Digital Trunk Quad Adapter Installation and Service Guide

SY33-2119-01

Digital Trunk Quad Adapter Installation and Service Guide

SY33-2119-01

Important

Before using this information and the product it supports, be sure to read all the information in Appendix, “Notices” on page 27.

Before installing or removing the Digital Trunk Quad Adapter, refer to “Safety Information” on page 27.

Second Edition (July 1997)

The information contained in this manual is subject to change from time to time. Any such changes will be reported in subsequent revisions.

Order publications through your IBM representative or the IBM branch office serving your locality. Publications are not stocked at the address given below.

A form for readers' comments appears at the back of this publication. If the form has been removed, address your comments to:

IBM France
Centre d'Etudes et Recherches
Service 0798 - BP 79
06610 La Gaude
France

- FAX: 33 4 93 24 77 97
- E-mail: FRIBMQF5 at IBMMAIL
- IBM Internal Use: LGERCF at LGEPROFS
- Internet: rcf_lagaude@vnet.ibm.com

When you send information to IBM, you grant IBM a non-exclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Contents

Preface

About This Book

This information is for use by IBM® customer engineers who perform setup, installation or maintenance of IBM communication products at the customer site.

Terminology Note

Throughout this manual:

- The Digital Trunk Quad Adapter is also referred to as the *DTQA*, the *card*, or the *adapter*,
- The memory module of the IBM ARTIC960 is referred to as the*SIMM*,
- The IBM ARTIC960 PCI Co-Processor Adapter is referred to as the *ARTIC*,
- The Digital Trunk Quad Adapter 4-port cable may also be referred to, as the *4-port cable*.

Related Publications

- Operating and Installation documentation provided with the system where you want to install the Digital Trunk Quad Adapter.
- Reference, service, and diagnostics documentation available for IBM DirectTalk® for AIX®.
- Adapters, Devices, and Cable Information for Multiple Bus Systems, SA38-0516.

Where to Find More Maintenance Information

If you are experiencing a problem which you suspect may not be related to the DTQA or the 4-port cable, investigate by running step-by-step isolation test on the entire hardware components of the IBM DirectTalk for AIX (refer to the *Installation, Maintenance, and Parts Catalog* manual supplied with the IBM 9291 or IBM 9295).

Chapter 1. Digital Trunk Quad Adapter Description

Product Description

The Digital Trunk Quad Adapter (DTQA) is a voice processing adapter for the RISC System/6000® computer with PCI Bus.

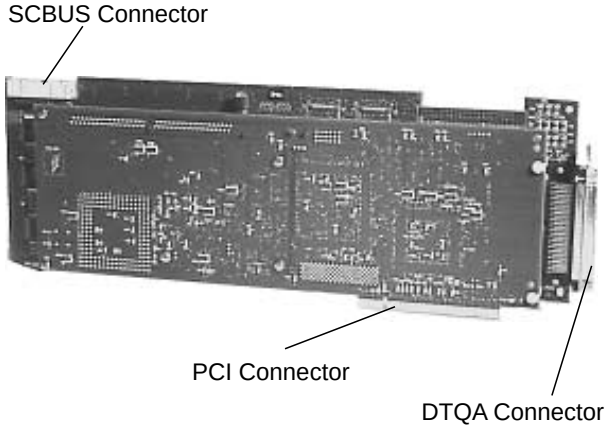
This adapter allows an RS/6000™ system to send and receive voice data and telephone signaling information from a Single or Multiple Digital Trunk Processor (IBM 9291, IBM 9295) connected to a digital telephone network (either E1 or T1).

Up to four PACKS (SPACK, VPACK or 9291) can be attached to the RS/6000 system via the DTQA.

Physical Description

The DTQA consists of an IBM ARTIC960 PCI Co-Processor Adapter with a 4 MB memory module and an attached Application Interface Board (AIB) referred to as the Quad AIB.

The IBM ARTIC960 PCI Co-Processor Adapter, the memory module and the Quad AIB are supplied already assembled as one unit.



Chapter 2. Installation Requirements and Instructions

This chapter provides the hardware and software requirements, lists the content of the DTQA package and describes information and instructions for installing the adapter.

Installation Requirements

The FCC statement in Appendix, “Notices” on page 27 may be different than the FCC statement in the manual that came with your system. Use the FCC statement in this manual for the system unit that will contain the DTQA.

The DTQA requires the following hardware and software:

Hardware

One PCI long slot in the RS/6000 system such as:

- Machine type 7024, model E20 or E30.
- Machine type 7025, model F30.

  Note: For further information about hardware requirements, refer to HONE information via your branch office.

Software

The DTQA is supported by AIX* 4.2[1], and is an hardware component of the License Program Product 5765-B81 IBM DirectTalk for AIX, Version 2.1 [1].

[1] Minimum level required

Package Content

Each DTQA package includes the following:

- DTQA
- Digital Trunk Quad Adapter 4-port cable (4-port cable), which provides connection for up to four Digital Trunk processor cables
- SCBUS cable, used only if there is more than one adapter with SCBUS connector in the system
- Wrap plug
- Installation and Service Guide.

Handling Static-Sensitive Devices

Components for your DTQA can be damaged by static discharges. To prevent this damage, your DTQA is wrapped in an anti-static bag. Observe the following precautions when handling the adapter:

- Keep the DTQA in its anti-static bag until you are ready to install it into your system.
- Make the least possible movement with your body to minimize the electrostatic charges created by contact with clothing, fibers, carpets and furniture.
- If possible, keep one hand on the system chassis when you are inserting or removing a DTQA from the system unit. Always switch off the power before performing either task.
- *Do not touch the circuit*.
- Do not place the DTQA on the machine cover or on a metal table. Machine covers and metal table increase the risk of damage because they make a discharge path from your body through the adapter.
- Do not allow the DTQA to be touched accidentally by others.

Specific Installation Instructions

- The installation of the DTQA must be performed by IBM customer engineers or an experienced system operator.
- For cover removal and optional adapter installation instructions, refer to the **Operating and Installation documentation provided with the system** where you want to install the DTQA.
- This adapter is a full length, full width, and full height adapter. You may experience some mechanical difficulty in installing this adapter in some RS/6000 systems. Please follow the MES installation instructions and exercise care when installing this adapter to avoid damage.
- The DTQA is a high performance adapter for which optimum operation is achieved when it is installed in **PRIMARY** PCI bus slots (normally slots 1 and 2 of the system unit, but for further clarification refer to the relevant RS/6000 system manual).
- If the system contains a particular type of PCI Token-Ring adapter (such as feature code 2979, FRU N0. 42H3377), you must place the DTQA adapters in slots with **higher slot numbers** than the slot the Token-Ring adapter is connected to.
- At the end of installation, if there is more than one adapter with SCBUS connector in the system, use the SCBUS cable to interconnect these adapters.
- Connect the 4-port cable to the 100 pin female connector on the I/O bracket of the DTQA.

Chapter 3. Installation Check or Problem Determination Procedures

This chapter describes the procedures that can be used to verify the installation and to diagnose problems. These procedures, **Stand-alone diagnostics**, are run from the system where the DTQA resides.

Note: The IBM DirectTalk for AIX software must not be running while stand-alone diagnostics are being used.

Running Stand-Alone Diagnostics with MAPs

To check the installation, or to resolve a customer-reported problem that cannot be solved with the IBM 9291 or IBM 9295 power test, use one or more of the following MAPs:

- Loop back test
- Step-by-step isolation test
- Telecommunication line cable test.

Wrap plugs are used in stand-alone diagnostics to test different components. These wrap plugs are shipped with the 9291 and 9295 units. The blanking plug (part number 51H4519) is sometimes needed. It is a DTQA component that the customer should have on site.

Important: Diagnostics tests will not work correctly if there is an 8 pin modular jack plugged into the connection above the 15 pin telecommunication line connector. Also, during diagnostic tests, the external alarm equipment must not be connected to the alarm relay connector on the back of the enclosure or unit until you perform the alarm relay test.

To run a stand-alone diagnostic test under AIX, carry out the MAP on the computer where the server cards belonging to the 9291 or 9295 you want to test are installed. If the IBM DirectTalk for AIX software is running, you must stop it.

To run stand-alone diagnostics under AIX, take the steps described in the following procedure. Be sure to type commands exactly as shown, typing characters in uppercase and lowercase as required.

1. Log on to the system as the AIX root user.
2. At the system prompt, type:

   ```
   cd /usr/lpp/dirTalk/devices/dtqa_bin
   ```

3. At the system prompt, type:

   ```
   ./DTQA_StandAlone
   ```

4. The system will respond with the following prompt:

   ```
   Enter Digital Trunk QUAD Adapter to test (0-7) (8 to quit
   Diagnostics)
   ```

   The card ID requested is the logical number of the DTQA, starting at 0, within the set of Digital Trunk Quad Adapters installed.

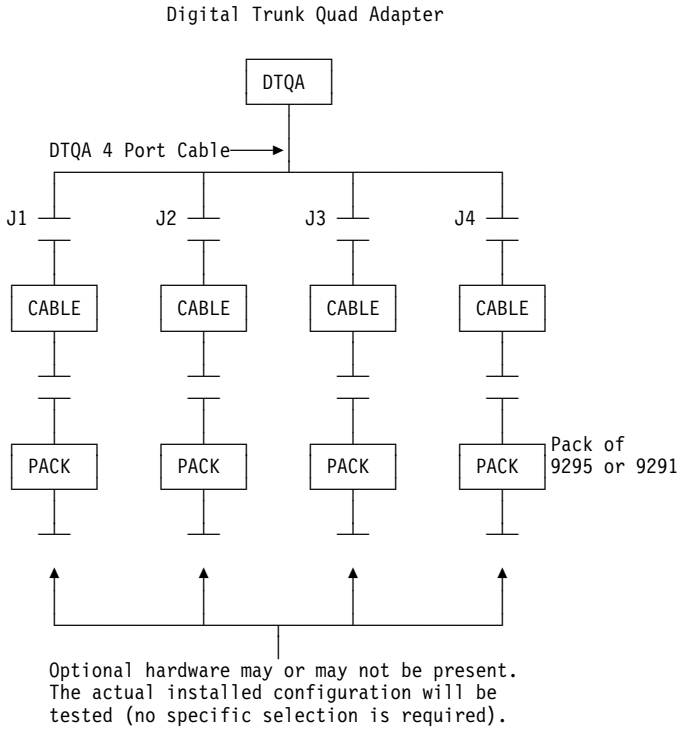
5. The **Diagnostic Mode menu** is displayed.
6. Refer to “MAP 0100: Loop Back Test” on page 9 and follow the instructions given there.

MAP 0100: Loop Back Test

The loop back test is always the first test to be performed once you have determined that there is not a power problem. You should repeat the loop back test after performing any action on the 9291 or 9295 hardware, such as unplugging a cable.

The loop back test can be run continuously to detect random failures. See “MAP 0130: Continuous Loop Back Test” on page 20 for more information.

If the loop back test detects a failure, you normally continue your investigation by running the step-by-step isolation test.



MAP 0100 (continued)

Loop Back Test	Command Summary
Tests the digital front end of the 9291 or 9295	Select option 1 from the Diagnostic Mode main menu. Follow the instructions on the screen. Check that the configuration recognized by the diagnostic test is the actual installed one.

001

– Select option 1 from the Diagnostic Mode main menu. Follow the progress of the test on your screen. Perform any actions requested.

Is the recognized configuration not the actual installed one, or has an error been detected?

Yes **No**

002

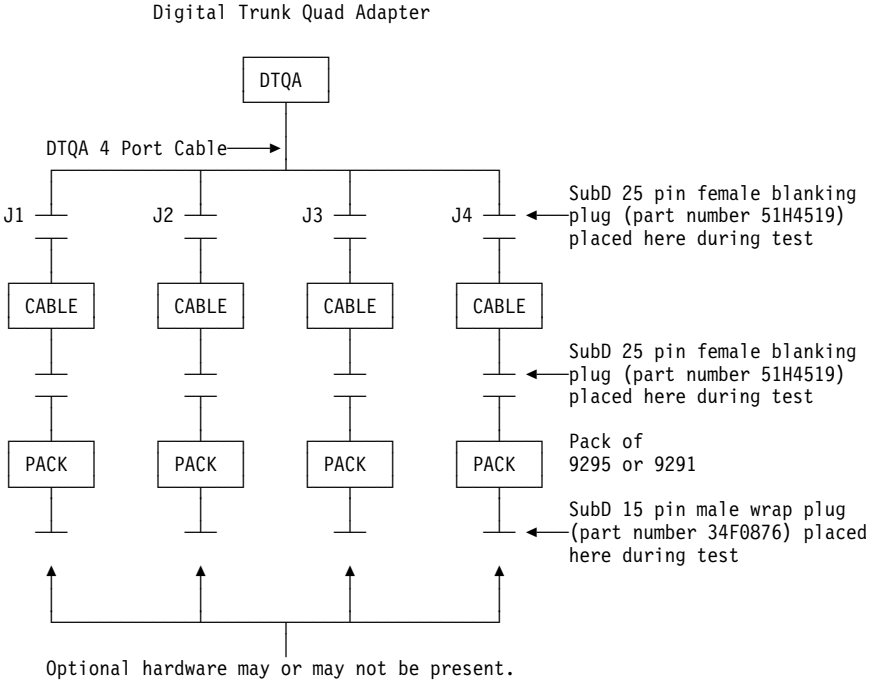
– Run "MAP 0120: Telecommunication Line Cable Test" on page 17.

003

– Run "MAP 0110: Step-by-Step Isolation Test" on page 11.

MAP 0110: Step-by-Step Isolation Test

The step-by-step isolation test determines which of the components shown in the following illustration has failed.



MAP 0110 (continued)

Step-by-Step Isolation Test	Command Summary
Tests the digital front end of the 9291 or 9295 step-by-step using wrap plugs at each connector.	Select option 2 from the Diagnostic Mode main menu. Follow the instructions on the screen. When required, confirm the port (connection 1 to 4) you want to test. The PACK is attached to a DTQA. When prompted to do so, attach the SubD 25 pin female blanking plug (part number 51H4519) to the 4-port cable tail or the Digital Trunk Processor cable. The SubD 15 pin male wrap plug (part number 34F0876) should be attached to the telecommunication connector on the 9291 or 9295 when the appropriate prompt is displayed.

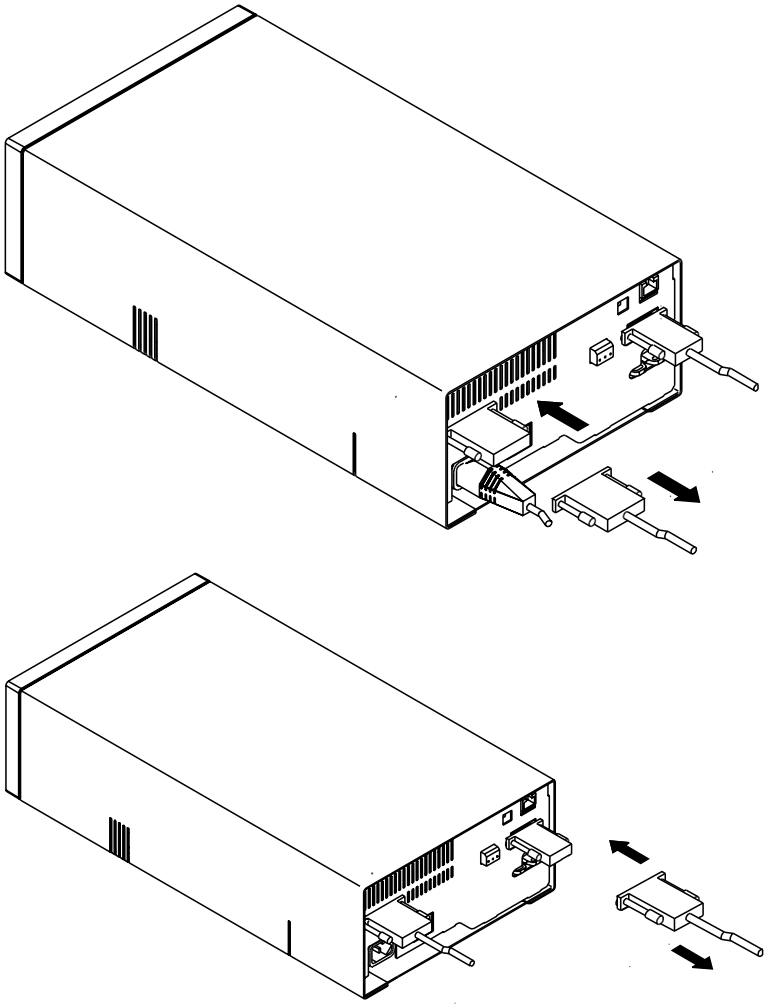


Figure 1. Step-by-Step Isolation Test for IBM 9291

MAP 0110 (continued)

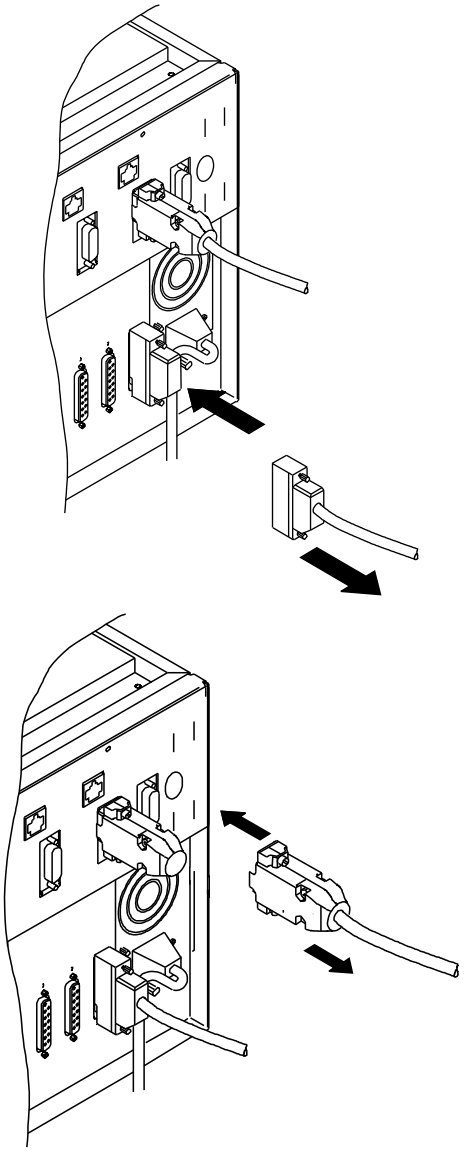


Figure 2. Step-by-Step Isolation Test for IBM 9295

001

– Select option 2 from the Diagnostic Mode main menu. Follow the progress of the test on your screen. Perform any actions requested.

Is a failure message displayed?

Yes **No**

002

– Run "MAP 0120: Telecommunication Line Cable Test" on page 17.

003

– Refer to Table 1.

Table 1 (Page 1 of 2). Step-by-Step Isolation Test - Symptom versus Action

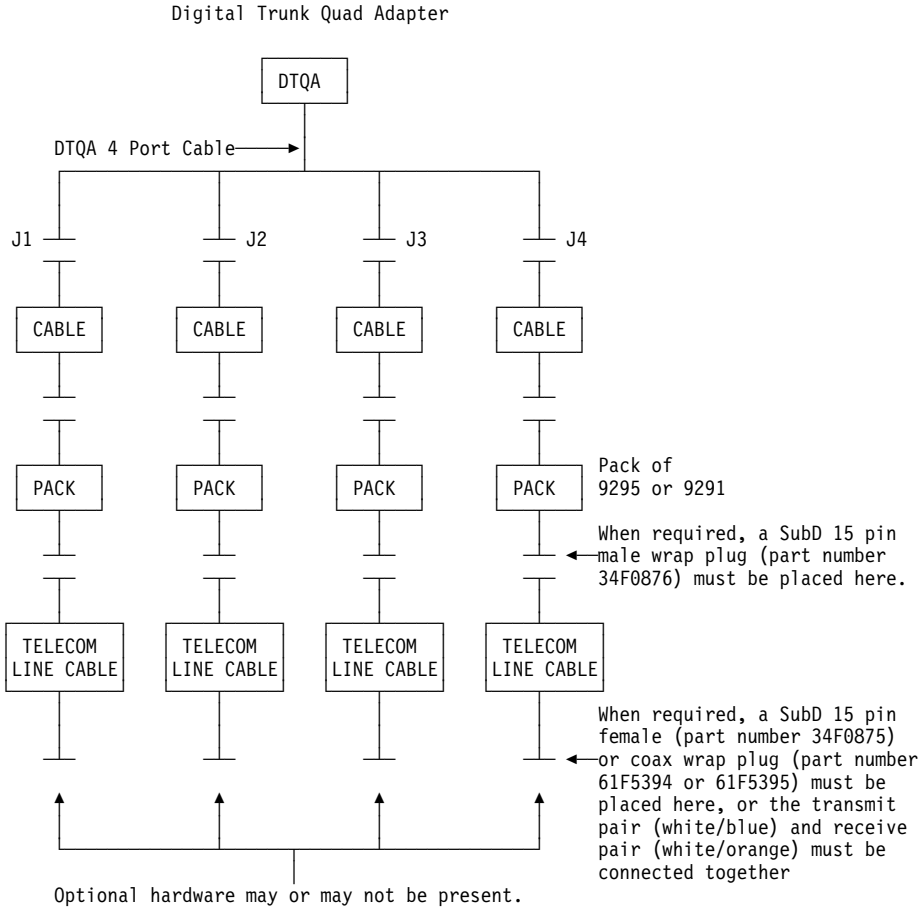
Symptom	Action
A failure message is displayed during ARTIC/SIMM test	The suspect FRUs are identified and listed on the screen as follows: • Adapter base card for IBM ARTIC960 PCI Co-Processor Adapter, • Interface board for Quad AIB, • memory module. When more than one possible cause is shown, the unit most likely to have failed is shown first. To change the suspect FRU, follow instructions defined in Chapter 5, "Removal and Replacement Procedures" on page 23.
A failure message is displayed during Quad AIB test	Change the Quad AIB. Proceed to page 23 for the procedures to follow when changing the Quad AIB.

Table 1 (Page 2 of 2). Step-by-Step Isolation Test - Symptom versus Action

Symptom	Action
A failure message is displayed during DTQA/Voice Pack Interface test when a blanking plug is attached to one tail of the Digital Trunk Quad Adapter 4-port cable.	1. Check that the 4-port cable is not faulty. 2. Otherwise, the Quad AIB is suspected. Go to page 23 for the procedures to follow when changing the Quad AIB.
A failure message is displayed during DTQA/Voice Pack Interface test when a blanking plug is attached to the Digital Trunk Processor cable.	Change the Digital Trunk Processor cable. Refer to Chapter 4, “FRU Removal and Replacement” in the 9291 or 9295 *Installation, Maintenance, and Parts Catalog*.
A failure message is displayed during DTQA/Voice Pack Interface test when a Pack is attached.	Change the Pack. Refer to Chapter 4, “FRU Removal and Replacement” in the 9291 or 9295 *Installation, Maintenance, and Parts Catalog*.
A failure message is displayed during Voice Pack test.	Change the Pack. Refer to Chapter 4, “FRU Removal and Replacement” in the 9291 or 9295 *Installation, Maintenance, and Parts Catalog*.
A failure message is displayed during intermediate steps such as initialization	Shut down and restart your station. If problem persists, check your software installation. To do so, refer to the *IBM DirectTalk for AIX, Problem Determination* manual.

MAP 0120: Telecommunication Line Cable Test

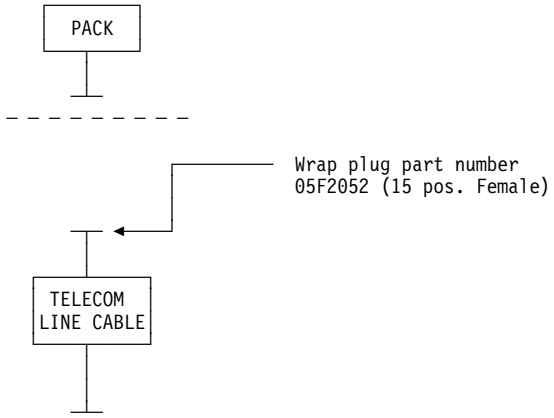
The telecommunication line cable test is used if the other diagnostic tests did not detect a failure, but the 9291 or 9295 is still not able to connect to the network. The loop back test should always be repeated after the telecommunication line cable test is complete.



MAP 0120 (continued)

Note

The following part of the telecommunication line cable test is initiated from the network and is included only for the information of French PTT engineers.



Telecommunication Line Cable Test	Command Summary
Tests the telecommunication line cable using a wrap plug.	Select option 5 from the Diagnostic Mode main menu. Follow the instructions on the screen. When required, confirm the port (connection 1 to 4) you want to test. When prompted to do so, attach SubD 15 pin male wrap plug (part number 34F0876) to the telecommunication connector. When prompted to do so, attach SubD 15 pin female wrap plug (part number 34F0875) or coax wrap plug (part number 61F5394 or 61F5395) to the CSU end of the telecommunication cable. Connect the transmit pair (white/blue) and the receive pair (white/orange) together to perform this test.

001

– Select option 5 from the Diagnostic Mode main menu. Follow the progress of the test on your screen. Perform any actions requested.

Is a failure message displayed?

Yes **No**

002

– No failure found. If you are in any doubt, go to "MAP 0100: Loop Back Test" on page 9 and run the loop back test to verify the system (if not yet done).

003

– Refer to Table 2.

Table 2. Telecommunication Line Cable Test - Symptom Versus Action

Symptom	Action
A failure message is displayed during the test before the telecommunication cable is wrapped?	Run "MAP 0110: Step-by-Step Isolation Test" on page 11.
A failure message is displayed during the test when the telecommunication cable is wrapped.	Change the Telecommunication Line Cable. Refer to Chapter 4, "FRU Removal and Replacement" in the 9291 or 9295 *Installation, Maintenance, and Parts Catalog*.

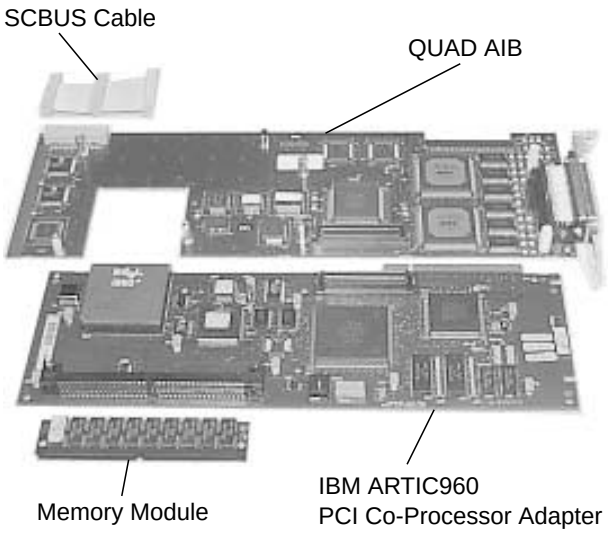
MAP 0130: Continuous Loop Back Test

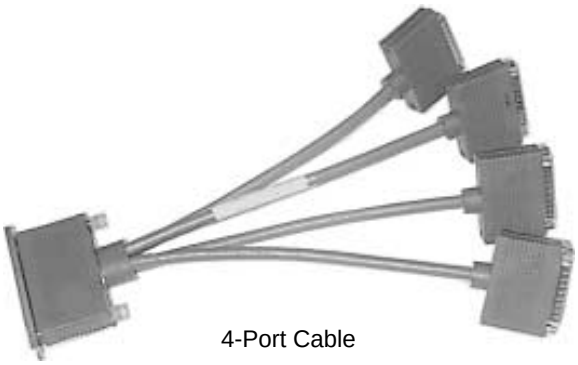
Run the continuous loop back test when you want to keep the loop back test (see “MAP 0100: Loop Back Test” on page 9) continuously running in order to detect random failures.

Test Description	Command Summary
Continuously tests the digital front end of the 9291 or 9295.	Select option 6 from the Diagnostic Mode main menu. When the PACK is attached to a DTQA, each loop takes between 3 and 8 minutes to complete depending on the installed configuration. When prompted, enter the number of loop back tests you want to perform. This can be any number from 1 to 100 000. Follow the instructions on the screen. If an error is detected, the test stops.

Chapter 4. Digital Trunk Quad Adapter Parts listing

This chapter contains for all field replaceable units (FRUs) of the DTQA, illustrations and listing.





This information is used by stock and maintenance personnel to identify, requisition, and issue replacements parts.

Table 3. DTQA Parts Listing

Description	**FRU No.**
IBM ARTIC960 PCI Co-Processor Adapter The IBM ARTIC960 PCI Co-Processor Adapter is supplied **without** the memory module.	87H3451
Quad application interface board (Quad AIB) This FRU No. consists of: • AIB • On the component side of the AIB, the standoffs containing the screws, and on the other side an adhesive plastic shield.	10J2272
Memory module (SIMM) of 4 MB	70F9973
Cable KIT consisting of 4-port cable and a wrap plug for test.	51H4325
SCBUS cable	10J2253

Chapter 5. Removal and Replacement Procedures

If you need to change one of the DTQA 4-port cable components, follow these steps:

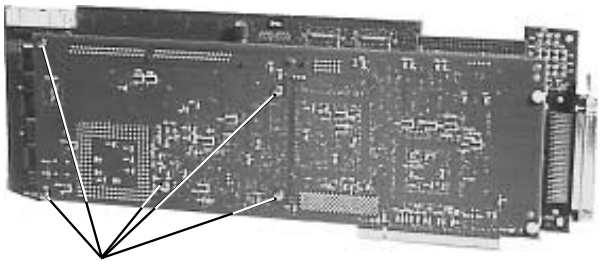
- **Step 1:** Unplug the 4-port cable and if applicable the SCBUS cable, then remove the DTQA from the RS/6000 system.

  Note: The DTQA is a feature of the RS/6000. For removal and replacement procedures of the DTQA in the RS/6000, refer to the **Operating and Installation documentation provided with this system**.

  Be sure to hold the DTQA by the edges only; do not touch the component pins or solder joints.

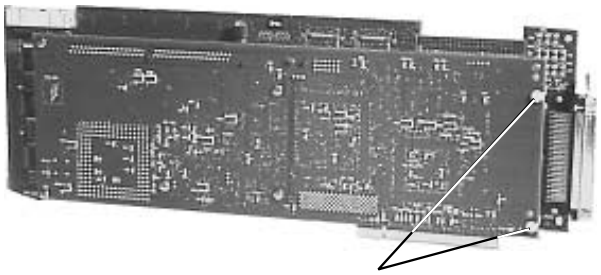
- **Step 2:** Separate the Quad AIB from the IBM ARTIC960 PCI Co-Processor Adapter by doing the following:

  – Remove the 5 metal screws on the IBM ARTIC960 PCI Co-Processor Adapter side.



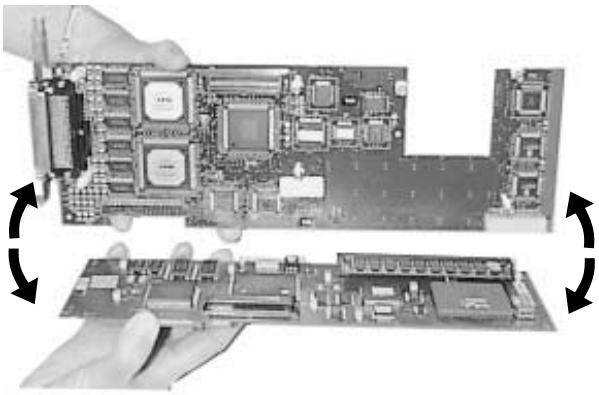
Remove 5 Screws

– Loosen a few turns the two plastic screws to allow the slots in the IBM ARTIC960 PCI Co-Processor Adapter to slide under the screw heads (the two cards are still held together by the Quad AIB connector).

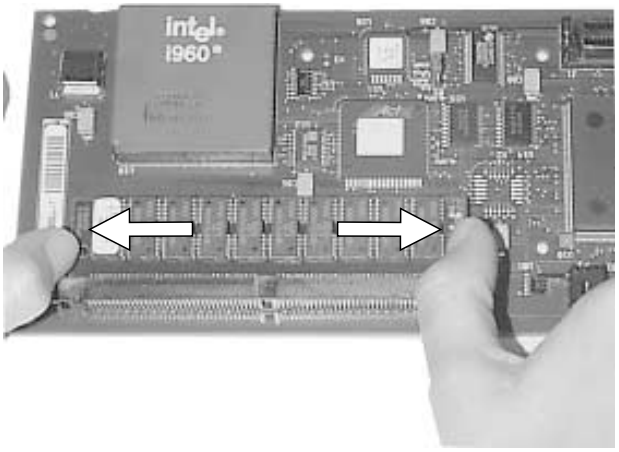


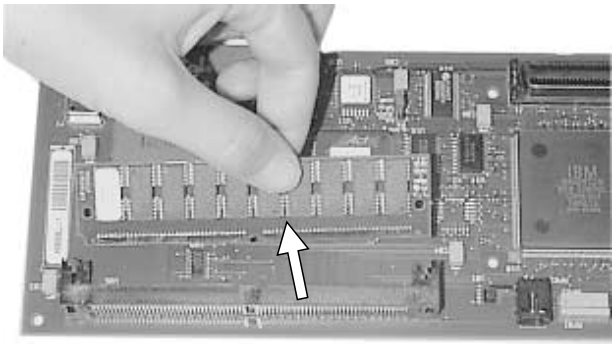
Loosen 2 Screws

– Carefully separate the Quad AIB from the IBM ARTIC960 PCI Co-Processor Adapter.



- **Step 3:** Change the faulty component.
  - **If the IBM ARTIC960 PCI Co-Processor Adapter is the faulty component**, before changing it, **remove the memory module** as shown in the two following figures:





The IBM ARTIC960 PCI Co-Processor Adapter FRU is supplied with a blue plastic holder, remove it before assembling the DTQA.

  - **To reinstall** the memory module on the IBM ARTIC960 PCI Co-Processor Adapter, insert it at an angle (approximately 45°) into the connector, and press it toward the IBM ARTIC960 PCI Co-Processor Adapter until the memory module snaps into the retainer clips.

- **Step 4:** Assemble the Quad AIB and the IBM ARTIC960 PCI Co-Processor Adapter again, by aligning the connector on the Quad AIB with the mating connector on the IBM ARTIC960 PCI Co-Processor Adapter, and firmly press the 2 connectors together (misalignment could cause damage).

  Insert screws through the holes of the IBM ARTIC960 PCI Co-Processor Adapter and tighten them.

- **Step 5:** Install the assembled unit into the system, plug the 4-port cable and use the SCBUS cable to interconnect the DTQA with the other SCBUS adapters (if applicable).

Appendix. Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Licensing, IBM Corporation, 500 Columbus Avenue, Thornwood, New York 10594, U.S.A.

Safety Information

Refer to the safety information available in the documentation of the system where you want to install the Digital Trunk Quad Adapter. Read in it the related information and safety notices before installing or removing the Digital Trunk Quad Adapter.

Underwriters Laboratories Inc. Statement

This card is for use only with IBM workstation or other IBM UL listed computers that have installation instruction detailing user installation of card cage accessories.

European Union (EU) Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM can not accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

Electronic Emission Notices

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Compliance Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Japanese Voluntary Control Council For Interference (VCCI) Statement

This equipment is in the 1st Class category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment aimed at preventing radio interference in commercial and industrial areas.

Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, and so on.

Read the instructions for correct handling.

Korean Communications Statement

Please note that this device has been approved for business purpose with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business one.

New Zealand Radiocommunications (Radio) Regulations

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Trademarks and Service Marks

The following terms are trademarks of the IBM Corporation in the United States or other countries, or both:

IBM
AIX
RS/6000
IBM DirectTalk for AIX
RISC System/6000 (RS/6000)

The following terms are trademarks of other companies as follows:

UNIX

Glossary

This glossary defines all new terms and abbreviations used in this manual. It includes terms and definitions from the *IBM Dictionary of Computing*, SC20-1699. If you do not find the term you are looking for, refer to the index or to the *IBM Dictionary of Computing*.

Advanced Interactive Executive (AIX). An IBM-developed family of operating systems based on UNIX**. AIX is the operating system on which IBM DirectTalk for AIX runs.

AIX. Advanced Interactive Executive.

Application Server Interface (ASI). The principal component of the IBM DirectTalk for AIX software through which the telephony system is connected to the IBM DirectTalk for AIX.

ASI. Application Server Interface.

CCITT. Comite Consultatif International Telegraphique et Telephonique. The International Telegraph and Telephone Consultative Committee.

CE. Customer engineer.

CSU. (1) Customer setup. (2) Channel service unit.

customer setup. Actions taken exclusively by the customer to unpack, connect, and check an IBM machine.

Digital Trunk Processor.. A generic term used primarily in the diagnostic tests to mean either a VPACK, SPACK, or RPACK, when no distinction between them is required.

Digital Trunk Processor Cable. A cable which connects the PACK to an adapter card via a Digital Trunk Quad adapter cable.

Digital Trunk Quad Adapter cable (octopus cable). A Cable which is attached to the Digital Trunk Quad Adapter allowing up to four PACKs to be connected to one Digital Trunk Quad Adapter.

Digital Trunk Quad Adapter. A card that performs voice signal processing and is an interface to the ASI Host.

E1. European telephony standard.

FCC. Federal Communications Commission.

Federal Communications Commission (FCC). A board of seven commissioners appointed by The President under the Communications Act of 1934, having the power to regulate all interstate and foreign electrical communication systems originating in the United States.

FRU. Field-replaceable unit.

IBM DirectTalk for AIX. A multi-component interactive voice processing system designed to answer phone calls, play back information, and provide transaction messaging.

interface. A common external boundary between separate devices, permitting interconnection of the devices.

LPP. Licensed Program Product

MAP. Maintenance analysis procedure.

PACK. A generic term used to mean either a VPACK, SPACK, or RPACK when no distinction between them is required.

plug. The removable half of an electrical connector.

post, telephone, and telegraph (PTT). A generic term for the government-operated common carrier in countries outside the U.S.A. and Canada.

PTT. Post, telephone, and telegraph.

RPACK. Resource Pack. Used for voice recognition functions.

Server card.. A Digital Trunk Quad Adapter

setup. The preparation of a system or machine to perform its functions.

SPACK. SS7 Voice Pack.

T1. North American telephony standard.

telecommunication line. A telephone or other communication line that is used to transmit messages from one location to another.

VPACK. Voice Pack.

Voice Server Card (VSC or VSC adapter). See Digital Trunk Quad Adapter

Readers' Comments — We'd Like to Hear from You

Digital Trunk Quad Adapter
Installation and Service Guide

Publication No. SY33-2119-01

Please send us your comments concerning this book. We will greatly appreciate them and will consider them for later releases of the present book.

If you prefer sending comments by FAX or electronically, use:

- FAX: 33 4 93 24 77 97
- E-mail: FRIBMQF5 at IBMMAIL
- IBM Internal Use: LGERCF at LGEPROFS
- Internet: rcf_lagaude@vnet.ibm.com

In advance, thank you.

Your comments:

Name

Address

Company or Organization

Phone No.

PLACE
POSTAGE
STAMP
HERE

IBM France
Centre d'Etudes et Recherches
Service 0798 - BP 79
06610 La Gaude
France

Fold and Tape **Please do not staple** Fold and Tape

Readers' Comments — We'd Like to Hear from You
SY33-2119-01

Part Number: 51H5241

Printed in France