2023 – 07/23/2023
- **Execution Type:** Manual
- **Test Results:** Passed

## **5.2. Test Metrics**

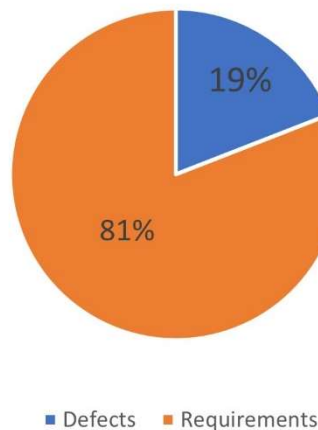
In total, twenty-three individual test cases were created to cover the verification and validation of the entirety of STeMS. All test cases related to the ConvoBuddy application functionality have been automated, which is approximately 65% of the total test cases tracked by the testing team.

Execution Type

*Figure 6: Proportion of Execution Types*

A total of thirty-seven items were submitted to the testing team over the entire development period. Of those thirty-seven items, twenty-nine were requirements initially set during the planning phases of the project. The remaining eight were defects found during testing that had been addressed and resubmitted to the testing team. Section 4 of the STR documents these defects and the associated requirements they were documented under.

Items Submitted to Test

*Figure 7: Items Submitted to Test*

## 6. Test Assessment

The testing phase for the ConvoBuddy application and its browser extension, designed to assist those with short-term memory loss, has been successfully completed. The testing coverage included all of ConvoBuddy's functionality, such as recording conversations, pausing conversations, saving conversations, and ensuring that the application's usability and overall user experience meet expectations. All test cases that were created by the testing team were diligently tested and have achieved a 100% pass ratio which demonstrates the high quality of the application.

The testing environment used by everyone on the testing team was stable and the emulator used to test the application was able to accurately simulate a customer using the application. Test automation, in addition to manual testing, was done during the testing phase. Automation helped with being able to test various scenarios with more accuracy and speed to ensure the quality of the software.

During testing, no major defects were detected and the minor issues that were found by the testing team were resolved quickly by the development team. Minor issues that were discovered included visual defects, such as icons not appearing in the correct place and not being able to see sound waves when recording a message, and a browser extension error which involved an error message appearing when the browser extension was installed.

The application is well prepared to be used by customers as the team is confident in the application's ability to perform as needed for its intended users. The application is a reliable and user-friendly solution for those who suffer from short-term memory and to be used by those who just have trouble remembering important events or details.



## 7. Test Results

The table below documents all test cases created for the proper verification and validation of the STeMS system. Each test case has been executed and any deviations from the detailed test steps listed in previous sections have been documented. Defects found during testing efforts have been documented with their associated test cases. More details on the found defects can be located in subsequent sections of this document.

Test Case ID	Execution Type	Results	Deviations	Defects Found
TC-1	Automated.	Passed	No deviations noted.	None.
TC-2	Automated.	Passed	No deviations noted.	Defect-1/Defect-3/Defect-4.
TC-3	Automated.	Passed	No deviations noted.	None.
TC-4	Automated.	Passed	No deviations noted.	None.
TC-5	Automated.	Passed	No deviations noted.	None.
TC-6	Automated.	Passed	No deviations noted.	None.
TC-7	Automated.	Passed	No deviations noted.	None.
TC-8	Automated.	Passed	No deviations noted.	Defect-6.
TC-9	Automated.	Passed	No deviations noted.	None.
TC-10	Automated.	Passed	No deviations noted.	None.
TC-11	Automated.	Passed	No deviations noted.	Defect-8.
TC-12	Automated.	Passed	No deviations noted.	None.
TC-13	Manual.	Passed	No deviations noted.	None.
TC-14	Manual.	Passed	No deviations noted.	None.
TC-15	Manual.	Passed	No deviations noted.	Defect-2/Defect-5.
TC-16	Manual.	Passed	No deviations noted.	None.
TC-17	Automated.	Passed	No deviations noted.	None.
TC-18	Automated.	Passed	No deviations noted.	None.
TC-19	Automated.	Passed	No deviations noted.	None.
TC-20	Manual.	Passed	No deviations noted.	None.
TC-21	Manual.	Passed	No deviations noted.	Defect-7.
TC-22	Manual.	Passed	No deviations noted.	None.
TC-23	Manual.	Passed	No deviations noted.	None.

*Table 8: Test Case Results*

At the time of the creation of this STR, all twenty-three test cases created for the verification and validation of STeMS have been executed and given a passing status. There are no test cases labeled as blocked or failed, and all found defects have been resolved.

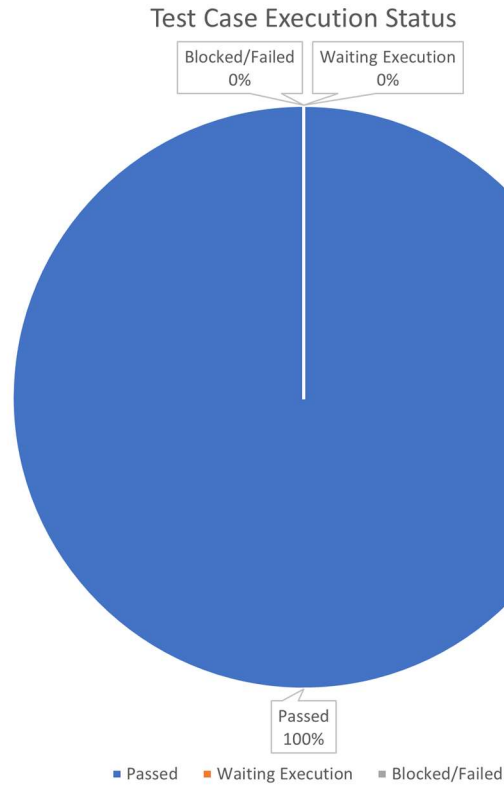


Figure 9: Test Cases Execution Status

## 7.1. Defects Found During Testing

Defect ID	Description	Status
Defect-1	The pause and stop buttons are not appearing in the correct place while recording in the application.	Fixed.
Defect-2	The fill form text within the browser extension is not aligned properly.	Fixed.
Defect-3	The popup message requesting microphone access is showing the incorrect name for the application.	Fixed.
Defect-4	The sound wave when recording within the application is not showing.	Fixed.
Defect-5	The browser extension popup is causing an error to be thrown.	Fixed.
Defect-6	Play Recording button is in the wrong position on the Conversation Details page.	Fixed.
Defect-7	APK file builds of the project are failing.	Fixed.
Defect-8	Sort Conversations triggers the mobile keyboard to appear and creates an unexpected cursor in Search Conversations control.	Fixed.

Table 10: Defects Found

## 8. Suggested Actions

Due to time limitations, only application side functional tests were automated. Automation efforts for any browser extension related test cases is suggested to improve efficiency of the testing team. Suggested tools for this effort include Selenium, a test engineering tool specifically designed for browser automation.

Adding a CD/CI pipeline for running these automated tests would also be a beneficial effort to future work on the STeMS system. Implementing an automation pipeline will decrease the amount of time needed for testing changes to both the application and the browser extension. Triggering the pipeline to run after any commits to the STeMS system repository will eliminate the need for the testing team to rerun any previously passing test cases to check for breaking changes. A pipeline will also aid in any future regression testing efforts by providing fast, accurate test results without the need for testing team intervention. Additionally, this proposed testing tool will create a fully optimized continuous integration environment for future development efforts.