|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Coordination-1 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 30, 2014 | | |
| **Module Name:** Coordination | |  |  | **Test Executed By:** | | |
| **Test Title:** Identify challenge in 10 seconds | | |  | **Test Execution Date:** | | |
| **Description:** Identify a challenge once arriving to that challenge zone within 10 seconds | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie arrives at a challenge zone | | |  |  |  |  |
| **Requirement Satisfied:** COR 6 and COR 6.1 | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Turn on the ultra-sonic |  | Ultra-sonic operational |  |  |  |
| 2 | Detect an object within 4 inches of Roadie | Object Detected | Detects an object |  |  |  |
| 3 | Turns the camera on |  | Camera is operational |  |  |  |
| 4 | Camera identifies the challenge within 5 seconds | Object Identification | Camera identifies the object |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Identifies the challenge present in front of Roadie | | | | | | |

**Table 1:** CoordinationTest Case 1 Challenge Identification

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Coordination-2 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 30, 2014 | | |
| **Module Name:** Coordination | |  |  | **Test Executed By:** | | |
| **Test Title:** Rubik's Cube Identification and Alignment | | |  | **Test Execution Date:** | | |
| **Description:** Roadie correctly identifies the challenge Rubik's Cube within 5 seconds of the camera being turn on. Then Roadie aligns itself up with Rubik's Cube. | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has arrived at a challenge zone and has detected a challenge within 4 inches of Roadie | | | | |  |  |
| **Requirement Satisfied:** COR 6.3, COR 7, and COR 7.1 | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Camera identifies Rubik's Cube |  | Rubik's Cube is identified |  |  |  |
| 2 | Camera measures the distance between | Pixels converted to inches | Distance measured |  |  |  |
| 3 | Strafe the distance measured by the Camera |  | Roadie strafes |  |  |  |
| 4 | Roadie moves forward 4 inches |  | Roadie moves forward |  |  |  |
| 5 | Roadie signals that it has arrived at the challenge |  | Roadie is at the Rubik's Cube |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie has aligned with the challenge and signals that it has arrived. | | | |  |  |  |

**Table 2:** CoordinationTest Case 2 Rubik’s Cube Identification and Aligment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Coordination-3 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 30, 2014 | | |
| **Module Name:** Coordination | |  |  | **Test Executed By:** | | |
| **Test Title:** Simon Carabiner Identification and Alignment | | |  | **Test Execution Date:** | | |
| **Description:** Roadie correctly identifies the challenge Simon Carabiner within 5 seconds of the camera being turn on. Then Roadie aligns itself up with Simon Carabiner. | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has arrived at a challenge zone and has detected a challenge within 4 inches of Roadie | | | | |  |  |
| **Requirement Satisfied:** COR 6.2, COR 7, and COR 7.1 | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Camera identifies Simon Carabiner |  | Simon Carabiner is identified |  |  |  |
| 2 | Camera measures the distance between Simon Carabiner and Roadie | Pixels converted to inches | Distance measured |  |  |  |
| 3 | Strafe this distance measured from the Camera |  | Roadie strafes |  |  |  |
| 4 | Roadie moves forwards 4 inches |  | Roadie moves forward |  |  |  |
| 5 | Roadie signals that it has arrived at the challenge |  | Roadie is at the Simon Carabiner |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie has aligned with the challenge and signals that it has arrived at the challenge. | | | | |  |  |

**Table 3:** CoordinationTest Case 3 Simon Carabiner Identification and Alignment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Coordination-4 | | |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 30, 2014 | | |
| **Module Name:** Coordination | |  |  | **Test Executed By:** | | |
| **Test Title:** Etch-A-Sketch Identification and Alignment | | |  | **Test Execution Date:** | | |
| **Description:** Roadie correctly identifies the challenge Etch-A-Sketch within 5 seconds of the camera being turn on. Then Roadie aligns itself up with Etch-A-Sketch. | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has arrived at a challenge zone and has detected a challenge within 4 inches of Roadie | | | | |  |  |
| **Requirement Satisfied:** COR 6.4, COR 7, and COR 7.1 | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Camera identifies Etch-A-Sketch |  | Etch-A-Sketch is identified |  |  |  |
| 2 | Camera measures the distance | Pixels converted to inches | Distance measured |  |  |  |
| 3 | Strafe the distance measured from the Camera |  | Roadie strafes |  |  |  |
| 4 | Roadie moves forward 4 inches |  | Roadie moves forward |  |  |  |
| 5 | Roadie signals that it has arrived at the challenge |  | Roadie is at the Etch-A-Sketch |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie has aligned with the challenge and signals that it has arrived at the challenge. | | | | |  |  |

**Table 4:** CoordinationTest Case 4 Etch-A-Sketch Identification and Alignment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Coordination-5 | | |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 30, 2014 | | |
| **Module Name:** Coordination | |  |  | **Test Executed By:** | | |
| **Test Title:** Playing Card Deck Identification and Alignment | | |  | **Test Execution Date:** | | |
| **Description:** Roadie correctly identifies the challenge Playing Card deck within 5 seconds of the camera being turn on. Then Roadie aligns itself up with Playing Card deck. | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has arrived at a challenge zone and has detected a challenge within 4 inches of Roadie | | | | |  |  |
| **Requirement Satisfied:** COR 6.5, COR 7, and COR 7.1 | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Camera identifies Playing Card deck |  | Playing Card deck is identified |  |  |  |
| 2 | Camera measures the distance | Pixels converted to inches | Distance measured |  |  |  |
| 3 | Strafe the distance measured from the Camera |  | Roadie strafes |  |  |  |
| 4 | Roadie moves forward 4 inches |  | Roadie moves forward |  |  |  |
| 5 | Roadie signals that it has arrived at the challenge |  | Roadie is at the Playing Card deck |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie has aligned with the challenge and signals that it has arrived at the challenge. | | | | |  |  |

**Table 5:** CoordinationTest Case 5 Playing Card Deck Identification and Alignment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Challenge-1 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** December 3, 2014 | | |
| **Module Name:** Challenge | |  |  | **Test Executed By:** | | |
| **Test Title:** Simon Carabiner Challenge | |  |  | **Test Execution Date:** | | |
| **Description:** Roadie plays Simon Carabiner correctly for 15 seconds | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has identified and aligned itself up with the Simon Carabiner | | | |  |  |  |
| **Requirement Satisfied:** CHA 1-10 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Roadie Presses the start button |  | Roadie powers on Simon |  |  |  |
| 2 | Roadie reads in the light values from Simon to determine which buttons to press | Array of light values | Roadie reads the light values from Simon |  |  |  |
| 3 | Roadie presses the color buttons in the order they lite up |  | Roadie correctly press the color buttons in order |  |  |  |
| 4 | Repeat steps 2 and 3 for 15 seconds | Time | Roadie plays Simon for 15 seconds |  |  |  |
| 5 | Roadie starts the process to leave the challenge zone |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie has correctly played Simon Carabiner for 15 seconds | | | |  |  |  |

Challenge Test Cases

**Table 6:** Challenge Test Case 1 Simon Carabiner Challenge

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Challenge-2 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** Low | |  |  | **Test Designed Date:** December 3, 2014 | | |
| **Module Name:** Challenge | |  |  | **Test Executed By:** | | |
| **Test Title:** Fails Simon Carabiner Challenge | |  |  | **Test Execution Date:** | | |
| **Description:** Roadie pushes the wrong color button when | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has identified and aligned itself up with the Simon Carabiner | | | |  |  |  |
| **Requirement Satisfied:** | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Roadie Presses the start button |  | Roadie powers on Simon |  |  |  |
| 2 | Roadie reads in the light values from Simon to determine which buttons to press | Array of light values | Roadie reads the light values from Simon |  |  |  |
| 3 | Roadie presses the wrong color button |  | Roadie correctly press the color buttons in order |  |  |  |
| 4 | Roadie reads the failure signal from Simon Carabiner | Failure signal | Roadie stops playing Simon Carabiner |  |  |  |
| 5 | Roadie starts the process to leave the challenge zone |  | Roadie starts the process to leave the challenge zone |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie has fails to press the correct button when choose which color button to press and starts the process to leave the challenge zone | | | | | | |

**Table 7:** Challenge Test Case 2 Fails Simon Carabiner Challenge

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Challenge-3 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** December 3, 2014 | | |
| **Module Name:** Challenge | |  |  | **Test Executed By:** | | |
| **Test Title:** Card Challenge | |  |  | **Test Execution Date:** | | |
| **Description:** Roadie picks up a single playing card | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has identified and aligned itself up with the deck of playing cards | | | |  |  |  |
| **Requirement Satisfied:** CHA 19 and CHA 21 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Roadie presses down on the deck of playing cards |  | Roadie applies pressure to the deck of cards |  |  |  |
| 2 | Roadie picks up a single playing card |  | Roadie picks up a single playing card |  |  |  |
| 3 | Roadie starts the process to leave the challenge zone |  | Roadie starts leaving the challenge zone |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie has a pick up a playing card | | |  |  |  |  |

**Table 8:** Challenge Test Case 3 Card Challenge

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Challenge-4 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** December 3, 2014 | | |
| **Module Name:** Challenge | |  |  | **Test Executed By:** | | |
| **Test Title:** Card Carrying | |  |  | **Test Execution Date:** | | |
| **Description:** Roadie carries a single playing card to the finish line | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has completed the card challenge | | |  |  |  |  |
| **Requirement Satisfied:** CHA 20 and CHA 21 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Roadie holds on to the playing card that was pick up from the Card Challenge |  | Roadie is holding onto the playing card |  |  |  |
| 2 | Roadie executes the leaving procedure |  | Roadie leaves the challenge zone |  |  |  |
| 3 | Roadie enters line following state after executing the leave procedure |  | Roadie starts line following |  |  |  |
| 4 | Roadie crosses the finish line |  | Roadie reaches the finish line |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie carried a single playing card to the finish line | | | |  |  |  |

**Table 9:** Challenge Test Case 4 Card Carrying

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Challenge-5 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** December 3, 2014 | | |
| **Module Name:** Challenge | |  |  | **Test Executed By:** | | |
| **Test Title:** Rubik's Cube Challenge | |  |  | **Test Execution Date:** | | |
| **Description:** Roadie twist a row of the Rubik's Cube 180 degrees | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has identified and aligned up with the Rubik's Cube | | | |  |  |  |
| **Requirement Satisfied:** CHA 11-13 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Roadie holds on to the Rubik's Cube |  | Roadie has ahold of the Rubik's Cube |  |  |  |
| 2 | Roadie places turning device for the Rubik's Cube over the Rubik's Cube |  | Roadie placed the turning device onto the Rubik's Cube |  |  |  |
| 3 | Roadie turns the row of the Rubik's Cube 180 degrees |  | Roadie turned a row of the Rubik's Cube 180 degrees |  |  |  |
| 4 | Roadie removes the turning device from the Rubik's Cube |  | Roadie has removed the turning device |  |  |  |
| 5 | Roadie starts the process to leave the challenge zone |  | Roadie starts to leave the challenge zone |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie twisted a row of the Rubik's Cube 180 degrees | | | |  |  |  |

**Table 10:** Challenge Test Case 5 Rubik’s Cube Challenge

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Challenge-6 | |  |  | **Test Design By:** Michael Philotoff | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** December 3, 2014 | | |
| **Module Name:** Challenge | |  |  | **Test Executed By:** | | |
| **Test Title:** Etch-A-Sketch Challenge | |  |  | **Test Execution Date:** | | |
| **Description:** Roadie uses the Etch-A-Sketch to draw "IEEE" onto the Etch-A-Sketch | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie has identified and aligned up with the Etch-A-Sketch | | | |  |  |  |
| **Requirement Satisfied:** CHA 14-18 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| 1 | Roadie places the two caps over the left and right nobs of the Etch-A-Sketch |  | Roadie has placed the caps over the Etch-A-Sketch |  |  |  |
| 2 | Roadie twists the Etch-A-Sketch nobs to draw "IEEE" onto the Etch-A-Sketch |  | Roadie drew "IEEE" on the Etch-A-Sketch |  |  |  |
| 3 | Roadie removes the two caps over the two Etch-A-Sketch nobs |  | Roadie removed the two caps over the Etch-A-Sketch |  |  |  |
| 4 | Roadie starts the process to leave the challenge zone |  | Roadie starts to leave the challenge zone |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie draws "IEEE" on the Etch-A-Sketch and starts to leave the challenge zone | | | | |  |  |

**Table 11:** Challenge Test Case 6 Etch-A-Sketch Challenge

Movement

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Movement-1 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** Low | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Sizing | |  |  | **Test Execution Date:** | | |
| **Description:** Confirm size requirements for Roadie | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie will be motionless with its camera retracted. | | | |  |  |  |
| **Requirement Satisfied:** MOV 1 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Leave Roadie motionless |  |  |  |  |  |
| **2** | Measure dimensions | Width/Length/Height | Within 1ft.x1ft.x1ft. |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie will remain motionless | | |  |  |  |  |

**Table 12:** Movement Test Case 1 Sizing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Movement-2 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Roadie stress test | |  |  | **Test Execution Date:** | | |
| **Description:** Test life of Roadie's power to ensure at least 30 minute lifespan | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie will start suspended with no wheel contact on ground and a full battery charge. Modified code uploaded to keep motors and sensors continually running. | | | | | | |
| **Requirement Satisfied:** MOV 2 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Suspend Roadie in place |  |  |  |  |  |
| **2** | Run all subsystems at normal operating capacity |  |  |  |  |  |
| **3** | Measure time until noticeable deterioration of wheel speed | Time (minutes) | Greater than 30 minutes |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie power source will have a less than nominal charge. | | | |  |  |  |

**Table 13:** Movement Test Case 2 Roadie Stress Test

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Movement-3 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** Low | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Power switch | |  |  | **Test Execution Date:** | | |
| **Description:** Ensure Roadie has easily accessible power switch | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie will be powered off at the starting area. | | |  |  |  |  |
| **Requirement Satisfied:** MOV 3 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Use power switch to provide power to Roadie |  | Roadie will receive power |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie will have power and execute loaded Arduino instructions. | | | |  |  |  |

**Table 14:** Movement Test Case 3 Power Switch

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Movement-4 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** Medium | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Surface Contact | |  |  | **Test Execution Date:** | | |
| **Description:** Ensure Roadie remains in contact with competition surface | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie will be un-powered at starting area | | |  |  |  |  |
| **Requirement Satisfied:** MOV 4, MOV 5 | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Turn on Roadie |  |  |  |  |  |
| **2** | Observe Roadie's execution of the competition from start to finish. |  | Roadie remains in contact with competition surface. |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie is motionless at the finish line. | | |  |  |  |  |

**Table 15:** Movement Test Case 4 Surface Contact

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Movement-5 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Minimum oscillation line following | | |  | **Test Execution Date:** | | |
| **Description:** Ensure Roadie can efficiently follow straight guidance tape. | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions: Roadie will be in a line following state with its sensor array over straight guidance tape.** | | | | |  |  |
| **Requirement Satisfied:** | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Allow Roadie to run continuously along guidance tape. |  | Roadie will keep guidance tape within the bounds of its own wheels. |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie will arrive at the end of the guidance tape and have the tape between the bounds of the Roadie's wheels. | | | | | |  |

**Table 16:** Movement Test Case 5 Minimum Oscillation Line Following

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID** Movement-6 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Right turn | |  |  | **Test Execution Date:** | | |
| **Description:** Ensure Roadie can navigate a right turn correctly | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie will approach a right turn in the guidance tape while in the line following state. | | | | |  |  |
| **Requirement Satisfied:** | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Roadie approaches right turn with sensors over guidance tape |  |  |  |  |  |
| **2** | Roadie rotates leaves line following state and turns right 90 degrees | Angle of Roadie relative to new section of guidance tape | 10 degree margin of error |  |  |  |
| **3** | Roadie resumes line following state |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie will be in a line following state navigating along the guidance tape. | | | | |  |  |

**Table 17:** Movement Test Case 6 Right Turn

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Movement-7 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** High | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Left turn | |  |  | **Test Execution Date:** | | |
| **Description:** Ensure Roadie can navigate a left turn correctly | | |  |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie will approach a left turn in the guidance tape while in the line following state. | | | | |  |  |
| **Requirement Satisfied:** | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Roadie approaches left turn with sensors over guidance tape |  |  |  |  |  |
| **2** | Roadie rotates leaves line following state and turns 90 degrees left | Angle of Roadie relative to new section of guidance tape | 10 degree margin of error |  |  |  |
| **3** | Roadie resumes line following state |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie will be in a line following state navigating along the guidance tape. | | | | |  |  |

**Table 18:** Movement Test Case 7 Left Turn

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Project Name:** Roadie | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Test Case ID:** Movement-8 | |  |  | **Test Design By:** Alex Senopoulos | | |
| **Test Priority:** Medium | |  |  | **Test Designed Date:** November 29, 2014 | | |
| **Module Name:** Movement | |  |  | **Test Executed By:** | | |
| **Test Title:** Roadie veer too far right | |  |  | **Test Execution Date:** | | |
| **Description:** Roadie corrects movement for being off the line too far to the right | | | |  |  |  |
|  |  |  |  |  |  |  |
| **Pre-conditions:** Roadie is in the line following state with the two left most sensors over the guidance tape and the sensor array front facing away from the guidance tape. | | | | | | |
| **Requirement Satisfied:** | |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Step** | **Test Steps** | **Test Data** | **Expected Result** | **Actual Result** | **Status(Pass/Fail)** | **Notes** |
| **1** | Roadie adjusts right side motor speed to a larger value than the left side | Motor rpm values for each wheel | Right side motors = 5000, Left side motors = 2000 |  |  |  |
|  |  |  |  |  |  |  |
| **Post-conditions:** Roadie's sensor array front will be facing towards the line | | | |  |  |  |

**Table 19:** Movement Test Case 8 Roadie Veer too far Right