

Article Overview

An optical link test splitter is a passive fiber optic device used to divide or combine optical signals, and its performance is measured by insertion loss and excess loss using standard testing methods.

What is an Optical Splitter

An optical splitter is a passive device that distributes an input optical signal into multiple outputs, commonly used in passive optical networks (PONs) to connect multiple users to a single optical network terminal . Splitters are named by their input-to-output configuration, such as 1x2, 1x4, 1x8, 1x32, or 2x32, indicating the number of input and output ports . They are bidirectional: in one direction, they split the signal, and in the other, they combine signals from multiple fibers .

Types of Optical Splitters

- o Planar Lightwave Circuit (PLC) Splitters: These are integrated waveguide devices based on quartz substrates, offering low loss, uniform light distribution, and wide wavelength range. They are compact, lightweight, and highly reliable, suitable for optical routing, network monitoring, and distributed sensing .
- o Fused Biconical Taper (FBT) Splitters: These are made by fusing and tapering fibers together. They are simpler and cost-effective but may have higher insertion loss and less uniformity compared to PLC splitters .

Testing Optical Splitters

Testing ensures that splitters meet performance specifications, primarily focusing on insertion loss and excess loss:

- o Insertion Loss: The ratio of optical power launched into the input port to the power at a single output port, including both splitting and excess loss .
- o Excess Loss: The difference between the total input power and the sum of all output powers, indicating inefficiencies in the splitter .

Testing Methods

- o Optical Power Meter and Light Source: A common method where a light source injects a signal into the splitter, and an optical power meter measures the output at each port. This method follows standards like OFSTP-14 for double-ended loss or FOTP-171 for single-ended testing .
- o Optical Time-Domain Reflectometer (OTDR): Used for end-to-end testing of fiber links including splitters, providing information on loss, reflections, and fiber integrity .

Practical Considerations

Optical Splitter Link Testing

- o Loss is symmetrical, meaning the attenuation is the same whether the splitter is used to combine or divide signals .
- o Each split factor of 2 introduces approximately 3 dB of splitting loss, and high-quality splitters minimize excess loss and variability across ports .
- o Testing is essential for certifying fiber optic links to ensure network reliability and compliance with standards .

Applications

Optical splitters are widely used in:

- o FTTH networks to serve multiple homes from a single PON interface .
- o Fiber optic sensing systems for distributed monitoring .
- o Optical network monitoring and routing in communication systems . In summary, an optical link test splitter is a critical component in fiber optic networks, and proper testing using optical power meters or OTDRs ensures that the splitter performs efficiently, with minimal loss and uniform signal distribution across all output ports.

explains how optical splitters enable FTTH, their types (FBT vs. PLC), key ratios, and how they integrate with LINK

Corning's link loss budget calculator will calculate your total link loss and tell you if your system falls within Corning's recommended

Optical splitters are widely used in passive optical networks. Splitter loss is an important

Some splitters use optical integrated components, so they can be true splitters and the loss in each direction may

Fiber Optic Testing Testing is used to evaluate the performance of fiber optic components, cable plants and systems. As the

By addressing these common issues and following the troubleshooting tips provided, you

Testing an installed fiber optic cable plant is essential to ensuring it will support your customers' applications once

There is something different between testing an optical splitter and a patch cable although both of them use an optical

Optical Splitter Link Testing

Testing a splitter or other passive fiber optic devices like switches is little different from testing a patchcord

Optical splitters are usually used in passive optical networks (PONs) to distribute fiber to individual homes or businesses. There is

Loss testing, as a necessary testing item of optical splitters can be done by using an optical power meter and light

Testing a balanced PON Splitter with CertiFiber®; PRO The CertiFiber®; Pro Optical Loss Test Set (OLTS) can be used to check that

Newer fiber-optic applications that involve optical splitters require a specific OTDR setup to identify and measure. This

It is difficult to test splitters by OTDR, especially to test high ratio splitters like 1: 64 or

To accurately assess signal loss and verify that splitter installations are performing within expected parameters, you

This paper gives an overview of bidirectional optical splitter characteristics. It outlines the basics of passive optical network

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