**The Audio Programmers**

**SERQET**

**Test Plan**

***Revision History***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Authors** | **Description of Change** | **Sections** | **Rev** | **Date** |
| Alex | Adjusted layout and added oscillator section, delay and reverb section, and added an audio visualiser component |  |  | 4-17 |

**Table of Contents**

[1 Team Description 4](#_gjdgxs)

[2 Test Objectives 4](#_30j0zll)

[2.1 Test Platform / Hardware / Environment 5](#_1fob9te)

[2.2 Test Definition](#_2et92p0) 5

[2.2.1 <](#_tyjcwt)Boot Test> 5

[2.2.2 <](#_3dy6vkm)MIDI Input Test> 5

[2.2.3 <](#_1t3h5sf)Tuning Test> 5

2.2.4 [<Waveform Parameter Test>](#_1t3h5sf) 5-6

2.2.5 [<Filter Parameter Test> 6](#_1t3h5sf)

2.2.6 [<Reverb Parameter Test> 6](#_1t3h5sf)

2.2.7  [<Delay Parameter Test> 6](#_1t3h5sf)

[2.3 Verification Cross Reference Matrix 7](#_4d34og8)

# Team Description

|  |  |
| --- | --- |
| **Team Member Name** | **Email Address** |
| Alexander Feldman | feldman0007@csu.fullerton.edu |
| James Dobson | bobberino98@csu.fullerton.edu |
| Elias Jackson | eliasthemusician@csu.fullerton.edu |
| Robert Rivas | r\_rivas@csu.fullerton.edu |

# Test Description

Description: These tests will verify that SERQET delivers the expected functionality of a synthesizer and validates that it adheres to the specifications outlined in the written requirements.

## Test Platform / Hardware / Environment

Equipment: We will use a Windows 10 based PC, and 2 different MIDI 1.0 compliant devices: an Akai Professional MPK Mini keyboard, and Akai Professional LPD8 drum pad controller

Environment: Windows 10

Configurations:

1: Windows 10 PC with Akai MPK Mini keyboard

2: Windows 10 PC with Akai Professional LPD8 drum pad controller

## Test Definition

### 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.

Requirements Tested: 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.`

Requirements Tested: RID-001, 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.

Requirements Tested: 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.

Requirements Tested: RID-004, RID-005

### 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

Requirements Tested: RID-006

### 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.

Requirements Tested: RID-007

### Delay Parameter test

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.

Requirements Tested: RID-008

## Verification Cross Reference Matrix

|  |  |
| --- | --- |
| **Requirement Identifier** | **Where Tested** |
| RID-009 | 2.2.1 |
| RID-001 | 2.2.2 |
| RID-003 | 2.2.2 |
| RID-004 | 2.2.4 |
| RID-005 | 2.2.4 |
| RID-002 | 2.2.3 |
| RID-006 | 2.2.5 |
| RID-007 | 2.2.6 |
| RID-008 | 2.2.7 |