

CertiFiberTM





CERTIFIBERTM

User Guide

PN 1886280 (English) April 2002, 4/02

© 2002 Fluke Networks, Inc. All rights reserved. Printed in USA.
All product names are trademarks of their respective companies.

LIMITED WARRANTY AND LIMITATION OF LIABILITY

Fluke Networks, Inc. (Fluke Networks) warrants its products to be free from defects in material and workmanship under normal use and service for one (1) year, beginning on the date of shipment. Link interface adapters (LIAs), parts, product repairs, and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke Networks authorized reseller, and does not apply to fuses, disposable batteries, or to any product which, in Fluke Networks' opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation or handling. Fluke Networks warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke Networks does not warrant that software will be error free or operate without interruption.

Fluke Networks' authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke Networks.

Fluke Networks' warranty obligation is limited, at Fluke Networks option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke Networks authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke Networks authorized service center to obtain return authorization information. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB Destination). If Fluke Networks determines that the failure was caused by misuse, alteration, accident, or abnormal condition of operation or handling, Fluke Networks will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer, transportation prepaid, and the Buyer will be billed for the repair and return transportation charges (FOB Shipping Point).

Warranty service is available outside the United States only if product was purchased through a Fluke Networks' Authorized Sales Outlet in the country of use or the applicable Fluke Networks international price was paid. Product transported from the United States for which the applicable Fluke Networks international price was not paid must be returned to the U.S. to receive warranty service, at the shipment expense and risk of Buyer. Fluke Networks reserves the right to invoice Buyer for importation costs of repair/replacement parts when product purchased in one country is submitted for repair in another country.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FLUKE NETWORKS SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, WHETHER ARISING FROM BREACH OF WARRANTY OR BASED ON CONTRACT, TORT, RELIANCE, OR ANY OTHER THEORY.

Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

Fluke Networks, Inc.
P.O. Box 777
Everett, WA 98206-0777
U.S.A.

Fluke Europe B.V.
P.O. Box 1186
5602 BD Eindhoven
The Netherlands



CERTIFIBER™

User Guide


ENGLISH

A guide to using the CERTIFIBER to install, manage, and troubleshoot multimode fiber cabling systems.

CERTIFIBER is the fastest dual fiber test equipment to certify installed links at both wavelengths, 850 and 1300nm. It verifies against TIA and ISO standards, as well as other fiber network application requirements.

CERTIFIBER measures length, propagation delay, and power loss of multimode fiber optic cabling.

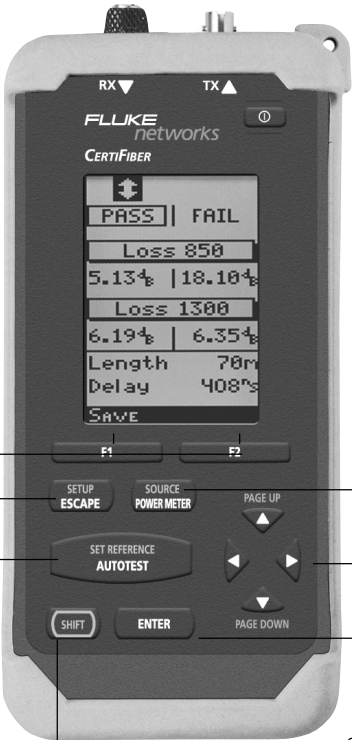
Contents

Chapter 1 - Introduction	6
The Complete Fiber Solution	6
Standard Features	7
Graphical User Interface	8
CertiFiber's Keypad	8
CertiFiber remote	10
LED Indicators	10
The Keypad	11
Battery	12
Battery Check	12
Connector Adapters	13
Technical Support	13
Product Versions	14
Editing with CertiFiber	14
 Getting Started	16
Display Contrast	17
Calibrating CertiFiber	17
 Chapter 2 - Setup	 19
Autotest	19
Editing Autotests	20
Test Mode	21
Job Names	22
Meters/Feet	23
Time/Date	23
Owner Name	24
Fiber GRI	25
Language	26
Upload to PC	27

Chapter 3 - Automatic Measurements .	29
Setting the Reference	29
Setting the Reference for Loopback Mode	31
Autotest	31
Autotest Results	34
Saving an Autotest	35
Viewing Autotest Results	37
Loopback Autotest	39
Results	40
Deleting Autotests	41
Uploading to a PC	42
Printing Test Results	43
Sample Autotest Certification Report	43
 Chapter 4 - Manual Measurements	 45
Power Loss	45
Loopback	46
Source Mode	46
Remote Light Source	47
 Appendix - A Technical Specifications ..	 49
CertiFiber	49
CertiFiber remote	50
 Appendix - B PASS/FAIL Criteria	 51

CERTIFIBER adapter ports
Receive 2 Transmit 1

F1 and F2
Functions
vary
depending
on the screen
currently
displayed.



Autotest
performs
a test.
Shift +
Autotest
sets the
reference.

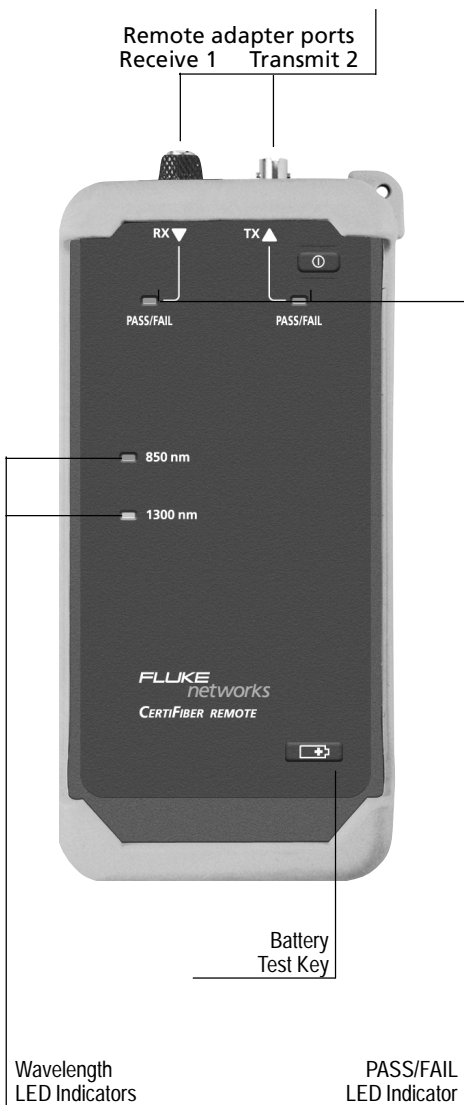
Shift in conjunction with
other keys executes
extended functions.

Enter
executes
a command.

Arrow Keys
allow navigation
within displays.

Escape exits the current
display or function.
Shift + Escape opens
the SETUP screen.

Power Meter enables non-automated
measurements. Shift + Power
Meter activates the Light Source.



Chapter 1 - Introduction

The Complete Fiber Solution

CERTIFIBER is the most advanced hand-held certification tool for fiber links, designed to be the complete solution for professional cable installers, service providers, and network administrators.

With the push of a button, CERTIFIBER certifies two multimode fibers simultaneously at both wavelengths.

Rather than just providing a number, CERTIFIBER analyzes the fiber link and determines whether cabling and network standards are met.

CERTIFIBER and CERTIFIBER REMOTE have an optical source that provides a consistent calibrated dual wavelength light. The level of light injected into or emerging from the fiber network can be measured at any point so that the performance of fiber optic transmission paths and equipment can be accessed quickly and accurately.

CERTIFIBER measures the optical power and at the same time verifies the proper installation and operation of various fiber optic components like fiber optic hub modules, repeaters, and adapter cards. By measuring signal loss CERTIFIBER helps you to identify faulty patch cables, failing splices, bad couplers and connectors.

CERTIFIBER's delay and length measurement capability accurately tests the link's propagation delay, which is then used to calculate length.

CERTIFIBER incorporates a graphical user interface and descriptive menu options that guide you quickly and easily through the completely automated certification or troubleshooting process of fiber optic cabling systems.

Standard Features

- Certifies a duplex fiber link (two fiber cables) simultaneously
- Measures Optical Power Loss in the direction of data transmission for both multi-mode wave lengths on two fiber cables without changing connectors
- Measures Length and Propagation Delay for a dual fiber cable
- Makes bidirectional measurements for duplex fiber links
- Utilizes preprogrammed test templates to easily certify fiber optic cabling to industry or network standards
- Pinpoints the margin available on the tested cable above and beyond the PASS/FAIL requirements
- Stores 1000 Autotests in memory with user-friendly, alphanumeric names, job names, and unique time and date stamps
- Transmits light continuously or modulated at 2KHz
- Downloads stored test results to a computer data-base for printing and professional record management

- Utilizes interchangeable connector adapters to test multiple network connections
- Includes a custom-tailored, non-removable impact cover for added protection

Graphical User Interface

CERTIFIBER's graphical user interface consists of an LCD display, quick access menus, arrow keys, and descriptive menu options that simplify certifying and troubleshooting fiber cabling systems.

CERTIFIBER's Keypad

ON/OFF

When turned on, CERTIFIBER will display the opening screen. To save battery power, CERTIFIBER will turn off automatically after 10 minutes without activity.

Escape

Press Escape to return to the previous screen.

Power Meter

Press Power Meter to measure power and loss at either 850 or 1300nm wavelength in a manual mode.

Autotest

Press Autotest to measure Length, Power Loss, and to obtain a PASS/FAIL analysis against a selected standard. *(See Chapter 3 - Automatic Measurements: Autotest for more information.)*



Shift

To execute one of CERTIFIBER's extended functions, press Shift in conjunction with AUTOTEST, Power Meter, Escape, or the arrow keys.









Enter

Press Enter to execute the current screen command.



Arrow Keys

The up and down arrows in the display area indicate that more information is available by pressing the  or  arrow keys. Press Shift and use the  or  arrow keys for page up and page down navigation. Use the  or  arrow keys to move right or left within a string of characters for editing purposes.



+



= Source

In addition to the fully automated test functions, CERTIFIBER can be operated in a manual mode. Press Shift + PowerMeter to quickly transform CERTIFIBER into a manual light source. Source Mode also allows you to change the light source from steady to modulated.



+



= Set Reference

Press Shift + Autotest to set the Reference value for calculating the loss measurement.
(See Chapter 3 - Automatic Measurements:

Setting the Reference for more information.)



Press Shift + Escape to customize CERTIFIBER. From any screen press Shift + Escape to quickly return to the Setup menu. *(See Chapter 2 - Setup for more information.)*

CERTIFIBER REMOTE

The CERTIFIBER REMOTE is an active and intelligent far end device that works with CERTIFIBER to verify optical cable transmission quality. All information is processed and transferred to the main unit. Both units provide a consistent, calibrated light source that increases the ease and effectiveness of fiber optic testing.

LED Indicators

CERTIFIBER REMOTE has 4 LED indicators:

LED	Color	Description
RX1 PASS/FAIL	red green	Fiber 1 has failed Fiber 1 has passed
TX2 PASS/FAIL	red green	Fiber 2 has failed Fiber 2 has passed
850nm*	green	CERTIFIBER REMOTE is transmitting at 850nm
1300nm*	green	CERTIFIBER REMOTE is transmitting at 1300nm
RX1 and TX2 **	red	Low Battery < 10%
TX2 **	red	Battery 10 to 25%

RX1 **	green	Battery 25% to 75%
RX1 and TX2 **	green	Good Battery > 75%
RX1 and TX2 ***	yellow	Part 1 of Two Way Autotest completed
<p>*Press and hold the Battery button to provide a light-source for 850 or 1300nm. The appropriate wave length LED will blink rapidly and then continuously.</p> <p>**Press the Battery button to run the Battery test.</p> <p>***Switch fiber connectors: RX2 to TX1, TX1 to RX2, RX1 to TX2, TX2 to RX1.</p>		

The Keypad

ON/OFF (CERTIFIBER REMOTE)

When turned on, CERTIFIBER REMOTE will flash the LCD power-up sequence. To save battery power, CERTIFIBER REMOTE will turn off automatically after 30 minutes without activity.

Battery (CERTIFIBER REMOTE)

CERTIFIBER REMOTE has a battery level indicator that allows to check the battery if CERTIFIBER REMOTE is not connected to CERTIFIBER. Press the Battery button to illuminate the RX1 and TX2 LEDs on the CERTIFIBER REMOTE unit. If both LEDs blink in red, the batteries are low and should be replaced. If the LEDs blink green lights, the remote unit's batteries are good and testing can proceed.

CERTIFIBER REMOTE can serve as a consistent light source for either wavelength. Simply press and hold the Battery button. After the RX1 and/or TX2 LED flashes 5 times during the battery test, the wavelength LED will blink

rapidly and then continuously to indicate that CERTIFIBER REMOTE provides a consistent lightsource for the wavelength indicated. Press the Battery button to turn the lightsource off. Press and hold the battery button to switch to the other wavelength.

Battery

CERTIFIBER and CERTIFIBER REMOTE each require three AA alkaline batteries. If CERTIFIBER and CERTIFIBER REMOTE will be stored for more than one month, the batteries should be removed.

To conserve battery life, CERTIFIBER will turn off automatically when no key has been used for 10 minutes.

Note

CERTIFIBER and CERTIFIBER REMOTE will not function properly with carbon batteries. Alkaline batteries are required.

Note

Stored Autotests and setup parameters are stored in flash memory. They are not affected by the battery status.

Battery Check

To check CERTIFIBER's battery:

1. Connect the CERTIFIBER to the REMOTE unit using a launch cable.
2. Turn both units on.
3. Press F2 to display the About screen.

The Version Info screen displays CERTIFIBER and CERTIFIBER REMOTE's remaining Battery power,

the Serial #, and the Hardware and Software Versions.

To change batteries, slide off the battery cover located on the back of each unit. Replace the three AA alkaline batteries and position them according to the display in the battery case.

Connector Adapters

CERTIFIBER has one ICA connector port (TX) and one threaded optical receiver port (RX) which accepts different connector adapters.

Attach the included connector adapters to the CERTIFIBER and CERTIFIBER REMOTE RX receiver ports before connecting jumpers.

Note

Keep the connectors covered when the units are not in use.

Both units have covers to protect the connectors from dirt. Keep the adapters covered when the units are not in use. This helps to ensure that contaminants from handling fiber do not affect test measurements.

Technical Support

Visit the Fluke Networks website at www.flukenetworks.com. Send email to fluke-assist@flukenetworks.com.

To order accessories or get the location of the nearest Fluke Networks distributor or service

center, call:

- USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-363-5853
- Europe: +31-402-675-200
- Beijing: 86 (10) 6512-3435
- Japan: +81-3-3434-0181
- Singapore: +65-738-5655
- Anywhere in the world: +1-425-446-4519

For operating assistance in the USA, call 1-800-283-5853.

Product Versions

To display the hardware and software versions of CERTIFIBER connect the units using a duplex cable.

1. Turn the units on.
2. Press F2 to display the About screen.

The Version Info screen displays CERTIFIBER's and CERTIFIBER REMOTE's remaining Battery power, the Serial Numbers, and the Hardware and Software Versions.

About	
Main Unit	
55A97M00104	
S/W:	1.12
H/W:	1.10
Battery: 100%	
Remote Unit	
55B97M00104	
S/W:	1.10
H/W:	1.00
Battery: 51%	

3. Press Escape to return to the CERTIFIBER logo screen.

Editing with CERTIFIBER

Several screens allow field editing. For example, the owner and company names, the Autotest name, and certain numeric values can be edited.

An editable field contains up to 12 alphabetic and special characters.

The following example shows you how to edit a field.

1. Open a screen that contains an editable field and press Edit to display the Edit screen.

The Edit screen contains the field you want to edit, and a spin wheel. The first character in the editable field will be highlighted.

2. To enter a new name or number press F2 (Delete) to delete the character at the cursor.

3. Use the **↑** or **↓** arrow key to scroll through the characters (letters, numbers, and special characters).

4. Spin the wheel to the character you want to select.



5. Press Enter to select the first letter as an upper case letter and to move the highlight automatically onto the next position.

6. Use the **↑** or **↓** arrow key to spin the wheel to the letter you want to select.

7. Press Shift + Enter to select the second letter as a lower case letter.

8. Repeat steps 3 through 7 until the field is completed.

9. Press F1 (OK) to exit the Edit screen.



Getting Started

CERTIFIBER certifies a fiber link in seconds using the one-button Autotest.

To run an Autotest proceed as follows:

1. Set the reference value. *(See Chapter 3 - Automatic Measurements: Setting the Reference for detailed information.)*
2. Attach the cable to be tested to CERTIFIBER and CERTIFIBER REMOTE 's connectors.

Note

One fiber needs to be connected from RX2 to TX2, the second fiber needs to be connected from TX1 to RX1

3. Select a fiber standard. TIA 568B and ISO 11801 are the most widely used fiber standards.
4. Press the Autotest button.
5. Enter the number of splices and connectors.
6. Press F1 (Run).

CERTIFIBER will now run the length, propagation delay, and dual fiber loss measurements for 850nm and 1300nm and provide a PASS/FAIL analysis based on the fiber standards.

7. Press F1 (Save) to name and store the test result for each fiber. *(See Chapter 3 - Automatic Measurements: Autotest for detailed information.)*
 8. Press F2 (View) to display test results and move between fibers.
-

Test Results can now be viewed in the Results screen. To print test results, they need to be uploaded to a PC using *Scanlink*. (See *Chapter 3 - Automatic Measurements: Results for further information.*)

Display Contrast

CERTIFIBER's display contrast can be adjusted. From the logo screen, press Shift + ↑ or ↓ to increase or de-crease the contrast.

Note

The display contrast returns to the default setting when the unit is turned off.

Calibrating CERTIFIBER

CERTIFIBER and CERTIFIBER REMOTE should be calibrated annually with specialized equipment.

Note:

Improperly polished or manufactured fiber connector ferrules may cause damage to CERTIFIBER's transmit LED.

To avoid out-of-warranty repairs, please use clean, properly polished connectors.

Chapter 2 - Setup

Press **Shift** + **SETUP
Escape**

to display the Setup screen.

Use the **↑** or **↓** arrow keys to highlight a setup feature.

Press Enter to display the relevant setup screen.

Press Escape to return to the CERTIFIBER logo screen.



Autotest

CERTIFIBER certifies fiber links based on the common standard TIA 568B and the international standard ISO 11801, as well as common LAN cabling standards such as FDDI, Fiber Channel and other application specific fiber requirements. *(See Appendix A for a complete list of supported network types.)*

1. To display the Autotest screen, highlight Autotest in the Setup screen and press Enter or F1 (Select).

2. Use the **↑** or **↓** arrow keys to scroll through the list of Autotests.

3. Highlight the preferred Autotest and press F1 (Select)



to select it as the Autotest to run and to return to the Setup screen.

Editing Autotests

In addition to the preprogrammed certification standards, CERTIFIBER allows you to customize Autotest settings and to develop new custom Autotests by specifying the PASS/FAIL limits to be used.

To edit an Autotest, proceed as follows:

1. From the Autotest setup screen use the \uparrow or \downarrow to highlight the Autotest you want to customize and then press F2 (Edit).

If you are editing an existing Autotest, the Testname: will be marked with an (*) preceding the selected name.

2. With the Testname field highlighted press F1 (Edit) to name the Autotest. (See Chapter 1 - Introduction: Editing with CERTIFIBER for detailed information.)

Testname:	*TIA 568B
Loss Per:	
Conn:	0.5dB
Splice:	0.1dB
Loss Per Km:	
@850:	1.0dB
@1300:	1.0dB
Length:	1000m
Delay:	N/A
SAVE	SELECT

Note

For equation-based Autotests (TIA 568B, ISO 11801, or 100 BASE-F) the amount for Loss per Connector and Splice needs to be entered.

3. Press F2 (Select) to highlight the value you want to edit.
4. Use the \uparrow or \downarrow to change the displayed values in 0.1dB or 1m increments.

5. Use the ← or → to change the displayed values in 1dB or 100m increments.

Editable fields for an equation-based Autotest are the Test Name, the Loss per Connector, the Loss per Splice, the Loss per Kilometer for both wavelengths, the Length, and the Delay.

Editable fields for an Autotest with fixed PASS/FAIL criteria are the Test Name, the Max. Loss for both wavelengths, the Length and the Delay.

6. Press F1 (Save) to open the Overwrite Autotest screen. It contains a list of four user definable Autotest names (User 1, User 2, User 3, and User 4).

7. Use the ↑ or ↓ to highlight one of the four Autotest names you want to overwrite with the new testname and settings.

Note

To ensure that the default Autotests are not altered, the '' preceding the name cannot be removed.*

8. Press F1 (Select) to save the Autotest and list the new testname in the Autotest screen.

9. Press F1 (Select) to select the highlighted Autotest as the test to run and return to the Autotest-Setup screen.

Test Mode

CERTIFIBER allows you to control the test direction. Dual fibers can be tested in opposite single direction or in both directions. Choose One Way to measure a duplex fiber link or

choose Two Way to measure a duplex fiber link in both directions (bidirectional test).

1. To display the Test Mode screen, use the ↓ to scroll to Test Mode in the Setup screen and press Enter or F1 (Select).

The display shows the currently selected test mode.



2. Press F2 (Change) to change the test mode.

3. Press F1 (Save) to save the setting and return to the Setup screen.

Job Names

CERTIFIBER allows you to assign predefined or customized Job Names so that you can uniquely identify different job sites, e. g. Project 1 has 389 fiber test results stored, Project 2 has 102 fiber test results stored etc.

1. To display the Job Names setup screen, use the ↓ to scroll to Job Names in the Setup screen and, press Enter or F1 (Select).



2. Use the ↑ or ↓ to scroll through the list of job names.

3. Highlight a Job Name and press (F2) Edit to customize it with up to 10 characters. (See *Chapter 1 - Introduction: Editing with CERTIFIBER for detailed information.*)

4. Highlight the Job Name you want to use and press Enter or F1 (Save) to save the list of Job Names.

If you choose not to use Job Names the first item in the Job Name list will automatically default to Not Used when an Autotest is saved.

Meters/Feet

CERTIFIBER allows you to change the measurement units from meters to feet.

1. To display the Meters/Feet setup screen, use the ↓ to scroll to Meters/Feet in the Setup screen and press Enter or F1 (Select).

The display shows the currently selected measurement unit.



2. Press F2 to toggle the measurement setting between Meters and Feet or use the ↑ or ↓ to change the measurement units.

3. Press F1 (Save) to save the setting and return to the Setup screen.

Time/Date

CERTIFIBER allows you to change the date and time. The set time and date will remain in the unit unless the battery is removed for more than one hour.

1. To display the Time/Date setup screen, use the ↓ to scroll to Time/Date in the Setup screen and press Enter or F1 (Select).

2. Use the ← or → arrow key to scroll through the segments in the screen.
3. Select the portion of the time or date field to change.
4. Use the ↑ or ↓ to change the values for the time and date.

Note

All fields are editable in increments of 1. Hold down the ↑ or ↓ to advance faster.

CERTIFIBER has two time displays available: 12 or 24 hour clock.

5. Move the cursor to the 12 Hour field. Use the ↑ or ↓ arrow keys to select the 12 or 24 hour option.

6. Press F1 (Save) to save the new settings and return to the Setup screen.



Owner Name

CERTIFIBER allows you to change the owner and company name used on the logo screen and on printed reports.

1. To display the Owner Name setup screen, use the ↓ to scroll to Owner Name in the Setup screen and press Enter or F1 (Select).

2. Use the ↑ or ↓ to highlight the Company Name.

3. With the Company name highlighted press F2 (Edit).



The Editing... screen appears with the cursor in the Company Name field.

4. Use the **↑** or **↓** arrow key to scroll through the characters in the spin wheel.

5. Press Enter to select the character located in the center of the spin wheel. Press Shift + Enter to select a lower case letter.

(See Chapter 1 - Introduction: Editing with CERTIFIBER for detailed information).

Up to 12 characters can be edited individually at the cursor position. Use the **←** and **→** to move right or left within a string of characters.

6. Repeat steps 4 and 5 until the field is completed.

7. Press F2 (Delete) to remove a letter from the field.

8. Press F1 (OK) to exit the Edit screen.

9. Highlight the Operator Name and press F2 (Edit).

10. Edit each character in the Edit screen individually as described in steps 4 through 8.

11. Press F1 (Save) to save the names and return to the Setup screen.

Fiber GRI

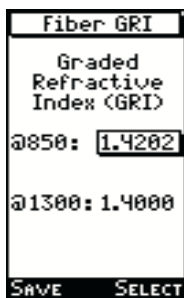
A fiber cable's Graded Refractive Index (GRI) differs depending on the supplier. To receive accurate length results for different fiber cables, CERTIFIBER has user definable GRI values for both wavelengths.

The default GRI values used for a 62.5 micron

cable are 1.5014 at 850nm, and 1.4966 at 1300nm. If you are using 50 micron cable and do not have the GRI values published by the fiber manufacturer, the defaults should be set to 1.4897 at 850nm and 1.4856 at 1300nm.

The standard GRI values for 62.5 micron fiber produced before 1994 is 1.478 at 850nm, and 1.422 at 1300nm.

1. To display the Fiber GRI setup screen, use the ↓ key to scroll to Fiber GRI in the Setup screen and press Enter or F1 (Select).



2. Press F2 (Select) to highlight the GRI to be changed.

3. Use the ↑ or ↓ arrow key to increase or decrease the value by .0001dB.

4. Use the ← or → arrow key to increase or decrease the value by .01 dB.

5. Press F1 (Save) to save the settings and return to the Setup screen.

Language

CERTIFIBER offers a selection of languages for the screen display.

1. To display the Language setup screen, use the ↓ to scroll to Language in the Setup screen and press Enter.

2. Use the ↑ or ↓ to scroll to



the appropriate language.

3. Press Enter or F1 (Select) to select the highlighted language as the default language and return to the Setup screen.

Upload to PC

All test results can be uploaded to a PC using the included *Scanlink Tools* software. (See *Chapter 3 - Automatic Measurements: Uploading to a PC for detailed information.*)

1. To launch CERTIFIBER's Upload mode, use the ↓ to scroll to Upload to PC in the Setup screen and press Enter.

All connectors and fiber end faces need to be clean prior to testing. Use the appropriate optical cleaning supplies to keep connectors and adapters free from contamination.

Chapter 3 - Automatic Measurements

Setting the Reference



Accurate, repeatable measurements of optical power and signal loss are fundamental for the installation and maintenance of fiber optics.

To make an accurate measurement, you need to know the loss in your attached launch cable and the power being transmitted.

The reference value must be stored before a loss measurement can be calculated. CERTIFIBER requires the reference value to compensate for the signal loss in the launch cable. This value is then subtracted from the actual measured value to determine loss.



Once the reference value is established, consistent readings for loss, delay, and length measurements are ensured.

Note

The launch cable used to set the reference value should be the same type of fiber as the cables to be tested and certified, either

50/125 or 62.5/125.

1. To set the reference value, connect CERTIFIBER and CERTIFIBER REMOTE using the launch cables as shown.

2. Press Shift + Autotest to record the reference value.

Once the reference data has been saved the CERTIFIBER logo screen will be displayed.

Note

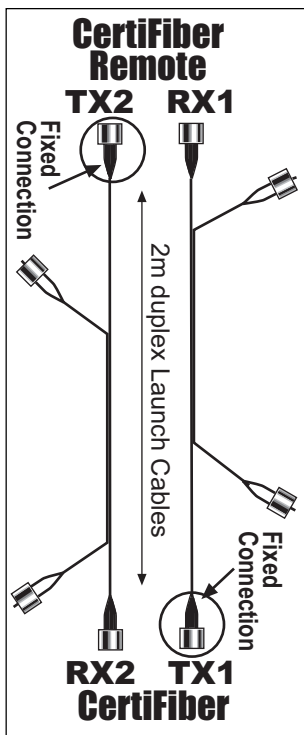
Once the reference value has been established, ensure that the launch cables remain attached to the TX1 and the TX2 ports! Disconnect only the RX1 and RX2 ports.

Note

If the test configuration changes, a new reference value needs to be established.

CERTIFIBER will store a separate reference value for each wavelength. The new reference value will be subtracted from the actual measured value to determine loss.

CERTIFIBER will store reference data for up to five CERTIFIBER REMOTE units and one Loopback.



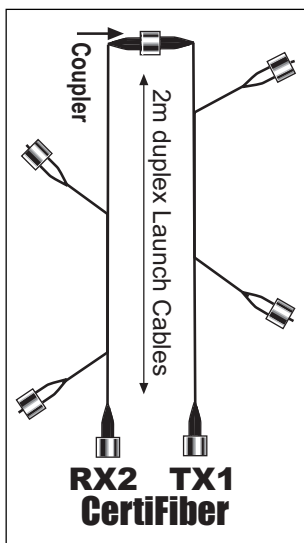
Note

To ensure consistent accurate measurements, the reference value must be set each calendar day that CERTIFIBER is used. The reference value expires each day at midnight.

Setting the Reference for Loopback Mode

If a single cable needs to be measured, the reference value is set as follows:

1. Connect the Launch cables to CERTIFIBER's RX2 and TX1 connectors as shown.
2. Use a coupler to connect the Launch cables.
3. Press Shift + Autotest to record the reference value.
4. Remove the coupler without disturbing the connection to CERTIFIBER.



Autotest



The completely automated Autotest feature runs cable tests, checks test results against

standards, and displays a PASS/FAIL indication.

An Autotest can be easily customized to run the different certification tests required for your site or system.

Autotest supports many different network types. The tests and results vary depending on the type of network. (See *Appendix A - Technical Specifications for a list of supported network types.*)

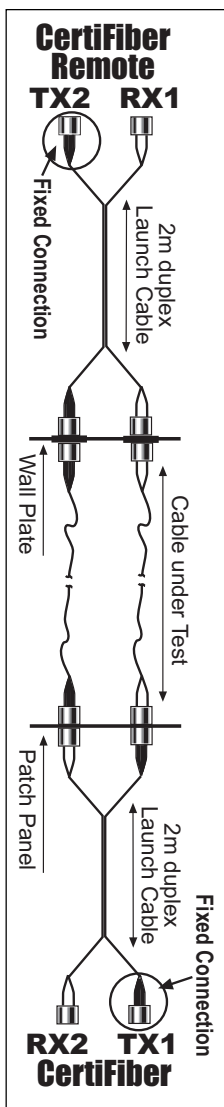
For certain Autotests, the PASS/FAIL criteria needs to be customized in the Edit Autotest screen. (See *Chapter 2 - Setup: Autotest for more information.*)

To run an Autotest proceed as follows:

1. Attach the cables to CERTIFIBER and CERTIFIBER REMOTE as shown.
2. Press the Autotest key.

Note

Steps 3 through 5 need to be followed if the number of connectors and splices must be customized.



If you are running an equation based Autotest (TIA 568B, ISO 11801, or 100 BASE-F) a screen will be displayed to allow for connector and splice number editing.

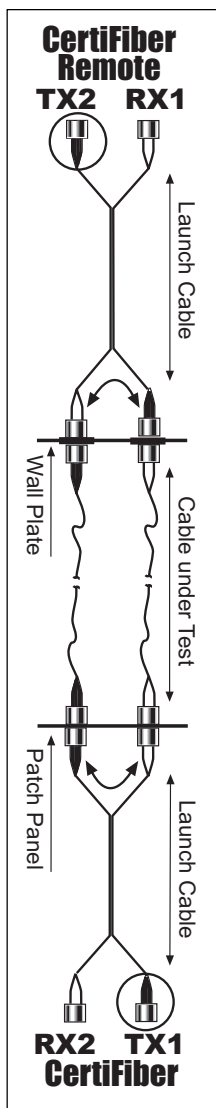
3. Press F2 (Select) to toggle the highlight between the number of connector pairs and the number of splices.

4. Use ↑ or ↓ to change the number of connector pairs and splices.

The screenshot shows a terminal window titled "TIA 568B". It contains two input fields: "Enter # of Connector Pairs:" with the value "2" and "Enter # of Splices:" with the value "0". At the bottom, there are two buttons labeled "RUN" and "SELECT".

5. After editing the selected fields, press F1 (Run) to save the changes and run the Autotest.

6. The Autotest Results screen will be displayed once CERTIFIBER has verified both fiber optic cables.



If you selected Two Way in the Test Mode setup, a message will prompt you to switch cables.




7. To continue the two way test, switch the connectors that attach to the cable under test as shown in the graphic.

Note


Do not switch the launch cable connectors that are attached to the units.

8. Press F1 (Run) to complete the two way test.

Autotest Results

The arrows at the top of the screen indicate whether the results are for a One Way or a Two Way test. A  or  marks tests in a single direction, and  marks bidirectional tests.

The Autotest Results screen displays the Loss for each fiber at 850 and 1300nm. For bidirectional measurements the Worst case loss is displayed.

	
PASS	PASS
Loss 850	
0.014%	0.034%
Loss 1300	
0.034%	0.004%
Length:	0m
Delay:	0ns
SAVE	VIEW

Note

There is a $\pm 0.25\text{dB}$ margin of error in all PASS/FAIL indications.

Length and Propagation Delay will be measured. The values will then be compared against the preprogrammed PASS/FAIL limits and CERTIFIBER will provide a PASS/FAIL indication for both fibers.

The screen displays the results for Fiber 1. Use the → to highlight and display the results for Fiber 2.

To save the highlighted Autotest result press F1 (Save).

To view all results for the highlighted Autotest press F2 (View).

↑↓
PASS PASS
Worst 850
0.00% 0.01%
Worst 1300
0.00% 0.04%
Length: 0m
Delay: 1ns
SAVE VIEW

Note

When viewing or saving bidirectional test results, remember that the test cable connectors at the wallplates have been switched. The displayed results represent the final launch cable connections to each fiber.

Saving an Autotest

1. Highlight Fiber 1 on the RX side or Fiber 2 on the TX side and press F1 (Save) to name and store the measured values with a time stamp.

2. The Job Name screen will be displayed.

3. Highlight a Job Name and press F1 (Select).

The performed Autotest will now be saved under the selected Job Name.

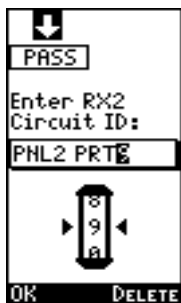
If you do not want to utilize CERTIFIBER's Job Name feature, highlight the first item on the list (Not Used), and press F1 (Select).

Editing...	
Enter Job Name:	
COMPANY 1	
1 2	
OK	DELETE

4. If the Job Name you wish to use was not predefined in the Job Name setup screen, CERTIFIBER allows you to edit one by pressing F2 (Edit). *(See Chapter 2 Setup: Job Names for information about customizing Job Names.)*

5. The Save Circuit ID screen will be displayed with an arrow in the titlebar indicating for which fiber the test result is. The overall Test Result is located right below the arrow.

6. The last saved Autotest name is displayed in the Circuit ID field with the cursor on the last character. Modify the Circuit ID. CERTIFIBER allows entering of up to 10 alphabetic and special characters. *(See Chapter 1 - Introduction: Editing with CERTIFIBER for detailed information).*



7. Press F1 (OK) when the Circuit ID is modified or a new Circuit ID is entered.

8. The Save Circuit ID screen for the other Fiber is now displayed.

9. Edit the Circuit ID and press F1 (OK).

Note

If you choose a bidirectional test, the data for both directions is automatically stored in the Autotest test record for that fiber.

Viewing Autotest Results

Once the Autotest has been saved, CERTIFIBER returns to the Autotest Result screen. F2 (View) is available.

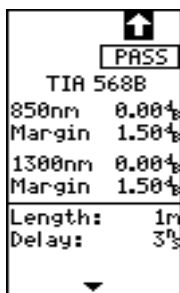
The arrow in the titlebar shows whether the fiber was tested one way or bidirectional. For a one way test the arrow has one pointer; for a bidirectional test, the arrow has two pointers.

1. Press F2 (View).

The overall test result is displayed right below the arrow.

The Autotest name that was specified in Setup as the test to run is shown.

The worst case difference between the PASS/FAIL value and the actual measurement for each fiber will be displayed as Margin. A positive margin indicates that the measured loss was less than the PASS/FAIL value. A negative margin indicates a fail, and shows how much the measurement exceeded the maximum allowable PASS/FAIL amount.



↑	
PASS	
TIA 568B	
850nm	0.00dB
Margin	1.50dB
1300nm	0.00dB
Margin	1.50dB
Length:	1m
Delay:	3ns
↓	

Note

If the overall result is FAIL, the failed parameters will be marked with a reverse highlight

During Autotest, CERTIFIBER measures a cable's Loss, Length, and Delay. The results are shown in the top part of the screen.

Optical Power Loss measures the signal loss

in a cable. A signal is injected into the fiber cable by the remote unit. CERTIFIBER measures the received signal to determine loss. The loss in decibel (dB) and the margin values are displayed for both wavelengths.

Length measurements are derived from the propagation delay results using the GRI (Graded Refractive Index) at the appropriate wavelength. CERTIFIBER measure the full length of the fibers under test. *(See Chapter 2 - Setup: Fiber GRI for information on how to change the GRI values.)*

In the Autotest Result screen, the length is displayed in meters or feet depending on your unit's setup. *(See Chapter 2 - Setup: Meters/Feet.)*

Propagation Delay is the measure of the time required for a signal to advance from one end of the circuit to the other. When measuring propagation delay, CERTIFIBER measures the round trip delay through both fibers, and then divides the result by two, assuming that the cables are equal in length. Propagation delay cannot be measured on a single fiber; duplex fibers must be used.

The Autotest Results screen displays the Propagation Delay in nanoseconds (nS).

2. To view results for bidirectional Autotests press F1

↑	
PASS	
TIA 568B	
850nm	0.00%
Margin	1.50%
1300nm	0.00%
Margin	1.50%
Length:	1m
Delay:	3%
Job Name:	
FLUKE	
Circuit ID:	
PNL2 PRT6	
Connector	
Pairs:	2
Splices:	
0	
10/1000	
10 Feb 1998	
10:35:55 PM	
▲	

(Direction) to switch between the results measured for each direction. The arrow in the titlebar will indicate the direction in which the fiber was measured.

3. Use the **↓** arrow keys to scroll to the bottom part of the Autotest results screen.

The Job Name, the Circuit ID, the number of Connector Pairs and Splices used for the Autotest are revealed.

Each test is stored with a date and time stamp.

4. Use the **←** or **→** arrow keys to toggle between results for Fiber 1 and Fiber 2.

5. Press Escape to exit the Autotest Results screen.

↓	
PASS	
TIA 568B	
850nm	0.014%
Margin	1.494%
1300nm	0.044%
Margin	1.464%
Length:	0m
Delay:	1%
↓	
DIRECTION	

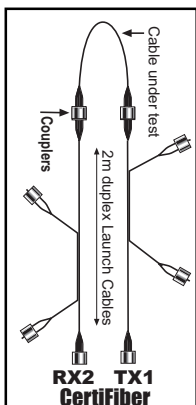
↑	
PASS	
TIA 568B	
850nm	-0.274%
Margin	1.774%
1300nm	0.004%
Margin	1.504%
Length:	0m
Delay:	1%
↓	
DIRECTION	

Loopback Autotest

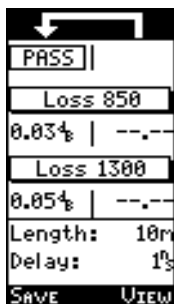
CERTIFIBER allows you to run an Autotest for a single cable. It will be displayed as RX in the Autotest Results screen.

1. To quickly verify the optical power loss of a single fiber, attach the cable to be tested to the launch cable connectors as shown.

2. Press the Autotest key.



The results will be displayed on the RX (left) side of the result screen, the arrow in the titlebar indicates the test direction.



3. Press F1 (Save) to name and store the measured values for the cable with a Job Name, a Circuit ID, and a time stamp.

4. When viewing results for bidirectional Loopback Autotests press F1 (Direction) to switch between the measured results.

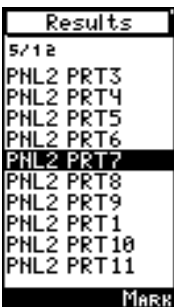
5. Press Escape to return to the logo screen.

Results

CERTIFIBER will store 1000 Autotest results.

1. To display the Results screen, press F1 (Results) from the logo screen.

The results screen will be displayed with all stored test results sorted by reverse date, where the oldest test is at the top of the list.



2. To quickly move to the last page of the list use the →. Use the ← to return to the first page.

3. To view detailed test results, use the ↑ or ↓ arrows to highlight the appropriate item and press Enter.

The Results screen will be displayed with the overall test result in the titlebar. The type of

Autotest used, the Circuit ID (Test name), the loss for both wavelengths, the length, the delay, the number of connectors and splices, the overall test number, and the time and date the test was taken will be shown in the scrollable screen.

4. Press Escape to return to the Results screen.

Deleting Autotests

CERTIFIBER allows you to delete selected Autotest results.

1. Display the Results screen and use the **↑** or **↓** key to highlight the Autotest result you want to delete.

2. Press F2 (Mark) to mark the Autotest name with a large arrow on the right side. The highlight will automatically advance to the next line.

3. To manually select several test results, press F2 (Mark) continuously until all the Autotest names to be deleted are marked with arrows.

Results	
6/12	
PHL2 PRT3	→
PHL2 PRT4	→
PHL2 PRT5	→
PHL2 PRT6	→
PHL2 PRT7	→
PHL2 PRT8	→
PHL2 PRT9	
PHL2 PRT1	
PHL2 PRT10	
PHL2 PRT11	
DELETE	MARK

4. To automatically select several test results, turn on block mode by pressing Shift + F2 (Block). The highlighted Autotest will be marked with the arrow.

5. Press Shift + **↓** once to page down and automatically mark each test in the block. Pressing Shift + **↓** continuously will rapidly mark several pages of Autotest names. Press Shift + **↑** to unmark a page of Autotest

names.

6. If tests were accidentally marked and should not be deleted, press F2 (Block) once more to turn the mark or block mode off. Unselect the Autotests by pressing F2 (Unmark).

7. Press F1 (Delete) to delete all tests that are currently marked.

8. A confirmation screen will prompt you. Make the appropriate choice and continue.

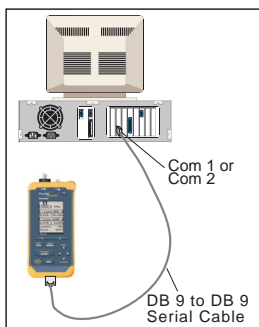
Uploading to a PC

Test results can be uploaded to a PC using the included *Scanlink Tools* software.

1. Connect CERTIFIBER's serial port to the serial port on your PC with the supplied communications cable.

2. Turn CERTIFIBER on to display the logo screen.

3. Press Shift + Escape to display the Setup screen.



4. Highlight Upload to PC and press F1 (Select).

CERTIFIBER is now in upload mode.

5. Run the *Scanlink* Upload Utility.



6. Click on the  button to establish communications between the *Scanlink* Upload utility and CERTIFIBER. Autotests that

are stored in CERTIFIBER's memory will be transferred directly to the PC.

Consult the *Scanlink Tools* on-line Help file for further instructions for uploading, viewing, storing and printing test results.

7. Turn CERTIFIBER off when the transfer is completed.

Printing Test Results

Autotest results can be printed from the PC to a printer.

Scanlink can be used to save and print data.

Consult the *Scanlink Tools* help file for further information about printing test results.

Sample Autotest Certification Report

The information on your Autotest printout varies depending on the type of Autotest that was used.

The name of the Autotest that was used to run the test, is displayed right below the company name, and the report title.

The heading provides information on the Circuit ID, the overall test result, etc. The number of connections and splices used in the link will only appear when the Autotest performed was equation-based.

The Test Direction depends on your scanner settings. Choices are: CERTIFIBER - -> Remote, Remote - -> CERTIFIBER, Bidirectional.

The Actual Results vary depending on your

scanner setup. For bidirectional tests the results will be displayed as follows: 1.20 / 1.40, where the first number represents a measurement from CERTIFIBER to CERTIFIBER REMOTE . The second number indicates a measurement from CERTIFIBER REMOTE to CERTIFIBER. Margin and PASS/FAIL results are based on the worst of the two values.

Networks also supported by CERTIFIBER's test results are listed on the bottom of the printout.

Company Name					
CERTIFIBER Certification Report					
TIA 568 B					
Circuit ID:	MICRO-IDF-002	Test Date/Time: 20 Dec 01 14:34:09			
Test Result:	PASS	# of fiber connectors: 2			
CERTIFIBER S/N:	55E97K00017	# of splices: 1			
Remote S/N:	55F98C00293	Fiber GRI @ 850nm: 1.4776			
SW Version:	V1.07	Fiber GRI @ 1300nm: 1.4719			
Test Direction:	Bidirectional				
Test	Expected Results	Actual Results		Margin	Pass/Fail
		C -> R	R -> C		
850 loss dB	OLB = 2.6	1.2	1.4	+1.4	PASS
1300 loss dB	OLB= 2.1	1.0	0.8	+1.1	PASS
Prop. Delay nS	-	60		-	n/a
Length m	<2000	88		-	PASS
Networks Supported:					
TIA 568B	ISO 11801	ATM 155		ATM155SWL	
ATM622	FDDI	100BaseF		10BaseFL	
10BaseFB	1000BaseSX	1000BaseLX		Token Ring	
Fiber Chan					
Signature: _____			Date: _____		

Chapter 4 - Manual Measurements

Power Loss

SOURCE Power Meter

The proper operation of a fiber network can be affected by the operation of its active components, such as transmitters and receivers. Excessive loss could actually be a result of a transmitter launching light at an unacceptable power level. Transmitters can also deliver too much light into the fiber optic cable, causing the receiver to overload.

To quickly verify and correct cabling and equipment problems, use CERTIFIBER's Power Meter function. For both wavelengths, Power Meter reports the overall power, the previously stored reference value, and the loss.

1. Connect CERTIFIBER directly to a cable or use a launch cable to connect to the equipment to be tested.

2. Press the Power Meter button.

3. The test direction will be indicated in the titlebar. The power, reference, and loss are displayed for each wavelength.

↓	
850nm	
Power	-12.42
Ref	-12.44
Loss	-0.02
1300nm	
Power	-13.43
Ref	-13.39
Loss	0.04

Note

Manual measurements cannot be stored.

4. Press Escape to exit the Power Meter screen.

Loopback

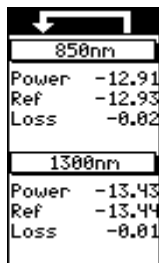
Power and loss for both wavelengths can also be measured in a Loopback.

1. Attach the cable to be tested to the launch cable as described in the Loopback Autotest section. *(See Chapter 3: Automatic Measurements: Loopback Autotest for further information.)*

2. Press the Power Meter button.

3. The direction of the power flow will be indicated in the titlebar.

4. Press Escape to exit the Power Meter screen.



850nm	
Power	-12.91
Ref	-12.93
Loss	-0.02
1300nm	
Power	-13.43
Ref	-13.44
Loss	-0.01

Source Mode



CERTIFIBER and CERTIFIBER REMOTE are designed to provide a consistent, calibrated light source for effectively measuring signal loss in fiber optic cables.

The transmitted light can be operated continuously or modulated.



Source Mode	
850nm	
2kHz Modulated	
1300NM	CW

When testing loss, use CERTIFIBER to function as a Continuous Wave (CW) light source.

When identifying fiber cables with a tone locator, use the 2KHz modulated mode.

1. Attach the cable to CERTIFIBER's TX1 connector.

2. Hold down the Shift key while pressing Power Meter.

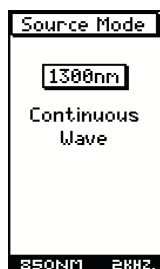
The Source Mode screen is now displayed.

3. Press F1 to change the wavelength, and have CERTIFIBER provide a consistent light-source.

4. Press F2 to change from a continuous to a modulated light source.

The wavelength and the lightsource frequency are displayed.

5. Press Escape to exit the Source Mode screen.



Remote Light Source

To use CERTIFIBER REMOTE's calibrated light source, proceed as follows:

1. Press and hold CERTIFIBER REMOTE's Battery button.

2. The RX1 and/or TX2 LED slowly flashes 5 times during the battery test.

3. The wavelength LED then blinks rapidly until the battery button is released.

4. A steady light on the wavelengths LED is

displayed to indicated that CERTIFIBER REMOTE now provides a consistent lightsource for the respective wavelength.

5. Press and hold the battery button to switch to the other wavelength.

6. Press the Battery button to turn the lightsource off.

Appendix - A Technical Specifications

CERTIFIBER

Physical Characteristics

- Dimensions: 7.62 cm x 16.5 cm x 3.35 cm (3.0" x 6.5" x 1.28")
- Weight: 0.422kg (14.9oz)

Power Source

- 3 AA Alkaline batteries
- Battery Life: Varies depending on usage and battery quality. On average, the batteries will test over 500 cables.

Environmental

- Operating Temperature: 0° to 45°C (32° to 113°F)
- Storage Temperature: -10° to 55°C (14° to 131°F)
- Operating Humidity (non-condensing): 5 to 90%
- Storage Humidity: 5 to 95%

User Interface

- Graphic LCD
- Keypad with tactile feedback, dedicated functions, 2 soft functions, and cursor pad
- Time and date stamp of all Autotests

Serial Port

- RS-232, DB 9

Memory

- Test Storage: 1000 complete Autotest results can be stored in nonvolatile flash memory
- Flash Memory allows electronic upgrading in the field

Autotest Functions

- Full suite of tests to determine if cable meets fiber standard and fiber network type require-

ments

Optical Measurements

- +3dBm to -55dBm
- .01dB resolution
- \pm .25dB typical accuracy

Length

- Maximum 2000m (6600ft)
- 1m (1ft) resolution

Delay

- 0 to 10,000 nS
- 1nS resolution

Cable Standards

- TIA 568B
- ISO 11801

Network Specifications

- | | | |
|----------------|-----------------|----------------|
| • ATM - 155 | • ATM - 155 SWL | • ATM - 622 |
| • FDDI | • 100Base-F | • 10Base-FL |
| • 10Base-FB | • TokenRing | • FiberChannel |
| • 1000 BASE-SX | • 1000 BASE-LX | |

CERTIFIBER REMOTE

Physical Characteristics

- Dimensions: 7.62 cm x 16.5 cm x 3.35 cm (3.0" x 6.5" x 1.28")
- Weight: 0.379kg (13.4oz)

Power Source

- 3 AA Alkaline batteries
- Battery Life: Varies depending on usage and battery quality. On average, the batteries will support testing of well over 500 cables.

Environmental

- Operating Temperature: 0° to 45° C (32° to 113°F)
 - Storage Temperature: -10° to 55 ° C (14° to 131°F)
 - Operating Humidity (non-condensing): 5 to 90%
 - Storage Humidity: 5 to 95%
-

Appendix - B

PASS/FAIL Criteria

For the latest cable installation, international standards, and conformance techniques:

http://cabletesting.com/Fiber_Standards.html

