

S-Link Testbench Instruction

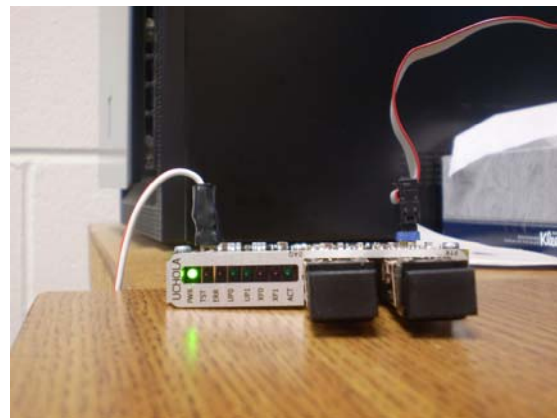
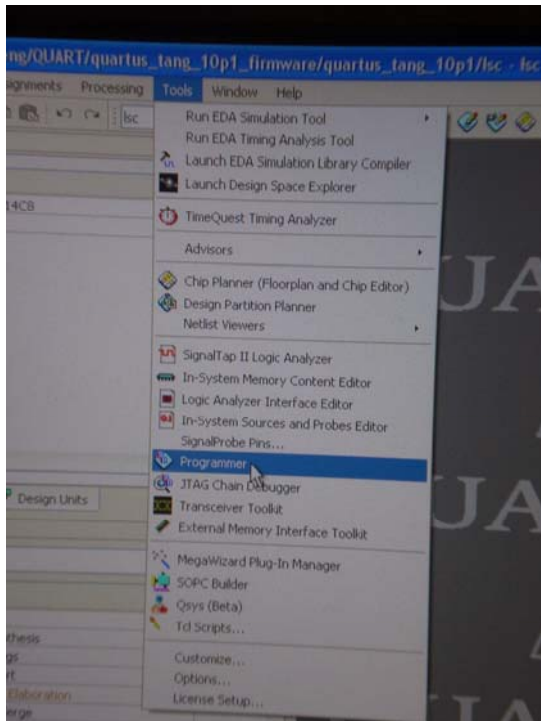
Programming the Board

A new board looks like the one on the right. This section is going to describe the way of programming using the .pof file, which remains in the board even when power is off.

First we should connect the power source to the board. Before connecting to the board, make sure the screen of the power source says “OUTOFF (3.30V)” (the picture below). Now plug the power cable to the JTAG port. Be ware of the direction of plugging the cable: the white strand should be on the same side with the little triangle on the board. Make sure the cable is connecting to the right place and then press the ON/OFF button on the power source to power up the board. Now the screen of the power source should say “3.30V, xxx A”, and there should be one red and one green LED lighting up on the board (as in the first picture).

Next connect the data cable to the BRASTER PORT, make sure the red line on the cable is on the same side as the little triangle on the board (as in the first picture).

Start the PC and run the Quartus II 11.1 (32 bit) program from the desktop. Exit the welcome window.

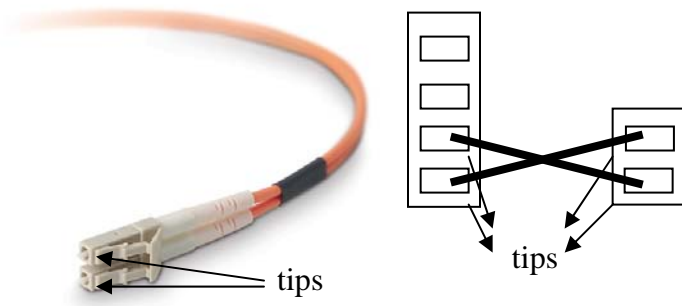
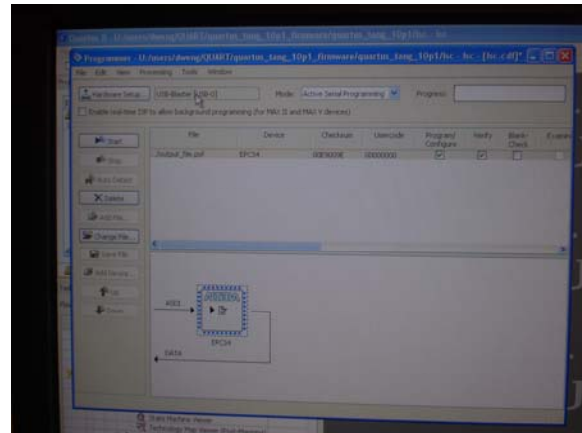


Next go to “Tools/Programmer” and start the programmer. Make sure at “Hardware Setup”, it says “USB-Blaster [USB-0]”, and at “Mode” it says “Active Serial Programming”.

Now we can click “Add File” to add the .pof file. If there is a file in the window already, you can click “Delete” to remove the file.

The .pof file is in the following path “C:\output_file.pof”

After opening the .pof file, you can click “Start”, and the programmer will begin programming. It will take less than a minute to program the board. Make sure the current displaying on the screen of the power source does not exceed 1 A. Power off the board before disconnecting any cables.



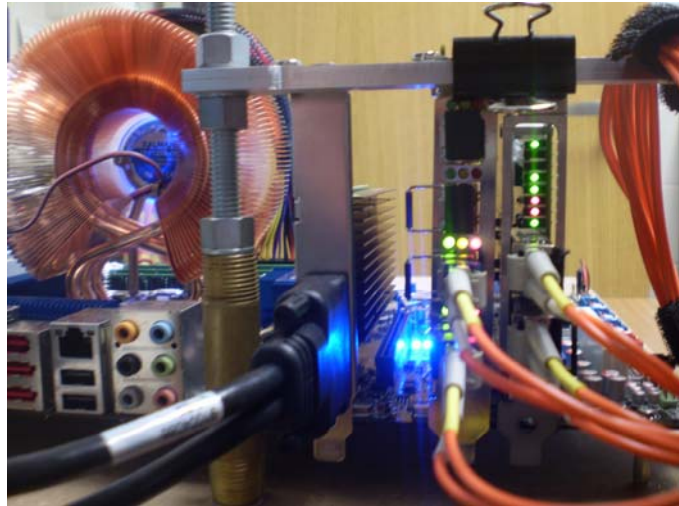
Cable Connection

The end of our optical fiber cables looks like the one on the right. There are two little tips on it, one on each strand. The tips should face right when plugging into the solar card, and face left when plugging into the hola card, (because the plugs on the hola card are upside-down).

There are two channels on the new solar card, labeled “Link 0” and “Link 1” respectively. When the card is inserted in the computer, looking from behind, Link 0 is the one on the top and Link 1 is the one on the bottom. Link 0 is the DAQ channel. If one wants to perform a single channel test, they should use Link 0 instead of Link 1.

There are four channels on the hola card. Looking from behind, the one on the bottom end is Channel 0, and the next one is Channel 1. These are the two channels that we use for testing. For a single channel test (e.g. singlerawspeed.exe), one should use Channel 0.

After plugging in, if one looks from behind, the two fiber cables should be crossed over as in the picture.



Computer

When the computer is turned on, sometimes it may ask you to restore the default setting by pressing F2 or ask the user to choose one of Linux systems (normally choose “Gentoo Linux 2.6.36-r8”). Next there will be a screen asking for user account and password:

ftk login:

Type “root” and press enter

ftk login: root

Then you will see

Password:

Type “ftk” and press enter (you won’t see “ftk” being typed in, but it’s okay).

After finish using the computer, the command to turn off the computer is “shutdown –h now”. Sometimes you might want to restart the computer, and the command is “shutdown –r now”.

Main test program

After logging in, you will be able to type in commands after the header

ftk ~ #

The main test program is under the name “RUN.sh”. You can just type the name and hit enter, and the program will run automatically. The test takes about 10 minutes, and if no mistake appears, it will exit itself at the end with positive notice.

If errors appear in the test, the test will halt and we need to use more specific test programs to diagnose the problem.

Compilation of the test bench

We also have specific test programs designated with specific purposes. First type “cd teststand_GPU/” and press enter. (In fact, you can just type “cd te” and press tab, the computer should be able to auto-finish the command line for you.)

The header should change to “ftk teststand_GPU #”, which indicates your current position. Next type “./ALL.sh” (case sensitive) and press enter, which starts the compilation.

ftk teststand_GPU # ./ALL.sh

Test programs

The executable programs are under the folder “bin”. You can change the directory by typing “cd bin/”.

ftk teststand_GPU # cd bin/

Again, the header would change to “ftk bin #”.

There are multiple programs that we can run on the board. Some useful ones include “dualrawslidas.exe” and “newholatest.exe”.

For example, to run the “dualrawslidas.exe” program, just type “./dualrawslidas.exe”, again, you may press tab after typing in a few letters to auto-finish the command.

ftk bin # ./dualrawslidas.exe

This program has many optional test modes with different length parameters. You can enter the parameters, under which you would test the boards, or you can skip all of

them by pressing enter and the program will be running under the default value (Random data, 256 words per frame and run for 3E7 frames).

Some useful commands

cd	change the current directory to the home directory “ftk ~ #”
ls	display all the files and folders in the directory
Ctrl + Z	suspend the program that you are running
Ctrl + C	terminate the program that you are running