

Which wavelength band should a GPON optical power meter use



Overview

****Wavelength Allocation****: The G-PON downstream signal operates between 1480–1500 nm, while upstream signals use 1260–1360 nm. Enhancement bands are reserved for NGA and video services, separated by guard bands to minimize interference. If you work on GPON and XGS-PON networks, the XGS/GPON. This document outlines recommendations for wavelength allocation in gigabit-capable passive optical networks (G-PONs) to enable coexistence with additional services like next-generation access (NGA) and video distribution. It specifies wavelength ranges, tolerance levels, and configurations for. It can handle 10 Gbps for downloads and 2.5 Gbps for uploads, all while staying compatible with existing GPON setups and RF video services. The image attached gives a clear picture of how various wavelength bands are designated for upstream and downstream data, along with GPON and video services. Legacy G-PON/E-PON and new 10G xPON generations operate at different wavelengths in order to co-exist with each other on the same optical distribution network (ODN). Their wavelengths are defined by the ITU-T and IEEE standards as follows: PON OPMs measure signal levels of individual wavelengths. In PON networks, a minimum of two or more wavelengths are used within the same fiber — GPON uses 1490 nm, 1310 nm and sometimes 1550 nm, while XG(S)-PON uses 1557 nm and 1270 nm. In. AFL's FlowScout Downstream PON Power Meter (DPPM) is designed to automatically detect and simultaneously measure coexistent downstream PON power levels at 1490 nm GPON/EPON and either 1550 nm RF video or 1577 nm XG/XGS/10GEPON.

Article Content

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Advanced Telecom Networks Are Key To Efficient & Resilient Power

In some legacy GPON situations where only a single wavelength is present, a standard broadband OPM can be used - however a specialized filtered PON OPM is always recommended.

Mar 05, 2026

FlowScout® Downstream PON Power Meter

The AFL FlowScout Downstream PON Power Meter is a versatile and reliable tool for measuring power levels in PON networks. It can automatically detect and simultaneously measure coexistent

Sep 20, 2025

XG-PON1 Wavelength Allocation Explained: Spectrum

Explore how XG-PON1 uses specific wavelength bands for upstream and downstream communication, coexisting with GPON and video services in

Dec 11, 2025

How to accurately measure the optical power of 10GE-PON/XGPON

Definitely it is important to use 10G PON power meter to test such PON network optical power. It supports separate testing at 1490nm and 1577nm wavelengths and give technicians correct

Aug 02, 2025

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

Compare PON power meters for GPON, XGS-PON, and 25G-PON networks. Understand the wavelengths each standard uses and why you need a dedicated PON meter instead of a basic

Nov 12, 2025

Understanding ITU-T G.984 and G.987 Standards for GPON and XG

These standards delineate the frameworks for Gigabit-capable Passive Optical Networks (GPON) and 10-Gigabit-capable Passive Optical Networks (XG-PON), respectively. Understanding

Jun 29, 2025

PON Module Parameters Guide: How to Choose the

Wavelength Compatibility: Different PON modules (such as GPON and XG-PON) use different wavelengths for signal transmission. Even if the

Jan 26, 2026

What Are GPON Wavelength Bands?

GPON (Gigabit Passive Optical Network) uses different wavelength bands for transmitting and receiving data. The downstream band in GPON is from 1480nm to 1500nm, while the upstream band is from

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Home -The Fiber Optic Association

Additionally, optical power is measured at transmission and reception using a stable test source and optical power meter. Throughout all testing, it is necessary to use the wavelengths of light that the

Oct 18, 2025

Optical Power Meters: Understand Their Uses and Internals

Optical power meters are indispensable instruments for testing and maintaining modern fiber optic communication and other

Jan 31, 2026

Optical Wavelength Considerations for NG EPON

EPON ONUs need to have Wavelength Blocking Filters (WBF) to block future PON wavelengths (10G EPON, TWDM, etc). If considering CWDM on the same fiber, need CWDM type Band-pass filters (BPF)

Sep 02, 2025

Understand GPON Technology

Wavelength-Division Multiplexing (WDM) - Wavelength-division multiplexing (WDM) is a technology that multiplexes a number of optical carrier

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GPON power budget calculations | APNIC Blog

Power budget Optical power budget refers to optical technologies that use fibre as the transmission medium, carrying light instead of voltages and

Dec 03, 2025

OPM and PON meter-EDITED

Over the range of typical fiber optic power measurements, the sensitivity of the detector varies considerably, so the power meter is calibrated at the typical wavelengths used in fiber optics (850,

Jun 04, 2026

XG-PON wavelength allocations according to ITU-T G.987.1. The

The wavelength allocation of XG-PON is the same as IEEE 10G-PON , namely 1260 -1280 nm upstream and 1575-1580 downstream (Fig. 1).

Jul 09, 2025

FHP3P05 PRO 10G PON Optical Power Meter

Applicable to GPON/EPON, XG(S)-PON/ 10G EPON and overlay RF video Network. Support accurate power measurement for downlink 1490nm/ 1577nm/ 1550nm and uplink 1310nm/ 1270nm. Excellent

Dec 20, 2025

The FOA Reference For Fiber Optics

The transmitter output should be within specifications, as should the receiver input, when tested with a calibrated optical power meter set at the proper wavelength (s).

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What Is the Ideal Wavelength Range for an Optical Power Meter?

Explore the importance of understanding wavelength range in optical power meters for accurate measurements in optical applications. Learn about the impact on measurement accuracy, factors

Nov 22, 2025

XG-PON1 Wavelength Allocation Explained: Spectrum

Learn how XG-PON1 allocates wavelengths for upstream, downstream, GPON, and video services. A complete guide for telecom

Jun 27, 2025

How to Use an Optical Power Meter(OPM): A Beginner''s

An optical power meter is a professional testing device used to measure the power of optical signals accurately. It is widely used in fiber optic

Jan 19, 2026

Recommendation ITU-T

****Wavelength Allocation****: The G-PON downstream signal operates between 1480–1500 nm, while upstream signals use 1260–1360 nm. Enhancement bands are reserved for NGA and video services,

Feb 06, 2026

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 guide explains the wavelengths behind each PON technology and

Oct 29, 2025

XGS-1577 PASSIVE OPTICAL NETWORK POWER METER

XGS-1577 Passive Optical Network Power Meter Manual The XGS-1577 XGSPON Meter is a high-performance testing tool designed for accurate and simultaneous measurements of upstream and

Feb 12, 2026

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 meter is ideal for EPON, BPON,

Jun 28, 2025

GPON Testing: Guide to commissioning and maintenance

The ARGUS 260 is additionally equipped with an optical light source that transmits a defined ID on a selected wavelength, and can be expanded using the optical

May 26, 2026

Gigabyte Passive Optical Network (GPON)

In downstream transmission, the lasers wavelength measures 1490 nm while the upstream wavelength measures 1550 nm. A single mode optical fiber coming from a central office, runs to a passive optical

Contact Us

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