AGATA DIGITISER SYSTEM TEST PROCEDURE

This document aims to describe the steps taken to perform a system test of the Agata digitiser system. It is a blend of functional tests that were performed at Daresbury Labs (DL) with more detailed tests performed by the IPHC Labs in Strasburg.

1. Use latest crate (cooper cooling pipes are covered with thermal adhesive).

2. Before inserting the modules, connect the pipes from the chiller, switch the chiller on and check there are no leaks.

3. Insert modules and connect the clock cables, 48V DC power (current limit set to 12A, current drawn 4.7A).

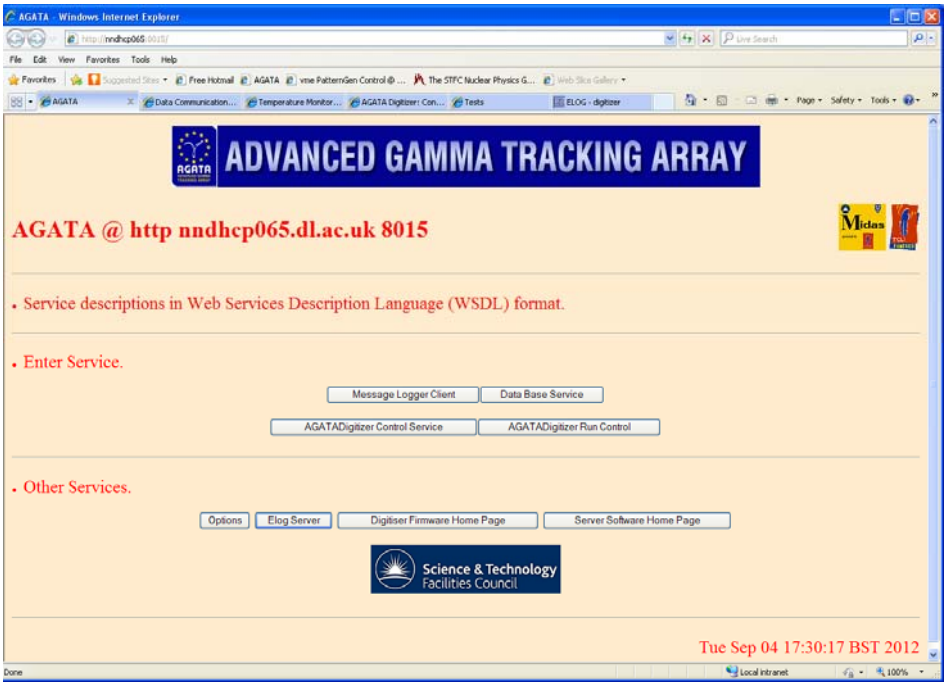
4. Program virtex and spartan fpgas platform flashes with latest code via Xilinx Impact tool.

5. Power cycle and verify that all virtex code is loaded up to fpga by checking the leds status of each card at the back of the digitiser
   (For segment leds 1-3 are off, leds 4-6 are counting and leds 7-8 are on,
   for core leds 1-6 are off, led 7 blinking and led 8 is on)

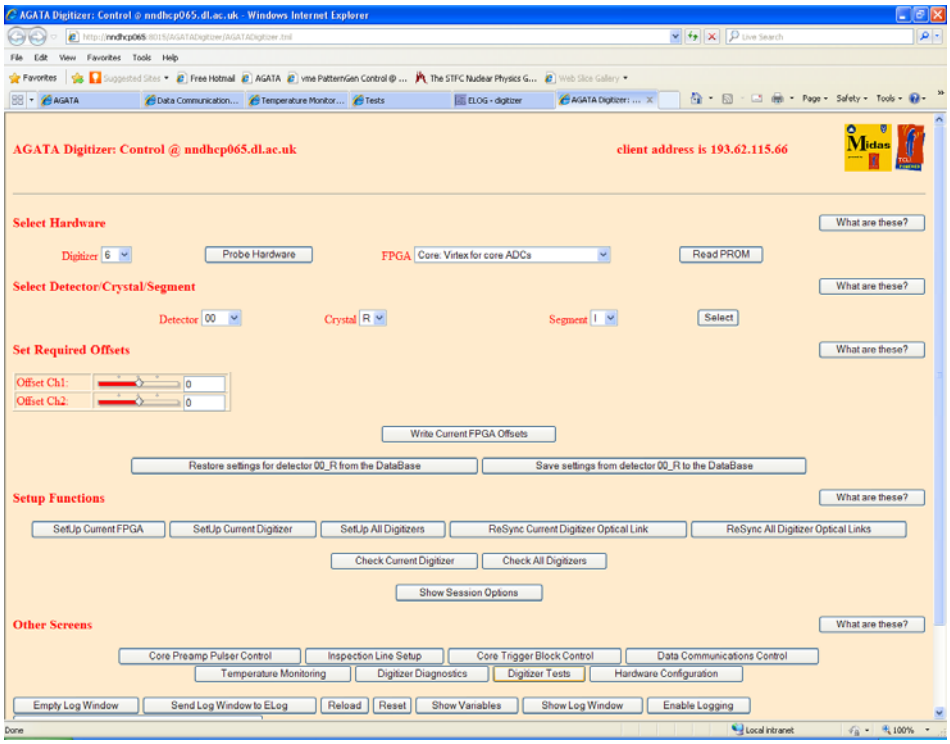
6. Configure IP addresses for both core and segment Xport using the Latronix device Installer. Use 10:10:1:2 for the core Xport and 10:10:1:10 for the segment Xport (These IP addresses are used in DL as part of a private network. They could be replaced with any other unique IP addresses).

7. To download SAM_seg_v16 and SAM_core_v5 directly to the fpga:

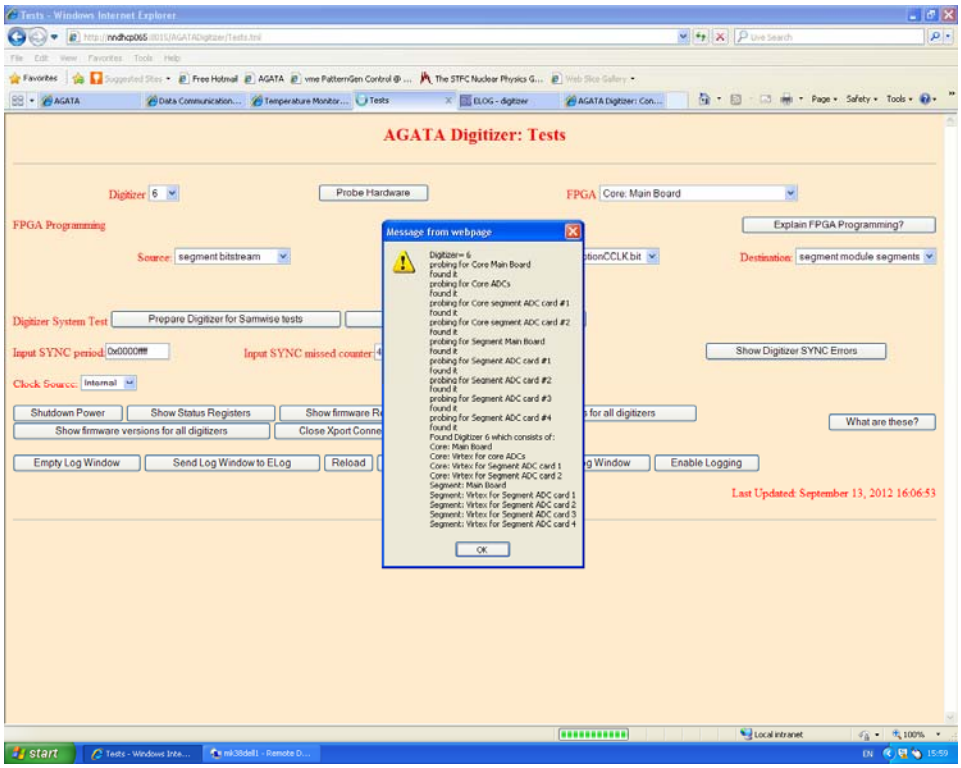
   On the figure below, click on “AGATADigitiser Contol Service”



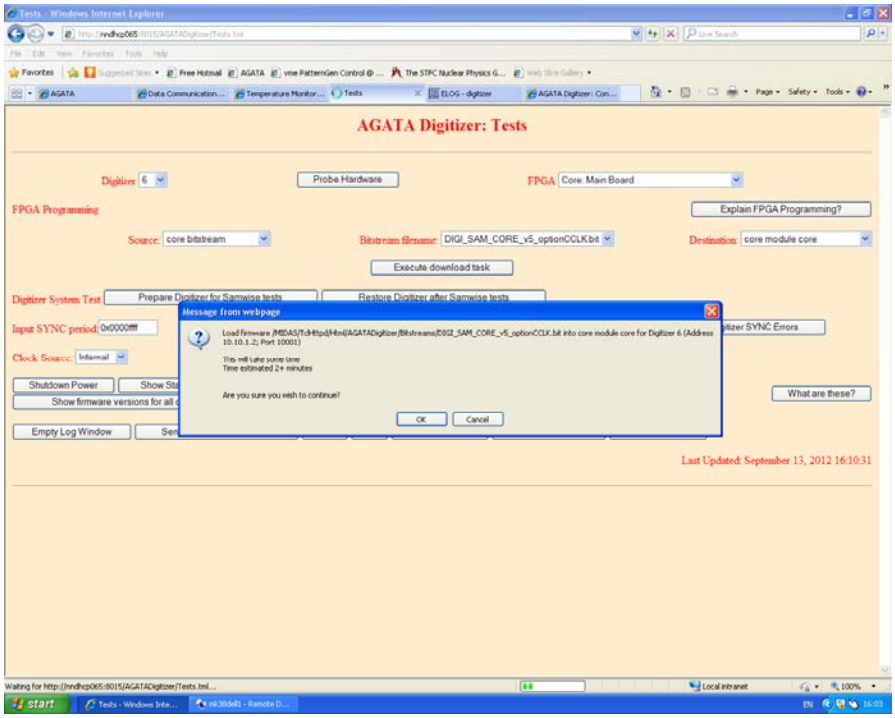
   Then click on “Digitizer Tests”:



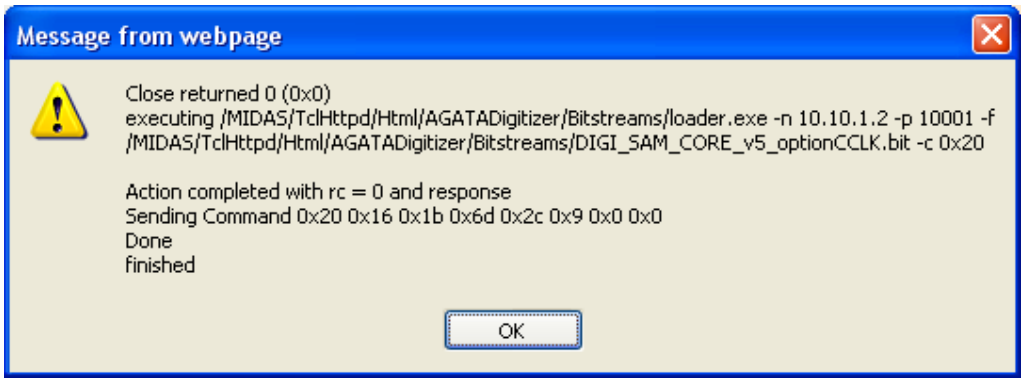
Then click on “Probe Hardware”:



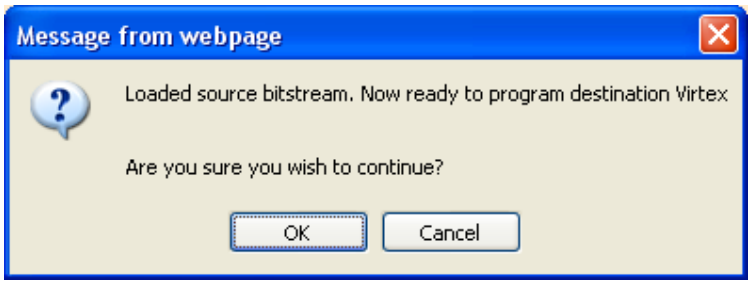
Make sure all the cards have been identified. Then, in order to program samwise to the core main board set the “Source”, “Bitstream file name” and “Destination” field as shown below, then click on “Execute download task” and then, on the prompt, click ok.



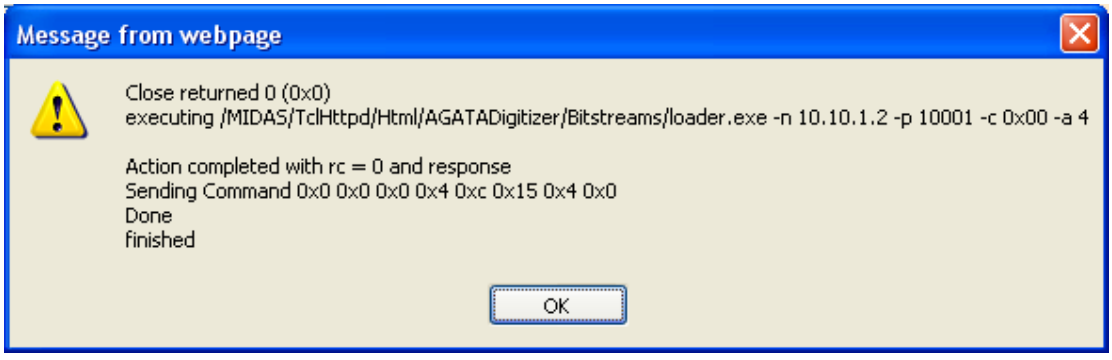
After a couple of minutes we get the following prompt:

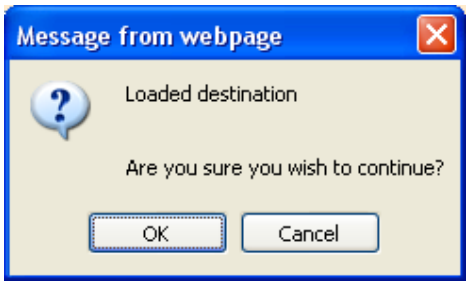


And then the following response (click ok):



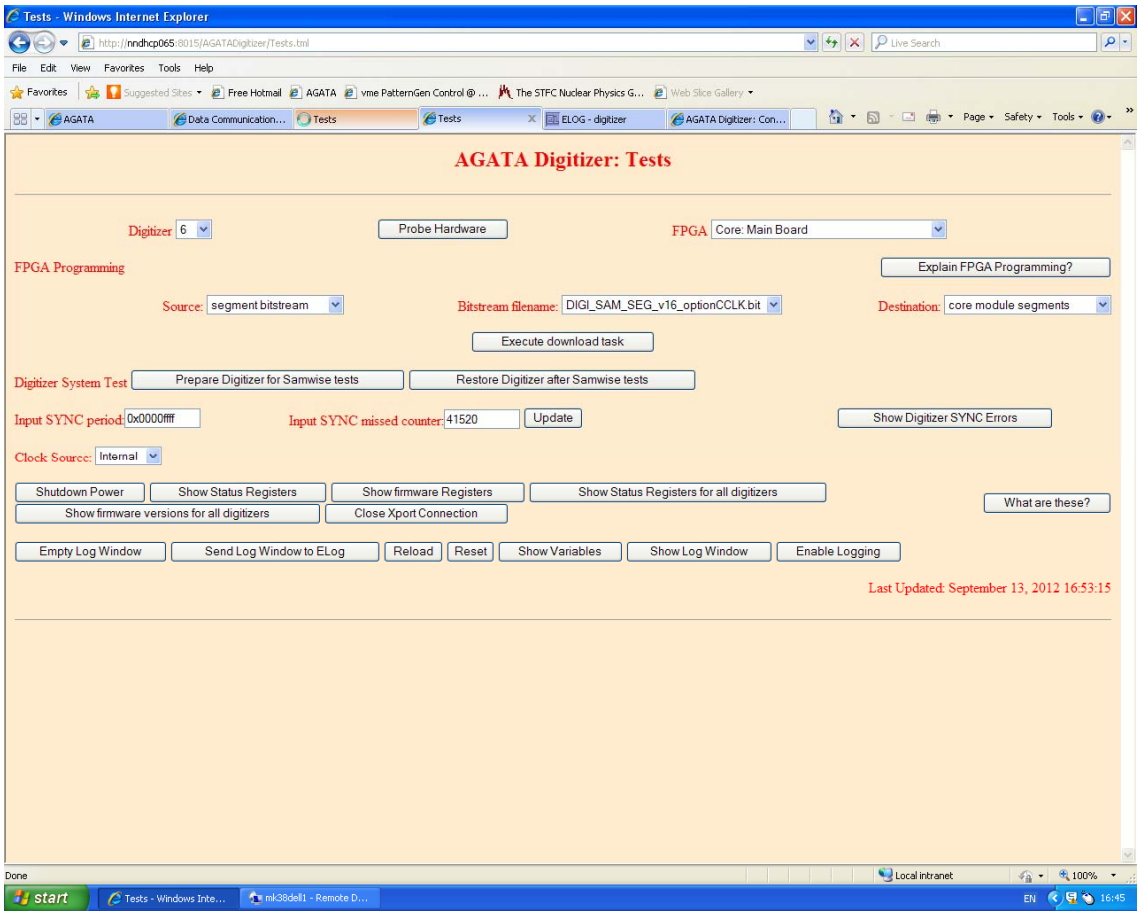
which is followed by the prompt that the command was executed successfully and a couple of more final prompts:





At that point the samwise firmware is loaded in the core Virtex and you can see the corresponding led pattern at back of the digitiser has changed to 4-bit toggling pattern.

In order to program the segment cards in the core module, follow the procedure above but change the “Source”, “Bitstream file name” and “Destination” field as shown below:

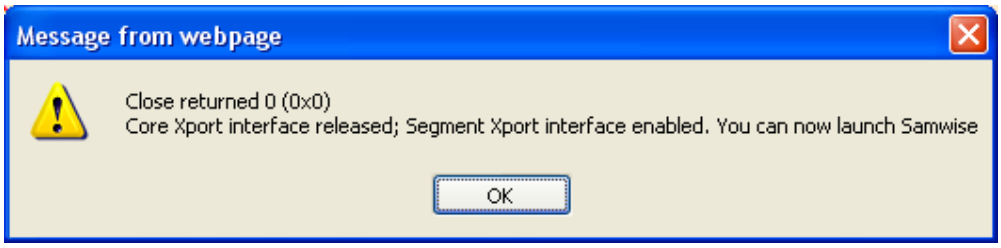


At that point the samwise firmware is loaded in all Virtex cards and you can see all the corresponding leds patterns at the back of the digitiser have changed to 4-bit toggling pattern.

PLEASE NOTE

Before launching samwise we need to enable the segment module xport, since it is require by samwise.

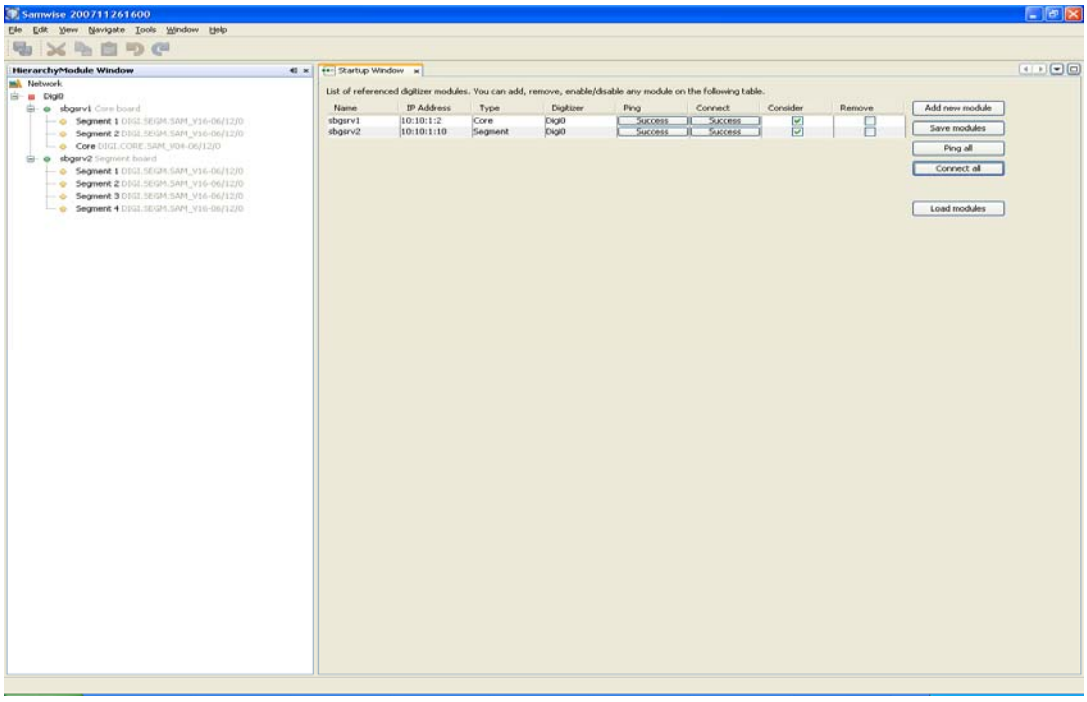
On the Agata Digitiser: Tests page click on “Prepare Digitiser for Samwise tests”, which gives the following prompt:



8. Launch samwise.exe (Latest version (Samwise - August 08 (Zip - 15.6 Mo) can be download from http://www.iphc.cnrs.fr/Samwise.html)

9. Enter the ip addresses for the core and segment xport and click save modules (make sure that you enter unique names under the “Name” field).

10. Then click on “Ping all”, which should return as success under the “ping” column and then “Connect all”. If successful, the Agata cards appear on the left hand side (see snapshot below):



From this point onward we could perform the following tests (each one is a separate document):

1. Analogue_Inspection_Line_test
2. Agata_Digitiser_Offset_and_gain_test
3. Agata_Digitiser_Noise_test
4. Agata_Digitiser_Ramp_test
5. Agata _Digitiser_Fiber_Optic_connections_ test

When samwise tests have finished, **exit** Samwise and go back to the “Agata Digitiser: Tests” page and click on “Restore Digitiser after Samwise tests”, in order to access the segment module via the core module xport (which is the default mode at power up).