

**Agilent E2943A/E2944A
ATCA Probes for
Advanced Switching
Interconnect**

Hardware Setup Guide



Agilent Technologies

Notices

© Agilent Technologies, Inc. 2005

No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Agilent Technologies, Inc. as governed by United States and international copyright laws.

Trademarks

Windows® is a U.S. registered trademark of Microsoft Corporation.

Installation Guides

You can find the installation guides for different components of the product on the product CD. Agilent recommends you to do not switch on the instrument before you have understood all the applicable installation instructions and have met all the installation prerequisites.

Where to find more information

You can find more information about ATCA from the following link:

<http://www.agilent.com/find/asi>

You can also look for search a local contact for assistance on the following link:

<http://www.http.agilent/find/assist>

Manual Part Number

E2943-91010

Edition

First edition, Sept 2005

Printed in Germany

Agilent Technologies
Herrenberger Strasse 130
D-71034 Boeblingen, Germany

Warranty

The material contained in this document is provided “as is,” and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as “Commercial computer software” as defined in DFAR 252.227-7014 (June 1995), or as a “commercial item” as defined in FAR 2.101(a) or as “Restricted

computer software” as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies’ standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

Safety Symbols on Instruments



Indicates warning or caution. If you see this symbol on a product, you must refer to the manuals for specific Warning or Caution information to avoid personal injury or damage to the product.



Frame or chassis ground terminal. Typically connects to the equipment's metal frame.



Indicates hazardous voltages and potential for electrical shock.



Indicates that antistatic precautions should be taken.



Indicates hot surface. Please do not touch.



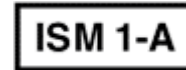
Indicates laser radiation turned on.



Safety requirements for electrical equipment for measurement, control, and laboratory use CAN/CSA C22.2 No. 1010.1 (1993) UL 3101, 3111 (First Editions) This equipment has also been evaluated to IEC 61010 edition 1 including amendments 1 and 2.




Notice for European Community: This product complies with the relevant European legal Directives: EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC.



This is the symbol for an Industrial, Scientific, and Medical Group 1 Class A product.

Environmental Information

	<p>This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.</p> <p><i>Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as a "Monitoring and Control Instrumentation" product.</i></p> <p>Do not dispose in domestic household waste.</p> <p>To return unwanted products, contact your local Agilent office, or see www.agilent.com/environment/product/ for more information.</p>
---	---

Contents

1 Introduction

About ATCA	8
E2943A - ATCA Active Probe Board	8
E2944A - ATCA Passive Probe Board	9
Important Terms and Acronyms	11

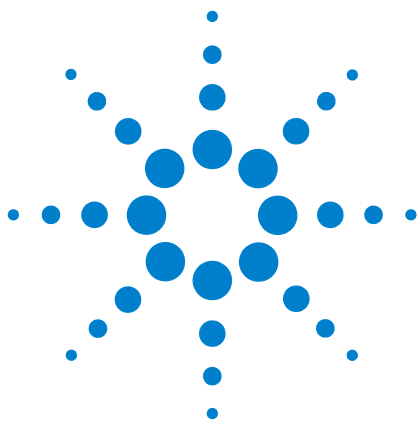
2 Setting Up the Hardware

About Setting Up the ATCA Probe Boards	14
Requirements for setting up the ATCA probe boards	14
Important considerations for setting up ATCA probe boards	14
Setting Up the ATCA Probe Boards	16
To set up probe board using the ASI Analyzer hardware setup model	17
To set up probe board using the ASI Exerciser hardware setup model	19
Verifying the ATCA Probe Board Setup	20
To verify the ATCA probe board setup	20

3 Power Supply

About Power Supply for the Active Probe Boards	24
Power supply for the active probe board	25
Power supply for the active probe board infrastructure	25
Power supply for the AMC card	25
Power supply for ATCA DUT through Zone 1 connector	26
Power supply for the fan	26

Index



1 Introduction

About ATCA 8

E2943A - ATCA Active Probe Board 8

E2944A - ATCA Passive Probe Board 9

Important Terms and Acronyms 11

This chapter introduces you to Advanced Telecom Computing Architecture (ATCA) and provides a brief description of the Agilent's E2943A and E2944A probe boards. This chapter also provides a brief description of some of the important terms and acronyms.



About ATCA

ATCA is an industry standard to create new hardware (boards and chassis) for optimized communication. Developed by the PCI Industrial Computer Manufacturers Group (PICMG), ATCA is designed to meet the requirements of next-generation communication applications.

In Agilent E2980 series, the following two ATCA probe boards are used to test communication devices:

- [E2943A - ATCA Active Probe Board](#)
- [E2944A - ATCA Passive Probe Board](#)

E2943A - ATCA Active Probe Board

Agilent E2943A, an *active probe board*, is used for the Protocol Exerciser to emulate any real ASI device. The active probe board can also be used for the Protocol Analyzer setup. Additionally, E2943A allows you to test the Advanced Mezzanine Cards (AMC) standard with a connector to plug in any AMC form factor card. E2943A is connected to the platform with the standard I/O cable.

Figure 1 illustrates an active probe in E2980.

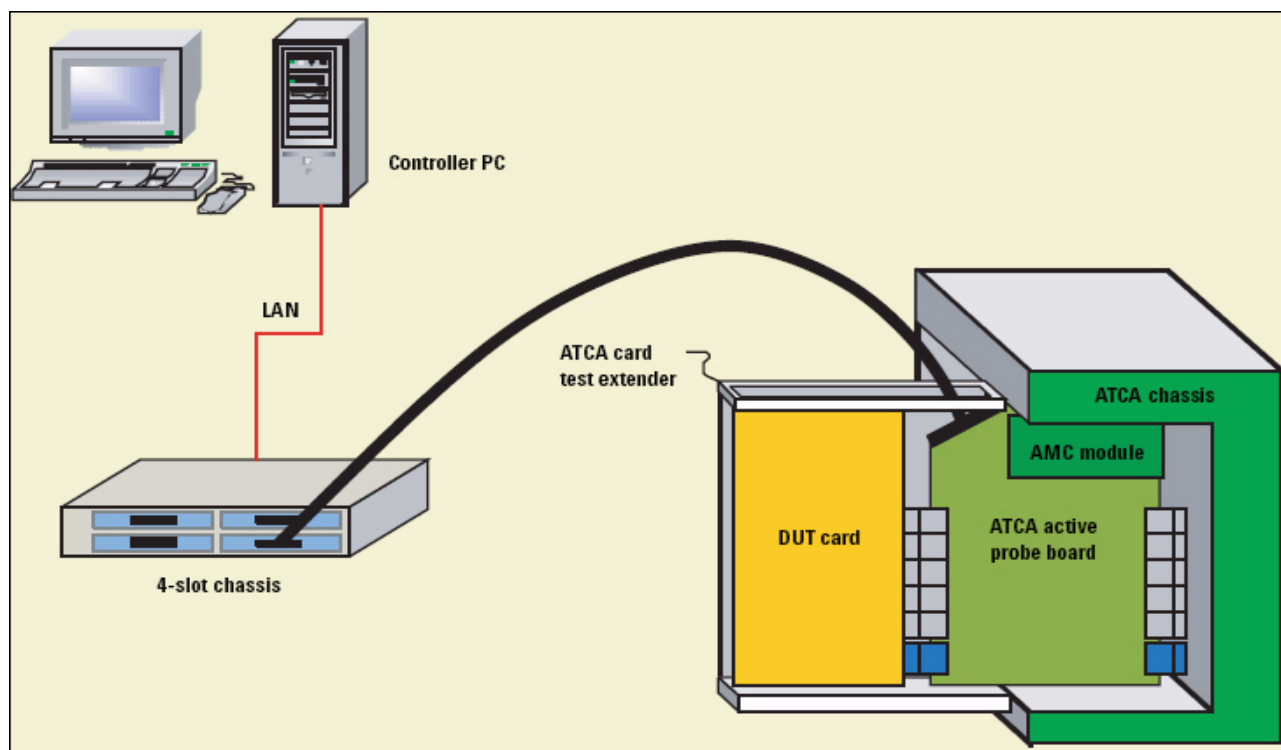


Figure 1 Active Probe

E2944A - ATCA Passive Probe Board

Agilent E2944A, a *passive probe board*, is used with Protocol Analyzer for non-intrusive capturing of the ASI transactions. E2944A connects to the platform through a Midbus connection.

In E2980 series, Midbus connection is provided using Agilent's E2941A, *Soft Touch Midbus probe*. This probe helps you to connect Protocol Analyzer to a DUT without using any available slot. For example, you can connect this probe to a standard footprint, which is integrated with the board under test, and then use it to analyze links on a board from one chip to another chip.

Figure 2 illustrates a passive probe in E2980.

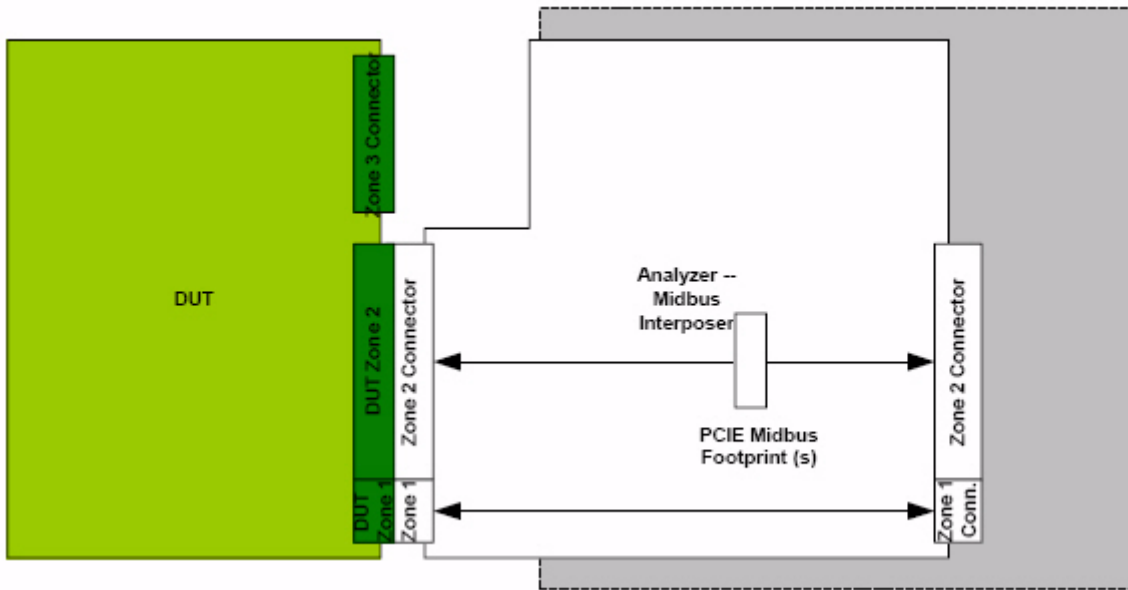


Figure 2 Passive Probe

Important Terms and Acronyms

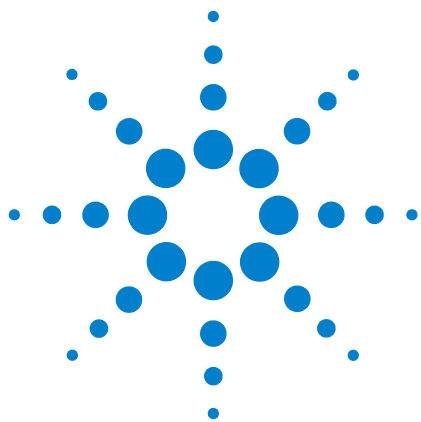
Before you start setting up the probe boards, it is important to get familiar with the following terms and acronyms:

- **Zone 1:** It is a linear space along the height dimension of an ATCA slot, which is allocated for power, management, and other additional functions.
- **Zone 2:** It is a linear space along the height dimension of an ATCA slot, which is allocated to the *data transport interface* (DTI).
- **Zone 3:** It is a linear space along the height dimension of an ATCA slot, which is reserved for user defined connections.
- **Backplane:** It is a passive circuit board that provides the Zone 1 and Zone 2 connectors for the front board slots. Link ports of these slots are connected through high speed signal pairs. Power distribution, management, and auxiliary signal connections are supported.
- **Fabric Interface:** It is a Zone 2 interface that provides 15 connections per slot. Each connection is comprised of up to eight differential signal pairs (*channel*) that support connections with up to 15 other slots.

Backplanes may support the *fabric interface* in a variety of configurations, such as Full Mesh and Dual Star topologies. Boards that support the fabric interface may be configured as *fabric node boards*, *fabric hub boards*, or *mesh enabled boards*.

- **AMC:** It is an acronym of *Advanced Mezzanine Card*. It is a modular add-on or child card that extends the functionality of a carrier board, such as an ATCA probe board. An AMC card is placed parallel to the carrier board. You can integrate it with the carrier board by plugging it into an AMC Connector.
- **DUT:** It is an acronym of *Device Under Test*.
- **ATCA Test Card Extender:** It is a metal card cage that holds up to three ATCA DUT boards. It is used to secure ATCA CUT cards on the probe board. It also contains separate fans to provide cooling for the DUT cards.

1 Introduction



2 Setting Up the Hardware

About Setting Up the ATCA Probe Boards 14

Setting Up the ATCA Probe Boards 16

Verifying the ATCA Probe Board Setup 20

This chapter provides information about the setting up the ATCA probe boards.



About Setting Up the ATCA Probe Boards

Prior to start setting up the hardware, you must pay attention to the:

- [Requirements for setting up the ATCA probe boards](#)
- [Important considerations for setting up ATCA probe boards](#)

Requirements for setting up the ATCA probe boards

Before you start setting up the ATCA probe boards, ensure the following:

- ATCA chassis is present.
- Test Card Extender is present.
- DUT is present.
- Required ATCA probe boards are present.
- The Protocol Exerciser software is properly installed.
- Black I/O cable, to connect the probe board and the I/O module, is present.

NOTE

Not all the hardware item is needed in each ATCA setup model. For more information, refer [Setting Up the ATCA Probe Boards](#) on page 16.

NOTE

For information on installing Protocol Exerciser, refer to *Agilent System Protocol Tester, Installation Guide*.

Important considerations for setting up ATCA probe boards

Remember the following points to avoid any hardware damage or human injury:

- E2943A contains unlimited circuits. To ensure its safe application, integrate E2943A into an enclosure, which complies with the safety requirements of IEC 61010-1 §9.2.
- While you are using E2943A, some parts may get very hot. Therefore, a suitable electrical and fire enclosure should be provided to protect against the spread of fire.

- The passive probe board has four retentions, where you can plug in the Midbus probe cable. Each of this retentions has four small needles for connector alignment, which can hurt the user. During shipment, these needles are covered by a foam that you must remove before using it.
- While handling a probe board, stay alert from the dangerous alignment pins that are made up of metal (Figure 3). They have a potential risk of causing injury.

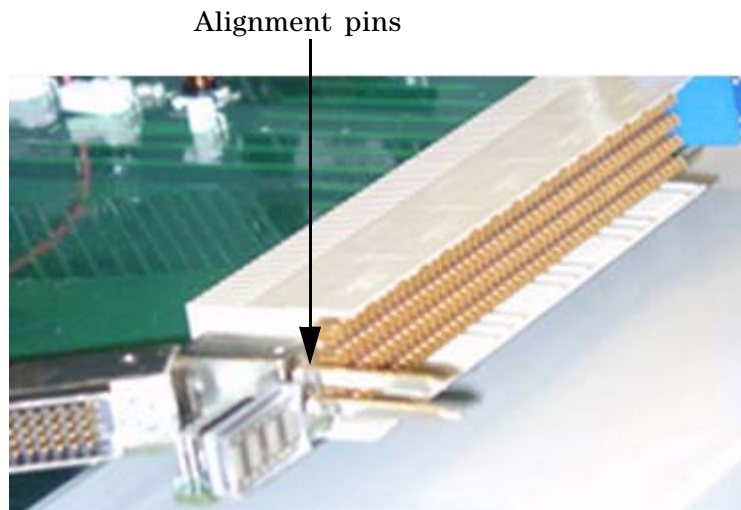


Figure 3 Alignment pins on the probe board

Setting Up the ATCA Probe Boards

There are the following ATCA setup models to set up probe boards:

- **ASI Analyzer:** Active or passive probe is used to monitor the traffic between DUT and ATCA chassis, or other DUTs in the same ATCA chassis (Figure 4).

In this method, the active probe board is powered by the I/O module.

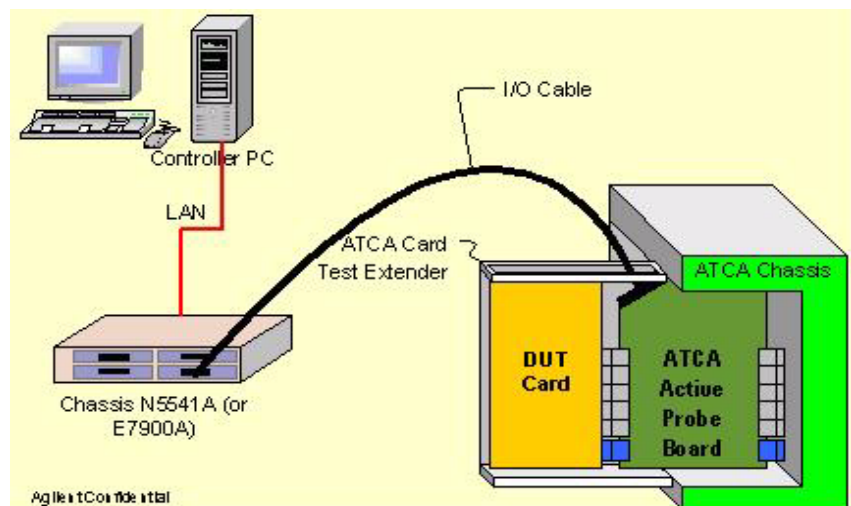


Figure 4 ASI Analyzer hardware setup model

- **ASI Exerciser:** When DUT is connected to the ATCA chassis and Protocol Exerciser is in another slot of the same chassis. DUT and Protocol Exerciser are connected together using backplane (Figure 5).

In this method, active probe board is powered by the I/O module, and will draw no power from the slot in the ATCA chassis.

NOTE

For more information on power supply for probe boards, refer to [Power Supply](#) on page 23.

- 2 Connect the Test Card Extender with the ATCA chassis and secure it firmly with the provided bolts.
- 3 If cooling is needed for DUT, do the following:
 - a Connect the fan line from the Test Card Extender to the connector provided on the active probe board.
 - b Connect 12V power supply to the fan power connector.
- 4 Connect the black I/O cable to the active probe board and to the I/O module, tightly.

Since, the Test Card Extender is already connected with the ATCA chassis, you may have to temporarily remove the metal part of the Test Card Extender from the left side. Next, insert the I/O cable into the opening. Finally, connect the I/O cable to the probe board and to the I/O module (Figure 6).



Figure 6 Connecting I/O Cable

5 Connect DUT with the Test Card Extender.

You can remove the top and bottom covers of the Test Card Extender to allow probing on DUT.

Ensure that there is no gap between the probe board and DUT. Also, ensure that the Test Card extender is mounted directly onto the card cage of the chassis.

NOTE

The filler panels coming with the Test Card Extender can be used to close the unused slots. This helps achieving proper cooling and air flow in the ATCA chassis.

This completes the ATCA active probe board setup.

To set up probe board using the ASI Exerciser hardware setup model

- 1 Plug the active probe board into the ATCA chassis.
- 2 Connect DUT with the ATCA chassis.

NOTE

To determine which slot of the ATCA chassis to use, please refer to the chassis vendor's manual.

- 3 Connect the black I/O cable to the active probe board and to the I/O module, tightly.

This completes the ATCA active probe board setup.

Verifying the ATCA Probe Board Setup

Once you have set up the probe boards, verify if they are ready to use. To do this, you need to start Protocol Exerciser and view its link settings.

To verify the ATCA probe board setup

- 1 Start a new Protocol Exerciser session.

To start a new Protocol Exerciser session, do the following:

- a On the Windows task bar, click **Start > Programs > Agilent System Protocol Tester > Exerciser for ASI**. The Select type of connection dialog box appears.
 - b Click **Connect to new session**.
 - c Type in the name or IP address of the server, where you want to start a new Protocol Exerciser session, in the **Server** text field.
 - d Click **Start**. The Select port to use dialog box appears.
 - e Select a module or port check box from the **Module/Port** column.
 - f Select a module name from the corresponding **Type** column.
 - g Click **OK**. The main Protocol Exerciser window appears.
- 2 Click the **General** icon in the *<Setup_Filename>* pane.
 - 3 Click the **Link Settings** tab.
 - 4 Click the **Probe Board Mode** drop-down list to view its options (Figure 7).

If Probe Board Mode displays the *To ATCA Chassis* and *To AMC* options, the ATCA probe board setup was a success.

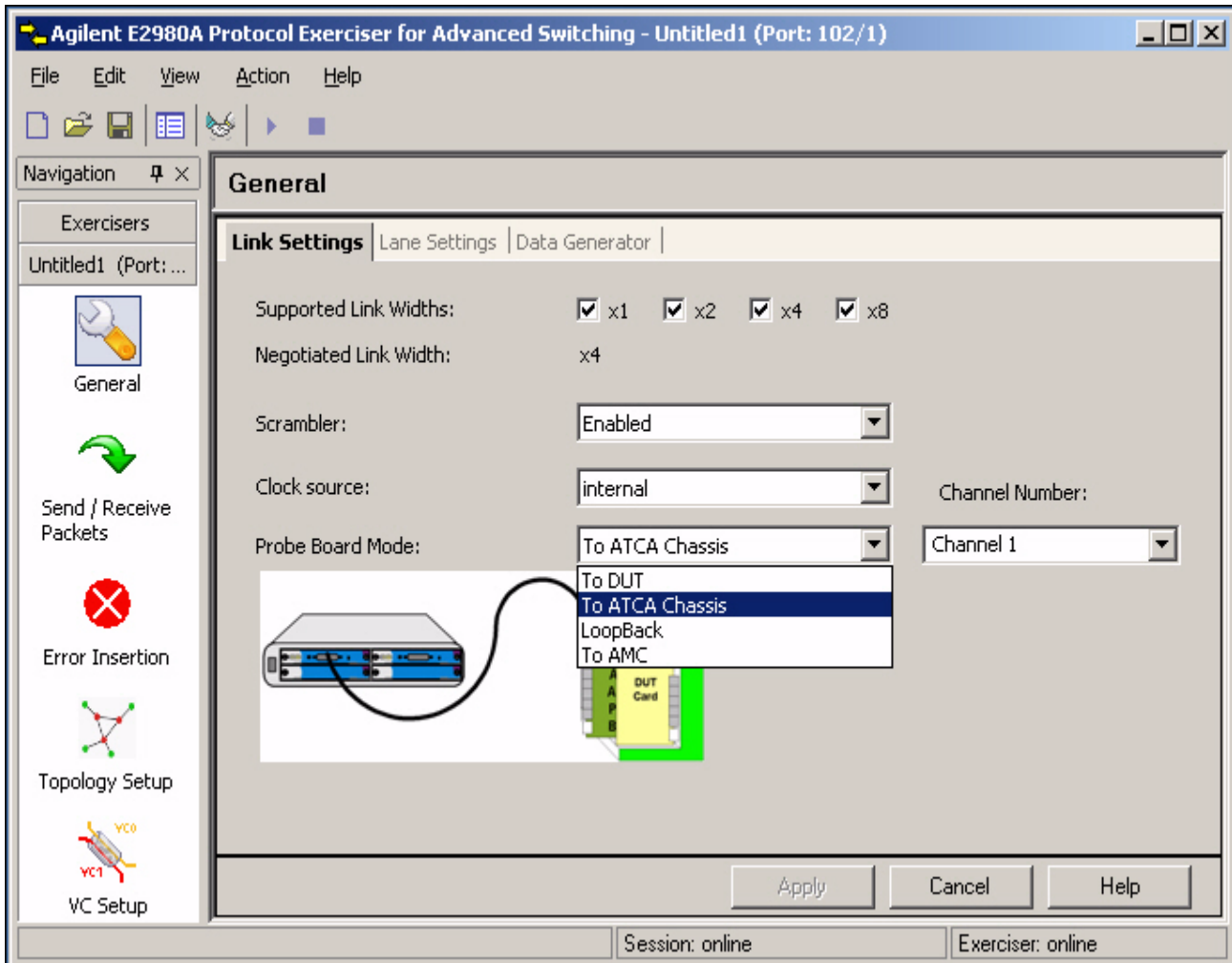
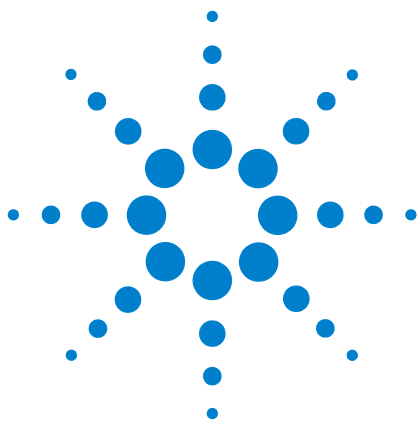


Figure 7 Link Settings tab

2 Setting Up the Hardware



3 Power Supply

About Power Supply for the Active Probe Boards	24
Power supply for the active probe board	25
Power supply for the active probe board infrastructure	25
Power supply for the AMC card	25
Power supply for ATCA DUT through Zone 1 connector	26
Power supply for the fan	26

This chapter provides information about the power supply requirements of the active probe board.



About Power Supply for the Active Probe Boards

Figure 8 illustrates the power supply distribution for the active probe board.

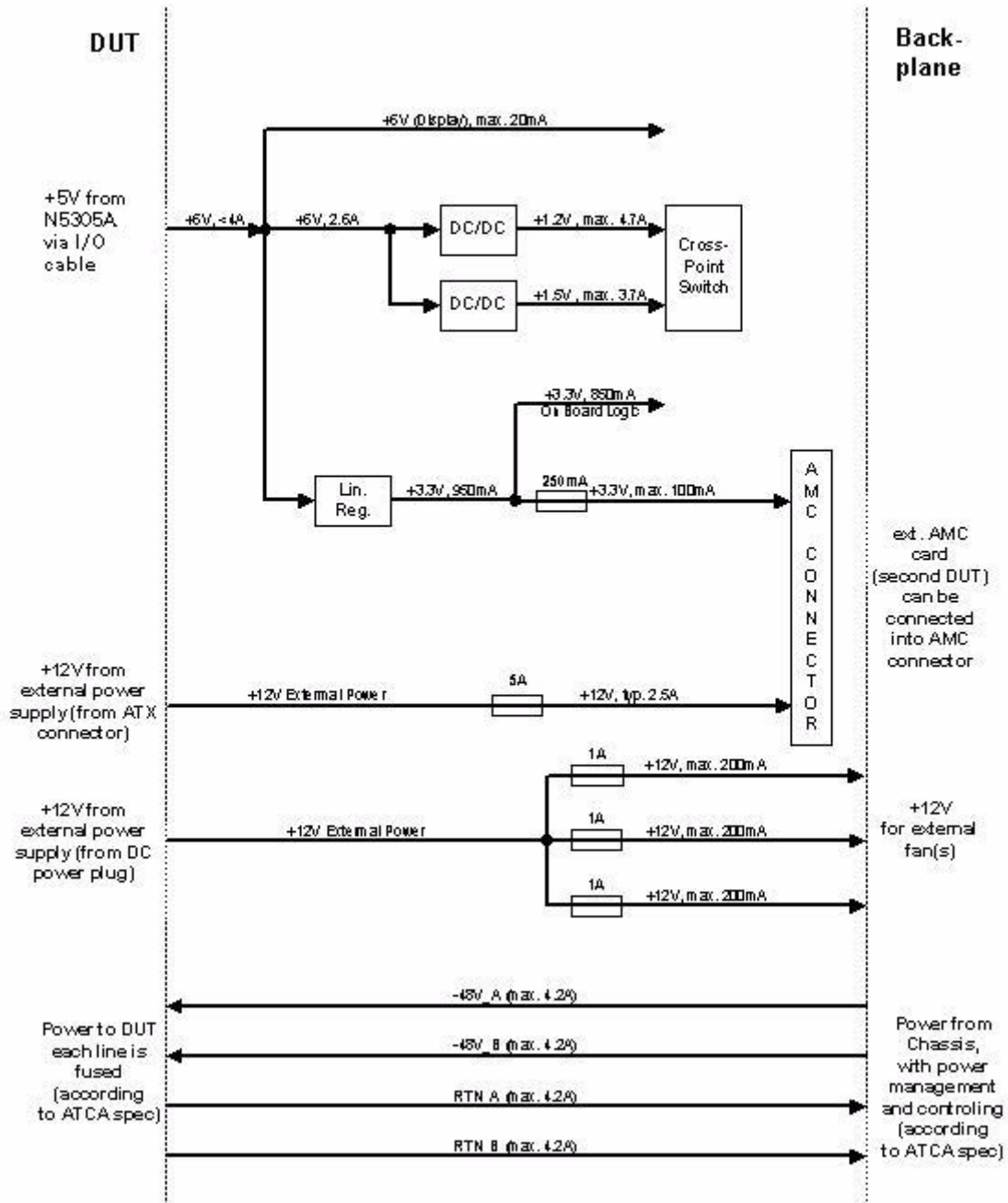


Figure 8 Active Probe Board - Power Supply

This section provides information regarding power supply to the active probe board.

This section has the following topics:

- [Power supply for the active probe board](#)
- [Power supply for the active probe board infrastructure](#)
- [Power supply for the AMC card](#)
- [Power supply for ATCA DUT through Zone 1 connector](#)
- [Power supply for the fan](#)

NOTE

You need to use many power cords while trying to use hardware parts, such as fan, ATC, backplane, and chassis, at the same point of time. Therefore, Agilent recommends to switch off all the power supply in case of any hardware problem.

Power supply for the active probe board

The ATCA Active Probe Board has different power entries:

- The board infrastructure and the cross point switch are powered from the I/O module (via the I/O cable).
- The AMC board module payload power (+12V) is supplied from an external power supply (via standard ATX disk power connector).
- The fan power distribution (+12V) is also supplied from an external power supply (via standard DC plug).
- ATCA DUT power supply feed through the ATCA Zone 1 connector.

Power supply for the active probe board infrastructure

All voltages used for the active probe board infrastructure, including the correspond switch, are generated from the +5V supplied by the I/O module. The probe boards draws less than 4A.

Power supply for the AMC card

An AMC card is powered with +12V payload power and +3.3V card management power. A brief description of the AMC payload and card management power is given below:

- **AMC payload power:** The +12V AMC payload power is supplied from an external power supply through a standard ATX disk power connector. Agilent recommends to use standard ATX PC power supply. The power input is connected via a 5Amp fuse directly to the AMC connector, therefore the maximum available power is 60 watts. The probe board circuitry does not use the +12V AMC power.
- **AMC card management power:** The AMC card needs a +3.3V power for card management with a maximum current of 100mA. The +3.3V voltage for the AMC card is be supplied by the probe board logic power, which is connected via a 250mA fuse.

Two LEDs on the active probe board are displaying the power status for the AMC connector beyond the fuses.

Power supply for ATCA DUT through Zone 1 connector

The dual -48V power supply and all associated power lines (pre-charge and enable signals) for the DUT are routed 1:1 from the backplane Zone 1 connector to the DUT side zone connector. The probe board circuitry is not connected to the Zone 1 power supplies.

Power supply for the fan

The DUT cooling fans inside the card cage are powered with +12V. The fan power distribution is on the probe board and consists of a standard DC power plug for the +12V input and of three connectors for each fan. Each fan has its own 1 Amp. Fuse, if one fan or the according fuse fails, the other fans are still running. Each of the fans need about 200mA (specification: 2.2W). The fan power distribution is not connected to the probe board circuitry.

As power input for the fans a standard external DC (wall plug) power supply could be used. The inner pin must be connected to +12V, the outer pin to ground.



+12V external - fan supply connector

Figure 9 +12V External - Fan supply connector

The standard version with 2 fans needs a power supply which is able to deliver +12V, < 500mA, < 6W, the special configuration with 3 fans needs a power supply with +12V, < 750mA, < 9W

The input connector is labeled as +12V EXT, the connectors for the fans are labeled with FAN 1, FAN 2 and FAN 3.

3 Power Supply

Index

A

active probe board, [8](#)
Advanced Mezzanine Cards, [8](#)
Advanced Telecom Computing Architecture, [7](#)
AMC, [8](#), [11](#)
AMC card management power, [26](#)
AMC payload power, [26](#)
ASI Analyzer hardware setup model, [16](#)
ASI Exerciser hardware setup model, [16](#)
ATCA, [8](#)
ATCA Test Card Extender, [11](#)

B

Backplane, [11](#)

D

DUT, [11](#)

E

E2943, [8](#)
E2944, [9](#)

F

Fabric Interface, [11](#)

M

Midbus connection, [9](#)

P

passive probe board, [9](#)
PCI Industrial Computer Manufacturers
Group, [8](#)
PICMG, [8](#)
Power supply distribution, [24](#)
Power supply for ATCA DUT through Zone 1
connector, [26](#)
Power supply for the active probe board, [25](#)
Power supply for the active probe board
infrastructure, [25](#)
Power supply for the AMC card, [25](#)
Power supply for the fan, [26](#)
Protocol Analyzer, [9](#)
Protocol Exerciser, [8](#)

R

Requirements for Setting Up the ATCA Probe
Boards, [14](#)

S

Setting Up the ATCA Probe Boards, [16](#)
Standard ATX disk power connector, [25](#)
Standard DC plug, [25](#)

T

Test Card Extender, [11](#)

Z

Zone 1, [11](#)
Zone 2, [11](#)
Zone 3, [11](#)

Copyright Agilent Technologies 2005
Printed in Germany September 2005



E2943-91010