Whitebox Test

The “Whitebox test” verification is focused on testing “[functionalities and performance](../1)%20Requirements/3.%20SWRA_20190621.docx)”, and at the highest level verify that the “[conventions](../1)%20Requirements/3.%20SWRA_20190621.docx)” are met, as well as sub requirements of such.

This document is defined as such:

1.- Testing Unit of functionalities and performance.

2.- The verification is done applying **Unit test**, using the **gTest** tool.

3.- Tests log is located in results

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| Test Case ID | TC001 |
| SW | Version: V1.0 |
| Test Case Summary | Verify that **ACD\_thread\_entry** output is dutyCycle |
| Prerequisites | 1. The set point is 0% PWM 2. The set point is 25% PWM 3. The set point is 50% PWM 4. The set point is 75% PWM 5. The set point is 100% PWM |
| Test Procedure | 1. Modify step by step PWM % to meet precondition. |
| Test Data | 1. Denominations: % PWM 2. Quantities: 0, 25, 50, 75, 100 |
| Expected Result | 1. DutyCycle will vary depending PWM % |
| Actual Result | 1.-dutyCycle is 0 RPM  2.- dutyCycle is 554-567 RPM  3.-Verify that dutyCycle is 824 - 842 RPM  4.-Verify that dutyCycle is 2485 -2570 RPM  5.-Verify that dutyCycle is 3149 – 3240 RPM |
| Status | Pass |
| Remarks | This is a Unit test. |
| Created By | Jesus Ramirez |
| Date of Creation | 11/10/19 |
| Executed By | Erick Sanchez |
| Date of Execution | 11/10/19 |
| Test Environment | * Unit Test. |

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| Test Case ID | TC002 |
| SW | Version: V1.0 |
| Test Case Summary | Verify that the **IO\_thread** entry receives **p\_args** the frequency work load in the f = 0 to 100 Hz range. |
| Prerequisites | 1. Configuration for frequency work load is set to 0 to 100 Hz. |
| Test Procedure | 1. Turn on the oscilloscope and calibrate to read frequency. 2. Ensure, electric board is powered and configured to generate signal. 3. Verify that digital signal is generated in the specific frequency and read by the oscilloscope. |
| Test Data | 1. Denominations: Hertz 2. Quantities: 100 to 1000 |
| Expected Result | 1. Value set to **variable\_rpm\_tx.** |
| Actual Result | 1. If the specified quantity is valid, the result is as expected. 2. If the specified quantity is invalid, nothing happens; the expected message is not displayed |
| Status | Pass |
| Remarks | This is a Unit test. |
| Created By | Jesus Ramirez |
| Date of Creation | 11/10/19 |
| Executed By | Erick Sanchez |
| Date of Execution | 11/10/19 |
| Test Environment | * Manual Test. |

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| Test Case ID | TC003 |
| SW | Version: V1.0 |
| Test Case Summary | Verify that **Refresh\_Screen()** sets display to values per requirements specified |
| Prerequisites | 1. **IO\_thread ()** output update to ADC thread inputs. 2. **ADC thread ()** output feeds Display thread input. 3. **Display thread ()** output Set to **Refresh\_screen()** |
| Test Procedure | 1. Direct display of the **string data** is visible in LCD display. |
| Test Data | 1. Denominations: data 2. Quantities: Ulong to string |
| Expected Result | 1. Readouts. |
| Actual Result | 1. If the specified quantity is valid, the result is as expected. 2. If the specified quantity is invalid, nothing happens; the expected message is not displayed |
| Status | Pass |
| Remarks | This is a Unit test. |
| Created By | Jesus Ramirez |
| Date of Creation | 11/10/19 |
| Executed By | Erick Sanchez |
| Date of Execution | 11/10/19 |
| Test Environment | * Unit test. |

# Test Log

Dry Run executed on: October/26/2019

by: Luis Sanchez

SW Ver:1.0

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| Test 1 |

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| Inputs: ADC:= 0 RPMs:= 0 |

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|Expected Result: 0 |

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| Current Result = 0 |

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|TEST RESULT: | PASS |

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| Test 2 |

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| Inputs: ADC:= 66 RPMs:= 561 |

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|Expected Result: 25 |

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| Current Result = 25 |

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|TEST RESULT: | PASS |

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| Test 3 |

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| Inputs: ADC:=128 RPMs:= 877 |

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|Expected Result: 50 |

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| Current Result = 50 |

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|TEST RESULT: | PASS |

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| Test 4 |

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| Inputs: ADC:=192 RPMs:= 2576 |

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|Expected Result: 75 |

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| Current Result = 75 |

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|TEST RESULT: | PASS |

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| Test 5 |

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| Inputs: ADC:=254 RPMs:= 3234 |

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|Expected Result: 100 |

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| Current Result 100 |

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|TEST RESULT: | PASS |

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