

Test Plan

The following test plan is created to ensure that our final product meets the requirements of our functional specifications. We will be testing our product with various types of tests, including different operational functionalities as well as some standard tests. Tests will be divided into two different stages.

The first stage is individual component tests, which is covered in the design specification. The following is the second stage which is a list of post-integration tests for the final prototype.

Please perform the following test plan with caution. Avoid any violent movements to avoid injury or damaging the prototype.

Integrated System Testing

Main Power Switch

Test	Testing Procedure	Verification	Pass/Fail	Comments
Switch Functionality	Turn the switch On or Off	All motor power should be cut off when switch is turned off		

Tracking System

Test	Testing Procedure	Verification	Pass/Fail	Comments
Straight Line Functionality	Switch to "Follow" mode and start walking away from the cart in a straight path.	The cart shall move towards the user and stop when it reaches the minimum following distance of 0.5 m		
Turning Functionality	Start turning left or right	The cart shall turn left or right according to user position		
Stopping Functionality	Turn 360 degrees to face the cart in follow mode	The cart shall stop		

Collision Detection System

Test	Testing Procedure	Verification	Pass/Fail	Comments
Functionality	While the cart is following the user, place an object in front of the cart	The cart shall come to a complete stop to avoid collision		

Mode Switching

Test	Testing Procedure	Verification	Pass/Fail	Comments
Button Functionality	Change the cart function mode from "Follow" mode to "Assist" mode or vice versa by pressing the mode switch button	The cart changes mode when the mode switch button is pressed		
LED Functionality	Blue LED should display "Assist" mode	The cart shall be operating in "Assist" mode		
LED Functionality	Green LED should display "Follow" mode	The cart shall be operating in "Follow" mode		

Assist Mode

Test	Testing Procedure	Verification	Pass/Fail	Comments
Functionality	While in "Assist" mode, the user pushes the throttle button on the handle of the cart to access motor power	The cart shall have motor power while throttle is pressed and the cart shall stop when throttle is released		