

SR2_Analog_810
&
SR2_Analog_810_mk1
Test Manual

by



with the collaboration of



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1 Introduction

This document describes the new configuration test and calibration procedures for the *SR2_Analog_810* and *SR2_Analog_810_mk1* acquisition boards.

This new tool is supported on two platforms:

- *Signal_Ranger_mk3_Pro*
- *Signal_Ranger_mk2_NG*
- These boards are generically referred to as DSP boards in the following text.

The tool supports the testing of the following boards:

- *SR2_Analog_810*
- *SR2_Analog_810_mk1* (including the TCXO)

These boards are generically referred to as *Analog_810* boards in the following text.

The tool supports the following Windows platforms:

- x86 (all versions of Windows since Windows XP)
- x64 (all versions of Windows since Windows XP)

The tool provides the following functionality:

- Tests the analog section of the board
- Tests the digital section of the board
- Allows the SPM controller users to reflash new DSP code as that code becomes available.

2 Preparing the DSP board

If your *Analog_810* board has been sold already attached to a DSP board, this step is not required.

When you convert an existing DSP board to work with a *Analog_810* board you should first execute a self-test of the DSP board. In addition to insuring that the DSP board is fully functional, this erases all logic and DSP code from the Flash. This insures that an FPGA logic that may conflict with the *Analog_810* board is not loaded at startup by mistake.

For that, use the *SR3_PRO_SelfTest* and *SR2_NG_SelfTest* applications, which are part of the *SR3_Applications_Installer* package.

2.1 Mating to the DSP board

When *SR2_Analog_810_mk1* is purchased with a DSP board the two boards are already mated. If not *SR2_Analog_810_mk1* must be mated to the DSP board prior to powering-up.

Never attempt to mate the two boards while the DSP board is powered.

When *SR2_Analog_810_mk1* is mated to a *Signal_Ranger_mk3_Pro* board a plastic cap is required on the central connector (J7) of the *Signal_Ranger_mk3_Pro* board. The following picture shows the plastic cap.

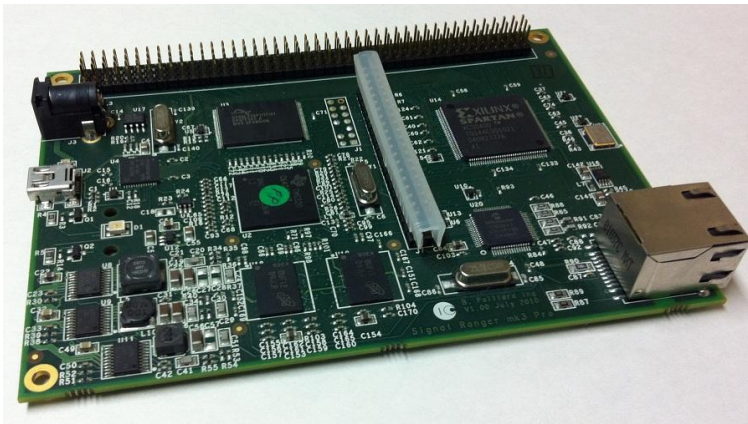


Figure 1 Plastic cap on J7

3 Tools Installation

3.1 Software Installation

- 1 Unzip the *SRx_Analog810_SelfTes* package
- 2 Run *Setup.exe*. This installs the *SRx_Analog810_SelfTest* application, the required driver and the documentation.

4 Self Test

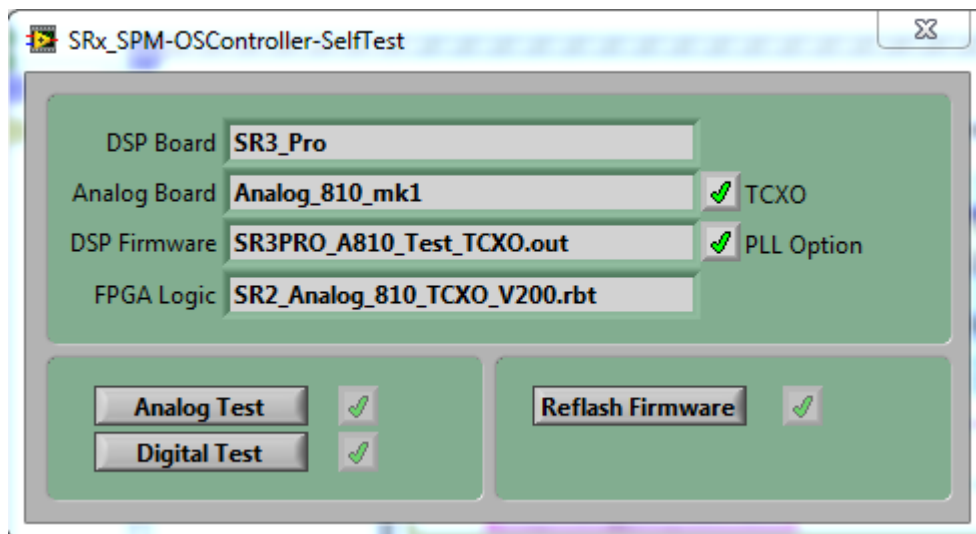


Figure 2 *SR2_analog_810_SelfTest* application

Figure 1 shows the front-panel of the *SRx_Analog810_SelfTest.exe* application. When the application is run, it first discovers:

- The type of DSP board (*SR3_Pro* or *SR2_NG*)
- The type of analog board (*SR2_Analog_810_mk1* or *SR2_Analog_810*)
- The presence of the PLL option in Flash
- The presence of DSP code and FPGA logic in Flash

At this point it waits for the user to press one of 3 buttons:

- **Analog Test:** Tests the analog IOs of the *Analog_810* board
- **Digital Test:** Tests the digital IOs of the *Analog_810* board
- **Reflash Firmware:** Reloads the Flash ROM with a new DSP code file, specified by the user. This procedure also reloads the FPGA logic appropriate for the type of *Analog_810* board.

4.1 Analog Test

Prior to pressing the *Analog Test* button the analog inputs of the *Analog_810* board need to be connected to its corresponding analog outputs. If you have access to the board connectors directly, connect the two flat-cable harnesses as described in the following picture. If the *Analog_810* board is enclosed in a rack, connect every input to every output using an individual BNC cable.

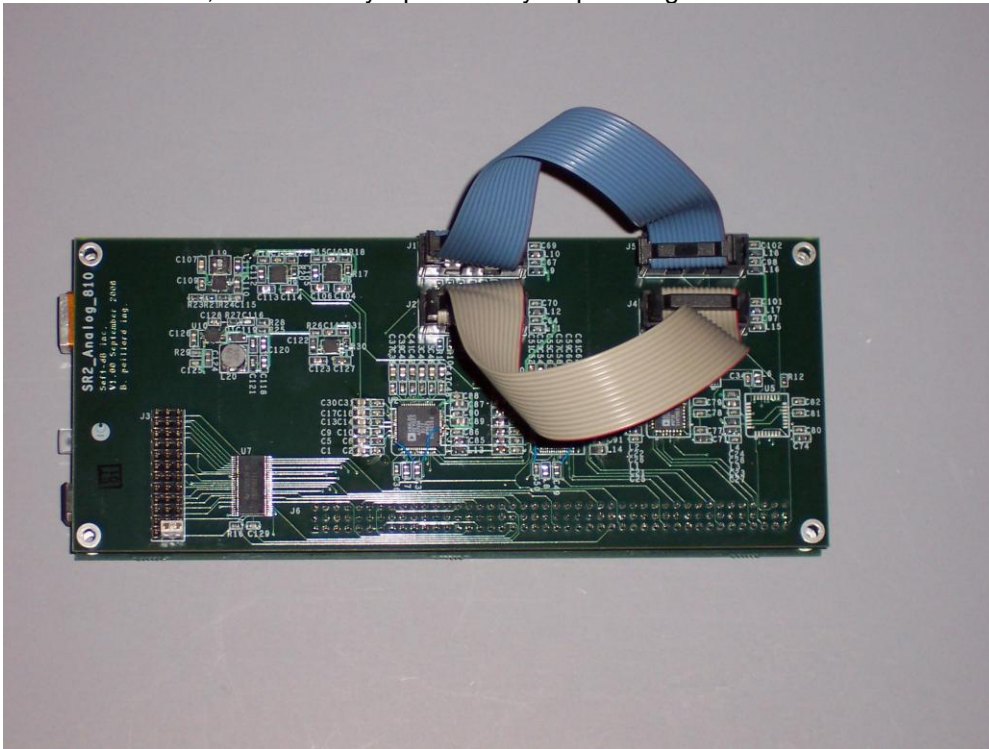


Figure 3 Board fitted with analog test harnesses.

After pressing the *Analog Test* button the following front-panel appears:

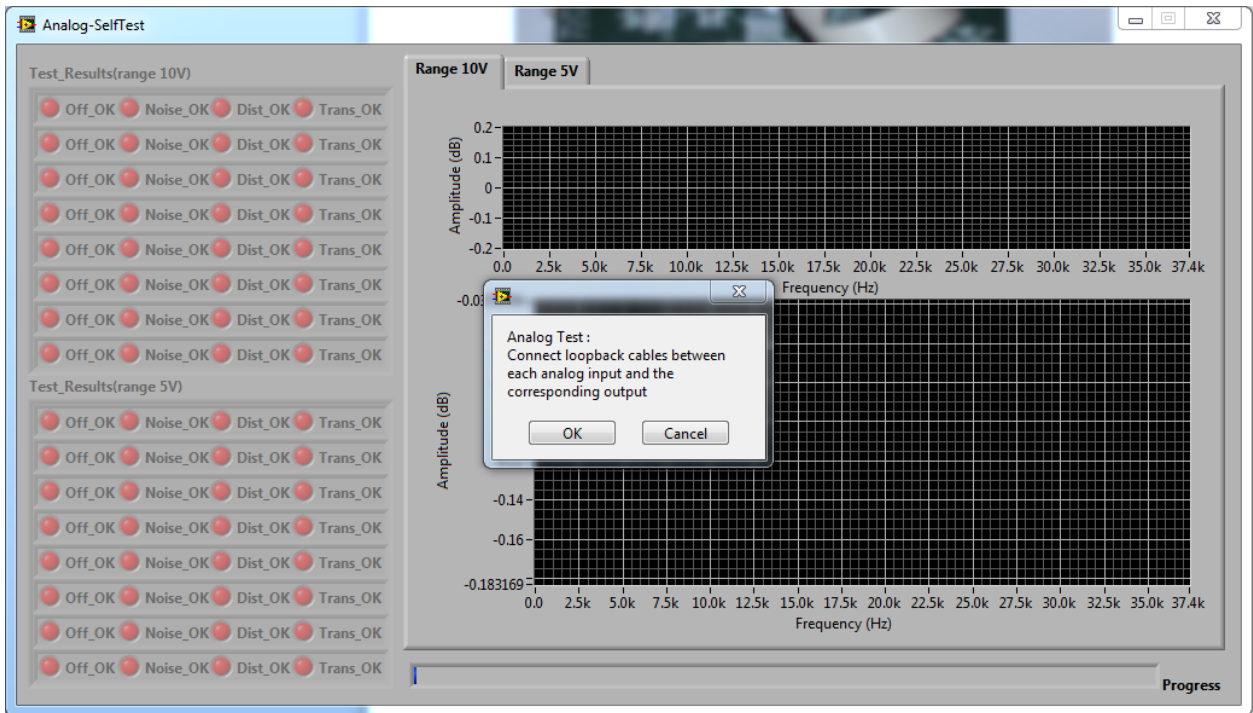


Figure 4 Analog Test Front-Panel

The tool tests the board and displays the test results in two forms:

- The complete transfer functions are displayed at the right of the panel (press the *Range 5V* tab to see the transfer functions at the 5V range).
- The summary results are displayed at the left of the panel. A green indicator is a *PASS*. A red indicator is a *FAIL*.

To continue, close the analog test window.

4.2 Digital Test

Press the *Digital Test* button to start testing the digital IOs of the *Analog_810* board. After pressing the *Digital Test* button the following front-panel appears:

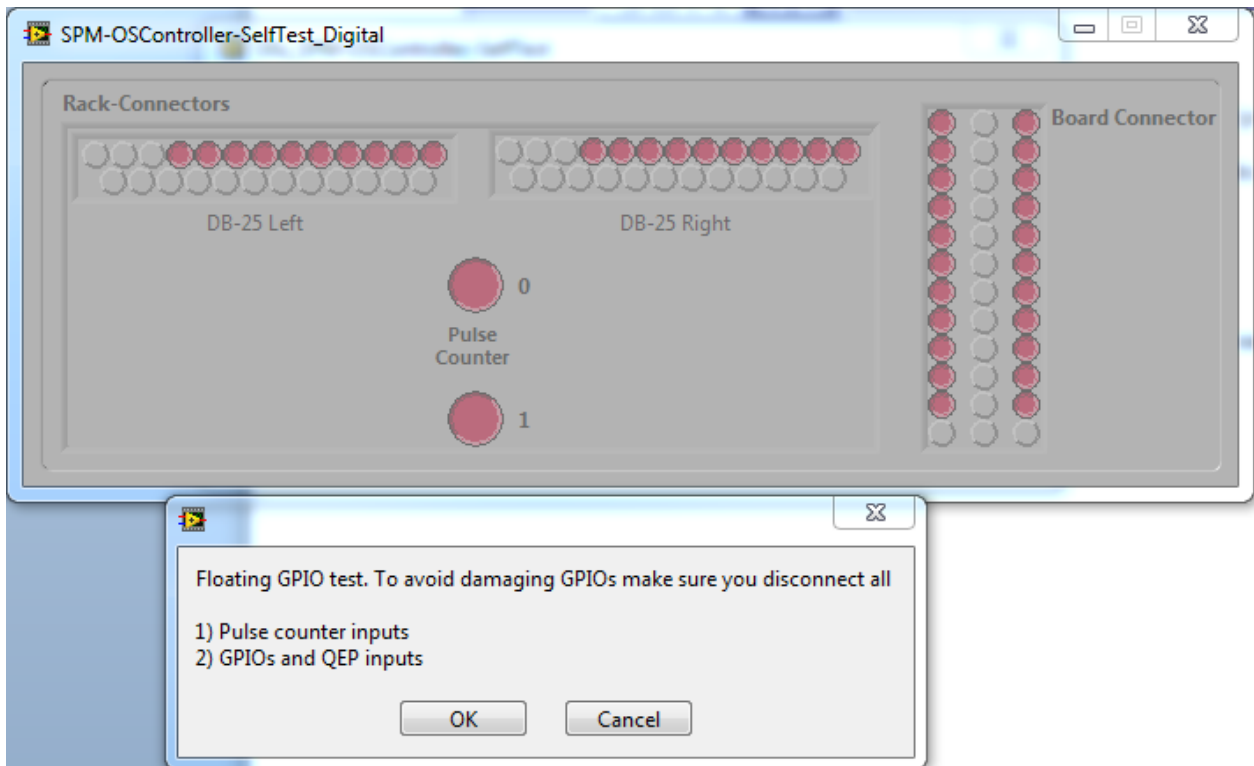


Figure 5 Digital Test Front Panel

The digital test consists of two separate tests:

- **A Floating GPIO test:** This test is performed with nothing connected to the digital IOs. This first part of the test makes sure that the digital IOs are functional, and not shorted to each other, VCC or GND.
- **A Connected GPIO test:** This test is performed with special jumpers connected to the digital IOs. This part of the test makes sure that the digital IOs are properly connected all the way to the output connectors, and that the presence signal is enabled. If you do not have the special jumpers, simply skip this part of the test.

To continue, close the digital test window.

4.3 Firmware Reflash

When new DSP firmware is available for the *Open Source SPM Controller*, through the *GXSM* web site, the *Reflash Firmware* functionality allows the user to load that new firmware, along with the *FPGA* logic that is appropriate for the *Analog_810* board.

After the user presses the button the application presents a browser to find the new DSP firmware file. That file must be an **.out* file, or an **.out.vi* container VI that has been compiled for the appropriate DSP (*SR2_NG* or *SR3_Pro*).

The user cannot choose the *FPGA* file. The appropriate one is automatically chosen and loaded.