User Manual

Tektronix

IGS-5034-00
Fibre Channel Transceiver Test System

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Tektronix, Inc., P.O. Box 1000, Wilsonville, OR 97070–1000

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

To Avoid Fire or Personal Injury

Use Proper Power Cord. Use only the power cord specified for this product and certified for the country of use.

Use Proper Voltage Setting. Before applying power, ensure that the line selector is in the proper position for the power source being used.

Connect and Disconnect Properly. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

Ground the Product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and marking on the product. Consult the product manual for further ratings information before making connections to the product.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Use Proper Fuse. Use only the fuse type and rating specified for this product.

Avoid Exposed Circuitry. Do not touch exposed connections and components when power is present.

Wear Eye Protection. Wear eye protection if exposure to high-intensity rays or laser radiation exists.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Provide Proper Ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Symbols and Terms

Terms in this Manual. These terms may appear in this manual:

WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*

CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Terms on the Product. These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product. The following symbols may appear on the product:

WARNING
High Voltage

Protective Ground
(Earth) Terminal

CAUTION
Refer to Manual

Double
Insulated

Preface

This document contains operating instructions for the IGS-5034-00 Fibre Channel Transceiver Test System (referred to in this document as “test system” or “system”). Information about maintenance, repair, and modification of the test system is located in the manuals listed below.

The following manuals contain system-level information:

- *System Administrator Procedures: IGS-5034-00 Fibre Channel Transceiver Test System Instruction Manual*
- *Technician Procedures: IGS-5034-00 Fibre Channel Transceiver Test System Instruction Manual*

Product manuals for individual system components are also provided.

Contacting Tektronix

Service Support	Contact your local Tektronix distributor or sales office. Or, visit our web site for a listing of worldwide service locations. http://www.tek.com
For other information	In North America: 1-800-TEK-WIDE (1-800-835-9433) An operator will direct your call.
To write us	Tektronix, Inc. P.O. Box 1000 Wilsonville, OR 97070-1000

Getting Started

Getting Started

This chapter contains basic information that you need to know before operating the test system.

Product Description

The test system performs manufacturing product verification testing on fibre channel transceivers. Figure 1–1 shows the fibre channel transceivers. This manual refers to fibre channel transceiver as a device under test (DUT).

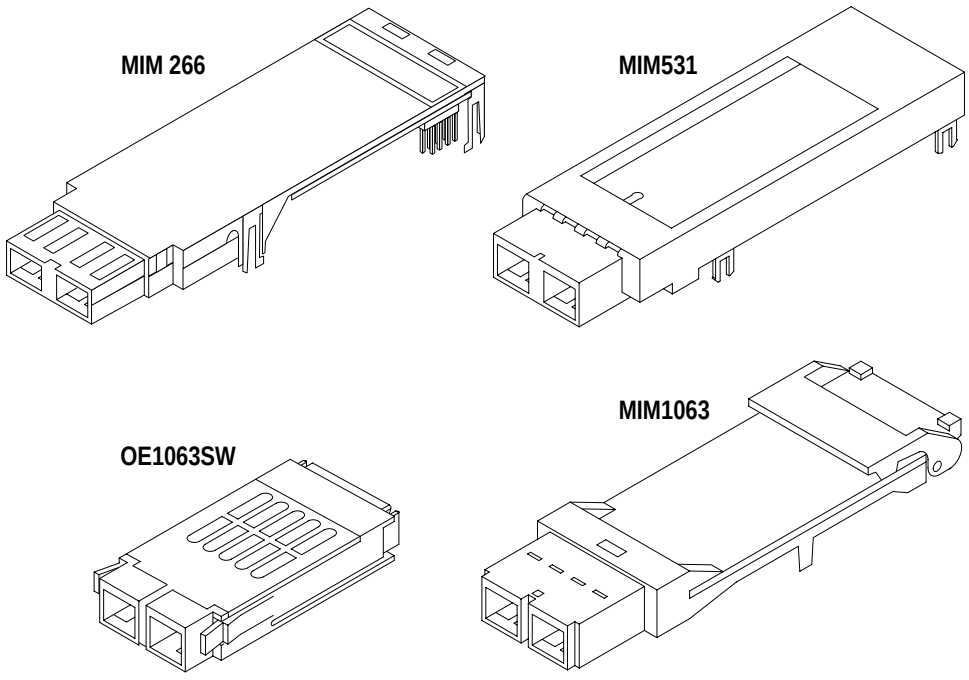

Figure 1–1: The DUT: fibre channel transceivers

Using the test system you can quickly verify whether the DUT is good or bad. The test system checks specific parameters of the DUT in areas such as bit-error-rate, optical levels, and pulse parameters. After testing the DUT, the system displays a message telling you if the DUT passed or failed. System software also documents test results for each DUT tested; this test data is accessible by the system administrator and the line technician.

Figure 1–2 shows the test system as it appears during normal operation.

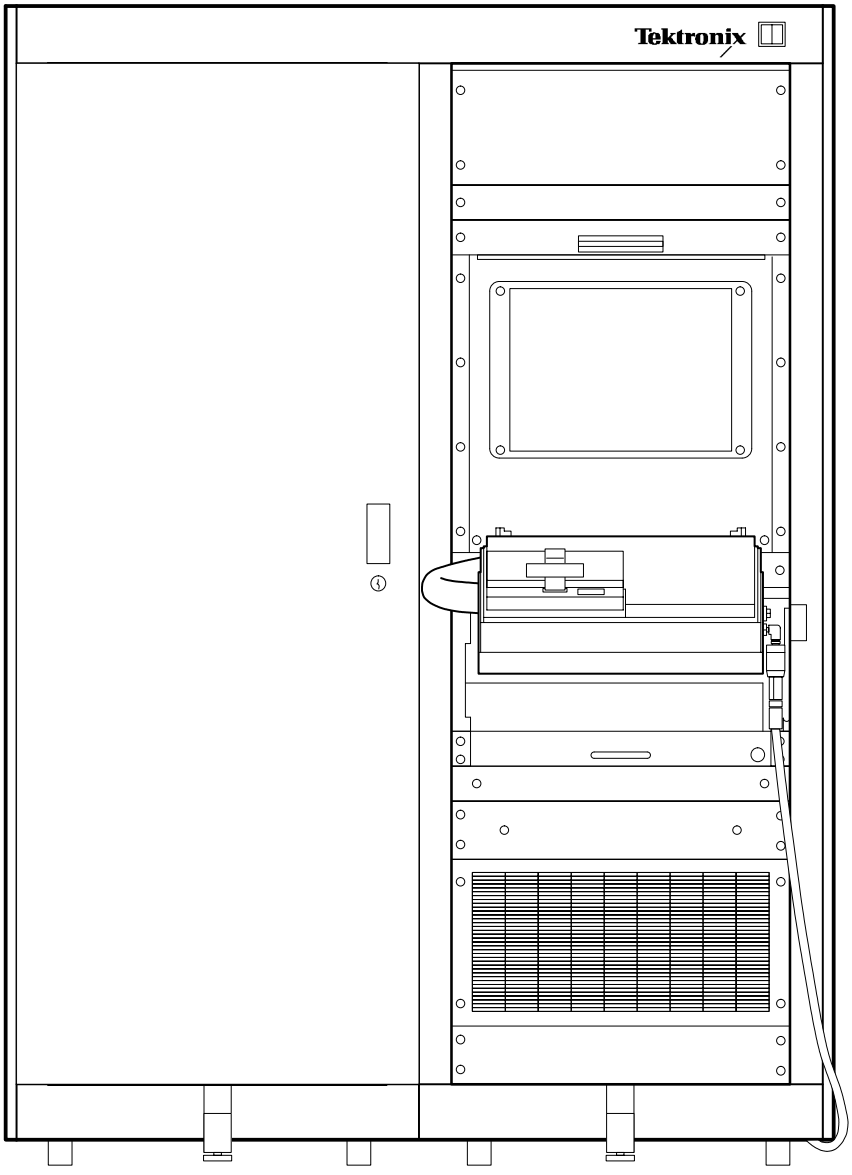

Figure 1–2: IGS-5034-00 Fibre Channel Transceiver Test System

Cautions and Warnings

Before you operate the test system, you must become familiar with the following important information.

Laser Safety

The test system has three sources of laser light:

- An active DUT inserted into the test fixture with power applied
- The Symbol Technologies, Inc. LS 1220 bar code scanner
- The Broadband Communications Products, Inc. laser source instrument

The DUT, inserted into the test fixture with power applied, is a Class I laser product. The bar code scanner (another Class I laser product) is also located inside the test fixture housing. The design of the test fixture protects the operator from exposure to harmful laser light levels: when the test fixture lid is opened laser light is not present, and during testing (when the lid is closed) laser light is contained inside the fixture.

NOTE. *In normal operating mode, the test fixture and system comprise a Class I laser DUT due to several safety interlocks. The output from a Class I laser is safe to view without special eye protection.*

Under normal operating conditions (rear test system doors closed and locked, and front-panel protective covers in place), the Broadband Communications Products, Inc. laser source instrument, a Class IIIb product, is inaccessible to the operator and thus poses no hazard.

The test system provides three different safety interlocks in an attempt to prevent exposure to harmful laser light. First, the software does not enable the optical path until the lid is closed and a valid DUT is detected. Second, the hardware is electrically prevented from completing the optical path for the Class III source when the lid is open. Third, the mechanical design of the fixture completely encloses the area where the light might be present.

WARNING. *The operator is protected from harmful laser light levels during normal operation. However, during servicing procedures a Class IIIb laser product is accessible. Servicing procedures must not be performed by the operator. All servicing procedures must be referred to qualified technical personnel, trained in laser safety procedures.*

Static Precautions

DUTs are sensitive to static damage. When working with static-sensitive components, you should observe the following standard anti-static precautions:

CAUTION. *Failure to observe these anti-static precautions can result in damage to the DUT being tested. Damage to electrical components may not be immediately apparent. Always follow the precautionary measures listed when handling static-sensitive DUTs.*

- Minimize handling of static-sensitive DUTs.
- Transport and store static-sensitive DUTs in their original containers or on conductive foam. Label any package that contains static-sensitive DUTs.
- Discharge static voltage from your body by wearing a wrist strap when handling these DUTs. Handling of these DUTs should be performed only at a static-free workstation by qualified personnel. (See Figure 1–3 for wrist strap connection location.)
- Don't put anything capable of generating or holding a static charge on the work surface.
- Avoid handling DUTs in areas that have a floor or work-surface covering capable of generating a static charge.
- Pick up DUTs by the body, never by the leads or pins.
- Do not slide DUTs over any surface.

CAUTION. *The body of the test fixture is capable of holding a static charge. You should use an ionizer to nullify any static buildup on the test fixture. Make sure that the ionizer is powered on and that the ionizer air flow toward the test fixture is not obstructed.*

General

Do not touch optical surfaces. Doing so can leave a residue on the optical surface that interferes with the laser transmission/reception and causes faulty test results.

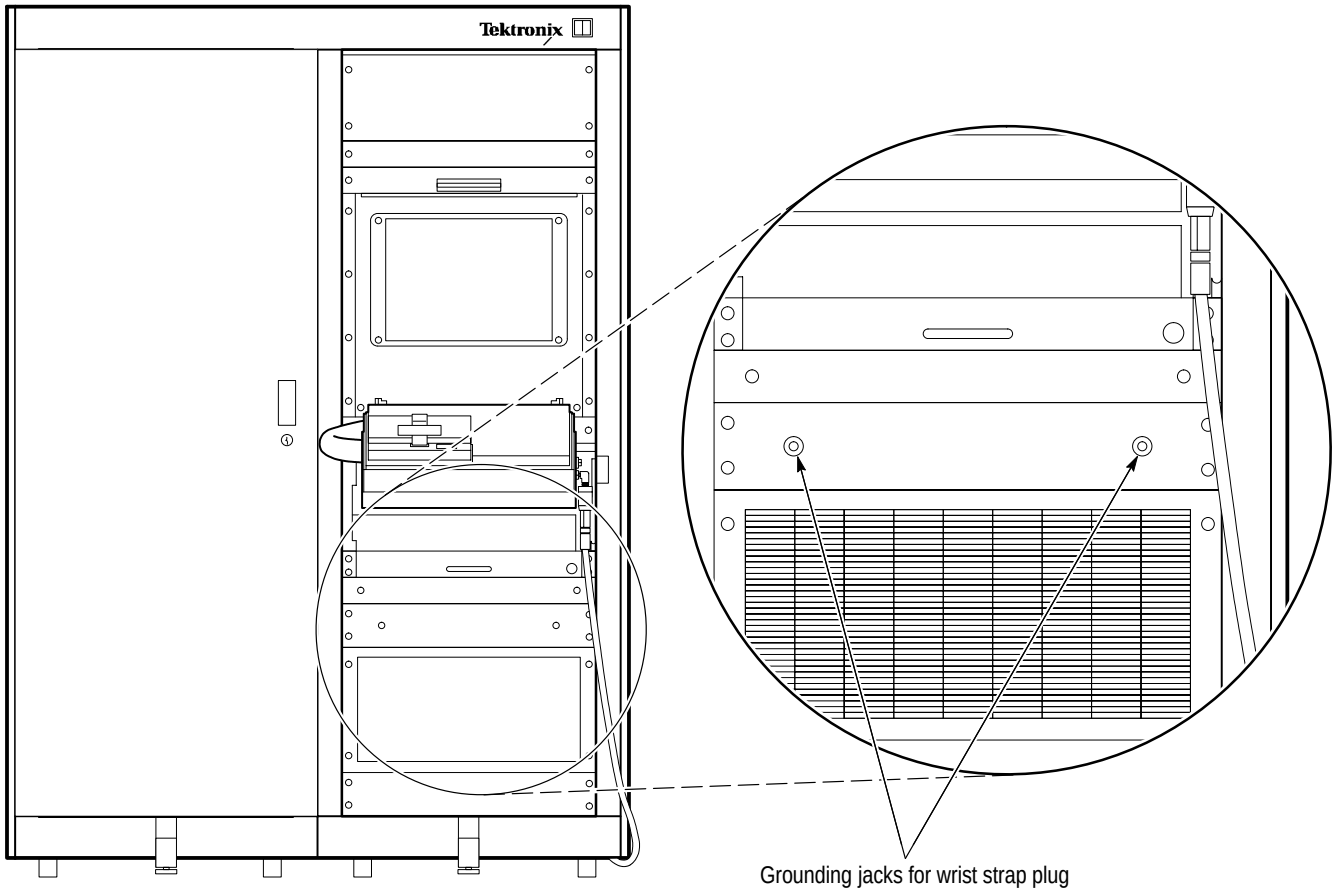

Figure 1–3: Wrist strap grounding connections

General Maintenance

It is important that the test system and its surrounding area be kept clean and dust-free. Doing so reduces maintenance costs, down time, and ultimately increases the accuracy and reliability of the test results.

It is also important that the DUT is handled properly, so that the DUT does not add any further dust or dirt to the test fixture. Keep the optical connectors on the DUT covered at all times except when testing.

Further cleaning and maintenance procedures are the responsibility of the technician.

Operating Basics

Operating Basics

This chapter tells you how to run the production tests on a fibre channel transceiver device under test (DUT).

NOTE. *If you have not already done so, read the information in the* Getting Started *chapter before continuing on with the following material.* Getting Started *contains important information about handling the DUT under test and about looking after the test system.*

Functional Check

At the start of each shift, you should perform this functional check procedure to make sure the test system is working properly. To do this, follow these steps:

1. Check that the test system is displaying a READY FOR DUT message.
2. Check that the correct DUT adapter is installed for the DUT you will be testing (MIMG, MIM 266, MIM 531, or OESW).

NOTE. *If the correct DUT adapter is not installed, contact the line technician. The system must be reconfigured when the DUT type is changed.*

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3. Install the SFTP_DUT in the test fixture. The test begins when you close the lid of the test fixture. The rest of the test is automatic.

   For instructions on how to install a DUT into the test fixture, refer to *Installing the DUT* on page 2–2.

4. When the test system displays READY FOR GOLD, remove the SFTP_DUT and replace it in its container.
5. Insert the appropriate Golden_DUT in the test fixture and close the lid.

NOTE. *You must use the same type of Golden_DUT as the DUT you intend to test.*

When the test is complete, the system displays a PASS message or a SYSTEM FAILURE message on the monitor. When the test system displays PASS, you may remove the Golden_DUT and begin testing production DUTs.

If the test system displays SYSTEM FAILURE for either test, call the line technician.

Installing the DUT Adapter

Only the technician should install the DUT adapter.

Installing the DUT

To install the DUT into the test fixture, follow these steps:

1. To open the test fixture, press the release handle and lift it, as shown in Figure 2–1.

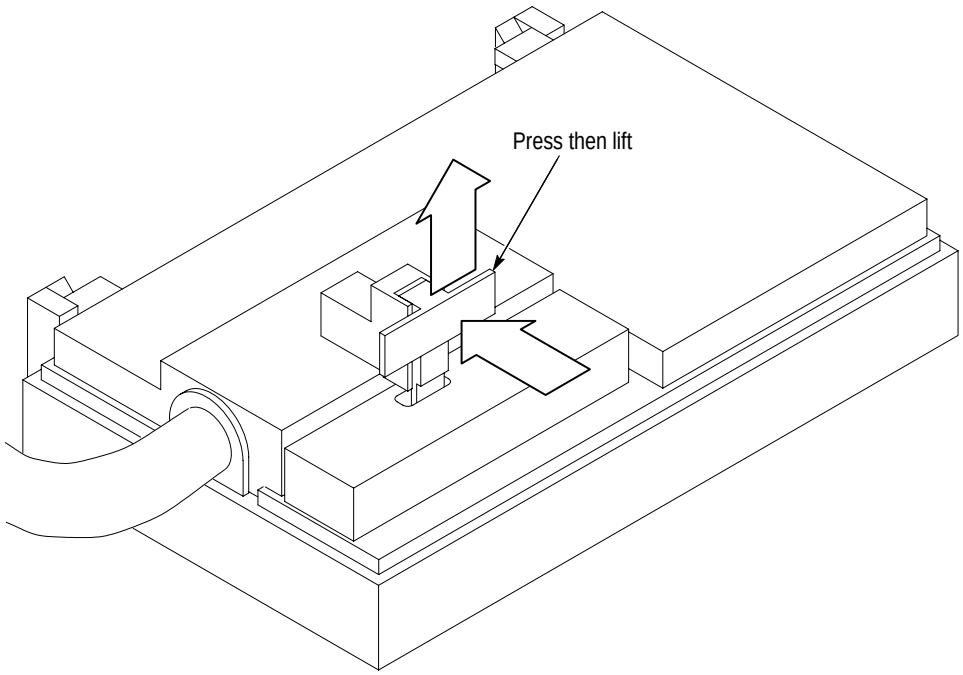

Figure 2–1: Opening the test fixture

2. Remove all protective caps from the DUT.

3. Carefully insert the DUT into the DUT adapter in the test fixture (see Figure 2–2). Make sure the pins are seated correctly, and then press down gently until the DUT is fully seated.

NOTE. *It is important that you insert the DUT correctly in the test fixture. Improper insertion can cause false test results.*

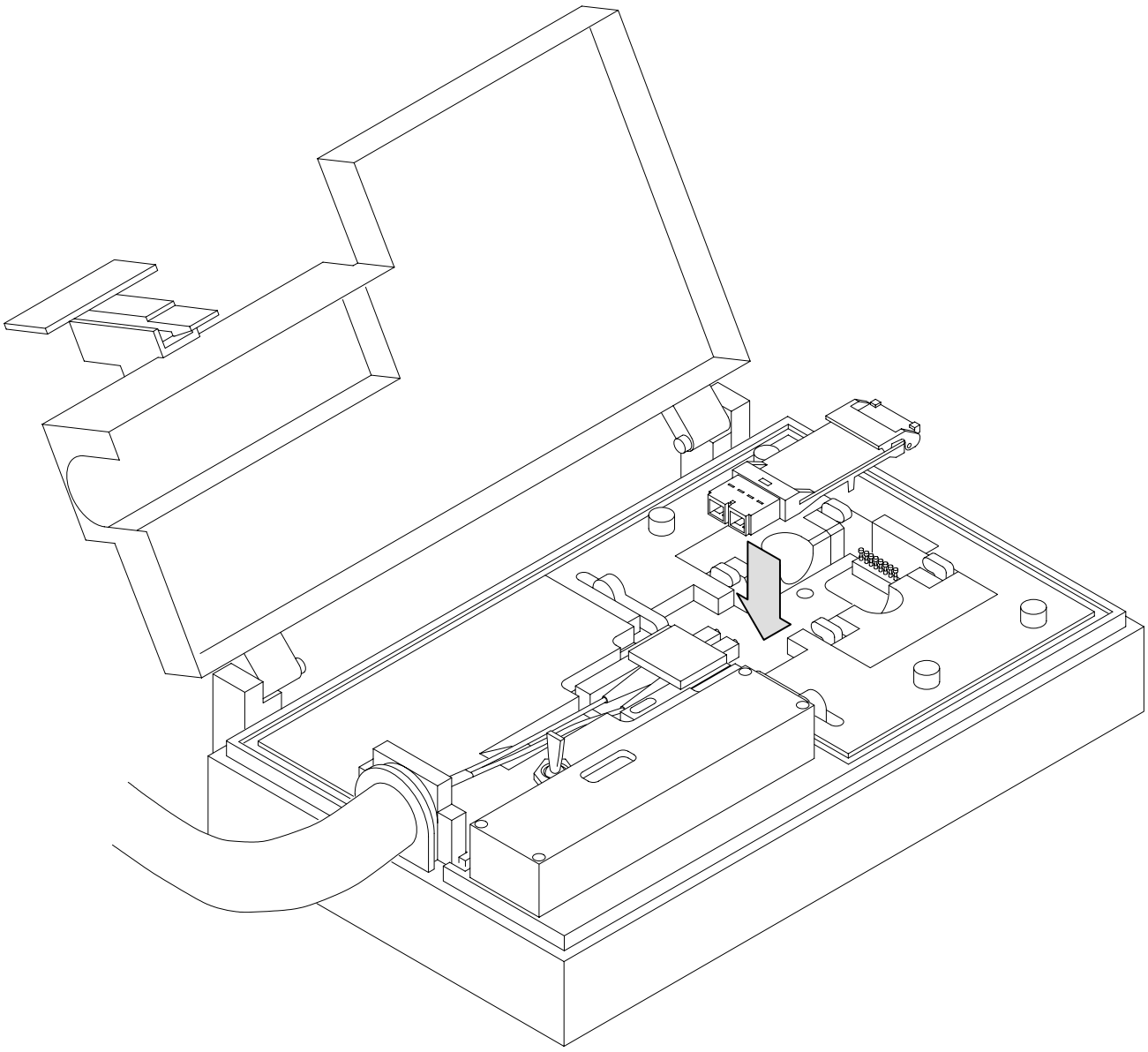

Figure 2–2: Inserting the DUT in the DUT adapter

For the OESW DUT, drop it straight down in front of the scallops until it touches the back of the platform and slide the DUT into the connector. Figure 2–3 shows how to insert an OESW DUT.

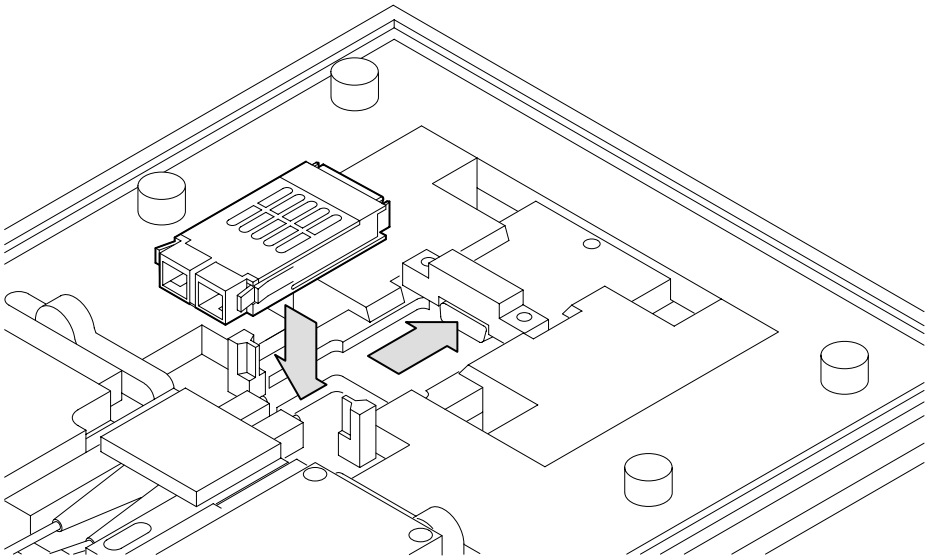

Figure 2–3: Inserting an OESW DUT in the adapter

4. Push the toggle switch to the “Capture” position to clamp the DUT firmly into its final position.
5. Press down firmly on the lid to close the test fixture. The latch makes an audible click when the lid is fully closed.

To remove the OESW DUT, squeeze the release tabs and push the DUT out from the connector end.

Running the Tests

The full sequence of tests takes approximately 3.5 minutes per DUT. However, the DUT may fail a test part way through the sequence, causing the tests to be terminated and the DUT to be rejected before the 3.5 minutes have lapsed.

To perform the tests on the DUT, follow these steps:

1. When the test system displays a Ready message, you may install the DUT into the test fixture. See Figure 2–4.

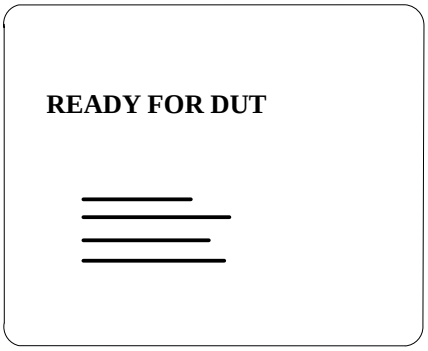

Figure 2–4: Ready for DUT Display

2. Close the test fixture and the test sequence begins. The test system displays which test is currently running. See Figure 2–5.

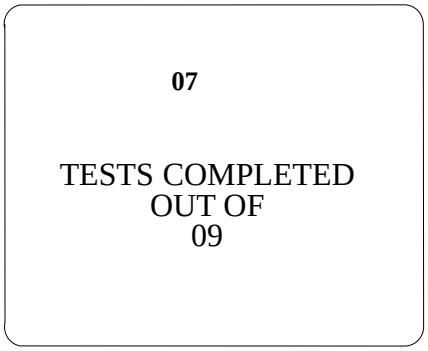

Figure 2–5: DUT Test in Progress Display

WARNING. *The test system locks the test fixture while testing the DUT. This is for your protection. Do not attempt to open the test fixture until the tests are completed (the system displays PASS or FAIL on the monitor).*

3. When the system finishes the tests, check whether the DUT passed or failed. The test system displays the results on the monitor. Figure 2–6 shows both the PASS and FAIL displays. Each screen may contain additional instructions beneath the PASS or FAIL message.

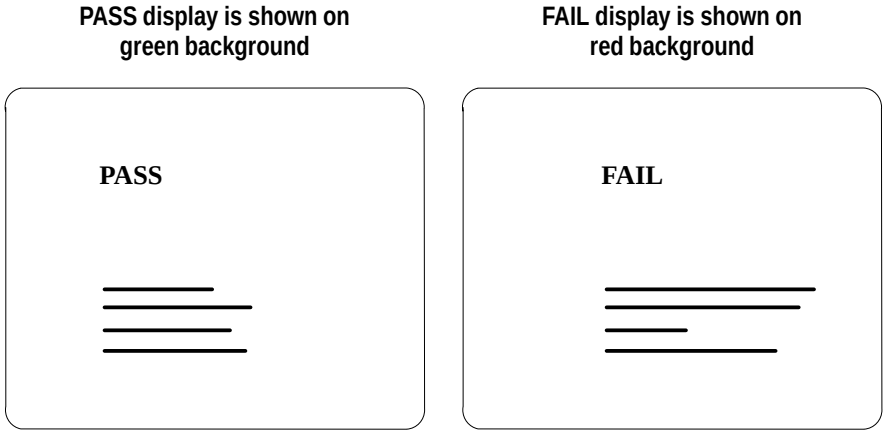

Figure 2–6: Test Results Display

4. Open the lid and push the toggle switch to the “Release” position to release the clamps.

NOTE*. Make sure that you check whether the device passed or failed the tests before going on to test the next device. It is important that the failed parts be properly handled and documented.*

5. Remove the device when the tests are complete. Place the device in the correct bin, for passed or failed devices.

Reference

Reference

This chapter provides a short description of the tests and some procedures to follow if you experience difficulties with the test system.

Test Descriptions

The system performs a number of tests on each component, testing that the component is functional and that it performs as specified.

The system performs the tests in order, from most basic to most complex. For most of the basic tests, if the component fails it is rejected and no further tests are performed on that component. This saves testing time.

The following is a brief description of the tests performed on the DUT. The tests are divided into four main categories, listed in order of execution:

DUT Initialization Tests. These tests check the most basic characteristics of the DUT, relating to the power supply.

DUT Optical Calibration Tests. These tests set the optical power levels of the transmit portion of the DUT. These calibration settings are implemented through the EEPOT signal connections on the test fixture.

If any of the DUT Optical Calibration Tests fail, the test system will not perform any more tests, and will reject the DUT. This is because other tests will probably fail if the DUT is unable to have properly calibrated optical power levels.

Functional Tests. These tests check the integrity of optical and electrical paths within the DUT.

Failure of some of the functional tests halts the testing process. Other tests do not require that the testing process be halted if the test fails.

Performance Tests. These tests measure how well the DUT performs and how it compares to tolerances. Test failures at this point are considered to be due to out-of-tolerance performance.

All tests within this group are performed and the results entered into the test log; test failures do not halt the test sequence.

Operator Troubleshooting Procedures

The following topics describe the problems that you may encounter, along with suggestions for how you should deal with them.

Three Components in a Row Fail the Same Test

When three components in a row fail the same test, you should check that the system is operating correctly. Refer to *Functional Check* on page 2–1, and perform the Golden_DUT portion of the test. If the system passes, continue testing components. If the system fails, call the line technician.

"Bad Scan" Message

The test fixture is unable to read the bar code on the DUT. Check the bar code on the DUT. The bar code should be readable (not torn or smudged), correctly aligned, and right side up. If the bar code is correctly placed and undamaged, call the line technician.

SFTP_DUT or Golden_DUT Fails Test

If either of these tests fail, call the line technician.

Other Problems

If you are experiencing other problems with the test system, or if the solutions proposed above do not work, call the line technician for assistance.