**Table 1: Start Module Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. of Trials | Actions | Expected Result | Actual Result | Remarks |
| 1 | Press Start Button on | System Start  Show LED Indicators – Electric Supply Established | System Start | Passed |
| 2 | Press Start Button on | System Start  Show LED Indicators – Electric Supply Established | System Start | Passed |
| 3 | Press Start Button on | System Start  Show LED Indicators – Electric Supply Established | System Start | Passed |

Table 1 shows the test conducted on the start module conducted on the 3 trials. The project designers were able to start the process and the sensor starts to communicate with the device and the actual result matched on expected results. Therefore, the module function as it is expected to and passed.

**Table 2: Stop Module Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. of Trials | Actions | Expected Result | Actual Result | Remarks |
| 1 | Press Stop Button | System Stop recording data from sensor | System Stop recording data from sensor | Passed |
| 2 | Press Stop Button | System Stop recording data from sensor | System Stop recording data from sensor | Passed |
| 3 | Press Stop Button | System Stop recording data from sensor | System Stop recording data from sensor | Passed |

Table 2 shows the test conducted on the stop module conducted on the 3 trials. The project designers were able to stop the activity on all the conducting trials and the actual result matched on expected results. Therefore, the module function as it is expected to and passed.

**Table 3. Print Module Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. of Trials | Activities | Expected Result | Actual Result | Remarks |
| 1 | Print Module Press | System gives a print out of gathered distance and fare | System gives a print out of gathered distance and fare | passed |
| 2 | Print Module Press | System gives a print out of gathered distance and fare | System gives a print out of gathered distance and fare | passed |
| 3 | Print Module Press | System gives a print out of gathered distance and fare | System gives a print out of gathered distance and fare | passed |

Table 3 shows the test conducted on the print module conducted on the 3 trials. The project designers were able to print computed distance and fare on all conducting trials and the actual result matched on expected results. Therefore, the module function as it is expected to and passed.

**Table 4. LCD Module Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. of Trials | Activities | Expected Result | Actual Result | Remarks |
| 1 | Display output | Display Computed Distance and Fare as a output | View Computed Distance and Fare | Passed |
| 2 | Display output | Display Computed Distance and Fare as a output | View Computed Distance and Fare | Passed |
| 3 | Display output | Display Computed Distance and Fare as a output | View Computed Distance and Fare | Passed |

Table 4 shows the test conducted on the print module conducted on the 3 trials. The project designers were able to Display all computed data in microcontroller on all conducting trials and the actual result matched on expected results. Therefore, the module function as it is expected to and passed.

**Table 5. Sensor Module Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. of Trials | Activities | Expected Result | Actual Result | Remarks |
| 1 | Sensor The Speed and Distance | Compute the Distance and the fare | Compute the Exact Distance and the fare | Passed |
| 2 | Sensor The Speed and Distance | Compute the Distance and the fare | Compute the Exact Distance and the fare | Passed |
| 3 | Sensor The Speed and Distance | Compute the Distance and the fare | Compute the Exact Distance and the fare | Passed |

Table 5 shows the test conducted on the print module conducted on the 3 trials. The project designers were able to monitor the distance and the rpm of the wheel on all conducting trials and the actual result matched on expected results. Therefore, the module function as it is expected to and passed.

**Table 6. Microcontroller Module Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. of Trials | Activities | Expected Result | Actual Result | Remarks |
| 1 | Gives instruction to start the system | Send the Start data if the user pressed the start button | Send the Start data if the user pressed the button | Passed |
| 2 | Gives instruction to stop the system | Send the Stop data if the user pressed the stop button | Send the Stop data if the user pressed the stop button | Passed |
| 3 | Gives instruction to communicate to thermal printer | Sends the data to print out the distance and fare | Sends the data to print out the distance and fare | Passed |
| 4 | Gives instruction to Display computed | Sends the data to Display the output based from microcontroller | Sends the data to Display the output based from microcontroller | Passed |
| 5 | Gives instruction  To Sensor the distance travel | Sensor the Revolution and compute the distance | Sensor the Revolution and compute the distance | passed |

Table 6 shows the test conducted on the microcontroller module based on 3 trials. The project designers were able to create a programming code in order to achieve the function of each component, by giving instructions for each them. Therefore, the module function as it is expected to the passed.

**Distance Calculation**

The system calculates the revolution per minute using magnetic reed switch attached to the wheel of the tricycle. The calculation is depends on the circumference of the front wheel where the sensor attached to, using the circumference formula and the radius of wheel we are able to compute the distance traveled using DT = R x C formula DT represent as distance traveled, R as number of rotation and C as computed circumference of the wheel.

Example:

Radius = 13.5 ( tire radius in inches )

Circumference = 2 \* 3.14 \* radius

Distance Travel = R ( number of rotation ) \* C ( computed circumference )

The distance is calculated in three different methods. One is on device, second is on Google map, third one is the mobile application.

Some values of data has been shown:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No. of Trials | Tricycle Meter  km | Google Map  km | Mobile Application  km | Difference Between Tricycle Meter and Google Map | Difference Between Tricycle Meter and Mobile Application |
| 1 | 2.03 | 2 | 2.014 | 0.003 | 0.016 |
| 2 | 10.97 | 11.3 | 11.2 | 0.33 | 0.23 |
| 3 | 1.92 | 1.97 | 1.79 | 0.05 | 0.13 |
| 4 | 7.1 | 7.5 | 7.3 | 0.4 | 0.2 |
| 5 | 1.93 | 1.9 | 1.88 | 0.03 | 0.05 |
| 6 | 3.05 | 3.33 | 3.10 | 0.28 | 0.05 |

**Fare Calculation:**

As the fare calculation is totally dependable on the distance traveled. Fare calculation has been done depending on the fare policy of LTFRB (Land Transportation Franchising and Regulatory Board) in tricycles.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Location | Type | Base Fare | Initial | Per km |
| Manila | Tricycle | 9 | 4km | 1.40 |
| Cebu | Tricycle | 8 | 4km | 1.30 |

According to LTFRB fare rate is depends on the location and base fare plus distance of travel minus initial kilometer multiply per kilometer.

Example Formula:

base\_fare + (distance - initial) \* per\_km