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| Test Writer: Raghad Boulos | | | | | | | |
| Test Case Name: | | Ultrasonic sensor Distance and delay Measurement Unit (water proof ) test #1 | Test ID: | | | | UltraS-UT-01 |
| Description: | | Checks the maximum detection range and response sensitivity | Type: | | | | White box  Black box |
| Test Information | | | | | | | |
| Name of Tester: | | Raghad, Madeleine, Sepehr, Travis | Date:12/09/2015 | | | |  |
| Hardware Ver: | | Ultrasonic Module – Ultrasonic version 1.1 | Time: 08:45 pm | | | |  |
| Setup: | | Blind Spot Detector should be connected to power, including the TSIG input and an using a tape measure, an object approximately the size of a person will be placed 7 feet in front of the device’s sensor. | | | | | |
| Step | Action | Expected Result | Pass | Fail | N/A | Comments | |
| 1 | Apply power to board and TSIG input | Board should start up and begin detecting objects within detectable range |  | x |  | Sensor detected objects within 5.5 ft only | |
| 2 | Using a tape measure, a human sized object will be placed 7 feet from the device’s sensor | If object is exactly 7 feet away, LED should be on |  | x |  | LED is OFF | |
| 3 | Move object forward if LED is off or move object backwards if LED is on | When moved further from sensor, LED should turn off | x |  |  |  | |
| 4 | Measure distance of object again | Measurement should be approximately 7 feet |  |  |  | Measurements were ~ 5 ft | |
| 5 | Response measurement | Object must be detected within 15th of second |  | x |  | Response is delayed by a sec | |
| Overall test results | | |  | x |  |  | |

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| Test Writer: Travis Pow | | | | | | | |
| Test Case Name: | | Blind Spot Detector Stress Test #1 | Test ID: | | | | BSD-ST-01 |
| Description: | | Checks if the Blind Spot Detector will operate correctly at a max temperature of 85 degrees Celsius | Type: | | | | White box  Black box |
| Test Information | | | | | | | |
| Name of Tester: | | Travis | Date: | | | | 12/09/2015 |
| Hardware Ver: | | Blind Spot Detector 1.0 | Time: | | | | 7:00 am |
| Setup: | | The Blind Spot Detector should powered and placed in a weathered chamber set to 85 degrees Celsius with an object set exactly 6 feet away. | | | | | |
| Step | Action | Expected Result | Pass | Fail | N/A | Comments | |
| 1 | Apply 12 volts to both VCC and TSIG pins | Blind Spot Detector will start up and begin detecting objects within its detectable range | x |  |  |  | |
| 2 | Insert device into weathered chamber | Temperature of room should be approximately 85 degrees Celsius. | x |  |  |  | |
| 3 | Connect a voltmeter to the AN pin of the Blind Spot Detector | Depending on the distance of object detection, voltmeter should have a voltage reading between 2.5V – OV | x |  |  |  | |
| 4 | Place a person sized object 6 feet away from device | Voltmeter should read a voltage of ~(voltage value for 6 feet) | x |  |  |  | |
| 5 | Leave device in chamber for 2 hours and check voltmeter reading | Voltmeter should have approximately same reading from step 4 |  | x |  | LED remained ON at all times even when no object is within detection range | |
| 6 | Move device further than 7 ft away |  |  |  |  |  | |
| Overall test results | | |  | x |  | Identify location of failing component/ module | |

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| Test Writer: Travis Pow | | | | | | | |
| Test Case Name: | | AVR Distance Measurement Unit (non-water proof ) test #2 | Test ID: | | | | AVR-UT-02 |
| Description: | | Checks the accuracy of the max detectable distance set on the ATtiny85 | Type: | | | | White box  Black box |
| Test Information | | | | | | | |
| Name of Tester: | | Sepehr, Madeleine , Travis, Raghad | Date: | | | | 12/09/2015 |
| Hardware Ver: | | BSD Processor Module – Processor version 1.1 | Time: | | | | 7:00 pm |
| Setup: | | Blind Spot Detector should be connected to power, including the TSIG input and an using a tape measure, an object approximately the size of a person will be placed 7 feet in front of the device’s sensor. | | | | | |
| Step | Action | Expected Result | Pass | Fail | N/A | Comments | |
| 1 | Apply power to board and TSIG input | Board should start up and begin detecting objects within detectable range | x |  |  | Board turned ON | |
| 2 | Using a tape measure, a human sized object will be placed 7 feet from the device’s sensor | If object is exactly 7 feet away, LED should be on | x |  |  | LED turned ON | |
| 3 | Move object forward if LED is off or move object backwards if LED is on | When moved further from sensor, LED should turn off | x |  |  | LED turned OFF | |
| 4 | Measure distance of object again | Measurement should be approximately 7 feet | x |  |  |  | |
| Overall test results | | | x |  |  |  | |

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| Test Writer: Travis Pow | | | | | | | |
| Test Case Name: | | BSD Current Consumption Parametric Test#1 | Test ID: | | | | BSD-PT-01 |
| Description: | | Measures the power consumption of the whole device with 0V on the TSIG input and no object within detectable range | Type: | | | | Black Box |
| Test Information | | | | | | | |
| Name of Tester: | | Travis, Madeleine, Sepehr , Raghad | Date: 12/09/2015 | | | |  |
| Hardware Ver: | | BSD 1.0 | Time: 08:30 pm | | | |  |
| Setup: | | Apply power to VCC pin on the Blind Spot Detector and connect a multimeter to between the input voltage and the VCC pin of the Blind Spot Detector | | | | | |
| Step | Action | Expected Result | Pass | Fail | N/A | Comments | |
| 1 | Connect multimeter to the 12V voltage source and VCC of BSD | Should read approximately zero amps until voltage source is turned on | x |  |  |  | |
| 2 | Turn on 12V voltage supply | BSD will start up and begin taking measurements | x |  |  |  | |
| 3 | Read multimeter current measurement | Current consumption should be approximately 12mA | x |  |  | Less than expected with current draw of approximately 8.5-9mA | |
| Overall test results | | | x |  |  | Current draw was better than expected | |