Fiber OWL 4 Series Test Kits

Certification Testing
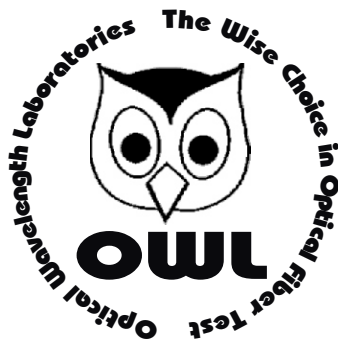
Quick Reference Guide

For part numbers:
KIT-FO4-L2st
KIT-FO4-L2sc
KIT-FO4-L2fc

Optical Wavelength Laboratories

Quick Reference Guide
Fiber OWL 4 Series
Firmware Version 4.65

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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 competent 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 optical power meter and a Laser OWL singlemode fiber optic laser 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:

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

⚠ **NOTE:** if you are testing at both 1310nm and 1550nm, each light source wavelength will require its own singlemode patch cable.

EQUIPMENT PORTS

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

**FIGURE 1
Test Equipment Ports**

Detector

1310 nm

1550 nm

Fiber OWL 4 power meter   Laser OWL light source
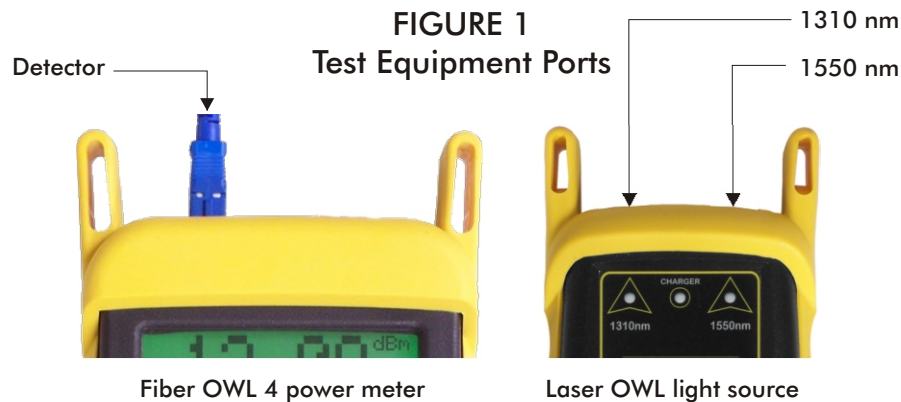
VERIFY PROPER OPERATION OF THE EQUIPMENT

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

NOTE: LIGHT SOURCE CONNECTOR PORT CONFIGURATION MAY VARY BASED UPON YOUR EQUIPMENT

DO NOT INSERT APC (ANGLED PHYSICAL CONTACT) CONNECTORS INTO ANY OWL LIGHT SOURCE PORT AS THIS MAY DAMAGE THE LIGHT SOURCE INSIDE THE PORTS.

**FIGURE 2
Singlemode
Patch Cable
Connection**

STEP 2   Power on the light source.

STEP 3   Power on the Fiber OWL 4.

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

STEP 5   Press <F3> on the Fiber OWL 4 until the wavelength reads 1310nm.

STEP 6   The Fiber OWL 4 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 singlemode patch cable between the Fiber OWL 4 and the Laser OWL as shown in Figure 2.

VERIFY PROPER OPERATION OF THE EQUIPMENT, cont.

STEP 9 The Fiber OWL 4 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 singlemode patch cable between the Fiber OWL 4 and the Laser OWL as shown in Figure 2.

STEP 12 The Fiber OWL 4 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:



 [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
  TIA-568B.3/CAN-T529
  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 Enter the end-to-end length of the fiber link under test in meters.

Press **<DONE>** to continue.

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



 [01000]
 ----------------
  <--- | FEET | --->
```

RUN LINK WIZARD, cont.

STEP 22   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.

```
INLINE CONNECTIONS?
(A CONNECTION IS WHEN
TWO FIBER CONNECTORS
MATE  USUALLY A PATCH
PANEL)
[2 ]
------------------
<--- | FEET | --->
```

Press **<DONE>** to continue.

STEP 23   Enter the number of splices in the link under test. Splices can be either fusion or mechanical. Typical singlemode networks will have zero splices.

```
ENTER THE NUMBER OF
SPLICES IN THE FIBER
BEING TESTED:

[0 ]
------------------
<--- | FEET | --->
```

⚠️ **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 24   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.

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

STEP 25   Press **<F1>** until the asterisk (*****) is in front of 1310nm (as shown at right).

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

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

------------------
WAVE | SET | DONE
```

STEP 26   Connect the detector port on the Fiber OWL 4 and the 1310nm light source (left-hand port) together with the singlemode cable as shown in Figure 2.

Press **<F1>** to continue.

```
   CONNECT
   1310nm
   SOURCE
------------------
DONE |     |
```

STEP 27   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 28   Confirm setting the 1310nm reference.

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

```
  SET 1310nm
  REFERENCE?
------------------
YES  |      | NO
```

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

STEP 29   For setting a 1550nm reference, repeat steps 25 through 28, except you will select 1550nm (as shown at right). Also, remember to set the Laser OWL to 1550nm (the right-hand indicator LED will be lit).

```
SET SOURCE REFERENCES
WAVELEN REF dBm  TYP.
------------------
 1310nm -10.00  (-10)
*1550nm NOT SET (-10)

------------------
WAVE | SET | DONE
```

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

STEP 30   Press **<F3>** to complete the Link Wizard.

**STEP 31**   Press **<F1>** to begin taking readings.

TAKE READINGS

STEP 32   Disconnect the singlemode patch cable from the Fiber OWL 4 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 33   Connect the units to the first fiber to test as shown in Figure 3. Your readings will vary from the example below.

FIGURE 3
Equipment
Connection for
Optical Loss
Measurements
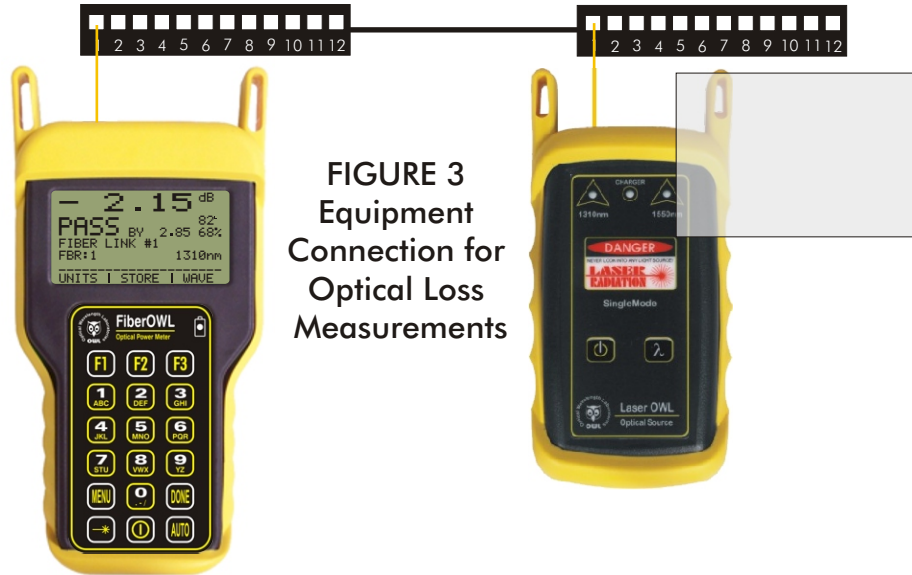
STEP 34   Press <F2> to store the data point. If this is the first data point in the link, you may be prompted to enter a new label.

STEP 35   Press <F3> to save the data point.

STEP 36   Disconnect the patch cables from the patch panels and move them to the next port in the patch panel, then repeat steps 34 through 36 until all fibers in the link have been tested at 1310nm.

STEP 37   If also testing at 1550nm, repeat steps 33 through 36, but this time use the singlemode patch cable attached to the 1550nm port. Also, make sure that you set the Fiber OWL 4 and the Laser OWL to 1550nm.