

Test #1
(Based on Nov. 12 Version)

1. The system shall detect obstacles in the user's path and provide real-time alerts. These real-time alerts, or the vibrations in this case, will allow the user's brain to register the vibration in about 0.15 seconds, therefore giving more than enough time for the user to avoid obstacles.
 - a. Test Setup
 - i. This test will be done starting from when the sensor detects an object to the point in time when the vibration motor starts to vibrate.
 - b. Environmental Parameters
 - i. Indoor environments and outdoor parameters should be similar, as in they should be moderate (ie. permissible lighting conditions), as this test is based on if the sensor can detect the object to then signal to the motor to turn on.
 - Pass: Sensor works for both indoor and outdoor environments, however, moderate lighting (space is evenly illuminated, providing a balanced light), which then allows for the motor to turn on.
 - c. Test Inputs
 - i. To fully realize the time that it takes for the vibration motor to turn on, a varied number of complex situations can be tested to see the response time for the motor, namely:
 - The motion of the object; moving
 - a. Pass: the device can detect moving objects.
 - Distance of the object (ie 25 cm to 5 m)
 - a. Pass: the distance it detects is great, and has a range of 25 cm to about 5 meters.
 - Different obstacle configurations; single obstacles, multiple obstacles, or obstacles positioned at angles to the sensor
 - a. Pass: Sensor can detect objects at an angle a little under 180 degrees.
 - d. Quantifiable Measurement Standard
 - i. The minimum time for the vibration motor to activate is 0.15 seconds, thus allowing, as stated above, the human brain to take an additional 0.15 seconds to process the tactile information. Therefore, the vibration motor should be turned on for 1 second, stop and then turn on for 2 seconds, in a cycle until the motion stops. This will allow the individual to fully be aware of the vibration.
 - Pass: The vibration motor does exactly as described above, turns on for 1 second, stops, and then turns on for 2 seconds.
 - e. Pass Criteria
 - i. This test is considered a pass when the time for the vibration motor can be felt by the individual.
 - As the device passed the above criteria, it is considered a pass for this test.

Video of Design:

