

MS12001 Cable Assembly Test System

User Guide

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Units of Measurement

Units of measurement in this publication conform to SI standards and practices.

Patents

The MS12001's Universal Interface is protected by US patent 6,612,750.

Version number 1.0.0

Contents

| | Certification Information | viii |
|---|--|------|
| 1 | Introducing the MS12001 Cable Assembly Test System | 1 |
| | Step-by-Step Approach | 2 |
| | System Overview | 3 |
| | MS12 and MS12-PM01 Module Description | 5 |
| | Test Features | 6 |
| | Custom Access Levels | 7 |
| | Centralized Database | 7 |
| | Industry Standards | 8 |
| | Conventions | 9 |
| 2 | Safety Information | 11 |
| 3 | Getting Started with Your Cable Assembly Test System | 13 |
| | Installing a Bar Code Reader and a Footswitch | 14 |
| | Preparing Hardware for System Configuration | |
| | Connecting Two RMs and the RM Switch | |
| | Configuring an External Switch | |
| | Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application | |
| | Reinstalling or Upgrading the MS12001 Database Cleaner Application | 37 |
| | Installing the VSReport Designer Software | 39 |
| | Starting and Exiting the MS12001 Cable Assembly Test System Application | 41 |
| | Setting User Permissions | 42 |
| | | |

| 4 | Setting Up System Parameters | 45 |
|---|---|----|
| | Defining Access Levels | |
| | Defining Custom Field Names | |
| | Defining Reflectance Sensitivity | |
| | Defining Reference Configuration | |
| | Setting Single or Multiple RM Configuration | |
| | Handling Failed Tests | |
| | Defining Results Storage | |
| | Selecting the Number of Reflectance Values | 58 |
| | Automatic Switch Configuration | 60 |
| | Setting Resolution to Display | 61 |
| | Setting Display for Very Small Reflectance Values | |
| | Enabling or Disabling the Warning for Low IL Values | 65 |
| | Setting Monitoring Display Options | 68 |
| | Configuring Database Connection | 70 |
| | Configuring Database Security Mode | 73 |
| | Customizing DUT Serial Numbers | 74 |
| | Selecting Test Instructions | 76 |
| | Customizing Test Instructions | 78 |
| | Setting Print and Export Parameters | 85 |
| 5 | Setting Up Test Profiles | 89 |
| | Entering Customer and Company Information | 89 |
| | Defining Connector Types | |
| | Defining DUTs | |
| | Entering Test Information | |
| 6 | Preparing Your Test Sequence | |
| | Overview of Possible Test Sequences | |
| | Setting Up Your Test | |
| | Cleaning and Connecting Optical Fibers | |
| | Testing Reflectance on Short Fibers | |
| | Monitoring IL and RL References or Measurements | |
| | Referencing Master Test Jumpers | |
| | Adjusting Power Level | |
| | Activating/Deactivating Switch Ports | |
| | Associating Switch Ports with Connector Types | |
| | Displaying/Hiding Connection Diagrams | |

| 7 | Testing Simplex Patchcords139Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing141Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing145Testing Patchcords, Standard Configuration and Unidirectional Testing153Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing157Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing161Testing Patchcords, High-Throughput Configuration and Bidirectional Testing161Testing Patchcords, High-Throughput Configuration and Bidirectional Testing168 |
|----|---|
| 8 | Testing Duplex Patchcords173Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing175Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing181Testing Patchcords, Standard Configuration and Undirectional Testing189Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing193Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing199Testing Patchcords, High-Throughput Configuration and Bidirectional Testing207 |
| 9 | Testing Bundle Patchcords213 Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing214Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing214Testing Patchcords, Standard Configuration and Unidirectional Testing214Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing215Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing215Testing Patchcords, High-Throughput Configuration and Bidirectional Testing215Testing Patchcords, High-Throughput Configuration and Unidirectional Testing215 |
| | Testing Fanout Patchcords217 Testing Patchcords, Standard Configuration and Bidirectional Testing219Testing Patchcords, Standard Configuration and Unidirectional Testing227Testing Patchcords, High-Throughput Configuration and Bidirectional Testing232Testing Patchcords, High-Throughput Configuration and Unidirectional Testing232Testing Patchcords, High-Throughput Configuration and Unidirectional Testing237 |
| 11 | Testing Multifiber Patchcords243Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing245Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing251Testing Patchcords, Standard Configuration and Unidirectional Testing259Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing265Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing271Testing Patchcords, High-Throughput Configuration and Bidirectional Testing277 |

Contents

| 12 Managing Results | |
|---|-----|
| Browsing through the Database | |
| Customizing the Database Browser Information | |
| Defining Criteria | |
| Printing Statistics Charts | |
| Printing Labels and Reports | |
| Customizing Labels and Reports | 294 |
| 13 Backing Up and Restoring Databases | |
| Backing Up Tests and Configurations | |
| Restoring Tests and Configurations | |
| Viewing Backup and Database Recovery History | |
| 14 Using the Reflectance Verification Tool | |
| Preparing Hardware for Reflectance Testing | |
| Starting and Exiting the Application | |
| Initializing Hardware | |
| Nulling Electrical Offsets | |
| Entering Test Information | |
| Monitoring Internal OTDR Lasers | |
| Measuring the Power Level | |
| Performing a Reference Measurement | |
| Performing Reflectance Measurement | |
| Managing CKT-30 Configurations | |
| Managing the Verification Results Viewing Test Results | |
| | |
| 15 Maintenance | |
| Cleaning Fixed Connectors | |
| Cleaning UI Connectors | |
| Cleaning Detector Ports | |
| Recalibrating the Unit | |
| Recycling and Disposal (Applies to European Union Only) | |
| 16 Troubleshooting | |
| Solving Common Problems | |
| Viewing Online Documentation | |
| Contacting the Technical Support Group | |
| Transportation | |
| A SCPI Command Reference | |
| Quick Reference Command Tree | |
| Product-Specific Commands—Description | |

| C Non-Reflective Terminations 387 Mandrel-Wrap 387 Termination Connector 388 Index-Matching Gel or Fluid 388 Gel Block 389 Data Dictionary 389 Data Fields for Label Customization 389 Data Fields for Report Customization 391 E Filter Builder Examples 397 Displaying Results that Have Failed 397 Displaying Results for a Time Interval 400 Displaying Results for a Time Interval 403 F Using the DataBase Cleaner 407 Overview 407 Nexting and Exiting the DataBase Cleaner 408 Starting and Exiting the DataBase Cleaner 409 Changing the Password 410 Working Locally or Remotely 412 Deleting Test Records 414 Manual Database Backup 424 System Information and Technical Support 425 Creating Your Own Database Management Code 426 | B | Basic Theory Insertion Loss Measurement Internal Monitor Detector Integrating Cavity Reflectance Measurement Multimode Fiber Transmission Multimode Fiber Launch Conditions | 381 381 382 382 385 |
|---|---|---|--|
| Termination Connector 388 Index-Matching Gel or Fluid 388 Gel Block 388 Gel Block 388 D Data Dictionary 389 Data Fields for Label Customization 389 Data Fields for Report Customization 391 E Filter Builder Examples 397 Displaying Results that Have Failed 397 Displaying Results for Serial Numbers 400 Displaying Results for a Time Interval 403 F Using the DataBase Cleaner 407 Overview 407 408 Starting and Exiting the DataBase Cleaner 408 Starting and Exiting the DataBase Cleaner 409 Changing the Password 410 Working Locally or Remotely 412 Deleting Test Records 414 Manual Database Backup 424 System Information and Technical Support 425 Creating Your Own Database Management Code 426 | C | Non-Reflective Terminations | 387 |
| Data Fields for Label Customization389Data Fields for Report Customization391EFilter Builder Examples397Displaying Results that Have Failed397Displaying Results for Serial Numbers400Displaying Results for a Time Interval403FUsing the DataBase Cleaner407Overview407Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | | Termination Connector Index-Matching Gel or Fluid | 388 388 |
| Data Fields for Label Customization389Data Fields for Report Customization391EFilter Builder Examples397Displaying Results that Have Failed397Displaying Results for Serial Numbers400Displaying Results for a Time Interval403FUsing the DataBase Cleaner407Overview407Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | D | Data Dictionary | |
| Data Fields for Report Customization391EFilter Builder Examples397Displaying Results that Have Failed397Displaying Results for Serial Numbers400Displaying Results for a Time Interval403FUsing the DataBase Cleaner407Overview407Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup425Creating Your Own Database Management Code426 | _ | | |
| Displaying Results that Have Failed397Displaying Results for Serial Numbers400Displaying Results for a Time Interval403FUsing the DataBase Cleaner407Overview407Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | | | |
| Displaying Results for Serial Numbers400Displaying Results for a Time Interval403FUsing the DataBase Cleaner407Overview407Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | Е | Filter Builder Examples | 397 |
| Displaying Results for a Time Interval 403 F Using the DataBase Cleaner 407 Overview 407 Installing the DataBase Cleaner 408 Starting and Exiting the DataBase Cleaner 409 Changing the Password 410 Working Locally or Remotely 412 Deleting Test Records 414 Manual Database Backup 424 System Information and Technical Support 425 Creating Your Own Database Management Code 426 | | Displaying Results that Have Failed | |
| FUsing the DataBase Cleaner407Overview407Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | | | |
| Overview407Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | | | |
| Installing the DataBase Cleaner408Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | | Displaying Results for a Time Interval | 403 |
| Starting and Exiting the DataBase Cleaner409Changing the Password410Working Locally or Remotely412Deleting Test Records414Manual Database Backup424System Information and Technical Support425Creating Your Own Database Management Code426 | F | Displaying Results for a Time Interval | 403 |
| Changing the Password.410Working Locally or Remotely.412Deleting Test Records.414Manual Database Backup.424System Information and Technical Support.425Creating Your Own Database Management Code.426 | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview | 403 407 407 |
| Working Locally or Remotely.412Deleting Test Records.414Manual Database Backup.424System Information and Technical Support.425Creating Your Own Database Management Code.426 | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview Installing the DataBase Cleaner | 403 407 407 408 |
| Deleting Test Records | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview Installing the DataBase Cleaner Starting and Exiting the DataBase Cleaner | 403 407 407 408 409 |
| System Information and Technical Support | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview Installing the DataBase Cleaner | 403 407 407 408 409 410 |
| Creating Your Own Database Management Code426 | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview Installing the DataBase Cleaner Starting and Exiting the DataBase Cleaner Changing the Password Working Locally or Remotely | 403 407 407 408 409 410 412 |
| | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview Installing the DataBase Cleaner Starting and Exiting the DataBase Cleaner Changing the Password Working Locally or Remotely Deleting Test Records Manual Database Backup | 403 407 407 408 409 410 412 414 424 |
| Index | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview Installing the DataBase Cleaner Starting and Exiting the DataBase Cleaner Changing the Password Working Locally or Remotely Deleting Test Records Manual Database Backup System Information and Technical Support | 403 407 407 409 410 410 412 414 424 425 |
| | F | Displaying Results for a Time Interval Using the DataBase Cleaner Overview Installing the DataBase Cleaner Starting and Exiting the DataBase Cleaner Changing the Password Working Locally or Remotely Deleting Test Records Manual Database Backup System Information and Technical Support | 403 407 407 409 410 410 412 414 424 425 |

Certification Information

FCC Information

Electronic test equipment is exempt from Part 15 compliance (FCC) in the United States. However, compliance verification tests are systematically performed on most JGR equipment.

CE Information

Electronic test equipment is subject to the EMC Directive in the European Union. The EN61326 standard prescribes both emission and immunity requirements for laboratory, measurement, and control equipment. This unit has undergone extensive testing according to the European Union Directive and Standards.

Introducing the MS12001 Cable Assembly Test System

The MS12001 Cable Assembly Test System was designed to streamline production testing and quality control of patchcords and other fiber assemblies.

The system can perform automated insertion loss and reflectance measurements on both singlemode and multimode fiber-optic patchcords and fiber assemblies. It allows you to test patchcords as short as 1.8 meters without having to apply non-reflective terminations.

The system offers two configurations:

- > Standard: requires more manipulation from the user.
- High-throughput: minimizes manipulations from the user, which reduces testing time.

The MS12001 Cable Assembly Test System can perform tests at one, two, three or four wavelengths. The MS12001 system may include one or two MS12 Loss Test Modules (RM). In a configuration with two MS12 modules, an MS7 Optical Switch is also required to select wavelengths from both MS12 Loss Test Modules.

Note: You can use a configuration with two RMs for all of your tests. The appropriate test instructions can also be displayed in the interface. However, procedures for a configuration with one RM are provided through this user guide. Additionally, module connection graphics provided within the MS12001 Cable Assembly Test System software also depict a configuration with one RM. You can find the procedure and connection graphic for two RM setup in section Connecting Two RMs and the RM Switch on page 25.

Step-by-Step Approach

Step-by-Step Approach

Guided by your selection parameters, the software, based on Windows XP, controls the test procedure from start to finish. This systematic approach, combined with the possibility of adding a bar code reader, eliminates the risk of data entry and reporting errors. A footswitch can also be added to your system to speed up the test process.

System Overview

System Overview

The Cable Assembly Test System is built around the MS platforms. For more information, refer to your MS platform user guide.

The Cable Assembly Test System comes in two hardware configurations, which maximize the test process of your fiber-optic assemblies. The necessary hardware varies depending on the selected configuration and on the patchcord or fiber-optic assembly being tested. The system modularity allows you to easily add modules without having to upgrade software.

- Standard: This configuration uses one MS12 Loss Test Module for multimode tests and one or two modules for singlemode tests. In some configurations, there is an optional switch with the same number of ports as the number of fibers in the DUT.
- ➤ High-throughput: This configuration speeds up the production of hybrid assemblies. High-throughput includes one or two MS12 modules and an optical switch with a number of ports corresponding to double the fibers included in the DUT. For testing simplex patchcords with a single MS12, an additional optional loss meter may be required.

Both Standard and High-throughput configurations can include two MS12 loss test modules coupled to one MS7 switch module dedicated to selecting test wavelengths.

IMPORTANT

Be careful when selecting which MS12 Loss Test Module you will use. Some of these modules are intended for IL measurement only (no reflectance measurements possible). System Overview

Modules described below are all the hardware that may be required to build the Cable Assembly Test System according to your test selection.

| Modules | Features |
|------------------------------------|---|
| MS12 Loss Test Module | ► Two-slot module |
| | Combines a reflectometer and a loss meter in one module^a |
| | Based on advanced time-domain reflectometry technology |
| | Comprises a wide-aperture integrating cavity |
| | Delivers insertion loss and reflection measurements |
| | Comprises an internal monitoring channel to compensate for any internal source power variation |
| | Comprises internal reflectance |
| MS12-PM01 Loss Meter | Used as an additional loss meter in high-throughput configurations including a single MS12 Loss Test Module used for testing simplex patchcords |
| | Comprises a wide-aperture cavity |
| | Delivers insertion loss measurements |
| MS7 Optical Switch ^{b, c} | Offers a choice of several configurations; refer to the corresponding documentation for detailsP |
| | Accurate and repeatable fiber-to-fiber switching |

a. The MS12 Loss Test Module can also be purchased without the reflectometer (IL testing only).

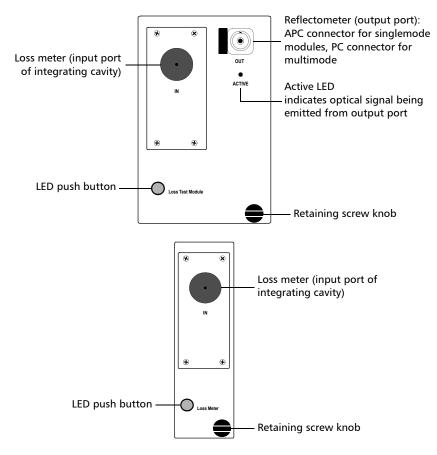
b. When a two MS12 Loss Test Modules configuration is being used, one MS7 optical switch must be included to select test wavelengths from the reflectance meter (RM) modules. A second switch can also be included for selected DUTs. For an RM switch, a 1 x 2 switch is sufficient (see Automatic Switch Configuration on page 60).

c. For selecting DUTs for tests, you can also use an external switch (see *Configuring an External Switch* on page 28).

MS12 and MS12-PM01 Module Description

This section describes the MS12 and the MS12-PM01 modules. For a description of other modules used in the Cable Assembly Test System, refer to their respective user guides.

JGR has incorporated the integrating-cavity technology into the MS12 Loss Test Module and the MS12-PM01 Loss Meter (dedicated loss-test module). For more information on the integrating-cavity, see *Integrating Cavity* on page 382.



Test Features

Test Features

The various hardware configurations allow you to perform insertion loss and reflectance measurements of the following types of fiber-optic components:

- ➤ *Simplex patchcord*: cable assembly with a single fiber and a connector at each end.
- Duplex patchcord: cable assembly with two fibers and two connectors at each end.
- Bundle patchcord: cable assembly with N fibers and N connectors at each end.
- ► *Fanout assembly*: cable assembly with N connectors at one end and a multifiber connector (for example, MTRJ and MTP) at the other end.
- ► *Multifiber-to-multifiber patchcord*: cable assembly with a single cable and a multifiber connector (for example, MTRJ and MTP) at each end.
- > Other types of patchcords, including hybrid or non-hybrid.

The mandrel-free option allows you to test long fibers without a mandrel tool or other non-reflective termination method.

You can test fiber assemblies in three different manners:

- Bidirectional testing allows you to separately test both connectors. You obtain InsertionLoss_A, InsertionLoss_B, Reflectance_A, and Reflectance_B.
- ➤ Unidirectional testing allows you to simultaneously test both connectors. You obtain InsertionLoss_{A+B}, Reflectance_A and Reflectance_B, or Reflectance_{A+B}.
- Connector A or Connector B (one connector only) testing is particularly useful if you manufacture connectors, because it allows you to test individual connectors (not fiber assemblies).

Custom Access Levels

Custom Access Levels

You can customize user access levels via the Supervisor Access feature, which allows you to specify the parameters that can be controlled by users.

Centralized Database

The application also comprises a centralized database that can be accessed through its own browser. This allows you to use the Cable Assembly Test System as a stand-alone system or to connect it to a local area network (LAN). This last feature makes the system particularly useful and efficient on the production floor. For larger plants, a configuration can be created and shared among several MS12001 workstations via a LAN. Industry Standards

Industry Standards

There are many North American and international standards describing, in detail, the different methods approved for testing the insertion loss and reflectance of passive components. As a supplement to the information provided in this user guide, JGR highly recommends that you consult the following standards:

- ► *TIA/EIA-455-34A FOTP-34* Interconnection Device Insertion Loss Test
- TIA/EIA-455-50A FOTP-50
 Light Launch Conditions for Long-Length Graded-Index Optical Fiber Spectral Attenuation Measurements.
- ➤ TIA/EIA-455-171 FOTP-171 Attenuation by Substitution Measurement for Short—Length Multimode Graded—Index and Singlemode Optical Fiber Cable Assemblies
- TIA/EIA-526-14A OFSTP-14
 Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant.
- TIA/EIA-568-A Commercial Building Telecommunications Cabling Standard
- ► IEC 61300-3-4-Basic test and measurement procedures—Part 3-4: Examinations and measurements—Attenuation
- ► IEC 61300-3-34-

Fiber-optic interconnecting devices and passive components-Basic test and measurement procedures—Part 3-34: Examinations and measurements—Attenuation of random mated connectors

Conventions

Conventions

Before using the product described in this manual, you should understand the following conventions:



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in *death or serious injury*. Do not proceed unless you understand and meet the required conditions.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *minor or moderate injury*. Do not proceed unless you understand and meet the required conditions.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in *component damage*. Do not proceed unless you understand and meet the required conditions.



IMPORTANT

Refers to information about this product you should not overlook.



Safety Information

The laser safety information in this chapter is only applicable to the MS12 Loss Test Module.



WARNING

Do not install or terminate fibers while a light source is active. Never look directly into a live fiber and ensure that your eyes are protected at all times.



WARNING

Use of controls, adjustments and procedures for operation and maintenance other than those specified herein may result in hazardous radiation exposure or impair the protection provided by this unit.

Your instrument is a Class 1 laser product in compliance with standards IEC 60825-1 and 21 CFR 1040.10. Laser radiation may be encountered at the output port.

The following label indicates that a product contains a Class 1 source:



3 Getting Started with Your Cable Assembly Test System

In this chapter, you will find information on hardware components and modules used in the MS12001 Cable Assembly Test System as well as directions on how to install your system and the application. Instructions on how to perform a basic test to make sure that your system is working properly are also given.

The Cable Assembly Test System has been configured and tested at the factory under normal conditions. However, before using it to test any patchcord, make sure that these requirements have been carried out:

- ► The MS platform controller and expansion units are properly installed as explained in your MS platform user guide.
- ➤ The necessary test modules are all present and correctly installed, as explained in *Preparing Hardware for System Configuration* on page 18.
- If you use a bar code reader or a footswitch, make sure that they are properly connected, as explained in *Installing a Bar Code Reader and a Footswitch* on page 14.
- The MS12001 Cable Assembly Test System application is installed, as explained in *Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application* on page 30.

Installing a Bar Code Reader and a Footswitch

Installing a Bar Code Reader and a Footswitch

The Cable Assembly Test System design allows you to use a bar code reader and a footswitch.

- A bar code reader increases productivity and avoids typing. It allows you to enter serial numbers or names in dialog boxes without typing.
 When you read data with the bar code reader, the text information will be inserted at the cursor position, as if it was typed on the keyboard.
- The footswitch is a timesaver for your test procedure. It frees your hands by simulating a keyboard key (such as Enter) so that you can concentrate on optical manipulations.

Since this optional equipment is not part of the system itself, you must ensure that it meets certain conditions and that it is configured appropriately.



IMPORTANT

The information provided here only applies to the footswitch and bar code reader models provided by JGR. If you are using another model, refer to its documentation for information.

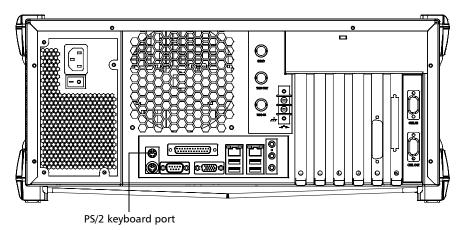
Getting Started with Your Cable Assembly Test System

Installing a Bar Code Reader and a Footswitch

Required Connection Type

The footswitch or bar code reader must support the *Keyboard Wedge* connection type. This means that the equipment will be connected in parallel to the keyboard port of your MS controller unit.

MS Controller Unit Back Panel



Installing a Bar Code Reader and a Footswitch

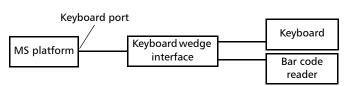
Connecting a Bar Code Reader and a Footswitch

The method to connect these optional instruments to MS platform controller units will depend on the equipment you have. For example, if you need to connect both a footswitch and a bar code reader, you may have to use a Y-type connector. Some possibilities are illustrated below.



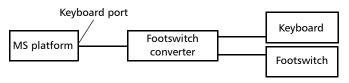
CAUTION

You must turn off the system before connecting a new component. Failure to do so may result in damage to the equipment.

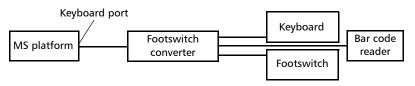


System with Bar Code Reader Only

System with Footswitch Only



System with Bar Code Reader and Footswitch



Installing a Bar Code Reader and a Footswitch

Configuring and Using the Bar Code Reader



IMPORTANT

You must configure the bar code reader so that a TAB code is added to the end of each scanned code. This TAB code will ensure that the software correctly interprets the bar codes.

For information on how to configure the bar code reader and how to use it to scan bar codes, refer to the user guide that came with your particular model.

Configuring and Using the Footswitch



IMPORTANT

You must configure the footswitch so that it is associated with the ENTER key. This will ensure that the footswitch takes advantage of the software design.

For information on how to configure and use the footswitch, refer to the user guide that came with your particular model.

Preparing Hardware for System Configuration

You must insert the appropriate modules according to the hardware configuration before using the MS12001 Cable Assembly Test System.

Note: The system does not require a particular order for the modules, they can be inserted in any slot, at your convenience. However, the position of a pair of MS12 Loss Test Modules or of a pair of switch modules relatively to each other is important.

All configurations of the MS12001 Cable Assembly Test System support testing using one or two MS12 Loss Test Modules (RMs).

Tests can be made at one, two, three, or four wavelengths. For tests at four wavelengths, your two RMs must provide two wavelengths each, and all four wavelengths must be different.

In configurations with one or two MS12 modules, the switch used for selecting the fibers of the DUTs is the DUT switch.

You must also set your MS12001 system for one or two RM modules. for more information, see *Setting Single or Multiple RM Configuration* on page 54.



CAUTION

JGR provides one test jumper and one reference jumper to perform your tests. You should handle them with care. Damaged connectors may lead to incorrect readings.



MPORTANT

JGR recommends to remove unnecessary switches from your MS12001. If several switches are present in your system, when you change ruttiest setup, without notice, the system may automatically select a different DUT switch to provide the number of ports required for the test.

Choose a DUT switch that covers all of your testing needs, and leave only that one inserted in your system.

One MS12 Module Test Configuration

For tests made with one MS12 Loss Test Module, the first MS12 module detected with the appropriate test wavelengths will be used for testing.

When several optical switches are included in a one MS12 module setup, the first switch with the required number of ports that is detected will be used as the DUT switch.

Note: By default, the MS12001 is configured for tests with one RM.

Getting Started with Your Cable Assembly Test System

Preparing Hardware for System Configuration

| Test Configuration | Modules Required with One MS12 |
|--|---|
| Simplex standard | ► One MS12 Loss Test Module |
| Duplex standard | |
| Bundle standard | |
| Simplex high-throughput | ► One MS12 Loss Test Module |
| Duplex high-throughput Bundle high-throughput | One MS7 Optical Switch or GPIB-controlled switch One MS12-PM01 Loss Meter |
| Fanout standard | One MS12 Loss Test Module One MS7 Optical Switch or GPIB-controlled switch |
| Fanout high-throughput | One MS12 Loss Test Module One MS7 Optical Switch or GPIB-controlled switch One MS12-PM01 Loss Meter |
| Multifiber-to-multifiber standard | One MS12 Loss Test Module One MS7 Optical Switch or GPIB-controlled switch |
| Multifiber-to-multifiber high-throughput | One MS12 Loss Test Module One MS7 Optical Switch or GPIB-controlled switch |

Two MS12 Modules Test Configuration

For tests made with two MS12 Loss Test Modules, the system verifies if the selected test wavelengths are available in the first MS12 module. When both RMs provide a same wavelength, the first RM will be used first. When only one RM provides a required wavelength, that RM will be used first regardless of its slot position in the system.

For example, if the first RM provides the 1490 nm wavelength and the second RM provides 1490 nm and 1625 nm wavelengths, the order of the selected RMs and wavelengths will be as follows: MS12 no. 1 (1490 nm) and MS12 no. 2 (1625 nm).

Should the first RM provide 1490 nm and 1625 nm wavelengths, and the second RM provide the 1490 nm wavelength, only the first RM will be selected and provide both wavelengths: MS12 no. 1 (1490 nm and 1625 nm). The second RM with the 1490 nm wavelength will simply not be used.

Thus, the order in which RM modules are inserted in your system is important when both RMs provide identical wavelengths.

If all test wavelengths are different on the two RMs, they will all be available for tests.

Getting Started with Your Cable Assembly Test System

Preparing Hardware for System Configuration

The order in which RM modules are inserted in your system is also important in regard to measurement monitoring at two wavelengths. Both monitored wavelengths must come from the same RM. For more information, see *Setting Monitoring Display Options* on page 68.

For tests made with two RMs, a 1 x 2 MS7 switch module must be included. This switch is the RM switch.

The RM switch is to be used exclusively for selecting test wavelengths provided by the two MS12 modules. The switch can be inserted in any slot of your MS platform controller or expansion units. The first switch detected in the system will be used as the RM switch.

The two RMs and the switch are to be connected. For more information, see *Connecting Two RMs and the RM Switch* on page 25.

When a DUT switch is also required for your tests, it must come after the RM switch in your test system.

When several optical switches are included in a two MS12 modules setup, the first switch with the required number of ports that is detected after the RM switch will be used as the DUT switch.

Note: When testing simplex, duplex or bundle patchcords with a high-throughput MS12001 system with two MS12 modules, an MS12-PM01 Loss Meter is no longer required. JGR recommends to remove MS12-PM01 modules from your MS platform Controller or Expansion Units for testing cable assemblies.

| Test Configuration | Modules Required with Two MS12 | | |
|---|---|--|--|
| Simplex standard | ► Two MS12 Loss Test Modules | | |
| Duplex standard | ► One 1 x 2 MS7 Optical Switch | | |
| Bundle standard | (RM switch) | | |
| Simplex high-throughput | ➤ Two MS12 Loss Test Modules ^a | | |
| Duplex high-throughput | ► Two MS7 Optical Switches or one | | |
| Bundle high-throughput | 1 x 2 MS7 Optical Switch (RM switch) and one | | |
| Fanout standard | GPIB-controlled switch | | |
| Fanout high-throughput | (DUT switch) | | |
| Multifiber-to-multifiber standard | | | |
| Multifiber-to-multifiber high-throughput | | | |

a. In two RM high-throughput configurations for testing patchcords, since two loss meters are already available in the RMs through their Input ports, an MS12-PM01 Loss Meter is no longer required.



IMPORTANT

For multimode testing, be careful when selecting an MS12 Loss Test Module. Some are intended for IL measurement only (no reflectance measurements possible).

Connecting Two RMs and the RM Switch

When your MS12001 configuration includes two MS12 Loss Test Modules (RMs), an MS7 switch module, the RM switch, is used for selecting the RMs. The system is preset to use the first detected MS7 as the RM switch. Only an internal switch can be used as the RM switch.

The switch can be inserted in any of your MS platform controller or expansion unit's slots.



IMPORTANT

The MS7 Optical Switch used for selecting test wavelengths from two RMs is not tracked by the MS12001 system.

After changing the RM switch in your system, changing connectors, or disconnecting and reconnecting your RMs or patchcords and the switch, make sure you perform a new set of reference measurements to recalibrate the system.

A 1 x 2 MS7 switch module is sufficient as the RM switch. You can use a switch with more ports. In all cases, the switch's Input ports 1 and 2 have been predefined for connecting RM 1 and RM 2 respectively.

The switch's Input port configuration cannot be modified. Even when the first and second input port from the RM switch have been deactivated, they will remain active when used for RM switching and wavelength selection.

Note: Promptly fix faulty ports and connectors on the RM switch or replace the switch to ensure accurate tests.

Connecting Two RMs and the RM Switch

In a two RM configuration, a second switch, either internal or external, can also be included for selecting DUTs when required. Also, the DUT switch must come after the RM switch. The DUT switch's ports can be deactivated or activated. For more information, *Activating/Deactivating Switch Ports* on page 130.

Note: In a one RM configuration, the first internal or external switch detected will be used for selecting DUTs.

Once an MS12001 has been configured with two RMs, you can keep this hardware setup even when testing at one or two wavelengths that requires only a single RM. Simply configure and save the appropriate test profiles. For more information, see *Setting Up Test Profiles* on page 89.

By leaving your system in a two RM configuration, you will only need to calibrate and reference your components once.

Whether your MS12001 system is for Standard or High-Throughput testing, with a two MS12 Loss Test Module configuration, the two loss meters found on the modules' Input ports will cover all of your testing needs.

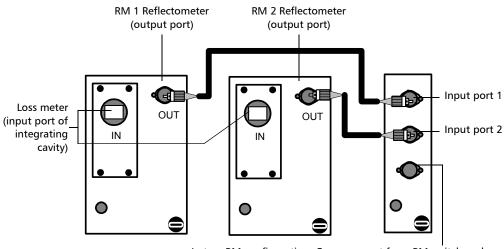
Note: When testing simplex, duplex or bundle patchcords with a high-throughput MS12001 system with two MS12 modules, an MS12-PM01 Loss Meter is no longer required. JGR recommends to remove MS12-PM01 modules from your MS platform Controller or Expansion Units for testing cable assemblies.

Connecting Two RMs and the RM Switch

To connect your RMs and your switch:

Set up your connections as shown below:

- Connect the first MS12 Loss Test Module detected on your platform (RM 1) to the Input port 1 of the MS7 Switch Module.
- Connect the second MS12 Loss Test Module detected on your platform (RM 2) to the switch's Input port 2.
- **Note:** Use APC connectors for Reflectometer (Output) ports on both the RMs as well as for the Input ports 1 and 2 from the RM switch.



In two RM configuration, Common port from RM switch replaces RM's Reflectometer (Output) port from one RM configuration.

In the connection diagrams provided in the *MS12001 User Guide* and in the application, when a switch module is included in the setup, it is always the DUT switch.

Configuring an External Switch

Configuring an External Switch

The external switches compatible with your MS12001 are JDS or Dicon controlled by GPIB. To use either switch, you have to configure it in the system.

Note: When using two MS12 Loss Test Modules for testing, your external switch will mandatorily be used as a DUT switch for selecting the fibers to test. It will not be available for selecting RMs for test wavelengths.

To configure your external switch:

1. From the main window, click the **Settings** function tab.

| External Swit | | Acces | s Level | | JGR |
|----------------------|--------------------------------------|--------------------------|--------------------------|-------------|------------------|
| | u can configure external GPIB switch | es. | Operator Super | visor | er _ Measure |
| System Measurem | ent Options Acquisition Dat | tabase User Access Displ | ay Switch Config Power-L | evel | Config |
| Singlemode Switch Co | JDS Dicon | Multimode Switch Co | IDIS Dicon | | Browser |
| External Switch G | ieneral Settings | External Switch | General Settings | _ | er |
| Output count: | 48 | Output count: | 48 | | Settings |
| Fiber type: | A Fiber 5 µm 💌 | Fiber type: | C Fiber 50 µm | ~ | |
| Serial number: | 1234567890 | Serial number: | 1234567890 | | About and Help |
| External Switch G | PIB Settings | External Switch | GPIB Settings | _ | |
| GPIB card address: | GPIB0 | GPIB card address: | GPIB0 | - | |
| Primary address: | 4 | Primary address: | 4 | - | |
| | | | | | |
| | | | Apply | Cancel | (?) Help Esit |
| Status: | | | Supervi | sor 7/20/20 | 011 11:37 AM |

- 2. From the Settings function tab, click the Switch Config. tab.
- 3. Under Access Level, click the Supervisor button.

Make sure that you have the Supervisor access rights.

- **4.** To select the switch mode, click the **Use external Switch** button under the singlemode or multimode section.
- 5. To select your switch type, click the JDS or the Dicon button.
- 6. Under External Switch General Settings, enter the right information in the Output Count, Fiber Type and Serial Number boxes.

| External Switch Ge | eneral Settings | External Switch G | eneral Settings | er |
|--------------------|-----------------|--------------------|--------------------|----------------|
| Output count: | 48 | Output count: | 48 | Settings |
| Fiber type: | A Fiber 5 µm | Fiber type: | C Fiber 50 µm | |
| Serial number: | 1234567890 | Serial number: | 1234567890 | About and Help |
| External Switch GP | PIB Settings | External Switch G | PIB Settings | |
| GPIB card address: | GPIB0 | GPIB card address: | GPIB0 | |
| Primary address: | 4 | Primary address: | 4 | |
| | | | | |
| | | | Apply Cancel | Pelp Exit |
| Status: | | | Supervisor 7/20/20 | 11 11:37 AM |

- 7. Under External Switch GPIB Settings, in the GPIB card address box, type the address of your card.
- 8. In the **Primary Address** box, type the switch address.
- **9.** Click **Apply** to save your settings.

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

For the Cable Assembly Test System to function properly, the MS Manager software must be installed on your MS platforms.

Normally, you wouldn't have to install MS Manager or the Cable Assembly Test System application, except in particular circumstances (such as after having reinstalled Microsoft Windows).

Note: JGR recommends upgrading all MS12001 system applications (central/server and client) to the same version.

IMPORTANT

To avoid losing data, carefully follow the procedure below.

To reinstall or upgrade the Cable Assembly Test System application on an MS platform controller unit:

- 1. Uninstall the old Cable Assembly Test System application as follows:
 - **1a.** Using the application, back up your data as explained in *Backing Up Tests and Configurations* on page 299.

Make sure that the operation is successful before exiting the application and proceeding to next step.

- **1b.** On the hard drive, remove the singlemode reference file as follows:
- **1c.** Go to C:\Documents and Settings\All Users\ Application Data\JGR\MS12001 and delete the CATS.cfg file.

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

1d. On the hard drive, remove the default instructions file as follows:

Go to C:\Documents and Settings\All Users\Application Data\JGR\MS12001 and delete the Instructions Default.xml file.

1e. If you have modified the original templates provided with your application (*Chart.xml*, *Label.xml*, *Report.xml*), without renaming them, first proceed a follows:

Go to C:\Documents and Settings\ All Users\Application Data\JGR\MS12001\Templates, rename the templates, and copy them to a location of your choice.

- **Note:** Your templates may be located somewhere else if you have set your own path for the template files.
 - **1f.** If you have customized the test instructions of your MS12001 software, proceed as follows:

On the hard drive, go to C:\Documents and Settings\ All Users\Application Data\JGR\MS12001 and copy the Instructions Custom.xml file to a location of your choice.

1g. If you have customized the settings of your MS12001 station's software, proceed as follows:

Go to C:\Documents and Settings\All Users\Application Data\JGR\MS12001 and copy the Settings.xml file to a location of your choice.

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

1h. If you have customized the settings of your MS12001 Database Cleaner software, proceed as follows:

Go to C:\Documents and Settings\All Users\Application Data\JGR\MS12001 and copy the SettingsCleaner.xml file to a location of your choice.

- *1i.* In the Windows **Control Panel** dialog box, double-click **Add or Remove Programs** and, in the **Add or Remove Programs** dialog box, select the MS12001 software, and then click **Remove**.
- **2.** Insert the MS12001 Cable Assembly Test System disk in the CD-ROM drive.
- **3.** Ensure that MS Manager is already installed and that its version is up-to-date.

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

- **4.** Install or upgrade MSDE as follows:
 - **4a.** From the CD, copy the *2*) *MSDE SP4* folder to a location of your choice on your MS platform controller unit.



IMPORTANT

You cannot start the installation or upgrade of MSDE directly from the CD.

You must first copy the MSDE folder to your MS platform controller unit.

4b. Verify if MSDE is already installed on your system:
On the Windows taskbar, click the Start button and select
Settings > Control Panel. Double-click the Administrative Tools icon, then double-click the Services icon.

On the list, if you find **MSSQLSERVER** with its status set to **Started** and its startup type set to **Automatic**, you can *upgrade* MSDE. In all other cases, you must *install* it.

 If you need to upgrade MSDE: On the Windows taskbar, click the Start button and select Run. Use the Browse button to find the UPGRADESP4.bat file in the MSDE SP4 folder you copied at step 4a.

OR

- ➤ If you need to install MSDE: On the Windows taskbar, click the Start button, select Run. Use the Browse button to find the MSDE.bat file in the MSDE SP4 folder you copied at step 4a.
- **4c.** Click **OK** to start the installation and follow the on-screen instructions.

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

- **5.** Install the MS12001 software as follows:
 - *5a.* On the Windows taskbar, click the **Start** button and select **Run**.
 - **5b.** Use the **Browse** button to find the *setup.exe* file on the CD-ROM.
 - **5c.** Click **OK** to start the installation.

IMPORTANT

Keep the default names and paths suggested by the setup program. Otherwise, the application will not be able to link to your database (you will not be able to see the test results previously acquired).

5d. Click OK to start the wizard and follow the on-screen instructions.

- **6.** Complete the upgrade as follows:
 - **6a.** If you have copied templates on step 1e, copy the files from the location you chose and paste them to *C*:|*Documents and Settings*| *All Users*|*Application Data*|*JGR*|*MS12001*|*Templates*.
 - **6b.** If you have copied the instructions file on step 1f, copy the file from the location you chose and paste it to *C*:/*Documents and Settings*/*All Users*/*Application Data*/*JGR*/*MS12001 Config*.
 - **6c.** If you have copied the Settings file on step 1g, copy the file from the location you chose and paste it to *C*:*Documents and Settings**All Users**Application Data**JGR**MS12001 Config.*
 - **6d.** If you have copied the Database Cleaner Settings file on step 1h, copy the file from the location you chose and paste it to C:\Documents and Settings\All Users\Application Data\JGR\MS12001 Config.

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

6e. If you are using a CKT-30 Reflectance Reference instrument and the reflectance verification tool for verifying the reflectance of MS12 Loss Test Modules, copy the *CKT30Config.xml* file from *C:\Program Files\JGR\MS12001\Tools* and paste it to *C:\Documents and Settings\All Users\Application Data\JGR\MS12001 3250 Calibration*.

If you leave the *CKT30Config.xml* file in its previous location, the data already recorded will no longer be available.



IMPORTANT

Do not restore your database. This would overwrite the upgraded database structure. The database backup was made in step 1a in case problems occurred during the upgrade.

- 6f. Start the Cable Assembly Test System application.
- **6g.** From the **Settings** function tab, select the **System** tab. Select the desired template files for your labels and reports. For more information, see *Setting Print and Export Parameters* on page 85.



MPORTANT

If you intend to use the templates that you have renamed on step 1e, ensure to select them instead of the supplied *Label.xml* and *Report.xml* templates.

Note: Additional templates are available specifically for testing at up to four wavelengths.

Reinstalling or Upgrading the MS12001 Cable Assembly Test System Application

- *6h.* From the **Settings** function tab, select the **Measurement Options** tab.
- *6i.* Under **Multiple RM Configuration**, select the desired hardware configuration.

For more information, see *Setting Single or Multiple RM Configuration* on page 54.

6j. From the **Database Browser**, make sure you see your test results (displayed according to the currently selected filter).

If you have defined your own customers, connectors, DUTs and/or tests with a previous software version, you should see them all from the **Config** function tab. Your filters will also be available.

Reinstalling or Upgrading the MS12001 Database Cleaner Application

The DataBase Cleaner application may be installed on a computer or directly on the MS controller unit. For more information, see *Installing the DataBase Cleaner* on page 408.

To reinstall or upgrade the Database Cleaner application on a controller unit or on a computer:

1. If you have customized the settings of your MS12001 Database Cleaner software, proceed as follows:

Go to C:\Documents and Settings\All Users\Application Data\JGR\MS12001 and copy the SettingsCleaner.xml file to a location of your choice.

- 2. Uninstall the old Database Cleaner application as follows:
 - 2a. In the Windows Control Panel dialog box, double-click Add or Remove Programs.
 - **2b.** From the **Add or Remove Programs** dialog box, select the MS12001 Database Cleaner software, and then click **Remove**.
- **3.** Insert the MS12001 Cable Assembly Test System disk in the CD-ROM drive.

Reinstalling or Upgrading the MS12001 Database Cleaner Application

- **4.** Install the MS12001 Database Cleaner software as follows:
 - 4a. On the Windows taskbar, click the **Start** button and select **Run**.
 - 4b. Use the Browse button to find the *setup.exe file* on the CD-ROM.
 - **4c.** Click **OK** to start the installation.
 - 4d. Click OK to start the wizard and follow the on-screen instructions.
 - **4e.** You should keep default names and paths as suggested from the Setup program.
- 5. If you have copied the Database Cleaner Settings file at step 1, complete the upgrade by copying the file from the location you chose and paste it to C:\Documents and Settings\All Users\Application Data\JGR\MS12001 Config.

Installing the VSReport Designer Software

Predefined templates are provided with your MS12001 Cable Assembly Test System. You can tailor them to your needs using the VSReport Designer software (provided on the Cable Assembly Test System CD).



IMPORTANT

This software has not been installed at the factory. You must install it and register it if you want to customize your labels and reports.

Note: JGR provides no documentation or support for VSReport Designer. If you need help, you will have to use the online help available in the software (you can print the desired help topics or view them on-screen).

To install VSReport Designer on an MS platform controller unit:

- **1.** Insert the MS12001 Cable Assembly Test System disk in the CD-ROM drive.
- 2. On the Windows taskbar, click the **Start** button and select **Run**.
- Use the Browse button to find VSVIEW 7.0 Reporting Edition Install view 7setup.exe file on the CD-ROM. Click Open.
- **4.** Click **OK** to start the installation.



MPORTANT

When prompted, choose Evaluation Copy. Otherwise, VSReport Designer could not be registered properly.

5. Simply follow the on-screen instructions. You should keep default names and paths as suggested from the Setup program.



IMPORTANT

The version you have just installed may not be the latest. You may download updates at http://www.componentone.com.

Installing the VSReport Designer Software

To register the VSReport Designer software:

- 1. On the Windows taskbar, click the **Start** button and select **Run**.
- 2. Use the **Browse** button to find *VSVIEW 7.0 Reporting Edition*|*License*|*c1lic.exe* file on the CD-ROM. Click **Open**.
- **3.** Click **OK** to start the installation.
- **4.** From the displayed dialog box, enter the license key in the **Serial Number** box. This license key will allow you to run the software on your system. It is provided in the jewel case, just under the MS12001 CD (you have to remove the CD from its case to see the license key).
- 5. When the confirmation message is displayed, click OK.

You are now able to customize your labels and reports with VSReport Designer, as explained in *Customizing Labels and Reports* on page 294.

Starting and Exiting the MS12001 Cable Assembly Test System Application

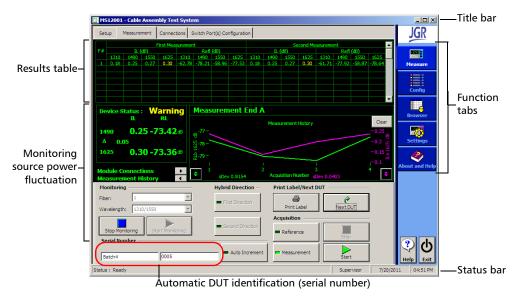
To start the Cable Assembly Test System application:

 On the Windows desktop, double-click the MS12001 Cable Assembly Test System icon.

OR

► From MS Manager, select the **Integrated Applications** function tab, then click the MS12001 Cable Assembly Test System button.

The application's main window is shown below:



To exit the Cable Assembly Test System application:

Click the **Exit** button located beneath the function tabs.

Note: If the application has been started from MS Manager, closing MS Manager will also close the Cable Assembly Test System application.

Setting User Permissions

Setting User Permissions

Several folders contain files which are regularly updated by the MS12001 application, the DataBase Cleaner, and the reflectance verification tool.

Under Windows XP, a network administrator may wish to give users a *Write* permission to some or all of these folders. For example, a user with *Restricted User* access might need an extended access to some functions and applications.

The *Write* permission can be given for user accounts, for the following folders:

IMPORTANT

By default, upon installation of the MS12001 Cable Assembly Test System, the Write permission is given for the folders below for all users.

It is the network administrator's responsibility to control user permissions.

MS12001 folder: To allow users to perform power level adjustments and reference measurements. Permission must be given on the local path C:\Documents and Settings\All Users\Application Data\ JGR\MS12001.

IMPORTANT

By default, upon installation of the MS12001 DataBase Cleaner, the Write permission is given to the MS12001 Config folder for all users.

It is the network administrator's responsibility to control user permissions.

Setting User Permissions

- MS12001 Config folder: To be able to give users the Supervisor access level and/or access to the DataBase Cleaner Application. the Permission must be given on the local path C:\Documents and Settings\All Users\Application Data\ JGR\MS12001 Config.
- MS12001 3250 Calibration folder: To allow users access to the reflectance verification tool. Permission must be given on the local path C:\Documents and Settings\All Users\Application Data\ JGR\MS12001 3250 Calibration.

4 Setting Up System Parameters

This chapter covers the parameters that you must specify to determine how you want your application to manage your test sequences and results.

Defining Access Levels

The Cable Assembly Test System comprises the following access levels:

 Operator: allows you to perform complete tests and gives you access to specific function as defined by a supervisor.

The Operator access level is assigned by default to all users.

 Supervisor: gives you access to all functions and allows you to select the functions that will be accessible to operators.

The Supervisor access level can be protected by a password.

The supervisor can change operators access rights to some functionalities such as overwriting results for a certain DUT or modifying the switch port configuration (port status, assigned connector).

Note: Under Windows XP, for users without sufficient Write permissions, for example those in Restricted User mode, the Supervisor level may not be available. To be able to provide the Supervisor access level to such users, a Network Administrator must give their accounts the Write permission on C:\Documents and Settings\All Users\Application Data\JGR\MS12001 Config.

For more information, see Setting User Permissions on page 42.

Entering the Supervisor Access Level

All users automatically access the MS12001 application with the Operator access level.

To be able to set up the system parameters, you must change your access level to Supervisor. The Supervisor access level allows you to change the password to that level and to select the functions that will be accessible to operators, give your operators the possibility of modifying some parameters, as well as to set or change all the other system parameters.

To enter the Supervisor access level, you must select that level and provide the set password.

To enter the supervisor access level:

- **1.** Click the **Settings** function tab.
- 2. Under Access Level, click the Supervisor button.

When you click the **Supervisor** button, the **Supervisor Level** dialog box opens, asking you for the supervisor password.

| MS12001 - Cable Assembly Test System | | |
|---|--|----------------------|
| System Settings | Access Level | JGR |
| From this window, you can select label printer (s |), and other options Operator | Supervisor |
| System Measurement Options Acquisitio | n Database User Access Display Switch Conf | Supervisor Level |
| Custom Titles | Label Printer | |
| First title: Custom1 | First printer: None | Enter your password: |
| Second title: Custom2 | Second printer: None | |
| Third title: Custom3 | Auto Print Labels | OK Cancel |

- **Note:** By default, there is no password. If you have never used a password, click **OK** to continue.
 - 3. In the Enter your password box, type your password and click OK.

Changing the Password

Once a password has been set for accessing the Supervisor access level, it can be changed by any user with the Supervisor access level.

To change the password:

- 1. From the **Settings** function tab, select the **System** tab.
- 2. Ensure that you have the Supervisor access rights.
- 3. Click the Change Password button.

| Change Password | |
|-----------------------|--------|
| Old Password: | |
| New Password: | |
| Confirm New Password: | |
| бк | Cancel |

- 4. Enter the old password and then the new password.
- 5. Enter your new password again in the Confirm New Password box.
- **6.** Click **OK**.

Modifying Operator Accesses

Operator accesses can be modified for some parameters and functionalities.

Note: Only a user with Supervisor access level can modify operator accesses.

To modify the Operator accesses:

- 1. From the **Settings** function tab, select the **User Access** tab.
- **2.** Under **Configuration Settings** and **Setup Settings**, click the buttons corresponding to parameters for which you want to give access.

| MS12001 - Cable Assembly Test System | | |
|---|--|---------------------|
| Operator Access Settings From this window, you can limit operator access to configuration panels. | certain Coerstor Supervisor | JGR Measure |
| System Measurement Options Acquisition Configuration Settings | Database User Access Display Switch Config Power-Level Setup Settings | Config |
| Company DUT | Customer List DUT List Auto Increment Labels Wavelengths | Browser Settings |
| Connector | Hardware Type Test Type Measurement Custom Fields | About and Help |
| Overwrite DUT Results Setting | Switch Port Configuration Settings - Allow Changes | |
| | Apply Cancel | ் Help Exit |

- **3.** Click **Apply** to confirm your changes.
- **Note:** By default, all parameters on the **User Access** tab are unavailable to users with Operator accesses.

Defining Custom Field Names

You can specify names to identify the contents of custom fields. Custom fields are useful to add information to a setup.

Note: This function requires Supervisor access rights.

To define custom field names:

- 1. From the **Settings** function tab, select the **System** tab.
- **2.** Under **Custom Titles**, enter the titles to use in their corresponding text boxes.

| M512001 - Cable Assembly Test System | | |
|--|--|----------|
| System Settings | Access Level | JGR |
| From this window, you can select label printer(s), | and other options Operator Supervisor | Measure |
| System Measurement Options Acquisition | Database User Access Display Switch Config Power-Level | Config |
| Custom Titles | Label Printer First printer: None | Browser |
| Second title: Custom2 Third title: Custom3 | Second printer: None | settings |
| | | |

3. Click **Apply** to confirm your changes.

Defining Reflectance Sensitivity

Reflectance sensitivity, high or standard, will determine the number of acquisitions made during the reflectance measurement. Since reflectance is using a technology similar to an OTDR, by selecting a "high" reflectance sensitivity, the number of acquisitions will be quadrupled.

This tool is useful when measuring reflectance values lower than -65 dB. It will take longer to get reflectance values in high reflectance sensitivity mode than in standard mode.

Note: This function requires Supervisor access rights.

To define reflectance sensitivity:

- 1. From the Application Settings function tab, select the Acquisition tab.
- 2. Click the button corresponding to the reflectance sensitivity you want.

| M512001 - Cable Assembly Test System | Access Level | JGR |
|---|---|-------------|
| Acquisition Settings | Access Level | _ |
| From this window, you can customize acquisition parameters. | Operator Supervisor | Measure |
| System Measurement Options Acquisition Database Use | er Access Display Switch Config Power-Level | Config |
| Standard High | | Browser |
| IOR Fiber Characteristics | | Settings |
| 850 1.496 1300 1.487 1310 1.4677 1490 1.46806 | | About and H |

3. Click **Apply** to confirm your changes.

Defining Reference Configuration

You can configure the method you use to take references. The application allows you to intervene manually between each reference. It may also determine the length of your master test jumper (MTJ) automatically or it may ask the operator to enter it manually.

For unidirectional testing, IL referencing can be done by either referencing only MTJ1 or referencing MTJ1 and MTJ2. When referencing only MTJ1, insertion loss of MTJ2 is included in the DUT insertion loss value.

Note: *MTJ2* corresponds to the master test jumper used between the DUT and the loss meter when performing unidirectional testing.

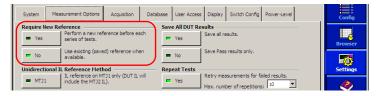
It is possible to configure the application to view one or two reflectance values. For more information, see *Selecting the Number of Reflectance Values* on page 58.

Note: This function requires Supervisor access rights.

To force referencing before each test session:

- 1. From the Settings function tab, select the Measurement Options tab.
- **2.** Under **Require New Reference**, select whether you want to force a new reference or not.

If you choose not to force references, a previous reference will be used when available and you will be able to take measurements without referencing first.



3. Click **Apply** to confirm your changes.

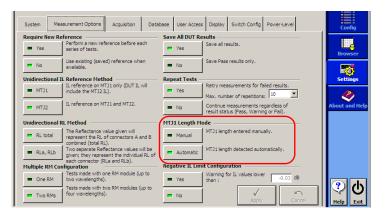
To set up the IL reference method for unidirectional testing:

- Measurement Options Acquisition Database User Access Display Switch Config Power-Level Confi System **Require New Reference** Save All DUT Results Perform a new reference before each series of tests. Save all results 💻 Yes Yes Brow Use existing (saved) reference when available. Save Pass results only. No - No settings Unidirectional IL Reference Method Repeat Tests IL reference on MTJ1 only (DUT IL will include the MTJ2 IL). Retry measurements for failed results. MTJ1 🖛 Yes 2 • Max. number of repetitions: 10 IL reference on MTJ1 and MTJ2. Continue measurements regardless of result status (Pass, Warning or Fail). мт32 No Unidirectional RL Method MTJ1 Length Mode RL total
 The Reflectance value given will
 represent the RL of connectors A and B
 combined (total RL).
 RLs, RLb
 Vor separate Reflectance values will be
 yiven; they represent the individual RL of
 Multiple RIM Configuration to the total will be
 total with one RIM and la (r. to. MTJ1 length entered manually. Manual Automatic MTJ1 length detected automatically. **Negative IL Limit Configuration** Tests made with one RM module (up to two wavelengths). Warning for IL values lower than : -0.03 dB Yes One RM ?) ტ Tests made with two RM modules (up to four wavelengths). \checkmark 5 I No Two RMs
- 1. From the Settings function tab, select the Measurement Options tab.

- **2.** Under **Unidirectional IL Reference Methods**, select whether to reference using only MTJ1 or using both MTJ1 and MTJ2.
- 3. Click Apply.

To have the MTJ length detected automatically:

1. From the Settings function tab, select the Measurement Options tab.



2. Under **MTJ1 Length Mode**, select whether you want to enter the length yourself or let the system detect it automatically.



IMPORTANT

Be careful when you work in manual mode because your Cable Assembly Test System directly uses the values you provide. Consequently, entering an erroneous master test jumper length will lead to unreliable or incorrect reflectance results.

Setting Single or Multiple RM Configuration

You can set the MS12001 system to use one or two MS12 Loss Test Modules (RMs) for tests.

If you intend to use your system solely for multimode testing, since only one MS12 module is available, which provides both the 850 nm and 1300 nm wavelengths, the one RM configuration is appropriate.

Note: By default, the MS12001 is configured for tests with one RM.

If you intend to use your system all the time for singlemode testing with only one or two wavelengths that are available on a single MS12 Loss Test Module, the one RM configuration is also appropriate.

If you intend to test in singlemode with wavelengths provided by up to two MS12 modules, use the two RM configuration.

Your system is most flexible when set for using two RMs. You can perform test with one to four wavelengths without the need to configure, reference and calibrate the hardware again.

Even if some of your tests need only wavelengths from one RM, instead of reconfiguring the hardware, simply define appropriate test profiles. For more information, see *Setting Up Test Profiles* on page 89.

Select the label, report and chart templates that correspond to the RM configuration you have selected. For more information, see *Setting Print and Export Parameters* on page 85.

Setting Single or Multiple RM Configuration

To select one or two RMs for tests:

- Measurement Options Acquisition Database User Access Display Switch Config Power-Level System Require New Reference Save All DUT Results rform a new reference before each Save all results. Perform a new series of tests Tes Yes Yes Use existing (saved) reference when Save Pass results only. No No available -0 Unidirectional IL Reference Method – Repeat Tests MTJ1
 IL reference on MTJ1 only (DUT IL will include the MTJ2 IL). Retry measurements for failed results. 🖛 Yes -Max. number of repetitions: 10 IL reference on MTJ1 and MTJ2. MT32 No Continue measurements regardless of result status (Pass, Warning or Fail). Unidirectional RL Method MTJ1 Length Mode The Reflectance value given will represent the RL of connectors A and B combined (total RL). MIDI length entered manually. RL total Two separate Reflectance values will be given; they represent the individual RL of Automatic MTJ1 length detected automatically. Dia Dib Multiple RM Configuration Negative IL Limit Configuration Tests made with one RM module (up to two wavelengths). Yes
 Warning for IL values lower
 -0.03
 dB One RM ?) ტ Tests made with two RM modules (up to four wavelengths). \checkmark 0 Two RMs I No
- 1. From the Settings function tab, select the Measurement Options tab.

- **2.** Under **Multiple RM Configuration**, select whether you want to use one or two RMs for tests.
- **Note:** After you have changed the RM configuration in your system, you must reinitialize the modules and reference the components again.

When you have set the system for using two RMs, make sure you have properly connected your RMs and the MS7 switch module (RM switch) after you have installed your modules in the system. For more information, see *Connecting Two RMs and the RM Switch* on page 25.

U

IMPORTANT

The MS7 Optical Switch used for selecting test wavelengths from two RMs is not tracked by the MS12001 system.

After changing the RM switch in your system, changing connectors, or disconnecting and reconnecting your RMs or patchcords and the switch, make sure you perform a new set of reference measurements to recalibrate the system.

Handling Failed Tests

The application may allow the operator to retry any failed test. You can also limit the number of trials.

Note: This function requires Supervisor access rights.

To configure the handling of failed tests:

1. From the Settings function tab, select the Measurement Options tab.

| System | Measurement Options | Acquisition Di | atabase | User Access | Display | Switch Config | Power-Level | | Config |
|--------------------------|--|-----------------------|---------|---------------|----------------------|--|-------------|------|----------------|
| Require M | lew Reference | | Sav | e All DUT Res | ults — | | | - | |
| Yes | Perform a new refere series of tests. | ence before each | = | Yes | Save all re | sults. | | | Browser |
| No | Use existing (saved) available. | reference when | - | No | Save Pass | results only. | | | 20 |
| Unidirect | ional IL Reference Method | I | Rep | eat Tests — | | | | | Settings |
| MTJ: | IL reference on MTJ1 include the MTJ2 IL). | | - | Yes | 1 A A | surements for fa ier of repetitions | | í I | |
| m MTJ2 | IL reference on MTJ1 | and MTJ2. | - | No | Continue r | neasurements re us (Pass, Warnir | gardless of |) | About and Help |
| Unidirect | ional RL Method | | — МТЈ | 1 Length Mo | de | | | _ | |
| 🖷 RL to | otal The Reflectance valu represent the RL of c combined (total RL), | | - | Manual | MTJ1 leng | th entered manu | ally. | | |
| RLa, | RLb Two separate Reflec given; they represen each connector (RLa | t the individual RL o | of 🗖 | Automatic | MTJ1 leng | th detected auto | matically. | | |
| Multiple F | RM Configuration — | , | Neg | ative IL Limi | t Configur | ation | | - | |
| One | RM Tests made with one two wavelengths). | RM module (up to | - | Yes | Warning fi than : | or IL values lowe | f -0.03 d | в | |
| Two | RMs Tests made with two four wavelengths). | RM modules (up to | - | No | | Apply | | ncel | Help Exit |

- **2.** Under **Repeat Tests**, select whether a failed test is to be retried or not and, if necessary, select the number of retries.
- 3. Click Apply.

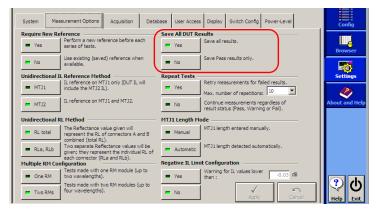
Defining Results Storage

You have a choice of which test results will be saved. You can either save all results or you can save only the results that pass the test.

Note: This function requires Supervisor access rights.

To select which results to save:

1. From the Settings function tab, select the Measurement Options tab.



- **2.** Under **Save All DUT Results**, select whether to save all results or only results that pass the test.
- 3. Click Apply.

Note: The application will not take this setting into account if you are working with hybrid patchcords with a standard configuration and bidirectional testing. Since the application allows batch testing, it must save all results to keep a correspondence between End A and End B results of the fiber assembly. However, your setting remains available for all other test types.

Selecting the Number of Reflectance Values

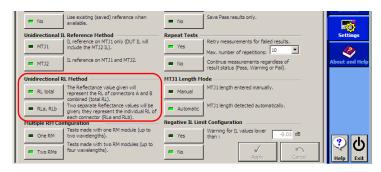
You can specify the way the Cable Assembly Test System will display reflectance results. You can choose to view one or two values.

➤ One reflectance value: The result corresponds to the sum of connectors A and B reflectance.

Reflectance (dB) = $10 \cdot \left[log \left(\frac{P_{reflected, connector A}}{P_{incident, connector A}} \right) + log \left(\frac{P_{reflected, connector B}}{P_{incident, connector B}} \right) \right]$

- ➤ Two reflectance values: the first value corresponds to connector A reflectance and the second to connector B reflectance. When the displayed results are exactly the same for both connectors, that means the application has returned the worst reflectance value obtained (either connector A or connector B value).
- **Note:** Regardless of your choice to display one or two reflectance values, the DUT status (pass or fail) is determined by the worst connector value. For example, if connector A is "Pass" and connector B is "Fail", the DUT will be marked as "Fail".
- Note: This function requires Supervisor access rights.

To select the number of reflectance values:

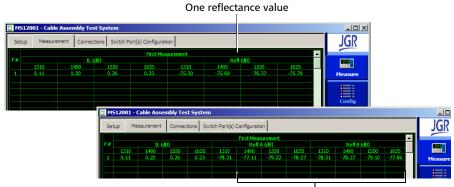


1. From the Settings function tab, select the Measurement Options tab.

2. Under **Unidirectional RL method**, select whether one or two reflectance values are displayed.

3. Click Apply.

The result table on the **Measurement** tab will be formatted according to your selection.



Two reflectance values

Automatic Switch Configuration

When operating in one RM configuration, the system automatically assigns the first detected optical switch which provides the required number of ports as the DUT switch. In such a case, make sure the first switch in your system is the one you are intending to use as the DUT switch.

When operating with two MS12 Loss Test Modules (RMs) in two RM configuration, the MS12001 system automatically assigns the first detected MS7 switch module as the RM switch.

The RM switch's Input port 1 is automatically set for selecting the first detected MS12 module's test wavelengths. The Input port 2 is automatically set for selecting the second MS12 module's wavelengths.

A switch with more than two Input ports can be used as the RM switch. However, only Input ports 1 and 2 will be used for selecting the wavelengths from the RMs.

Note: The RM switch can be used only for selecting RMs, even when additional ports are available.

A second switch may also be included for selecting DUTs to be tested. In two RM configuration, the switch detected in second in the system is assigned as the DUT switch.

Note: A system in two RM configuration will use an external switch only as a DUT switch.

Setting Resolution to Display

The application lets you determine the number of digits (resolution) that will be displayed for IL and reflectance values, including the monitoring values, as well as for master test jumper length. The Database Browser will take into account the settings that you make when displaying values.

- **Note:** The modification of resolution is for display purposes only; therefore, it does not affect the database content.
- Note: The displayed values are rounded, not truncated.
- **Note:** With a three-digit display resolution, IL monitoring or IL measurement values of 10 dBm or more are rounded to two digits.

If you want to modify the format of values displayed in reports, you can use VSReport Designer (see *Customizing Labels and Reports* on page 294).

Note: This function requires Supervisor access rights.

Setting Resolution to Display

To set display resolution:

1. From the **Settings** function tab, select the **Display** tab.

| System Measurement Options A | cquisition Database User Access Display Switch Config Power-Level | Config |
|---|---|----------------|
| Measurement Resolution | Edit Sequences Instructions Default Instructions | Browser |
| Reflectance: 2 Length: 1 | Local Customized Instructions Edit | Settings |
| Low Reflectance Display | Monitoring Display | About and Help |
| Display Measure (ex73 dB) | Single Wavelength IL (fast) Single Wavelength RL (fast) | |
| Display < (ex. <-71 dB) | Dual Wavelength IL Dual Wavelength RL | |
| For values lower than: -65 dB | Single Wavelength IL and RL Dual Wavelength IL and RL | |
| | Apply Cana | |

- **2.** Under **Measurement Resolution**, select the desired resolutions for insertion loss, reflectance, and length.
- **3.** Click **Apply** to confirm your changes.

Setting Display for Very Small Reflectance Values

The application allows you to define a threshold for the minimum reflectance value and to specify how it should display the reflectance values that go beyond this threshold.

The possibilities are:

- ► the value itself (for example, -78 dB)
- ► an indicator including the threshold value (for example, <-71 dB)

The Database Browser will take into account the settings that you make when displaying values.

Note: This modification is for display purposes only; therefore, it does not affect the database content nor the DUT status. The DUT status is function of the limits you specify (see Defining Connector Types on page 92), not of the indicator (for example, <-71 dB). The threshold value is rounded to one digit after the point when displayed in the results table.

If you want to modify the format of the values appearing in the reports, you can use the VSReport Designer (see *Customizing Labels and Reports* on page 294).

Note: This function requires Supervisor access rights.

Setting Display for Very Small Reflectance Values

To set the display for small reflectance values:

1. From the **Settings** function tab, select the **Display** tab.

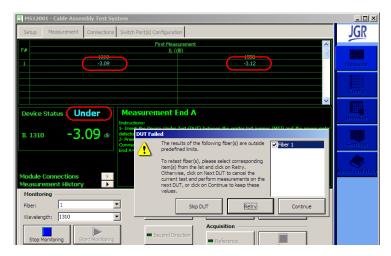
| System Measurement Options | Acquisition Database User Access Display Switch Config Power-Level | Config |
|--|--|---|
| Insertion loss: 2 | Edit Sequences Instructions Default Instructions | Browser |
| Reflectance: 2 | Local Customized Instructions Edit | Settings |
| Low Reflectance Display Display Measure (ex73 dB) | Monitoring Display Single Wavelength RL (fast) Single Wavelength RL (fast) | About and Help |
| Display < (ex. <-71 dB) | Dual Wavelength IL Dual Wavelength RL | |
| For values lower than: -65 | dB Single Wavelength IL and RL Dual Wavelength IL and RL | |
| | Apply Cancel | الله الله الله الله الله الله الله الله |

- **2.** Select the desired display for small reflectance values.
- **3.** Specify the threshold.
- **4.** Click **Apply** to confirm your changes.

Enabling or Disabling the Warning for Low IL Values

You can enable or disable the detection of low IL values. When this feature is enabled, the application will warn you whenever the measured IL values are under the defined threshold. Typical values for the threshold are between -0.03 dB and -0.1 dB.

The application will display in blue the values that are too low and will provide a list of fibers on which such values have been measured. You will then be able to either re-test the fibers or skip the DUT.



By default, the feature is not enabled.

- **Note:** This feature is intended to help you quickly identify potential problems; therefore, it does not affect the database content nor the DUT status. The DUT status is function of the limits you specify for the connector type (see Defining Connector Types on page 92).
- Note: This function requires Supervisor access rights.

Enabling or Disabling the Warning for Low IL Values

To enable the warning for low IL values:

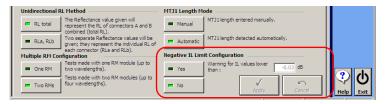
- 1. From the **Settings** function tab, select the **Measurement Options** tab.
- 2. Select Yes.

| M512001 - Cabl | e Assembly Test System | | | |
|----------------------------|--|-------------------------------|---|--------------|
| Measurem | ent Settings | | Access Level | JGR |
| From this wind options. | ow, you can customize reference and measur | rement | Operator Supervisor | Measure |
| System Mei | asurement Options Acquisition Data | abase User Acces | s Display Switch Config Power-Level | Config |
| Require New Re | eference | Save All DUT R | | |
| Yes | Perform a new reference before each series of tests. | 💻 Yes | Save all results. | Browser |
| no No | Use existing (saved) reference when available. | No | Save Pass results only. | Browser |
| Unidirectional I | IL Reference Method | Repeat Tests | | Settings |
| mtj1 | IL reference on MTJ1 only (DUT IL will include the MTJ2 IL). | 🖛 Yes | Retry measurements for failed results. Max. number of repetitions: | |
| MTJ2 | IL reference on MTJ1 and MTJ2. | No | Continue measurements regardless of result status (Pass, Warning or Fail). | About and He |
| Unidirectional F | RL Method | MTJ1 Length M | lode | |
| 💻 RL total | The Reflectance value given will represent the RL of connectors A and B combined (total RL). | Manual | MT31 length entered manually. | |
| 🔳 RLa, RLb | Two separate Reflectance values will be given; they represent the individual RL of each connector (RLa and RLb). | Automatic | MTJ1 length detected automatically. | |
| Multiple RM Co | | Negative IL Lin | nit Configuration | |
| One RM | Tests made with one RM module (up to two wavelengths). | Yes | Warning for IL values lower -0.03 dB | |
| Two RMs | Tests made with two RM modules (up to four wavelengths). | m No | Appiy Cancel | Help Exit |

- *3.* In the Warning for IL values lower than box, enter the threshold value.
- 4. Click Apply to confirm your changes.

To disable the warning for low IL values:

- 1. From the **Settings** function tab, select the **Measurement Options** tab.
- 2. Select No.

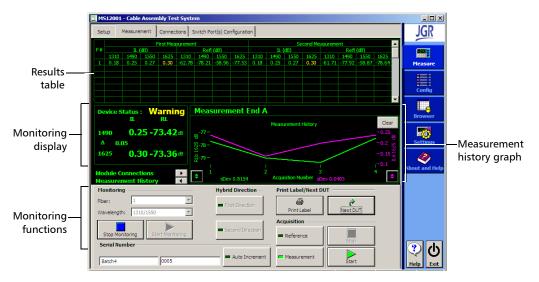


3. Click **Apply** to confirm your changes.

Setting Monitoring Display Options

The Cable Assembly Test System has *monitoring* functions that allow you to verify power variations while you test your connections.

The monitoring display can be found on the **Measurement** tab from the **Measure** function tab. For more information, see *Monitoring IL and RL References or Measurements* on page 109.



Monitoring options allow you to determine which values will be displayed in the monitoring display, as well as the options that will be available for the monitoring functions.

The following monitoring values can be displayed:

- Insertion loss (IL) values are displayed only if an IL measurement is performed in the test.
- Reflectance loss (RL) values are displayed only if such an option is selected, and an RL measurement is performed in the test.

- ➤ When a single wavelength option is selected, monitoring values for IL and RL measurements are displayed for one test wavelength at a time, independently from the number of wavelengths selected for tests.
- When a dual wavelength option is selected, monitoring values for IL and RL measurements are displayed simultaneously for a pair of selected test wavelengths, providing they come from the same MS12 Loss Test Module.
- **Note:** Monitoring two wavelengths at the same time is possible only when both wavelengths come from the same RM. This is to prevent premature wearing of the RM switch.

The measurement history graph can display up to a hundred IL and RL monitoring values, for one or two connectors. Once the maximum number of values is displayed, new monitoring values replace the oldest ones.

To set the monitoring display options:

| System Measurement Options Acqu | uisition Database User Access Display Switch Config Power-Level | Config |
|---|---|----------------|
| Measurement Resolution | Edit Sequences Instructions | |
| Insertion loss: 2 | Default Instructions | Browser |
| Reflectance: 2 | Local Customized Instructions Edit | Settings |
| Low Reflectance Display | Monitoring Display | <i></i> |
| Display Measure (ex73 dB) | Single Wavelength IL (fast) Single Wavelength RL (fast) | About and Help |
| Display < (ex. <-71 dB) | Dual Wavelength IL Dual Wavelength RL | |
| For values lower than: -65 dB | Single Wavelength IL and RL Dual Wavelength IL and RL | |
| | | |
| | Apply Cancel | () Help |

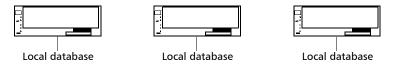
1. From the **Settings** function tab, select the **Display** tab.

- **2.** Under **Monitoring Display**, select the desired monitoring display option.
- **3.** Click **Apply** to confirm your changes.

Configuring Database Connection

Before being able to use your database, you must configure its connection to the network. The possible configurations are:

- Local (default configuration): the database is installed locally on each workstation (MS platform controller unit) and workstations are independent from one another.
- **Note:** Since each workstation is a stand-alone station, you will have to define connectors, DUTs, test profiles, etc. on each workstation.

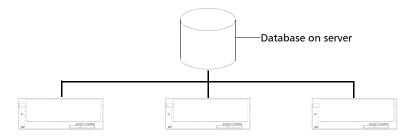


 Centralized: the database is installed on one workstation (MS platform controller unit) and is used by other workstations via a network link.



Database on main workstation

 Server-based: the database is installed on a stand-alone server and is used by all workstations (MS platform controller units) via a network link.



If the centralized or server-based database becomes unavailable because of a network problem, the Cable Assembly Test System will be able to work locally.

Note: The database and the application have been updated to support two RM configuration and testing at up to four wavelengths. When your database configuration is centralized or server-based, JGR recommends updating all MS12001 system databases and applications, central or server-based and local, to the current version. If either the central/server-based system or a remote client system is not current, you will be able to record your results for each test wavelength from a remote application to a central or server-based database of a previous or current version, but you will not be able to retrieve these results for label, report or browser display from a local or remote application of a previous version.



IMPORTANT

If you choose to work locally because the network is not accessible, be aware that

- you won't have access to the connectors, DUTs, test profiles, etc. that you may have defined in the network database.
- all the results of the tests that will be performed locally will remain local. It is impossible to append the results of any database to the network database.
- Note: This function requires Supervisor access rights.

To configure the connection to the database:

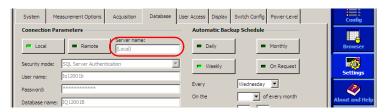
- 1. From the **Settings** function tab, select the **Database** tab.
- **2.** In the **Server Name** box, type the appropriate name. Use the following table to help you choose the appropriate value.

| Database Configuration | If you are configuring | Server name will be |
|---------------------------|------------------------|----------------------------|
| Local | any workstation | (Local) |
| Main workstation | the main workstation | (Local) |
| | the other workstations | main workstation's name |
| Server | the server itself | (Local) |
| | the other workstations | the server name |



IMPORTANT

For the Cable Assembly Test System to work properly, ensure that you type the word *(Local)* exactly as it appears in the table above.



- **3.** Type in the database file name. In the case of a network configuration, the database file name should be the one in the server.
- 4. Click Apply to confirm your settings.
- **5.** Repeat steps 1 to 4 for each workstation.

Configuring Database Security Mode

When configuring a server-based database connection, the following security modes are available:

- ► SQL Server Authentication Mode
- ► Windows Authentication Mode

To configure the database security mode properly, JGR recommends that you contact your database administrator to know the exact server name, database name and security mode.

Note: This function requires Supervisor access rights.

To configure the database security mode:

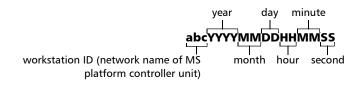
- 1. From the **Settings** function tab, select the **Database** tab.
- 2. From the Security Mode list, select the desired security mode.

| connection rai | ameters | Automatic back | up schedule | |
|---------------------------|---------------------------|----------------------------|--------------------------------|----------------|
| Local | Remote Server name: | Daily | Monthly | Browser |
| Security mode | SQL Server Authentication | Weekly | On Request | Settings |
| User name: | user007 | | | |
| Password: | ***** | Every | Wednesday | |
| Database name: | brance. | On the | of every month | About and Help |
| Database name: | PRANGE | Start backup at: | 12 : 15 (24-hr clock) | |
| Restore | | o tor t o o o top o tr | | |
| | | Keep backup for: | 5 day(s) | |

3. Click **Apply** to confirm your settings.

Customizing DUT Serial Numbers

By default, you define your serial numbers (with or without Auto Increment option). However, you can configure the application to automatically generate non-editable serial numbers for each DUT. These serial numbers, also visible from the application, have the following format:



Note: The time (date and time) is defined at the beginning of the test; therefore, it does not correspond to the time at which you save your test results.

You can customize serial number generation using a specific .xml file. This file is created the very first time you start the application and updated to add any missing field when you upgrade the application.

To customize the way DUT serial numbers are generated:

- **1.** Exit the Cable Assembly Test System application.
- **2.** Go to C:\Documents and Settings\All Users\Application Data\JGR\MS12001 and open the *Settings.xml* file.
- **Note:** You can edit the file with a text editor such as Notepad.exe or an xml editor such as XMLNotepad.exe (free on the Internet).
 - **3.** Modify the *SerialNumberMode* field by respecting uppercase and lowercase (for example, "True"), otherwise the application will not be able to use the file.
 - ► For automatic generation of unique serial numbers, enter True.
 - ► For generation of your own serial numbers, enter False.
 - **4.** Save and close the file.

The new settings will apply the next time you start the application.

Selecting Test Instructions

You can select whether you want the application to display the default instructions or the ones you customized previously (see *Customizing Test Instructions* on page 78).

The default test instructions provide procedures for testing in one or two RM configuration, depending on the way your system is set. For more information, see *Setting Single or Multiple RM Configuration* on page 54.

IMPORTANT

The modified instructions remain local. If you want to use these instructions on several workstations (MS platform controller units), you will have to duplicate the configuration file on each workstation.

Note: This function requires Supervisor access rights.

Users will be able to display test instructions from the **Measurement** tab found on the **Measure** function tab. For more information, *Consulting the Measurement History Graph* on page 116.

Note: The module connection graphics provided in the MS12001 application depict a one MS12 configuration with two-wavelengths, whether the system is in one RM or two RMs configuration.

To select a set of instructions:

- 1. From the **Settings** function tab, select the **Display** tab.
- **2.** Select either **Default Instructions** or **Local Customized Instructions**, depending on your needs.

| Measurement Resolution | Edit Sequences Instructions | |
|-----------------------------|---|----------------|
| Insertion loss: 2 | Default Instructions | Browser |
| Reflectance: 2 | Local Customized Instructions Edit | |
| Length: 1 | | Settings |
| Low Reflectance Display | Monitoring Display | 2 |
| E Display Measure (ex73 dB) | Single Wavelength IL (fast) Single Wavelength RL (fast) | About and Help |

- **3.** If you want to use custom instructions on several workstations, duplicate the *InstructionsDefault.xml* file as follows:
 - 3a. On the hard disk of the current workstation, go to C: |Documents and Settings|All Users|
 Application Data|JGR|MS12001 Config.
 Copy the InstructionsDefault.xml file. Use a floppy disk if the corresponding folder on the destination workstation is not shared.
 - *3b.* Paste the copied file in the corresponding folder of each workstation to configure.

Customizing Test Instructions

The MS12001 Cable Assembly Test System allows you to customize the sequence instructions (test steps) and some other generic messages that are displayed during tests. This is particularly useful if you work with special test configurations or if you want to write instructions in a language other than English.

Note: The module connection graphics provided in the MS12001 application depict a one MS12 configuration with two-wavelengths, whether the system is in one RM or two RMs configuration.

IMPORTANT

The modified instructions remain local. If you want to use these instructions on several workstations (MS platform controller units), see *Selecting Test Instructions* on page 76.

A message may appear in many different test configurations. For this reason, the application allows you to modify one instruction at a time or all instructions simultaneously. In the same way, it is always possible to return to default instructions; one instruction at a time or all instructions simultaneously.

The application also provides you with special keywords that can be inserted in the instructions. These keywords are updated automatically during tests to reflect your particular settings.

For example, if you insert the %*C1* keyword in an instruction, during a test including this instruction, it will be automatically replaced by the appropriate DUT connector on screen.

A complete list of the supported keywords is available in the application.

Note: This function requires Supervisor access rights.

To customize sequence (steps) instructions:

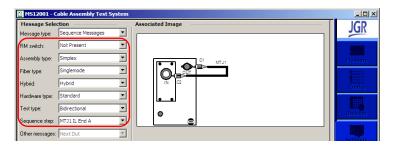
- 1. From the **Settings** function tab, select the **Display** tab.
- 2. Use the Edit button to access the customization window.

| Measurement Resolution | Edit Sequences Instructions | |
|---|---|----------------|
| Insertion loss: 2 | Default Instructions | Browser |
| Reflectance: 2 | Local Customized Instructions Edit | Settings |
| Low Reflectance Display | Monitoring Display | I |
| Display Measure (ex73 dB) | Single Wavelength IL (fast) Single Wavelength RL (fast) | About and Help |
| Display < (ex. <-71 dB) | Dual Wavelength IL Dual Wavelength RL | |

3. From the Message Type box, select Sequence Messages.

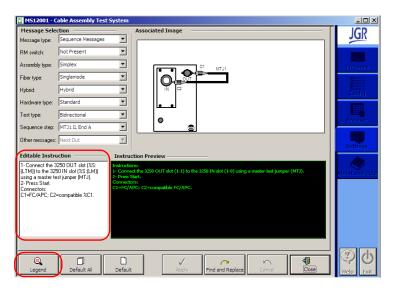
| M512001 - 0 | able Assembly Test System | | _0× |
|-----------------|---------------------------|------------------|---------|
| Message Sele | | Associated Image | JGR |
| Message type: | Sequence Messages | | Jan |
| RM switch: | Not Present | | |
| Assembly type: | Simplex 💌 | | Measure |
| Fiber type: | Singlemode 💌 | | |
| Hybrid: | Hybrid | N C2 | Config |
| Hardware type: | Standard 💌 | | |
| Test type: | Bidirectional | • | Browser |
| Sequence step: | MTJ1 IL End A | | |
| Other messages: | Next Dut | | ee_ |

4. From the provided boxes, specify the information identifying the instructions to be modified (for example, RM switch not present, simplex, singlemode, hybrid, standard, unidirectional, MTJ1 EndA).



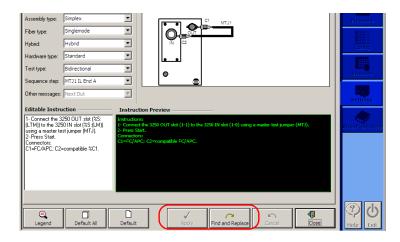
The corresponding graph is displayed.

 From the Editable Instruction box, modify the instructions as needed. You can view the complete list of supported keywords by using the Legend button.



| Keywords Meaning | ssembly Test System | |
|--|---|--------------|
| inserted in the instructi | ou to edit the instructions that are displayed during tests. It also provides you with special keywords that can be ons. These keywords are updated automatically during tests to reflect your particular setting (For example, instead tructions will doally FC/APC or any other connector you might be usino). | Jan |
| Supported Keywords: %C1 %C2 %F1 | stands for the left connector of a device (DUT) stands for the right connector of a device (DUT) stands for the right connector. | Measure |
| %E2 | For example, when testing from A to B, %E1 will be replaced by A. For example, when testing from B to A, %E1 will be replaced by B. stands for DUT right connector For example, when testing from A to B, %E2 will be replaced by B. | Config |
| %P %PF:(fiber no) | For example, when testing from B to A, %E2 will be replaced by A. stands for the switch port number for the current fiber under test. stands for the switch port number for fiber number nof fibers currently under test. For example, %PF:1 will be the | Browser |
| %S:(LTM,LM,LMx,SW) | switch port number for fiber number 1. For example, WFF1: will be the port number of the switch corresponding to the DUT fiber associated with the fiber number. stands for the number of IQS module slot in which the module is inserted. | settings |
| | For example, K5:LTM will be replaced with the [Q5 slot number in which the LTM module is inserted. For example, K5:LTM will be replaced with the [Q5 slot number in which the second LTM module is inserted. For example, K5:LM will be replaced with the [Q5 slot number in which the first UI is inserted. For example, K5:LM will be replaced with the [Q5 slot number in which the first which is inserted. For example, K5:LM will be replaced with the [Q5 slot number in which the grow such is inserted. For example, K5:LM will be replaced with the [Q5 slot number in which the surveiting watch is inserted. For example, K5:LM will be replaced with the [Q5 slot number in which the camption watch is inserted. For example, K5:LM will be replaced with the [Q5 slot number in which the camption watch is inserted. | About and He |
| %F %% | stands for fiber number n of fibers currently under test. will be replaced by % | |
| %C1 and %C2 connect %P port number has be %PF port number for fi | ons, the following default parameters are used : ors are replaced by FC/APC or FC/PC connector depending the measurement direction then set to 12, by default are unubler has been set to 12, by default we been set to 12.TM=(1-1); LM=(1-0); in the case of the 3250 and LM=(1-4) in the case of the 9403; LM=(1-(1): LM=(1-1); SW=(1-2). | |
| | | Help Exit |

6. Since a message may appear in many different test configurations, if you want to apply changes to some or all of the configurations related to the current message, use the **Find and Replace** button. If you prefer to modify only the current message, use the **Apply** button.

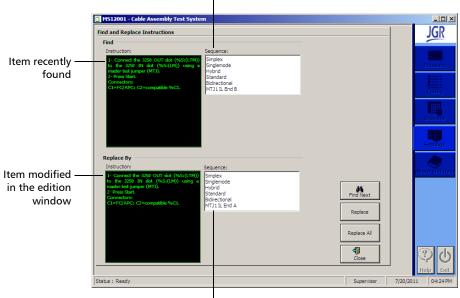


Setting Up System Parameters

7. If you selected **Find and Replace**, you can replace one item at a time by using the **Find Next** button to reach the desired instructions and then **Replace**. Repeat for all items to be modified.

OR

You can replace all items simultaneously with the **Replace All** button.



Identification of the item recently found

Identification of the item selected in the edition window

- **8.** Use the **Close** button to return to the edition window. Your changes will be applied automatically.
- 9. Use the Close button to return to the Settings function tab.

To customize generic messages:

- 1. From the **Settings** function tab, select the **Display** tab.
- 2. Use the Edit button to access the customization window.

| Measurement Resolution | Edit Sequences Instructions | |
|---|---|----------------|
| Insertion loss: 2 | Default Instructions | Browser |
| Reflectance: 2 | Local Customized Instructions Edit | Settings |
| Low Reflectance Display | Monitoring Display | <i></i> |
| Display Measure (ex73 dB) | Single Wavelength IL (fast) Single Wavelength RL (fast) | About and Help |
| ■ Display < (ex. <-71 dB) | Dual Wavelength IL Dual Wavelength RL | |

3. From the Message Type box, select Other Messages.

| MS12001 - Cable Assembly Test System | | | <u>-0×</u> |
|--------------------------------------|-------------------|------------------|------------|
| Message Sek | Sequence Messages | Associated Image | JGR |
| RM switch: | Not Present | | |
| Assembly type: | Simplex 💌 | | Measure |
| Fiber type: | Singlemode 💌 | | |
| Hybrid: | Hybrid | IN C2 | Config |
| Hardware type: | Standard 💌 | | |
| Test type: | Bidirectional | • | Browser |
| Sequence step: | MTJ1 IL End A | | |
| | | | |

4. From the Other Messages box, select the message to be modified.

| MS12001 - C | able Assembly Test System | | <u>_0×</u> |
|----------------|---------------------------|------------------|-------------|
| Message Sele | | Associated Image | JGR |
| Message type: | Sequence Messages | | Jan |
| RM switch: | Not Present | | 14 <u>-</u> |
| Assembly type: | Simplex 💌 | | Measure |
| Fiber type: | Singlemode 💌 | | |
| Hybrid: | Hybrid | IN C2 | Config |
| Hardware type: | Standard 💌 | | |
| Test type: | Bidirectional | • | Browser |
| Sequence step: | MTJ1 IL End A | | |
| | | | |

- 5. Use Apply to confirm your changes or Cancel to discard them.
- 6. Use the Close button to return to the Settings function tab.

To revert to default test instructions:

- 1. From the **Settings** function tab, select the **Display** tab.
- 2. Use the Edit button to access the customization window.

| Measurement Resolution | Edit Sequences Instructions | |
|---|---|----------------|
| Insertion loss: 2 | Default Instructions | Browser |
| Reflectance: 2 | Local Customized Instructions Edit | Settings |
| Low Reflectance Display | Monitoring Display | <i></i> |
| Display Measure (ex73 dB) | Single Wavelength IL (fast) Single Wavelength RL (fast) | About and Help |
| Display < (ex. <-71 dB) | Dual Wavelength IL Dual Wavelength RL | |

3. Use the **Default** button to revert only the current item to its default value

OR

Use the **Default All** button to revert all items to their default values. Answer Yes when the application will prompt you.

| Editable Instruction 1: Connect the 3250 DUT slot (25: (LTM)) to the 3250 NUT slot (25: (LTM)) to the 3250 NUT slot (25: (LTM)) to the 3250 NUT slot (25: (LTM)). 2: Press Statt. Connectors: C1=FC/APC; C2=compatible %C1. | Instruction Preview | Settings About and Help |
|---|---------------------------------------|----------------------------|
| Legend Default Al | Default Apply Find and Replace Cancel | Pelp Exit |

4. Use the Close button to return to the Settings function tab.

Setting Print and Export Parameters

In order to have your labels and reports printed and exported correctly, you must select a printer, a template file and a printing method. You may also configure the system to print or to export labels automatically when the operator completes a test (starts a test on a new DUT).

Note: This function requires Supervisor access rights.

| System Measurement Options Acquisiti | on Database User Access Display Switch Config Power-Level | Config |
|--------------------------------------|---|----------------|
| Custom Titles | Label Printer | |
| First title: Custom1 | First printer: None | Browser |
| Second title: Custom2 | Second printer: None | 20 |
| Third title: Custom3 | Auto Print Labels | Settings |
| | | ٨ |
| | Auto Export Labels Labels export extention : (.txt) | About and Help |
| Supervisor Password | Template Files | |
| Change Password | Label: Label.xml | |
| | Report: Report.xml | |
| | Chart: Chart.xml | |
| | | |
| | Apply Cancel | Help Exit |

U

IMPORTANT

You need to select a printer even if you only intend to export labels.

To select a printer:

- 1. From the Settings function tab, select the System tab.
- 2. Under Label Printer, select your printers.

The first printer you select will print the first label and the second printer will print the second label.

3. Click Apply to confirm your settings.

Setting Print and Export Parameters

To have labels printed automatically:

- 1. From the **Settings** function tab, select the **System** tab.
- 2. Under Label Printer, click the Auto Print Labels button.
- **3.** Click **Apply** to confirm your settings.

To have labels exported automatically:

- 1. From the **Settings** function tab, select the **System** tab.
- 2. Under Label Printer, click the Auto Export Labels button.
- **3.** In the **Labels Export Extension** list, select the file extension corresponding to the desired file format (html, pdf, text).
- **Note:** The application automatically generates a file name that corresponds to the DUT's serial number. The exported files are stored in the My Documents folder.
 - 4. Click Apply to confirm your settings.

To select label, report and chart template files:

- 1. From the **Settings** function tab, select the **System** tab.
- **2.** Under **Templates Files**, select the templates you want to use for your labels, reports, and charts.

For labels, you can choose between two template files:

 Label.xml: Provides labels for measurements made at up to two wavelengths.

When using the one RM configuration, select the *Label.xml* template.

 LabelExtended.xml: Provides labels for measurements made at up to four wavelengths.

When using the two RMs configuration, select the *LabelExtended.xml* template.

For more information on system configuration with one or two RMs, see *Preparing Hardware for System Configuration* on page 18.

3. Click **Apply** to confirm your settings.

For more information on customizing templates, see *Customizing Labels and Reports* on page 294.

Setting Up Test Profiles

This chapter will allow you to define various test parameters. These configurations will be saved for future use.

Entering Customer and Company Information

You may identify the customers for whom you are testing DUTs as well as your company information. Here, you can enter names, addresses and other useful information.

To add information about a new customer:

A City

1 111 111-1111

+

| Company Customer | Connector DUT Test | Config |
|-------------------------|-----------------------------|-------------|
| Customer Identification | | |
| Customer name: | Our Customer | Browser |
| Customer Configuration | | -0 |
| Address: | 123, Fiber-Optics Boulevard | Setting |

A State

123 ABC

1. Select the **Config** function tab, then select the **Customer** tab.

2. Click Add if you want to add entirely new information.

X

OR

Select an existing customer in the **Customer Identification** panel and click the **Copy to** button. A new customer file will be created with the duplicated information.

- 3. Enter your new customer's name in the Customer Name box.
- 4. Enter other contact data in the Customer Configuration panel.
- 5. Click Apply to save the information.

5

Entering Customer and Company Information

To modify an existing customer profile:

- 1. Select the **Config** function tab, then select the **Customer** tab.
- 2. Select the name of the customer profile you want to modify in the **Customer Name** box.
- 3. Modify the customer name or any other information as necessary.
- 4. Click Apply to save the modifications.

To delete an existing customer profile:

- **1.** Select the name of the customer profile you wish to delete.
- **2.** Click **Delete**. If this customer profile was associated with a test, the system will ask if you want to proceed or not.



IMPORTANT

The system will erase all traces of the customer you delete as well as all tests associated with it. Acquired data will remain available.

To set up your company's profile:

1. Select the **Config** function tab, then select the **Company** tab.

| Company Customer | Connector DUT Test | Config |
|---------------------------|-------------------------|----------------|
| Company Identification | | |
| Company name: | EXFO inc. | Browser |
| Company Configuration | | Settings |
| Address: | 400, Godin Avenue | A |
| City, State/Province: | Quebec , Quebec | About and Help |
| Country, Zip/Postal code: | Canada , G1M 2K2 | |
| Phone number: | 1 800 663-3936 | |
| Additional comments: | None | |
| | | |
| | + X CapyTo Apply Cencel | Pelp Exit |

- **2.** Enter information about your company.
- **3.** Click **Apply** to save the information.

Defining Connector Types

You can add a new connector type or modify information on an already registered model. The insertion loss and reflectance limits that you set up here will later determine when your tests pass or fail.

To add a new connector type:

1. Select the **Config** function tab, then select the **Connector** tab.

| | stomer Connector | DUT Test | | 1 | Config |
|-------------------|------------------|--------------------|-------|--------|----------------|
| Connector Identif | FC/APC | | | | Browser |
| Connector Config | | Reflectance Limits | | | Settings |
| Pass limit: | 0.5 dB | Pass limit: -65 | dB | | About and Help |
| Warning limit: | 0.3 dB | Warning limit: -68 | dB | | |
| | | | | | |
| | | | | | |
| | A | | ру То | Cancel | Help Exit |

2. Click Add if you want to add entirely new information.

OR

Select an existing connector type from the **Connector Identification** panel and click the **Copy to** button. A new connector type will be created with the duplicated information.

- 3. Enter your new connector's name in the Connector Name box.
- **4.** Enter insertion loss and reflectance thresholds in the **Connector Configuration** panel.
- **5.** Click **Apply** to save the modifications.
- **Note:** Insertion loss limits should be between 0.01 and 99.99 dB. Reflectance limits should be between -0.01 and -99.99 dB. Make sure that warning limits are lower than pass limits.

To modify an existing connector type:

- 1. Select the **Config** function tab, then select the **Connector** tab.
- **2.** Select the name of the connector type you want to modify from the **Connector Name** box.
- **3.** In the **Connector Configuration** panel, modify the insertion loss and reflectance limits as necessary.
- 4. Click Apply to save the modifications.



IMPORTANT

Tests and DUTs that use a modified connector will also be updated. Measurements acquired with the previous connectors will be saved.

To delete an existing connector type:

- 1. Select the name of the connector type you wish to delete.
- **2.** Click **Delete**. If this connector type was associated with a DUT or test, the system will ask if you want to proceed or not.

Defining DUTs

You can add a new DUT or modify information on an already defined DUT. During DUT definition, you will specify the type of fiber to be tested. The MS12001 Cable Assembly Test System allows you to test:

- > Singlemode fibers (core of $9 \mu m$)
- > Multimode fibers (core of $50 \,\mu m$)
- > Multimode fibers (core of $62.5 \,\mu$ m)

IMPORTANT

For multimode testing, if you intend to use a switch that does not match the fiber core, read *Multimode Fiber Launch Conditions* on page 386.

You will also indicate if the DUT can be used without a non-reflective termination or not. For more information, see *Non-Reflective Terminations* on page 387.

IMPORTANT

To avoid erroneous results, *singlemode* patchcords shorter than 1.8 meters cannot be considered mandrel-free. You will have to use non-reflective terminations (for more information on these methods, see *Non-Reflective Terminations* on page 387).

To add a new DUT type:

1. Select the **Config** function tab, then select the **DUT** tab.

| | tion | | | | | | | |
|---------------|----------------|----------------|---|---------------------------------------|----------------|--------------|----------|-------------|
| Part number: | Duplex Singler | ode 234D-2 | | | | | <u> </u> | Browsei |
| Description: | High-Performa | nce DUT | | Assemi | oly type: Du | plex | • | |
| Manufacturer: | Our Company | | | Numbe | r of fibers: 2 | | | Settings |
| Maximum fiber | length (m): | 3 | | | | Mandrel Free | | |
| Fiber type: | Sir | nglemode - 9um | • | | _ | | | About and I |
| UT Configura | tion | | | | | | | |
| End A: | FC/APC | | - | End B: | MTP/PC - Male | | | |
| LIN 61 | IL limits: | 0.5 dB | | End Di | IL limits: | 0.5 dB | | |
| | Refl. limits: | -65 dB | | | Refl. limits: | -60 dB | | |
| | | | | · · · · · · · · · · · · · · · · · · · | | | | |

2. Click Add if you want to add entirely new information.

OR

Select an existing DUT type from the **DUT Identification** panel and click the **Copy to** button. A new DUT type will be created with the duplicated information.

- **3.** Enter your new DUT's part number in the **Part Number** box and enter the remaining parameters identifying your DUT.
- **Note:** Singlemode fiber length can be as long as 1500 m. It is highly recommended to specify the fiber length to optimize the pulse length and avoid unnecessary delays during the test.
 - **4.** If your DUT can be tested without a non-reflective termination, click the **Mandrel-Free** button.



IMPORTANT

If you want to test *singlemode* fibers shorter than 1.8 meters, you must ensure that the mandrel-free option is not selected.

- **5.** From the **DUT Configuration** panel, select the appropriate connectors for both ends. Connector properties are shown as a reference but can be modified as explained in *Defining Connector Types* on page 92.
- 6. Click Apply to save the modifications.

To modify an existing DUT type:

- 1. Select the Config function tab, then select the DUT tab.
- **2.** Select the part number of the DUT you want to modify from the **Part Number** box.
- 3. Modify the identification and connector types as necessary.
- 4. Click Apply to save the modifications.

IMPORTANT

Tests that use the modified DUT will also be updated. Measurements acquired with the previous DUT remain available.

To delete an existing DUT type:

- **1.** Select the part number of the DUT type you wish to delete.
- **2.** Click **Delete**. If this DUT was associated with a test, the system will ask if you want to proceed or not.

IMPORTANT

The system will erase all traces of the DUT in the current test. Acquired data will remain available.

Entering Test Information

Using DUTs, connector types and customer data defined in the application, you may set up test profiles for future use.

The offered wavelengths depend on the fiber type specified during DUT definition (see *Defining DUTs* on page 94). For instance, a singlemode fiber can be tested at three different wavelengths and a multimode fiber, at two wavelengths.



IMPORTANT

For multimode testing, if your test profile contains reflectance, be careful when selecting which MS12 Loss Test Module you will use. Some of these modules are intended for IL measurement only (no reflectance measurements possible).



IMPORTANT

If you want to test multimode fibers shorter than 1.8 meters, JGR recommends that you select the unidirectional test type.

Entering Test Information

To create a test profile:

1. Select the **Config** function tab, then select the **Test** tab.

| Company Customer Connector DUT Test | Config |
|--|----------------|
| Test Identification | |
| Test name: SM Batch | Browser |
| Test Configuration | |
| General Singlemode Wavelength Multimode Wavelength | Settings |
| Customer: Our Customer ▼ 1310 □850 | |
| DUT: Duplex Singlemode 2340-2 | About and Help |
| Labels Test Type Measurement | |
| First: Bidirectional dual-wavelength Image: Connector A Insertion Loss | |
| Second: None Bidrectional Connector B Refectance | |
| | |
| Heided K Copy To K Copy To | Help Exit |

2. Click Add if you want to add entirely new information.

OR

Select an existing test profile from the **Test Identification** panel and click the **Copy to** button. A new test profile will be created with the duplicated information.

- 3. Enter your new test profile's name in the **Test Name** box.
- **4.** Select the test parameters in the **Test Configuration** panel. For more information about test types and measurement parameters, see *Test Features* on page 6.
- **Note:** To be able to perform a test set with more than two wavelengths or with two wavelengths that are found on separate MS12 Loss Test Modules, your MS12001 must include two MS12 Loss Test Modules which provide the appropriate wavelengths, as well as an MS7 Optical Switch with 1 x 2 switch ports for selecting the test wavelengths. For more information, see Connecting Two RMs and the RM Switch on page 25.
 - **5.** Click **Apply** to save the modifications.

To modify an existing test profile:

- 1. Select the **Config** function tab, then select the **Test** tab.
- 2. Select the name of the test profile you want to modify from the **Test** Name box.
- 3. Modify the identification and parameters as necessary.
- 4. Click Apply to save the modifications.



MPORTANT

Measurements taken using the "original" profile remain available.

To delete an existing test profile:

1. Select the name of the test profile you wish to delete.



IMPORTANT

The system will erase all traces of the test. Acquired data will remain available.

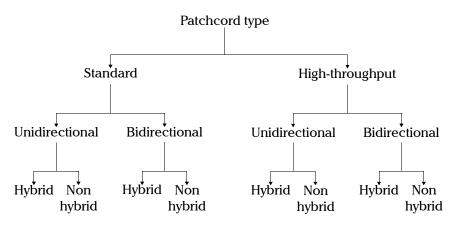
2. Click Delete.

Preparing Your Test Sequence

Before performing a sequence of tests with the MS12001 Cable Assembly Test System, you must understand what a test sequence is and how to set up the test parameters. You must also know how to reference master test jumpers.

Overview of Possible Test Sequences

The following diagram gives you an overview of the types of patchcords, configurations and tests presented in the next chapters.



The Cable Assembly Test System can test the following patchcord types:

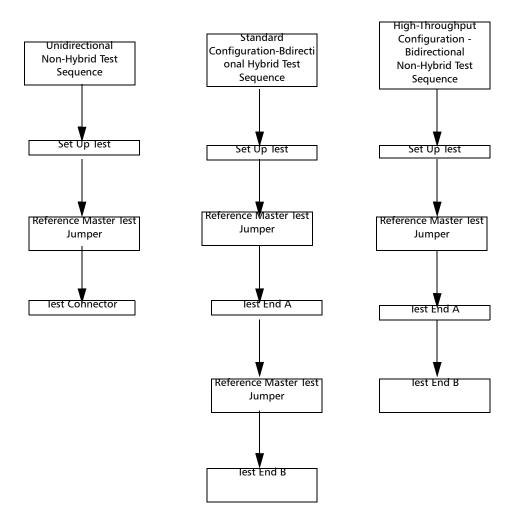
- Simplex: see *Testing Simplex Patchcords* on page 139.
- > Duplex: see *Testing Duplex Patchcords* on page 173.
- ▶ Bundle: see *Testing Bundle Patchcords* on page 213.
- ► Fanout: see *Testing Fanout Patchcords* on page 217.
- ► MTP/MTRJ: see *Testing Multifiber Patchcords* on page 243.
- **Note:** Fanout patchcords are hybrid by definition. The gray boxes in the above diagram indicate that the corresponding configurations do not exist for fanout.

6

Preparing Your Test Sequence

Overview of Possible Test Sequences

Here are examples of test sequences to show how the references interact with measurements.



Throughout your test sequences, you are always able to verify if your connections were made properly. The Connections tab gives you information about:

- > Selected hardware: serial number and position of the modules.
- Connections: fiber and connectors tested and module to which it is connected.
- References taken: the master test jumper that was referenced as well as its length, the connector that was referenced, and the wavelength at which the test was done.

| | MS12001 - Cab | le Assembly Test Syste | n | | | | | _ 🗆 🗙 |
|-----------------------|---------------------------|-----------------------------|----------------------------------|--------------------------|---------------------------------|-----------------|------------|-----------------|
| _ | | 5 | witch Port(s) Config | uration | | | | JGR |
| | Selected Hardw | | | | | | | |
| Selected | Function Loss Module 1 | | Serial Number 0371924 | Unit Slot | | | | Measure |
| hardware | Reflectometer | | 0264779 | 1 | 1 | | | |
| naruware | | | | | | | | |
| | | | | | | | | Config |
| Ē | Reference Confi | guration | | | | | | |
| | Port | Reference | 2 | Leng | th(m) | Connectio | ns | Browser |
| | | Connector | MTJ2 Wave | | MTJ2 Fiber | Connector | Loss Meter | |
| Reference | 1 FC/UPC 1 FC/UPC | | | ;1550 24.8 ;1550 24.8 | N/A 1 N/A 1 | End A End B | (1-0) | 20 |
| configuration | | | | , | | | (| Settings |
| | | | | | | | | |
| and connections | | | | | | | | About and Help |
| | | | | | | | | about and ricip |
| | | | | | | | | |
| | | | | | | | | |
| Power Level | | | | | | | | |
| information | Test Power Leve | | | , | | | | |
| | RM Serial Number | Last Reflectance Calibratio | n LM Serial Number 0000371924 | Wavelengths 1310 | Last Power Lev 2011-06-30 16 | el Adjustment P | -10.79 | |
| (only available for - | 0000264779 | 2007-12-20 19:00:00 | 0000371924 | 1510 | 2011-06-30 16 | | -10.79 | |
| singlemode | | | | | | | | |
| J | | | | | | | | <u>V</u> U |
| testing) L | | | | | | | | Help Exit |
| 1 | | | | | | | | |

Note: You can access the Connections tab when your system is set to single RM configuration. When the system is set to two RM configuration, the tab is unavailable.

Setting Up Your Test

The parameters defining the available test profiles have been previously set up by the supervisor (see *Setting Up Test Profiles* on page 89). Regardless of the type of patchcords you intend to test, the procedure remains the same; you must either select the test profile that applies to your patchcords or define new test parameters manually.

To set up a test:

1. From the **Measure** function tab, click the **Setup** tab.

| MS12001 - Cable Assembly Test System | | |
|---|--|----------------|
| Setup Measurement Connections Switch Port(s) Conf | iguration | JGR |
| Test Identification | | |
| Test Name: | Refresh | Measure |
| Test Configuration | | |
| General | Singlemode Wavelength Multimode Wavelength | Config |
| Customer: Our Customer | ☑ 1310 □ 850 ☑ 1490 □ 1300 | Browser |
| DUT: Duplex Singlemode 234D-2 | ♥ 1550 ♥ 1625 | Settings |
| Labels | Test Type Measurement – | Occurrys |
| First: Bidirectional dual-wavelength | Unidirectional Connector A Insertion Loss | 2 |
| Second: None | Bidrectional Connector B Reflectance | About and Help |
| Hardware Type | Custom Fields | |
| Standard High Throughput | Custom1: | |
| Standard High Throughput | Custom2 : | |
| | Custom3 : | |

2. Select the desired test profile in the **Test Name** box.

OR

Set up your own test by defining the parameters you need.

IMPORTANT

If you manually define your test parameters, they will be lost once you close the application. The test results will be saved in the database, but they will remain associated to a test with no name. **Note:** To be able to perform a test set with more than two wavelengths or with two wavelengths that are found on separate MS12 Loss Test Modules, your MS12001 must include two MS12 Loss Test Modules which provide the appropriate wavelengths, as well as an MS7 Optical Switch with 1 x 2 switch ports for selecting the test wavelengths. For more information, see Connecting Two RMs and the RM Switch on page 25.

IMPORTANT

When testing hybrid patchcords, standard configuration and bidirectional testing, JGR recommends to define a complete test profile (with a name). This way, you will be able to test End A and End B in distinct test sessions (after closing the application or changing the setup).

To avoid losing data if you omit to give your test a name, you will be forced to complete test on both End A and End B before performing another action.

- 3. In the Test Configuration panel, specify the following parameters:
 - ► Hardware Type
 - ► Custom Fields
 - ➤ Operator
- **Note:** The application will use the first two MS12 Loss Test modules available in the system. For example, if you have three MS12 Loss Test modules, one in slot 1, one in slot 2 and one in slot 9, the application will register the first two where it will find the required test wavelengths. The required test wavelengths found on the first registered module will be used in the first place. Those available on the second module will be used only if not found on the first module.

Cleaning and Connecting Optical Fibers

Cleaning and Connecting Optical Fibers

IMPORTANT

To ensure maximum power and to avoid erroneous readings:

- Always inspect fiber ends and make sure that they are clean as explained below before inserting them into the port. JGR is not responsible for damage or errors caused by bad fiber cleaning or handling.
- Ensure that your patchcord has appropriate connectors. Joining mismatched connectors will damage the ferrules.

To connect the fiber-optic cable to the port:

- **1.** Inspect the fiber using a fiber inspection microscope. If the fiber is clean, proceed to connecting it to the port. If the fiber is dirty, clean it as explained below.
- **2.** Clean the fiber ends as follows:
 - **2a.** Gently wipe the fiber end with a lint-free swab dipped in isopropyl alcohol.
 - **2b.** Use compressed air to dry completely.
 - **2c.** Visually inspect the fiber end to ensure its cleanliness.

3. Carefully align the connector and port to prevent the fiber end from touching the outside of the port or rubbing against other surfaces.

If your connector features a key, ensure that it is fully fitted into the port's corresponding notch.

4. Push the connector in so that the fiber-optic cable is firmly in place, thus ensuring adequate contact.

If your connector features a screwsleeve, tighten the connector enough to firmly maintain the fiber in place. Do not overtighten, as this will damage the fiber and the port.

Note: If your fiber-optic cable is not properly aligned and/or connected, you will notice heavy loss and reflection.

Testing Reflectance on Short Fibers

The MS12001 Cable Assembly Test System allows you test reflectance even on short fibers (<1.8 meters) by following the guidelines provided in the table below. For more information on the returned values, see *Selecting the Number of Reflectance Values* on page 58.

| For | Actions | Results |
|-------------------|--|--|
| Singlemode fibers | Deactivate the mandrel-free option. Select a <i>bidirectional</i> test. Use a non-reflective termination method. JGR recommends that you use the mandrel-wrap technique. For more information on the possible methods, see <i>Non-Reflective Terminations</i> on page 387. | One result at a time will be returned (connector A, then connector B). |
| Multimode fibers | Select a <i>unidirectional</i> test. Select to display two results. For more information, see <i>Selecting the Number of Reflectance Values</i> on page 58. Do NOT use a non-reflective termination. | Two results will be returned. |

Monitoring IL and RL References or Measurements

The Cable Assembly Test System has a Monitoring feature to allow you to verify power variations while you test your connections for IL and RL variations while referencing master test jumpers or testing DUTs.

The options selected for setting up the monitoring display will determine which options will be available from several monitoring commands, as well as the measurement values displayed. For more information, see *Setting Monitoring Display Options* on page 68.

Monitoring options for the measurement history graph are also determined by the test setup. For more information, see *Setting Up Your Test* on page 104.

The selected monitoring display options also have an impact on the monitoring speed:

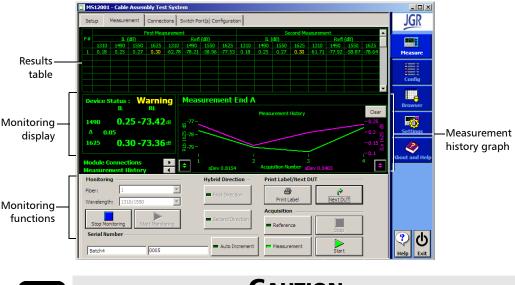
- Monitoring a single wavelength for IL measurement. This is the fastest available monitoring option.
- ► Monitoring IL and RL. This option is slower than for IL alone.
- > Monitoring a two wavelengths. This is the slowest monitoring option.
- **Note:** Monitoring two wavelengths at the same time is possible only when both wavelengths come from the same RM. This is to prevent premature wearing of the RM switch.

Monitoring IL and RL References or Measurements

Monitoring is performed continuously, from the time your modules have been initialized until you exit the application. You can also manually stop monitoring your measurement values at any time, and then resume by activating the appropriate commands.

Note: Monitoring automatically stops after the system has been inactive for five minutes. As soon as you begin referencing or taking measurements again, monitoring automatically restarts.

Monitoring can be stopped manually by clicking the **Stop Monitoring** button under **Monitoring**. To restart monitoring, click the **Start Monitoring** button.



CAUTION

Check for the laser warning label under the function tabs on the main window. When the laser is on, the warning label appears.

The *monitoring* functions are grouped on the **Measurement** tab accessible from the **Measure** function tab:

► Monitoring functions:

Provide commands to display the measurement values for the desired DUT fibers and test wavelengths, as well as to stop or start monitoring. For more information, see *Changing Your Monitoring Setup* on page 113.

► Monitoring display:

Shows the IL and RL values detected in real time, for the one or two wavelengths being monitored. For more information, see *Monitoring the Detected IL and RL* on page 115.

► Measurement history graph:

Displays the IL and RL measurements from the A and B connectors, or sometimes a general IL or RL measurement, recorded in the database. A standard deviation value is also displayed. It is calculated from the measurements recorded during your tests.

The measurement history graph is not used to monitor the referencing of master test jumpers.

For more information, see *Consulting the Measurement History Graph* on page 116.

Note: With a three-digit display resolution, IL monitoring or IL measurement values of 10 dBm or more are rounded to two digits.

Monitoring IL and RL References or Measurements

Monitoring References

To monitor references, you use the following sections of the **Measurement** tab:

- ► The monitoring functions (for more information, see *Changing Your Monitoring Setup* on page 113).
- ➤ The monitoring display (for more information, see *Monitoring the Detected IL and RL* on page 115).

IMPORTANT

During referencing, monitoring allows you to make sure that connections were properly made. The power is only used as a guidance, for it has not been calibrated to give absolute values (dBm).

The monitored values and the results differ for singlemode and multimode fibers.

| For | Monitoring Displays | For MTJ1, table shows | For MTJ2, table shows |
|------------|------------------------------------|--|---------------------------|
| Singlemode | Power read (only as a guidance) | Insertion loss of the complete optical path. <i>One RM configuration</i> : From the output port of the MS12 Loss Test Module to the input port of the MS12-PM01 Loss Module. <i>Two RM configuration</i> : From the output port of the MS12 Loss Test Module to the input port of the MS12 Loss Test Module selected for the test. | Insertion loss of MTJ2 |
| Multimode | Power read (only as a guidance) | A calculated value that will be used later by the system | Insertion loss of MTJ2 |

Monitoring Measurements

To monitor measurements, you use the following sections of the **Measurement** tab:

- The monitoring functions (for more information, see *Changing Your Monitoring Setup* on page 113).
- ► The monitoring display (for more information, see *Monitoring the Detected IL and RL* on page 115).
- ► The measurement history graph (for more information, see *Consulting the Measurement History Graph* on page 116).

The monitored values and the results differ for singlemode and multimode fibers.

| For | Monitoring Displays | In unidirectional, table shows | In bidirectional, table shows |
|------------------|--|-----------------------------------|---|
| and multimode | <i>Unidirectional testing</i> : Insertion loss of the DUT and reflectance of connector A and B. <i>Bidirectional testing</i> : Insertion loss and reflectance of connector A or B (the one connected to MTJ1). | DUT and reflectance of | Insertion loss and reflectance of connector A and insertion loss and reflectance of connector B. |

Changing Your Monitoring Setup

The monitoring functions allow you to select the fiber and the wavelengths to be monitored. You can also manually stop or start monitoring your reference or IL and RL measurements.

The fiber numbers in the **Fiber** list is determined by the number of fibers of the DUT you have defined in your test setup. For more information, see *Defining DUTs* on page 94.

Monitoring IL and RL References or Measurements

To select the fiber to monitor:

- Measurement Connections Switch Port(s) Configuration jgr Setup 1490 1550 1625 1310 -78.21 -58.96 -77.53 0.18 vice Status : Warning Measurement End A 20 0.25-73.42dB 1490 0.30 -73.364 1625 • sDev 0.8154 Hybrid Direction Print Label/Next DUI Monitoring ٣ Fiber 8 First Direction Wavelength: 1310/1550 Print Lab Acquisition Reference |> Start Auto Increment Measurement Batch4
- 1. Under Monitoring, in the Fiber list, select the fiber number.

2. In the **Wavelength** list, select the wavelength or pair of wavelengths to appear in the monitoring display.

The choice of wavelengths in the **Wavelength** list varies according to the monitoring display options. For more information, see *Setting Monitoring Display Options* on page 68. Moreover, only the wavelengths included in the test are available for selection.

If a single wavelength monitoring option has been selected, the wavelengths can only be selected one at a time.

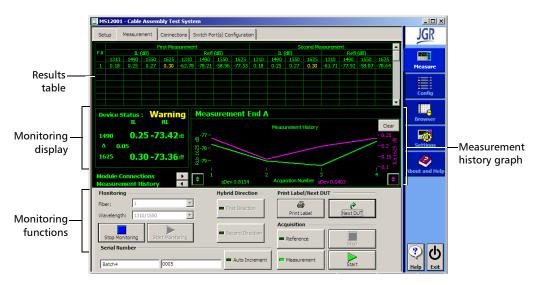
If a dual wavelength monitoring option has been selected, the wavelengths available on the RMs from your system are displayed.

Note: Monitoring two wavelengths at the same time is possible only when both wavelengths come from the same RM. This is to prevent premature wearing of the RM switch.

Monitoring the Detected IL and RL

The monitoring display shows in real time the power value read by the insertion loss meter or the reflectance meter.

The values displayed in the monitoring display change according to the monitoring display options selected in the system parameters. For more information, see *Setting Monitoring Display Options* on page 68.



The monitoring display can provide monitoring values for one IL, two IL, one IL and one RL, or two IL and two RL.

When monitoring two wavelengths at the same time, the monitored values may be slightly different due to switching between the two wavelengths. However, the measure will not be affected.

When a dual-wavelength IL option is selected, the power difference (delta) calculated between the IL values for the two wavelengths is displayed.

You can use the power difference of the IL to identify inappropriate mechanical or optical constraints on a DUT.

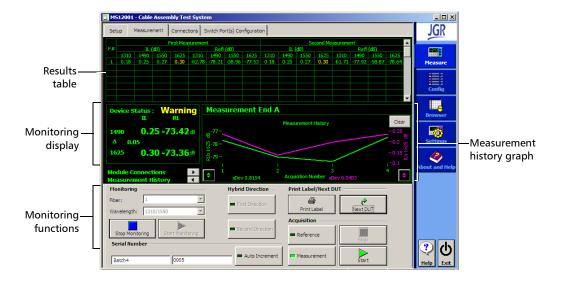
Consulting the Measurement History Graph

The measurement history graph displays graphs of the IL and RL measurements recorded in the database, as specified by the wavelength, test type and measurement options from the Setup tab found on the Measure function tab.

The measurement history graph provides you with a trend in the measurements you have already recorded. Since the measurements from the results table are not recorded in the database, they are not included in the measurement history graph.

Up to the latest one hundred measurements recorded in your database while your system remains open can be shown in the graph. While testing, you can also clear the graph of values.

The measurements available for display change according to your setup. For more information, see *Setting Up Your Test* on page 104.

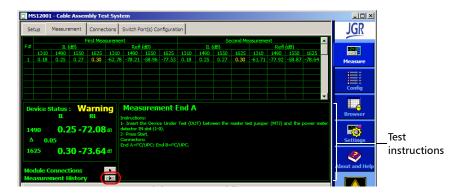


Note: Master test jumper references are not displayed in the history graph.

In place of the measurement history graph, you can display test instructions. For more information, see *Selecting Test Instructions* on page 76.

To toggle the display between the history graph and the test instructions:

Click the arrow button next to **Measurement History**.



Above the measurement history graph or your test instructions, you can display connection diagrams. For more information on displaying connection diagrams, see *Displaying/Hiding Connection Diagrams* on page 136.

On the lower left and lower right corners of the measurement history graph, you can display sets of measurements for the wavelengths, IL or RL, and connectors specified in your test setup.

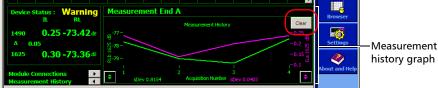
With one measurement set selected on one side of the graph, the other sets available from your test can be selected from the other side. The measurement set selected from the left-hand side is displayed in green. The one selected from the right-hand side is displayed in magenta.

To select measurement sets in the measurement history graph:

In the lower-right or lower-left corner of the measurement history graph, click the arrow button to open the measurement list, and select the desired measurement set.

For each set of measurements displayed in the measurement history graph, a standard deviation value is automatically calculated and displayed. For more information, see Standard Deviation Calculation on page 119.

You can clear the measurement history graph of values to refresh the measurements that are being monitored.



To clear the measurement history graph: Click the **Clear** button.

Standard Deviation Calculation

A standard deviation value is calculated for each set of measurements defined in your test setup. In the measurement history graph, the standard deviation is displayed for each selected measurement set.

The standard deviation calculated is a discreet probability.

Up to a hundred values from your measurements are being used for calculating the standard deviation. The latest one hundred measurement values recorded in the system database are being used for calculation.

If variable x takes a finite number of values $x_1, ..., x_n$, with respective probabilities $p_1, ..., p_n$ (under the condition n),

$$\sum_{i=1}^{n} p_i = 1$$

Preparing Your Test Sequence

Monitoring IL and RL References or Measurements

the standard deviation is given by

$$\sigma = \sqrt{\sum_{i=1}^{n} P_i \cdot {}_{(x_i - \bar{x})}^2} = \sqrt{\left(\sum_{i=1}^{n} P_i \cdot x_i^2\right)} - \bar{x}^2$$

where

$$\sum_{i=1}^{n} P_{i} \cdot x_{i}$$

More specifically, if the law of x is uniform on an ensemble of finite values, we have

$$\sigma_{x} = \sqrt{\frac{1}{n} \sum_{i=1}^{n} (x_{i} - \bar{x})^{2}} = \sqrt{\frac{1}{n} \left(\sum_{i=1}^{n} x_{i}^{2}\right) - \bar{x}^{2}}$$

where

$$\bar{\mathbf{x}} = \frac{1}{n} \sum_{i=1}^{n} \mathbf{x}_{i}$$

Note: You can also calculate the standard deviation for your measurements with the help of a report, since all of the necessary data is recorded in the test database. For more information, see Customizing Labels and Reports on page 294.

Referencing Master Test Jumpers

Referencing master test jumpers is an essential part of the testing process. JGR recommends that you reference your master test jumpers at least before each batch of patchcords.

Note: Under Windows XP, to allow users without sufficient Write permissions to perform reflectance measurements, for example those in Restricted User mode, a Network Administrator must give them the Write permission to their accounts on C:\Documents and Settings\Application\Data\MS12001.

For more information, see Setting User Permissions on page 42.

Note: If you are testing in multimode, reflectance only, and you cannot connect your master test jumper to the detector, it is normal that you receive a message indicating that the input power is too low. In this case, simply ignore the warning and go on with the test.

The major difference between referencing singlemode and multimode fibers is reflectance. With multimode fibers, the reflectance reference is performed using a fiber-to-air interface (one end of the patchcord remains in the air), during a separate step.

IMPORTANT

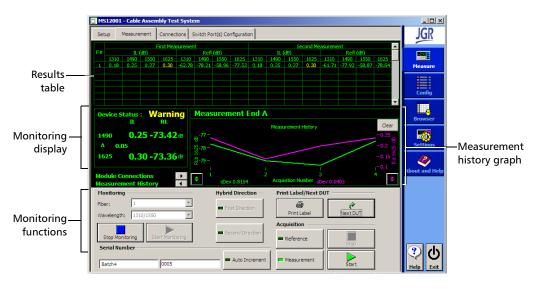
For accurate results with multimode testing, you must use master test jumpers of 3 meters or more.

The Cable Assembly Test System has monitoring functions to allow you to verify power variations while you test your connections. For more information, see *Monitoring IL and RL References or Measurements* on page 109.



IMPORTANT

During referencing, monitoring allows you to make sure that connections were properly made. The power is only used as a guidance, for it has not been calibrated to give absolute values (dBm).





CAUTION

Check for the laser warning label on the right side of the screen. When the laser is on, the warning sign appears.

Performing a Reflectance Reference

This operation only applies to multimode fibers.

This step is performed to calibrate the internal reflection of the MS12 Loss Test Module. This calibration is based on the fact that Fresnel reflections occurring at a fiber-to-air interface correspond to a known constant.

IMPORTANT

To obtain accurate results, always ensure that

- your fibers are clean and properly connected. For more information, see *Cleaning and Connecting Optical Fibers* on page 106.
- during the reflectance reference, the end of the master test jumper (that has to remain in the air) is far from any reflecting surface.

To perform a reflectance reference on a master test jumper:

- 1. From the **Measure** function tab, select the **Measurement** tab.
- **2.** Click the **Reference** button.
- **3.** Connect your master test jumper(s).
- 4. Click Start to launch the acquisition.
- **Note:** The master test jumper (MTJ) length will also be detected during this operation.

Performing an IL Reference

This operation applies to both singlemode and multimode fibers.

An insertion loss reference measurement is performed to compensate for any loss in the system (for example, connections, switches) or in the master test jumpers. It also allows you to take the source power into account.



IMPORTANT

To obtain accurate results, always ensure that your fibers are clean and properly connected (see *Cleaning and Connecting Optical Fibers* on page 106).

To reference a master test jumper in bidirectional testing:



IMPORTANT

If you are testing multimode fibers and have selected a reflectance measurement, go directly to step 3 to avoid losing the results of the reflectance reference you have just performed.

- 1. From the **Measure** function tab, select the **Measurement** tab.
- **2.** Click the **Reference** button.
- **3.** Connect your master test jumper(s).
- 4. Click Start to launch the acquisition.
- **Note:** The master test jumper (MTJ) length will also be detected during this operation if you are testing singlemode fibers and have selected a reflectance measurement.

Referencing Master Test Jumpers

To reference a master test jumper in unidirectional testing (when you can connect MTJ1 and MTJ2 together):

IMPORTANT

In unidirectional testing, the second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.



IMPORTANT

If you are testing multimode fibers and have selected a reflectance measurement, go directly to step 3 to avoid losing the results of the reflectance reference you have just performed.

- 1. From the **Measure** function tab, select the **Measurement** tab.
- **2.** Click the **Reference** button.
- 3. Connect your first master test jumper (MTJ1).
- 4. Click Start to launch the acquisition.
- **Note:** The length of the first master test jumper (MTJ1) will also be detected during this step if you are testing singlemode fibers and have selected a reflectance measurement.
 - 5. Connect your second master test jumper (MTJ2).
 - 6. Click Start to launch the acquisition.
- **Note:** If you have chosen to consider the insertion loss of MTJ2 (see Defining Reference Configuration on page 51), IL will be measured and the length of MTJ2 will be detected if the reflectance measurement has been selected. If you have chosen NOT to consider the insertion loss of MTJ2, only its length will be detected.

To reference a master test jumper in unidirectional testing (when you cannot connect MTJ1 and MTJ2 together):



IMPORTANT

In unidirectional testing, the second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.



IMPORTANT

If you are testing multimode fibers and have selected a reflectance measurement, go directly to step 3 to avoid losing the results of the reflectance reference you have just performed.

- 1. From the **Measure** function tab, select the **Measurement** tab.
- **2.** Click the **Reference** button.
- 3. Connect your first master test jumper (MTJ1).
- **4.** Click **Start** to launch the acquisition.
- **Note:** The length of the first master test jumper (MTJ1) will also be detected during this operation if you are testing singlemode fibers and have selected a reflectance measurement.
 - 5. Connect your second master test jumper (MTJ2).
 - **6.** Click **Start**. When requested, enter the second master test jumper length in the box.
- **Note:** The master test jumper length should include only the length of MTJ2, and not that of the entire optical path.

Adjusting Power Level

Note: Power level adjustment applies only to singlemode testing.

This operation is performed to adjust the power level of loss modules, according to the differences between loss modules (LM) and reflectance modules (RM) power levels.

Power must be adjusted between all LMs and each RM from your system, including when an optical switch is being used for selecting the test wavelengths in two RM configuration.

This step is mandatory and should be performed every month on all LMs in the system or each time modules are moved. The system will prompt you if the power level has never been adjusted with the current hardware.

To adjust the power level:

- 1. From the **Settings** function tab, select the **Power-Level** tab.
- 2. Choose the desired loss module from the LM Serial Number box.



- *3.* Choose the desired reflectance module from the **RM Serial Number** box.
- **Note:** Multimode RM will not appear on the provided list since power level adjustment is only intended for singlemode fibers.
 - **4.** Connect your multimode reference jumper (supplied by JGR) as indicated on the screen.
 - 5. Select Start Adjustment to start the power level adjustment.
 - **6.** Repeat steps 2 to 5 with each loss module that will be used in the system.

Activating/Deactivating Switch Ports

Activating/Deactivating Switch Ports

It is possible to identify switch ports as defective so that the application won't use them during testing. This allows you to continue working with the operational ports without being blocked by the defective ones. You can easily reactivate a port to make it available again.

IMPORTANT

Activating or deactivating switch ports will automatically stop the current test. Modules in the system are also reinitialized.

Note: You can activate or deactivate switch ports from all optical switches available in the system. However, automatic port activation or deactivation will occur only when a switch is being used for selecting DUTs. When a switch is being used for selecting RMs for test wavelengths, Input ports 1 and 2 are preset to be connected to RM 1 and RM 2 respectively. If switch Input ports 1 and 2 are deactivated for the RM switch, the system will inform the user that ports are defective. Defective Input ports 1 and 2 will have to be fixed to be able to perform tests with the system.

To deactivate switch ports:

- From the Measure function tab, select the Switch Port(s) Configuration tab.
- 2. From the Serial Number box, select the switch to use in your system.

| Setup | Measuremen | | | JGR |
|---------------------------|-----------------|-----------------------------|--|------------|
| Serial number: 0084752-20 | | | | |
| Dptica Port | l Port(s) Confi | guration Assigned Connector | | Config |
| | Operational | MTP/PC - Male | | |
| | Operational | MTRJ/PC - Male | | |
| | Operational | FC/APC | | |
| | Operational | FC/APC | | Browser |
| 5 | Defective | FC/UPC | | (married) |
| 6 | Defective | FC/UPC | | z 0 |
| 7 | Operational | MTP/PC - Male | | Settings |
| 8 | Operational | MTRJ/PC - Female | | |

- **Note:** A switch will appear on the list only if it has been used in at least one test performed with the MS12001 Cable Assembly Test System.
 - **3.** In the provided switch port table, find the line corresponding to the port number you wish to deactivate.

| etup | Measuremen | t Connections Switch Port(s) Configuration | JG |
|---------------|---------------------------|--|-----------|
| | number: 00847 | | Measu |
| ptica Port | l Port(s) Confi Status | guration Assigned Connector | Confic |
| 1 | Operational | MTP/PC - Male | |
| 2 | Operational | MTRJ/PC - Male | |
| 3 | Operational | FC/APC | |
| 4 | Operational | FC/APC | Browse |
| - (| Defective | - FC/UPC | (married |
| | Operational | FC/UPC | 24 |
| 7 | Defective | MTP/PC - Male | Setting |
| 8 | Operational | MTRJ/PC - Female | |
| 9 | Operational | Not Assigned | |
| 10 | Operational | Not Assigned | |

- 4. From the associated Status column, change the status to *Defective*.
- 5. Repeat steps 3 to 4 for each port you wish to deactivate.
- **6.** Click **Apply** to confirm.

Activating/Deactivating Switch Ports

To reactivate a switch port:

- From the Measure function tab, select the Switch Port(s) Configuration tab.
- 2. From the Serial Number box, select the switch to use in your system.

| Setup | Measuremen | | JGR |
|------------------|---|----------------------------|-------------|
| _ | number: 0084 | | Measure |
| ptica | ll Port(s) Confi | guration | |
| Port | Status | Assigned Connector | Config |
| 1 | Operational | MTP/PC - Male | |
| | | | |
| 2 | Operational | MTRJ/PC - Male | |
| | Operational Operational | MTRJ/PC - Male FC/APC | Le |
| 3 | | | Browser |
| 3 4 | Operational | FC/APC | |
| 3 4 5 | Operational Operational | FC/APC FC/APC | Browser |
| 3 4 5 6 | Operational Operational Defective | FC/APC FC/APC FC/UPC | |

- **Note:** A switch will appear on the list only if it has been used in at least one test performed with the MS12001 Cable Assembly Test System.
 - **3.** In the provided switch port table, find the line corresponding to the port number you wish to reactivate.

| Setup Measurement Connections Switch Port(s) Configuration | | | | |
|--|---|--|----------|--|
| Selected Optical Switch(es) Serial number: 0084752-20 | | | | |
| Optical Port(s) Config | Assigned Connector | | Config | |
| 1 Operational 2 Operational 3 Operational 4 Operational | MTP/PC - Male MTRJ/PC - Male FC/APC FC/APC | | Browser | |
| 6 Operational 7 Defective | FC/UPC FC/UPC MTP/PC - Male | | Settings | |
| 8 Operational 9 Operational 10 Operational | MTRJ/PC - Female Not Assigned Not Assigned | | 2 | |

- 4. From the associated **Status** column, change the status to *Operational*.
- 5. Repeat steps 3 to 4 for each port you wish to reactivate.
- 6. Click Apply to confirm.

Associating Switch Ports with Connector Types

To avoid disconnecting master test jumpers from the switch, the MS12001 Cable Assembly Test System allows you to associate switch ports with specific connector types. You can also easily remove the association with connectors to make the switch ports independent again.

If no switch ports are associated with a specific connector type, the ports, marked as *Operational* (see *Activating/Deactivating Switch Ports* on page 130), will be used sequentially.

If at least one port is associated with a specific connector type, the application will use:

- First: the ports marked as *Operational*, associated with the desired connector type.
- Second: ports marked as *Operational*, not associated with a connector type.
- Third: ports marked as *Operational*, associated with other connector types.
- **Note:** This function requires Supervisor access rights. For more information, see Setting User Permissions on page 42.

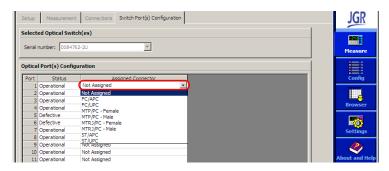
To associate switch ports with connector types:

- From the Measure function tab, select the Switch Port(s) Configuration tab.
- 2. From the Serial Number box, select the switch to use in your system.

| Setup | Measuremen | t Connections Switch Port(s) Configuration | | JGR |
|-------------|------------------------|--|--|-------------|
| _ | Dptical Swit | | | Measure |
| Port | rt(s) Confiç Status | Juration Assigned Connector | | Config |
| | erational | MTP/PC - Male | | |
| | erational | MTRJ/PC - Male | | |
| | erational | FC/APC | | Browser |
| 4 Opt | erational | FC/APC | | browser |
| 5 Def | ective | FC/UPC | | (married) |
| 6 Def | ective | FC/UPC | | z a) |
| 7 Opt | erational | MTP/PC - Male | | Settings |
| 8 Ope | erational | MTRJ/PC - Female | | |
| | | | | |

Note: A switch will appear on the list only if it has been used in at least one test performed with the MS12001 Cable Assembly Test System.

3. In the port table, find the port number you want to associate to a connector type.



- 4. In the Assigned Connector column, select the connector type.
- **5.** Repeat steps 3 and 4 for each port you want to associate with a connector type.
- **6.** Click **Apply** to confirm.

To remove the association with a connector type:

Follow the exact steps as for associating a port with a connector, but at step 4, change the assigned connector to *Not Assigned*.

Displaying/Hiding Connection Diagrams

The MS12001 Cable Assembly Test System allows you to view images indicating how to connect the patchcords. You will notice that these images contain symbols such as C1, C2, etc.

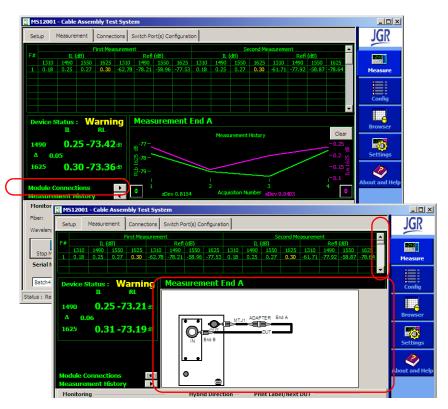
Note: Diagrams are for guidance only. The actual connectors or port position can differ. Connection diagrams show one RM configuration, even when your system is set to the two RM configuration with a RM switch. In the diagrams, a switch module that is part of the setup is always being used as the DUT switch. For more information on how to use connection diagrams on two RM setup, see Connecting Two RMs and the RM Switch on page 25.

During a test, the application displays a legend with a correspondence between these symbols and the connectors you are actually using.

When the connection diagram is displayed, only the last four results are shown in the table. You have to use the provided scroll bar to view the previous ones. It is always possible to hide the diagram to view the full results table.

To display or to hide the connection diagram:

- 1. From the **Measure** function tab, select the **Measurement** tab.
- **2.** Click the **Module Connections** arrow to display or to hide the connection diagram.



The connection diagram replaces the measurement history graph.

To view the results from the table, you may use the scroll bar on the right-hand side of the results table.

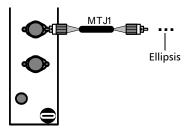
This chapter will guide you through the steps required to test simplex patchcords with the MS12001 Cable Assembly Test System.

Note: You can use a configuration with two RMs for all of your tests. The appropriate test instructions can also be displayed in the interface. However, procedures for a configuration with one RM are provided through this user guide. Additionally, module connection graphics provided within the MS12001 Cable Assembly Test System software also depict a configuration with one RM. You can find the procedure and connection graphic for two RM setup in section Connecting Two RMs and the RM Switch on page 25.

A simplex patchcord is a cable assembly with a single fiber and a connector at each end, as shown below.

Once your test is set up, you will be ready to test your patchcords. For an overview of the test sequence and preparation, see *Preparing Your Test Sequence* on page 101.

Note: Some of the figures presented in this chapter include ellipses. These symbols indicate that you must repeat an action several times.



IMPORTANT

To obtain accurate results, always ensure that your fibers are clean and properly connected (see *Cleaning and Connecting Optical Fibers* on page 106).

Note: If you are testing in multimode, reflectance only, and you cannot connect your DUT to the detector, it is normal to receive a message indicating that input power is too low. Simply ignore the warning and go on with the test.

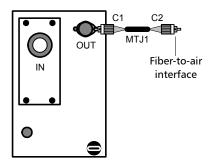
The Cable Assembly Test System has monitoring functions to allow you to verify power variations while you test your connections. For more information, see *Monitoring IL and RL References or Measurements* on page 109.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

To test your patchcord:

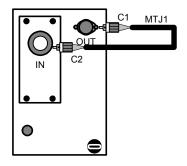
- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

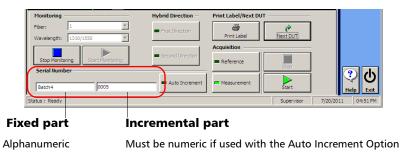
Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

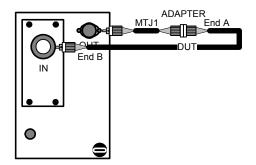
5. Enter the DUT serial number in the **Serial Number** box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

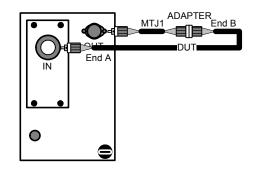
- 6. Measure End A of your DUT.
 - 6a. Click the Measurement button.
 - **6b.** Set up your connections as shown below.



- 6c. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **7.** Measure End B of your DUT.
 - 7a. Set up your connections as shown below.



- 7b. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

MPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

To test your patchcord:

1. Set up your test parameters as explained in *Preparing Your Test Sequence* on page 101.



IMPORTANT

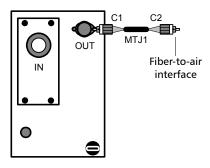
When testing hybrid patchcords, standard configuration and bidirectional testing, JGR recommends to define a complete test profile (with a name). This way, you will be able to test End A and End B in distinct test sessions (after closing the application or changing the setup).

To avoid losing data if you omit to give your test a name, you will be forced to complete test on both End A and End B before performing another action.

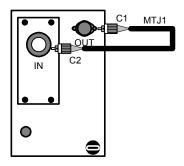
2. From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click on the **Reference** button.
 - **3b.** Set up your connections as shown below.



- **3c.** Click **Start** to start the reference acquisition.
- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

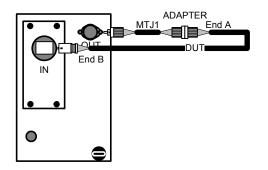
5. Enter the DUT serial number in the Serial Number box.

| Monitoring | Hybrid Direction | Print Label/Next DUT | |
|--------------------------------|------------------|-----------------------|--------------------|
| Fiber: 1 Wavelength: 1310/1550 | First Direction | Print Label | |
| Stop Monitoring Start Monitori | Second Direction | Acquisition Reference | |
| Serial Number | Auto Increment | Measurement Start | Help Exit |
| Status : Ready | | Supervisor | 7/20/2011 04:51 PM |
| Fixed part | Incremental p | oart | |
| Alphanumeric | Must be numeric | if used with the Auto | Increment Optio |

- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - 6. Under Hybrid Direction, click First Direction.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **7.** Measure End A of your DUT.
 - **7a.** Click the **Measurement** button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **9.** Click **Next DUT** to go on to the following DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Not completed*" in the database.
- **Note:** To speed up the process, you can test connector A of a batch of fibers before switching to connector B.
 - **10.** If you have completed the test for End A of your batch of patchcords, click **Second Direction**, under **Hybrid Direction**, to test End B.

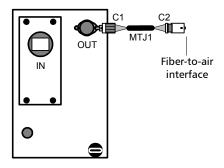


Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

11. If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.

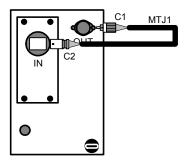
11a. Click the **Reference** button.

11b.Set up your connections as shown below.



11c. Click **Start** to start the reference acquisition.

- **12.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **12a.** Set up your connections as shown below.



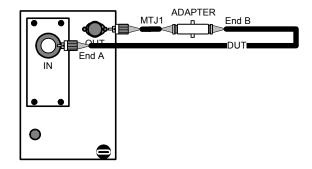
12b.Click **Start** to start the reference acquisition.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **13.** Verify the DUT serial number given by the system to make sure you are testing the right DUT.
- 14. Measure End B of your DUT.

14a. Click the **Measurement** button.

14b.Set up your connections as shown below.



14c. Click **Start** to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

- **15.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **16.** Click **Next DUT** to go on to the next DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Skipped*" in the database.

Testing Patchcords, Standard Configuration and Unidirectional Testing

IMPORTANT

The second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

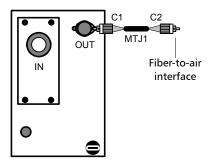
The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

To test hybrid or non-hybrid patchcords:

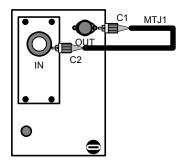
- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Patchcords, Standard Configuration and Unidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - **3b.** Set up your connections as shown below.

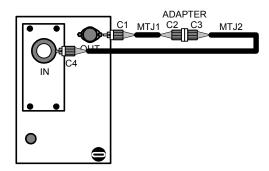


- **3c.** Click **Start** to start the reference acquisition.
- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

- **5.** Reference your master test jumper 2 for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 5a. Set up your connections as shown below.



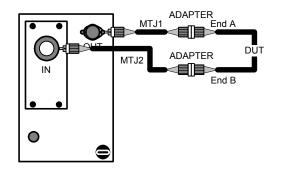
- **5b.** Click **Start** to start the reference acquisition.
- 6. Enter the DUT serial number in the Serial Number box.

| Monitoring | Hybrid Direction – | Print Label/Next DUT |
|-------------------------------|--------------------|-----------------------------------|
| Fiber: 1 | First Direction | Print Label |
| Wavelength: 1310/1550 | | Acquisition |
| Stop Monitoring Start Monitor | Second Direction | Reference Stop |
| Serial Number | | |
| Batch4 0005 | Auto Increment | Measurement Start Help Exit |
| Status : Ready | | Supervisor 7/20/2011 04:51 PI |
| | | |
| xed part | Incremental p | part |
| hanumeric | Must be numeric | if used with the Auto Increment O |

Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Patchcords, Standard Configuration and Unidirectional Testing

- 7. Measure your DUT.
 - 7a. Click the Measurement button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

MPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

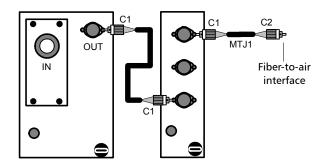
Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcord:

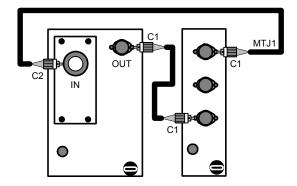
- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

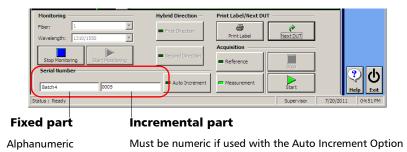
Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click Start to start the reference acquisition.

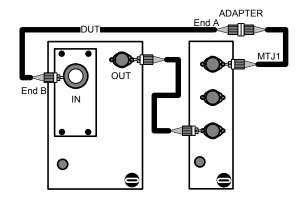
5. Enter the DUT serial number in the Serial Number box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

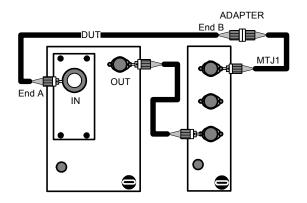
- 6. Measure End A of your DUT.
 - **6a.** Click the **Measurement** button.
 - **6b.** Set up your connections as shown below.



- 6c. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **7.** Measure End B of your DUT.
 - 7a. Set up your connections as shown below.



- 7b. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

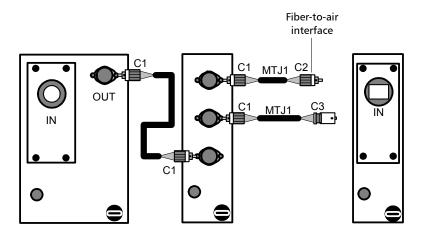
Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcord:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

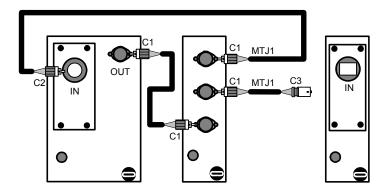
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

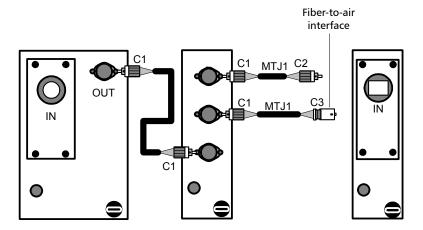
- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



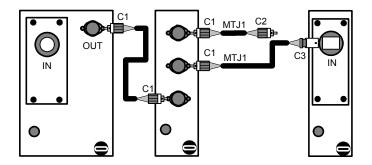
4b. Click Start to start the reference acquisition.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **5.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **5a.** Set up your connections as shown below.



- **5b.** Click **Start** to start the reference acquisition.
- **6.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 6a. Set up your connections as shown below.



6b. Click **Start** to start the reference acquisition.

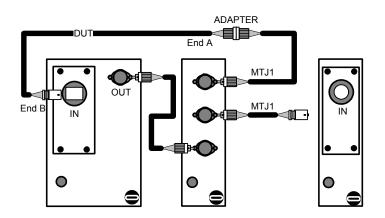
Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- Monitoring Hybrid Direction Print Label/Next DUT Fiber: 6 Next DUT First Direction Print Label Wavelength: 1310/1550 Acquisition 2 Reference Serial Num ▶ Start Auto Incremen measuremen Batch4 Supervisor itatus : Ready 7/20/201: **Fixed part Incremental part** Alphanumeric Must be numeric if used with the Auto Increment Option
- 7. Enter the DUT serial number in the **Serial Number** box.

Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **8.** Measure End A of your DUT.
 - **8a.** Click the **Measurement** button.
 - **8b.** Set up your connections as shown below.

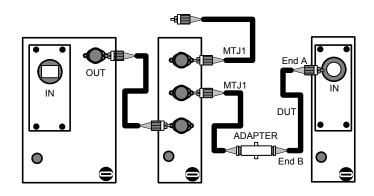


8c. Click **Start** to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- 9. Measure End B of your DUT.
 - **9a.** Set up your connections as shown below.



- 9b. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.



IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

- **10.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 11. Click Next DUT to go on to the following DUT.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

IMPORTANT

The second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

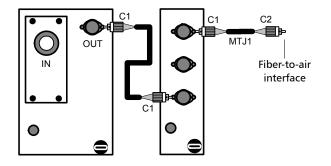
Note: The switch module shown in connection diagrams is the DUT switch.

To test hybrid or non-hybrid patchcords:

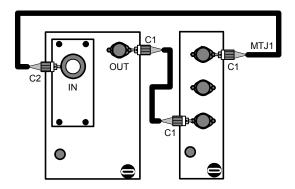
- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



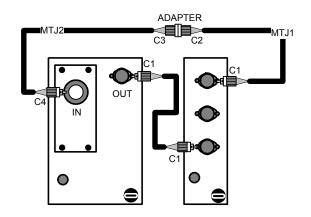
- **3c.** Click **Start** to start the reference acquisition.
- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

5. Reference your master test jumper 2 for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.



5a. Set up your connections as shown below.

5b. Click **Start** to start the reference acquisition.

6. Enter the DUT serial number in the **Serial Number** box.



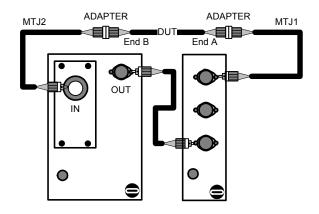
Alphanumeric

Must be numeric if used with the Auto Increment Option

Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

- **7.** Measure your DUT.
 - 7a. Click the Measurement button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

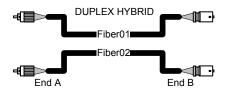
To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

This section will guide you through the steps required to test duplex patchcords with the MS12001 Cable Assembly Test System.

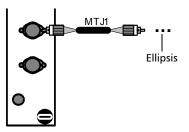
Note: You can use a configuration with two RMs for all of your tests. The appropriate test instructions can also be displayed in the interface. However, procedures for a configuration with one RM are provided through this user guide. Additionally, module connection graphics provided within the MS12001 Cable Assembly Test System software also depict a configuration with one RM. You can find the procedure and connection graphic for two RM setup in section Connecting Two RMs and the RM Switch on page 25.

A duplex patchcord is a cable assembly with two fibers and two connectors at each end.



Once your test is set up, you can test your patchcords. For an overview of the test sequence and preparation, see *Preparing Your Test Sequence* on page 101.

Note: Some of the figures presented in this chapter include ellipses. These symbols indicate that you must repeat an action several times.



IMPORTANT

To obtain accurate results, always ensure that your fibers are clean and properly connected (see *Cleaning and Connecting Optical Fibers* on page 106).

Note: If you are testing in multimode, reflectance only, and you cannot connect your DUT to the detector, it is normal to receive a message indicating that input power is too low. Simply ignore the warning and go on with the test.

The Cable Assembly Test System has monitoring functions to allow you to verify power variations while you test your connections. For more information, see *Monitoring IL and RL References or Measurements* on page 109.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

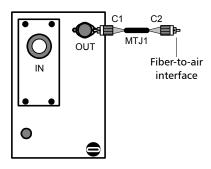
The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

To test your patchcords:

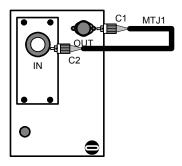
- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



- **3c.** Click **Start** to start the reference acquisition.
- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



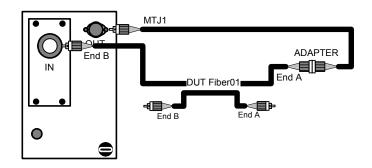
4b. Click **Start** to start the reference acquisition.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

5. Enter the DUT serial number in the Serial Number box.

| Monitoring Fiber: Wavelength: Stop Monitorin Serial Number Batch4 | | Hybrid Direction - First Direction Second Direction Auto Increment | Print Label/Next DUT | Next DUT | He | D Exit |
|--|---|---|----------------------|------------|-----------|-----------|
| Status : Ready | | | | Supervisor | 7/20/2011 | 04:51 PM |
| Fixed part | I | ncremental p | art | | | |
| Alphanumeric | Ν | Aust be numeric | if used with | the Auto | Increme | ent Optio |

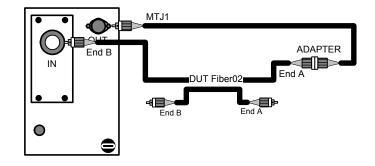
- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - 6. Measure End A of fiber 1 of your DUT.
 - 6a. Click the Measurement button.
 - **6b.** Set up your connections as shown below.



- 6c. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

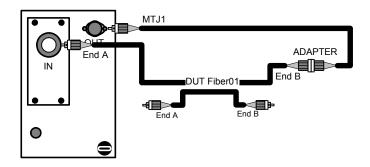
- 7. Measure End A of fiber 2 of your DUT.
 - **7a.** Set up your connections as shown below.



- **7b.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

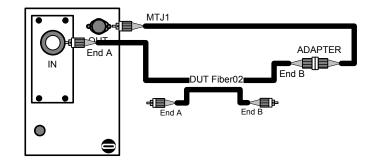
- 8. Measure End B of fiber 1 of your DUT.
 - **8a.** Set up your connections as shown below.



- **8b.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **9.** Measure End B of fiber 2 of your DUT.
 - **9a.** Set up your connections as shown below.



- **9b.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **10.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **11.** Click **Next DUT** to go on to the following DUT.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

To test your patchcord:

1. Set up your test parameters as explained in *Preparing Your Test Sequence* on page 101.



IMPORTANT

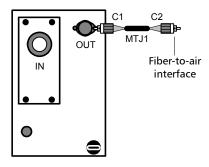
When testing hybrid patchcords, standard configuration and bidirectional testing, JGR recommends to define a complete test profile (with a name). This way, you will be able to test End A and End B in distinct test sessions (after closing the application or changing the setup).

To avoid losing data if you omit to give your test a name, you will be forced to complete test on both End A and End B before performing another action.

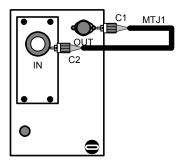
2. From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 3a. Click on the Reference button.
 - **3b.** Set up your connections as shown below.



- **3c.** Click **Start** to start the reference acquisition.
- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



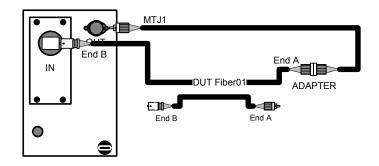
4b. Click **Start** to start the reference acquisition.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

5. Enter the DUT serial number in the Serial Number box.

| Monitoring Fiber: Wavelength: Stop Monitorin Serial Number Batch4 | | Hybrid Direction - First Direction Second Direction Auto Increment | Print Label/Next DUT | Next DUT | He | D Exit |
|--|---|---|----------------------|------------|-----------|-----------|
| Status : Ready | | | | Supervisor | 7/20/2011 | 04:51 PM |
| Fixed part | I | ncremental p | art | | | |
| Alphanumeric | Ν | Aust be numeric | if used with | the Auto | Increme | ent Optio |

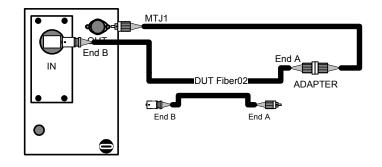
- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - 6. Measure End A of fiber 1 of your DUT.
 - 6a. Click the Measurement button.
 - **6b.** Set up your connections as shown below.



- 6c. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- 7. Measure End A of fiber 2 of your DUT.
 - **7a.** Set up your connections as shown below.



- **7b.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

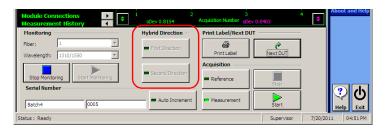
Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **9.** Click **Next DUT** to go on to the following DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Not completed*" in the database.
- **Note:** To speed up the process, you can test the connectors A of a batch of fiber before switching to End B.
 - **10.** If you have completed the test for End A of your batch of patchcords, click **Second Direction**, under **Hybrid Direction**, to test End B.

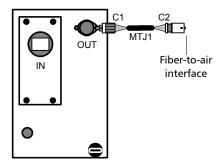


Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

11. If you are testing multimode fibers, reference End B of your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.

11a. Click the **Reference** button.

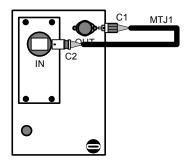
11b.Set up your connections as shown below.



11c. Click **Start** to start the reference acquisition.

12. Reference End B of your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.

12a. Set up your connections as shown below.



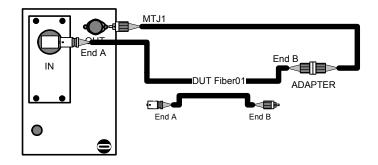
12b.Click **Start** to start the reference acquisition.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **13.** Verify the DUT serial number given by the system to make sure you are testing the right DUT.
- 14. Measure End B of fiber 1 of your DUT.

14a. Click the **Measurement** button.

14b.Set up your connections as shown below.



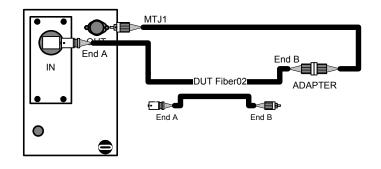
14c. Click Start to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

15. Measure End B of fiber 2 of your DUT.

15a. Set up your connections as shown below.



15b.Click **Start** to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **16.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **17.** Click **Next DUT** to go on to the next DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Skipped*" in the database.

Testing Patchcords, Standard Configuration and Unidirectional Testing

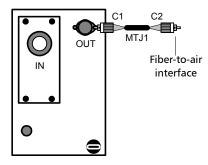
IMPORTANT

The second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

To test hybrid or non-hybrid patchcords:

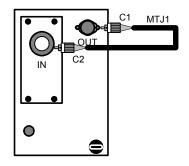
- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click Start to start the reference acquisition.

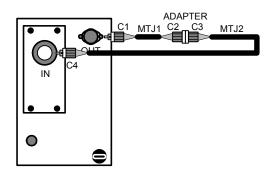
Testing Patchcords, Standard Configuration and Unidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

- **5.** Reference your master test jumper 2 for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **5a.** Set up your connections as shown below.

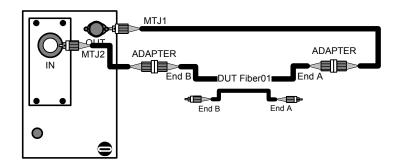


5b. Click **Start** to start the reference acquisition.

6. Enter the DUT serial number in the Serial Number box.

| Monitoring | Hybrid Direction — | Print Label/Next DUT | | | |
|------------------------------|-----------------------|----------------------|------------|-----------|----------|
| Fiber: 1 | First Direction | 4 | é | | |
| Wavelength: 1310/1550 | ▼ | Print Label | Next DUT | | |
| | | Acquisition | | | |
| Stop Monitoring Start Monito | ring Second Direction | Reference | Stop | | |
| Serial Number | | | Stop | 9 | |
| Batch4 0005 | Auto Increment | Measurement | Start | | |
| L Batche | | | Start | He | lp Exit |
| Status : Ready | | | Supervisor | 7/20/2011 | 04:51 PM |
| | | | | | |
| xed part | Incremental p | part | | | |
| | | | | | |
| ohanumeric | Must be numeric | if used with t | the Auto | Increme | ent Opt |

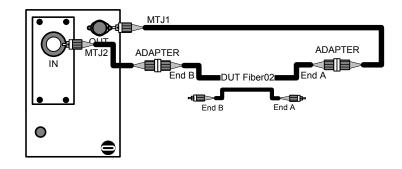
- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - 7. Measure fiber 1 of your DUT.
 - 7a. Click the Measurement button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Patchcords, Standard Configuration and Unidirectional Testing

- **8.** Measure fiber 2 of your DUT.
 - **8a.** Set up your connections as shown below.



- **8b.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **9.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 10. Click Next DUT to go on to the following DUT.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

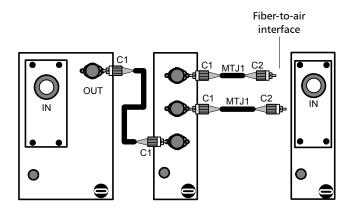
Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcords:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

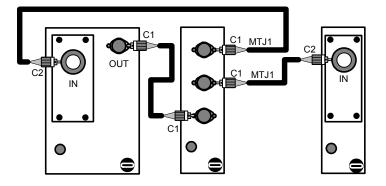
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



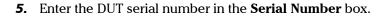
3c. Click **Start** to start the reference acquisition.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

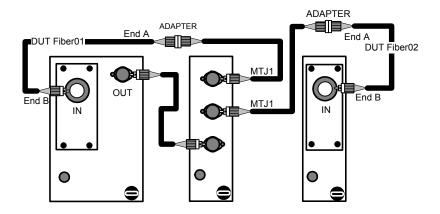


| Monitoring | Hybrid Direction — | Print Label/Next DUT |
|-----------------------------------|--------------------|--------------------------------------|
| Fiber: 1 Wavelength: 1310/1550 | First Direction | Print Label |
| Stop Monitoring | ring | Acquisition |
| Batch4 0005 | Auto Increment | Measurement |
| Status : Ready | | Supervisor 7/20/2011 04:51 PM |
| ixed part | Incremental p | part |
| phanumeric | Must be numeric | if used with the Auto Increment Opti |

Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **6.** Measure End A of your DUT.
 - **6a.** Click the **Measurement** button.
 - **6b.** Set up your connections as shown below.

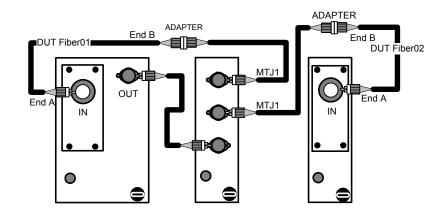


6c. Click **Start** to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **7.** Measure End B of your DUT.
 - 7a. Set up your connections as shown below.



- 7b. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **9.** Click **Next DUT** to go on to the following DUT.

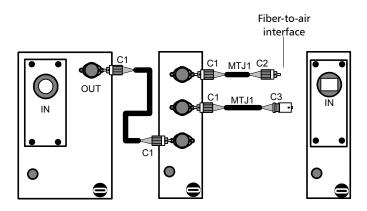
Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcords:

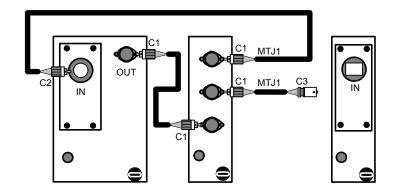
- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

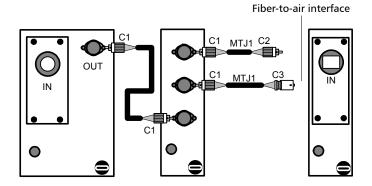
Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

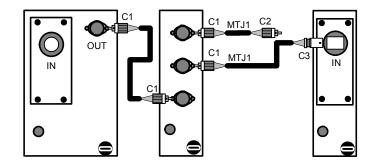
- **5.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **5a.** Set up your connections as shown below.



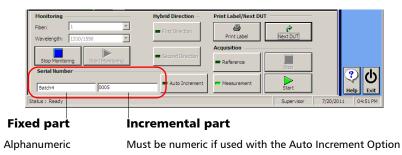
5b. Click **Start** to start the reference acquisition.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **6.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 6a. Set up your connections as shown below.



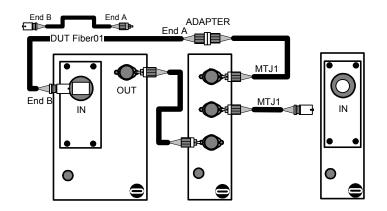
- **6b.** Click **Start** to start the reference acquisition.
- 7. Enter the DUT serial number in the Serial Number box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- 8. Measure End A of fiber 1 of your DUT.
 - **8a.** Click the **Measurement** button.
 - **8b.** Set up your connections as shown below.

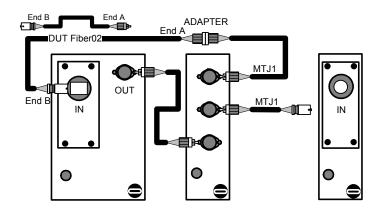


8c. Click **Start** to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **9.** Measure End A of fiber 2 of your DUT.
 - **9a.** Set up your connections as shown below.

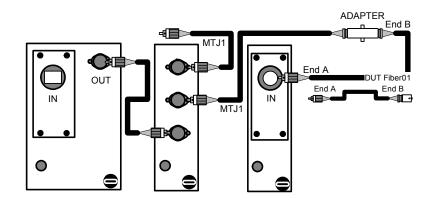


- 9b. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

10. Measure End B of fiber 1 of your DUT.

10a. Set up your connections as shown below.



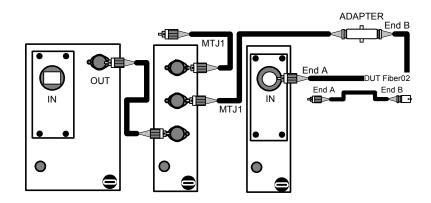
10b.Click **Start** to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

11. Measure End B of fiber 2 of your DUT.

11a. Set up your connections as shown below.



11b.Click **Start** to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **12.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 13. Click Next DUT to go on to the following DUT.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

IMPORTANT

In unidirectional testing, the second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

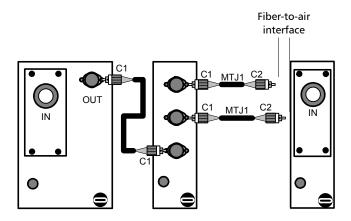
Note: The switch module shown in connection diagrams is the DUT switch.

To test hybrid or non-hybrid patchcords:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

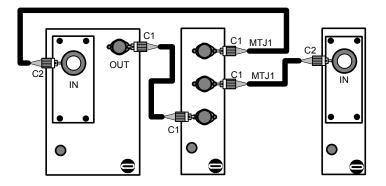
Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.

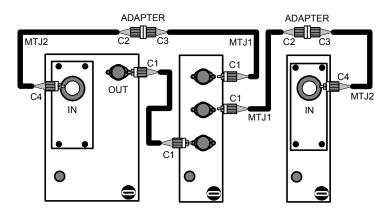


3c. Click **Start** to start the reference acquisition.

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.

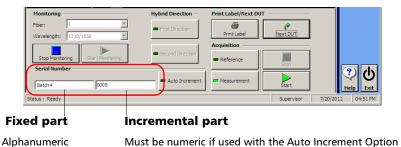


- 4b. Click Start to start the reference acquisition.
- **5.** Reference your master test jumper 2 for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 5a. Set up your connections as shown below.

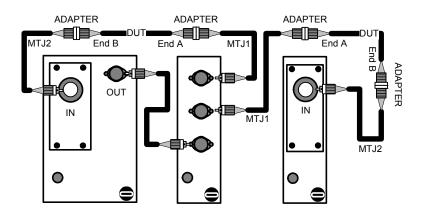


5b. Click Start to start the reference acquisition.

6. Enter the DUT serial number in the **Serial Number** box.



- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - **7.** Measure your DUT.
 - 7a. Click the Measurement button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.



IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

9 Testing Bundle Patchcords

This section will guide you through the steps required to test bundle patchcords with the MS12001 Cable Assembly Test System.

Note: You can use a configuration with two RMs for all of your tests. The appropriate test instructions can also be displayed in the interface. However, procedures for a configuration with one RM are provided through this user guide. Additionally, module connection graphics provided within the MS12001 Cable Assembly Test System software also depict a configuration with one RM. You can find the procedure and connection graphic for two RM setup in section Connecting Two RMs and the RM Switch on page 25.

A bundle patchcord is a cable assembly with N fibers and N connectors at each end.

Once your test is set up, you will be ready to test your patchcords. For an overview of the test sequence and preparation, see *Preparing Your Test Sequence* on page 101.

IMPORTANT

To obtain accurate results, always ensure that your fibers are clean and properly connected (see *Cleaning and Connecting Optical Fibers* on page 106).

The Cable Assembly Test System has monitoring functions to allow you to verify power variations while you test your connections. For more information, see *Monitoring IL and RL References or Measurements* on page 109.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

The procedure to test bundle patchcords is the same as for simplex patchcords. Refer to *Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing* on page 141 and repeat the test sequence for each fiber.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

The procedure to test bundle patchcords is the same as for simplex patchcords. Refer to *Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing* on page 145 and repeat the test sequence for each fiber.

Testing Patchcords, Standard Configuration and Unidirectional Testing

The procedure to test bundle patchcords is the same as for simplex patchcords. Refer to *Testing Patchcords, Standard Configuration and Unidirectional Testing* on page 153 and repeat the test sequence for each fiber.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The procedure to test bundle patchcords is the same as for simplex patchcords. Refer to *Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing* on page 157 and repeat the test sequence for each fiber.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The procedure to test bundle patchcords is the same as for simplex patchcords. Refer to *Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing* on page 161 and repeat the test sequence for each fiber.

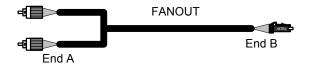
Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

The procedures to test bundle patchcords is the same as for simplex patchcords. Refer to *Testing Patchcords, High-Throughput Configuration and Unidirectional Testing* on page 168 and repeat the test sequence for each fiber.

This section will guide you through the steps required to test fanout patchcords with the MS12001 Cable Assembly Test System.

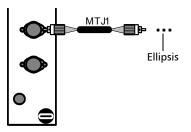
Note: You can use a configuration with two RMs for all of your tests. The appropriate test instructions can also be displayed in the interface. However, procedures for a configuration with one RM are provided through this user guide. Additionally, module connection graphics provided within the MS12001 Cable Assembly Test System software also depict a configuration with one RM. You can find the procedure and connection graphic for two RM setup in section Connecting Two RMs and the RM Switch on page 25.

A fanout patchcord is a cable assembly with N connectors at one end and a multifiber connector at the other end.



Once your test is set up, you will be ready to test your patchcords. For an overview of the test sequence and preparation, see *Preparing Your Test Sequence* on page 101.

Note: Some of the figures presented in this chapter include ellipses. These symbols indicate that you must repeat an action several times.



IMPORTANT

To obtain accurate results, always ensure that your fibers are clean and properly connected (see *Cleaning and Connecting Optical Fibers* on page 106).

Note: If you are testing in multimode, reflectance only, and you cannot connect your DUT to the detector, it is normal to receive a message indicating that input power is too low. Simply ignore the warning and go on with the test.

The Cable Assembly Test System has monitoring functions to allow you to verify power variations while you test your connections. For more information, see *Monitoring IL and RL References or Measurements* on page 109.

Testing Patchcords, Standard Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcords:

1. Set up your test parameters as explained in *Preparing Your Test Sequence* on page 101.

U

IMPORTANT

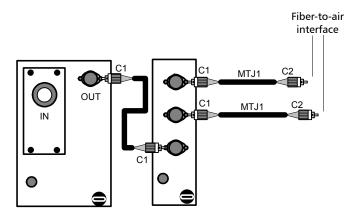
When testing hybrid patchcords, standard configuration and bidirectional testing, JGR recommends to define a complete test profile (with a name). This way, you will be able to test End A and End B in distinct test sessions (after closing the application or changing the setup).

To avoid losing data if you omit to give your test a name, you will be forced to complete test on both End A and End B before performing another action.

2. From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

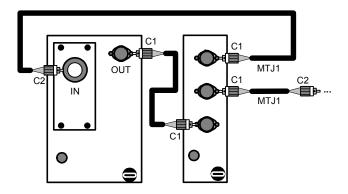
Testing Patchcords, Standard Configuration and Bidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click on the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



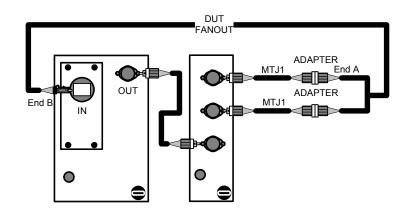
- **4b.** Click **Start** to start the reference acquisition.
- 5. Enter the DUT serial number in the Serial Number box.

| Monitoring | Hybrid Direction – | Print Label/Next DUT | | |
|--------------------------|---------------------|---|------------|--------------------|
| Fiber: 1 | First Direction | 6 | é | |
| Wavelength: 1310/1550 | - THOULEUUT | Print Label | Next DUT | |
| | | Acquisition | | |
| Stop Monitoring Start Mo | Second Direction | Reference | | |
| Serial Number | | · _ | Stop | 2 |
| | Auto Increment | Measurement | | ~U |
| Batch4 000 | , | | Start | Help Exit |
| Status : Ready | | | Supervisor | 7/20/2011 04:51 PM |
| _ [| | | | |
| xed part | Incremental | part | | |
| hanumeric | Must be numeric | if used with t | ha Auta | Incromont On |
| nanument | iviust de liuilleit | Must be numeric if used with the Auto Increment Optic | | |

- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - 6. Click the First Direction button under Hybrid Direction.

Testing Patchcords, Standard Configuration and Bidirectional Testing

- **7.** Measure your DUT from Fanout to Multifiber.
 - 7a. Click the Measurement button.
 - **7b.** Set up your connections as shown below.



7c. Click Start to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Patchcords, Standard Configuration and Bidirectional Testing

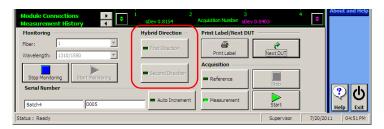
To avo

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **9.** Click **Next DUT** to go on to the following DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Not completed*" in the database.
- **Note:** To speed up the process, you can test the connectors A of a batch of fiber before switching to End B.
 - **10.** If you have completed the test for End A of your batch of patchcords, click **Second Direction**, under **Hybrid Direction**, to test End B.

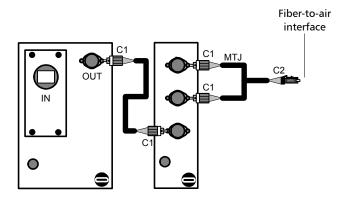


Testing Patchcords, Standard Configuration and Bidirectional Testing

11. If you are testing multimode fibers, reference End B of your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.

11a. Click the **Reference** button.

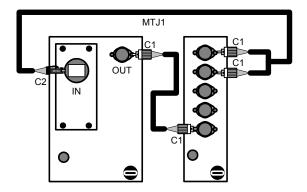
11b.Set up your connections as shown below.



11c. Click **Start** to start the reference acquisition.

12. Reference End B of your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.

12a. Set up your connections as shown below.



12b.Click **Start** to start the reference acquisition.

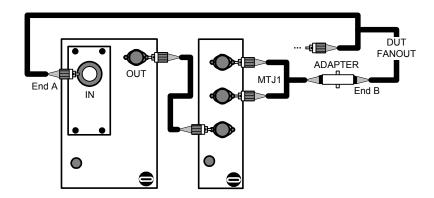
13. Verify the DUT serial number given by the system to make sure you are testing the right DUT.

Testing Patchcords, Standard Configuration and Bidirectional Testing

14. Measure your DUT from Multifiber to Fanout.

14a. Click the Measurement button.

14b.Set up your connections as shown below.



14c. Click Start to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **15.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **16.** Click **Next DUT** to go on to the next DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Skipped*" in the database.

Testing Patchcords, Standard Configuration and Unidirectional Testing

IMPORTANT

The second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

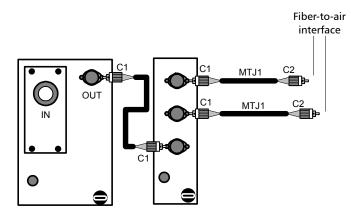
Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcord:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

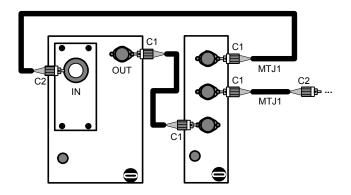
Testing Patchcords, Standard Configuration and Unidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - *3b.* Set up your connections as shown below.

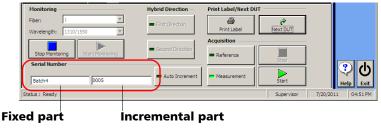


3c. Click **Start** to start the reference acquisition.

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



- **4b.** Click **Start** to start the reference acquisition.
- 5. When requested by the application, enter the length of MTJ2.
- 6. Enter the DUT serial number in the Serial Number box.



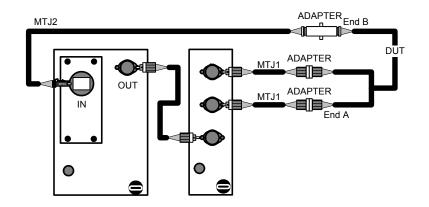
Alphanumeric

Must be numeric if used with the Auto Increment Option

Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Patchcords, Standard Configuration and Unidirectional Testing

- **7.** Measure your DUT from Fanout to Multifiber.
 - 7a. Click the Measurement button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Patchcords, Standard Configuration and Unidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

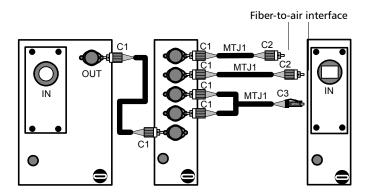
- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

Note: The switch module shown in connection diagrams is the DUT switch.

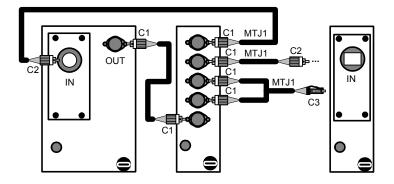
To test your patchcord:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - **3b.** Set up your connections as shown below.

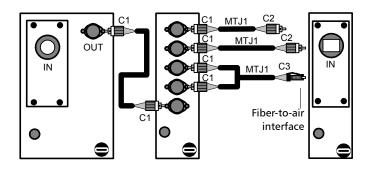


3c. Click **Start** to start the reference acquisition.

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



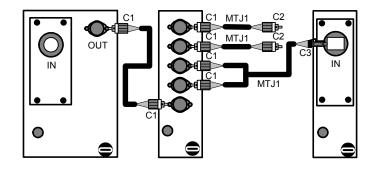
- 4b. Click Start to start the reference acquisition.
- **5.** If you are testing multimode fibers, reference your fanout master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **5a.** Set up your connections as shown below.



5b. Click Start to start the reference acquisition.

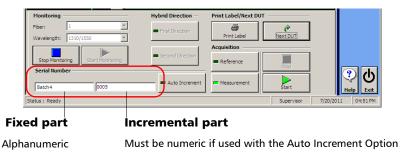
Testing Patchcords, High-Throughput Configuration and Bidirectional Testing

- **6.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 6a. Set up your connections as shown below.



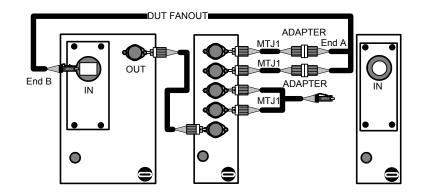
6b. Click **Start** to start the reference acquisition.

7. Enter the DUT serial number in the **Serial Number** box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

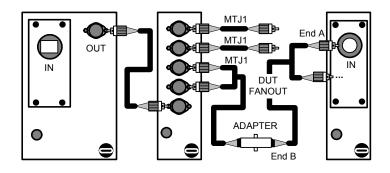
- 8. Measure your DUT from Fanout to Multifiber.
 - **8a.** Click the **Measurement** button.
 - **8b.** Set up your connections as shown below.



- **8c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Patchcords, High-Throughput Configuration and Bidirectional Testing

- **9.** Measure your DUT from Multifiber to Fanout.
 - **9a.** Set up your connections as shown below.



- **9b.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

MPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **10.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **11.** Click **Next DUT** to go on to the following DUT.

IMPORTANT

The second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

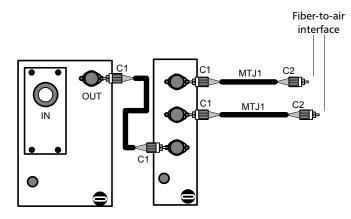
Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcord:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

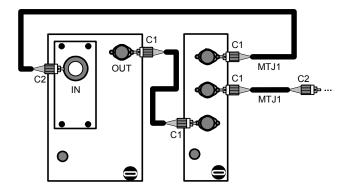
Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - *3b.* Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.

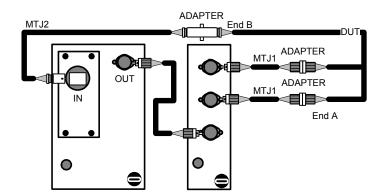


- **4b.** Click **Start** to start the reference acquisition.
- 5. When requested by the application, enter the length of MTJ2.

- Print Label/Next DUT Monitoring Hybrid Direction Next DUT 8 Erst Direction Print Lab Y Wavelength: 1310/1550 Acquisition Reference rial Numl Start Auto Increment Measurement atus : Read Superviso 7/20/201: **Fixed part Incremental part**
- 6. Enter the DUT serial number in the **Serial Number** box.



- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - 7. Measure your DUT from Fanout to Multifiber.
 - **7a.** Click the **Measurement** button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.



IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

11 Testing Multifiber Patchcords

This section will guide you through the steps required to test multifiber patchcords with the MS12001 Cable Assembly Test System.

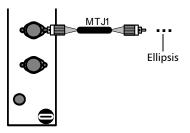
Note: You can use a configuration with two RMs for all of your tests. The appropriate test instructions can also be displayed in the interface. However, procedures for a configuration with one RM are provided through this user guide. Additionally, module connection graphics provided within the MS12001 Cable Assembly Test System software also depict a configuration with one RM. You can find the procedure and connection graphic for two RM setup in section Connecting Two RMs and the RM Switch on page 25.

A multifiber patchcord is a cable assembly with a multifiber connector (MTP or MTRJ) at each end.

| MULTIFIBER TO M | ULTIFIBER |
|-----------------|-----------|
| Male | Female |
| MIRJ | |
| End A | End B |

Once your test is set up, you will be ready to test your patchcords. For an overview of the test sequence and preparation, see *Preparing Your Test Sequence* on page 101.

Note: Some of the figures presented in this chapter include ellipses. These symbols indicate that you must repeat an action several times.



IMPORTANT

To obtain accurate results, always ensure that your fibers are clean and properly connected (see *Cleaning and Connecting Optical Fibers* on page 106).

Note: If you are testing in multimode, reflectance only, and you cannot connect your DUT to the detector, it is normal to receive a message indicating that input power is too low. Simply ignore the warning and go on with the test.

The Cable Assembly Test System has monitoring functions to allow you to verify power variations while you test your connections. For more information, see *Monitoring IL and RL References or Measurements* on page 109.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

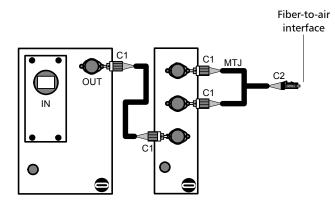
Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcords:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

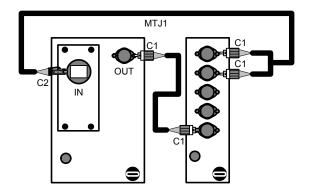
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

4. Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.

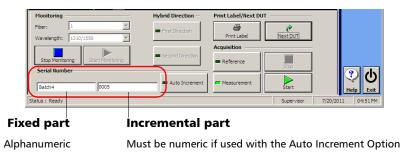


4a. Set up your connections as shown below.

4b. Click **Start** to start the reference acquisition.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

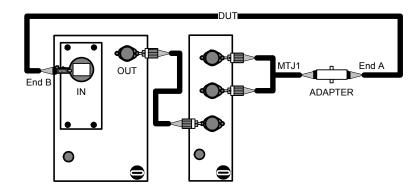
5. Enter the DUT serial number in the **Serial Number** box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

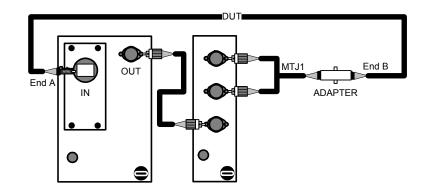
- 6. Measure End A of your DUT.
 - 6a. Click the Measurement button.
 - **6b.** Set up your connections as shown below.



- 6c. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **7.** Measure End B of your DUT.
 - 7a. Set up your connections as shown below.



- 7b. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

MPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcord:

1. Set up your test parameters as explained in *Preparing Your Test Sequence* on page 101.

IMPORTANT

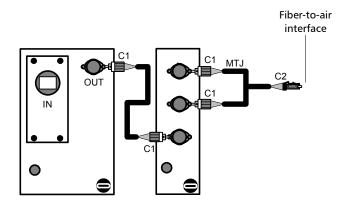
When testing hybrid patchcords, standard configuration and bidirectional testing, JGR recommends to define a complete test profile (with a name). This way, you will be able to test End A and End B in distinct test sessions (after closing the application or changing the setup).

To avoid losing data if you omit to give your test a name, you will be forced to complete test on both End A and End B before performing another action.

2. From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

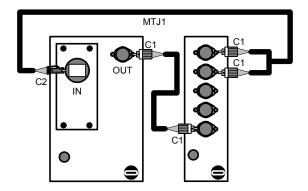
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click on the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



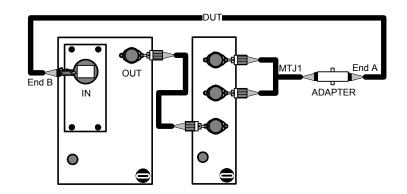
- **4b.** Click **Start** to start the reference acquisition.
- 5. Enter the DUT serial number in the Serial Number box.

| Monitoring | Hybrid Direction — | Print Label/Next DUT |
|---------------------------------|--------------------------------------|-------------------------------------|
| Fiber: 1 | First Direction | |
| Wavelength: 1310/1550 | ¥ | Print Label Next DUT |
| | Second Direction | Acquisition |
| Stop Monitoring Start Monitorin | | Reference Stop |
| Serial Number | | · ? の |
| Batch4 0005 | Auto Increment | Measurement Start Help Exit |
| Status : Ready | | Supervisor 7/20/2011 04:51 PM |
| | | |
| xed part | Incremental p | bart |
| phanumeric | Must be numeric | if used with the Auto Increment Opt |

- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - 6. Under Hybrid Direction, click First Direction.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

- **7.** Measure End A of your DUT.
 - **7a.** Click the **Measurement** button.
 - **7b.** Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

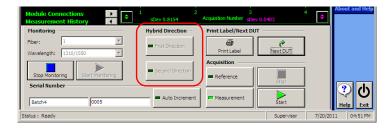
Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **9.** Click **Next DUT** to go on to the next DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Skipped*" in the database.
- **Note:** To speed up the process, you can test the connectors A of a batch of fiber before switching to End B.
 - **10.** If you have completed the test for End A of your batch of patchcords, click **Second Direction**, under **Hybrid Direction**, to test End B.

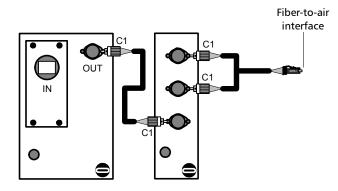


Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

11. If you are testing multimode fibers, reference End B of your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.

11a. Click the **Reference** button.

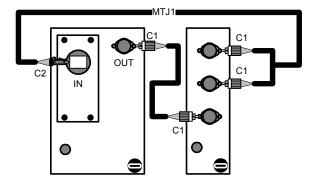
11b.Set up your connections as shown below.



11c. Click **Start** to start the reference acquisition.

12. Reference End B of your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.

12a. Set up your connections as shown below.



12b.Click **Start** to start the reference acquisition.

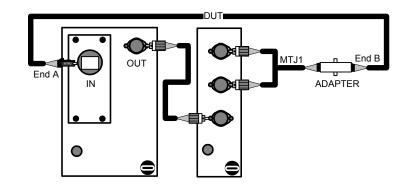
13. Verify the DUT serial number given by the system to make sure you are testing the right DUT.

Testing Hybrid Patchcords, Standard Configuration and Bidirectional Testing

14. Measure End B of your DUT.

14a. Click the Measurement button.

14b.Set up your connections as shown below.



14c. Click Start to start the acquisition.

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **15.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **16.** Click **Next DUT** to go on to the next DUT. If you click **Next DUT** without having tested the DUT, it will be written as "*Skipped*" in the database.

Testing Patchcords, Standard Configuration and Unidirectional Testing

IMPORTANT

The second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

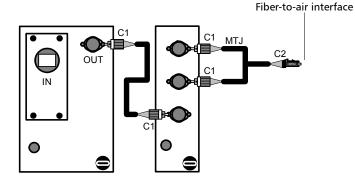
Note: The switch module shown in connection diagrams is the DUT switch.

To test hybrid or non-hybrid patchcords:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

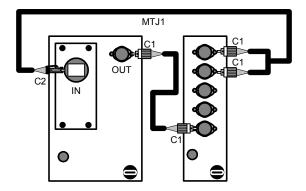
Testing Patchcords, Standard Configuration and Unidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



3c. Click **Start** to start the reference acquisition.

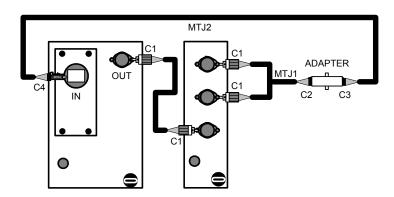
- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - 4a. Set up your connections as shown below.



4b. Click **Start** to start the reference acquisition.

Testing Patchcords, Standard Configuration and Unidirectional Testing

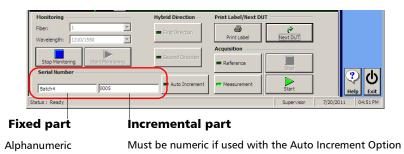
5. Reference your master test jumper 2 for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.



5a. Set up your connections as shown below.

5b. Click **Start** to start the reference acquisition.

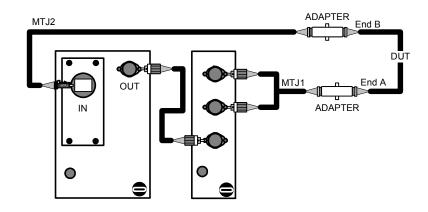
6. Enter the DUT serial number in the Serial Number box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Patchcords, Standard Configuration and Unidirectional Testing

- 7. Measure your DUT.
 - 7a. Click the Measurement button.
 - 7b. Set up your connections as shown below.



- **7c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Patchcords, Standard Configuration and Unidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **9.** Click **Next DUT** to go on to the following DUT.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

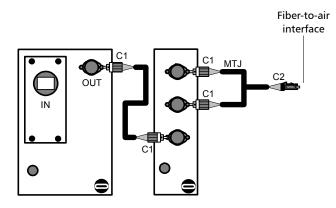
Note: The switch module shown in connection diagrams is the DUT switch.

To test patchcords:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



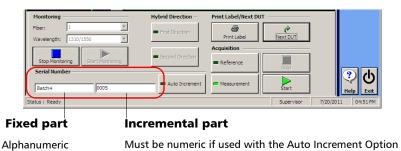
3c. Click **Start** to start the reference acquisition.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.

 - 4a. Set up your connections as shown below.

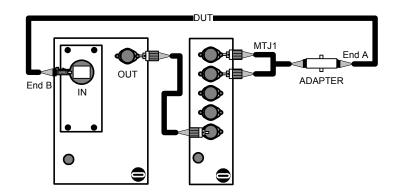
- **4b.** Click **Start** to start the reference acquisition.
- 5. Enter the DUT serial number in the Serial Number box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

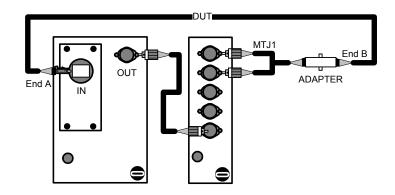
- **6.** Measure End A of your DUT.
 - **6a.** Click the **Measurement** button.
 - **6b.** Set up your connections as shown below.



- **6c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **7.** Measure End B of your DUT.
 - 7a. Set up your connections as shown below.



- 7b. Click Start to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Non-Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **9.** Click **Next DUT** to go on to the following DUT.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

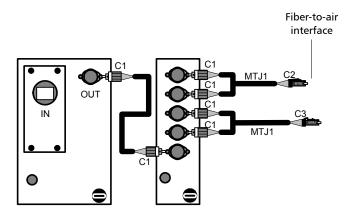
Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcord:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

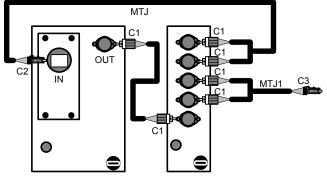
- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *3a.* Click the **Reference** button.
 - **3b.** Set up your connections as shown below.



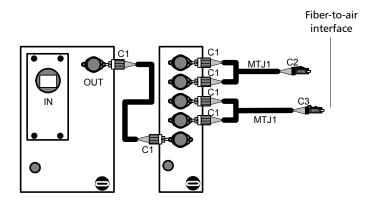
3c. Click **Start** to start the reference acquisition.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - *4a.* Set up your connections as shown below.



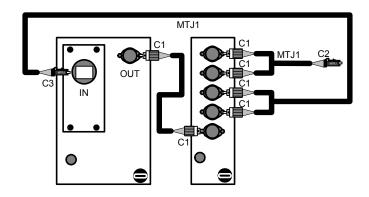
- **4b.** Click **Start** to start the reference acquisition.
- **5.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **5a.** Set up your connections as shown below.



5b. Click Start to start the reference acquisition.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

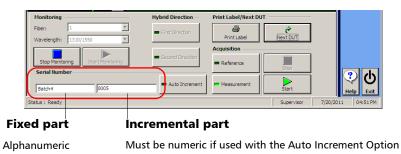
6. Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.



6a. Set up your connections as shown below.

6b. Click Start to start the reference acquisition.

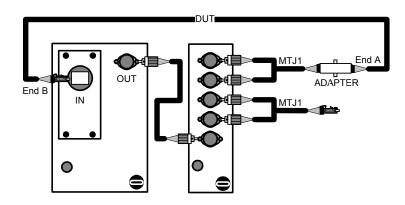
7. Enter the DUT serial number in the **Serial Number** box.



Note: If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

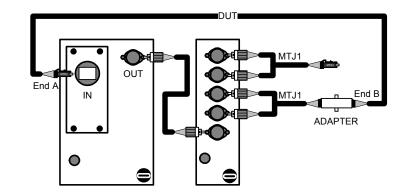
- 8. Measure End A of your DUT.
 - **8a.** Click the **Measurement** button.
 - **8b.** Set up your connections as shown below.



- **8c.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

Testing Hybrid Patchcords, High-Throughput Configuration and Bidirectional Testing

- **9.** Measure End B of your DUT.
 - **9a.** Set up your connections as shown below.



- **9b.** Click **Start** to start the acquisition.
- **Note:** If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

MPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **10.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- **11.** Click **Next DUT** to go on to the following DUT.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

IMPORTANT

The second master test jumper must have a UPC end to connect to the input port of the MS12 Loss Test Module.

The following procedure shows one RM configuration. For two RM configuration, use the Common port on the RM switch instead of the Reflectometer (Output) port on the MS12 module.

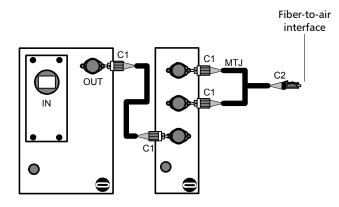
Note: The switch module shown in connection diagrams is the DUT switch.

To test your patchcords:

- **1.** Set up your test parameters as explained in *Setting Up Your Test* on page 104.
- **2.** From the **Measure** function tab, select the **Measurement** tab to be able to perform references and tests.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

- **3.** If you are testing multimode fibers, reference your master test jumper for reflectance. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **3a.** Click the **Reference** button.
 - **3b.** Set up your connections as shown below.

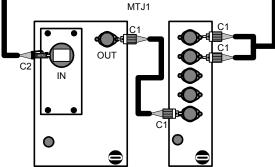


3c. Click **Start** to start the reference acquisition.

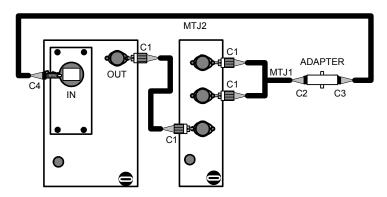
Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

- **4.** Reference your master test jumper for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - MTJ1

4a. Set up your connections as shown below.



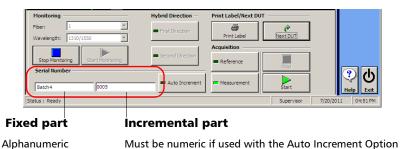
- **4b.** Click **Start** to start the reference acquisition.
- **5.** Reference your master test jumper 2 for insertion loss. You should have read *Referencing Master Test Jumpers* on page 122 first.
 - **5a.** Set up your connections as shown below.



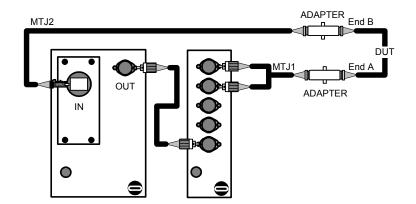
5b. Click **Start** to start the reference acquisition.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

6. Enter the DUT serial number in the **Serial Number** box.



- **Note:** If you configured the application to generate unique serial numbers automatically, you cannot modify these numbers from the application. For more information, see Customizing DUT Serial Numbers on page 74.
 - **7.** Measure your DUT.
 - 7a. Click the Measurement button.
 - **7b.** Set up your connections as shown below.



7c. Click Start to start the acquisition.

Testing Patchcords, High-Throughput Configuration and Unidirectional Testing

Note: If you have not selected the mandrel-free option (see Defining DUTs on page 94), the application will ask you to mandrel-wrap and straighten your fiber.

IMPORTANT

To avoid losing data, be sure to click Print Label or Next DUT before performing other actions such as modifying the test setup or configuring switch ports.

You can view results with the Database Browser without losing any information.

- **8.** Once your results are all acquired, you can print labels or reports. For more information, see *Printing Labels and Reports* on page 292.
- 9. Click Next DUT to go on to the following DUT.

12 Managing Results

This chapter presents various tools that will allow you to view, print and export test information and results obtained with the Cable Assembly Test System.

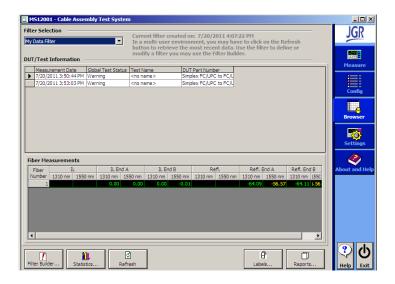
Browsing through the Database

The database browser gives you access to the whole contents of the database and allows you to view, print and export only the desired information by using customizable filters.

To browse through the database:

- 1. Click the Browser function tab to access the database main window.
- **2.** Select a filter from the list. If the list is empty, you may define one with the filter builder (see *Customizing the Database Browser Information* on page 284). Once a filter is selected, the DUT and fiber measurement tables are updated automatically.

Note: You may have to use the Refresh button to display the most recent data.



Customizing the Database Browser Information

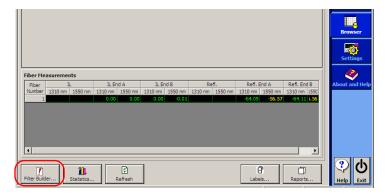
Customization of the information presented in the upper table of the Database Browser can be made using filters. Filters define which portion of the acquired data will be displayed (see *Browsing through the Database* on page 283).To consult examples of the filter builder, see *Filter Builder Examples* on page 397.

You can tailor the information to your needs by determining the columns to be displayed and their order of appearance. You can also indicate the order of appearance of the rows by defining a sorting criteria. A sorting criteria specifies columns (fields) into which the table must be sorted and the type of sorting (either ascending or descending) needed.

- **Note:** If you want to modify the display format of the results appearing in the fiber results table, see Setting Resolution to Display on page 61 and Setting Display for Very Small Reflectance Values on page 63.
- Note: Operators can add new filters, but cannot modify existing ones.

To add a new filter:

1. From the **Browser** function tab, click the **Filter Builder** button.



2. From the filter builder window, click **Add** if you want to add entirely new information.

OR

Select an existing filter from the **Filter** box and click the **Copy To** button. A new filter will be created with the duplicated information.

| M512001 - Cable Assembly Test System | _ 🗆 🗵 |
|--|----------------|
| Filter: My Data Filter 💌 💽 🕂 Kafresh Add Dekre | JGR |
| Condition Builder Selection Criteria Number of Records to Retrieve Yalue: Yalue: Yalue: Percent Field Name: Percent Field Name | er_ Measure |
| Custom Field 1 Dur_stoletarststatus = 1 And NOT(Dtm_PartNumber Like And An expression is a combination of -Field | Config |
| Name > <operator> Name > <operator> Name > <operator> Name > <operator> Name > <operators></operators></operator></operator></operator></operator> | Browser |

- *3.* From the **Condition builder** panel, you can define the data selection criteria. For more information, see *Defining Criteria* on page 288.
 - **3a.** Select a field name from the list.
 - **3b.** Select a comparison operator from the **Operator** box.
 - *3c.* Select the value to which the selected field should be compared. If there is no value available, simply type one in.
 - 3d. Insert the condition you have built in the Selection box using the <- AND or <- OR button. When required, you may also insert parenthesis in your expression by typing them directly in the selection box.

Note: For a single condition, you can use any of the two buttons.

- **4.** If you want to define a compound criterion, repeat step 3 for each condition you want to include.
- If necessary, enter a value to restrain the amount of data to be displayed. You can also specify this value in percentage by clicking on the **Percent %** button.

Customizing the Database Browser Information

6. Under **Display These Fields**, in the list, select the columns to be displayed in the results table by selecting the check box next the desired fields.

| Order select | tion buttons | |
|------------------------------------|---|-------------|
| | | |
| Field Selection & Sorting Criteria | | Settings |
| Display These Fields | Sort Criteria | |
| Measurement Date | Field name: Custom Field 1 Custom Field 1 | |
| Fixed Serial Number | Abo | ut and Help |
| Global Test Status | - | |
| Custom Field 1 | <- Insert | |
| Custom Field 2 | <- Insert | |
| | | |
| Custom Title 2 | Important: | |
| Custom Title 3 | The fields in the sorting criteria must first be selected from in | |
| | the Field Selection list. | |
| | | シーム |
| Clear | Apply Cancel Close Hit | elp Exit |
| | | |
| | | |
| Select all | L Clear all selection | |
| | | |
| button | button | |

You can define the order in which the columns will be displayed by selecting the corresponding field in the list and by moving it with the up and down arrows.

- **7.** If necessary, you can define sort criteria that determine how the current filter should display the data.
 - 7a. In the list, select a field.
 - **7b.** Click the **Ascending** or **Descending** button to apply, to the selected, the sorting order.
 - **7c.** Click **Insert** to enter the sorting criteria.
- **8.** Click **Apply** to save the filter.
- **Note:** In a multi-user environment, you can make the current filter available to all other workstations or keep it local (current workstation). In a local environment, filters always remain local (specific workstation only).
- Note: You can quickly empty all fields and boxes by clicking Clear.

To modify an existing filter:

- 1. From the **Browser** function tab, click the **Filter Builder** button.
- 2. From the Filter box, select the name of the filter you want to modify.
- **3.** Modify the information and click **Apply** to save the modifications.

To delete an existing filter:

- 1. From the **Browser** function tab, click the **Filter Builder** button.
- 2. From the Filter box, select the name of the filter you want to modify.
- 3. Click Delete.

Defining Criteria

You can specify on which criteria you want the data to be based on. Criteria are conditions that are used to extract specific information from all the available data records.

Note: The like operator is a special operator that can be inserted in a criterion with characters called "wildcards". It allows you to use only a part of a string as the search condition. For example, to see the results for all APC connectors, you can use LIKE '%APC%' where % acts as a wildcard character that replaces any combination of characters that could appear before or after "APC". For more information on this operator or on the supported wildcards, refer to SQL Server documentation.

It is possible to combine single criteria into compound criteria using the OR and AND keywords.

> OR: results that meet *at least one* of the criteria will be displayed.

For example, you can use this keyword to see results related to the customer named *ABC* and those related to the customer named *MyCustomer*.

> AND: results that meet *all of the criteria* will be displayed.

For example, you can use this keyword to see the IL results above 0.25, obtained for the customer *ABC*.

You can also specify a value to limit the number of data records that will be displayed.

For example, if you enter 50, the first 50 data records corresponding to the current filter selection will be listed. You can also use this function with a percentage. In this case, the first 50 % of the current filter selection will appear.

Printing Statistics Charts

The MS12001 Cable Assembly Test System allows you to view and print statistics charts according to the displayed data and the selected template. There are two different templates:

- ► Chart: displays distribution charts only
- Chart by category: displays distribution charts, as well as standard deviation, average, minimum and maximum values, variance.

The chart reports can also be exported to HTML (.htm) format.

To print statistics:

- 1. From the **Browser** function tab, click the **Statistics** button
- 2. In the Filter box, select the filter to be applied to the results.

| | Filter to be applied | | | | | | | | | |
|-----------------------|--|-------------|--------|--------|-------------|---------|---------|---------|----------|---------|
| | M51200 L - Cable Assembly Test System | | | | | | | | | |
| | Filter: <no fi<="" th=""><th>lter (all)></th><th></th><th>•</th><th>Bar Chart</th><th></th><th></th><th></th><th></th><th>JGR</th></no> | lter (all)> | | • | Bar Chart | | | | | JGR |
| <u> </u> | | | | | | 1300 nm | 1310 nm | 1550 nm | | JUIL |
| Selected– template | Select report: | hart | | • | IL End A | | ~ | • | | |
| A | | | | | IL End B | | | | | |
| template | Graph Scale | | | | Refl. | | | | | 11 a |
| | | Step | Min. | Max. | Refl. End A | | ~ | ¥ | | Measure |
| | Insertion Loss | 0.50 | 0.00 | 5.00 | Refl. End B | | ~ | • | • | |
| | Reflectance | 5.00 | -75.00 | -35.00 | • | | | | • | |

3. From the **Select Report** box, select the template you want to use to view results.

Note: Templates provided for statistics are not customizable.

4. Select which measurements you want to include in the chart by selecting the corresponding check boxes under **Bar Chart**.

MPORTANT

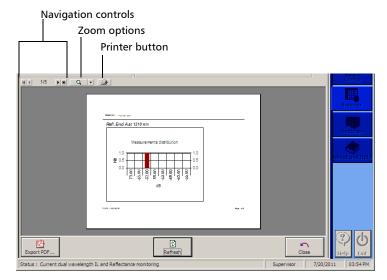
Ensure that you select wavelengths that correspond to the type of fiber you are testing (1310 nm, 1490 nm, 1550 nm, 1625 nm for fibers with a core of 50 μ m and 850 nm, 1300 nm for fibers with a core of 62.5 μ m). Otherwise, no results will be displayed.

| MS12001 - Ca | ble Assen | nbly Test | t System | | | | | | _ 🗆 🗵 |
|--|------------|-----------|----------|-------------|---------|---------|----------|---|--|
| Filter: <no fil<="" th=""><th>ter (all)></th><th></th><th>-</th><th>Bar Chart</th><th></th><th></th><th></th><th></th><th>ICD</th></no> | ter (all)> | | - | Bar Chart | | | | | ICD |
| Finder. Terro in | ter (ai)> | | | | 1300 nm | 1310 nm | 1550 nm | | JUK |
| Select report: | hart | | • | IL End A | | ~ | v | | |
| | | | _ | IL End B | | | | | |
| Graph Scale | | | | Refl. | | | | | 22 <u>-</u> |
| | Step | Min. | Max. | Refl. End A | | ~ | ~ | | Measure |
| Insertion Loss | 0.50 | 0.00 | 5.00 | Refl. End B | | × | ✓ | • | |
| Reflectance | 5.00 | -75.00 | -35.00 | 1 | | | | | 20000000 500 20000000 500 20000000 500 |
| | | | | | | | | | |

5. Under Graph Scale, you can define how data will be distributed.

| M512001 - Cable Assembly Test System | | | | | | | | | <u>_ ×</u> |
|--|-------------|--------|--------|-------------|---------|---------|---------|---|--|
| Filter: <no fi<="" th=""><th>lter (all)></th><th></th><th>-</th><th>Bar Chart</th><th></th><th></th><th></th><th></th><th>JGR</th></no> | lter (all)> | | - | Bar Chart | | | | | JGR |
| | the family | | | | 1300 nm | 1310 nm | 1550 nm | | JUN |
| Select report: | hart | | • | IL End A | | ~ | ✓ | | |
| | i i sui s | | | IL End B | | | | | |
| Graph Scale | | | | Refl. | | | | | 11 - C |
| | Step | Min. | Max. | Refl. End A | | ~ | ✓ | | Measure |
| Insertion Loss | 0.50 | 0.00 | 5.00 | Refl. End B | | × | ✓ | • | |
| Reflectance | 5.00 | -75.00 | -35.00 | 1 | | | | | December 200 |
| | | | | | | | | | Domotor: So: Domotor: So: Domotor: So: |

For example, in the illustration above, the insertion loss results will be distributed into categories of 0.5 dB in the range of 0 to 5 dB (that is, for each category, you can display the average value, the minimum value, and the maximum value).



6. Click **Refresh** to view your data.

To browse through the document:

Use the ke and ke buttons.

You can also adjust the zoom factor with the 🔍 🕞 button.

To print the document:

Use the _____ button to send it to the printer.

To export your report:

Click the **Export PDF** button.

To go back to the database browser:

Click **Close**.

Printing Labels and Reports

The MS12001 Cable Assembly Test System allows you to view and print identification labels and reports according to the displayed data and the selected template. The labels and reports can also be exported to these formats:

- ► HTML (.htm)
- ► PDF (.pdf)
- Text (.txt): Only the *tabular* reports (not labels nor reports containing graphs) provided by JGR were designed to be exported into a format that can be used in Microsoft Excel without modifications. It is your responsibility to ensure that custom reports are exported correctly.
- **Note:** The structure of the provided templates may vary without notice, from one version of the Cable Assembly Test System software to another.

To print a label or a report:

- 1. Click the **Browser** function tab.
- 2. Click the Labels button

OR

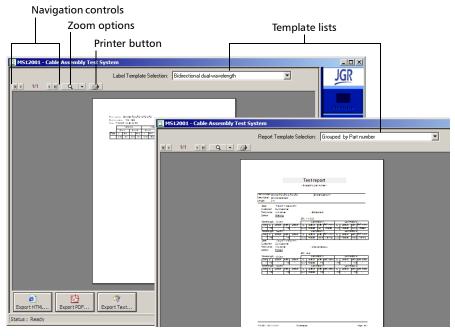
Click the **Reports** button.

| Fiber | I | L | IL Er | | IL Er | | Re | | Refl. E | | Refl. En | | About and H |
|-------------|---------|--------------------|---------|----------------|---------|---------|---------|---------|---------|----------|----------|------|-------------|
| Number | 1310 nm | 1550 nm | 1310 nm | 1550 nm | 1310 nm | 1550 nm | 1310 nm | 1550 nm | 1310 nm | 1550 nm | 1310 nm | | |
| 1 | | | 0.00 | 0.00 | 0.00 | -0.01 | | | -64.09 | -56.57 | -64.11 | 5.56 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
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| 4 | | | | | | | | | | | | | |
| • | _ | _ | _ | _ | _ | _ | | | | | | Þ | |
| • | | | | | | | | | _ | | | · | |
| • | | 10 | | 2 | 1 | _ | _ | | | <u>→</u> | | | <u>?</u> (|
| Ilter Build | | 111. Statistics | | (1) Refresh |] | _ | _ | _ | E | | Report | | ر ا |

3. Select a template.

A preview of your label or report appears.

Note: You cannot create new templates directly from this window. For more information, see Customizing Labels and Reports on page 294.



To browse through the document:

Use the kei and key buttons.

You can also adjust the zoom factor with the ____ button.

To print the document:

Use the _____ button to send it to a printer.

To export your label or report:

Click the button corresponding to the desired format.

To go back to the database browser:

Click Close.

Customizing Labels and Reports

Predefined templates are provided with your MS12001 Cable Assembly Test System. However, it is possible to tailor them to your needs by using the VSReport Designer software.

Note: No user guide is provided with the VSReport Designer software. If you need help, you will have to use the help feature directly from the software.

The various templates are grouped into .xml files according to their types:

- ► Label.xml (for labels)
- ► LabelExtended.xml (for labels that include 4 wavelengths)
- > *Chart.xml* (for reports including graphs)
- ► *Report.xml* (for reports)

Before being able to customize the templates, ensure that VSReport has been previously installed on your MS platform controller unit. For information on installation of the VSReport Designer, see *Installing the VSReport Designer Software* on page 39.

To customize a template:

- Start the VSReport Designer. On the Windows taskbar, click the Start button, select Programs > ComponentOne ActiveX Controls > VSView 7.0 > Reporting Edition > Report Designer.
- **2.** From the **VSReport Designer** main window, open the desired file. The .xml files can be found under:

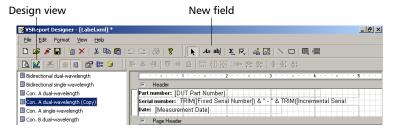
C:\Documents and Settings\All Users\JGR\MS12001\Templates

- **Note:** To quickly adapt a template to your needs, you can simply copy an existing one, rename it and modify it.
 - **3.** On the list located on the left side of the window, double-click the template to be modified.



Managing Results

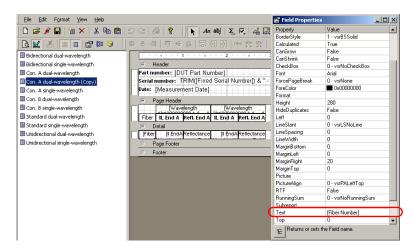
4. From the design view window, customize the template's appearance and content.



In order for the Cable Assembly Test System to automatically display the appropriate information, make sure that the new fields are inserted this way:

- 4a. Create an empty field in the appropriate section of the report.
- 4b. Select the new field, right-click it, and select Properties.
- 4c. In the Field Properties dialog box, double-click the Text property.

Once the value has been selected, type the name of the desired data field exactly as it appears in *Data Dictionary* on page 389.

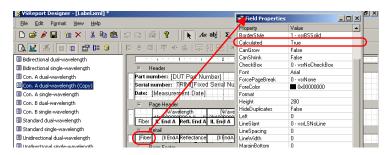


IMPORTANT

The Cable Assembly Test System will only recognize the fields that have text properties matching the names provided in the data dictionary.

4d. In the **Field Properties** dialog box, double-click the **Calculated** property to set it to *True*.

This way, the Cable Assembly Test System will recognize the new field as a data field instead of a simple text line.



5. When you are done with the changes, save your work and close VSReport Designer.

13 Backing Up and Restoring Databases

The MS12001 Cable Assembly Test System provides you with tools to help you back up your test information and results and to restore them when necessary.

U

IMPORTANT

It is impossible to append results to any database (local or network) of the MS12001 Cable Assembly Test System. For this reason, if the database you normally use becomes unavailable because of a network problem and you think of working locally, read *Configuring Database Connection* on page 70.

Backing Up Tests and Configurations

The MS12001 Cable Assembly Test System provides tools to perform backups of your databases. You can use these backups when you need to restore data. For information on data recovery, see *Restoring Tests and Configurations* on page 303.

Backups include the following elements:

- configuration (company, customers, connectors, DUT, test profiles); see Setting Up Test Profiles on page 89
- ➤ test results
- backup parameters (see procedures in this section)

Backing Up Tests and Configurations

Two types of backups are offered:

- Manual: The supervisor performs backups manually with the provided tools. For more information, see *Manual Database Backup* on page 424.
- Automatic: The system can automatically perform backups, according to the settings previously entered by the supervisor. Automatic backups can be performed once a day, once a week or once a month. By default, backups are performed weekly, on Wednesdays at 12:15 PM.

IMPORTANT

All backups have an expiration date, after which they are automatically deleted from the disk. It is your responsibility to set the number of days the system should keep backups available.

IMPORTANT

To avoid problems in case of a major crash, JGR recommends that you copy the backups to another disk regularly. Backups can be found under C:\Program Files\Microsoft SQL Server\MSSQL\Backup. This path cannot be modified from the Cable Assembly Test System.

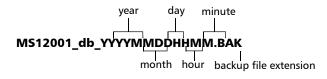
To perform a manual backup:

- 1. From the **Settings** function tab, select the **Display** tab.
- **2.** Ensure that you are in Supervisor mode.

3. In the **Keep backup for** box, enter a value for the expiration delay. You can enter any value from 1 to 9999 (days).

| User name: Iq12001b | |
|------------------------------|--|
| Password: | Every |
| Database name: IQ12001B | On the of every month About and Help |
| Restore | Start backup at: 12 : 15 (24-hr clock) |
| | Keep backup for: 5 day(s) |
| | Manual Backup |
| Update Selection Restore Now | Start Backup Now |
| History | |

- **4.** Click the **Start Backup Now** button to start the process. click **OK** to close the dialog box.
- **5.** Wait a few seconds for the process to be complete. click **Show History** to see information confirming that the backup operation was successful. For more information on operation history, see *Viewing Backup and Database Recovery History* on page 305.
- **Note:** It is useless to click the **Start Backup Now** button until the current backup is complete, since the system can perform only one backup per minute. This is related to the way the Cable Assembly Test System automatically names backup files:

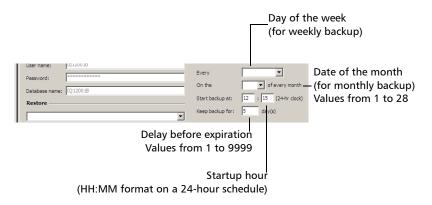


- **6.** Click **Update Selection** to add the new backup to the **Backup Selection** box.
- **Note:** If you always want to perform backups yourself, click the **On Request** button to select this backup mode. click **Apply** to save your settings.

Backing Up Tests and Configurations

To configure the system for automatic backups:

- 1. From the **Settings** function tab, select the **Display** tab.
- **2.** Ensure that you are in Supervisor mode.
- *3.* Click the button corresponding to the type of backup you need: **Daily**, **Weekly** or **Monthly**.
- **4.** Set the requested parameters. The requested parameters vary depending on the type of backup you have selected.



- **5.** Click **Apply** to save your settings.
- **Note:** Even if you have set automatic backups, you can use the **Start Backup Now** button to perform a manual backup whenever the need arises.

Restoring Tests and Configurations

The MS12001 Cable Assembly Test System allows you to restore databases from previous backups.

Note: This function requires Supervisor access level.

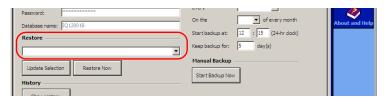


IMPORTANT

The restoring process will overwrite the current database with data from the selected backup file. You will lose all data saved between the date the backup was performed and the current date. For information on backups, see *Backing Up Tests and Configurations* on page 299.

To restore a database:

- **1.** If you are using the MS12001 Cable Assembly Test System in a multi-user environment, ensure that all the workstations (except the one you will be using to start the process) have closed the Cable Assembly Test System application before you start the operation.
- 2. From the Settings function tab, select the Display tab.
- **3.** From the **Backup Selection** box, choose which backup will be restored.



Restoring Tests and Configurations

4. Click the **Restore Now** button. click **OK** to confirm.

A message appears, giving you details about the restoring process. click **OK**. The MS12001 Cable Assembly Test System application will terminate.

- **5.** After a few minutes, restart the MS12001 Cable Assembly Test System application.
- **Note:** The time required to complete the operation may vary, depending on the amount of data being restored.
- **Note:** If the restoring process is still running, you will be notified and the application will not start.

Viewing Backup and Database Recovery History

All backup and restoring operations are logged whether the operations were successful or not. When problems occur (for example, disk full), they are also indicated.

Note: A detailed report of backup jobs executed over the last 30 days can be found under C:\Program Files\Microsoft SQL Server\MSSQL\.

| tabase Job History | | | |
|---|---------------|-----------------|----------|
| Backup database - 2003/01/15 12:15:01 - Succeeded | | | A |
| Backup database - 2003/01/08 12:15:02 - Succeeded | | | |
| Backup database - 2003/01/01 12:15:01 - Succeeded | | | |
| Backup database - 2002/12/25 12:15:01 - Succeeded | | | |
| Backup database - 2002/12/18 12:15:01 - Succeeded | | | |
| Backup database - 2002/12/12 12:15:00 - Succeeded | | | |
| Backup database - 2002/12/05 12:15:01 - Succeeded | | | |
| Backup database - 2002/11/28 12:15:00 - Succeeded | | | |
| Backup database - 2002/11/21 12:15:00 - Succeeded | | | _ |
| Backup database - 2002/11/14 12:15:00 - Succeeded | | | |
| Backup database - 2002/11/12 12:15:00 - Succeeded | | | |
| Backup database - 2002/11/11 12:15:00 - Succeeded | | | |
| Backup database - 2002/11/10 12:15:00 - Succeeded | | | |
| Backup database - 2002/11/09 12:15:00 - Succeeded | | | |
| Backup database - 2002/11/08 12:15:00 - Succeeded | | | |
| Backun database - 2002/11/07 12:15:00 - Succeeder | 1 | | |
| • | | | <u>•</u> |
| | | | |
| | | | |
| | | | |
| | Clear History | Refresh History | Close |
| | | | |

Note: This function requires Supervisor access level.

To view the backup and database recovery history:

- 1. From the Settings function tab, select the Display tab.
- 2. click **Show History** to display information.
- 3. click **Refresh History** to ensure the latest information is displayed.

To empty the contents of the history list:

From the Database Job History dialog box, click Clear History.

Note: Emptying the history list will not delete the backup files.

To exit the backup and database recovery history: Click **Close**.

14 Using the Reflectance Verification Tool

Result accuracy is influenced by the internal reflectance values of the *MS12 Loss Test Module* used in your system.

Note: This tool is intended for singlemode MS12 Loss Test Modules only.

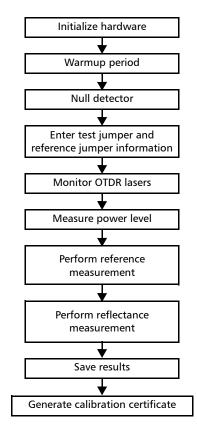
The reflectance verification tool has been designed to detect changes in reflectance, ensuring that you get the best possible results from your MS12001 Cable Assembly Test System.

The reflectance verification is accomplished by comparing the values obtained from the MS12 Loss Test Module to the values taken from the CKT-30 Reflectance Reference instrument, acting as a reference.

This tool consists of a wizard that proposes a step-by-step approach, where each step must be performed correctly before gaining access to the next step. This tool also allows you to move to a previous step if you need to perform this procedure again.

Note: Under Windows XP, for users without sufficient Write permissions to be able to access the reflectance verification tool, for example those in Restricted User mode, a Network Administrator must give them the Write permission to their accounts on C:\Documents and Settings\All Users\Application Data\JGR\MS12001 3250 Calibration.

For more information, see Setting User Permissions on page 42.



The following diagram illustrates the steps of a typical reflectance verification sequence that can be performed with the tool.

Preparing Hardware for Reflectance Testing

To perform a verification, you will need:

- ► the MS12 Loss Test Module (to be tested)
- ► a CKT-30 Reflectance Reference instrument
- > a multimode reference jumper (supplied by JGR)
- > a singlemode test jumper (supplied by JGR)



CAUTION

Never insert or remove a module while the controller or expansion unit is powered on. This will result in immediate and irreparable damage to both the module and unit.



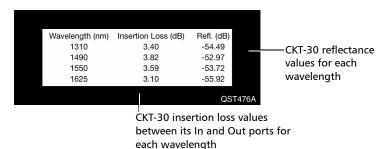
CAUTION

Handle the reference jumper and the test jumper with care. Damaged connectors may lead to incorrect readings. Preparing Hardware for Reflectance Testing

To prepare for the reflectance verification:

- **1.** Ensure that you have inserted the MS12 Loss Test Module in your system.
- **2.** Note the following information about the CKT-30 Reflectance Reference instrument, as you will need it during the verification process.
 - ► Serial number
 - ➤ Calibration date
 - ► IL and reflectance values at 1310 nm
 - ► IL and reflectance values at 1490 nm
 - ► IL and reflectance values at 1550 nm
 - ▶ IL and reflectance values at 1625 nm

All the required information can be found on a label affixed on the side panel of your CKT-30 Reflectance Reference instrument.



3. Insert the CKT-30 Reflectance Reference instrument in your system.

Starting and Exiting the Application

To start the application:

1. On the hard disk of your MS platform controller unit, find C:\Program Files\JGR\MS12001\Tools and double-click Instrument3250Calibration.exe.

Upon starting the application, a message may appear, indicating that the regional settings of your system were temporarily changed. This change consists in using a period for the decimal symbol and using the YYYY-MM-DD date format.

2. Click **OK**.

The MS12 Calibration welcome window is displayed.

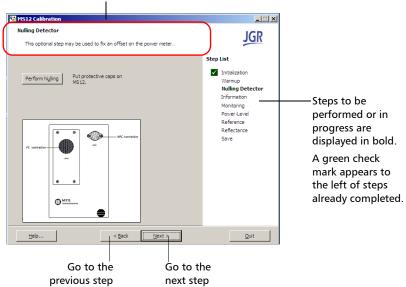


3. Click **Next** to continue.

Using the Reflectance Verification Tool

Starting and Exiting the Application

All windows in the procedure present the information using a common pattern.



Instructions guiding you through calibration process.

Closing any application that is not currently being used is a good way to free up system memory.

To close the application:

- \blacktriangleright Click \blacksquare (in the top right corner of the window).
- > Click the **Quit** button located at the bottom of the window.
- **Note:** It is possible to close the application at any step of the verification process. However, a confirmation message will be displayed, except if you have reached the last window (indicating that all steps have been successfully completed).

Initializing Hardware

Initializing Hardware

Once the required modules have been properly inserted into the system, a hardware detection is necessary before being able to perform a reflectance verification.

| 10 MS12 Calibration | |
|--|--|
| Initialization This step initializes communication with all modules. Please wait until the initialization process is complete before continuing. | JGR |
| Intelization Intelization MS12 Stot: 1 IMPORTANT The unit number must be 1 for the first 1Q5-500 controller or expansion unit, 2 for the second and so on. | Step List Initialization Warnup Nulling Detector Information Monitoring Power-Level Reference Reference Reference Save |
| Help | Quit |

To perform the initialization:

1. Fill in the fields with information about the MS12 Loss Test Module.

MPORTANT

The unit number is usually 1 for the MS platform controller unit, 2 for the first expansion unit and so on. As the expansion units are daisy chained, their positions are indicated on the unit's position display. For more information, refer to the *MS platform* platform user guide.

- **Note:** Since the MS12 Loss Test Module is a two-slot instrument, the slot position corresponds to the second slot number (for example, if the instrument takes both slots 4 and 5, the value to be entered in the **Slot** box is 5.)
 - 2. Click the Initialization button to start the process.

Using the Reflectance Verification Tool

Nulling Electrical Offsets

3. When the initialization is complete, click **Next**.





- **Note:** The timer will not automatically stop after 30 minutes. It is your responsibility to go to the next step after the warmup period is over.
 - 4. click Next to continue with the verification process.

Nulling Electrical Offsets

Temperature and humidity variations affect the performance of electronic circuits and optical detectors, which can offset measurement results. To compensate for this offset, the MS12001 is equipped with an offset nulling function.

JGR recommends performing a nulling of the electrical offsets whenever environmental conditions change.

IMPORTANT

Light must not reach the detector when nulling offsets.

This operation allows you to null the electrical offsets on the internal power meter of the MS12 Loss Test Module. A correction factor is determined and applied to any future measurement.

Note: This step is optional. To skip it, click Next.

To perform a nulling:

1. Put protective caps on the detector and output ports of the Loss Test Module.

| 10 MS12 Calibration | |
|---|--|
| Nulling Detector This optional step may be used to fix an offset on the power meter. | JGR |
| Perform Nylling Put protective caps on MS12. | Step List Initialization Warmup Nulling Detector Information Monitoring Power-i-evel Reference Reflectance Save |
| Help < Back | Quit |

2. Click the **Perform Nulling** button to start the null measurement.

When the operation is complete, click **Next**.

Entering Test Information

In order to perform a reflectance verification, you need to specify which patchcords will be used.

| | 🐝 MS12 Calibration | |
|--|--|---|
| | Information Enter information needed to calibrate the system. | JGR |
| Singlemode test jumper — supplied by JGR | Test Jumper Serial Number: 10_13 Length: 3 m | Step List Initialization Warmup Nulling Detector Information Monitoring Power-Level |
| Multimode reference jumper — supplied by JGR | Reference Jumper Serial Number: [1_234 | Reference Reflectance Save |
| Operator information | Name: Oper_12A | |
| | Help < Back | Quit |

To enter information for the reflectance verification:

- **1.** Under **Test Jumper**, enter the serial number and the length of the singlemode test jumper you will be using.
- **2.** Under **Reference Jumper**, in the **Serial Number** box, enter the serial number for the multimode reference jumper you will be using.
- 3. Under User, in the Name box enter the operator's name.
- **Note:** All parameters must be defined before going on with the verification process.
 - 4. Click Save to enter the values in the system.
 - 5. Click Next.

Monitoring Internal OTDR Lasers

Monitoring allows you to view, in real time, the values obtained for the cavity and monitor channels, according to the selected wavelength.

Note: This procedure is optional.

To monitor OTDR lasers:

1. In the Wavelength list, select the desired wavelength.

| 🔞 MS12 Calibration | |
|--|--|
| Monitoring You can test OTDR lasers. | JGR |
| OTDR Laser Wavelength : 1310 Y COFF Powermeter Cavity Channel : -94.691 Montor Channel : -2.098 | Step List Step List Warmup Nulling Detector Monitoring Power-Level Reference Reference Reference Save |
| Help | Quit |

- Note: The OFF option must be selected to be able to select a wavelength.
- **Note:** The available wavelengths correspond to the wavelengths supported by the instrument's internal OTDR.
 - 2. Select the ON option.

The cavity and monitor channel values change accordingly.

- **3.** Repeat steps 1 and 2 for all the wavelengths you want to monitor.
- 4. When you are done, select the OFF option and click Next.

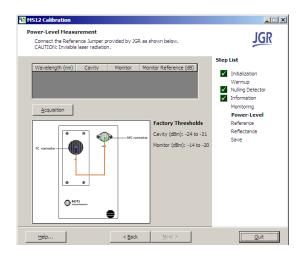
Measuring the Power Level

This procedure allows you to measure the power level of the MS12 Loss Test Module by using the multimode reference jumper.



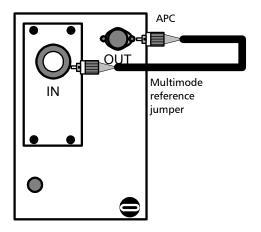
WARNING

Invisible laser radiation is emitted from the output port.



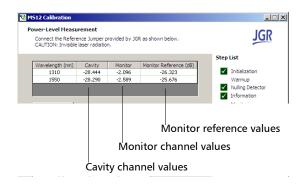
To measure the instrument's power level:

1. Connect the *FC/PC* end of the multimode reference jumper to the detector (In) port of the MS12 Loss Test Module and the *FC/APC* end to the output (Out) port as shown below.



2. Click Acquisition.

The obtained values are displayed in the **Monitor Reference (dB)** column of the result table. These values correspond to the difference between the cavity channel values and the monitor channel values.



3. Click Next.

Performing a Reference Measurement

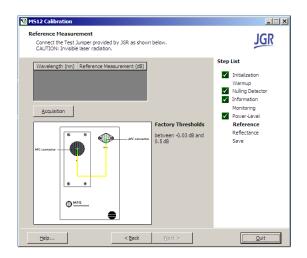
Performing a Reference Measurement

This procedure allows you to perform an IL reference measurement on the singlemode test jumper.



WARNING

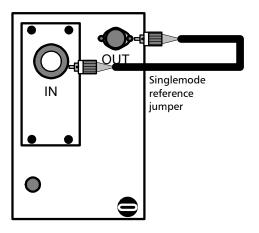
Invisible laser radiation is emitted from the output port.



Performing a Reference Measurement

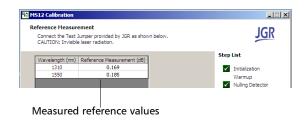
To perform a reference measurement:

1. Connect the singlemode patchcord to the detector (In) port of the MS12 Loss Test Module and to the output (Out) port as shown below.



2. Click Acquisition.

The obtained values are displayed in the **Measure (dB)** column of the result table.



3. Click Next.

Performing Reflectance Measurement

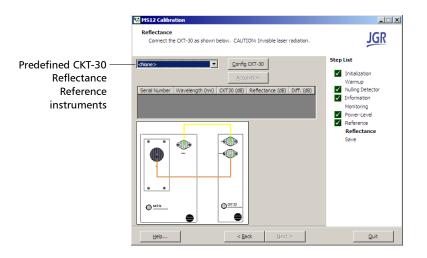
Performing Reflectance Measurement

This step allows you to perform a reflectance measurement on the MS12 Loss Test Module by using a CKT-30 Reflectance Reference instrument, the singlemode test jumper and the multimode reference jumper provided by JGR.



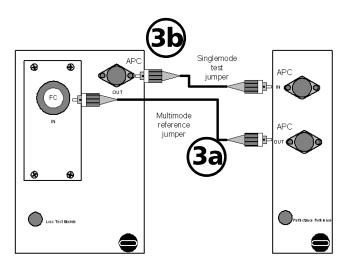
WARNING

Invisible laser radiation is emitted from the MS12 Loss Test Module's output port.



To perform a reflectance measurement:

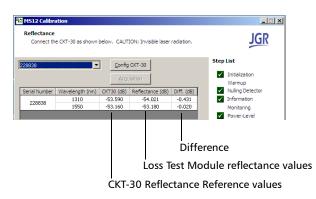
- **1.** If your CKT-30 Reflectance Reference instrument has not been configured (its serial number does not appear in the box), you must define it. For more information, see *Managing CKT-30 Configurations* on page 325.
- **2.** If necessary, select the serial number of the instrument you intend to use in the box containing the predefined CKT-30 Reflectance Reference instruments.
- **3.** Connect the patchcords:
 - **3a.** Connect the *FC/PC* end of the multimode reference jumper to the detector (In) port of the Loss Test Module and the *FC/APC* end to the output (Out) port of the CKT-30 Reflectance Reference instrument.
 - **3b.** Connect the singlemode test jumper to the output (Out) port of the Loss Test Module and to the input (In) port of the CKT-30 Reflectance Reference instrument.



Performing Reflectance Measurement

4. Click Acquisition.

The obtained values correspond to the difference between the reflectance values of the CKT-30 Reflectance Reference and Loss Test Module reflectance values.



5. Click Next.

IMPORTANT

Your MS12 Loss Test Module is within published specifications if

obtained difference $\leq 0.5 \text{ dB}$

otherwise, please contact JGR (see *Contacting the Technical Support Group* on page 345).

Managing CKT-30 Configurations

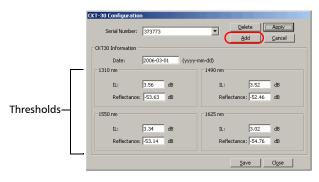
The MS12001 Cable Assembly Test System allows you to define thresholds for your CKT-30 instruments. You can create new configurations, modify existing ones or delete them.

To add a new CKT-30 configuration:

1. From the reflectance measurement step, click the **Config CKT-30** button.



2. In the **CKT-30 Configuration** dialog box, click the **Add** button to create a new configuration.



- 3. In the Serial Number box, enter the CKT-30 serial number.
- 4. Enter the required information in the appropriate boxes.

Note: If you have not previously taken note of the different values, you can find all the required information on the label affixed on the side panel of your CKT-30 Reflectance Reference instrument. Since the CKT-30 Reflectance Reference is a special instrument, you can remove it from the system without turning the MS platform controller or expansion unit off.

Managing CKT-30 Configurations

5. Click **Apply** to confirm your changes.

IMPORTANT

If you omit to click the Save button, all the changes you have made will be lost.

6. Click **Save** to save all the changes that you have made (to one or more configurations).

Clicking **Close** discards the changes and returns you to the main window.

To modify an existing CKT-30 configuration:

- **1.** From the reflectance measurement step, click the **Config CKT-30** button.
- **2.** From the **Serial Number** box, select the serial number of the CKT-30 instrument for which you want to modify the configuration.

| CKT-30 Configuration | |
|-------------------------------|--------------------|
| Serial Number: 373773 | Delete Apply |
| 0,0,75 | Add <u>C</u> ancel |
| CKT30 Information | |
| Date: 2006-03-01 (yyyy-mm-dd) | |

- **3.** Enter the required information in the appropriate boxes.
- 4. Click Apply to confirm your changes.



IMPORTANT

If you omit to click the Save button, all the changes you have made will be lost.

5. Click **Save** to save all the changes that you have made (to one or more configurations).

Clicking **Close** discards the changes and returns you to the main window.

To delete a CKT-30 configuration:

- **1.** From the reflectance measurement step, click the **Config CKT-30** button.
- **2.** From the **Serial Number** box, select the serial number of the CKT-30 instrument for which you want to delete the configuration.





IMPORTANT

If you omit to click the Save button, all the changes you have made will be lost.

3. Click **Save** to save all the changes that you have made (to one or more configurations).

Clicking **Close** discards the changes and returns you to the main window.

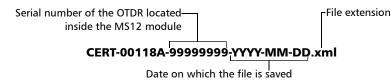
Managing the Verification Results

➤ Once the verification is complete, you can save the reflectance verification results for future use. The results are saved to a .*MDB* file, which is the standard Microsoft Access database format.

The default name for the database file corresponds to the serial number of the OTDR located inside the MS12 Loss Test Module, but you can change it to a name of your choice.

 Once you have saved the results, you can also generate an official calibration certificate with the status of the verification.
 This certificate is issued in .xml format, and it can be opened directly with Microsoft Excel.

The application automatically names certificate files as follows:



All the calibration certificates that you create are saved in the *C:\Documents and Settings\All Users\Application Data\JGR\MS12001* 3250 Calibration folder.

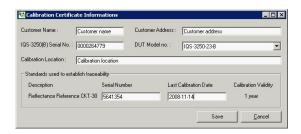
Managing the Verification Results

To manage the results:

1. Click **Save Report.** This will save the reflectance verification results to a database and enable you to generate a calibration certificate if desired.



- **2.** If you want to generate a calibration certificate with the status of the verification, proceed as follows:
 - 2a. Click Reflectance Certification.
 - **2b.** Enter the information or modify it as required.



- **Note:** Customer name and address, as well as calibration location are not mandatory, which means you can leave the corresponding boxes blank if you prefer.
- **Note:** A calibration is valid for a period of one year. If you modify the calibration date, ensure that it is less than one year from the current date and that it is presented in the YYYY-MM-DD format.

IMPORTANT

If you create more than one calibration certificate per day for a specific module (that is, with the exact same serial number), only the most recent certificate will be available.

2c. Click Save.

The new calibration certificate is saved automatically.

Viewing Test Results

Databases generated with this verification tool can be opened with Microsoft Access. JGR provides a sample report that you can generate with the reflectance verification data.

To view this report:

- **1.** Using Access, open the desired database.
- 2. Under **Reports** (located on the left of the main window), double-click **Report Calibration**.
- **Note:** This report can be tailored to your needs by toggling to design mode in Access.

15 Maintenance

To help ensure long, trouble-free operation:

- Always inspect fiber-optic connectors before using them and clean them if necessary.
- ► Keep the unit free of dust.
- Clean the unit casing and front panel with a cloth slightly dampened with water.
- Store unit at room temperature in a clean and dry area. Keep the unit out of direct sunlight.
- > Avoid high humidity or significant temperature fluctuations.
- > Avoid unnecessary shocks and vibrations.
- If any liquids are spilled on or into the unit, turn off the power immediately, disconnect from any external power source, remove the batteries and let the unit dry completely.



WARNING

Use of controls, adjustments, and procedures for operation and maintenance other than those specified herein may result in hazardous radiation exposure.

Cleaning Fixed Connectors

Regular cleaning of connectors will help maintain optimum performance. *Do not try to disassemble the unit. Doing so would break the connector.*

To clean fixed connectors:

- **1.** Fold a lint-free wiping cloth in four to form a square.
- **2.** Moisten the center of the lint-free wiping cloth with *only one drop* of isopropyl alcohol.

IMPORTANT

Alcohol may leave traces if used abundantly. Avoid contact between the tip of the bottle and the wiping cloth, and do not use bottles that distribute too much alcohol at a time.

3. Gently wipe the connector threads three times with the folded and moistened section of the wiping cloth.

IMPORTANT

Isopropyl alcohol takes approximately ten seconds to evaporate. Since isopropyl alcohol is not absolutely pure, evaporation will leave microscopic residue. Make sure you dry the surfaces before evaporation occurs.

- **4.** With a dry lint-free wiping cloth, gently wipe the same surfaces three times with a rotating movement.
- **5.** Throw out the wiping cloths after one use.

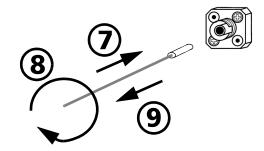
6. Moisten a cleaning tip (2.5 mm tip) with *only one drop* of isopropyl alcohol.



MPORTANT

Alcohol may leave traces if used abundantly. Avoid contact between the tip of the bottle and the cleaning tip, and do not use bottles that distribute too much alcohol at a time.

7. Slowly insert the cleaning tip into the connector until it reaches the ferrule inside (a slow clockwise rotating movement may help).



- **8.** Gently turn the cleaning tip one full turn.
- **9.** Continue to turn as you withdraw the cleaning tip.
- **10.** Repeat steps 7 to 9, but this time with a dry cleaning tip (2.5 mm tip provided by JGR).
- **Note:** Make sure you don't touch the soft end of the cleaning tip and verify the cleanliness of the cotton tip.
 - **11.** Throw out the cleaning tips after one use.

Cleaning UI Connectors

Regular cleaning of UI connectors will help maintain optimum performance. There is no need to disassemble the unit.

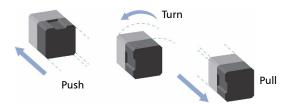
lf a

IMPORTANT

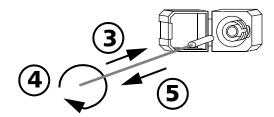
If any damage occurs to internal connectors, the module casing will have to be opened and a new calibration will be required.

To clean UI connectors:

1. Remove the UI from the instrument to expose the connector baseplate and ferrule.



- **2.** Moisten a 2.5 mm cleaning tip with *one drop* of isopropyl alcohol (alcohol may leave traces if used abundantly).
- **3.** Slowly insert the cleaning tip into the UI adapter until it comes out on the other side (a slow clockwise rotating movement may help).



4. Gently turn the cleaning tip one full turn, then continue to turn as you withdraw it.

5. Repeat steps 3 to 4 with a dry cleaning tip.

Note: Make sure you don't touch the soft end of the cleaning tip.

- **6.** Clean the ferrule in the connector port as follows:
 - 6a. Deposit one drop of isopropyl alcohol on a lint-free wiping cloth.



IMPORTANT

Isopropyl alcohol may leave residues if used abundantly or left to evaporate (about 10 seconds).

Avoid contact between the tip of the bottle and the wiping cloth, and dry the surface quickly.

- **6b.** Gently wipe the connector and ferrule.
- **6c.** With a dry lint-free wiping cloth, gently wipe the same surfaces to ensure that the connector and ferrule are perfectly dry.
- *6d.* Verify connector surface with a portable fiber-optic microscope or inspection probe.



WARNING

Verifying the surface of the connector WHILE THE UNIT IS ACTIVE WILL result in permanent eye damage.

- 7. Put the UI back onto the instrument (push and turn clockwise).
- **8.** Throw out cleaning tips and wiping cloths after one use.

Cleaning Detector Ports

Regular cleaning of detectors will help maintain measurement accuracy.



IMPORTANT

Always cover detectors with protective caps when unit is not in use.

To clean detector ports:

- **1.** Remove the protective cap and adapter (FOA) from the detector.
- 2. If the detector is dusty, blow dry with compressed air.
- **3.** Being careful not to touch the soft end of the swab, moisten a cleaning tip with *only one drop* of isopropyl alcohol.



IMPORTANT

Alcohol may leave traces if used abundantly. Do not use bottles that distribute too much alcohol at a time.

- **4.** While applying light pressure (to avoid breaking the detector window), gently rotate the cleaning tip on the detector window.
- 5. Repeat step 4 with a dry cleaning tip or blow dry with compressed air.
- **6.** Discard the cleaning tips after one use.

Recalibrating the Unit

Manufacturing and service center calibrations are based on the ISO/IEC 17025 Standard, which states that calibration documents must not contain a recommended calibration interval, unless this has been previously agreed upon with the customer.

Validity of specifications depends on operating conditions. For example, the calibration validity period can be longer or shorter depending on the intensity of use, environmental conditions and unit maintenance. You should determine the adequate calibration interval for your unit according to your accuracy requirements.

Under normal use, JGR recommends calibrating your unit every year.

Recycling and Disposal (Applies to European Union Only)



Recycle or dispose of your product (including electric and electronic accessories) properly, in accordance with local regulations. Do not dispose of it in ordinary garbage receptacles.

This equipment was sold after August 13, 2005 (as identified by the black rectangle).

- ➤ Unless otherwise noted in a separate agreement between JGR and a customer, distributor, or commercial partner, JGR will cover costs related to the collection, treatment, recovery, and disposal of end-of-lifecycle waste generated by electronic equipment introduced after August 13, 2005 to an European Union member state with legislation regarding Directive 2002/96/EC.
- Except for reasons of safety or environmental benefit, equipment manufactured by JGR, under its brand name, is generally designed to facilitate dismantling and reclamation.

16 Troubleshooting

Solving Common Problems

Before calling JGR's technical support, you may want to consider the following solutions to problems that could occur.

| Problem | Possible Cause | Solution |
|--|--|--|
| My network database is not accessible. | Network is down. Access rights for the folder containing the database have been modified. | Solve the network problem and try again. Work locally. If you choose to work on a local database, to avoid problems, read <i>Configuring Database</i> <i>Connection</i> on page 70. |
| The results differ from the expected values. | Connectors or fibers are dirty. Fibers are not properly connected. | See Cleaning and Connecting Optical Fibers on page 106. See Maintenance on page 333. Consult the sections concerning your particular test type. |

Troubleshooting

Solving Common Problems

| Problem | Possible Cause | Solution |
|--|--|--|
| Heavy losses can be noticed. | Connectors do not match. Fibers are not properly connected. In two RM configuration, the RMs may be connected to the wrong Input ports on the RM switch. | See Cleaning and Connecting Optical Fibers on page 106. See Connecting Two RMs and the RM Switch on page 25. |
| During reference or measurement, the application displays a message indicating that power is too low. | In most cases, fibers are not properly connected. However, if you are testing in multimode, reflectance only, and you cannot connect your DUT to the detector, it is normal that you receive this message. In this case, you can simply go on with the test. | |
| During reference or measurement, the application displays a message asking to verify if the loss module selected is available, and that the loss module and the reflectance module are from the same MS12 module. | The loss module may already be used by another application, such as the MS Manager, LabView, or Microsoft Visual Basic. | Free the loss module from the other application. For example, use the instrument control configuration utility from the MS Manager to set platform startup to local. |

Troubleshooting

Solving Common Problems

| Problem | Possible Cause | Solution |
|--|---|--|
| During reference or measurement, the application displays a message indicating that testing at two RMs cannot be performed. | The RM configuration may be wrong. The test wavelengths set for the test may not be available from the RMs included in the system. | Verify that the setting for testing with two RMs is activated. See Setting Single or Multiple RM Configuration on page 54. Varify the test |
| | The number of ports available on the DUT switch may be insufficient. | Verify the test wavelengths provided by the one or two RMs, as well as those that are configured for the selected test. |
| | | Verify that the right switch is being used for testing the DUTs. See Automatic Switch Configuration on page 60. |
| | | Verify that the DUT switch provides the appropriate number of ports. Remember that when testing in high-throughput configuration, the switch must provide twice the number of ports than the number of DUTs to test. See Activating/Deactivat ing Switch Ports on page 130. |

Viewing Online Documentation

An online version of the MS12001 Cable Assembly Test System user guide is conveniently available at all times from the application.

To access the online user guide:

- **1.** Click the **About and Help** function tab.
- 2. Click Help.

| Technical Supp | port 🔇 System Information | and Help | Settings |
|------------------------|---------------------------|----------|----------------|
| Installed kit version: | 3.2.0.190 | • | About and Help |
| Application version: | 4.0.0.0 | Help | |
| Workstation ID: | MS05P | | |
| Database version: | 1.2.0.14 | | |
| | | | |
| | | | Pelo Exit |

Contacting the Technical Support Group

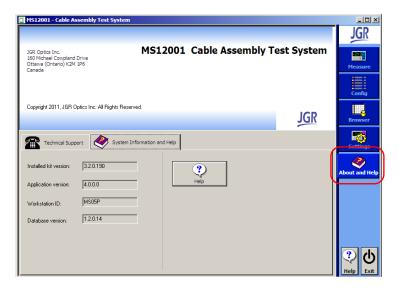
All inquiries regarding service, calibration and technical assistance should be directed to the Customer Service department:

JGR Optics

160 Michael Cowpland Drive Ottawa (Ontario) K2M 1P6 Tel: 613-599-1000 Fax: 613-599-1099 Tel.: 1 613 599-1000 Fax: 1 613 599-1099 info@jgroptics.com

To accelerate the process, please have information such as the name and the serial number (see the product identification label), as well as a description of your problem, close at hand.

You may also be requested to provide software and module version numbers. This information, as well as technical support contact information, can be found in the **About and Help** function tab.



Transportation

- ➤ Select the **Technical Support** tab to view phone numbers and active Internet links to JGR's Technical Support Group. Use these links to send an information request by email or to access JGR's web site.
- Select the Module Information tab to view the module identification, serial number and firmware version.

Transportation

Maintain a temperature range within specifications when transporting the unit. Transportation damage can occur from improper handling. The following steps are recommended to minimize the possibility of damage:

- > Pack the unit in its original packing material when shipping.
- > Avoid high humidity or large temperature fluctuations.
- ► Keep the unit out of direct sunlight.
- > Avoid unnecessary shocks and vibrations.

SCPI Command Reference

IMPORTANT

Since the MS controllers and expansion units can house many instruments, you must explicitly specify which instrument you want to remotely control in your MS12001 system.

You must add the following mnemonic *at the beginning of any command or query* that you send to an instrument within the MS12001 system:

LINStrument<LogicalIndex>:

where <*LogicalIndex*> corresponds to the identification number of the MS12001. Typically, this logical index is *12001* (as returned by the :*INSTrument:CATalog:FULL?* query, described in the MS platform user guide).

- **Note:** For information about the data types (for input and output), refer to the MS plaftorm user guide.
- **Note:** For information on how to send commands or queries to instruments that are not part of the MS12001 system, refer to your platform user guide.

| | | Com | mand | | Parameter(s) | Р. |
|-----------|-------------|----------|------|--|---------------------------|-----|
| CONFigure | LM | CHANnel | | | <channel></channel> | 349 |
| | | CHANnel? | | | | 350 |
| | POWer | LEVel | | | <powerlevel></powerlevel> | 351 |
| | WAVelength | | | | <wavelength></wavelength> | 352 |
| | WAVelength? | | | | | 353 |
| DEFine | LM | GROup? | | | | 354 |
| | | GROup | ADD | | <lmposition></lmposition> | 355 |

Quick Reference Command Tree

SCPI Command Reference

Quick Reference Command Tree

| Command | | | Parameter(s) | Р. | | |
|------------|------------|--------------|--------------|----|--|-----|
| | RM | GROup? | | | | 356 |
| | | GROup | ADD | | <rmposition></rmposition> | 357 |
| DELete | LM | GROup | | | | 358 |
| | RM | GROup | | | | 359 |
| FETCh | POWer | LEVel? | | | | 360 |
| INITialize | | | | | | 361 |
| LM | SELect | | | | <lmserialnumber></lmserialnumber> | 362 |
| | SELect? | | | | | 363 |
| MEASure | POWer | LEVel | | | | 364 |
| READ | COMPonent | POSition? | | | <mtj1ll>,<mtj1length></mtj1length></mtj1ll> | 365 |
| | IL? | | | | | 366 |
| | INTermal | REFLectance? | | | <il></il> | 367 |
| | LENGth? | | | | <1L> | 368 |
| | ММ | REFLectance? | | | | 370 |
| | SM | REFLectance? | | | <il>,<length></length></il> | 373 |
| RM | SELect | | | | <rmserialnumber></rmserialnumber> | 375 |
| | SELect? | | | | | 376 |
| | SNUMber? | | | | <wavelength></wavelength> | 377 |
| | WAVelength | LIST? | | | | 378 |
| STATus? | | | | | | 379 |
| WAVelength | LIST? | | | | | 380 |

Product-Specific Commands—Description

| | :CONFigure:LM:CHANnel |
|--------------|--|
| Description | This command specifies the channel number of the LM that is currently selected (from the group of MS12-PM01 modules). |
| Syntax | :CONFigure:LM:CHANnel <wsp><channel></channel></wsp> |
| Parameter(s) | Channel: |
| | The program data syntax for <channel> is defined as a <decimal numeric="" program<br="">DATA> element.</decimal></channel> |
| | Corresponds to the channel number of the LM module that is currently selected (from the group of MS12-PM01 modules). By default, this value is set to 1, which corresponds to the measurement channel of an LM that is part of an MS12 module. |

SCPI Command Reference

Product-Specific Commands—Description

| | :CONFigure:LM:CHANnel? |
|-----------------|--|
| Description | This query returns the channel number of the LM that is currently selected (from the group of MS12-PM01 modules). |
| Syntax | :CONFigure:LM:CHANnel? |
| Parameter(s) | None |
| Response Syntax | <channel></channel> |
| Response(s) | Channel: |
| | The response data syntax for <channel> is defined as a <nr1 data="" numeric="" response=""> element.</nr1></channel> |
| | Returns the channel number of the LM that is currently selected (from the group of MS12-PM01 modules). |

Product-Specific Commands—Description

| | :CONFigure:POWer:LEVel |
|--------------|---|
| Description | This command specifies the new power level coefficient that will be associated with the RM that is currently selected (from the group of MS12 modules) and with the LM that is currently selected (from the group of MS12-PM01 modules), for the wavelength that is currently selected. |
| Syntax | :CONFigure:POWer:LEVel <wsp><powerlevel ></powerlevel </wsp> |
| Parameter(s) | PowerLevel: |
| | The program data syntax for <powerlevel> is defined as a <decimal numeric="" program<br="">DATA> element.</decimal></powerlevel> |
| | Represents the new power level coefficient corresponding to the RM and LM that are currently selected, for the current wavelength. |

SCPI Command Reference

Product-Specific Commands—Description

| | :CONFigure:WAVelength |
|--------------|--|
| Description | This command specifies the wavelength, in meters (m), for the RM that is currently selected (from the group of MS12 modules). |
| Syntax | :CONFigure:WAVelength <wsp><wavelength></wavelength></wsp> |
| Parameter(s) | Wavelength: |
| | The program data syntax for <wavelength> is defined as a <nondecimal numeric<br="">PROGRAM DATA> element.</nondecimal></wavelength> |
| | Corresponds to the wavelength, in meters (m), for the RM that is currently selected. |

| | :CONFigure:WAVelength? |
|-----------------|---|
| Description | This query returns the current wavelength, in meters (m), for the RM that is currently selected (from the group of MS12 modules). |
| Syntax | :CONFigure:WAVelength? |
| Parameter(s) | None |
| Response Syntax | <wavelength></wavelength> |
| Response(s) | Wavelength: |
| | The response data syntax for <wavelength> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></wavelength> |
| | Returns the current wavelength, in meters (m), for the RM that is currently selected (from the group of MS12 modules). |

Product-Specific Commands—Description

| | :DEFine:LM:GROup? |
|-----------------|--|
| Description | This query returns a list of the serial numbers of all LM modules that are part of the MS12-PM01 modules group. |
| Syntax | :DEFine:LM:GROup? |
| Parameter(s) | None |
| Response Syntax | <lmserialnumberlist></lmserialnumberlist> |
| Response(s) | LmSerialNumberList: |
| | The response data syntax for <lmserialnumberlist> is defined as a <definite arbitrary="" block<br="" length="">RESPONSE DATA> element.</definite></lmserialnumberlist> |
| | Returns a list of the serial numbers of all LM modules that are part of the MS12-PM01 module group. |

| :DEFine:LM:GROup:ADD |
|---|
| This command adds an LM to the group of MS12-PM01 modules. This group will be taken into account during the initialization. |
| :DEFine:LM:GROup:ADD <wsp><lmposition></lmposition></wsp> |
| LmPosition: |
| The program data syntax for <lmposition> is defined as a <string data="" program=""> element.</string></lmposition> |
| Corresponds to the unit and slot number of the LM. Always begin with 0.0 |
| DEF:LM:GROU:ADD 0.0.1.0 |
| |

Product-Specific Commands—Description

| | :DEFine:RM:GROup? |
|-----------------|--|
| Description | This query returns a list of the serial numbers of all RM modules that are part of the group of MS12 modules. |
| Syntax | :DEFine:RM:GROup? |
| Parameter(s) | None |
| Response Syntax | <rmserialnumberlist></rmserialnumberlist> |
| Response(s) | RmSerialNumberList: |
| | The response data syntax for <rmserialnumberlist> is defined as a <definite arbitrary="" block<br="" length="">RESPONSE DATA> element.</definite></rmserialnumberlist> |
| | Returns a list of the serial numbers of all RM modules that are part of the MS12 module group. |

| | :DEFine:RM:GROup:ADD |
|--------------|---|
| Description | This command adds an RM to the group of MS12 modules. This group will be taken into account during the initialization. The LM module that is part of the MS12 will be added to the configuration of the system automatically. |
| Syntax | :DEFine:RM:GROup:ADD <wsp><rmposition></rmposition></wsp> |
| Parameter(s) | RmPosition: |
| | The program data syntax for <rmposition> is defined as a <string data="" program=""> element.</string></rmposition> |
| | Corresponds to the unit and slot number of the RM. Always begin with 0.0 |
| Example(s) | DEF:RM:GROU:ADD 0.0.1.1 |

Product-Specific Commands—Description

| | :DELete:LM:GROup |
|--------------|--|
| Description | This command deletes the group of MS12-PM01 modules. |
| Syntax | :DELete:LM:GROup |
| Parameter(s) | None |

| | :DELete:RM:GROup |
|--------------|---|
| Description | This command deletes the group of MS12 modules. |
| Syntax | :DELete:RM:GROup |
| Parameter(s) | None |

| | :FETCh:POWer:LEVel? |
|-----------------|--|
| Description | This query returns the power level coefficient that is associated with the RM that is currently selected (from the group of MS12 modules) and with the LM that is currently selected (from the group of MS12-PM01 modules), for the current wavelength. |
| Syntax | :FETCh:POWer:LEVel? |
| Parameter(s) | None |
| Response Syntax | <powerlevel></powerlevel> |
| Response(s) | PowerLevel: |
| | The response data syntax for <powerlevel> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></powerlevel> |
| | Returns the power level coefficient that is associated with the RM and LM that are currently selected, for the current wavelength. |

| | :INITialize |
|--------------|--|
| Description | This command starts the initialization of the modules that are associated with the system configuration. This operation is asynchronous because the initialization of all the modules (from the MS12 and MS12-PM01 groups) takes a few minutes. You should ensure that the status of the instrument switches from BUSY to READY, using the STATus? query. |
| Syntax | :INITialize |
| Parameter(s) | None |

Product-Specific Commands—Description

:LM:SELect

| Description | This command selects an LM (from the group of MS12-PM01 modules) using its serial number. |
|--------------|---|
| Syntax | :LM:SELect <wsp><lmserialnumber></lmserialnumber></wsp> |
| Parameter(s) | LmSerialNumber: |
| | The program data syntax for <lmserialnumber> is defined as a <string PROGRAM DATA> element.</string </lmserialnumber> |
| | Corresponds to the serial number of the LM that will be selected (from the group of MS12-PM01 modules). |

| | :LM:SELect? |
|-----------------|---|
| Description | This query returns the serial number of the LM that is currently selected (from the group of MS12-PM01 modules). |
| Syntax | :LM:SELect? |
| Parameter(s) | None |
| Response Syntax | <lmserialnumber></lmserialnumber> |
| Response(s) | LmSerialNumber: |
| | The response data syntax for <lmserialnumber> is defined as a <string RESPONSE DATA> element.</string </lmserialnumber> |
| | Returns the serial number of the LM that is currently selected (from the group of MS12-PM01 modules). |

Product-Specific Commands—Description

:MEASure:POWer:LEVel

| Description | This command determines the power level coefficient and configures it automatically. This coefficient will be used only when performing IL measurements on singlemode fibers. The measurement will be performed according to the selected RM (from the MS12 module group) and the selected LM (from the MS12-PM01 module group), at the selected wavelength. Important: You must connect the RM directly to the LM and use a special fiber to perform the measurement. |
|--------------|--|
| Syntax | :MEASure:POWer:LEVel |
| Parameter(s) | None |

| | :READ:COMPonent:POSition? |
|------------------------|--|
| Description | This command calculates the distance between the A connector and the component position, identified as C point. This service is only applicable when doing component testing measurements. |
| Syntax | :READ:COMPonent:POSition? <wsp><mtj1ll>,< Mtj1Length></mtj1ll></wsp> |
| Parameter(s) | ► <i>Mtj11l</i> : |
| | The program data syntax for <mtj1ll> is defined as a <decimal data="" numeric="" program=""> element.</decimal></mtj1ll> |
| | Corresponds to the insertion loss (IL) of the Master Test Jumper 1 (MTJ1), in decibels (dB). |
| | ► Mtj1Length: |
| | The program data syntax for <mtj1length> is defined as a <decimal numeric="" program<br="">DATA> element.</decimal></mtj1length> |
| | Corresponds to the length of the Master Test Jumper 1 (MTJ1), in meters (m). |
| Response Syntax | <length></length> |
| Response(s) | Length: |
| | The response data syntax for <length> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></length> |
| | Returns the distance between the A connector and the compenent under test, in meters (m). |

Product-Specific Commands—Description

:READ:IL?

| Description | This command measures the insertion loss (IL) of singlemode or multimode fibers. The measurement will be performed according to the selected RM (from the MS12 module group) and the selected LM (from the MS12-PM01 module group), at the selected wavelength. When the measurements are performed on singlemode fibers, the power level coefficient will also be taken into account. |
|------------------------|--|
| Syntax | :READ:IL? |
| Parameter(s) | None |
| Response Syntax | <il></il> |
| Response(s) | <i>IL:</i> The response data syntax for <il> is defined as a <nr3 data="" numeric="" response=""> element. Returns the insertion loss value, in decibels (dB).</nr3></il> |

| | :READ:INTermal:REFLectance? |
|-----------------|---|
| Description | This query returns the internal reflectance value of the module. This value will be taken into account when performing reflectance measurements on multimode fibers. |
| Syntax | :READ:INTermal:REFLectance? <wsp><il></il></wsp> |
| Parameter(s) | <i>IL:</i> The program data syntax for <il> is defined as a <decimal data="" numeric="" program=""> element.</decimal></il> |
| | Corresponds to the insertion loss (IL), in decibels (dB). |
| Response Syntax | <reflectance></reflectance> |
| Response(s) | <i>Reflectance:</i> The response data syntax for <reflectance> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></reflectance> |
| | Returns the internal reflectance value of the module for a multimode fiber. |

Product-Specific Commands—Description

| | :READ:LENGth? |
|-----------------|--|
| Description | This command measures the fiber length between the RM and LM. The measurement will be performed according to the selected RM (from the group of MS12 modules) and LM (from the group of MS12-PM01 modules), at the selected wavelength. |
| Syntax | :READ:LENGth? <wsp><il></il></wsp> |
| Parameter(s) | IL: |
| | The program data syntax for <il> is defined as a <decimal data="" numeric="" program=""> element.</decimal></il> |
| | Corresponds to the insertion loss (IL), in decibels (dB). |
| Response Syntax | <length></length> |
| Response(s) | Length: |
| | The response data syntax for <length> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></length> |
| | Returns the length, in meters (m). |

Product-Specific Commands—Description

| | :READ:MM:REFLectance? |
|-------------|--|
| Description | This command measures the reflectance on a multimode fiber. The measurement will be performed according to the selected RM (from the group of MS12 modules) and LM (from the group of MS12-PM01 modules), at the selected wavelength. |
| Syntax | :READ:MM:REFLectance? <wsp><il>,<internal Reflectance>,<length></length></internal </il></wsp> |

| | :READ:MM:REFLectance? |
|-----------------|--|
| Parameter(s) | ► 1L: |
| | The program data syntax for <il> is defined as a <decimal data="" numeric="" program=""> element.</decimal></il> |
| | Corresponds to the insertion loss (IL), in decibels (dB). |
| | ► InternalReflectance: |
| | The program data syntax for <internalreflectance> is defined as a <decimal data="" numeric="" program=""> element.</decimal></internalreflectance> |
| | Corresponds to the internal reflectance value of the module that was determined using the READ:INTernal:REFLectance? query during the configuration process. This value is expressed in decibels (dB). |
| | ► Length: |
| | The program data syntax for <length> is defined as a <decimal numeric="" program<br="">DATA> element.</decimal></length> |
| | Corresponds to the distance, in meters (m), at which you want to perform the reflectance measurement. |
| Response Syntax | <reflectance></reflectance> |

Product-Specific Commands—Description

| | :READ:MM:REFLectance? |
|-------------|--|
| Response(s) | Reflectance: |
| | The response data syntax for <reflectance> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></reflectance> |
| | Returns the reflectance value on the multimode fiber, in decibels (dB). |

| | :READ:SM:REFLectance? |
|-------------|---|
| Description | This command measures the reflectance on a singlemode fiber. The measurement will be performed according to the selected RM (from the group of MS12 modules) and LM (from the group of MS12-PM01 modules), at the selected wavelength. |
| Syntax | :READ:SM:REFLectance? <wsp><il>,<length ></length </il></wsp> |

| | :READ:SM:REFLectance? |
|-----------------|---|
| Parameter(s) | ► 1L: |
| | The program data syntax for <il> is defined as a <decimal data="" numeric="" program=""> element.</decimal></il> |
| | Corresponds to the insertion loss (IL), in decibels (dB). |
| | ► Length: |
| | The program data syntax for <length> is defined as a <decimal numeric="" program<br="">DATA> element.</decimal></length> |
| | Corresponds to thedistence, in meters (m), at which you want to perform the reflectance measurement. |
| Response Syntax | <reflectance></reflectance> |
| Response(s) | Reflectance: |
| | The response data syntax for <reflectance> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></reflectance> |
| | Returns the reflectance value on the singlemode fiber at the desired distance. The value is expressed in decibels (dB). |

| | :RM:SELect |
|--------------|---|
| Description | This command selects an RM (from the group of MS12 modules), using its serial number. |
| Syntax | :RM:SELect <wsp><rmserialnumber></rmserialnumber></wsp> |
| Parameter(s) | RmSerialNumber: |
| | The program data syntax for <rmserialnumber> is defined as a <string PROGRAM DATA> element.</string </rmserialnumber> |
| | Corresponds to the serial number of the RM that will be selected (from the group of MS12 modules). |

| | :RM:SELect? |
|-----------------|---|
| Description | This query returns the serial number of the RM that is currently selected (from the group of MS12 modules). |
| Syntax | :RM:SELect? |
| Parameter(s) | None |
| Response Syntax | <rmserialnumber></rmserialnumber> |
| Response(s) | RmSerialNumber: |
| | The response data syntax for <rmserialnumber> is defined as a <string RESPONSE DATA> element.</string </rmserialnumber> |
| | Returns the serial number of the RM that is currently selected. |

| | :RM:SNUMber? |
|-----------------|--|
| Description | This query returns the serial number of the RM whose wavelength corresponds to the wavelength that is passed as a parameter. |
| Syntax | :RM:SNUMber? <wsp><wavelength></wavelength></wsp> |
| Parameter(s) | Wavelength: |
| | The program data syntax for <wavelength> is defined as a <nondecimal numeric<br="">PROGRAM DATA> element.</nondecimal></wavelength> |
| | Corresponds to the wavelength, in meters (m). |
| Response Syntax | <rmserialnumber></rmserialnumber> |
| Response(s) | RmSerialNumber: |
| | The response data syntax for <rmserialnumber> is defined as a <string RESPONSE DATA> element.</string </rmserialnumber> |
| | Returns the serial number of the RM. |

Product-Specific Commands—Description

| | :RM:WAVelength:LIST? |
|-----------------|---|
| Description | This query returns a list of wavelengths at which the instrument will be able to perform a measurement, according to the RM module that is currently selected. |
| Syntax | :RM:WAVelength:LIST? |
| Parameter(s) | None |
| Response Syntax | <wavelengths></wavelengths> |
| Response(s) | Wavelengths: |
| | The response data syntax for <wavelengths> is defined as a <nr3 data="" numeric="" response=""> element.</nr3></wavelengths> |
| | Returns a list of the wavelengths at which the instrument will be able to perform measurements according to the currently selected RM. |

| | :STATus? |
|-----------------|--|
| Description | This query returns a value indicating the status of the switch (READY, BUSY, etc.). This command is an event and has no associated *RST condition or query form. |
| Syntax | :STATus? |
| Parameter(s) | None |
| Response Syntax | <status></status> |
| Response(s) | Status: |
| | The response data syntax for <status> is defined as a <character data="" response=""> element.</character></status> |
| | The <status> response represents the module state, where:</status> |
| | UNINITIALIZED, means the module is not initialized. INITINPROGRESS, means the module initialization is in progress, READY, means the module is ready, BUSY, means the module is busy, DISCONNECTED, means the module is disconnected, |
| | DEFECTIVE, means the module is defective and UNCONFIGURED, means the module is not configured. |

Product-Specific Commands—Description

| | :WAVelength:LIST? |
|-----------------|--|
| Description | This query returns a list of the wavelengths that are available, based on the MS12 modules that were used during the initialization. |
| Syntax | :WAVelength:LIST? |
| Parameter(s) | None |
| Response Syntax | <wavelengths></wavelengths> |
| Response(s) | Wavelengths: |
| | The response data syntax for <wavelengths> is defined as a <definite arbitrary<br="" length="">BLOCK RESPONSE DATA> element.</definite></wavelengths> |
| | Returns a list of the available wavelengths, in meters (m). |

B Basic Theory

Passive fiber-optic cable assemblies, patchcords, pigtails and connectors are normally tested to verify the insertion loss and reflection they will introduce when used in an optical transmission system. The MS12001 Cable Assembly Test System is designed for production testing of all types of connectors and cable assemblies.

Insertion Loss Measurement

Based on advanced time domain technology and the wide aperture integrating cavity detector, the MS12 Loss Test Module will deliver accurate and repeatable IL and reflectance measurements. The internal monitoring channel ensures accurate IL measurements by compensating for any source power variations. The insertion loss measurement has been developed in accordance with the TIA/EIA-455-34A Standard FOTP-34A, "Interconnection Device Insertion Loss Test".

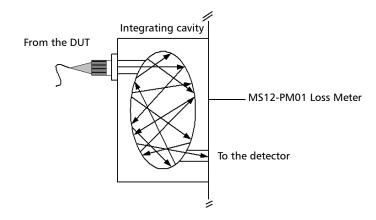
Internal Monitor Detector

During the insertion loss measurement, the laser is activated in continuous wave (CW) mode. The internal monitoring detector is used to compensate for any source power fluctuations. This is important because, during fast dual-wavelength IL and reflectance measurements, the source is constantly changing wavelength and mode (pulsed to CW).

As you can see, this method provides the most accurate results possible, since it is taking into account all the variation of power during every measurement as well as during the referencing. The MS12001 references are good for as long as the optical path remains undisturbed.

Integrating Cavity

The main advantage of using an integrating cavity in combination with a detector is that the power measurement will be independent of the fiber's numerical aperture and alignment, since the cavity has a large aperture which is equivalent to a wide-area detector of ~ 12 mm in diameter. The cavity is deal or quick, reliable and repeatable power measurements for all current single ferrule polish (PC or APC) and multifiber connectors.



Reflectance Measurement

When light is emitted into a fiber-optic component (for example, connector, fiber, coupler, etc.) some of the energy is transmitted, some is absorbed and some is reflected. In fiber-optic systems, reflected light is due to Fresnel reflections and Rayleigh scattering. Fresnel reflections occur at discrete components and are a result of air gaps, misalignment, and non-matching refractive indexes. Rayleigh scattering is due to the variations in material density and compositional fluctuations occurring during fiber manufacturing. This is creating random homogeneities that rise to refractive index variations.

Reflectance is the ratio of reflected power to incident power due to a single interface.

Reflectance (dB) =
$$10 \cdot \log\left(\frac{P_{reflected}}{P_{incident}}\right)$$

Note: Reflectance is described as a negative quantity when expressed in dB.

Keep in mind that the definition of reflectance differs slightly from optical return loss (ORL). ORL refers to the total effect of multiple reflections and scattering events within a fiber-optic system.

Reflectance of transmission systems, equipment and connectors are measured because reflected power is undesirable:

- ► It contributes to overall power loss.
- High-performance laser transmitters are very sensitive to reflected light. Laser stability and system signal-to-noise ratio can be significantly degraded. Under extreme conditions, the laser transmitter can be damaged.
- Reflected light can be re-reflected in the forward direction. These forward-propagating reflections lag behind the original signal and cause problems with communication and video signal processing.

Almost every singlemode connector used throughout the telecom industry is tested for insertion loss and reflectance. Connectors and patchcords are used in all segments: DWDM, Metro, CWDM, WDM, CATV, Metro Access, LAN, long-haul, submarine systems, PON, FTTX and others.

The new Cable Assembly Test System targets the suppliers of these cable assemblies, and is the highest-performance system available for high-volume production testing.

Internal Reflection Reference

During the reflectance measurement, the laser is activated in pulsed mode. The MS12 Loss Test Module's internal reflectance reference is used to provide a known reflection peak corresponding to a known absolute reflection. It also will allow the instrument to correct for variations in the power of the laser source. The reference reflection's peak range approaches the values expected for typical connector reflectance, thus ensuring that all measurements are made in an excellent linearity range.

IMPORTANT

To obtain accurate results when testing multimode fibers, ensure that during reflectance reference,

- > your master test jumpers are clean
- the end of the master test jumper that has to remain in the air is far from any reflecting surface.

Multimode Fiber Transmission

In a multimode fiber, light can travel through many possible optical paths. These paths are referred to as "modes". All modes are not equal: they have different propagating characteristics and sensitivities to external perturbations such as bends and splices.

- ➤ The lower (low-order) modes are excited by emitting light near the central axis of the fiber. They are also often called "tightly coupled modes".
- The higher order modes have a significant part of their power close to the cladding or even in the cladding itself. They are also called "loosely coupled modes".

For these very high order modes, losses are high, even for a bend radius of a few centimeters. However, for graded-index fibers of 50 or $62.5 \,\mu\text{m}$ core, it is possible to filter out more loss modes with a "mode filter". A mode filter consists in performing a mandrel wrap of a few turns with a radius of 1.7 to 2.5 cm on these fibers. When there is a fiber-to-fiber connection (splice or other interface), these higher order modes will be the most attenuated.

Multimode Fiber Launch Conditions

The type of light source and the type of the optical components being used will influence the launch conditions and, consequently, the results the system will return.

When light from an optical source (surface- or edge-emitting LED, laser, VCSEL, light coming from another fiber, etc.) is coupled into a multimode fiber, the light launch conditions determine which modes will be excited or "filled" and to what extent.

An overfilled fiber means that a large a portion of the power is launched into the high-order modes. If you measure the connector loss under these conditions, you will likely obtain a conservative result that is, higher measured loss than a test with underfilled launch conditions. On the other hand, if you test under restricted or significantly underfilled launch conditions, the test results will be overly optimistic (very low loss) and you may not be able to identify defective connectors.

In the Cable Assembly Test System, LEDs are used for the insertion loss (IL) measurement.

 The type of the optical components being used can also change the launch conditions.

MPORTANT

When an optical component (switch or coupler) is inserted before the device under test, it is your responsibility to ensure that the launch conditions are not modified.

C Non-Reflective Terminations

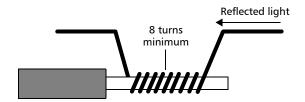
Non-reflective terminations are required during some steps of your test. The common techniques for providing a non-reflective termination are:

- > mandrel-wrapping (for singlemode fibers only)
- ► termination connector (for singlemode fibers only)
- ▶ index-matching gel or fluid
- ➤ gel block

Mandrel-Wrap

Note: This technique applies to singlemode fibers only.

A mandrel-wrap is created by wrapping the fiber a minimum of eight turns (very important at 1310 nm) around the supplied mandrel tool (or other cylinder of similar diameter). It is the recommended method to test singlemode fibers shorter than 1.8 meters.



The mandrel-wrap introduces sufficient attenuation so that any reflections originating from beyond the termination point are negligible.

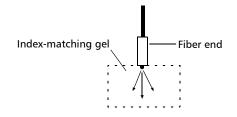
Termination Connector

Note: This technique applies to singlemode fibers only.

A termination connector is a connector with a short length of fiber terminated in either an index-matching material or in a permanent mandrel. When you require a non-reflective termination, simply connect the termination connector. Obviously, since it is a connector, there will always be a reflection due to the connector interface.

Index-Matching Gel or Fluid

An index-matching gel or fluid is an optically transparent material with the same refractive index as that of the fiber. If access to a fiber end is available, a near-perfect termination can be produced by inserting the fiber end into the index-matching compound, in which case optical energy is coupled into the material and reflections are almost completely suppressed.



Gel Block

A gel block is an index-matching material. To terminate a connector, simply press the ferrule on the gel block. Gel blocks typically provide between –50 dB and –55 dB reflection when using non-angled connectors. The main advantage of a gel block over other index-matching materials is that no cleaning is required after use.

This chapter gives you a detailed list of the various data fields that can be used with VSReport Designer to customize your labels and reports. For information on label and report customization, see *Customizing Labels and Reports* on page 294.

Data Fields for Label Customization

| Data Field | Туре | Remarks |
|-----------------------------|---------------------|---------|
| [Custom Field 1] | Character (max. 50) | |
| [Custom Field 2] | Character (max. 50) | |
| [Custom Field 3] | Character (max. 50) | |
| [Custom Title 1] | Character (max. 25) | |
| [Custom Title 2] | Character (max. 25) | |
| [Custom Title 3] | Character (max. 25) | |
| [Customer Name] | Character (max. 50) | |
| [Operator Name] | Character (max. 50) | |
| [Test Name] | Character (max. 50) | |
| [Fixed Serial Number] | Character (max. 50) | |
| [Incremental Serial Number] | Character (max. 50) | |
| [Wavelength 1] | Numeric | |
| [Wavelength 2] | Numeric | |
| [Wavelength 3] | Numeric | |
| [Wavelength 4] | Numeric | |
| [DUT Description] | Character (max. 34) | |
| [DUT Length] | Numeric | |
| [DUT Manufacturer] | Character (max. 50) | |
| [DUT Part Number] | Character (max. 34) | |

Data Fields for Label Customization

| Data Field | Туре | Remarks |
|---------------------------------|---------------------|---------|
| [Measurement Date] | Date time | |
| [Fiber Number] | Numeric | |
| [Workstation ID] | Character (max. 50) | |
| [IL Wavelength 1] | Numeric | |
| [IL Wavelength 2] | Numeric | |
| [IL Wavelength 3] | Numeric | |
| [IL Wavelength 4] | Numeric | |
| [IL EndA Wavelength 1] | Numeric | |
| [IL EndA Wavelength 2] | Numeric | |
| [IL EndA Wavelength 3] | Numeric | |
| [IL EndA Wavelength 4] | Numeric | |
| [IL EndB Wavelength 1] | Numeric | |
| [IL EndB Wavelength 2] | Numeric | |
| [IL EndB Wavelength 3] | Numeric | |
| [IL EndB Wavelength 4] | Numeric | |
| [Reflectance Wavelength 1] | Numeric | |
| [Reflectance Wavelength 2] | Numeric | |
| [Reflectance Wavelength 3] | Numeric | |
| [Reflectance Wavelength 4] | Numeric | |
| [Reflectance EndA Wavelength 1] | Numeric | |
| [Reflectance EndA Wavelength 2] | Numeric | |
| [Reflectance EndA Wavelength 3] | Numeric | |
| [Reflectance EndA Wavelength 4] | Numeric | |
| [Reflectance EndB Wavelength 1] | Numeric | |

Data Fields for Report Customization

| Data Field | Туре | Remarks |
|---------------------------------|---------|---------|
| [Reflectance EndB Wavelength 2] | Numeric | |
| [Reflectance EndB Wavelength 3] | Numeric | |
| [Reflectance EndB Wavelength 4] | Numeric | |

Data Fields for Report Customization

| Data Field | Туре | Remarks |
|-----------------------------|---------------------|---------|
| [Measurement Date] | Date time | |
| [Fixed Serial Number] | Character (max. 50) | |
| [Incremental Serial Number] | Character (max. 50) | |
| [Global Test Status] | Numeric | |
| [Custom Field 1] | Character (max. 50) | |
| [Custom Field 2] | Character (max. 50) | |
| [Custom Field 3] | Character (max. 50) | |
| [Custom Title 1] | Character (max. 25) | |
| [Custom Title 2] | Character (max. 25) | |
| [Custom Title 3] | Character (max. 25) | |
| [Operator Name] | Character (max. 50) | |
| [Workstation Id] | Character (max. 50) | |
| [Wavelength] | Numeric | |

Data Fields for Report Customization

| Data Field | Туре | Remarks |
|------------------|-----------|-----------------------------|
| [IL Status] | Character | Fiber measurement IL status |
| | | "Not Completed" |
| | | "Passed" |
| | | "Warning" |
| | | "Failed" |
| | | "Skipped" |
| [IL] | Numeric | |
| [IL EndA] | Numeric | |
| [IL EndA Status] | Character | Fiber measurement IL status |
| | | "Not Completed" |
| | | "Passed" |
| | | "Warning" |
| | | "Failed" |
| | | "Skipped" |
| [Il EndB] | Numeric | |
| [IL EndB Status] | Character | Fiber measurement IL status |
| | | "Not Completed" |
| | | "Passed" |
| | | "Warning" |
| | | "Failed" |
| | | "Skipped" |
| [Reflectance] | Numeric | |

Data Fields for Report Customization

| Data Field | Туре | Remarks |
|---------------------------|---------------------|----------------------------------|
| [Reflectance Status] | Character | Fiber measurement IL status |
| | | "Not Completed" |
| | | "Passed" |
| | | "Warning" |
| | | "Failed" |
| | | "Skipped" |
| [Reflectance EndA] | Numeric | |
| [Reflectance EndA Status] | Character | Fiber measurement IL status |
| | | "Not Completed" |
| | | "Passed" |
| | | "Warning" |
| | | "Failed" |
| | | "Skipped" |
| [Reflectance EndB] | Numeric | |
| [Reflectance EndB Status] | Character | Fiber measurement EndB Status |
| | | "Not Completed" |
| | | "Passed" |
| | | "Warning" |
| | | "Failed" |
| | | "Skipped" |
| [Test Name] | Character (max. 50) | |
| [Test Type] | Character | Test type |
| | | "Bidirectional" |
| | | "Unidirectional" |
| | | "One connector A" |
| | | "One connector B" |

Data Fields for Report Customization

| Data Field | Туре | Remarks |
|-------------------------------|---------------------|--------------------------|
| [Test Reflectance] | Character | "Yes" |
| | | "No" |
| [Test IL] | Character | "Yes" |
| | | "No" |
| [Customer Name] | Character (max. 50) | |
| [DUT Part Number] | Character (max. 34) | |
| [DUT Description] | Character (max. 34) | |
| [DUT Manufacturer] | Character (max. 50) | |
| [DUT Mode] | Character | "Singlemode" |
| | | "Multimode" |
| [DUT Length] | Numeric | |
| [DUT Device Type] | Character | DUT type |
| | | "Simplex" |
| | | "Duplex" |
| | | "Bundle" |
| | | "Multifiber-Multifiber" |
| | | "Fanout-Multifiber" |
| [DUT Mandrel-Free] | Character | Is the DUT mandrel free? |
| | | "No" |
| | | "Yes" |
| [Fiber Number] | Numeric | |
| [EndA Connector Name] | Character (max. 50) | |
| [EndA IL Pass Limit] | Numeric | |
| [EndA IL Warning Limit] | Numeric | |
| [EndA Reflectance Pass Limit] | Numeric | |

Data Fields for Report Customization

| Data Field | Туре | Remarks |
|----------------------------------|---------------------|---------|
| [EndA Reflectance Warning Limit] | Numeric | |
| [EndB Connector Name] | Character (max. 50) | |
| [EndB IL Pass Limit] | Numeric | |
| [EndB IL Warning Limit] | Numeric | |
| [EndB Reflectance Pass Limit] | Numeric | |
| [EndB Reflectance Warning Limit] | Numeric | |

Filter Builder Examples

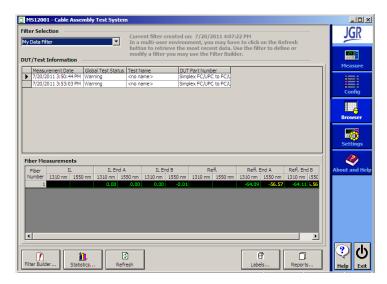
Customizing the information presented in the upper table of the Database Browser can be made using filters. Filters define which portion of the acquired data will be displayed (see *Browsing through the Database* on page 283). The following procedures will help you build the filters needed to display your results.

Displaying Results that Have Failed

You can view the results that failed by building a specific filter. This example explains how to build such filter.

To display the results having a failed status:

1. From the main window, click the **Browser** function tab.



- 2. Click the Filter Builder button.
- 3. From the filter builder window, click Add.

Ε

4. In the Filter box, name your filter Failed.

| MS12001 - Cable Assembly Test System | | | _ 🗆 🗵 |
|--|-----------|--|----------------|
| Filter: Falled | Refresh A | dd Delete Copy To | JGR |
| Condition Builder Selection Criteria Field Name: Operator: | Value: | Number of Records to Retrieve | er_ Measure |
| Global Test Status | | Percent (%) Note on Selection Criteria: An expression is a combination of <field< td=""><td>Config</td></field<> | Config |
| | - OK | Name >< Operator > <value>. Expressions may be combined using AND or OR operators. Please make sure to insert each expression by using the appropriate button.</value> | Browser |
| 1 | Þ | | |

- 5. Under Condition Builder, define the data selection criteria as follows:
 - 5a. In the Field Name list, select Global Test Status.
 - **5b.** In the **Operator** list, select **=**.
 - **5c.** In the Value list, select Failed.
 - 5d. In the list on the left, apply the condition to the expressions using the <- AND and <- OR buttons.
- **6.** Under **Display These Fields**, select the check box next to the items you want to display in the columns.

| | - Order selection buttons | |
|---|--|----------------|
| Field Selection & Sorting Criteri Display These Fields Messurement Date Field Selection Number Coston Field 1 Custon Field 1 Custon Field 3 Custon Tile 1 Custon Tile 1 Custon Tile 2 Custon Tile 3 | Sort Criteria Field name: Cutom Field 1 Ascending Descending Cutom Field 1 Important: The fields in the sorting oriteria must first be selected from in the Field Selection list. Apply Cancel Cose | About and Help |

Select all button Clear all selection button

You can define the order in which the columns will be displayed by selecting the corresponding item in the list and by moving it with the up and down arrows.

- **7.** You can define criteria that determine how the current filter should display the data. Define criteria by the measurement date:
 - 7a. Under Display These Fields, select Measurement Date.
 - **7b.** Click **Ascending** to apply to the current field by clicking on the corresponding buttons.
 - **7c.** Click **Insert** to register the sorting criteria.

Note: You can quickly empty all boxes by clicking Clear.

8. Click Apply to save the filter.

The **DUT/Test Information** table appears.

| ilte | S12001 - Cable Asse | | urrent filter created on: | | | | JGR |
|-----------|---------------------|---------------------|--|---|-----------------------------|----------------|----------|
| aik UT | /Test Information | bi | a multi-user environme itton to retrieve the mo odify a filter you may u | ost recent data. U se the Filter Build | lse the filter to de er. | fine or | Measure |
| | Measurement Date | Fixed Serial Number | Incremental Serial Number | | Custom Field 1 | Custom Field 2 | |
| | 3/3/2008 2:02:03 PM | Batch4 | 0005 | Failed | | | 1 |
| | 3/3/2008 2:02:53 PM | Batch4 | 0006 | Failed | | | |
| | 3/3/2008 2:04:47 PM | Batch4 | 0008 | Failed | | | Config |
| | | | | | | | Browser |
| | | | | | | | Settings |

9. In the Filter list, select Failed to display your results.

Displaying Results for Serial Numbers

You can view the results associated with a serial number by building a specific filter.

To display results associated with a serial number:

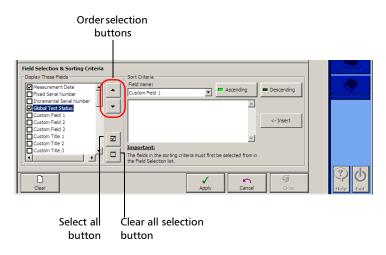
1. From the main window, click the **Browser** function tab.

| I | M512001 - Cable Asse | mbly Test Systen | n | | | | | | | | | IX |
|---|----------------------|--------------------|--|------------|--------------|---------|-------------|-----------|----------|------|-----------|----------|
| Γ | Filter Selection | | Current filter o In a multi-use button to retr | r environn | nent, you n | nay ha | ve to click | on the Re | fresh | - | JGR | |
| | DUT/Test Information | | modify a filter | | | | | er to dem | | | Measur | |
| H | Measurement Date | Global Test Status | Test Name | DUT | Part Number | | | | | | Picasur | F |
| H | 7/20/2011 3:50:44 PM | Warning | <no name=""></no> | Simpl | ex FC/UPC to | o FC/L | | | | | 10000 | |
| H | 7/20/2011 3:53:03 PM | Warning | <no name=""></no> | Simpl | ex FC/UPC to | o FC/L | | | | | | |
| l | | | | | | | | | | | Config | |
| | | | | | | | | | | | Browset | , |
| | | | | | | | | | | | Setting | s |
| l | Fiber Measurements | | | | | | | | | | 2 | |
| H | Fiber IL | IL End A | IL Er | nd B | Refl. | | Refl. 8 | End A | Refl. En | d B | About and | Help |
| H | Number 1310 nm 1550 | nm 1310 nm 15 | 50 nm 1310 nm | 1550 nm | 1310 nm 1 | 1550 nm | 1310 nm | 1550 nm | 1310 nm | 1550 | | _ |
| H | 1 | 0.00 | 0.00 0.00 | -0.01 | | | -64.09 | -56.57 | -64.11 | 3.56 | | |
| | 4 | | | | | | | | | • | | 1.1 |
| ľ | Filter Builder | tics | | | | | Labe | ₹ is | Report | | Help E | り ×it |

- 2. Click the Filter Builder button.
- **3.** From the filter builder window, click **Add**.

| M512001 - Cable Assembly Test System | _O× |
|---|----------------|
| Filter: Batch 4 | JGR |
| Condition Builder - Selection Criteria - Fled Name: Operator: Value: Value: | er_ Measure |
| Field Name: Operator: Value: Percent (%) Custom Field 1 Image: Status Image: Status Image: Status Image: Status Dum_FixSenally = Status Image: Status Image | Config |
| Name > <operator> <value>. Expressions may be combined using be combined using but on CR operators. Please make sure to insert each expression by using the appropriate button.</value></operator> | Browser |
| | |

- **4.** In the **Filter** box, enter the name of your filter (**Batch 4** in this example).
- 5. Under Condition Builder, define the data selection criteria as follows:
 - 5a. In the Field Name list, select Fixed Serial Number.
 - **5b.** In the **Operator** list, select **=**.
 - **5c.** In the **Value** list, select the desired batch.
 - 5d. In the list on the left, apply the condition to the expressions using the <- AND and <- OR buttons.
- **6.** Under **Display These Fields**, select the check box next to the items you want to display in the columns.



You can define the order in which the columns will be displayed by selecting the corresponding field in the list and by moving it with the up and down arrows.

Filter Builder Examples

Displaying Results for Serial Numbers

- **7.** You can define criteria that determine how the current filter should display the data. Define criteria by the measurement date:
 - 7a. Under Display These Fields, select Measurement Date.
 - **7b.** Click **Ascending** to apply to the current field by clicking the corresponding buttons.
 - **7c.** Click **Insert** to register the sorting criteria.

Note: You can quickly empty all fields and boxes by clicking Clear.

8. Click **Apply** to save the current filter.

The **DUT/Test Information** table appears.

| Batch 4 | | | | | | JGR | |
|---------|---------------------|--------------------|-------------------|---|----------------|---------------------------------------|---------|
| л | /Test Information | | | ieve the most recent data you may use the Filter B | | define or | Measure |
| | Measurement Date | Global Test Status | Test Name | DUT Part Number | Custom Field 1 | Custom Field 2 | Heasure |
| • | 3/3/2008 1:49:00 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/U | | | : |
| | 3/3/2008 1:49:38 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/L | | | |
| | 3/3/2008 1:50:23 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/L | | | Config |
| | 3/3/2008 1:51:46 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/U | | | |
| | 3/3/2008 2:02:03 PM | Failed | <no name=""></no> | Simplex FC/UPC to FC/U | | | |
| | 3/3/2008 2:02:53 PM | Failed | <no name=""></no> | Simplex FC/UPC to FC/L | | | |
| | 3/3/2008 2:03:42 PM | Passed | <no name=""></no> | Simplex FC/UPC to FC/U | | | Browser |
| | 3/3/2008 2:04:47 PM | Failed | <no name=""></no> | Simplex FC/UPC to FC/U | | | |
| Ē | | | | | | · · · · · · · · · · · · · · · · · · · | 20 |

9. Under **Filter Selection**, in the list, select the desired batch (**Batch 4** in this example) to display your results.

Displaying Results for a Time Interval

You can view the results of tests that were made within a specific time interval by building a specific filter.

To display results for a time interval:

1. From the main window, click the **Browser** function tab.

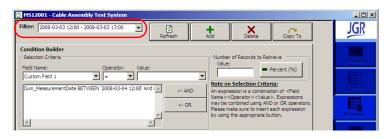
| MS12001 - Cable Asse | mbly Test Syst | em | | | | | | | | | |
|----------------------|-------------------|---|--------------------------|-------------------------|------------|-----------------------|-----------------------------|-------------------------|--------------|-----------|-----------|
| Filter Selection | | In a butte | multi-use on to retri | r environ ieve the r | nost rece | may hav nt data. U | re to click Ise the filt | on the Re er to defi | | JG | |
| DUT/Test Information | | | | | use the F | | ler. | | | Meas | - |
| Measurement Date | Global Test State | | | DUT | Part Numb | er | | | | | |
| 7/20/2011 3:50:44 PM | | <no na<="" th=""><th></th><th></th><th>lex FC/UPC</th><th></th><th></th><th></th><th></th><th></th><th></th></no> | | | lex FC/UPC | | | | | | |
| 7/20/2011 3:53:03 PM | Warning | <no na<="" th=""><th>ame></th><th>Simp</th><th>lex FC/UPC</th><th>to FC/U</th><th></th><th></th><th></th><th>Con</th><th>fig</th></no> | ame> | Simp | lex FC/UPC | to FC/U | | | | Con | fig |
| | | | | | | | | | | Brow | ser |
| | | | | | | | | | | Setti | |
| Fiber Measurements | | | | | | | | | | | |
| Fiber IL | IL End | AL | IL Er | nd B | Re | fl. | Refl. B | End A | Refl. End B | About ar | id Help |
| Number 1310 nm 1550 |) nm 1310 nm | 1550 nm | 1310 nm | 1550 nm | 1310 nm | 1550 nm | 1310 nm | 1550 nm | 1310 nm 1550 | | |
| 1 | 0.00 | 0.00 | 0.00 | -0.01 | | | -64.09 | -56.57 | -64.11 j.55 | | |
| 4 | | | | | | | | | | | |
| Filter Builder | tics R | efresh |] | | | | Labe | ₿ ls | Reports | ? Help | ل Exit |

- **2.** Click the **Filter Builder** button.
- **3.** From the filter builder window, click **Add**.

| M512001 - Cable Assembly Test System | |
|--|----------------|
| Filter: 2008-03-03 12:00 - 2008-03-03 17:00 💽 😫 🕂 Add Delete Copy To | JGR |
| Condition Builder - Selection Criteria - Fled Name: Operator: Value: Value: | er_ Measure |
| Custom Field 1 | Config |
| Name> <operator><value>. Expressions may be combined using be combined using but on CR operators. Please make sure to insert each expression by using the appropriate button.</value></operator> | Browser |
| | |

Displaying Results for a Time Interval

4. In the **Filter** list, enter the filter name according to the beginning and end date of the test results as shown below.



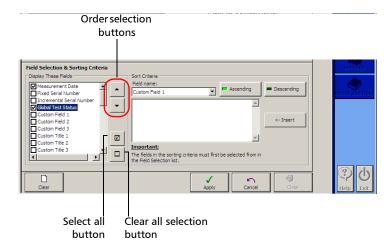
5. Under **Condition Builder**, define the data selection criteria as follows:

5a. In the Field Name list, select Measurement Date.

- **5b.** In the **Operator** list, select **=**.
- **5c.** In the **Value** list, select a temporary value.
- 5d. Insert the condition you have built in the selection box using the
 AND or <– OR button. If you want to define a compound criterion, repeat step 5 for each condition you want to include.
- **5e.** Replace the **=** sign by typing **BETWEEN** over it.
- *5f.* Replace the temporary value by entering the date interval you wish to use as a criteria following the pattern as shown below:

| ilter: 2008-03-03 12:00 - 2008-03-03 17:00 💌 😰 Refres | Add X Delete Copy To |
|--|---|
| Condition Builder Selection Orteria Field Name: Operator: Value: Custom Field 1 | Number of Records to Retrieve Heres Value: Percent (%) Hote on Selection Criteria: An expression is a combination of relied ND Name be combined using AND or CR operators. Prease make sure to nerve each expression s by using the appropriate button. |

6. Under **Display These Fields**, select the check box next to the items you want to display in the columns.



You can define the order in which the columns will be displayed by selecting the corresponding field in the list and by moving it with the up and down arrows.

- **7.** You can define criteria that determine how the current filter should display the data. Define criteria by the measurement date:
 - 7a. Under Display These Fields, select Measurement Date.
 - **7b.** Click **Ascending** to apply to the current field by clicking on the corresponding buttons.
 - **7c.** Click **Insert** to register the sorting criteria.

Note: You can quickly empty all fields and boxes by clicking on Clear.

Displaying Results for a Time Interval

8. Click **Apply** to save the current filter.

The **DUT/Test Information** table appears.

| r Selection 8-03-03 12:00 - 2008-0 /Test Information | 3-03 17:00 | In a multi-use button to retr | created on: 7/20/2011 4: r environment, you may l ieve the most recent data you may use the Filter Bu | have to click on the filter to | | |
|--|--------------------|----------------------------------|--|--------------------------------|----------------|--------|
| Measurement Date | Global Test Status | Test Name | DUT Part Number | Custom Field 1 | Custom Field 2 | Measur |
| 3/3/2008 1:49:00 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/L | | | 1000 |
| 3/3/2008 1:49:38 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/L | | | |
| 3/3/2008 1:50:23 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/L | | | Config |
| 3/3/2008 1:51:46 PM | Warning | <no name=""></no> | Simplex FC/UPC to FC/L | | | |
| 3/3/2008 2:02:03 PM | Failed | <no name=""></no> | Simplex FC/UPC to FC/L | | | |
| 3/3/2008 2:02:53 PM | Failed | <no name=""></no> | Simplex FC/UPC to FC/L | | | |
| 3/3/2008 2:03:42 PM | Passed | <no name=""></no> | Simplex FC/UPC to FC/L | | | Browse |
| 3/3/2008 2:04:47 PM | Failed | <no name=""></no> | Simplex FC/UPC to FC/L | | | |
| | | | | | | 20 |

9. In the Filter list, select the desired date interval to display your results.

F Using the DataBase Cleaner

Overview

The MS12001 Cable Assembly Test System DataBase Cleaner software was designed to manage patchcord test records. The accumulation of test records may slow down your system and possibly lead to a loss of data. The DataBase Cleaner enables you to keep the database as small as possible by deleting obsolete records.

| | 🙀 M512001 - Cable Assembly Test System - Database Cleaner | _ 🗆 🗙 | |
|---------------|---|-------------------|------------------------------------|
| | Filter Specifications | Main Menu | |
| Filter tabs — | Test DUT Customer Miscelianeous | JGR | |
| | C Activate test filter | | |
| | Test name: | | 7 |
| | Con pame > Select All MTP Hybrid MM Select None MTP Non Hybrid MM Delete MTR Non Hybrid MM Delete MTR Non Hybrid MM Select None MTR Non Hybrid MM Select None Stripts Hybrid MM Select None Smplex Hybrid MM Select None Smplex Hybrid MM Select None | Choose / Delete | — Function tabs |
| | Global Test Status: Date range: | | |
| | Not Completed From: Wed, 20 July 2011 | | |
| | Failed To: Wed. 20 July 2011 | | |
| | Skipped | | About and Exit |
| | Selec From Data Prevew SQL Request Preview | About Exit | buttons |
| | The Test options are disabled. Activate the checkbox in the tab header to enable the TEST section. | 7/28/2011 8:58 AM | |

Main Window

Data Preview and SQL Request Preview buttons

Note: Under Windows XP, for users without sufficient Write permissions, for example those in Restricted User mode, to be able to access the DataBase Cleaner application, a Network Administrator must give them the Write permission to their accounts on C:\Documents and Settings\All Users\Application Data\JGR\ MS12001 Config.

For more information, see Setting User Permissions on page 42.

From the Main Menu you access the two function tabs:

The Choose/Delete function tab allows you to access the main window where you can delete test records according to your selection of test parameters.

The first time you delete a test record, the DataBase Cleaner automatically generates a backup of the whole database. This backup can be used to restore the database to its initial state.

➤ The Application Settings function tab allows you to set the DataBase Cleaner password, restore deleted databases, make manual backups and define the network connection parameters of the system.

Installing the DataBase Cleaner

The DataBase Cleaner application is located on the CD delivered with the MS12001 software. It may be installed on a computer or directly on the MS platforms controller unit.

To install the DataBase Cleaner:

- **1.** Insert the installation CD in the CD-ROM drive of your computer or MS platforms controller unit.
- 2. On the CD, double-click the folder named MS12001 DataBase Cleaner.
- **3.** Double-click the **setup.exe** file and follow the instructions appearing on the screen.

The DataBase Cleaner application will be automatically installed on the same folder as your MS12001 Cable Assembly Test System software.

Starting and Exiting the DataBase Cleaner

To avoid potential corruption or loss of data, each time the DataBase Cleaner is started, a message reminds you to ensure that other active networked stations running the MS12001 are not in use.



To start the DataBase Cleaner application:

- **1.** On the Windows taskbar, click the **Start** button, and point to **Programs**.
- 2. Point to JGR, and then click MS12001 DataBase Cleaner.
- **3.** In the **Supervisor Level** dialog box, in the **Enter your password** box, type the same password used to open the MS12001 Cable Assembly Test System.

| Supervisor Level | |
|----------------------|--------|
| Enter your password: | |
| ок | Cancel |

4. Click OK.

To exit the DataBase Cleaner application:

On the Main Menu, click the Exit button.

OR

On the title bar, click 🔟.

Changing the Password

You must have supervisor access level rights to change the password.

IJ

IMPORTANT

The DataBase Cleaner uses the same password as the MS12001 Cable Assembly Test System.

Changing the password to the DataBase Cleaner also changes the password to the MS12001 Cable Assembly Test System.

To change the password:

1. From the **Application Settings** function tab, under **Supervisor Password**, click **Change Password**.

| 🙀 M512001 - Cable Assembly Test System - Database Cleaner | <u> </u> |
|--|----------------------|
| Application Settings | Main Menu |
| Supervisor Password Change Password | JGR |
| Manual Backup And Restore | |
| None | |
| Refresh List Restore Backup Now | Choose / Delete |
| Connection Parameters Local Remote Connection Parameters Server Name: Cocol | Application Settings |
| | |
| Security Mode: SQL Server Authentication | |
| User Name: Iq1200 1b | |
| Password: | |
| Database Name: IQ12001B | |
| Apply Cancel | About Exit |
| | 7/28/2011 8:53 AM |

2. In the **Change Password** dialog box, using either the computer keyboard or the on-screen keyboard. type the old and new passwords.

The password must have at least 6 characters.

| Change Password | |
|-----------------------|--------|
| Old Password: | |
| New Password: | |
| Confirm New Password: | |
| К | Cancel |

3. Click OK.

Working Locally or Remotely

To access the database you want to work on, you need to select the workstation or server name. For remote use, you also need to select the network security mode.

For further details, refer to sections *Configuring Database Connection* and *Configuring Database Security Mode* of the MS12001 user guide.

To work locally:

1. From the **Application Settings** function tab, under **Connection Parameters**, click **Local**.

The word (Local) appears in the Server Name box.

| MS12001 - Cable Assembly Test System - Database Cleaner | _ 🗆 X |
|---|----------------------|
| Application Settings | Main Menu |
| Supervisor Password Change Password | JGR |
| Manual Backup And Restore | |
| None | La |
| Refresh List Restore Backup Now | Choose / Delete |
| Connection Parameters Local | Application Settings |
| Security Mode: SQL Server Authentication | |
| User Name: Iq12001b | |
| Password: ****** | |
| Database Name: IQ12001B | |
| Apply Cencel | About Exit |
| | 7/28/2011 8:53 AM |

2. Click **Apply** to confirm your selection.

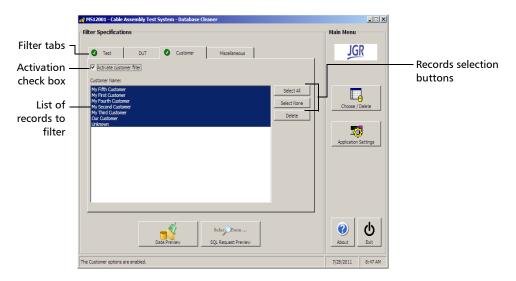
To work remotely:

- **1.** From the **Application Settings** function tab, under **Connection Parameters**, click **Remote**.
- 2. In the Server Name box, type one of the following:
 - > the main workstation name for a centralized system configuration.
 - ► the server name for a server-based configuration.
- *3.* In the Security Mode list, select SQL Server Authentication or Windows Authentication.
- **Note:** The security mode of the network connection is identical to that of the MS12001 Cable Assembly Test System.
 - 4. Click Apply to confirm your selection.

Deleting Test Records

The DataBase Cleaner includes the same test parameters as the MS12001 Cable Assembly Test System.

Test records are deleted by building a filter according to a selection of test parameters. Clicking the **Choose/Delete** function tab gives you access to the filter specifications of the main window.



The first time you delete a test record, the DataBase Cleaner automatically generates a backup of the database.

Subsequent record deletions made during the same cleaning session are not saved. You will lose all changes made since the last backup.

Building a Filter and Deleting Records

You can delete test records according to **Test**, **DUT**, **Customer**, and **Custom** parameters. The **Custom** parameters are available on the **Miscellaneous** tab.

Whenever you delete a record, a message appears on the screen asking you to confirm the operation.

Once your filter is complete, you can delete the selected records according to three methods:

| Item | Delete | Delete All Entries | Delete Selected |
|--------------------|---------------------|--------------------|-----------------------------|
| Test record folder | Folder deleted | Folder retained | Folder retained |
| Data | All records deleted | | Selected records deleted |

To build a filter:

- 1. From the Main Menu, click the Choose/Delete function tab.
- **2.** Under **Filter Specifications**, click the tab containing the type of parameters you want to delete.
- **3.** Select the **Activate filter** check box to access the test records of the selected tab.

A green circle on the tab header indicates that it is activated. You can build a filter by activating a single or several filter tabs. Deleting Test Records

- 4. Initially, all entries of an activated tab are highlighted.
 - ► To deselect all records, click **Select None**.
 - To select a few records, use the left button of your mouse. Use check boxes, lists, and text boxes to select the test records to be deleted.
 - > To select all test records, click **Select All**.
- 5. Repeat steps 2 to 4 for all applicable filter tabs.

IMPORTANT

To avoid deleting the wrong test records, before clicking the Delete button of the main window, make sure that only the filter tabs containing the test records you really want to dispose of are activated.

IJ

IMPORTANT

The first time you delete a test record, the DataBase Cleaner automatically generates a backup of the database. The name of the backup is composed of the date and time of deletion.

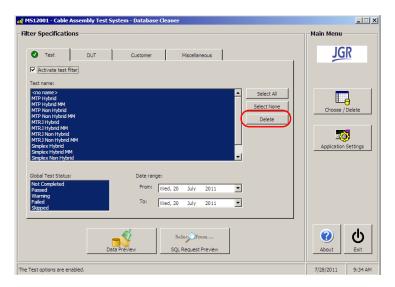
You should log the name of the backup for future reference.

The next time you delete records during the same session, no new backup is created.

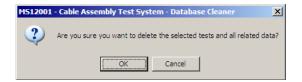
You may recover any deleted records from the backup created during this data cleaning session using the Restore function.

To delete both the test record folder and its entire contents:

1. From the main window, click **Delete**.



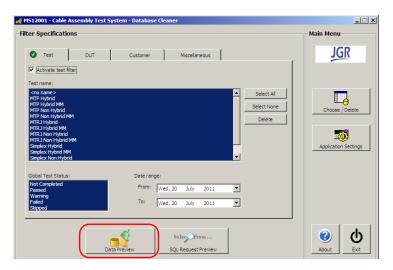
The following message appears.



2. Click OK to confirm or Cancel to return to the main window.

To delete all test records and keep the empty test record folder:

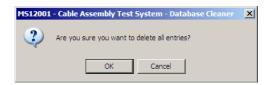
1. From the main window, click **Data Preview**.



2. In the MS12001 - Cable Assembly Test System - DataBase Cleaner dialog box, click Delete All Entries.

| Measurem | ent Date | Fixed Seria | l Number | Incremen | ntal Serial | Number | Global Te | st Status | Custom | Field 1 | Custom Field | 2 0 |
|-----------------|-----------------|-------------|----------|----------|-------------|---------|-----------|-----------|---------|---------|--------------|-----|
| 1/25/2007 | 9:29:56 AM | ahaah | | 07 | | | Failed | | | | | |
| | 9:30:14 AM | ghagh | | 08 | | | Failed | | | | | |
| 1/25/2007 | 9:30:24 AM | ghggh | | 09 | | | Failed | | | | | |
| 1/25/2007 | 9:31:04 AM | ghggh | | 10 | | | Failed | | | | | |
| 1/25/2007 | 10:05:10 AM | ghggh | | 11 | | | Not Comp | oleted | | | | |
| ∢ Fiber Meas | surement | | | | | | | | | | | ļ |
| Fiber | IL | IL Er | nd A | IL En | d B | Re | fl. | Refl. E | ind A | Refl | . End B | |
| | 490 nm 1625 r | m 1490 nm | 1625 nm | 1490 nm | 1625 nm | 1490 nm | 1625 nm | 1490 nm | 1625 nm | 1490 nn | 1625 nm | |
| - | | 0.00 | 0.00 | 0.00 | 0.00 | | | -22.04 | -21.53 | | 0 -21.78 | |

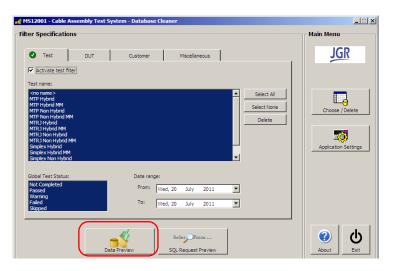
The following message appears.



3. Click OK to confirm or Cancel to return to the main window.

To delete selected records only:

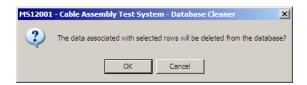
1. From the main window, click **Data Preview**.



2. In the MS12001 - Cable Assembly Test System - DataBase Cleaner dialog box, click Delete Selected.

| Measurement Date | Fixed Serial Number | Incremental Serial Numb | er 🛛 Global Test | : Status Cust | om Field 1 | Custom Field 2 | 0 |
|---------------------------|--------------------------|-------------------------|------------------|-----------------|------------|----------------|---|
| 1/25/2007 9:29:56 AM | ahaah | 07 | Failed | | | | |
| 1/25/2007 9:30:14 AM | ghggh | 08 | Failed | | | | |
| /25/2007 9:30:24 AM ghggh | | 09 | Failed | | | | |
| 1/25/2007 9:31:04 AM | 25/2007 9:31:04 AM ghggh | | Failed | | | | |
| 1/25/2007 10:05:10 AM | ghggh | 11 | Not Comple | eted | | | |
| ∢ | J ⁱ | 1 | 1 | | | 1 | • |
| Fiber IL | IL End A | IL End B | Refl. | Refl. End A | Ref | l. End B | |
| Number 1490 nm 1625 | nm 1490 nm 1625 nm | 1490 nm 1625 nm 1490 | nm 1625 nm 1 | 490 nm 1625 r | nm 1490 nr | m 1625 nm | |
| 1 | 0.00 0.00 | 0.00 0.00 | | -22.04 -21. | 53 .22.2 | 0 -21.79 | |

The following message appears.



3. Click OK to confirm or Cancel to return to the main window.

Restoring Records

The **Restore** function allows you to recover deleted records contained in a backup.

However, you cannot recover records deleted since the last backup.

IMPORTANT

The restoring process will overwrite the current database with data from the selected backup file. You will lose all data saved between the last backup and the current date and time.

For information on backups, see *Backing Up Tests and Configurations* on page 299.

To restore records:

 From the Application Settings function tab, in the list under Manual Backup and Restore, select the backup you want to restore.

| M512001 - Cable Assembly Test System - Database Cleaner | _ 🗆 🗙 |
|---|----------------------|
| Application Settings | Main Menu |
| Supervisor Password Change Password | JGR |
| Hanual Backup And Restore | Choose / Delete |
| Connection Parameters Server Name: | Application Settings |
| Security Mode: SQL Server Authentication 💌 User Name: Iq12001b Password: ==================================== | |
| Database Name: IQ12001B | |

If the desired backup does not appear in the list, click **Refresh List** to update the list of available choices.

2. Click the **Restore** button.

The following message appears.



3. Click **Yes** to proceed with the restoring operation or **No** to return to the main window.

Once the restoring procedure is started, a message box informs you that the DataBase Cleaner application will be closed. You must wait a few minutes before restarting it.

Manual Database Backup

At any time, you can make a backup of the database you are working on.

For further details, see Backing Up and Restoring Databases on page 299.

To make a manual backup:

1. From the Application Settings function tab, under Manual Backup and Restore, click Backup Now.

A message appears to confirm the backup operation.

2. Click **OK** to confirm or **Cancel** to return to the main window.

IMPORTANT

All backups have an expiry date, after which they are automatically deleted from the disk. Use the MS12001 Cable Assembly Test System software (not the DataBase Cleaner application) to set the number of days for which backups will remain available.

IMPORTANT

To avoid problems in case of a major crash, JGR recommends to copy backups regularly to another disk. Backups can be found under C:\Program Files\Microsoft SQL Server\MSSQL\Backup. This path cannot be modified from the Cable Assembly Test System.

System Information and Technical Support

Information about the DataBase Cleaner software and technical support is available from the **Main Menu**.

To view system and technical support information:

On the Main Menu, click About.



Creating Your Own Database Management Code

Creating Your Own Database Management Code

If you have several MS12001 Cable Assembly Test Systems containing a large number of records to manage and want to create your own database management code, you can copy the instructions used by the DataBase Cleaner software.

To access the code to create your own data preview tables:

On the main window, click **SQL Request Preview**.

The following window opens.

| | ement used in the Preview Data window | |
|--------------------|---|---|
| ELECT D | | ļ |
| | Measurement.Dum_Id, 'Measurement.Dum_MeasurementDate AS [Measurement Date], | |
| | Measurement.Dum_Heasurement.Date As [Heasurement Date], Measurement.Dum_FixSerialNr AS [Fixed Serial Number], | |
| | Measurement.Dum IncrSerialNr AS [Incremental Serial Number], | |
| | N dbo.TDUTMeasurement.Dum GlobalTestStatus=0 THEN 'Not Completed' WHEN | |
| | Measurement.Dum_GlobalTestStatus=1 THEN 'Passed' WHEN dbo.TDUTMeasurement.Dum_GlobalTestStatus=2 THEN | |
| | WHEN dbo.TDUTMeasurement.Dum_GlobalTestStatus=3 THEN 'Failed' WHEN | |
| | Measurement.Dum_GlobalTestStatus=4 THEN 'Skipped' END AS [Global Test Status], | |
| | Measurement.Dum SpareField1 AS [Custom Field 1], | |
| | Measurement.Dum SpareField2 AS [Custom Field 2], | Į |
| oo.TDUT | Measurement.Dum SpareField3 AS (Custom Field 3), | |
| bo.TDUT | Measurement.Dum_SpareTitle1 AS [Custom Title 1], | |
| | Measurement.Dum_SpareTitle2 AS [Custom Title 2], | |
| | Measurement.Dum_SpareTitle3 AS [Custom Title 3], | |
| | Measurement.Dum_OperatorName AS [Operator Name], | |
| | Measurement.Dum_WorkStationId AS [Workstation ID], | |
| | TTestTemplate.Tst_Name) AS [Test Name], | |
| | N dbo.TTestTemplate.Tst_Type=1 THEN 'Bidirectional' WHEN dbo.TTestTemplate.Tst_Type=2 THEN 'Unidirectional' WHEN | |
| | Template.Tst_Type=3 THEN 'One Connector A' WHEN dbo.TTestTemplate.Tst_Type=4 THEN 'One Connector B' END AS | |
| Fest Typ | | |
| ASE WH eflectan | EN dbo.TTestTemplate.Tst_Reflectance=0 THEN 'No' WHEN dbo.TTestTemplate.Tst_Reflectance=-1 THEN 'Yes' END AS [Tes | ٩ |
| | .e], EN dbo.TTestTemplate.Tst_IL=0 THEN 'No' WHEN dbo.TTestTemplate.Tst_IL=-1 THEN 'Yes' END AS (Test IL), | |
| | TCustomer.Cus_Name) AS [Customer Name], | |
| u initado. | rcustomer.cus_name) As [customer name], | |

Creating Your Own Database Management Code

To access the SQL code to create your own instructions to delete records:

- 1. From the main window, click **Data Preview**.
- **2.** Click **SQL Statement for all entries** to access the code to delete all records.

OR

Click **SQL Statement for Selected records only** to access the code to delete selected records.

| Data Preview SQL Statemer | Test System - Database Cleaner It for all entries SQL Statement for Selected records only | |
|--|--|---|
| 03C 1Q 1200 ID | M512001 - Cable Assembly Test System - Database Cleaner | |
| /************************************* | Data Preview SQL Statement for all entries SQL Statement for Selected records only | 1 |
| / UPDATE dbo.TFiberMeasur dbo.TFiberMeasurement.F dbo.TDUTMeasurement INNER.JOIN dbo.TTesTTen INNER.JOIN dbo.TFiberMe | USE IQ 12001B | |
| INNER JOIN dbo.TCustom INNER JOIN dbo.TDutMod INNER JOIN dbo.TCable O INNER JOIN dbo.TFiber Of dbo.TFiber.Fib Id | /***** Update the [TFiberMeasurement] table *****/ /****************************** | |
| | GO/############################### | |
| | /***** Update the [TDUTMeasurement] table *****/ /****************************** | - |
| | Delete Selected Cancel | |

Index

Α

| About and Help function tabs | 345 |
|--|------|
| access level | |
| DataBase Cleaner | . 42 |
| modifying switch ports configuration | . 45 |
| Operator | . 46 |
| overwriting results | . 45 |
| reflectance verification tool | . 42 |
| Restricted User | |
| specifying user controls | 7 |
| Supervisor Access feature | |
| Supervisor, changing password of | . 47 |
| system | . 42 |
| Write permission | . 42 |
| adding | |
| connector | . 92 |
| customer profile | . 89 |
| DUT type | . 94 |
| filter | 284 |
| address, of module | 313 |
| after-sales service | 345 |
| application | |
| contacting JGR support from | 345 |
| starting | . 41 |
| automatic | |
| backup 300, | 302 |
| calculation of master test jumper lengtl | h51 |
| detection of master test jumper length | . 53 |
| printing/exporting labels | . 85 |
| | |

В

| backup | |
|--------------------------|-----|
| automatic 300, | 302 |
| database manually | 424 |
| expiration date | 300 |
| manually | 300 |
| tests and configurations | 299 |
| viewing | 305 |

| bar code reader | |
|---|----------------|
| configuring | 17 |
| connecting | 6 |
| installing | 4 |
| bidirectional test | |
| description | . 6 |
| fanout2 | 9 |
| fanout high-throughput23 | 32 |
| hybrid bundle214, 21 | |
| hybrid duplex18 | 31 |
| hybrid duplex high-throughput | 99 |
| hybrid multifiber 251, 27 | 71 |
| hybrid simplex145, 16 | |
| non-hybrid bundle 214, 2 | 15 |
| non-hybrid duplex17 | |
| non-hybrid duplex high-throughput 19 | 93 |
| non-hybrid multifiber | |
| non-hybrid simplex | |
| browsing | |
| database | 33 |
| document |) 3 |
| bundle | |
| hybrid, high-throughput bidirectional . 2 | 15 |
| hybrid, standard bidirectional | |
| non-hybrid, high-throughput bidir 2 | |
| non-hybrid, high-throughput unidir 2 | |
| non-hybrid, standard bidirectional 2 | |
| patchcord | |
| standard unidirectional | 14 |
| | |

С

| caution |
|---|
| of personal hazard9 |
| of product hazard9 |
| cavity, integrating 4 |
| centralized configuration for database 70 |
| certification informationviii |
| chart, selecting template |
| cleaning |
| detector ports |
| EUI connectors |
| fiber ends 106 |
| fixed connectors |
| front panel |
| combined reflectance values |
| company |
| entering information |
| setting up profile |
| comparative value |
| compensation for source variation |
| configuration |
| backing up |
| high-throughput3 |
| one loss test module |
| restoring |
| standard 3 |
| two loss test modules and one wavelength |
| selection switch |
| configuring |
| automatic backup 302 |
| database connection70 |
| database security73 |
| DUT |
| external switch28 |
| handling of failed tests |
| references 51 |
| connection |
| displaying/hiding diagram 136 |
| for footswitch/bar code reader |
| testing using two loss test modules 25 |
| to the database, modifying72 |
| verification103 |

| connector | |
|----------------------------------|-----|
| adding | |
| associating type to switch ports | 133 |
| deleting | |
| for non-reflective termination | |
| insertion loss limit | |
| modifying type | |
| new | 92 |
| reflectance limit | |
| testing | 6 |
| connectors, cleaning | |
| contact information, JGR | 345 |
| conventions, safety | 9 |
| criteria for defining data | |
| custom fields, defining | |
| customer | |
| identification | |
| modifying profile | |
| customer service | 345 |
| customizing | |
| database browser information | |
| labels and reports | |
| labels with data fields | 389 |
| reports with data fields | 391 |
| serial numbers | 74 |
| test steps | 78 |
| | |

D

| data fields for label customizing | dark current effects, eliminating |
|--|-------------------------------------|
| for report customizing | data fields |
| database backing up, automatically | for label customizing 389 |
| backing up, automatically | for report customizing 391 |
| backing up, manually | database |
| browser | backing up, automatically |
| changes not allowed299 configuring connection70 customizing browser information284 | backing up, manually424 |
| configuring connection70 customizing browser information284 | browser |
| customizing browser information 284 | changes not allowed299 |
| | configuring connection70 |
| morging 71 | customizing browser information 284 |
| merging | merging |
| modifying server72 | modifying server72 |

| not accessible71 |
|--|
| not accessible, troubleshooting |
| restoring 303, 422 |
| switching to local71 |
| switching to local, warning |
| viewing recovery history |
| DataBase Cleaner |
| changing password 410 |
| exiting 409 |
| installing |
| starting |
| system information |
| technical support |
| |
| usage |
| user access |
| database security mode |
| decimal point, number of digits after 61 |
| defining |
| connector types 92 |
| custom fields 49 |
| custom instructions78 |
| data criteria 288 |
| DUT |
| storage of results57 |
| deleting |
| connector |
| customer profile |
| existing filter |
| test profile |
| detector port, cleaning |
| device under test. See DUT |
| |
| digits, number of61 |
| display |
| connection diagram |
| instructions set 117 |
| measurement history graph 117 |
| one or two values for reflectance |
| resolution 61 |
| very small IL values65 |
| very small reflectance values |
| |

| document | |
|---|-----|
| browsing2 | 291 |
| printing2 | 293 |
| duplex | |
| high-throughput unidir. test | 207 |
| hybrid, high-throughput bidir. test 1 | 99 |
| hybrid, standard bidirectional test 1 | 81 |
| non-hybrid, high-throughput bidir. test1 | 93 |
| non-hybrid, standard bidirectional test 1 | 75 |
| patchcord6, 101, 1 | 73 |
| standard unidirectional test 1 | 89 |
| DUT | |
| changing type | 96 |
| configuration | |
| switch for selecting | 60 |
| switch, for selecting | 23 |
| DUT selection switch | 23 |
| testing using two loss test modules | 28 |
| | |

Е

| electronic offsets, eliminating eliminating offsets/dark current | |
|---|----------|
| ellipsis, in connection figures 139, 1 | |
| 243 | |
| emptying history list | 305 |
| erasing test profile | |
| EUI connectors, cleaning | 336 |
| exporting | |
| label and report | 292, 293 |
| labels automatically | |
| report | 291 |
| external switch, configuring | |

F

| failed tests, retrying56 |
|---|
| fanout |
| high-throughput bidirectional test 232 |
| high-throughput unidirectional test 236 |
| patchcord6, 101, 217 |
| standard bidirectional test |
| standard unidirectional test |

Index

| gel | |
|--|---|
| block for non-reflective termination 388 | 5 |
| index-matching | 5 |
| GPIB-controlled switch 28 | 5 |
| graph symbols 139, 173, 217, 243 | 6 |

G

Н

| hardware |
|---|
| for reflectance test 309 |
| initializing for reflectance verification 313 |
| help. see online user guide |
| high-order modes 385 |
| high-reflectance sensitivity 50 |

high-throughput

| bidirectional test, bundle hybrid 215 |
|--|
| bidirectional test, bundle non-hybrid215 |
| bidirectional test, duplex hybrid 199 |
| bidirectional test, duplex non-hybrid 193 |
| bidirectional test, fanout |
| bidirectional test, multifiber hybrid 271 |
| bidirectional test, multifiber non-hybrid265 |
| bidirectional test, simplex hybrid |
| bidirectional test, simplex non-hybrid 157 |
| unidirectional test, bundle non-hybrid. 215 |
| unidirectional test, duplex |
| unidirectional test, fanout |
| unidirectional test, simplex |
| history |
| emptying list |
| of backup and database, viewing 305 |
| hybrid patchcord |
| <i>,</i> , |

| identification label | 345 |
|---|-------|
| identifying | |
| customer | 89 |
| DUT type | 94 |
| test | 316 |
| IL reference method | 52 |
| IL values | |
| display for very small | 65 |
| index-matching gel or fluid | 388 |
| industry standards | 8 |
| initializing hardware, reflect. verification. | 313 |
| insertion loss | |
| measuring | 122 |
| monitoring | 109 |
| referencing | 125 |
| theory | 381 |
| installing | |
| cable assembly test system | 13 |
| DataBase Cleaner | , 408 |
| system | 30 |
| VSReport | 39 |
| | |

-

| instructions set | |
|-----------------------------|---|
| displaying 117 | 7 |
| modifying78 | 3 |
| selecting | 5 |
| integrating cavity | |
| internal | |
| monitor detector, theory | |
| reflection reference theory | 1 |

J

| JGR support e-mail | 345 |
|--------------------|-----|
| JGR Web site | 345 |

Κ

| keyboard wedge connection type 15 | kevb | oard we | dae conne | ection type | | 5 |
|-----------------------------------|------|---------|-----------|-------------|--|---|
|-----------------------------------|------|---------|-----------|-------------|--|---|

L

| label |
|-------------------------------------|
| customizing 294, 389, 391 |
| printing292 |
| template 87 |
| label, identification |
| LAN used for controlling system 6 |
| lasers of OTDRs, monitoring 317 |
| launch conditions, multimode |
| level, adjustment for power 128 |
| levels, user access45 |
| local |
| configuration for database |
| use of system6 |
| logical operator 285, 398, 401, 404 |
| loosely coupled modes 385 |
| loss meter module characteristics 4 |
| loss test module |
| adjusting power level128 |
| characteristics 4 |
| configuring multiple54 |
| connection with wavelength |
| selection switch |
| integrating cavity4 |
| |

| internal reflectance | 307 |
|-----------------------------|-----|
| selecting number of | |
| low IL values, warning | |
| low reflectance sensitivity | |
| low-order modes | |
| | |

Μ

| maintenance | |
|--|-----|
| detector ports | 338 |
| EUI connectors | |
| fixed connectors | |
| front panel | |
| general information | |
| mandrel-free testing | |
| mandrel-wrap non-reflective termination. | |
| master test jumper | 507 |
| automatic detection of length | 53 |
| entering length manually | |
| referencing | |
| unidirectional testing | |
| measurement | |
| for reference, performing | 320 |
| power level | |
| reflectance | |
| small reflectance values | |
| measurement history graph | |
| description | 116 |
| displaying | 117 |
| mode | |
| filter | 385 |
| tightly/loosely coupled | |
| modifying | |
| connector | 93 |
| switch ports configuration | |
| test profile | |
| user access | |
| module | |
| description | 5 |
| for test configuration | |
| physical address | |

| firmware version number | module information | |
|---|--|------|
| serial number | firmware version number | 345 |
| monitoring113DUT, selecting.113insertion loss109internal OTDR lasers.317measures displayed as graph116reference109reflectance109standard deviation, formula119starting113stopping113test wavelength, selecting113values displayed115values graph, clearing118MTJ. See master test jumper101MTP/MTRJ patchcord6MTP/MTRJ patchcord101multifiber101hybrid, high-throughput bidir. test251non-hybrid, high-throughput bidir. test265243standard unidirectional test259multimode386fiber launch conditions386fiber transmission385 | module identification number | 345 |
| DUT, selecting.113insertion loss109internal OTDR lasers.317measures displayed as graph116reference109reflectance109standard deviation, formula119starting113stopping113test wavelength, selecting113values displayed115values graph, clearing118MTJ. See master test jumper101MTP/MTRJ patchcord6MTP/MTRJ patchcord101multifiber104hybrid, high-throughput bidir. test251non-hybrid, high-throughput bidir. test265243standard unidirectional test259multimode16fiber launch conditions386fiber transmission385 | serial number | 345 |
| insertion loss | monitoring | |
| internal OTDR lasers | DUT, selecting | 113 |
| measures displayed as graph116reference109reflectance109standard deviation, formula119starting113stopping113test wavelength, selecting113values displayed115values graph, clearing118MTJ. See master test jumper101MTP/MTRJ patchcord101multifiber101hybrid, high-throughput bidir. test251non-hybrid, high-throughput bidir. test265243standard unidirectional test259multimode386fiber launch conditions386fiber transmission385 | insertion loss | 109 |
| reference | internal OTDR lasers | 317 |
| reflectance | measures displayed as graph | 116 |
| standard deviation, formula | reference | 109 |
| starting | reflectance | 109 |
| stopping113test wavelength, selecting113values displayed115values graph, clearing118MTJ. See master test jumper118MTP patchcord6MTP/MTRJ patchcord101multifiber101hybrid, high-throughput bidir. test251non-hybrid, standard bidirectional test255non-hybrid, standard bidirectional test243standard unidirectional test259multimode386fiber launch conditions385 | standard deviation, formula | 119 |
| test wavelength, selecting | starting | 113 |
| values displayed | stopping | 113 |
| values graph, clearing | test wavelength, selecting | 113 |
| MTJ. See master test jumper MTP patchcord | | |
| MTP patchcord | values graph, clearing | 118 |
| MTP/MTRJ patchcord | | |
| multifiber hybrid, high-throughput bidir. test 271 hybrid, standard bidirectional test 251 non-hybrid, high-throughput bidir. test265 non-hybrid, standard bidirectional test 245 patchcord | | |
| hybrid, high-throughput bidir. test 271 hybrid, standard bidirectional test 251 non-hybrid, high-throughput bidir. test265 non-hybrid, standard bidirectional test 245 patchcord | MTP/MTRJ patchcord | 101 |
| hybrid, standard bidirectional test 251 non-hybrid, high-throughput bidir. test265 non-hybrid, standard bidirectional test 245 patchcord | | |
| non-hybrid, high-throughput bidir. test265 non-hybrid, standard bidirectional test 245 patchcord | | |
| non-hybrid, standard bidirectional test 245 patchcord | | |
| patchcord | non-hybrid, high-throughput bidir. tes | t265 |
| standard unidirectional test | · · · | |
| multimode fiber launch conditions | 1 | |
| fiber launch conditions | | 259 |
| fiber transmission | | |
| | | |
| reference jumper 318 | | |
| 2 | reference jumper | 318 |

Ν

| N connector patchcord N filter patchcord non-reflective termination | |
|---|-----|
| connector | 388 |
| gel block | 388 |
| index-matching gel or fluid | 388 |
| mandrel-wrap | 387 |
| null measurement, performing | 314 |

| nulling offsets | . 314 |
|------------------|-------|
| number of digits | 61 |

0

| one connector only test | 6 |
|---------------------------------------|-----|
| online user guide | 344 |
| Operator | |
| access level | |
| access to specific fields | 48 |
| required access | 42 |
| operator access | |
| level | 45 |
| optical detector performance | 314 |
| optical switch module characteristics | 4 |
| optimizing result accuracy | 314 |
| order of tests | 101 |
| OTDR internal lasers, monitoring | 317 |
| overfilled fiber | 386 |
| overwriting results | 45 |
| | |

Ρ

| parameters for printer, setting | 85 |
|---------------------------------|---------|
| part number for DUT | 94 |
| passive component testing | 8 |
| password, changing | 47, 410 |
| patchcord | |
| assembly | 6 |
| bundle | |
| duplex | |
| fanout | |
| MTP-MTP/MTRJ-MTRJ | |
| simplex | 139 |
| types | 101 |
| paths, optical | |
| PDF. see online user guide | |
| performing | |
| reference measurement | 320 |
| reflectance measurement | 322 |
| reflectance verification | |
| performing null measurement | |
| | |

| ports |
|---|
| modifying configuration 45 |
| switch, activation/deactivation |
| switch, associated to connector type 133 |
| power level |
| adjusting128 |
| measuring |
| precision of displayed values 61 |
| preparing hardware for reflectance test 309 |
| printer, selecting 85 |
| printing |
| document 293 |
| labels and reports 292 |
| labels automatically85 |
| report 85 |
| statistics charts 289 |
| product |
| identification label |
| profile |
| customer, modifying a |
| entering for test97 |
| of test, selecting 104 |
| protective cap |
| |

R

| recalibration 33 | 9 |
|---|----|
| records | |
| deleting 414, 42 | 7 |
| restoring 42 | 2 |
| reference | |
| automatic detection of master test jump | er |
| length5 | 3 |
| configuration5 | 1 |
| forcing5 | 1 |
| IL 12 | 5 |
| interacting with measurements 10 | 2 |
| internal reflection theory | 4 |
| method for unidirectional test | 2 |
| monitoring 10 | 9 |
| performing measurement | 0 |
| reflectance 12 | 4 |

| reference, zero power | 314 |
|---------------------------------------|----------|
| referencing master test jumpers | |
| bidirectional testing | 125 |
| description | |
| IL | |
| | |
| reflectance | 124 |
| unidirectional testing | 125, 127 |
| reflectance | |
| displaying values | |
| measurement | |
| monitoring | |
| number of values | |
| preparing hardware for test | |
| referencing | |
| saving test results | |
| sensitivity, defining | 50 |
| testing on short fibers | |
| theory | |
| verification, warmup time | |
| viewing test results | |
| reflectance meter. See loss test modu | |
| reflectance values | |
| display for very small | 63 |
| reflectance verification | |
| reflectance verification tool | |
| closing | 312 |
| description | |
| starting | |
| user access | |
| | |
| reflectometer laser | |
| reinstalling software | |
| removing | |
| test profile | 99 |
| report | |
| customizing | |
| exporting | |
| printing | |
| printing/exporting | |
| selecting template | |
| resolution, setting | 61 |
| restoring tests and configurations | |
| - • | - |

results

| addition not allowed in the database 299 | |
|--|---|
| appending the database71 | |
| for reflectance test, saving | 3 |
| managing 283 | 3 |
| merging | 1 |
| overwriting 45 | |
| recording all at the same time | |
| saving | 7 |
| viewing | |
| viewing table136 | õ |
| returning to database browser | 3 |
| RM switch. See wavelength selection switch | |
| RM. See loss test module | |

S

| safety | |
|---------------------------------------|-----|
| caution | 9 |
| conventions | 9 |
| warning | 9 |
| saving | |
| reflectance test results | 328 |
| results | 57 |
| security mode, database | 73 |
| selecting | |
| printer | 85 |
| printing templates | 292 |
| test profile | |
| test steps | 76 |
| user access level | 45 |
| sensitivity of reflectance | 50 |
| separated reflectance values | 58 |
| sequences for tests | 102 |
| serial number, module | 345 |
| serial numbers, generating | 74 |
| server configuration for the database | 72 |
| setting | |
| automatic backup | 302 |
| company profile | 91 |
| test | 104 |
| user access | 48 |

| short fibers, testing reflectance 108 |
|--|
| simplex |
| high-throughput unidir. test |
| hybrid, high-throughput bidir. test 161 |
| hybrid, standard bidirectional test 145 |
| non-hybrid, high-throughput bidir. test157 |
| non-hybrid, standard bidir. test |
| patchcord6, 101, 139 |
| standard unidirectional test |
| single-fiber patchcord6 |
| small IL values, display |
| small reflectance values |
| display63 |
| measuring |
| software, installing |
| source variation compensation |
| standalone use of system6 |
| standard |
| bidirectional test, bundle hybrid |
| bidirectional test, bundle non-hybrid 214 |
| bidirectional test, duplex hybrid |
| bidirectional test, duplex non-hybrid 175 |
| bidirectional test, fanout |
| bidirectional test, multifiber hybrid 251 |
| bidirectional test, multifiber non-hybrid245 |
| bidirectional test, simplex hybrid |
| bidirectional test, simplex non-hybrid 141 |
| unidirectional test, bundle |
| unidirectional test, duplex |
| unidirectional test, fanout |
| unidirectional test, multifiber |
| unidirectional test, simplex |
| standards, industry |
| starting |
| application |
| reflectance verification tool |
| statistics charts, printing |
| storage of results, setting |
| storage requirements |
| storing reflectance test results |
| |

| Supervisor |
|--|
| changing password47 |
| providing required access |
| supervisor access |
| level 45 |
| Restricted User mode, limitations 45 |
| switch |
| activating/deactivating ports |
| broken port deactivation 130 |
| connecting16 |
| external28 |
| for foot 13 |
| for selecting DUTs 60 |
| for selecting MS12 Loss Test Module 60 |
| GPIB-controlled28 |
| modifying ports configuration |
| ports and connectors, associating 133 |
| symbols, in figures 139, 173, 217, 243 |
| symbols, safety9 |
| system |
| installing13 |
| user access42 |

Т

| technical support | 345, 425 |
|---------------------------|----------|
| temperature for storage | 333 |
| template | |
| customizing | 294 |
| for printing | 292 |
| selecting | |
| test | |
| backing up | 299 |
| connector A or B only | 6 |
| customizing instructions | 78 |
| deleting profile | 99 |
| entering information | |
| increasing repeatability | 50 |
| modifying profile | |
| modules for configuration | |
| number of retrials | |
| patchcord options | |
| | |

| possible sequences101 |
|--|
| profile, creating a97 |
| reflectance on short fibers |
| restoring |
| retrying |
| saving results |
| selecting instructions76 |
| selecting the number of loss test modules. 55 |
| sequences102 |
| setting up104 |
| viewing reference results |
| without a mandrel6 |
| test results. See results |
| test sequences 101 |
| test wavelengths, selecting with two loss test |
| modules22 |
| testing a DUT several times45 |
| testing methods for IL and reflectance |
| theory |
| insertion loss measurement |
| integrating cavity 382 |
| internal monitor detector |
| internal reflection reference |
| multimode fiber launch conditions 386 |
| multimode fiber transmission |
| reflectance |
| tightly coupled modes |
| transportation requirements |
| two-fiber patchcord6 |
| typical reflectance verification sequence 308 |

U

| under threshold values, display | . 63, 65 |
|---------------------------------|----------|
| underfilled fiber | 386 |
| unidirectional test | |
| bundle | 214 |
| description | 6 |
| duplex | 189 |
| duplex high-throughput | |
| fanout | 227 |
| | |

| fanout high-throughput | 236 |
|-----------------------------------|-----|
| method | 52 |
| multifiber | 259 |
| non-hybrid bundle | |
| simplex | |
| unique serial numbers | 74 |
| unit recalibration | |
| updating software. see installing | |
| user access | |
| levels | 45 |
| setting | 48 |
| user guide for VSReport Designer | 39 |
| user guide. see online user guide | |
| | |

W

| warmup time for reflectance verification 314 |
|---|
| warning for low IL values65 |
| wavelength selection switch |
| connection with loss test modules25 |
| testing using two loss test modules 23 |
| working locally71 |
| workstations, using custom instructions 76 |
| writing test instructions in your language 78 |
| |

Ζ

| zero-power reference31 | 4 |
|------------------------|---|
|------------------------|---|

V

| values | |
|--------------------------------|--------|
| display precision | 61 |
| under limit, display | 63, 65 |
| verification tool, reflectance | |
| description | 307 |
| exiting | 312 |
| user access | 42 |
| viewing | |
| database browser information | 284 |
| reflectance test results | 331 |
| VSReport Designer | |
| customizing labels and reports | 294 |
| help/user guide | 39 |
| installing | 39 |
| license key | |
| - | |