



# Vidar-5x4-ASM Plus Testing Procedure

## 1 Abstract

This document discusses the procedure of a complete test for Vidar-5x4-ASM Plus series cards, there are three variants in Vidar-5x4-ASM Plus series:

**Table 1. Vidar-5x4-ASM Plus variants**

Board Type	Vidar-5x4-ASM-CST	Vidar-5x4-ASM-EX	Vidar-5x4-ASM-PRO
<b>Abbreviation</b>	CST	EX	PRO
<b>Program Command</b>	VctProg	VexProg	VprProg
<b>Test Command</b>	VctTest	VexTest	VprTest

The major difference among these variants is different DSP chips U4, U6, U8 and U10 populated on board, they can be identified by the marks on the chips:

Vidar-5x4-ASM-CST: CST;  
 Vidar-5x4-ASM-EX: 5410A;  
 Vidar-5x4-ASM-PRO: 5416.

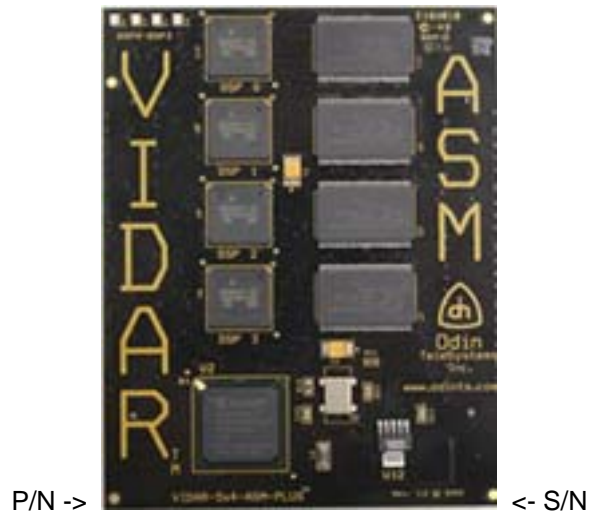
In Table 1, **Abbreviation**, **Program Command** and **Test Command** are symbols, they need to be substituted by the real entities, take Vidar-5x4-ASM-EX as an example, Vidar-5x4-ASM-**Abbreviation** means Vidar-5x4-ASM-EX, **Program Command** is VexProg and **Test Command** is VexTest.

It assumes that all of the configuration executables, batch files, and data files have been retrieved from the VSS Vidar-5x4-ASM-**Abbreviation** 1.0 /Testing/BrdTest project.

The tests are performed on a Windows XP / 2003 Sever / Vista / 7 PC.

## 2 Final Assembly

- Place the board on an anti-static mat.
- Attach a label sticker of product number (P/N) on the connector of left side of the board (under text VIDAR), and serial number (S/N) on the right side of the board (under text ASM and Odin logo), see Picture 1.



Picture 1: Vidar-5x4-ASM

### 3 Testing Equipment Setup

- Plug a PCI Extender (Picture 2) onto Hermod-PCI-64 (Picture 3). Picture 4 shows PCI Extender on Hermod-PCI-64.

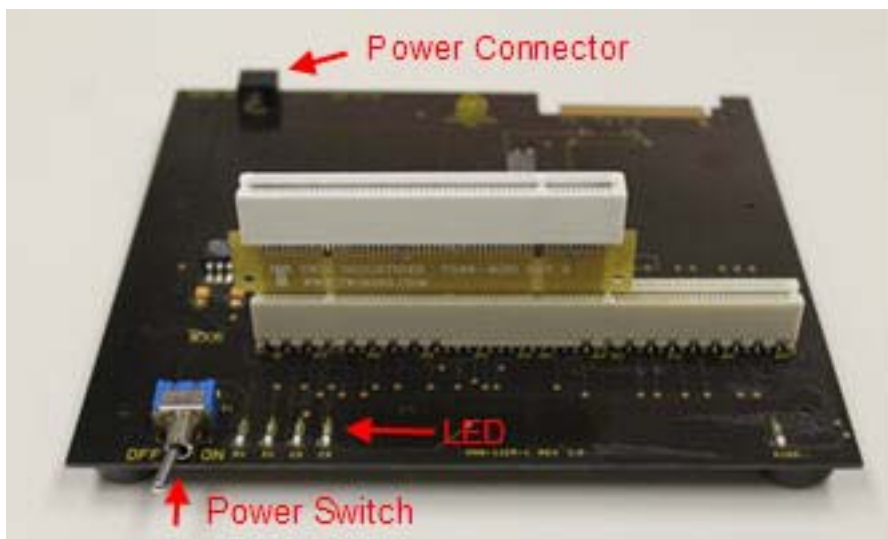
**Note:** Using PCI Extender is to prevent PCI connector of Hermod-PCI-64 from damaging, frequent sitting and un-sitting Thor-2-PCI-Plus or other boards may damage the connector, therefore, don't remove PCI extender when Thor-2-PCI-Plus is removed.



Picture 2: PCI Extender



Picture 3: Hermod-PCI-64 with Power Adapter and H.100 Cable



Picture 4: PCI Extender on Hermod-PCI-64

- Place a Thor-2-PCI-Plus board (Picture 5) onto PCI Extender, mount a Vidar-5x4-ASM board on the Thor-2-PCI-Plus board (Picture 6).



Picture 5: Thor-2-PCI-Plus (black color)



Picture 6: Thor-2-PCI-Plus with Vidar-5x4-ASM on Hermod-PCI-64

#### 4 Xilinx Software “Lab Tools” Installation:

- Download “Lab Tools” from Xilinx web site: [www.xilinx.com/support/download/index.htm](http://www.xilinx.com/support/download/index.htm). Version 13.2 is used in our test, newer versions should work as well.
- Run xsetup.exe to install the software.

## 5 Firmware Configuration

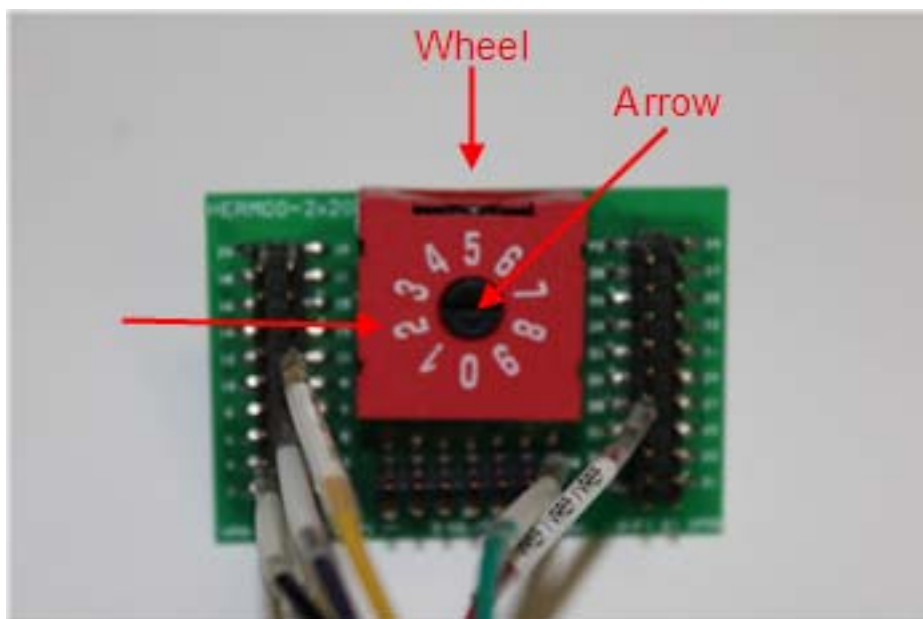
- Connect Platform Cable USB II (Picture 7) to computer's USB port. You may be prompted for driver.



Picture 7: Xilinx Platform Cable USB II

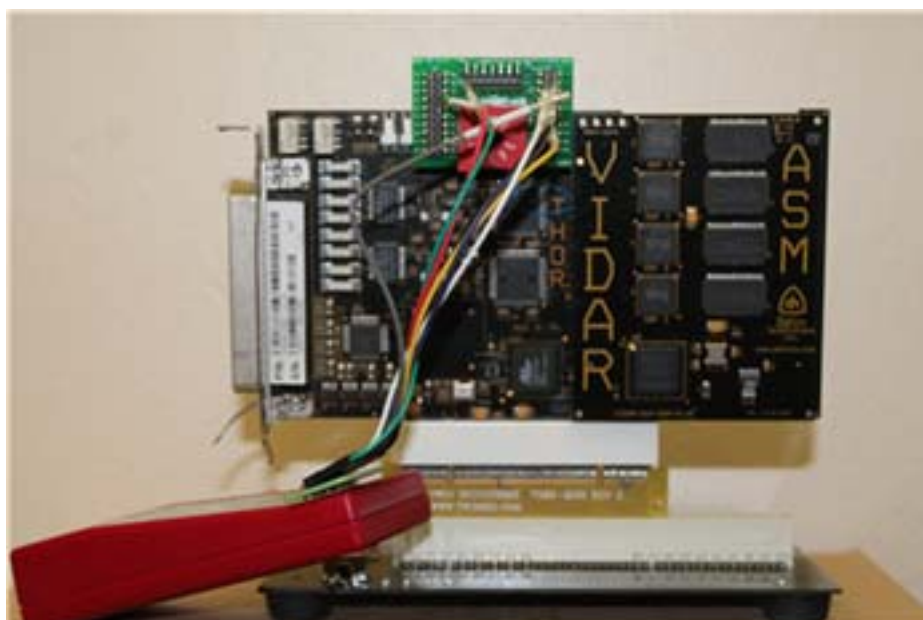
- The other end of the cable is connected to Hermod-2x20. On Hermod-2x20, turn the wheel so that the arrow on switch SW1 points to '2' (Picture 8).

**Note:** A wire with black color on Hermod-2x20 is NOT connecting to anything.



Picture 8: Hermod-2x20

- Connect Hermod-2x20 to Thor-2-PCI-Plus board's JTAG connector "J3 JTAG", it only fits in one way, see Picture 9 below.

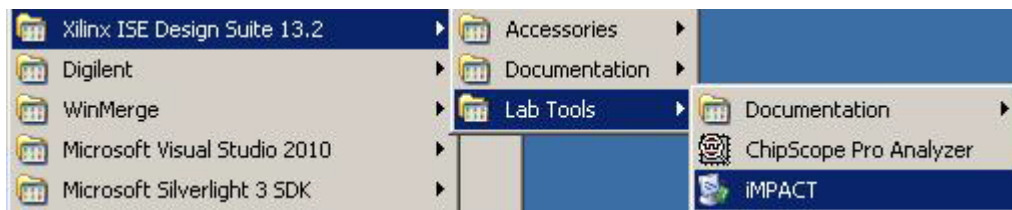


Picture 9: Hermod-2x20 on Thor-2-PCI-Plus.



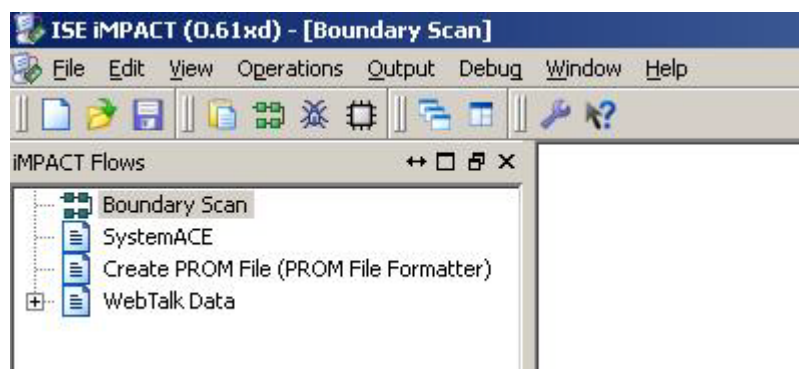


- Connect Power Adapter to 110v power socket and Hermod-PCI-64, and switch on power on Hermod-PCI-64, LEDs of 3v and 5v should be lit. Please see Picture 4.
- Run Xilinx software Impact (Picture 10):



Picture 10: Run “Impact”

- Press ‘No’ or “Cancel” if you see any. Then you will see the following snapshot (Picture 11):



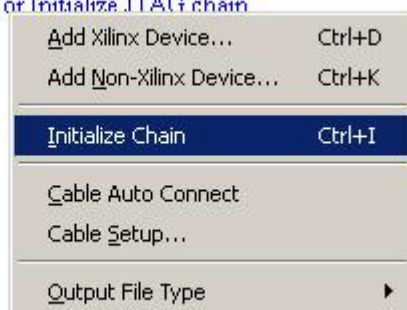
Picture 11: Snapshot 1 of Impact

- Double click on “Boundary Scan”, the following (Picture 12) will show:  
[Right click to Add Device or Initialize JTAG chain](#)

Picture 12: Snapshot 2 of Impact

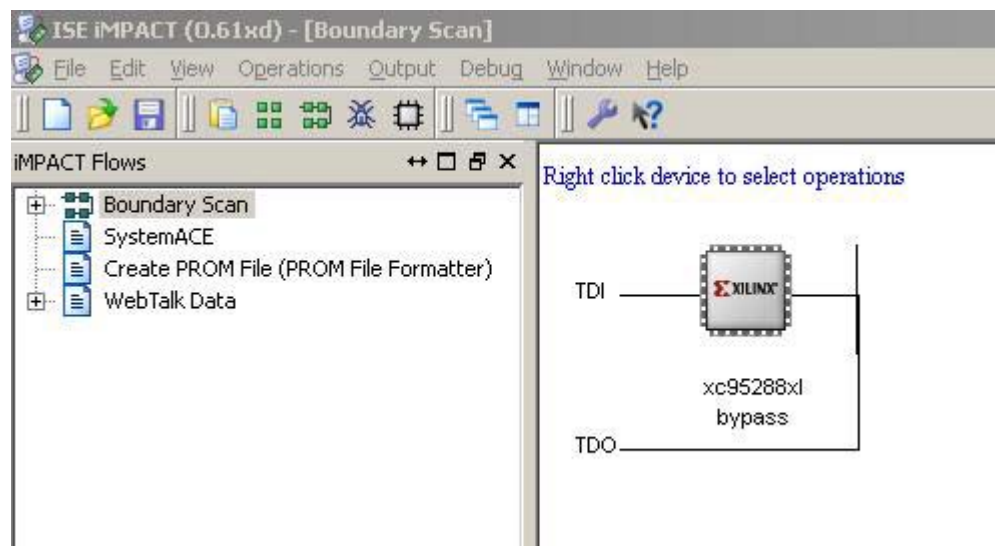
- Then right click on the text, it displays the following (Picture 13), and then click on “Initialize Chain”.

Right click to Add Device or Initialize JTAG chain



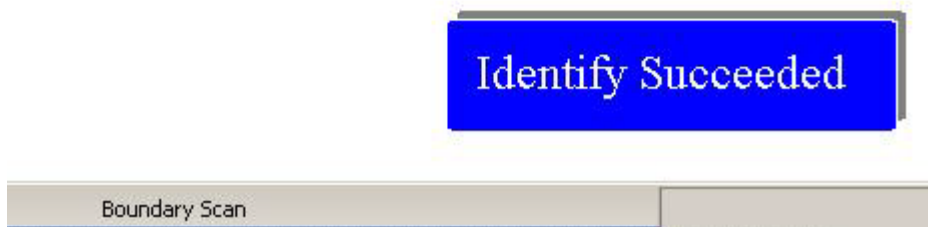
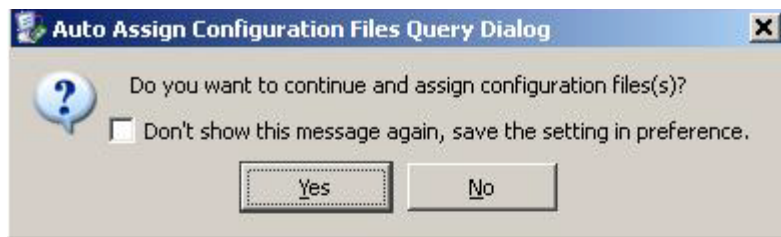
Picture 13: Snapshot 3 of Impact

- Picture 14 shows that a Xilinx device is found, Picture 15 shows a question window “Auto Assign Configuration Files Query Dialog” and a message “Identify Succeeded” which verifies a Xilinx device:



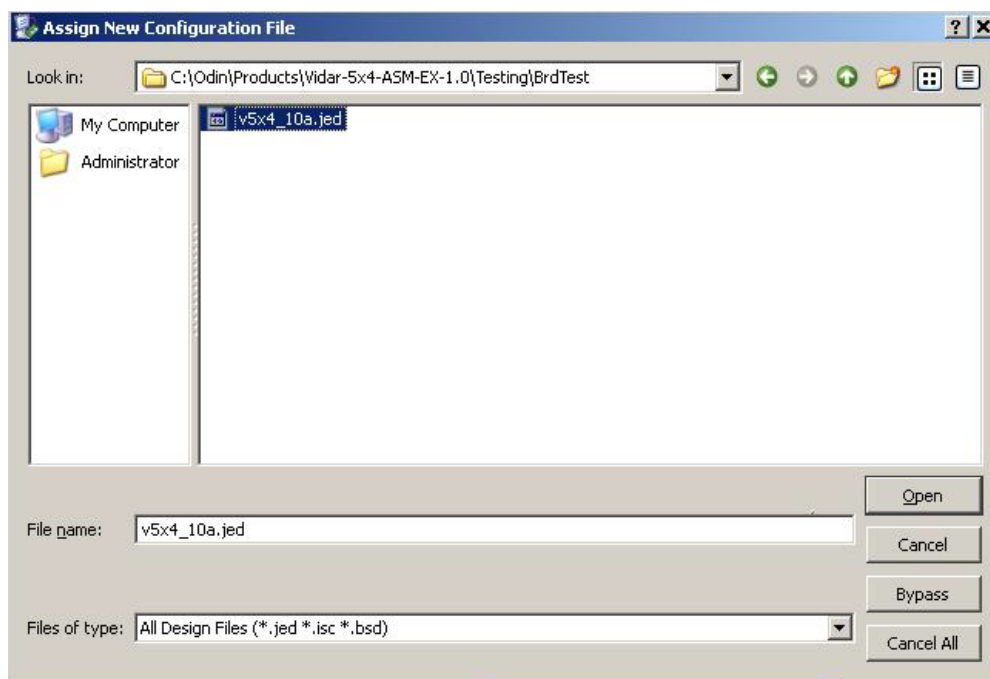
Picture 14: Snapshot 4 of Impact.





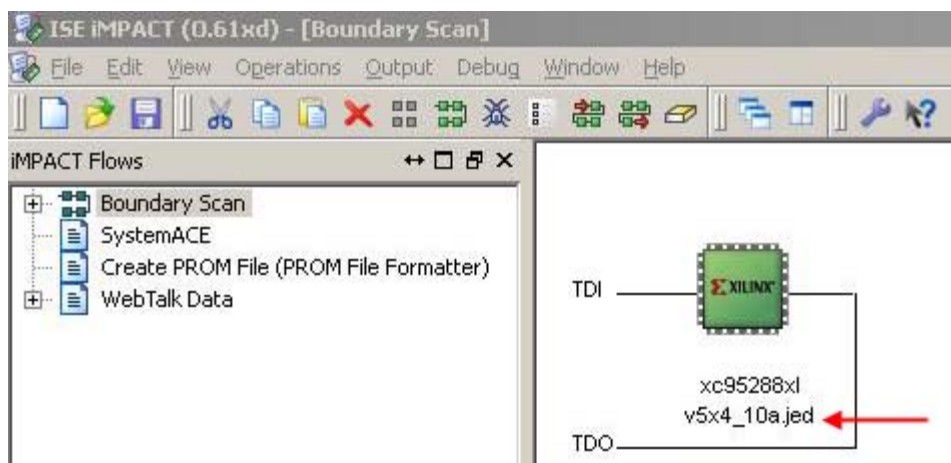
Picture 15: Snapshot 5 of Impact.

- On the question window, click “Yes” and browse to the place that v5x4\_10a.jed is located, in the Picture 16, it shows c:\Odin\Products\Vidar-5x4-ASM-EX\Testing\BrdTest, and this directory is recommended as a standard.

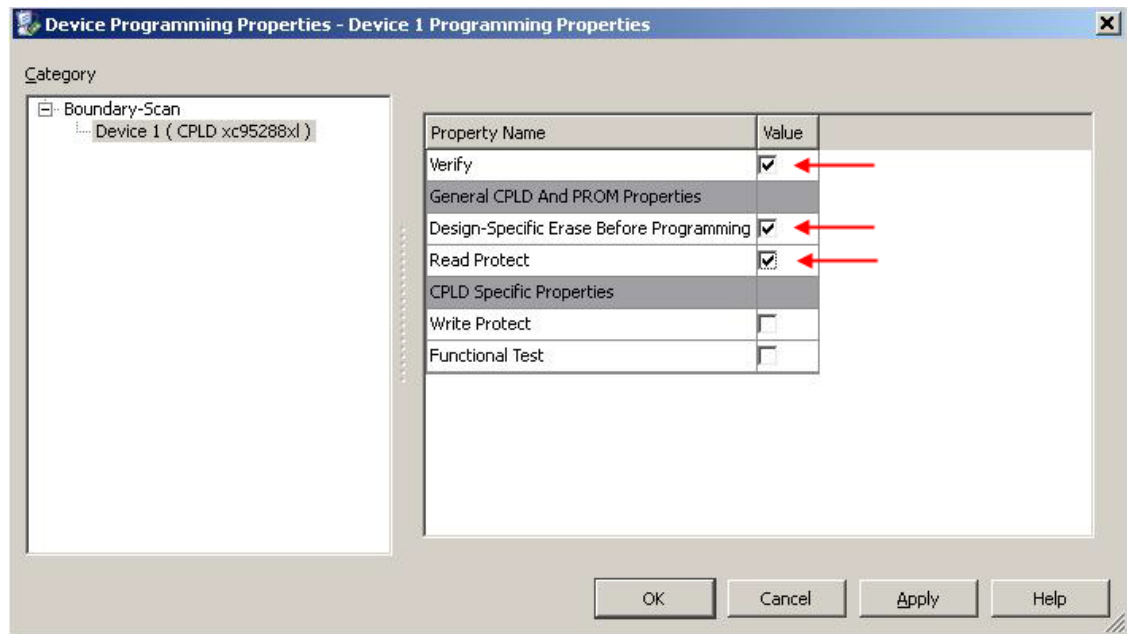


Picture 16: Snapshot 6 of Impact

- Click “Open”, Picture 17 shows that file v5x4-10a.jed is loaded, check the three boxes that arrows point to in Picture 18.

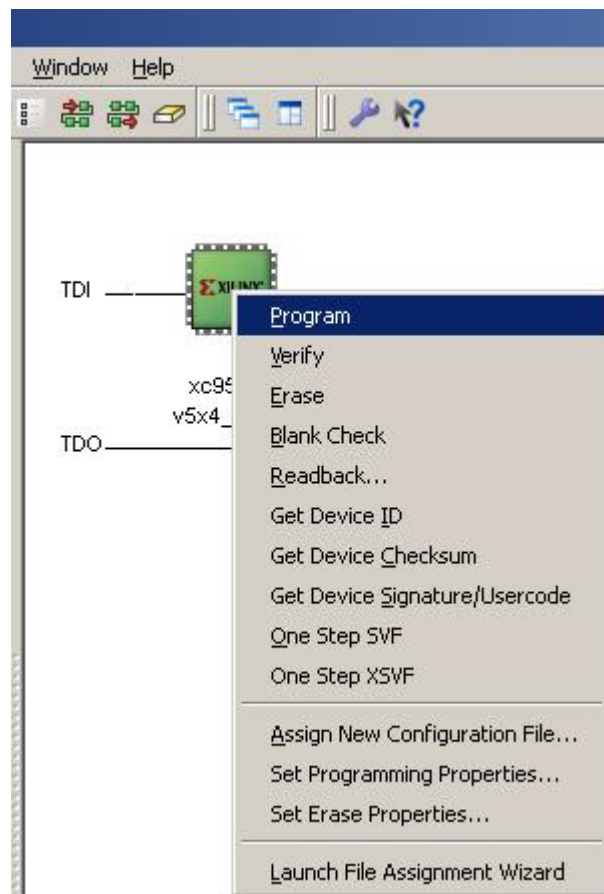


Picture 17; Snapshot 7 of Impact



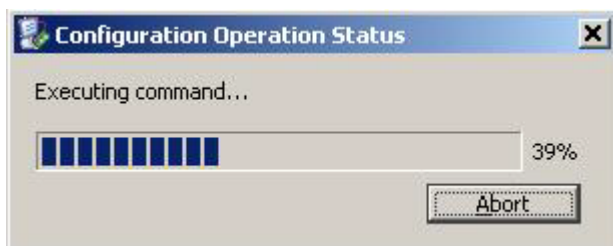
Picture 18: Snapshot 7 of Impact

- Click "OK", and then right-click on the green icon of Xilinx, it displays a menu showing on Picture 19.



Picture 19: Snapshot 8 of Impact

- Click on “Program”, Impact shows the “Configuration Operation Status” as Picture 20:



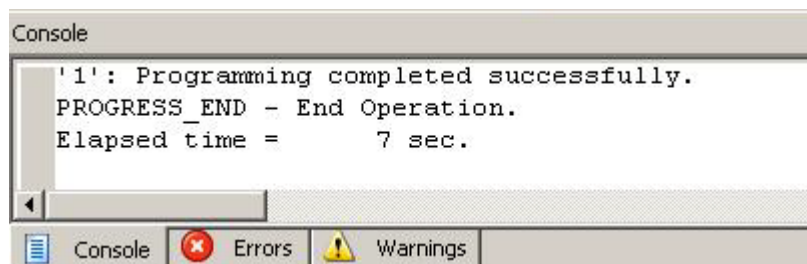
Picture 20: Snapshot 9 of Impact

- If programming is successful, a little message displays as Picture 21:



Picture 21; Snapshot 10 of Impact

- If it FAILED, you may try “Erase” first and then “Program” (see Picture 19).
- Progressing information is displayed on “Console” window which is on the bottom of the Impact screen (Picture 22), the information is useful when programming fails.

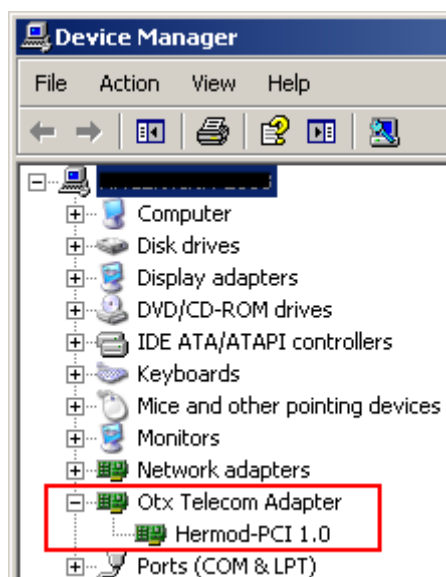


Picture 22; Snapshot 11 of Impact

- Then turn switch off on Hermod-PCI-64, remove Vidar card from Thor-2-PCI-Plus. Now it is ready for the next Vidar for configuration.

## 6 JTAG Testing

- On a PC, plug in a Hermod-PCI board on PCI extender, power on the extender.
- On Control Panel / System / Hardware / Device Manager, load the driver by right-clicking on the Hermod-PCI board, and choosing “Enable”, or right-click the PC’s name, choose “scan for hardware change” and enable Hermod-PCI. It should look like picture below if the driver is loaded successfully.



- Connect a rainbow color cable between Hermod-PCI and the board under test: connect one end of cable (labeled with “Connect to Hermod-PCI”) to BJ3 on Hermod-PCI board, another end of cable (labeled with “Connect to DUT”) to J3 JTAG on Thor-2-PCI-Plus which is on Hermod-PCI-64.
- Cycle power on Hermod-PCI-64 card.
- On the same DOS window,

```

C:\ C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

c:\products\Vidar-5x4-ASM-EX-1.0\Testing\BrdTest>VexTest VEXxyz_

```

type in “VexTest VEXxyz”, “VexTest” is the *Test Command* for Vidar-5x4-ASM-EX, “VEXxyz” is the serial number, there is a space between “VexTest” and “VEXxyz”, press <Enter> key, the test program asks you:

*Do you have Hermod-PCI connected to JTAG connector?  
Do you connect H100 cable between Hermod-PCI-64 and Thor-2-PCI-Plus ?*

If the cable are connected, press ‘y’.

The program automatically exits, if it is successful it should produce a printout similar to this:

```

Error limit at 250
PPI at IO-Addr 0x250
OTXPIC ID Code: 0010 1001 0101 0000 0110 0000 1001 0011
OTXPIC is a XC95108-TQ100 version 2

```





*OTXCDC ID Code: 0010 1001 0101 0000 0010 0000 1001 0011*  
*OTXCDC is a XC9536-VQ44 v2*

*V5X4PAIC ID Code: 0011 1001 0110 0001 0110 0000 1001 0011*  
*V5X4PAIC is a XC95288XL-FG256 version 3*

*FALC0 ID Code: 0100 0000 0000 0100 0010 0000 1000 0011*  
*FALC0 is a FALC\_LH v1.3*

*FALC1 ID Code: 0100 0000 0000 0100 0010 0000 1000 0011*  
*FALC0 is a FALC\_LH v1.3*

*OTXPIC User Code: 0011 0000 0011 0101 0011 0001 0011 0011*  
*OTXPIC Signature: 0513*

*OTXCDC User Code: 0011 0000 0011 0111 0011 0110 0011 0010*  
*OTXCDC Signature: 0762*

*V5x4PAIC User Code: 0011 0001 0011 0000 0011 0101 0011 0010*  
*V5x4PAIC Signature: 1052*

*Checking OTXPIC -- BU9 data ...*  
*Checking OTXCDC -- BU13 data ...*  
*Checking AMB -- BU11 data ...*  
*Checking OTXDML -- BU16 data ...*  
*Checking FALC0 -- U3 data ...*  
*Checking FALC1 -- U6 data ...*  
*Checking V5X4CST -- U2 data ...*  
*Checking DSP0 -- U10 data ...*  
*Checking DSP1 -- U8 data ...*  
*Checking DSP2 -- U4 data ...*  
*Checking DSP3 -- U6 data ...*

*Testing Stimulus to OTXPIC ...*  
*Testing OTXPIC(BU9) Pin 13 FPGA\_2\_RST (data out)*  
*Testing OTXPIC(BU9) Pin 14 FPGA\_2\_DONE (data out)*  
*.....*

*Testing Stimulus to OTXCDC ...*  
*Testing OTXCDC(BU13) Pin 40 PCM\_C2C (data out)*  
*Testing OTXCDC(BU13) Pin 41 PCM\_C16B (data out)*  
*.....*

*Testing Stimulus to AMB ...*  
*Testing AMB(BU11) Pin 203 PMCTCLKO (data out)*  
*Testing AMB(BU11) Pin 182 LDO15 (data out)*  
*.....*

*Testing Stimulus to OTXDML ...*  
*Testing OTXDML(BU16) Pin 106 DOUT (data out)*  
*Testing OTXDML(BU16) Pin 105 DIN (data out)*  
*.....*



*Testing Stimulus to FALC0 ...*  
*Testing FALC0(U3) Pin 56 INT (data out)*  
*Testing FALC0(U3) Pin 57 RDO (data out)*  
.....

*Testing Stimulus to FALC1 ...*  
*Testing FALC1(U6) Pin 56 INT (data out)*  
*Testing FALC1(U6) Pin 57 RDO (data out)*  
.....

*Testing Stimulus to V5X4PAIC ...*  
*Testing V5X4PAIC(U2) Pin 670 INTNIC (C1) (output)*  
*Testing V5X4PAIC(U2) Pin 652 READY (E6) (output)*  
.....

*Testing Stimulus to DSP0 ...*  
*Testing DSP0(U10) Pin 37 BCLKR2 (bidir)*  
*Testing DSP0(U10) Pin 34 BFSX2 (bidir)*  
.....

*Testing Stimulus to DSP1 ...*  
*Testing DSP1(U8) Pin 37 BCLKR2 (bidir)*  
*Testing DSP1(U8) Pin 34 BFSX2 (bidir)*  
.....

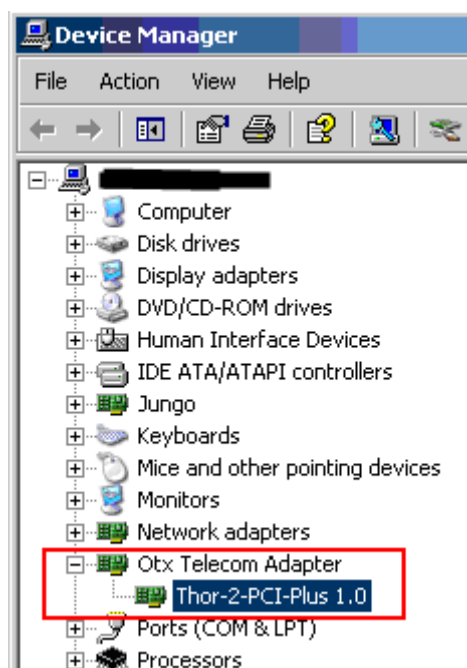
*Testing Stimulus to DSP2 ...*  
*Testing DSP2(U4) Pin 37 BCLKR2 (bidir)*  
*Testing DSP2(U4) Pin 34 BFSX2 (bidir)*  
.....

*Testing Stimulus to DSP3 ...*  
*Testing DSP3(U6) Pin 37 BCLKR2 (bidir)*  
*Testing DSP3(U6) Pin 34 BFSX2 (bidir)*  
.....  
*0 errors encountered (see Jt5x4T2p.log)*

Check the messages on the last lines, if “0 errors encountered (see jtVex-SerialNumber.log)” displays, that means the board passes JTAG test, otherwise, go to **Diagnostics**.

## 7 Functional Test

- Take Thor-2-PCI-Plus with Vidar-5x4-ASM-EX from Hermod-PCI-64 to a PCI Extender on a PC, put a “Thor-2-PCI-Plus Loop Plug” on the board, power on the extender.
- From Device Manager, load the driver by right-clicking on the Thor-2-PCI-Plus board, and choosing “Enable” or right-clicking the PC’s name and choosing “scan for hardware change” and enable Thor-2-PCI-Plus. It should look like picture below if everything goes correctly.



- Under c:\Odin\AppTest-2.32 (Note: 2.32 could change depending on the driver version), open a DOS window,

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

c:\Odin\AppTest-2.32>Vdar_plus_test.pl VEXxyz
```

Type in “Vidar\_plus\_test.pl VEXxyz” again, “VEXxyz” is the serial number of board under test, then press <Enter>,

- The command runs a set of programs. “Vidar-5x4-ASM VEXxyz passed tests” will display if the board passes all the tests.
- The final result log file would be Result-VEXxyz.log.

## 8 System Test

- On the same DOS window above, type in “Vidar\_Plus\_SystemTestAll.pl” with the number of loops you want to run, for example: Vidar\_Plus\_SystemTestAll.pl 100, (note: there is a space before “100” loops), and press <Enter>.

## 9 Diagnostics

If error occurs on running *Program Command* (Section 3 Firmware Configuration):



- Check cable connection between Xilinx cable and the board under test.
- Check if any device is missing or disoriented.
- Check for any short or open circuit.

If error occurs on running or *Test Command* (Section 4 JTAG Testing):

- Highlight file jtVex.log and press “F3” on the keyboard to open the file. Check the pins of device with error(s) shown on jtVex.log, for example, if it shows: “Testing FALC0 Pin 41 INT (output) Error#00000001: OTXDMPT2 Pin AA5 INT\_FALC0 (input); Got 1, Expected 0”, then check FALC0 pin 41 and OTXDMPT pin AA5.
- After touch-up on the problem device, re-run *Program Command* and *Test Command* .