Test Plan

December 6, 2023

ECE 411
Dr. Andrew Greenberg

TEAM 5
Abdulaziz Alateeqi,
Flynn Flynn,
Meshal Almutairi
Gene Hu

Test Author: Gene				
	Test Case Name:	Microphone Interface	**Test ID #:**	01
	Description:	*This test will be testing the library [LIBRARY USED] to interface the microphone and the ESP32. The ESP32 should be able to analyze the sound and convert it into usable data (intensity of frequencies).*	**Type:**	□ white box
Tester Information				
	Name of Tester:	Aziz	**Date:**	11/15/2023
	HW/SW Version:	1.0	**Time:**	
	Setup:	*Microphone needs to have pins soldered and then connected to ESP32. Audio library will need to be downloaded to use the test program.*		

TEST	INPUTS	EXPECTED OUTPUTS	PASS	FAIL	N/A	Comments
1	Sound going into the microphone.	ESP32 is outputting FFT data into the terminal.	x			
2	Different sound levels.	The louder the sound, the larger the numbers being generated by the analyzer.	x			
4						
	Overall test result:		**x**			

Test Author: Gene				
	Test Case Name:	LED Matrix Interface	**Test ID #:**	01
	Description:	*This test case will be testing the libraries LedMatrix and FastLED to interface with the LED matrix.*	**Type:**	□ black box □ _____
Tester Information				
	Name of Tester:	Gene	**Date:**	11/12/2023
	HW/SW Version:	1.0	**Time:**	
	Setup:	*The LED matrix needs to be connected to ESP32 through breadboard or wires.*		

TEST	INPUTS	EXPECTED OUTPUTS	PASS	FAIL	N/A	Comments
1	Code to turn all LEDs on and rotate the colors from red, green, blue, and finally yellow.	The LED matrix will have all LEDs on and rotate through the color wheel of red, green, blue, and yellow.	x			
2	Code to turn on the corner LEDs. Specifically, (0,0), (0,7), (31,0), and (31,7).	The four corners are lit up to their respective colors (indicated by the text color).	x			
3						
	Overall test result:		**x**			

Test Author: Gene							
	Test Case Name:	Audio Visualizer Program		**Test ID #:**			
	Description:	*This test case will be connecting the microphone and LED matrix programs together such that sound data coming from the microphone will be visualized on the LED matrix in the form of colored bars. The bar height will be based on the intensity of the frequencies.*		**Type:**			□ white box
Tester Information							
	Name of Tester:	Meshal		**Date:**			11/17/2023
	HW/SW Version:	1.0		**Time:**			
	Setup:	*The microphone, LED matrix, and ESP32 need to be connected together on a breadboard.*					
TEST	**INPUTS**	**EXPECTED OUTPUTS**		**PASS**	**FAIL**	**N/A**	**Comments**
1	User's voice	A subsection of the matrix going up and down depending on the user's voice.		x			
2	Music from PC	A wide variety of bars should be going up and down depending on the song.		x			
3							
	Overall test result:			**x**			

Test Author: Flynn							
	Test Case Name:	Power is Being Supplied		**Test ID #:**			01
	Description:	*This test case will be testing if the PCB is distributing power correctly. If working, the ESP32, microphone, and LED matrix will be powered on when the power supply is plugged in.*		**Type:**			□Grey box
Tester Information							
	Name of Tester:	Flynn		**Date:**			11/28/2023
	HW/SW Version:	1.0		**Time:**			5:00 pm
	Setup:	*PCB with all components attached.*					
TEST	**INPUTS**	**EXPECTED OUTPUTS**	**PASS**	**FAIL**	**N/A**	**Comments**	
1	Voltage from the power supply is plugged into the power terminal.	ESP32 turns on, LED matrix lights up, and microphone is giving data to ESP32.	o	x		GND pin of jack not connected. Jumper was connected to battery tab and ESP boots up	
2	+3V VDD supply powering I2S microphone and ADC board	Microphone is able to be detected when connecting via PCB to Arduino program	x				
3	+5V rail to power LED Matrix	LED Matrix should show bottom row of light illuminate when power attached	x				
	Overall test result:		**x**				

Test Author: Flynn				
	Test Case Name:	Product Functionality	**Test ID #:**	
	Description:	This will test the general operations of the device to take in inputs, process the audio and output the audio spectrum on the LED matrix in real time..	**Type:**	□ white box □ black box □ _____
Tester Information				
	Name of Tester:	Gene, Aziz, Meshal, Flynn	**Date:**	11/28
	HW/SW Version:	1.	**Time:**	
	Setup:	PCB fully populated with external power to board and		

TEST	**INPUTS**	**EXPECTED OUTPUTS**	**PASS**	**FAIL**	**N/A**	**Comments**
1	I2S Microphone.	LED matrix displays FFT of room audio in real time.	o	x		Routing of ESP32 and board found mismatched. Changes to code and pin-pin jumpers resolved issues.
2	3.5mm analog audio (Additional feature)	LED matrix displays FFT of aux cable audio in real time.		x		PCB routing for ADC mirrored. ADC will need to be desoldered, rotated, and retested.
3	Switching between inputs	LED matrix changes which input it is displaying from			x	Since Analog is not working, all that can be tested is that the input changes.
	Overall test result:					