Testing Methods for Multimode Dual-Core Fiber Optic Patch Cords

Overview

FOA Fiber U Quickstart Guide: Fiber Optic TestingThis is your "QuickStart" guide to testing fiber optic cable plants, patchcords and communications equipme.

Key Takeaways

Testing dual-core multimode fiber patch cords involves measuring insertion loss, return loss, and verifying polarity for each fiber using a calibrated light source, power meter, and reference cables.

Equipment Needed

Multimode LE

D light source (850 nm, optionally 1300 nm) for multimode fibers. Optical power meter calibrated to the same wavelength as the source. Reference patch cords of the same fiber type and size (50/125 or 62.

5/125) to set a 0 dB reference. Mating adapters compatible with the connectors on the patch cord. Cleaning supplies for connectors and adapters to prevent contamination.

Testing Procedure

Set up the reference: Connect a reference patch cord to the light source and set the power meter to read 0 dB. This establishes a baseline for loss measurement. Connect the patch cord under test: Use a mating adapter to connect one end of the dual-core patch cord to the reference cable and the other end to the power meter.

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Measure insertion loss (IL): Record the power loss for each fiber individually. Since the patch cord is short, fiber attenuation is negligible, so the measurement primarily reflects connector quality. Reverse the patch cord: Test the opposite end to verify the second connector.

Polarity verification: For duplex or uniboot cords, ensure the transmit (Tx) and receive (Rx) channels are correctly aligned. Reverse polarity cords can be converted from TIA-568 A-B to A-A without tools if needed. Return loss (RL) and endface inspection: Use an optical loss test set (OLTS), OTDR, or endface metrology tools to check for reflections, scratches, pits, or contamination that could degrade performance.

Additional Considerations

Connector types: Ensure patch cord connectors match the equipment or use hybrid adapters if necessary. Fiber type compatibility: OM3 patch cords can be used on OM2 or OM4 cable plants, but matching fiber type is recommended for optimal performance. Documentation: Record IL, RL, and polarity results for quality assurance and troubleshooting.

Maintenance: Clean connectors before and after testing to maintain low loss and prevent damage. By following these steps, you can ensure that dual-core multimode patch cords meet performance standards, maintain signal integrity, and are ready for deployment in optical networks.

Article Content

FOA Fiber U Quickstart Guide: Fiber Optic Testing

This is your "QuickStart" guide to testing fiber optic cable plants, patchcords and communications equipment with a fiber optic light source and power meter. We''ll

Fiber Optic System Testing Tutorial

The recommended measurement method for end-to-end link testing is the single-jumper (or “one-cord”) reference method (with mandrel wrap for multimode). This test configuration is

The FOA Reference For Fiber Optics

The most common tests involve testing fiber optic cable plants, patchcords and other components that have connectors on each end. These are tested with a test source and power meter with reference

Fiber Optic Patch Cord Performance Testing

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In summary, rigorous testing of fiber optic patch cords is essential for delivering high-reliability optical assemblies. A robust OEM customization model should integrate four key test

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Table 1 summarizes the known attenuation measurement standards for installed optical fiber cabling, their test methods, and most importantly, when they should be used.

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This document describes how and where permanent link loss testing should be performed based on the specifics of the cabling system. A link loss equation is used to calculate acceptable attenuation

How to Test Patch Cords and Fiber Jumpers

A copper patch cord and fiber jumper connection test was conducted to see which brands can consistently pass industry standards. See the results here.

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This application note examines the one-cord, two-cord and three-cord reference methods proposed by various standards bodies regarding how and when they should be used.

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