

PON optical power meters cannot detect which wavelength of light



Overview

Each generation uses different wavelengths, and a basic optical power meter cannot separate those signals on a live network.

Key Takeaways

Basic optical power meters cannot accurately detect individual PON wavelengths such as 1270 nm upstream or 1577 nm downstream on XGS-PON networks. Why Standard Power Meters Cannot Detect Certain PON Wavelengths

Conventional optical power meters measure total optical power at a single wavelength window using a single photodetector. On a PON fiber, multiple wavelengths coexist simultaneously due to wavelength-division multiplexing (WDM). For example, in a GPON network, the downstream signal travels at 1490 nm, upstream at 1310 nm, and RF video overlays may use 1550 nm. Standard meters cannot separate these signals, so they only provide a combined power reading, which does not indicate whether each individual wavelength is within specification. In XGS-PON networks, the downstream wavelength shifts to 1577 nm and upstream to 1270 nm. A GPON-only meter cannot measure 1577 nm downstream or 1270 nm upstream, making it ineffective for testing XGS-PON signals.

Wavelengths Typically Undetectable by Basic Meters

- 1270 nm – XGS-PON upstream
- 1310 nm – GPON upstream (may be detectable if meter is calibrated for 1310 nm)

- 1490 nm – GPON downstream (detectable by some meters)
- 1550 nm – RF video overlay (may be undetectable without proper filtering)
- 1577 nm – XGS-PON downstream Without wavelength-selective filters, a standard meter cannot isolate these signals, leading to inaccurate readings or inability to troubleshoot live PON networks .

Solution: Dedicated PON Power Meters

Dedicated PON meters use wavelength-selective optical filters to measure each signal independently. They can detect multiple wavelengths simultaneously, such as 1310 nm, 1490 nm, 1550 nm, and 1577 nm, providing per-wavelength, per-direction power readings. This capability is essential for verifying that each signal on the fiber is within the specified power budget and for safe testing of live networks . In summary, basic optical power meters cannot detect PON wavelengths that are outside their calibration range or coexist with other signals, particularly 1270 nm upstream and 1577 nm downstream on XGS-PON networks, and may also struggle with RF video overlays at 1550 nm. Using a dedicated PON meter is necessary for accurate, per-wavelength measurements.

Article Content

GPON vs XGS-PON vs 25G-PON: Which Power Meter Do You Need?

Each generation uses different wavelengths, and a basic optical power meter cannot separate those signals on a live network. This

OPM and PON meter-EDITED

In PON networks, a conventional OPM cannot identify which wavelength it is measuring. For this reason, special optical power

Optical power meter

Firstly, the user must set the meter to the correct test wavelength, and secondly, the presence of spurious wavelengths can result in

Why Do You Need a PON Power Meter

The PON power meter can simultaneously test the upstream and downstream wavelengths of 1490nm, 1550nm and 1310nm through

Best Fiber Optic Power Meters for FTTH in 2026 | ShopFiberOptic

Compare the best fiber optic power meters for FTTH installation and PON network testing. Covers basic optical meters, wavelength

XGS PON Power Meter

The 10G XGS PON optical power meter can measure the power values of uplink and downlink signals in GPON /EPON and XGPON/

Passive Optical Network Power Meter for

With support for 1270 nm and 1310 nm upstream wavelengths, and 1490 nm, 1550 nm, and 1577 nm downstream wavelengths, this

How to Choose the Best PON Power Meter for Fiber Optic Testing

Look for models with automatic wavelength detection, high dynamic range (up to -35 dBm), and compatibility with

Measuring PON & WDM Signals Using the OWS200

Some technicians are using PON optical power meters which is a costly solution to measure 1490nm and 1550nm independently.

Optical power meter

An optical power meter (OPM) is a device used to measure the power in an optical signal. The term usually refers to a device used

Portable PON Optical Power Meter | sisco

SISCO handheld PON optical power meter is used to measure the optical power of both upstream and

FlowScout PON Optical Power Meter | AFL Global

The FlowScout® Through-Mode PON Optical Power Meter from AFL offers fast, accurate detection of

How to Use an Optical Power Meter Correctly | ShopFiberOptic

Step-by-step guide to using a fiber optic power meter: connector cleaning, wavelength selection, reference setup, insertion loss

PON Verification and Activation | AFL Global

GPON, video and XGS-PON services can exist on the same FTTx network, so specific wavelengths must be verified. Using tools

Jonard Tools PON-50 Instructions

PON-50 PASSIVE OPTICAL NETWORK POWER METER FOR BPON/EPON/GPON
INSTRUCTION MANUAL OVERVIEW:

PPM-350D

The PPM-350D is the first PON-aware™ power meter to automatically detect and test next-gen and legacy PON technologies.

ChallengerOptics / Wavelength Optical Testing and

C0-OPM-PONX / Full Feature PON Power Meter FEATURES: - Next generation PON Power Meter, XGS

PON Power Meter FAQ | Kingfisher International

A laser test source doesn't seem to work properly with this meter Laser test sources may appear to randomly work or fail with a PON

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Contact Us

Continue your research online:

Website: <https://danialonso.es>

Technical inquiry: <https://danialonso.es/contact.html>

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

