
Testing the ATSTK94

This tutorial shows the user how to test the ATSTK94 Board. The following example uses a sample bit stream file supplied with the kit to perform a board test. It is recommended to perform the board test when you receive the kit to test both your connections to the board and the board itself.

The main steps in this tutorial are:

- Programming the Configurator (AT17XX) with a Bit Stream File
- Downloading the Configuration Data to the AT94K FPSLIC™ Device During Power Up.

Setting up the Example Files

In this tutorial all paths are given assuming a default install of `c:\SystemDesigner`. If you have installed System Designer™ in another drive or directory, remember to change the path to your actual System Designer directory.:

1. Install System Designer from the CD, please refer to the “System Designer User Guide” available on the Atmel web site, at http://www.atmel.com/dyn/products/tools_card.asp?tool_id=2752.
2. Request and Configure your license.
3. Install CPS from the System Designer CD.
4. Copy the `test_fpslic.bst` file from `c:\SystemDesigner\Examples\at94k\ATSTK94 Designs` or from http://www.atmel.com/dyn/products/tools_card.asp?tool_id=2750.

Setting up the Hardware

1. Connect the 25-pin parallel cable to the 25-pin male connector of the ATDH2225 download cable. The 10-pin female header plugs into the 10-pin male header (J1) on the ATDH94STKB board.
2. Connect the power supply from an AC outlet to the 9V DC connector (P3) on the ATSTK94 board.
3. Make sure to set the jumpers located between the LEDs and Switches appropriately. LED1 to LED8 should be connected to AVR side. Switches SW1 to SW4 should be connected to AVR side, and switches SW5 to SW8 should be connected to FPGA side.
4. Adjust *SW10* to the *PROG* position and *SW14* to the *ON* position. The power LED lights.



ATST94K

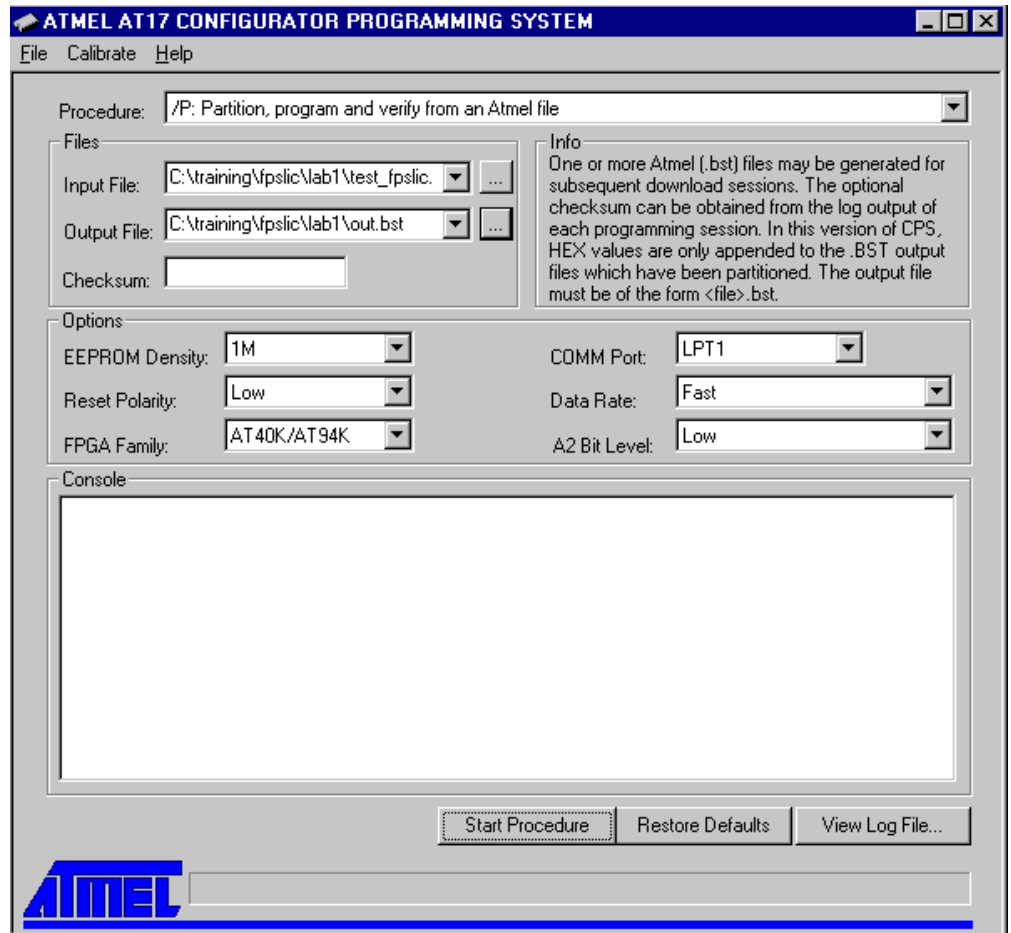
Tutorial



Downloading to the Configurator

1. Go to the *Start* menu and choose *Programs > Atmel > Atmel CPS 8.0x*. Atmel CPS opens, see Figure 1.

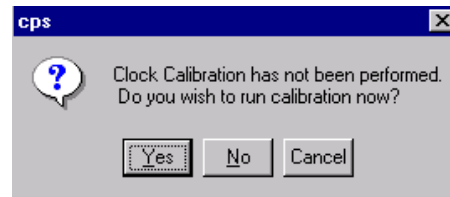
Figure 1. Atmel CPS Window



2. Select */P Partition, Program and Verify from an Atmel File* from the *Procedure* pull-down menu in the CPS window.
3. Use the button from the *Input File* pull-down menu to locate the `test_fpslic.bst` file under `c:\training\fpslic\lab1`.
4. Use the button from the *Output File* pull-down menu to indicate the `out.bst` file under `c:\training\fpslic\lab1`.
5. Select *1M* from the *EEPROM Density* pull-down menu.
6. Use the default options for the rest.
7. Press *Start Procedure* to program the Configurator.

If the utility has not been calibrated on a given PC, the *Clock Calibration* dialog will be displayed when the *Start Procedure* button is clicked, see Figure 2. For best results, it is highly recommended to allow *Clock Calibration* to proceed prior to the execution of the procedure. The clock calibration routine accounts for any variations in time delay units between different processors.

Figure 2. Clock Calibration Dialog Box

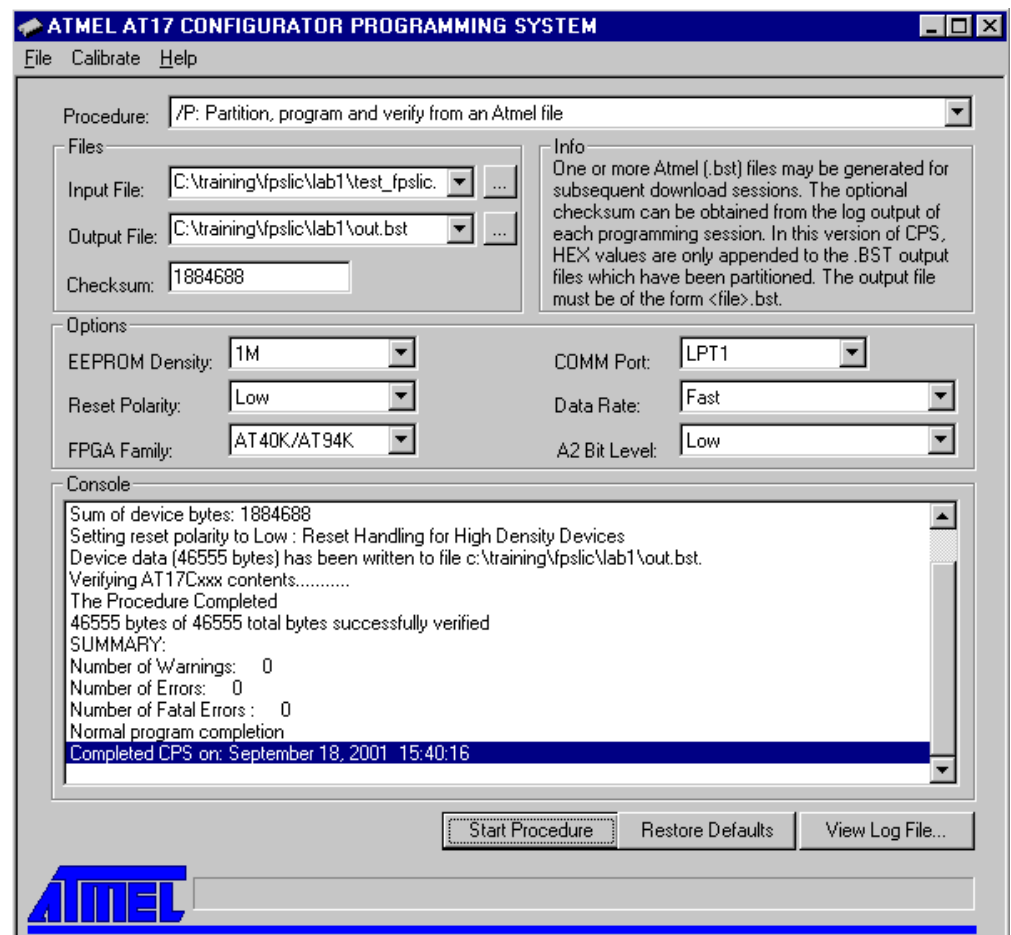


8. Press Yes. A calibration accuracy dialog box opens.

Low, Medium and *High* refer to the accuracy of the calibration. A high level of calibration will require more time to complete. Calibration can be performed again or at a later time by going to the *Calibrate* menu and selecting *Calibrate now*. The *out.bst* file can be overwritten.

If successful, the results are shown in Figure 3.

Figure 3. CPS Window Results



9. After CPS reports successful completion you can switch from *Prog.* to *Run*. Your design starts to run. The Alphanumeric will show a count sequence from 0 to 9 and from A to Z and will then reset to 0. The LED will show the counting up sequence. If your design does not run immediately you can set *JP19* to *RESET* and use the *RESET* button *SW12* to force a download from the Configurator to the FPSLIC device. You can also power-cycle the device.



The Checksum number is the number of data bits in the bitstream file, the checksum number shown here is for `test_fpslic.bst` file. This number can be used to check if the data is corrupted during file transfer.

Hardware Troubleshooting

Your design can encounter the following errors:

```
Error message "Expected 1 but found 0"
```

- No Power to the board
- Prog/ Run in the wrong position

or:

```
FATAL_ERROR: CMD ack_sense timed out
```

```
Double check the orientation of cable connected to evaluation board
```

Any other failure would be related to the following:

- Check to see that the Jumpers and Switches are in default positions, see Table 1.
- The next area to check is the pinlocks. In Figaro, during the parts process, make sure that you have selected to assign pinlocks. Without performing this step, your project will not run on the board, since you have not connected the signals to the correct pins on the board.
- Check to see that the AVR-FPGA Interface has the correct connections.
- Run co-verification on your design

Please refer to the CPS Troubleshooting guide for a complete description. Go to the *Help* menu and select *Contents > Trouble Shooting*.

Table 1. Default for Jumpers and Switches

Jumper/Switch	Default Position
JP 1-16	The default position for all the switches and LEDs is with the Jumper set to the “A” position, which means that the switches and LEDs are connected to the microcontroller. By setting the jumpers to the “F” position, the switches and LEDs are connected to FPGA.
JP17	Rev 2 – The jumper is set towards the edge of the board, this connects to the 4 MHz crystal. Connecting to other side will connect to the 18 MHz crystal. Rev3 and beyond – The position of the jumper is changed and it should be set on the inner side to connect to the 4 MHz crystal. Connecting towards the outer side of the board will connect to the 18 MHz crystal.
JP18	Has a Jumper Connected
JP19	Set to the RESET Position
JP20	Jumper connects the SER_EN pin of the AT17 device to the PORTE pin 7 of the microcontroller. By connecting this jumper, you can perform 2-wire serial interface. Default is “Not Connected”
JP21	Jumper Connects CEO/A2 to V _{CC} . Default is “Not Connected”
JP22	Jumper connects the write protect pins of the AT17 device to V _{CC} . Default is “Not Connected”
JP23	Rev4 and beyond – Jumper connects the write protect pins of the AT17 device to V _{CC} . Default is “Not Connected”
ON/OFF (Sw14)	Power Switch. Default Position Off
Run /Prog	Switch Set to Prog.



Atmel Corporation

2325 Orchard Parkway
San Jose, CA 95131
Tel: 1(408) 441-0311
Fax: 1(408) 487-2600

Regional Headquarters

Europe

Atmel Sarl
Route des Arsenaux 41
Case Postale 80
CH-1705 Fribourg
Switzerland
Tel: (41) 26-426-5555
Fax: (41) 26-426-5500

Asia

Room 1219
Chinachem Golden Plaza
77 Mody Road Tsimshatsui
East Kowloon
Hong Kong
Tel: (852) 2721-9778
Fax: (852) 2722-1369

Japan

9F, Tonetsu Shinkawa Bldg.
1-24-8 Shinkawa
Chuo-ku, Tokyo 104-0033
Japan
Tel: (81) 3-3523-3551
Fax: (81) 3-3523-7581

Atmel Operations

Memory

2325 Orchard Parkway
San Jose, CA 95131
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

Microcontrollers

2325 Orchard Parkway
San Jose, CA 95131
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

La Chantrerie
BP 70602
44306 Nantes Cedex 3, France
Tel: (33) 2-40-18-18-18
Fax: (33) 2-40-18-19-60

ASIC/ASSP/Smart Cards

Zone Industrielle
13106 Rousset Cedex, France
Tel: (33) 4-42-53-60-00
Fax: (33) 4-42-53-60-01

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Scottish Enterprise Technology Park
Maxwell Building
East Kilbride G75 0QR, Scotland
Tel: (44) 1355-803-000
Fax: (44) 1355-242-743

RF/Automotive

Theresienstrasse 2
Postfach 3535
74025 Heilbronn, Germany
Tel: (49) 71-31-67-0
Fax: (49) 71-31-67-2340

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Biometrics/Imaging/Hi-Rel MPU/ High Speed Converters/RF Datacom

Avenue de Rochepleine
BP 123
38521 Saint-Egreve Cedex, France
Tel: (33) 4-76-58-30-00
Fax: (33) 4-76-58-34-80

Atmel Programmable SLI Hotline
(408) 436-4119

Atmel Programmable SLI e-mail
fpslic@atmel.com

FAQ
Available on web site

e-mail
literature@atmel.com

Web Site
<http://www.atmel.com>

Disclaimer: Atmel Corporation makes no warranty for the use of its products, other than those expressly contained in the Company's standard warranty which is detailed in Atmel's Terms and Conditions located on the Company's web site. The Company assumes no responsibility for any errors which may appear in this document, reserves the right to change devices or specifications detailed herein at any time without notice, and does not make any commitment to update the information contained herein. No licenses to patents or other intellectual property of Atmel are granted by the Company in connection with the sale of Atmel products, expressly or by implication. Atmel's products are not authorized for use as critical components in life support devices or systems.

© Atmel Corporation 2003. All rights reserved. Atmel® and combinations thereof, AVR® and AVR Studio® are the registered trademarks of Atmel; System Designer™ and FPSLIC™ are the trademarks of Atmel.

ModelSim® and Leonardo® are the registered trademarks of Mentor Graphics Corporation. LeonardoSpec-
trum™ is the trademark of Mentor Graphics Corporation. Other terms and product names may be the trade-
marks of others.



Printed on recycled paper.