



JDSU Fiber Characterization Service

Complete qualification of high-speed fiber optic networks

About JDSU Fiber Characterization Service

JDSU's Fiber Characterization Service verifies the integrity and capacity of your fiber plant through the measurement of key fundamental properties, such as attenuation, reflectance, and dispersion. Comprehensive testing, using JDSU's industry-leading optical test equipment, is performed by expert technical engineers and administered by a dedicated project manager. Whether you are increasing the speed or density of traffic on your existing network or you wish to verify the quality of a fiber installation prior to deployment, the information provided in our comprehensive report will allow you to properly plan for current and future network deployments.

Fiber characterization quantifies your fiber plant's ability to handle high data rate and Wavelength Division Multiplexing (WDM) applications with a wide array of measurements and services, including OIL, ORL, OTDR traces, CD, and PMD. Analysis of the results eliminates costly troubleshooting and finger pointing during the latter stages of network installation. *Fiber characterization is required to ensure that poor ORL, CD, and PMD results do not impair or prevent certain types of traffic, such as 10G and DWDM.* The test results provide baseline fiber characteristics, enabling improved network planning, increased network reliability, reduced service interruptions, and more effective future maintenance.

We bring our own specially trained experts to your site to help qualify your optical network. Dedicated project managers work with you to develop the solution, managing all phases of the project and ensuring customer satisfaction. Experienced and certified test technicians and test engineers perform testing on your network and on your schedule to ensure accurate results. A senior test engineer provides a comprehensive final report with detailed test results, analysis, and recommendations.

JDSU continuously strives towards the gold standard, providing a complete package of fiber characterization equipment, services, and certifications. Trust JDSU to prepare you for FTTH, triple-play applications, and high data rates with our Fiber Characterization Service provided by our own experienced staff.

Fiber Characterization

Optical Insertion Loss (OIL)

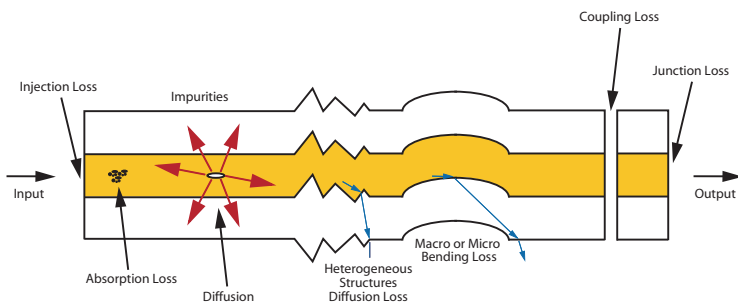
OIL measurements provide optical power loss results at various wavelengths as well as transmission delay and fiber length. OIL measurement results can indicate excessive loss, which may require the addition of optical amplifiers or regenerators.

Optical Return Loss (ORL)

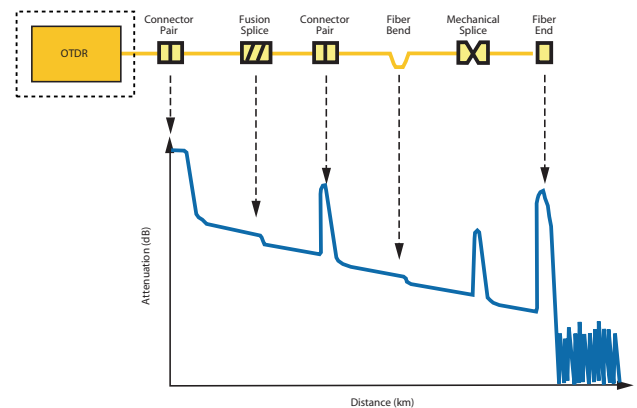
ORL measurements indicate the cumulative reflection offered by the optical link as a result of connector reflectance and inherent fiber reflectance. This measurement provides a pass/fail result for the entire link and determines the suitability of a link for WDM (Wave Division Multiplexing) applications. Failed ORL results can usually be corrected by careful cleaning of the fiber connectors or by re-termination of the fiber connectors in worst-case scenarios.

Optical Time Domain Reflectometry (OTDR)

An OTDR trace provides an overall view of the fiber span. This trace allows technicians to evaluate the performance of splices, connectors, and the overall fiber link. OTDR traces allow the technician to identify high-loss splices and connectors, ORL information on individual reflective events from connectors and mechanical splices, and bending.



Sources of Loss



Optical Time Domain Reflectometry (OTDR)

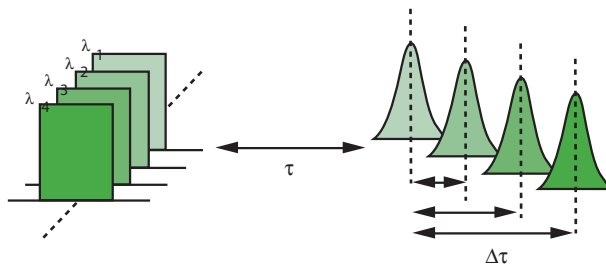
Fiber Characterization

Chromatic Dispersion (CD)

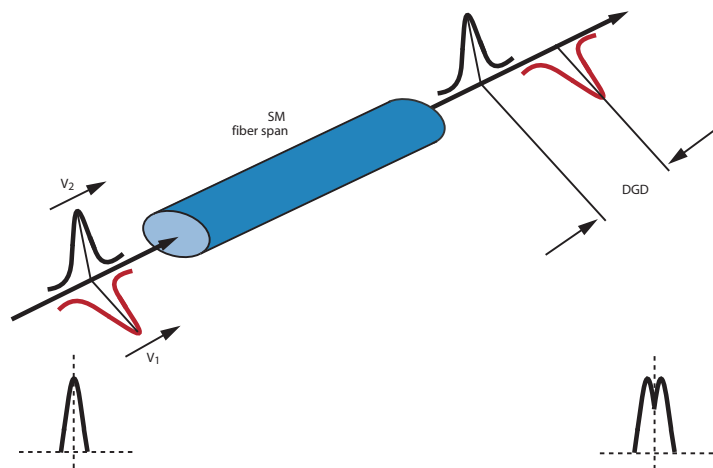
CD measurements define the amount of general dispersion (pulse spreading) encountered on the fiber link. CD results also indicate the type of fiber used (through the analysis of zero dispersion wavelength characteristics). Since transmission equipment can compensate for the measured amount of CD on the fiber, CD results are important to transmission systems engineers and installers.

Polarization Mode Dispersion (PMD)

PMD measurements define the polarization-related dispersion effects experienced on a fiber. Temperature variations, the condition of the installed fiber, and inherent fiber geometry affect these results. Since you cannot compensate for PMD effects, PMD results are typically of most concern to users as a method of determining a fiber's suitability for WDM applications.



Chromatic Dispersion (CD)



Polarization Mode Dispersion (PMD)

Standard Statement of Work

Tests

- Bidirectional Optical Insertion Loss (OIL) at 1550 nm and 1625 nm
- Bidirectional Optical Return Loss (ORL) at 1550 nm and 1625 nm
- Bidirectional Optical Time Domain Reflectometry (OTDR) at 1550 nm and 1625 nm
- Chromatic Dispersion (CD) in the C and L bands
- Polarization Mode Dispersion (PMD) in the C band

Deliverables

- Comprehensive final report detailing the test plan, fiber assignment, test results, pass/fail analysis, recommended actions, bidirectional OTDR analysis, and printouts of all OTDR and CD traces
- Daily summary report of test results within 24 hours of test
- Test procedures
- OTDR, CD, and PMD trace files
- JDSU OFS-110 Fiber Trace Viewer Software
- Digital pictures of selected fiber end faces

Value Added Services

- Program management of project
- Visual inspection and cleaning of all patch panel bulkhead adapters and fiber end faces

Additional Services

In addition to fiber characterization service, we also offer the following on-site testing services:

- SONET testing
- DWDM testing including spectral attenuation profile (SAP) measurements
- Bit error rate (BER) testing
- Data communications measurement including Ethernet, IP, frame relay, and ATM
- Testing up to speeds of OC-768 (40 Gbps)
- Site surveying
- JDSU-certified Test Technician and Test Engineer Fiber Characterization Career Certifications

Customers

Providers

Providers use JDSU Fiber Characterization Services to ensure the quality of fiber optic rings recently turned-up or transitioned to high data-rates. Without fiber characterization, the provider is gambling on the fiber, not knowing whether the characteristics of the fiber meet the thresholds necessary for OC-192 or DWDM. Without JDSU services, the provider has to rely upon the installer or company field technicians to provide adequate information to the network planners. While the provider's technicians may be able to perform the testing, our reporting practices are second to none in the industry.

Network Equipment Manufacturers

The customers of Network Equipment Manufacturers (NEM) often rely upon the NEM to provide fiber characterization to ensure the quality of the fiber network. Without fiber characterization, the NEM could spend costly days of installation time troubleshooting when the fiber is not suitable for use at high-data rates. Without JDSU services, the NEM has to use the valuable time of the NEM's field engineers to perform fiber characterization. JDSU can help the NEM can assure the customer a trusted third-party has verified the quality of the fiber network and its ability to handle the network equipment.

Contractors

Contractors turning-up fiber networks or adding services or network components to existing networks for the government or the private sector can benefit from using JDSU Fiber Characterization Services to complete their offering. By performing fiber characterization, we help contractors assure customers of the quality of work and help meet deadlines by reducing installation time.



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