Software Verification Plan

This document is focused on listing verification and also verification strategy (which is also defined in the [requirements](../1)%20Requirements/3.%20SWRA_20190621.docx))

VERIFICATION METHODS - STRATEGY

The verification methods of the requirements are defined below:

* Inspection (**I**): control or visual verification
  + Control of the physical implementation or the installation of a component. The control verifies that the implementation or the installation of a component is compliant with the requirements of diagrams.
  + Control of the documentation describing a component. The control verifies that the documentation is compliant with the requirements.
* Analysis (**A**): verification based upon analytical evidences
  + Verification of a functionality, performance or technical solution of a component by analyzing the data collected by tests in real conditions, by simulation of real conditions or by an analysis report.
  + Analysis of test data or of design data is used as appropriate to verify requirements.
  + The verification is based upon analytical evidences obtained by calculations, like modeling, simulation and forecasting.
  + Analysis is used when an acceptable level of confidence cannot be established by other methods or if analysis is the most cost-effective solution.
* Demonstration (**D**): verification of operational characteristics, without quantitative measurement
  + Verifying a requirement by demonstration implies that the required functionality specified by a requirement is complete.
  + Demonstration is used when quantitative measurement is not required for verification of the requirements
  + Demonstration includes the control of the technical solutions specified by the non-functional requirements.
* Test (**T**): verification of quantitative characteristics with quantitative measurement
  + Verifying a functionality, performance or technical solution of a component by executing testing scenarios in predefined, controlled and traceable testing conditions.
  + Tests require the use of special equipment, instrumentation, simulation techniques, or the application of established principles and procedures,
  + Data produced during tests is used to evaluate quantitative results and compare them with requirements.

For each requirement of the SRS, a verification method is defined. Method is abbreviated I, A, D or T.

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| **Requirement ID** | **Requirement Title** | **Method** |
| REQ- 001 | Verify that the color of the display background is blue | I |
| REQ- 002 | Verify that Renesas Sinergy is SK-S7G2 | I |
| REQ- 003 | Verify that Renesas Sinergy is connected to PC to flash SP\_C software | I |
| REQ- 004 | Verify that Motor is connected to the Renesas as shown in diagram. | I |
| REQ- 005 | Verify that firmware version on electronic card is 1.0.1 | I |
| REQ- 006 | Verify that Display is initialized as soon card is on | D |
| REQ- 007 | Verify that SW is flashed to electronic card | D |
| REQ- 008 | Verify that the speed is displayed in rpm | D |
| REQ- 009 | Verify that the result is displayed as per requirement “[SRS- HMI\_Display](#_Human_Machine_Interface)” | D |
| REQ- 010 | Verify that if a value is out of range, a warning is displayed | D |
| REQ- 011 | Verify that Speed Control is implemented using PID algorithm | A |
| REQ- 012 | Verify that PID algorithm is implemented as per modeling in development document and transfer function as per requirement “[SRS-MATLAB\_ Transfer function (TF)](#_Verification__Transfer_function)” | A |
| REQ- 013 | Verify that SetPoint is defined as per requirement “[SRS-Controller](#_SW_Configuration)” | A |
| REQ- 014 | Verify that the PWM is define as per the requirement “[SRS-PWM](#_Functionalities_and_Performance)” | A |
| REQ- 015 | Verify that SP\_C is defined as per output requirements “[SRS-PWM](#_Functionalities_and_Performance)” | A |
| REQ- 016 | Verify that ACD\_thread\_entry is 0% PWM  Verify that ACD\_thread\_entry is 25% PWM  Verify that ACD\_thread\_entry is 50% PWM  Verify that ACD\_thread\_entry is 75% PWM  Verify that ACD\_thread\_entry is 100% PWM | T |
| REQ- 018 | Verify that IC\_thread | T |
| REQ- 020 | Verify that display\_thread | T |

Note: do not mistake the two meanings of the word “test” in this document:

* The method of verification, named Test and abbreviated (T), as defined above.
* A test, or test case, is a sequence of actions to verify a requirement. Tests are defined in the software test plan.

Rule of thumb for software, 80% of requirements are verified by demonstration, 15% by inspection and 5% by analysis or test methods.