

# Fiber OWL 4 BOLT Series Test Kits

## Certification Testing

## Quick Reference Guide

For part numbers:

KIT-FO4B-L2st

KIT-FO4B-L2sc

KIT-FO4B-L2fc



## Optical Wavelength Laboratories

## **NOTICE TO NEW USERS:**

All personnel testing optical fibers should be adequately trained in the field of fiber optics before using any fiber optic test equipment.

If the user is not completely familiar with testing fiber optics, they should seek professional training. Such training can be acquired from a variety of sources, such as local hands-on training classes.

Valuable information about fiber optic testing can also be gathered from reading printed literature carefully or by thoroughly reading supplied operations manuals.

Fiber optic testers vary from other types of test equipment due to issues such as:

- 1) standards-based testing
- 2) proper fiber optic test procedures (FOTPs)
- 3) "zeroing" or referencing of power levels
- 4) determining the correct link budget to pass or fail by

Complete understanding of each of these issues is critical for performing proper fiber optic tests.

## **GETTING STARTED**

Thank you for your purchase of this OWL certification test kit. Included in this kit is a Fiber OWL 4 BOLT optical power meter and a WaveSource multimode fiber optic light source. This quick reference guide will assist you in setting up your test kit for a standards-based certification test.

## **BEFORE YOU TEST**

Prior to performing a certification test, there are a few things you need to know about your link:

- ▶ *Fiber Type*
- ▶ *Fiber Length*
- ▶ *Number of Connections (i.e. patch panels)*
- ▶ *Number of Splices*
- ▶ *Fiber Cabling Standard*
- ▶ *Connector Type*

It is also important to understand the definition of a fiber optic link as it pertains to the Fiber OWL 4 BOLT:

**A link is a group of fibers that have the same characteristics, and follow the same pathway from one end to the other.**

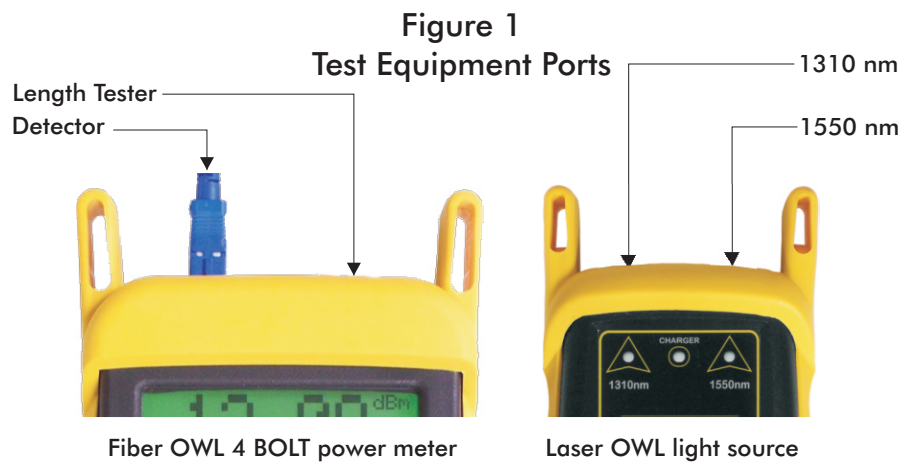
Also, ensure that your patch cable connectors match the patch panel ports on the link under test.

## REQUIRED ACCESSORIES

- ▶ (3) singlemode patch cables

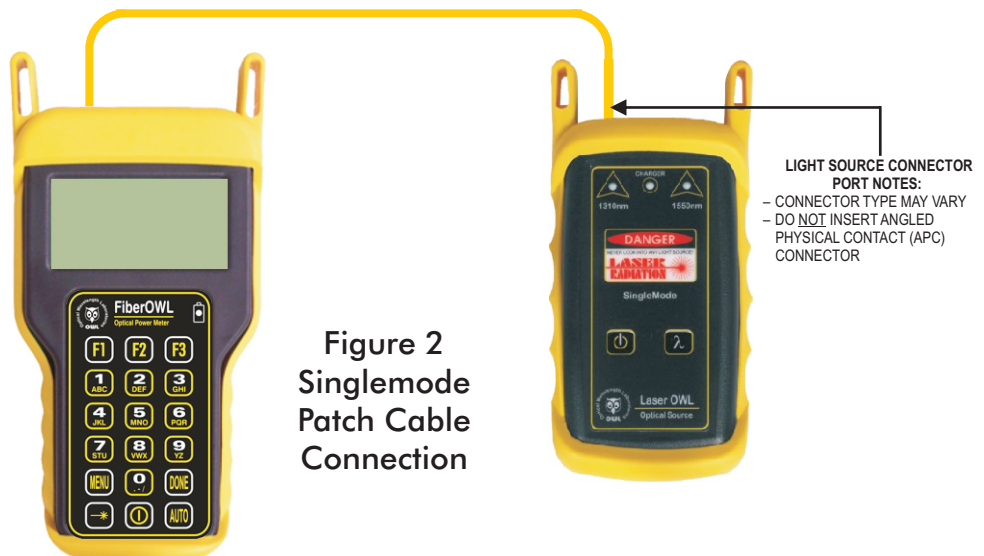
## EQUIPMENT PORTS

Figure 1 shows the ports of the equipment used during this procedure. These ports may vary depending upon the model of equipment.



## VERIFY PROPER OPERATION OF THE EQUIPMENT

**STEP 1**      Connect the power meter and light source together with one of the patch cables as shown in Figure 2.



**STEP 2**      Power on the light source.

**STEP 3**      Power on the Fiber OWL 4 BOLT.

**STEP 4**      From the OPERATING MODE menu, select SIMPLE METER.

**STEP 5**      Press <F3> until the Fiber OWL 4 BOLT is set to 1310nm.

**STEP 6**      The Fiber OWL 4 BOLT should read approximately -10.00 dBm. If the reading is below -12.00 dBm, the patch cable should be replaced.

**STEP 7**      Once proper operation has been verified, remove the first patch cable from both units and set it aside.

**STEP 8**      Connect the second patch cable between the Fiber OWL 4 BOLT and the Laser OWL as shown in Figure 2.

**STEP 9** The Fiber OWL 4 BOLT should read approximately -10.00 dBm. If the reading is below -12.00 dBm, the patch cable should be replaced.

**STEP 10** Once proper operation has been verified, remove the second patch cable from both units and set it aside.

**STEP 11** Connect the third patch cable between the Fiber OWL 4 BOLT and the Laser OWL as shown in Figure 2.

**STEP 12** The Fiber OWL 4 BOLT should read approximately -10.00 dBm. If the reading is below -12.00 dBm, the patch cable should be replaced.

**STEP 13** Disconnect the third cable from both units, and set it aside. Press **<DONE>** to return to the OPERATING MODE menu.

## RUN LINK WIZARD

**STEP 14** From the OPERATING MODE menu, select CERTIFICATION METER.

**STEP 15** From the START MENU, press **<1>LINK WIZARD**.

```
START MENU
<1>LINK WIZARD
<2>TAKE READINGS
<3>MAIN MENU
```

**STEP 16** From the STORED LINKS menu, highlight the stored link name you wish to use and press **<F2>** to select.

```
STORED LINKS
Fiber Link #1
Fiber Link #2
Fiber Link #3
Fiber Link #4
-----
NEXT [SELECT]
```

**STEP 17** **OPTIONAL:** you may change the link name to something that better describes the group of fibers you are testing.

Press **<DONE>** to continue.

```
LINK NAME:
[Fiber Link #1 ]
-----
<--- [SHIFT] --->
```

**STEP 18** Change the LINK DATE to the date the fiber will be tested using the format MM-DD-YY.

Press **<DONE>** when you are finished entering the current date.

```
DATE: [MM/DD/YY]
[03-20-08]
-----
<--- [SHIFT] --->
```

 **It is important to set the current date in order to ensure that the correct date appears on the certification reports.**

**STEP 19** Highlight the cabling standard to use for the set of fibers you are testing.

Press **<F2>** to select the chosen standard.

```
FIBER STANDARDS
USER DEFINED #1
USER DEFINED #2
ULR-568B-CAN-152
ISO/IEC 11801
-----
NEXT [SELECT]
```

**STEP 20** Highlight the fiber type of the network under test.

Press **<F2>** to select the fiber type.

```
FIBER TYPES
62.5um MultiMode
50.0um MultiMode
INDOOR SingleMode
OUTDOOR SingleMode
-----
NEXT [SELECT]
```

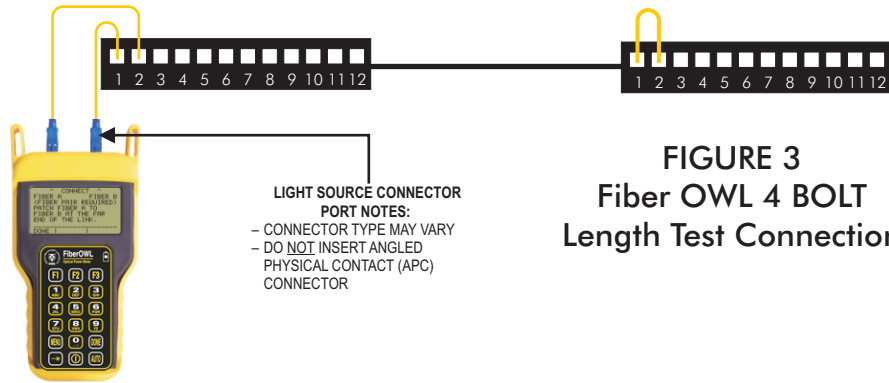
**STEP 21** Press **<1>** to use measure the fiber length with the Fiber OWL 4 BOLT.

```
FIBER LENGTH METHOD
<1> USE THE METER TO
MEASURE LENGTH
<2> ENTER LENGTH
MANUALLY
```

## RUN LINK WIZARD, cont.

**STEP 22** Connect the Fiber OWL 4 BOLT to your fiber link as shown in Figure 3.

Press <F1> to continue.



```
CONNECT
FIBER A    FIBER B
<FIBER PAIR REQUIRED>
PATCH FIBER A TO
FIBER B AT THE FAR
END OF THE LINK.
-----
DONE |
```

**STEP 23** Review the end-to-end fiber length. In the example screenshot at right, the end-to-end fiber length could be within the range of 1000 to 1006 meters.

Press <F2> to continue.

**STEP 24** The end-to-end length shown here is the length that will be entered into the Link Wizard configuration.

**OPTIONAL:** you may also enter the fiber length manually.

Press <DONE> to continue.

**NOTE:** Length testing is complete. You may now remove all of the patch cables from the link under test.

```
FIBER LENGTH
01000 -0/+6 meters
1310nm Index<n>=1.490
-----
TEST | DONE | INDEX
```

```
ENTER FIBER LENGTH:
[1 TO 65535]

[01000] METERS
-----
<--- | UNITS | --->
```

**STEP 25** Enter the number of connections (i.e. patch panels) in the link under test. Typical fiber networks will have 2 connections – one for a patch panel located at each end of the link.

Press <DONE> to continue.

**STEP 26** Enter the number of splices in the link under test. Splices can be either fusion or mechanical.

**NOTE:** some connectors use mechanical splice technology for termination. If the link under test is terminated with these “no-polish, no-epoxy” type connectors, they should be considered as mechanical splices.

Press <DONE> to continue.

**STEP 27** Review your Link Wizard setup.

If correct, press <F1> and continue on to the next step.

If changes need to be made, press <F3> and go back to STEP 17.

**STEP 28** Press <F1> until the asterisk (\*) is in front of 1310nm (as shown at right).

Press <F2> to begin the SET REFERENCE procedure for 1310nm.

```
Standard TIA-568B.3/CAN-T529
Length 01000 Meters
Connections 02 Connections
Splices 00 Splices
Fiber Type INDOOR SingleMode
IS THIS CORRECT?
-----
YES | NO
```

```
SET SOURCE REFERENCES
WAVELEN REF dBm TYP.
-----
*1310nm NOT SET (-10)
1550nm NOT SET (-10)
-----
WAVE | SET | DONE
```

**STEP 29** Using one of the singlemode patch cables, connect the detector on the Fiber OWL 4 BOLT power meter to the 1310nm light source (left-hand port) together as shown in Figure 2.

Press <F1> to continue.

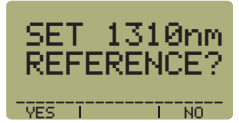
## RUN LINK WIZARD, cont.

**STEP 30** Make sure that the 1310nm light source port is powered ON and selected (the indicator LED on the left-hand side will be lit).

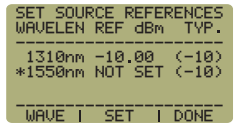


**STEP 31** Confirm setting the 1310nm reference.

Pressing <F1> to continue. You will be returned to the SET SOURCE REFERENCES screen.



**NOTE:** if you are also testing at 1550nm, you will need to connect a separate singlemode patch cable to the 1550nm port.



**STEP 32** For setting a 1550nm reference, repeat steps 27 through 30, except you will select 1550nm (as shown at right).

After the 1550nm reference is set, the REF dBm field will be filled in with a reference value.

**STEP 33** Press <F3> to complete the Link Wizard.

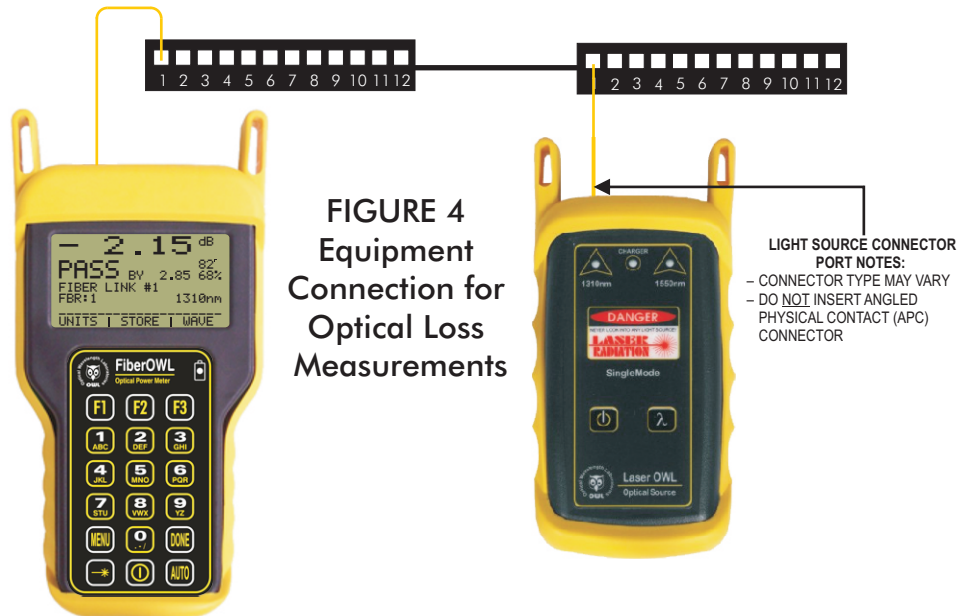
**STEP 34** Press <F1> to begin taking readings.

## TAKE READINGS

**STEP 35** Disconnect the singlemode patch cable from the Fiber OWL 4 BOLT and take the units to opposite ends of the link.

**!** Do NOT disconnect the patch cable(s) from the light source at any time until all fibers have been tested.

**STEP 36** Connect the units to the first fiber to test as shown in Figure 4. Your readings will vary from the example below.



**STEP 37** Press <F2> to store the data point. If this is the first data point in the link, you may be prompted to enter a new label.

**STEP 38** Press <F3> to save the data point.

**STEP 39** Disconnect the patch cables from the patch panels and move them to the next port in the patch panel, then repeat steps 37 through 39 until all fibers in the link have been tested at 1310nm.

**TAKE READINGS, cont.**

**STEP 40** If also testing at 1550nm, repeat steps 36 through 39, but this time use the singlemode patch cable that is attached to the 1550nm port. Also, make sure that you set the Fiber OWL 4 BOLT and the Laser OWL to 1550nm.

(end of procedure)