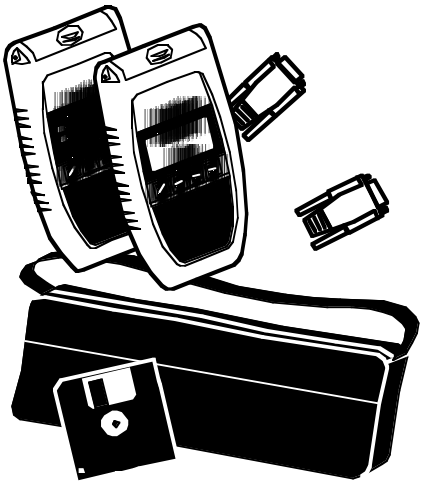
BLACK BOX NETWORK SERVICES

JANUARY 2000
TS1006A
TS1007A

SimpliFiber Kit
ST or SC



BLACK BOX NETWORK SERVICES

1000 Park Drive • Lawrence, PA 15055-1018 •
724-746-5500 • Fax 724-746-0746

CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX**
(outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week:
Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive,
Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

TRADEMARKS

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CONTENTS

1. Specifications

1.1 SimpliFiber Meter

Display—Custom LCD, 1.75"H x 0.85"L (4.4 x 2 cm)

Keypad—Four momentary-contact keys

Batteries—(2) AA alkaline

Average Battery Life—100 hours

Size—6.25"H x 3.5"W x 1.25"D (15.9 x 8.9 x 3.2 cm)

Weight—0.38 lb. (0.2 kg)

1.2 SimpliFiber Source

Wavelength—850, LED, > -20 dBm; 1300, LED, > -20 dBm

Batteries—(2) AA alkaline

Average Battery Life—850/1300 Source: 10 to 50 hours, depending on mode

Temperature Tolerance—*Operating:* 32 to 113°F (0 to 45°C); *Storage:* 14 to 140°F (-10 to +60°C)

Humidity—*Operating:* 10 to 90% noncondensing; *Storage:* 5 to 95%

Certifications—CE

Size—6.25"H x 3.5"W x 1.25"D (15.9 x 8.9 x 3.2 cm)

Weight—0.38 lb. (0.2 kg)

2. Introduction

2.1 The SimpliFiber Solution

SimpliFiber is a high-quality fiberoptic cabling test tool that quickly and easily identifies failure points in a fiber network. It consists of two units: SimpliFiber Meter and SimpliFiber Source.

SimpliFiber Meter (the optical power meter) and SimpliFiber Source (the optical light source) help you install, manage, and troubleshoot multimode and single-mode fiber cabling systems.

The SimpliFiber 850/1300 Source provides a consistent dual-wavelength light that allows you to quickly and accurately assess the performance of fiberoptic transmission paths and equipment. It also supplies a modulated signal for use with fiber identifiers.

The SimpliFiber Meter measures the power of light emerging from the fiber. By measuring optical power, SimpliFiber Meter verifies the proper installation and operation of fiberoptic components such as fiberoptic hub modules, repeaters, and adapter cards.

SimpliFiber also helps to identify faulty patch cables, failing splices, or bad couplers and connectors by measuring signal loss.

You can use the SimpliFiber Meter with any source operating at 850 or 1300.

You can use the SimpliFiber 850/1300 Source with any power meter.

A hinged cover protects the units' connector(s). It also allows you to prop up the units when you're using them.

2.2 The SimpliFiber Kit

The SimpliFiber Kit contains the SimpliFiber Meter and SimpliFiber 850/1300 source units. The kit includes the optical cleaning supplies that you need to keep fiber connectors and adapters free from contamination.

The SimpliFiber Kit contains:

- SimpliFiber Meter ST (part number TS1006A) or SC (part number TS1007A)
- SimpliFiber 850/1300 Source
- A soft carrying case

- (4) AA alkaline batteries ([2] for each unit)
- Fiber cleaning supplies
- ScanLink software
- A communication cable to connect to the PC
- This users' guide

2.3 SimpliFiber Meter

The SimpliFiber Meter interface consists of an LCD display and a keypad.

2.3.1 Using the Keypad

Use the SimpliFiber Meter keypad to select the functions you need to test and troubleshoot fiberoptic cabling. Each key performs at least two functions. When multiple keys are required to activate a function, press and hold each key in the order shown below.

This button powers the SimpliFiber on or off. When turned on, SimpliFiber Meter will flash the LCD power-up test and then resume the test mode that was last executed. To conserve battery life, SimpliFiber Meter will turn off automatically when no signal is detected and no key has been used for 60 minutes.

Press this button to shift the upper key functions (dBm and DEL). When activated, the word SHFT is displayed.

Press and hold this button to set the Reference.

Press this button until SHFT is displayed, and press it again to display the reference value.

Press this button to change the wavelength. The sequence is: 850 nm, 1300 nm. Use this function only when connecting to a light source other than the SimpliFiber Source. When using SimpliFiber 850/1300 Source in AUTO mode, the wavelength will be detected automatically.

+ Use these buttons to change the mode between Power Meter (dBm) and Loss Meter (dB).

Press this button to display the next available position where a test can be saved.

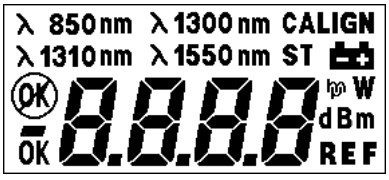
Press and hold this button to save test results.

Press and then press and hold to delete the last saved test result.

Press and then press to view the last saved test result.

2.3.2 Reading the Display

The display operates when all LCD icons appear as shown below.



If no icons appear when the unit is operating, make sure the batteries are correctly installed or install new batteries.

λ 850nm Measure at 850-nm wavelength.

λ 1300 nm Measure at 1300-nm wavelength.

ALIGN Align units, set Reference.

CAL Send SimpliFiber in for Calibration.

Low Battery power.

Error occurred.

OK Successful operation.

Negative value.

dB Loss-measurement value displayed.

dBm Power-measurement value displayed.

REF Current reference value being stored.

8.8.8.8 Result or Error message.

2.4 SimpliFiber Source

The SimpliFiber Source is an active and intelligent light source that works with the SimpliFiber Meter to verify optical cable transmission quality.

The SimpliFiber 850/1300 is an LED light source.

2.4.1 USING THE KEYPAD

This button powers the SimpliFiber Source on or off. When turned on, the SimpliFiber Source will light the LED of the last active transmission mode.

Press AUTO and the SimpliFiber Meter will automatically sense the current SimpliFiber Source wavelength. When using the SimpliFiber Meter and the SimpliFiber Source, always select AUTO mode so the SimpliFiber Meter can automatically determine the wavelength of the transmitted light.

The transmitted light can be operated continuously or modulated. When measuring power, use the continuous light source. When identifying fiber cables with an identifier, use the 2-kHz modulated mode.

Pressing MOD toggles between continuous and modulated light sources. When Continuous Wave is selected, the LED will

show a steady light; when 2 kHz (modulated) is selected, the LED will blink.

Use this feature with all third-party power meters.

(SimpliFiber 850/1300 Source) Press lambda to manually switch the wavelength between 850 nm and 1300 nm. Connect the launch cable to the appropriate port.

2.4.2 LED INDICATORS

The SimpliFiber 850/1300 Source has five red LED indicators. The table below describes the LED activity.

LED Name	Description
850 nm	Transmitting at 850-nm wavelength.
1300 nm	Transmitting at 1300-nm wavelength.
AUTO	SimpliFiber Meter is autosensing the wavelength of the SimpliFiber Source.
CW/2kHz	Steady for continuous light source; flashing for modulated light source.
Low Batt	Time to replace the AA batteries.

2.5 Calibration

Calibrate the SimpliFiber Meter annually with specialized equipment. Call Black Box Technical Support at 724-746-5500 for details.

2.6 Technical Support

NOTE

All connectors and fiber end faces must be clean before testing. Use the appropriate optical cleaning supplies to keep connectors and couplers free from contamination.

If you have technical questions, contact Black Box Technical Support at 724-746-5500.

3. Measuring Loss

Loss measures the signal degradation in a fiberoptic cable. SimpliFiber 850/1300 Source injects a signal into the fiber cable, and SimpliFiber Meter measures the received signal at 850 nm or 1300 nm.

This chapter describes the procedures for measuring loss in a fiberoptic cable plant using SimpliFiber Meter and SimpliFiber Source.

Three different test methods are explained; they vary in the way the launch cables are connected when the reference value is determined.

3.1 The Reference Value

Accurate repeatable measurements of optical power and signal loss are fundamental for the installation and maintenance of fiberoptic cabling.

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

The reference value must be stored before a loss measurement can be calculated.

SimpliFiber requires the reference value to compensate for the signal loss in the launch cable. This value is then automatically subtracted from the actual measured value to determine cable plant loss.

NOTE

The launch cable used to set the reference value should be the same type as the cables you want to test: 50/125, 62.5/125, or single mode.

3.2 The Reference Methods

Choose from the three methods described here to determine the reference. Diagrams show how to establish the reference for each method.

After you establish the reference value, make sure that you don't disturb the connections. Follow the instructions closely to assure that the effects of the connectors and launch cables are "zeroed out."

NOTE

When you remove and then reattach a connector, it won't go back to the exact same position. As a result, measurements will change slightly when you make or remove connections.

3.2.1 METHOD A

For Method A, two launch cables are used to set the reference.

Method A cancels the effects of the launch cables and one coupler for all subsequent measurements.

1. Connect a launch cable to the SimpliFiber Meter.
2. Connect a launch cable to the SimpliFiber Source.
3. Use a coupler to connect the two fiber ends.
4. Power on SimpliFiber Source and press

.

To choose the appropriate wavelength, 850 or 1300, depending on where the fiber is connected, press

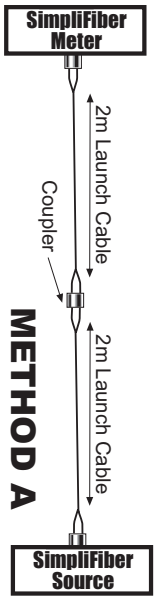
.

5. Power on the SimpliFiber Meter. The unit will auto-sense the appropriate wavelength.

NOTE

When using a light source other than SimpliFiber, press the

button to select the appropriate wavelength. Both units must be set to the same wavelength.



6. Press, hold, and release the 

button to set and save the new reference value. The reference value will be displayed.

7. Disconnect the coupler without disturbing the fiber connections to the units.

3.2.2 Measuring Loss Using Method A

If you used Method A to set the reference, proceed as follows:

1. Do not disconnect the launch cables from the SimpliFiber units.
2. Disconnect one launch cable from the coupler.
3. Connect the fiber you want to measure between the launch cables. You might need an extra coupler.
4. SimpliFiber Meter will report the loss in dB.

5. Press and hold DEL SAVE to save the test result. When using Method A, the effects of both launch cables and one coupler are removed.

3.2.3 METHOD B

This method is commonly recommended by ISO 11801 and ANSI/EIA/TIA 568A.

For Method B, you'll use one launch cable to set the reference.

The launch cable will be canceled out for all subsequent measurements.

1. Connect one end of a launch cable to the SimpliFiber Meter.
2. Connect the other end of the same launch cable to the SimpliFiber Source.
3. Power on SimpliFiber Source and press AUTO. To choose the appropriate wavelength, 850 or 1300, press λ.

4. Power on the SimpliFiber Meter. The unit will auto-sense the appropriate wavelength.

NOTE

When using a light source other than the SimpliFiber Source, press the dBm/λ to select the appropriate wavelength. Both units must be set to the same wavelength.

5. Press, hold, and release the REF/SHFT button to set and save the new reference value. The reference value will be displayed.

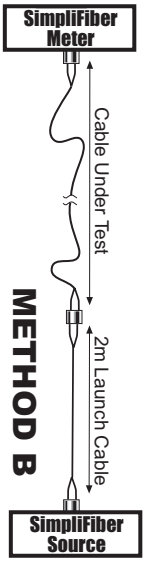
6. Disconnect the launch cable from the SimpliFiber Meter.

3.2.4 Measuring Loss Using Method B

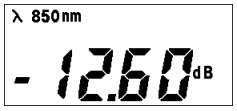
If you used Method B to set the reference, proceed as follows:

1. Do not disconnect the launch cable from the SimpliFiber Source unit.

2. Connect the fiber you want to measure between the SimpliFiber Meter output and the launch cable that is attached to the SimpliFiber Source. You'll need an extra coupler.



3. SimpliFiber Meter will immediately report the loss in dB.



4. Press and hold DEL SAVE to save the test result.

Method B removes the effect of one launch cable.

3.2.5 METHOD C

For Method C, you'll use three launch cables and two connectors to set the reference. ALL of the launch cables and connectors are canceled. Use this method when measuring an end-to-end system where the patch cables must be included in the total loss measurement.

1. Connect the first launch cable to the SimpliFiber Meter.
2. Connect the second launch cable to the SimpliFiber Source.
3. Use two couplers to join the two launch cables with a third launch cable.
4. Power on the SimpliFiber Source and press

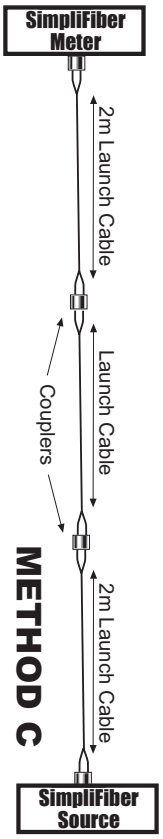
AUTO.

5. Choose the appropriate wavelength, 850 or 1300, and press

NOTE

When using a light source other than the SimpliFiber Source, press the

to select the appropriate wavelength. Both units must be set to the same wavelength.



6. Press, hold, and release the 

button to set and save the new

reference value. The reference value will be displayed.

7. Disconnect the third launch cable, located in the center, without disturbing any connections to the couplers or adapters.

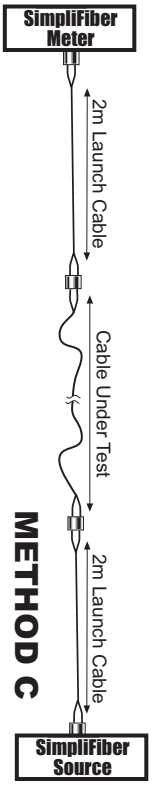
3.2.6 Measuring Loss Using Method C

If you used Method C to set the reference, proceed as follows:

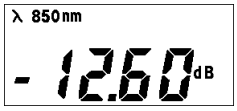
1. Do not disconnect the launch cables from the SimpliFiber units.

2. Remove the launch cable located in the center without disturbing the couplers.

3. Connect the fiber you want to measure between the launch cables.



4. SimpliFiber will immediately report the loss in dB.



5. Press and hold DEL SAVE to save the test result.

Method C removes the effect of the launch cables and the couplers.

3.3 Saving Results

SimpliFiber Meter will store 100 test results. Each test is stored in order (for example **5** is the fifth test that was stored).

1. To save a test result, press DEL SAVE. A number (between 1 and 100) will flash in the lower right corner of the display.

In our example, **5** is the next open storage position.

2. Press and hold the DEL SAVE button until OK is displayed in the lower left corner of the display.

The number of the saved test will be displayed to confirm that the result was saved.

In our example, test-result-number 5 has been saved.

3.4 Viewing Results

Press REF SHFT and then DEL SAVE to display the last stored test.

A number (between 1 and 100) and the test result start flashing alternately.

3.5 Deleting Results

Press REF SHFT and then hold DEL SAVE to delete the result.

OK and the number of the deleted test will be displayed to confirm that number 4 is available again.

NOTE

The most recent test will be deleted first.

3.6 Uploading to a PC

You can upload test results to a PC using the included ScanLink software.

1. Connect the SimpliFiber Meter serial port to the serial port on your PC with the supplied communications cable.
2. Power on the SimpliFiber Meter.
3. Run the ScanLink software.

4. Click on  (Upload) to establish communications between ScanLink and SimpliFiber Meter.
5. From ScanLink's Upload screen, select SimpliFiber.
6. Select the communications port (COM 1 or COM 2).
7. Click Upload.

Test results that are stored in SimpliFiber Meter's memory will be uploaded to the PC.

Consult the ScanLink online help for additional instructions for viewing, saving, and printing test results.

8. Power off the SimpliFiber Meter when the transfer is completed.

4. Measuring Power

When measuring power, the SimpliFiber reports the overall power. Use it to quickly verify cabling and equipment problems.

1. To measure power, connect the fiberoptic cable to the appropriate SimpliFiber 850/1300 Source output.

2. Connect the fiberoptic cable to the SimpliFiber Meter.

3. Power on the SimpliFiber Source and press

   .

4. To choose the appropriate wavelength, press

   .

5. Power on the SimpliFiber Meter. The unit will autosense the wavelength.

NOTE

When using a source other than the SimpliFiber Source, press 

to select the wavelength.

6. Press 

and then the 

button to change the units from dB to dBm.

7. SimpliFiber will immediately report the overall power in dBm.

Appendix. Error Messages

Err 1–Invalid Reference value.

Error code 1 indicates that the reference value is "under" or "over" the limits.

Store a new Reference value.

Err 2–UNDER or OVER limit.

The measured value is under or over the limit. The numeric values displayed on the LCD can range from -55.00 dB/dBm to 3.00 dB/dBm.

When a measurement is less than -55.00 dB/dBm, the measured value is OVER the limit.

Remeasure.

Err 3–Memory is full, cannot save result.

Error code 3 indicates that the unit's memory is full.

Upload the stored test results to your PC.

Delete saved results from the unit's memory.

Err 4–No results are stored in memory.

Error code 4 indicates that there are no results stored in the unit's memory.

SimpliFiber's memory is empty.

Err 5–Wavelength cannot be changed.

Error code 5 indicates that the wavelength cannot be changed while the SimpliFiber Source is in AUTO mode.

Change mode to CW before changing the wavelength.

Err 6–Calibration is expired.

Calibration values are corrupted.

Call Black Box Technical Support at 724-746-5500.

Err 7–Communication error between SimpliFiber Meter and PC.

Communication between PC and SimpliFiber cannot be established.

Verify connection between the SimpliFiber and the PC and retry.

Err 8–Connection error between SimpliFiber and PC.

Connection between SimpliFiber and PC is broken.

Verify connection between the SimpliFiber and the PC and retry.