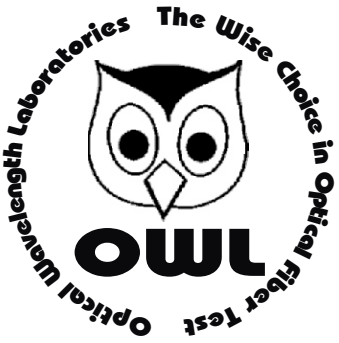
Dual OWL
Operations Guide
Multimode Light Sources



Optical Wavelength Laboratories

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FIGURES

1.0 GENERAL

Thank you for your purchase of an Optical Wavelength Labs (OWL) Dual OWL multimode light source.

The source is simple to operate with a single switch controlling power and selecting the output wavelength. LED indicators highlight the selected source and verify that battery power is sufficient to maintain the calibrated output power.

The Dual OWL is a LED-based light source designed to test multimode fiber optic links. The LED outputs are temperature compensated and are calibrated to couple -20dBm of optical power into multimode fiber. The LED indicators show whether the unit is ON or OFF, and whether the battery has enough power to maintain its calibrated output power. Dual 850 and 1300nm light sources provide dual wavelength testing that conforms to international testing standards.

Each Dual OWL comes with a protective rubber boot, carrying strap, CD-ROM based operations manual, and a 9-volt battery.

Typical uses include telecommunications networks, data networks, cable television, and industrial equipment control.

2.0 FUNCTIONAL DESCRIPTIONS

Figure 1 - Dual OWL
Multimode Light Source

1. 850 nm port - This port houses a 850 nm multimode source and can be either a ST or SC connector.

2. Power/Wavelength selector switch - This switch toggles to 3 positions. Center position is OFF, the left position powers on the 850 nm LED, and the right position powers on the 1300 nm LED.

3. 1300 nm port - This port houses a 1300 nm multimode source and can be either a ST or SC connector.

4. 850 nm Indicator LED - This LED indicates the ON/OFF status of the 850nm LED source.

5. 1300nm Indicator LED - This LED indicates the ON/OFF status of the 1300nm LED source.

NOTE: During normal operation, if the indicator LEDs are not lit, this indicates that the battery has insufficient power to provide accurate readings and must be replaced.

3.0 APPLICATIONS

3.1 PRECAUTIONS

3.1.1 Safety - Caution must be exercised when working with optical equipment. Most transmission equipment and light sources use light that is invisible to the human eye. High energy light is potentially dangerous, and can cause serious, irreparable damage to the eye. Thus, it is recommended to **NEVER** look into the connector port of a light source or the end of a fiber.

3.1.2 Operational - In order to ensure accurate and reliable readings, it is vitally important to clean ferrules containing optical fibers and optical connector ports. If dirt, dust, and oil is allowed to build up inside connector ports, this may scratch the surface of the LED diode, producing erroneous results. Replace dust caps after each use.

3.2 REQUIRED ACCESSORIES

3.2.1 Cleaning Supplies - It is recommended to clean fiber ferrules before each insertion with 99% or better isopropyl alcohol and a lint free cloth. A can of compressed air should be available to dry off the connector after wiping, and to blow out dust from bulkheads.

3.2.2 Patch Cords - Patch cords may be needed to connect the Dual OWL to the system under test. The connector styles on the patch cord must match the type on the Dual OWL and the type of the system under test.

3.2.3 Optical Fiber Adapters - Optical fiber adapters are used to connect two connectorized fibers together, and may be necessary to adapt your patch cords to the system under test.

3.3 TYPICAL APPLICATIONS

The Dual OWL multimode light source can be used as a diagnostic and measurement tool of optical transmission systems and fiber optic links. These applications can be found in several industries, including premise, LAN, CATV, and Telco.

The Dual OWL multimode light source is designed to emit a temperature-stabilized source of light to be used for optical loss measurement. The Dual OWL serves as an optical reference, which is otherwise known as the “zero” point when a power meter is “zeroed”. Optical loss measurements are useful for measuring the attenuation, or loss, of a fiber link. The loss value can then be compared to a pre-calculated link budget, which is used to determine if the fiber link will operate within the parameters of the transmission equipment.

The formula for calculating loss in a fiber link is: $\mathbf{L = P_a - P_r}$

where **L** is the amount of optical loss in dB, $\mathbf{P_a}$ is the absolute power in dbm, and $\mathbf{P_r}$ is the reference power in dBm.

Optical loss measurements can also be used for fiber optic link certification. Link certification is a process where optical loss measurements are compared to a link budget calculated using fiber optic cabling standards.

4.0 MAINTENANCE / CALIBRATION

4.0.1 Repair of this unit by unauthorized personnel is prohibited, and will void any warranty associated with the unit.

4.0.2 The battery compartment is covered by a sliding plate on the back of the unit. Remove the rubber boot to expose the back of the unit. One 9v battery is required for operation.

4.0.3 For accurate readings, the optical connectors on the Dual OWL and the connectors on the patch cords should be cleaned prior to attaching them to each other. Minimize dust and dirt buildup by replacing the dust caps after each use.

4.0.4 It is recommended to have Optical Wavelength Laboratories calibrate the Dual OWL once per year.

5.0 WARRANTY

5.0.1 Optical Wavelength Labs products have a **two-year** factory warranty, which covers manufacturer defect and workmanship only, valid from the date of shipment to the original customer.

5.0.2 Products found to be defective within the warranty will be either repaired or replaced, at the option of Optical Wavelength Labs.

5.0.3 This warranty does not apply to units that have been repaired or altered by anyone other than Optical Wavelength Labs, or have been subjected to misuse, negligence, or accident.

5.0.4 In no way will Optical Wavelength Labs liabilities exceed the original purchase price of the unit.

5.0.5 To return equipment under warranty, please contact Optical Wavelength Labs for a RMA number. To ensure quick turnaround, please include a short description of the problem and a phone number where you can be reached during normal business hours.

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6.0 SPECIFICATIONS

Launch Method	LED
Connector	ST or SC
Center Wavelength (850nm)	850 ±20nm
Center Wavelength (1300nm)	1290nm min
	1350nm max
Spectral Width (FWHM; 850 nm)	35 nm
Spectral Width(FWHM; 1300nm)	170nm
Output Power	-20.0 dBm
Initial Accuracy	0.1 dB
Fiber Type	multimode
Battery Life	40 hrs.
Battery Capacity Display	Yes
Operating Temperature	0 to 55° C
Storage Temperature	0 to 75° C
Dimensions	2.75" x 4.94" x 1.28"
Weight	154g

Conforms to the Harmonized European Standards EN 61326-1 and EN 61010-1.