

## How to measure the luminous power of an optical module



### Overview

An increasingly common special-purpose OPM, commonly called a "PON Power Meter" is designed to hook into a live PON (Passive Optical Network) circuit, and simultaneously test the optical power in different directions and wavelengths. This unit is essentially a triple power meter, with a collection of wavelength filters and optical couplers. Proper calibration is complicated by the varying duty cycle of the measured optical signals.

### Key Takeaways

You can check the optical power of an optical module using an optical power meter or the module's built-in Digital Optical Monitoring (DOM/DDM) feature. Using an Optical Power Meter

An optical power meter (OPM) is the most accurate tool for measuring the transmitted (TX) and received (RX) optical power of a module. To use it:

- Select the correct wavelength: Ensure the power meter matches the module's operating wavelength (commonly 850 nm, 1310 nm, or 1550 nm) to get accurate readings .
- Clean connectors: Dirt or dust on fiber connectors can reduce power readings and cause signal loss .
- Connect the fiber: Insert the fiber from the optical module into the power meter.

- **Read the power:** The meter displays optical power in dBm. Compare the reading to the module's datasheet to verify it is within the recommended range .

- **Safety:** Never look directly into the fiber end; laser light can damage your eyes. Wear safety glasses .

#### Using Digital Optical Monitoring (DOM/DDM)

Many modern SFP or optical modules support DOM/DDM, which provides real-time monitoring of optical power and other parameters:

- **Access the switch or device CLI:** Commands vary by vendor. For example, on Cisco Catalyst switches, use `show interfaces transceiver detail` to view TX and RX power .

- **Check TX and RX values:** TX indicates the light leaving the module, while RX shows the light received from the remote device. Values outside the low/high warning thresholds may indicate a problem .

- **Regular monitoring:** Periodically check optical power to detect degradation early, which helps prevent network outages .

#### Additional Tips

- **Compare with datasheet:** Always verify measured power against the module specifications to ensure proper operation .

- **Test after changes:** Check optical power after installing, replacing, or cleaning modules to confirm correct performance .

- **Troubleshoot low power:** Low TX power may indicate dirty connectors, damaged fiber, or a failing module . By combining optical power meters and DOM/DDM monitoring, you can accurately measure and maintain the luminous power of optical modules, ensuring reliable network performance.

## Article Content

### Optical power meter

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