

Article Overview

Fiber optic splitter testing involves measuring insertion loss, excess loss, and split ratio using standard methods with a light source and optical power meter to ensure proper performance in PON and other fiber networks.

Overview of Fiber Optic Splitters

Fiber optic splitters, also called optical couplers, are passive devices that divide or combine optical signals. They are commonly used in Passive Optical Networks (PON) to share a single optical signal among multiple users. Splitters are classified by the number of inputs and outputs, such as 1x2, 1x32, or 2x4, and can be FBT (Fused Biconical Taper) or PLC (Planar Lightwave Circuit) types. The loss introduced by a splitter includes the splitting loss, excess loss from manufacturing, and connector losses.

Testing Principles

Testing a splitter is similar to testing a fiber patchcord or cable plant. The main goals are to measure:

- o Insertion Loss: The ratio of optical power from the input to a single output port, including splitting and excess loss.
- o Excess Loss: The difference between the input power and the total power from all output ports, ensuring total output is never higher than input.
- o Split Ratio Verification: Confirms the optical power is divided according to the specified ratio (e.g., 50/50 for a 1x2 splitter), .

Standard Testing Methods

- o Equipment Required: Optical light source (at the appropriate wavelength), optical power meter, and launch/reference cables.
- o Calibration: Connect the launch cable to the source and calibrate the meter to set a 0 dB reference.
- o Downstream Testing: Connect the source to the splitter input and measure each output port sequentially with the power meter.
- o Upstream Testing: Reverse the direction to test signals from output ports back to the input, especially important for bidirectional splitters.
- o Multiple Input/Output Splitters: For 2x2 or 2xN splitters, test each input to all outputs individually, recording the loss for each path.

Testing Standards

- o OFSTP-14: Double-ended loss test (connectors on both ends)



Fiber Optic Splitter Tester

o FOTP-171: Single-ended loss test (one end connected) These standards ensure consistent and reliable measurement of splitter performance .

Common Issues and Troubleshooting

- o High Loss Readings: Often caused by dirty connectors, misalignment, or damaged splitters.
- o Unstable Readings: Can result from poor contact, environmental factors, or vibrations.
- o Inconsistent Results: May indicate faulty splitters, calibration errors, or improper handling . Best Practices:
- o Clean all connectors thoroughly before testing.
- o Ensure precise fiber alignment using appropriate tools.
- o Inspect splitters and connectors for physical damage.
- o Record and compare results against manufacturer specifications to verify compliance .

Additional Considerations

- o Switches and Attenuators: Test similarly to splitters, checking for consistency, crosstalk, and expected attenuation.
- o Wavelength-Dependent Devices: Use sources at the correct wavelength and spectral width for accurate testing.
- o Documentation: Maintain detailed records of insertion loss and excess loss for each port to support network performance verification . Fiber optic splitter testing is essential to ensure signal integrity, optimize network performance, and prevent system failures in FTTH, PON, and other optical networks.

Now, we test the simplest 1x2 optical splitter as the picture shown below. First, attach a launch reference cable to the

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

Learn about the common contaminants of fiber optics in today's mission critical networks and get a detailed look at fiber testing and

How to test fiber optic splitters or other passive devices A fiber optic splitter is a device that splits the fiber optic light into several

Using an OTDR to test every fiber in an OSP link is traditional, as the OTDR provides a snapshot of the losses in the fiber, locates

It encompasses both optical and mechanical evaluations of individual elements, as well as

Fiber Optic Splitter Tester

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

What's an optical splitter? How does the fiber optic splitter work? How many fiber splitter types? How to choose the

Optical splitters in the outside plant (OSP) are used mostly in passive optical networks (PONs) for fiber-to-the-user (FTTx) networks,

All couplers are manufactured using a very simple proprietary process that produces reliable,

For other 1xN optical splitters, like a 1x32 splitter, this testing method can also be applied.

Testing Fiber Optic Couplers, Splitters Or Other Passive Devices A passive device used to split or combine signals on fiber optics

Fluke Fiber Optic testing products to help certify that power losses are within standards. Troubleshoot broken and high loss links on

FS offers a range of fibre testers & tools, such as testers, cable cutting tools, splicing tools, cleaning tools, polishing tools for fibre or

Lamp Hacha Para Roofing Product description Fiber Optic Tester, Handheld Optical Power Meter, Cable Tester, Fiber

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