

# Optical Wavelength Laboratories

## ZOOM 2 Series Test Kits

Optical Loss Testing

Quick Reference Guide

For part numbers:  
KIT-Z2-WSMDxx  
KIT-Z2-WSMDVxx  
KIT-Z2-WSMDSDxx



## **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 ZOOM 2 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 ZOOM 2:

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.

# QUICK REFERENCE GUIDES

**Optical Power Meter:**  
**Fiber Optic Light Source:**

**ZOOM 2**  
**WaveSource Series Multimode Source** PAGE 1 of 4

This quick reference guide demonstrates the procedure for performing a dual-wavelength insertion loss test at both 850nm and 1300nm.

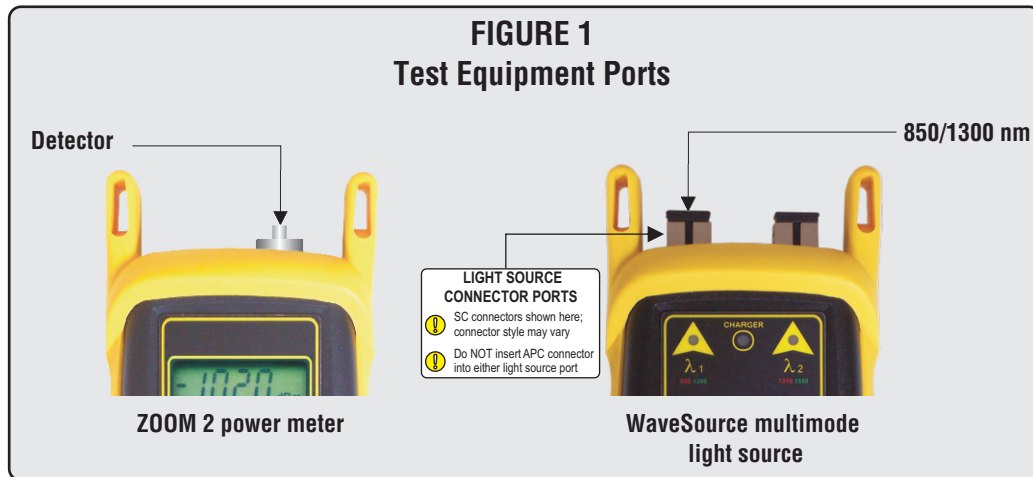
 **to test at only one wavelength, ignore the steps related to the other wavelength**

There are three main parts to performing an insertion loss test:

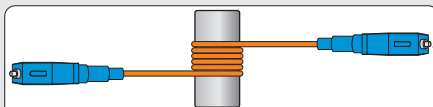
- PART 1** verify proper operation of the test equipment and patch cables;
- PART 2** set a reference for the wavelength(s) used during fiber link measurement; and
- PART 3** take measurements.

## EQUIPMENT PORTS


Figure1 shows the ports used during this procedure. These ports may vary depending upon the model of equipment.





## REQUIRED ACCESSORIES



**Mandrel-wrapped reference cable**




**(1) Straight patch cable**

-  ensure test cables have the proper core size and connector type
-  multimode reference cables must be wrapped and secured around a mandrel as required by national and international Fiber Optic Test Procedures (Figure 2)

Core Size	50/125 μm	62.5/125 μm
Diameter	0.9 in.	0.7 in.
Wraps	5	5

**Figure 2**

-  a mandrel-wrapped reference cable is required for each light source wavelength being used for testing

# QUICK REFERENCE GUIDES

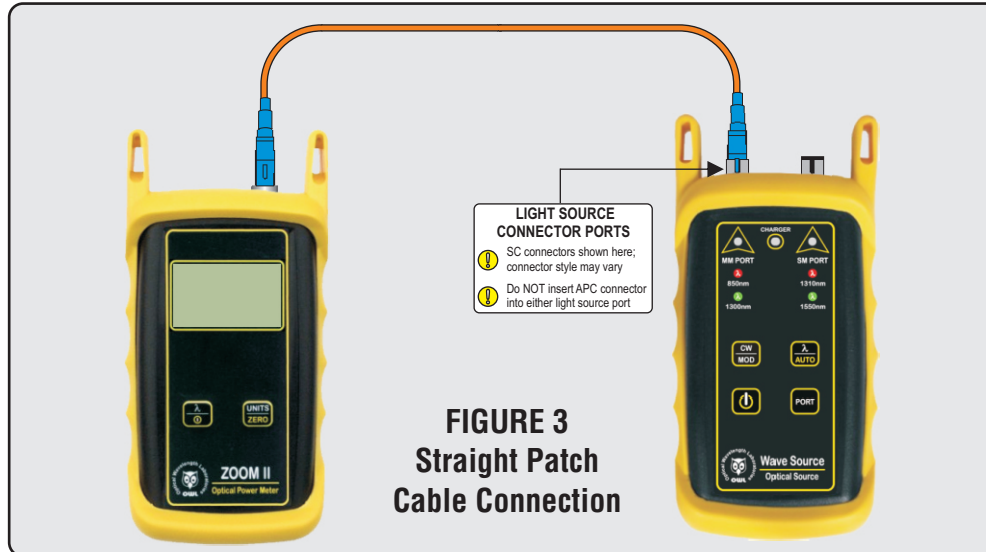
Optical Power Meter: **ZOOM 2**

Fiber Optic Light Source: **WaveSource Series Multimode Source**

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## PART 1 – VERIFY EQUIPMENT OPERATION

- 1 Connect the power meter and light source together with the straight patch cable (Figure 3).



**FIGURE 3**  
**Straight Patch**  
**Cable Connection**

- 2 Press to power on the WaveSource multimode light source. By default, the light source will be set to 850nm (RED indicator LED on the left-hand side).
- 3 Press to power on the ZOOM 2 optical power meter.
- 4 If necessary, press several times on the ZOOM 2 until the wavelength is set to 850nm, and press so that the ZOOM 2 is set to 'dBm'.
- 5 Compare the reading on the ZOOM 2 to Table 1 for acceptable power levels. The patch cable should be replaced if it is below the acceptable power level.

Core Size	Acceptable Power Level	Replace at
62.5/125 μM	-19.0 to -21.0 dBm	-21.00 dBm
50/125 μM	-22.0 to -24.0 dBm	-24.00 dBm

**TABLE 1**

- 6 Once proper operation has been verified, remove the straight patch cable from both units and set it aside.

(continue procedure on next page)

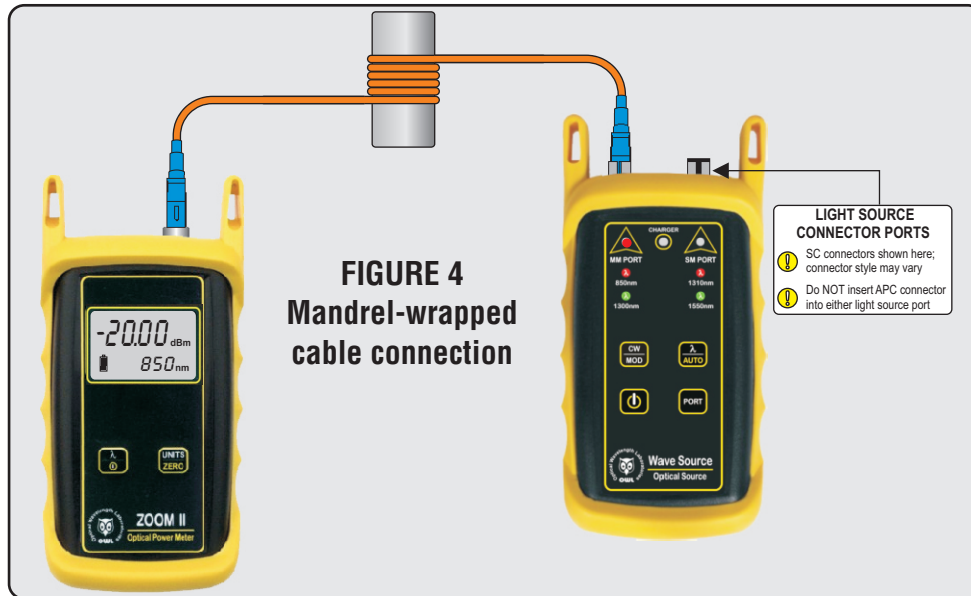
# QUICK REFERENCE GUIDES

Optical Power Meter:  
Fiber Optic Light Source:

**ZOOM 2**  
**WaveSource Series Multimode Source** PAGE 3 of 4

## PART 1 – VERIFY EQUIPMENT OPERATION; cont.

- 7 Connect a mandrel-wrapped patch cable between the detector port on the ZOOM 2 and the MM PORT (left-hand side) on the WaveSource (Figure 4).



- 8 Compare the reading on the ZOOM 2 to Table 1 for acceptable power levels. The mandrel-wrapped patch cable should be replaced if it is below the acceptable power level.
- 9 Once proper operation has been verified, continue on to the next step.

## PART 2 – SET REFERENCE

✓ **Setting a reference is commonly referred to as “zeroing”.**

- 10 With the ZOOM 2 and WaveSource still connected as shown in Figure 4, press and hold **UNITS ZERO** on the ZOOM 2 to set the reference for 850nm.

The ZOOM 2 display should change to show readings in ‘dB’, and the power reading should be approximately 0.00 dB. This means that the meter and light source have been successfully “zeroed” at 850nm.



- 11 Press **λ/O** on the ZOOM 2 to set the power meter wavelength to 1300nm.
- 12 Press **λ/AUTO** on the WaveSource to set the light source wavelength to 1300nm. The indicator LED on the left-hand side should turn **GREEN**.
- 13 Press and hold **UNITS ZERO** on the ZOOM 2 to set the reference for 1300nm. The power reading should be approximately 0.00 dB.

# QUICK REFERENCE GUIDES

Optical Power Meter:  
Fiber Optic Light Source:

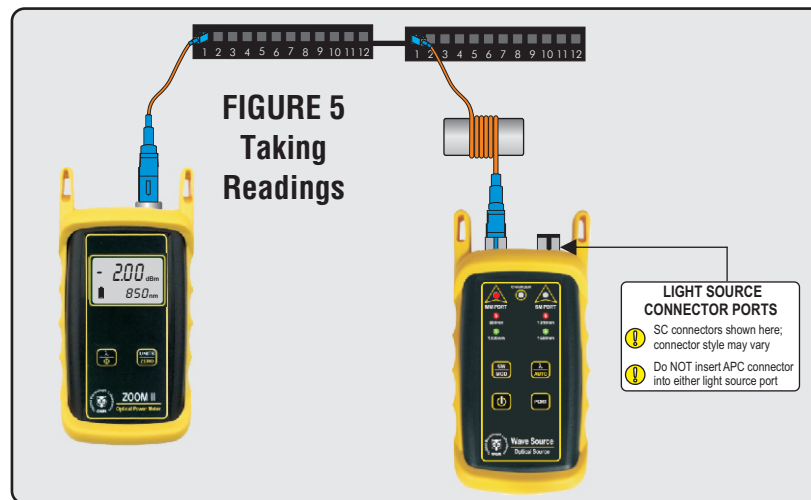
ZOOM 2  
WaveSource Series Multimode Source PAGE 4 of 4





## PART 3 – TAKE READINGS

- 14 Remove the patch cable from the detector port on the ZOOM 2. Leaving the mandrel-wrapped cable attached to the WaveSource, and bring both units to the opposite ends of the link under test.

 Remember to bring the straight patch cable with the ZOOM 2.

- 15 Connect the ZOOM 2 and WaveSource to the link under test as shown in Figure 5.



- 16 Press  so that the ZOOM 2 is set to '850nm'.
- 17 Press  on the WaveSource once to set the wavelength to '850' (the RED LED will now be lit).
- 18 Record the 850nm 'dB' loss value for the current fiber under test.
- 19 Disconnect both patch cables from the patch panels and move to the next port on the patch panels.
- 20 Repeat 18 and 19 for each fiber in the cable under test until all fibers have been tested at 850nm.
- 21 Press  on the ZOOM 2 once to set the wavelength to '1300nm'.
- 22 Press  on the WaveSource once to set the wavelength is to '1300nm' (the GREEN LED will now be lit).
- 23 Record the 1300nm 'dB' loss value for the current fiber under test.
- 24 Disconnect both patch cables from the patch panels and move to the next port on the patch panels.
- 25 Repeat steps 23 and 24 for each fiber in the cable under test until all fibers have been tested at 1300nm.