

**MIDDLE EAST TECHNICAL UNIVERSITY
COMPUTER ENGINEERING DEPARTMENT**

CENG 492

TEST SPECIFICATION REPORT

EFDELUDI ARTS

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1. INTRODUCTION

Testing is one of most important part of our project. All the possibilities should been considered, any little problems or bugs should be named, so that they can be cleared and proceeding to the next phases of project takes place with minimum difficulties.

1.1 Goals and Objectives

The main purpose of our process is to control the functionality of the parts of the project and to detect the possible errors.

1.2 Document Scope

This document contains the method for testing process.

1.3 Testing Plan

Our testing process consists of two phases:

- Library Testing: testing library functions
- Hardware Testing: testing hardware parts

2. LIBRARY TESTING

Our library presents some functions for programmers so that they can develop wireless applications without struggling with wireless communication details. In this step, we will test these library functions by using GUI under such topics:

Connection, Digital Input/Output, Analog Input/Output, Motor Directions and Frequency Output

2.1 Connection

Testing will be made on establishing a successful connection and cancelling the connection.

Used Functions:

```
void connect(char *port);
```

```
void disconnect();
```

```
int ping();
```

Procedure:

- Specify the port type : COM1, COM2, COM3, COM4
- Try to establish a connection clicking the “Connect” button

- According to Status, if it is
 - “Connected” means successful connection
 - “Disconnected” means connection failure
 - “Out of Range” means the device is too far from the computer to establish a connection.
- After establishing a successful connection, try to disconnect from it clicking the “Disconnect” button.
- Now, Status should be “Disconnected”.

2.2 Digital Input/Output

Testing will be made on setting/clearing 8 digital outputs and reading 8 digital inputs.

Used Functions:

```
void setDOutput(int x, int v);
```

```
int getDInput(int x);
```

```
int getDOutput(int x);
```

Procedure:

- For set operation, specify the output pin and give 5V.
- Do this operation for each digital output pin.
- For clear operation, specify the output pin and give 0V.

- Do this operation for each digital output pin.
- For read operation, just specify the input pin,
- Do this operation for each digital input pin.

2.3 Analog Input/Output

Testing will be made on adjusting 2 analog output pins and reading 2 analog input pins.

Used Functions:

```
void setAOutput(int x, int v);
```

```
int getAInput(int x);
```

```
int getAOutput(int x);
```

Procedure:

- For adjusting operation, specify the analog output pin and give the voltage between 0V and 5V.
- Do this operation for each analog output pin.
- For read operation, just specify the analog input pin.
- Do this operation for each analog input pin.

2.4 Motor Directions

Testing will be made on controlling the two independent motors that is embedded in the device.

Used Functions:

```
void setMotorDirection(int k, int d);
```

Procedure:

- Specify the motor number 1 or 2 that will be tested.
- Assign the direction to 1 for “forward”
- Assign the direction to -1 for “backward”
- Assign the direction to 0 for “stop”
- Try these operations for each motor independently.

2.5 Frequency Output

Testing will be made on disabling analog outputs and adjusting each frequency output.

Used Functions:

```
void setFrequency(int v);
```

Procedure:

- Specify the analog output pin which will be disabled.
- Adjust the frequency output between 0 and 255 Hz.
- Do these operations for each frequency output for the sample values: 0 - 50 - 100 - 150 - 200 - 255 Hz.

3. HARDWARE TESTING

Hardware testing consists of these parts:

- Check for any possible short-circuits.
- Checking digital input/output voltages.
- Try voltage suppliers between 5V to 12V.
- Check for unwanted high temperature.
- Check the circuit without Bluetooth but connecting to computer with serial cable.
- Check the power leds of analog and digital input/output pins.
- Check the TIMER0 counter in the PIC for overflowing accurately.