**The Audio Programmers**

**SERQET**

**Test Procedure**

***Revision History***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Authors** | **Description of Change** | **Sections** | **Rev** | **Date** |
| Alex | Rearranged components, added delay timer and reverb damping sliders |  |  | 4/19 |

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# Team Description

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# Introduction

This document will outline the procedural steps taken in order to test whether the written requirements for SERQET have been successfully implemented.

## Identification

|  |  |
| --- | --- |
| **Requirement Document Tested:** | *SERQET Written Requirements* |
| **Requirement Document Revision:** | Rev O |
| **Revision Release Date:** | Spring 2019 |

# 

# Test Procedures

## Boot Test

Description: Will test whether SERQET boots correctly from an executable file, and loads the basic UI. This is simply done by running the SERQET.exe file on a Windows system.

Precondition:

1) Program has successfully compiled on windows

|  |  |  |  |
| --- | --- | --- | --- |
| **Step #** | **Action** | **System Response** | **Requirement Tested**  **(if applicable)** |
| 1 | Click executable file | User interface appears on screen with knobs and sliders set to default state. | RID-009 |

## MIDI Input Test

Description: Will test MIDI input from external MIDI 1.0 compliant devices. This test will be to plug in a variety of MIDI devices, and test whether SERQET properly receives the input from each of the devices. It will also test that the program will accept 1 note at a time, with new notes overriding old notes.

Precondition:

1) Midi device plugged in before booting Serqet

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| --- | --- | --- | --- |
| **Step Number** | **Action** | **System Response** | **Requirement Tested**  **(if applicable)** |
| 1 | Verify that midi devices appear in midi input list. | Serqet shall provide drop down list showing names of plugged in devices. | RID-001 |
| 2 | Select Midi device | That selection will remain in input box. Serqet will now receive MIDI input from that device. | RID-001 |
| 3 | Play note | Note amplitudes appear in audio visualizer. Audible sound produced. | RID-003 |
| 4 | Play multiple notes concurrently | Program should accept 1 note at a time, with new notes overriding old notes. | RID-003 |

## Tuning Test

### 

Description: This test will determine whether SERQET is producing the correct note for the MIDI input. This will be accomplished by running SERQET through tuner, or comparing it to a sample note of the desired frequency.

Precondition:

1) Program is running and notes are playing as expected from the input MIDI device.

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| --- | --- | --- | --- |
| **Step Number** | **Action** | **System Response** | **Requirement Tested**  **(if applicable)** |
| 1 | Play an A4 note with an external tuner app open. | External tuner should say that the note is 440 Hz. | RID-002 |

## Waveform Parameter Test

Description: This will test SERQET’s waveform controls, and whether the waveforms are being adjusted and produced properly, and are producing the desired timbres. This will be done by selecting each waveform type, on each waveform channel, and adjusting the volumes of the channels, while playing a note, to determine whether they are being adjusted and mixed together correctly.

Precondition:

1) Program successfully booted, and knobs and sliders successfully loaded in.

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| --- | --- | --- | --- |
| **Step Number** | **Action** | **System Response** | **Requirement Tested**  **(if applicable)** |
| 1 | User selects wave type using oscillator button and adjusts channel volume | Waveform is adjusted and mixed properly, and produces the desired timbres. | RID-004 |

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## Filter Parameter Test

Description: This will test SERQET’s filter controls, and whether they are properly changing the frequency response and timbre of the synthesizer. This will be done by adjusting the controls of the filter while playing a note, in order to see whether it properly affects the sound

Precondition:

1. SERQET note plays.

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| --- | --- | --- | --- |
| **Step Number** | **Action** | **System Response** | **Requirement Tested**  **(if applicable)** |
| 1 | While note is playing, user modifies filter cutoff and resonance. | Frequency response and timbre change according to filter type | RID-006 |

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## Reverb Parameter Test

Description: This will test SERQET’s reverb effect, and its individual parameters. This will be done by changing the value of the mix, room size, and damping parameters then playing a note, to see if the desired reverb sound is being produced. This will be repeated for multiple different values. The toggle switch for the reverb will also be tested, to see if it properly disables and enables the effect.

Precondition:

1) notes playing properly

|  |  |  |  |
| --- | --- | --- | --- |
| **Step Number** | **Action** | **System Response** | **Requirement Tested**  **(if applicable)** |
| 1 | Reverb toggled on by user | Reverb will change tone of output. | RID-007 |
| 2 | User modifies wet/dry slider | Dry signal will be mixed with reverb effect on output. | RID-007 |
| 3 | User modifies damping slider | Reverb frequency spectrum will change. | RID-007 |
| 4 | User modifies room size | Length of reverb will change. | RID-007 |

## 

## Delay Parameter Test

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Description: This will test SERQET’s delay effect, and all of its parameters. This will be done by adjusting the delay time, mix, and feedback parameters, and then playing a note, to see if the delay sounds as desired. The delay time will be compared against a metronome to determine if the timing is correct. The feedback and mix will be adjusted to produce the desired amount, and tested as such.

Precondition:

1) note playing properly

|  |  |  |  |
| --- | --- | --- | --- |
| **Step Number** | **Action** | **System Response** | **Requirement Tested**  **(if applicable)** |
| 1 | Delay toggled on by user | Delay will repeat notes according to user settings. | RID-008 |
| 2 | User modifies delay to time | repeats in increments of seconds. | RID-008 |
| 3 | User modifies level | volume of repetitions | RID-008 |
| 4 | User modifies feedback | amount of times the note repeats. | RID-008 |

# Verification Cross Reference Matrix

|  |  |
| --- | --- |
| **Requirement Identifier** | **Where Tested** |
| RID-009 | 3.1 |
| RID-001 | 3.2 |
| RID-003 | 3.2 |
| RID-004 | 3.4 |
| RID-005 | 3.4 |
| RID-002 | 3.3 |
| RID-006 | 3.5 |
| RID-007 | 3.6 |
| RID-008 | 3.7 |