Be an Expert
Training Program

Course Outline
FE-1033

Introduction to OTDR Testing

The optical time-domain reflectometer (OTDR) is one of the most complex instruments in fiber-optic testing. To fully understand the meaning of an OTDR measurement, users must first acquire traces, which must then be properly analyzed and interpreted.

This one-day course teaches attendees how to interpret OTDR measurements based on general reflectometry theory. The course also discusses the limitations of both the theory and the instrument, as understanding these limitations will enable the attendees to get reliable results from an OTDR. An overview of iOLM features is also available.

The training session also includes more specific testing theory and a hands-on workshop that will show attendees how to operate the instrument and perform manual measurements using markers.

Content

- Basic types of fiber connections
- Attenuation vs. the event dead zone
- Calculation of attenuation and event dead zones
- Causes of reflectance in the fiber
- Fundamental theory of optical time-domain reflectometry
- OTDR measurement method based on dynamic range
- Manual OTDR measurements using markers:
  - Four-point event loss
  - Three-point reflectance
  - Two-point ORL
  - Two-point section attenuation
  - Least square approximation (LSA) section attenuation
- Parameter settings for fiber link characterization:
  - Distance range
  - Pulse width
  - Averaging time
  - Wavelength
  - Index of refraction (IOR)
  - Helix factor
  - Overview of iOLM features

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Prerequisites

› Basic comprehension of physics and mathematics

› EXFO's FE-1031– Basic Fiber Optics and Loss Testing (IL and ORL) or equivalent

Methodology

The first part of this course consists of lectures using PowerPoint presentations and demonstrations, while the second part consists of specific hands-on OTDR testing exercises and experiments, including manual testing using markers and trace acquisition for fiber characterization.

Documentation

Attendees will receive a binder containing copies of presentations and other handouts.

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