PRINTING HISTORY

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition is published.

A software code may be printed before the date; this indicates the version of the software product at the time the manual or update was issued. Many product updates and fixes do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one to one correspondence between product updates and manual updates.

Edition 1, January 2003
Edition 2, January 2010
Edition 3, February 2011

GENERAL NOTICE

Information contained in this document is subject to change without notice. CORELIS shall not be liable for errors contained herein for incidental or consequential damages in connection with the furnishing, performance, or use of material contained in this manual. This document contains proprietary information, which is protected by copyright. All rights reserved. No part of this document may be reproduced or translated to other languages without the prior written consent of CORELIS.

CORELIS assumes no responsibility for the use of or reliability of its software on equipment that is not furnished by CORELIS.
PRODUCT WARRANTY
For product warranty and software maintenance information, see the PRODUCT WARRANTY AND SOFTWARE MAINTENANCE POLICY statement included with your product shipment.

EXCLUSIVE REMEDIES
THE REMEDIES CONTAINED HEREIN ARE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES. CORELIS SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

Product maintenance agreements and other customer assistance agreements are available for Corelis products. For assistance, contact your nearest Corelis Sales and Service Office.

RETURN POLICY
No items returned to CORELIS for warranty, service, or any other reason shall be accepted unless first authorized by CORELIS, either direct or through its authorized sales representatives. All returned items must be shipped pre-paid and clearly display a Returned Merchandise Authorization (RMA) number on the shipping carton. Freight collect items will NOT be accepted. Customers or authorized sales representatives must first contact CORELIS with notice of request for return of merchandise. RMA's can only originate from CORELIS. If authorization is granted, an RMA number will be forwarded to the customer either directly or through its authorized sales representative.

CONTACT INFORMATION
For sales inquiries, please contact sales@corelis.com.

For any support related questions, please enter a support request at www.corelis.com/support or email support@corelis.com.

For more information about other products and services that Corelis offers, please visit www.corelis.com.
Table of Contents

CHAPTER 1 PRODUCT OVERVIEW ................................................................. 1-1
Introduction ........................................................................................................ 1-1
Features of the ScanDIMM-184 ....................................................................... 1-1
ScanDIMM-184/1.8V ....................................................................................... 1-2
Daisy-Chaining the TAPs ................................................................................ 1-2
ScanDIMM-184 Specifications ....................................................................... 1-3

CHAPTER 2 SCANDIMM-184 INSTALLATION .............................................. 2-1
What’s on the Disk .......................................................................................... 2-2
Introduction ...................................................................................................... 2-2
Connecting to the Boundary-Scan Controller ............................................... 2-2
Daisy-Chaining Multiple ScanDIMM-184 Modules ...................................... 2-5
Single TAP Connection to the Target UUT ...................................................... 2-7
Indicator LEDs ............................................................................................... 2-7
Mating Connectors ........................................................................................ 2-8
Accessories ...................................................................................................... 2-8

CHAPTER 3 PREPARATION OF TEST INPUT FILES .................................... 3-1
Introduction ...................................................................................................... 3-1
How to Generate Vectors using the ScanDIMM-184 .................................. 3-1
Testing the Socket Power and Ground Pins .................................................... 3-2

CHAPTER 4 EXECUTING SELFTEST WITH SCANEXPRESS RUNNER .... 4-1
Infrastructure Test .......................................................................................... 4-1
# Table of Figures

1. **Figure 1-1. ScanDIMM-184 module (top view)** ................................................................. 1-1
2. **Figure 2-1. ScanDIMM-184 and Cable Accessories** .............................................................. 2-1
3. **Figure 2-2. Block Diagram of Connection to a Single ScanDIMM-184** ...................................... 2-3
4. **Figure 2-3. Connection of 2 ScanDIMM-184 Modules and the Target using Separate TAPs** ........ 2-4
5. **Figure 2-4. Connecting Multiple ScanDIMM-184 Modules** .................................................. 2-5
6. **Figure 2-5. Example Target with Two ScanDIMM-184 Modules** ........................................... 2-6
7. **Figure 2-6. TAP Connection for a Single TAP System** .......................................................... 2-7
8. **Figure 3-1. Example Topology *.top file** ............................................................................. 3-1
9. **Figure 4-1. ScanExpress Runner Infrastructure Test** ............................................................. 4-2
Table of Tables

Table 1-1. DC Characteristics........................................................................................................ 1-3
Table 2-1. TAP-In Connection List.................................................................................................. 2-3
Table 2-2. TAP-Out Connection List .............................................................................................. 2-6
Table 2-3. Mating Connectors for the ScanDIMM-184................................................................. 2-8
Table 2-4. Cable Accessories for ScanDIMM-184........................................................................... 2-8
Table 2-5. Digikey Cable Part Numbers .......................................................................................... 2-8
Chapter 1
Product Overview

Introduction

The ScanDIMM-184 Digital Tester module provides an easy-to-use method for interconnected testing of 184-pin DIMM sockets. Through the use of Boundary-Scan technology, the ScanDIMM-184 Digital Tester provides 179 fully bi-directional test signals. A Boundary-Scan Test Access Port (TAP) connects to a host computer, which provides virtually unlimited memory depth for testing each of the DIMM socket pins. The 184-pin sockets are often used for Double Data Rate (DDR) Synchronous Dynamic Random Access Memory (SDRAM) memory modules, and the ScanDIMM-184 offers an accurate and easy-to-use mechanical and electrical solution to connecting test equipment to DIMM sockets.

Features of the ScanDIMM-184

- Tests 184-pin DDR DIMM sockets
- Tests for opens on the socket’s power and ground pins
- 2.5V interface, 3.3V tolerant.
- Daisy-chain up to 8 ScanDIMM-184 modules
- LEDs indicate power-on and TAP-on
- Compatible with ScanExpress software.

Figure 1-1 shows the ScanDIMM-184 module with Pin 1 of the TAP-In connector identified.

Figure 1-1. ScanDIMM-184 module (top view)
**ScanDIMM-184/1.8V**

The ScanDIMM-184 is designed to fit into the popular 184-pin, 2.5V-compatible DIMM socket. A similar module, the ScanDIMM-184/1.8V, fits into a 1.8V-compatible DIMM socket. This manual applies to both the 2.5V and 1.8V modules but for the sake of simplicity it references only the more popular 2.5V module. For ordering information on the 1.8V version, please contact sales@corelis.com.

**Daisy-Chaining the TAPs**

Multiple ScanDIMM-184s give access to units under test (UUTs) that contain multiple DIMM sockets. Each ScanDIMM-184 provides a TAP-In and a TAP-Out connector. The TAP-In connects to the external Boundary-Scan tester. Connect the TAP-Out only when daisy-chaining multiple ScanDIMM-184 modules. Although each ScanDIMM-184 module can connect to its own external TAP, daisy-chaining multiple ScanDIMM-184 modules together using the TAP-In and TAP-Out connectors minimizes the number of TAPs between the UUT and the external ScanExpress Boundary-Scan tester. The TAP-Out connector’s presence-detect logic automatically detects the module connected to it and properly routes the Boundary-Scan signals to the next module in the chain.
ScanDIMM-184 Specifications

Size and Form Factor

| Compatibility | JEDEC MO-206 |
| Dimensions    | 5.250 in. × 1.000 in. (JEDEC MO-206 AA dimension) |
| PCB thickness | 0.050 in. |
| Connector Keying | 2.5V-compatible, 1.8V version also available |

Number of Boundary-Scan Test Signals

179 per module

Maximum Test Clock (TCK) Frequency

Maximum TCK Frequency 25 MHz

LEDs

- Pwr
  Indicates 2.5V power source is present
- TAP On
  Indicates the TAP is connected.

I/O and TAP Signals DC Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Conditions</th>
<th>MIN</th>
<th>MAX</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Power ($V_{DD}$) - Provided via the 184 pin socket pins</td>
<td></td>
<td>2.30</td>
<td>2.70</td>
<td>V</td>
</tr>
<tr>
<td>High Level Input Voltage ($V_{IH}$)</td>
<td></td>
<td>1.7</td>
<td>3.6</td>
<td>V</td>
</tr>
<tr>
<td>Low Level Input Voltage ($V_{IL}$)</td>
<td></td>
<td>-0.30</td>
<td>0.70</td>
<td>V</td>
</tr>
<tr>
<td>Output High Level Voltage ($V_{OH}$)</td>
<td>I$_{OH} = -4$ mA dc</td>
<td>2.10</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>I$_{OH} = -0.1$ mA dc</td>
<td>2.30</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Output Low Level Voltage ($V_{OL}$)</td>
<td>I$_{OL} = 8$ mA dc</td>
<td></td>
<td>0.40</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>I$_{OL} = 0.1$ mA dc</td>
<td></td>
<td>0.20</td>
<td>V</td>
</tr>
<tr>
<td>Input leakage Current ($I_i$)</td>
<td>$V_i = V_{DD}$ or GND</td>
<td>-10</td>
<td>10</td>
<td>$\mu$A</td>
</tr>
</tbody>
</table>

Table 1-1. DC Characteristics
TAP Connectors

TAP-In Connector 10-pin Single Row 0.100-in. spacing (Samtec part no. TSM-110-01-T-SH or equivalent)
TAP-Out Connector 10-pin IDC (Samtec part no. TSM-110-01-T-SH or equivalent)

Power Requirements (Provided by the 184-pin mating socket)

2.50 V .200 A (Maximum)

Operating Environment

Temperature 0°C to 55°C
Relative Humidity 10% to 90%, non-condensing

Storage Environment

Temperature -40°C to 85°C
The ScanDIMM-184 product consists of the following components:

- User’s Manual
- Configuration Disk
- ScanDIMM-184 Module
- Host Adapter Cable, Corelis P/N 15336
- TAP-Out to TAP-In daisy-chain cable, 2” long, 10-pin 1:1, Corelis P/N 15337

Ensure all materials listed are present and free from visible damage or defects before proceeding. If anything appears to be missing or damaged, contact Corelis at the number listed on the front cover immediately. Figure 2-1 shows the ScanDIMM-184 and the two cables that come with the product.
What's on the Disk

The disk contains the following Test Vector Generation files:

<table>
<thead>
<tr>
<th>Filename</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ScanDIMM-184.bsd</td>
<td>BSDL file for the ScanDIMM-184 Boundary-Scan component.</td>
</tr>
<tr>
<td>ScanDIMM-184.top</td>
<td>The topology file for the ScanDIMM-184. This file is merged with the UUT's topology file.</td>
</tr>
<tr>
<td>SelfTest_Infrastructure_Inf.cv</td>
<td>An infrastructure test for a single ScanDIMM-184 with nothing connected to its TAP-Out. It is used with ScanExpress Runner as a basic self-test of the ScanDIMM-184.</td>
</tr>
</tbody>
</table>

Introduction

To ensure reliable operation of the ScanDIMM-184, it is important to connect it properly to both the Boundary-Scan tester and the UUT’s 184-pin DIMM socket.

Connecting to the Boundary-Scan Controller

The external Boundary-Scan controller connects to the ScanDIMM-184 TAP-In connector via the Host Adapter Cable. Connect one end of the Host Adapter Cable P/N 15336 to the TAP-In connector of the ScanDIMM-184. Connect the 10-pin cable from the Boundary-Scan Controller (ScanTAP-4, Buffer-1149.1/Gang, etc.) to the other end of the adapter cable. Table 2-1 shows the pin assignments for the TAP-In connector. Figure 2-2 shows a block diagram for the TAP connection to a single ScanDIMM-184 module.
Figure 2-2. Block Diagram of Connection to a Single ScanDIMM-184

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>I/O</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TRST*</td>
<td>In</td>
<td>TRST*</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>TDI</td>
<td>In</td>
<td>Test Data In</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>TDO</td>
<td>Out</td>
<td>Test Data Out</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>7</td>
<td>TMS</td>
<td>In</td>
<td>Test Mode Select</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>9</td>
<td>TCK</td>
<td>In</td>
<td>Test Clock</td>
</tr>
<tr>
<td>10</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
</tbody>
</table>

Table 2-1. TAP-In Connection List
The TAP-In connector conforms to the popular Corelis 10-pin TAP connector pinout except that it is a single row (10 × 1) instead of dual row (5 × 2). The Host TAP Adapter Cable P/N 15336 is a 1:1 adapter cable. The pin assignment is standard, connecting to any Corelis controller using the appropriate standard 10-pin TAP cable. It is best to use the PCI-1149.1/Turbo equipped with a ScanTAP-4 Intelligent Pod, with one TAP connected to the ScanDIMM-184 (or to multiple, daisy-chained ScanDIMM-184 modules) and with additional TAP(s) connected to the UUT. Other Corelis controllers with an appropriate version of the Buffer-1149.1 can also be used so that the UUT can connect on a separate TAP.

Figure 2-3 shows the TAP connections for two daisy-chained ScanDIMM-184 modules on TAP1 and the Target UUT on TAP2.

---

**Figure 2-3.** Connection of 2 ScanDIMM-184 Modules and the Target using Separate TAPs
Daisy-Chaining Multiple ScanDIMM-184 Modules

The TAP-Out connector can daisy-chain multiple ScanDIMM-184 modules together to form a high pin-count digital test system that can test multiple DIMM sockets at once. With the ScanDIMM-184 TAP-Out/TAP-In connectors connected in series, a single host TAP interface can access multiple ScanDIMM-184 modules as shown in Figure 2-4.

![Diagram of Daisy-Chaining Multiple ScanDIMM-184 Modules](image)

**Figure 2-4. Connecting Multiple ScanDIMM-184 Modules**

A straight-ten contact, single row, socket-connector-to-socket-connector, flex flat cable connects adjacent ScanDIMM-184 modules. The daisy chain cable (P/N 15337) connects the TAP-Out connector from the first ScanDIMM-184 module to the TAP-In connector on the second module. Additional ScanDIMM-184 modules are daisy-chained in a similar fashion. The UUT connects to the TAP-Out of the last ScanDIMM-184. Table 2-2 shows the pin assignments for the TAP-Out connector. Figure 2-5 shows a system with two daisy-chained ScanDIMM-184 modules installed on a target UUT.
<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>I/O</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TRST*</td>
<td>Out</td>
<td>TRST*</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>TDO</td>
<td>Out</td>
<td>Test Data Out</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>TDI</td>
<td>In</td>
<td>Test Data In</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>7</td>
<td>TMS</td>
<td>Out</td>
<td>Test Mode Select</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>9</td>
<td>TCK</td>
<td>Out</td>
<td>Test Clock</td>
</tr>
<tr>
<td>10</td>
<td>GND</td>
<td></td>
<td>Ground</td>
</tr>
</tbody>
</table>

Table 2-2. TAP-Out Connection List

Figure 2-5. Example Target with Two ScanDIMM-184 Modules
**Single TAP Connection to the Target UUT**

There are two ways to connect to the target UUT. The first and most recommended way is using an external Corelis Buffer-1149.1/Gang pod or external ScanTAP-4 Intelligent Pod unit to chain the Target UUT with the ScanDIMM-184 module(s). In this case simply connect TAP2 from the pod to the TAP connector on the target UUT.

Another way to connect to the Target UUT is to daisy-chain the target with the ScanDIMM-184 module(s). In this case, the TAP-Out from the last ScanDIMM-184 module must connect to the TAP of the target. The connection list in Table 2-2 must be followed and all grounds must be connected. (Note that TDO from the TAP-Out connects to the TDI of the next device in the scan chain). This configuration is not desirable if there are many ScanDIMM-184 modules chained together, or if the target TAP connector is far away from the ScanDIMM-184 modules, because of signal integrity problems.

---

**Indicator LEDs**

Two LEDs indicate the status of the ScanDIMM-184 module. D2 is labeled PWR. It illuminates if the ScanDIMM-184 is receiving power from the target (through pins 85 and 168). If the LED is not illuminated, the ScanDIMM-184 module is not powered up. D1 is labeled TAP ON. It indicates a detected connection to either a controller or a daisy-chained upstream ScanDIMM-184 module. The ScanDIMM-184 module will not operate unless D1 is illuminated.
Mating Connectors

Table 2-3 shows the mating connectors needed to make cables for the Boundary-Scan connector.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Manufacturer</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAP-In to TAP-Out</td>
<td>10-pin 0.1 in. single row connector.</td>
<td>Molex</td>
<td>50-57-9010</td>
</tr>
<tr>
<td></td>
<td>Crimp Terminals</td>
<td>Molex</td>
<td>16-02-0097</td>
</tr>
<tr>
<td>Host TAP Adapter Plug</td>
<td>10-pin IDC Plug</td>
<td>3M</td>
<td>4610-6351</td>
</tr>
<tr>
<td></td>
<td>Strain Relief</td>
<td>3M</td>
<td>3448-3010</td>
</tr>
<tr>
<td>Host TAP Adapter Socket (Connects with Target)</td>
<td>10-pin IDC Socket</td>
<td>3M</td>
<td>3473-6610</td>
</tr>
<tr>
<td></td>
<td>Strain Relief</td>
<td>3M</td>
<td>3448-3010</td>
</tr>
</tbody>
</table>

Table 2-3. Mating Connectors for the ScanDIMM-184

Accessories

Additional TAP Adapter Cables (P/N 15336) and 2-inch 10-pin 1:1 cables (P/N 15337) can be ordered from Corelis:

<table>
<thead>
<tr>
<th>Description</th>
<th>Corelis P/N</th>
<th>Other Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-pin dual row IDC plug to 10 pin single row 1:1 cable</td>
<td>15336</td>
<td>Custom</td>
</tr>
<tr>
<td>10-pin single row 1:1 cable, 2 inch</td>
<td>15337</td>
<td>Digikey P/N A9BBG-1002F-ND</td>
</tr>
</tbody>
</table>

Table 2-4. Cable Accessories for ScanDIMM-184

The single row 1:1 cables may be ordered directly from Digikey (see www.digikey.com) in different lengths:

<table>
<thead>
<tr>
<th>Length</th>
<th>Digikey P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 in.</td>
<td>A9BBG-1003F-ND</td>
</tr>
<tr>
<td>4 in.</td>
<td>A9BBG-1004F-ND</td>
</tr>
<tr>
<td>5 in.</td>
<td>A9BBG-1005F-ND</td>
</tr>
<tr>
<td>6 in.</td>
<td>A9BBG-1006F-ND</td>
</tr>
<tr>
<td>8 in.</td>
<td>A9BBG-1008F-ND</td>
</tr>
</tbody>
</table>

Table 2-5. Digikey Cable Part Numbers
Introduction

The ScanDIMM-184 integrates easily with a boundary-scan test plan. When the ScanDIMM-184 is installed in a socket, the socket behaves like a boundary-scan component. Therefore, it is not necessary to make any changes to the netlist to include the ScanDIMM-184 in a test plan.

Once the ScanDIMM-184 is plugged into the socket on the target board, the boundary-scan test system will automatically test the socket. However, regeneration of the interconnect tests with the relevant ScanDIMM-184 input files included is required (using ScanExpress TPG).

How to Generate Vectors using the ScanDIMM-184

Copy the file ScanDIMM-184.bsd to your design directory. Add the ScanDIMM-184 modules to the topology file and regenerate your test vectors. In the topology file each ScanDIMM-184 takes the reference number of the socket in which it is installed. How the ScanDIMM-184 components are connected to the target system determines the order that they appear in the topology file. If the ScanDIMM-184 units are connected to TAP2 then they are placed at the end of the topology file.

Below is an example of a target system with two ScanDIMM-184 connected to a second TAP installed in locations J1 and J2.

```
!------------------------------------------------------------------
! Boundary-Scan chain Topology File
! ScanDIMM-184
!
! File:       Example.top
! Date:       January 19, 2003
! Engineer:   K. May
! Company:    Corelis Inc.
!------------------------------------------------------------------

CHAIN   chain1
DEVICES
!
!
! DEVICE     BSDL FILE --------> PACKAGE -> BYPASS?
!
!
U1        "EPM7032_bt44.bsd"   TQFP44   NO
U2        "xc2s50_fg256.bsd"   FG256    NO
J1        "ScanDIMM-184.bsd"   FPBGA_256 NO
J2        "ScanDIMM-184.bsd"   FPBGA_256 NO
!

END_DEVICES

END_CHAIN
```

Figure 3-1. Example Topology *.top file
Testing the Socket Power and Ground Pins

To test the power and ground pins on the ScanDIMM-184 socket the constraint file should have added syntax:

SENSE_HIGH VDD
SENSE_LOW GND

Where VDD and GND are the net names of the 2.5V power and the ground signal on the target board. This syntax may already be present to test other power or ground connections in the target system.
Chapter 4
Executing Selftest with ScanExpress Runner

ScanExpress Runner (sold separately) can load and run the compact vector file, SelfTest_Infrastructure_inf.cvf, and quickly test that the ScanDIMM-184 is functional. Both the ScanExpress Runner software and a Corelis Boundary-Scan controller such as the PCI-1149.1/Turbo are required to execute this file.

Infrastructure Test

The infrastructure test verifies the TAP connection between the controller and the ScanDIMM-184. It also verifies that the Boundary-Scan infrastructure of the CPLD device on the ScanDIMM-184 is fully functional. The infrastructure test requires a Corelis Boundary-Scan controller, a ScanDIMM-184 unit and a Host TAP cable (P/N 15336). The following steps execute an infrastructure test.

**Step 1**  Remove any memory modules from the UUT DIMM socket(s) to be tested.

**Step 2**  Install the ScanDIMM-184 in the socket.

**Step 3**  Connect the Host TAP Adapter cable P/N 15336 to the “TAP-In” connector on the ScanDIMM-184.

**Step 4**  Connect the 10-pin TAP cable from the external controller to the other end of the Host TAP Adapter cable.

**Step 5**  Apply power to the UUT.

**Step 6**  Make sure that both LEDs on the ScanDIMM-184 illuminate.

**Step 7**  Double-click on the ScanExpress Runner Icon.

**Step 8**  Select File:New Test Plan and click on the Add button.

**Step 9**  With the file browser, find and select the Selftest_Infrastructure_inf.cvf file. Click OK.

**Step 10**  Select Set-up:Controller, then choose the appropriate Boundary-Scan controller and set the frequency to 1 MHz.

**Step 11**  Select Run Test. The test should run and pass. Figure 4-1 shows a passing infrastructure test.
Figure 4-1. ScanExpress Runner Infrastructure Test