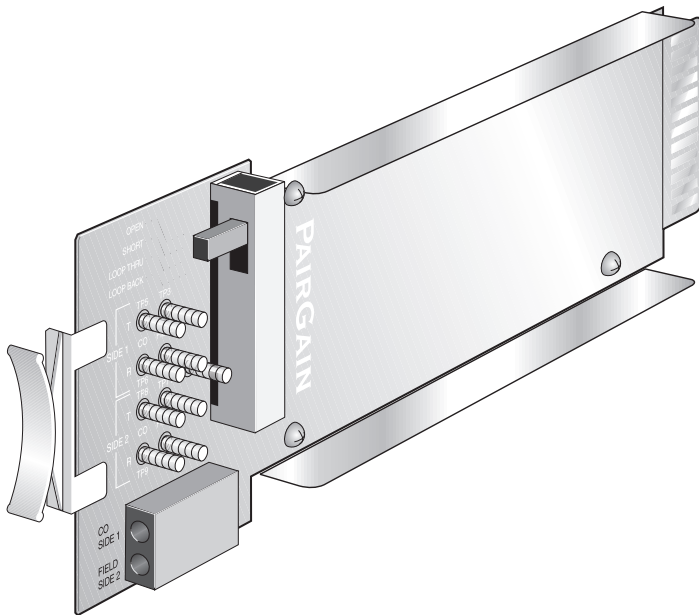


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# HIGAIN TEST CARD

Model	List Number	Part Number	CLEI Code
HTC-439	1	150-1559-01	T1DQAB1J

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**PAIRGAIN TECHNOLOGIES, INC.**  
**ENGINEERING SERVICES TECHNICAL PRACTICE**  
**SECTION 150-101-100-02**

## Revision History of This Practice

Revision	Release Date	Revisions Made
01	November 10, 1997	Initial Release
02	June 8, 1999	Reversed Tip and Ring pin assignments

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*Other product names mentioned in this practice are used for identification purposes only and may be trademarks or registered trademarks of their respective companies.*

## USING THIS TECHNICAL PRACTICE

Two types of messages, identified by icons, appear in the text.



**Notes contain information about special circumstances.**



**Cautions indicate the possibility of equipment damage or the possibility of personal injury.**

## DOCUMENTATION

If you have comments on this PairGain document, send an email to [technical\\_publications@pairgain.com](mailto:technical_publications@pairgain.com). Type the product name and the section number of the document in the subject area of the email message.

## INSPECTING THE SHIPMENT

Upon receipt of the equipment:

- Unpack each container and visually inspect the contents for signs of damage. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company and to PairGain. Order replacement equipment, if necessary.
- Check the packing list to ensure complete and accurate shipment of each listed item. If the shipment is short or irregular, contact PairGain as described in the Warranty located inside the back cover. If you must store the equipment for a prolonged period, store the equipment in its original container.

# TABLE OF CONTENTS

**Overview** \_\_\_\_\_ **1**

    Features ..... 1

    Test Card ..... 2

**Installation** \_\_\_\_\_ **3**

**Testing a Circuit** \_\_\_\_\_ **3**

**Appendix A - Specifications** \_\_\_\_\_ **6**

**Appendix B - Glossary** \_\_\_\_\_ **7**

**Appendix C - Product Support** \_\_\_\_\_ **8**

    Technical Support..... 8

    World Wide Web..... 8

    Returns..... 9

**Certification and Warranty** \_\_\_\_\_ **Inside Back Cover**

# LIST OF FIGURES

Figure 1. HTC-439 List 1 Test Card ..... 2

Figure 2. HTC-439 List 1 Test Connections..... 5

# LIST OF TABLES

Table 1. Test Connections ..... 4

# OVERVIEW

This practice describes the PairGain<sup>®</sup> HiGain<sup>®</sup> Test Card HTC-439 List 1. The HTC-439 provides a convenient method of testing Central Office (CO) and Field Tip and Ring transmit and receive pairs from any standard T1-239 repeater slot.

## FEATURES

- Four-position slider switch (S1) that allows you to select the kind of test you wish to perform on the transmit (XMT) and receive (RCV) Tip and Ring pairs on CO and field circuits:
  - Open
  - Short
  - Loop Thru
  - Loop Back (metallic)
- Test points that provide access to Tip and Ring circuits (CO and field) and to frame ground.
- Miniature 210 jacks located within the J1 block that provide access to CO and field Tip and Ring circuit sides.
- Designed to extend beyond the front plane of the shelf or enclosure into which the HTC-439 is inserted to permit easy access to its test points.

# TEST CARD

Test points on the HTC-439 (Figure 1) provide access to each circuit under test as well as to frame ground. The four-position test slider switch (S1) selects which test (Open, Short, Loop Thru, or Loop Back) is to be performed on CO and field circuits. The Open switch position effectively provides a splitting-type access to one pair of the CO and field sides and the 210 jacks. The Loop Back or Loop Thru switch positions allow you to use the two miniature 210 jacks located within the J1 block. All tests are run on both side 1 and side 2. Refer to “Testing a Circuit” on page 3 for further information.

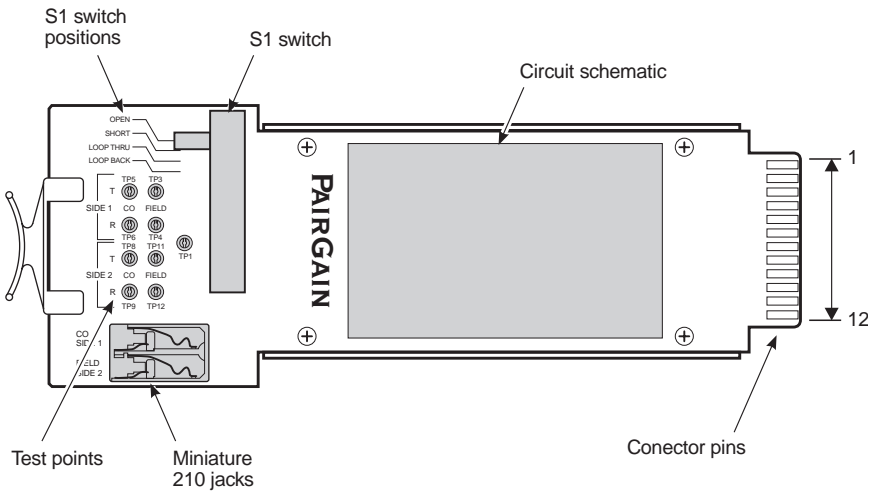


Figure 1. HTC-439 List 1 Test Card

# INSTALLATION

- 1 Insert the HTC-439 into the shelf slot for the channel you want to test.
- 2 Push the card all the way into the slot until the card is firmly seated.



**All wiring external to the product should follow the provisions of the current edition of the National Electrical Code.**

## TESTING A CIRCUIT

Use the HTC-439 to test circuits, as follows:

- 1 Set the slider switch S1 to the type of test you want to perform (Open, Short, Loop Thru, or Loop Back).
- 2 Connect to test points as applicable. The connections of Tip and Ring pairs of CO and field circuits for each setting of the switch are listed in [Table 1 on page 4](#) and illustrated in [Figure 2 on page 5](#). (Pin numbers correspond to the edge connector pins for each circuit.)
- 3 Perform the selected test.
- 4 Monitor the circuits at the corresponding test points on the card.
- 5 Repeat steps 1 through 4 as required.

**Table 1. Test Connections**

<b>Connect</b>	<b>Pin Number</b>	<b>To</b>	<b>Pin Number</b>
<b>Loopback - This switch position connects the following circuits</b>			
CO Tip	6	CO Tip	9
CO Ring	5	CO Ring	8
Field Tip	4	Field Tip	12
Field Ring	3	Field Ring	11
<b>Loophru - This switch position connects the following circuits</b>			
CO Tip	6	Field Tip	4
CO Ring	5	Field Ring	3
CO Tip	9	Field Tip	12
CO Ring	8	Field Ring	11
<b>Short - This switch position connects the following circuits</b>			
CO Tip	6	CO Ring	5
CO Tip	9	CO Ring	8
Field Tip	4	Field Ring	3
Field Tip	12	Field Ring	11
<b>Open - This switch position removes all connections between the circuits</b>			



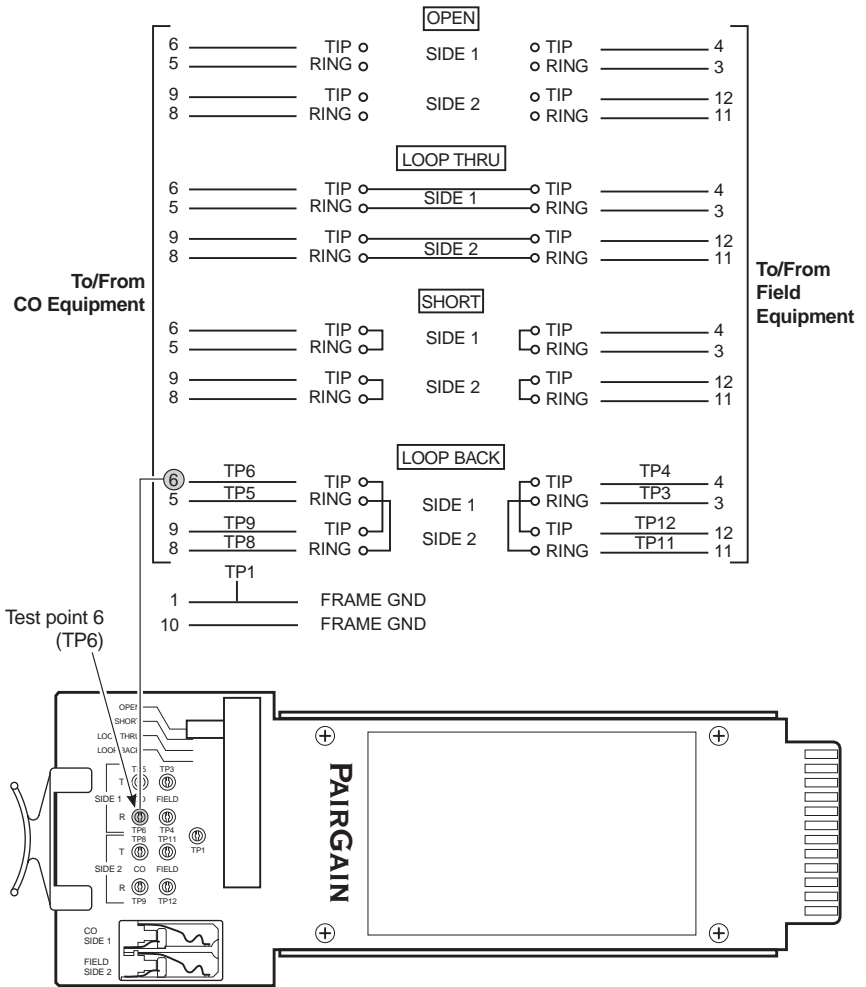


Figure 2. HTC-439 List 1 Test Connections

# APPENDIX A - SPECIFICATIONS

**Mounting** Any T1-239 repeater mechanics slot

**Environmental**

**Operating Temperature:** 40 °F to + 149 °F (-40 °C to + 65 °C)

**Operating Humidity:** 5% to 95% (non condensing)

**Dimensions and Weight**

Height: 3.1 in. (7.87 cm)

Width: 0.6 in. (1.52 cm)

Depth: 8.4 in. (21.34 cm)

Weight: 0.30 lb. (0.66 kg)

# APPENDIX B - GLOSSARY

<b>CO</b>	Central Office
<b>GND</b>	Ground
<b>HTC</b>	HiGain Test Card
<b>RCV</b>	Receive
<b>RMA</b>	Return Material Authorization
<b>XMT</b>	Transmit

# APPENDIX C - PRODUCT SUPPORT

PairGain Customer Service Group provides expert pre-sales and post-sales support and training for all its products.

## TECHNICAL SUPPORT

Technical assistance is available 24 hours a day, 7 days a week by contacting PairGain Customer Service Group at:

<b>Telephone:</b>	(800) 638-0031 or (714) 832-9922 The 800 telephone support line is toll-free in the U.S. and Canada.
<b>Fax:</b>	(714) 832-9924
<b>Email:</b>	support@pairgain.com

During normal business hours (7:30 AM to 5:30 PM, Pacific Time, Monday through Friday, excluding holidays), technical assistance calls are normally answered directly by a Customer Service Engineer. At other times, a request for technical assistance is handled by an on-duty Customer Service Engineer through a callback process. This process normally results in a callback within 30 minutes of initiating the request.

## WORLD WIDE WEB

PairGain product and company information can be found at <http://www.pairgain.com> using any Web browser.

# RETURNS

To return equipment to PairGain:

- 1 Locate the number of the purchase order under which the equipment was purchased. You will need to provide this number to PairGain Customer Service to obtain a return authorization.
- 2 Call or write PairGain Customer Service to ask for a Return Material Authorization (RMA) number and any additional instructions. Use the telephone or fax number listed below:
  - Telephone: (800) 370-9670
  - Fax: (714) 730-2961
- 3 Include the following information, in writing, along with the equipment you are returning:
  - Company name, address, and the name of a person PairGain can contact regarding this equipment.
  - The purchase order number provided to Customer Service when the RMA number was requested.
  - A description of the equipment, as well as the number of units that you are returning. Be sure to include the model and part number of each unit.
  - The shipping address to which PairGain should return the repaired equipment.
  - The reason for the return, for example:  
The equipment needs an ECO/ECN upgrade.  
The equipment is defective.



**If the equipment is defective, please tell us what you observed just before the equipment malfunctioned. Be as detailed in your description as possible.**

- 4 Pack the equipment in a shipping carton.
- 5 Write PairGain's address and the Return Material Authorization number you received from Customer Service clearly on the outside of the carton:

PairGain Technologies, Inc.  
14352 Franklin Ave.  
Tustin, CA 92780-7013

Attention: **CRF RMA (Number)**

# CERTIFICATION AND WARRANTY

## FCC COMPLIANCE

The HTC-439 List 1 does not have any clocking source, and deems to be a passive device per FCC guidelines. When used in conjunction with any clocking devices, this combined system may radiate radio frequency energy that can cause harmful interference to radio communications. Operation of such a system 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.

## WARRANTY

PairGain Technologies warrants this product to be free of defects and to be fully functional for a period of 60 months from the date of original shipment, given correct customer installation and regular maintenance. PairGain will repair or replace at PairGain's option any unit without cost during this period if the unit is found to be defective for any reason other than abuse or incorrect use or installation.

Do not try to repair the unit. If it fails, replace it with another unit and return the faulty unit to PairGain for repair. Any modifications of the unit by anyone other than an authorized PairGain representative voids the warranty.

If a unit needs repair, call PairGain for a Return Material Authorization (RMA) number and return the defective unit, freight prepaid, along with a brief description of the problem, to:

PairGain Technologies, Inc.  
14352 Franklin Avenue  
Tustin, CA 92780  
ATTN: Repair and Return Dept.  
(800) 638-0031

Refer to the instructions under [“World Wide Web” on page 8](#) for complete return instructions.

PairGain continues to repair faulty modules beyond the warranty program at a nominal charge. Contact your PairGain sales representative for details and pricing.

## MODIFICATIONS

Any changes or modifications made to this device that are not expressly approved by PairGain Technologies, Inc. may void the user's warranty.

All wiring external to the products should follow the provisions of the current edition of the National Electrical Code.

For technical assistance, refer to [“Technical Support” on page 8](#).

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**Corporate Office**

14402 Franklin Avenue  
Tustin, CA 92780

Tel: (714) 832-9922

Fax: (714) 832-9924

**For Technical Assistance:**

(800) 638-0031

