

Course Name: Advanced Fiber Optics Testing and Troubleshooting

Course Overview:

An advanced training class emphasizing trouble shooting and fault location techniques of the Optical Time Domain Reflectometer (OTDR), Optical Loss Test Sets (OLTS), and Visible Fault Identifiers (VFI). The One-day technical training class has significant hands on training time using state of the art test equipment and simulated fiber optic networks. The student will master the basic principals of the proper set up, operation, and interpretation of test measurements with an OTDR and OLTS in order to make system test acceptance analysis and system fault location.

Course Length: 1 Day

Who should attend?

- Field Service Technicians
- Field Engineers
- Managers/ Field Supervisors
- Design Engineers
- Managers or Supervisors

Prerequisites: Introduction to Fiber Optics and Fiber Optics Testing and Troubleshooting.

Course Fees:

- 1 day course at your location \$4550 for up to 10 attendees

Customizable Course: Yes

Course Content:

Fiber Optic Testing Overview

- Basic Field Tests
 - Continuity/Polarity
 - Visual End-Face Inspection
 - Attenuation/Insertion Loss
 - Reflectance
 - Standards Certification – Tier 1 and Tier 2
 - Fiber Characterization
- Field Test Equipment: Use and Application
 - Visual Fault Identifier
 - Optical Fiber Identifier
 - Microscope
 - Attenuation Test Set

- Certification Test Set
- OTDR

Insertion Loss Testing

- Explain the basic system configuration for insertion loss testing
- Explain the use of jumpers during insertion loss testing
- Develop an attenuation loss budget
- Explain the proper application of the 1, 2, and 3 jumper reference
- Explain the proper application of the mandrel wrap for MM testing with a LED light source

Attenuation Test Set Fundamentals

- Explain the keys and functions on the Noyes OPM 5-2C Power Meter and OLTS power sources
- Mathematically evaluate jumper performance with the attenuation test set
- Use the reference key to evaluate jumper performance with the attenuation test set

OTDR Fundamentals

- List applications for OTDR testing.
- Explain the basic principle of operation for an OTDR.
- Explain Rayleigh Scattering
- Explain Fresnel Reflection
- Explain pulse width of the OTDR
- Explain “Dead Zone” of the OTDR
- Explain Measurement Range and Dynamic Range
- Explain the difference in 2-point versus LSA insertion loss measurements
- Explain the need for Launch and Receiving cables with OTDRs

Basic Trace Interpretation

- Identify the following events in an OTDR trace
 - Mated connector pair
 - Dead zone
 - Fusion splice
 - Mechanical splice
 - Angled connector pair
 - Macrobend

Advanced Trace Interpretation

- Identify the following events in an OTDR trace
- Identify and explain the occurrence of a ghost reflection
- Identify and explain the occurrence of a gainer
- Identify and explain the occurrence of an exaggerated loss
- Explain the proper technique for splice loss estimation with an OTDR
- Explain the difference between optical distance and cable sheath distance

- Explain techniques for reconciling cable sheath distance and optical distance
- Explain anomalies resulting from an optical distance in excess of OTDR range

OTDR Practicals

- Check set-up parameters.
- Determine jumper length.
- Determine system length
- Perform a 2-pt loss estimation on a mated connector pair.
- Perform a 2-pt loss estimation on a fusion splice.
- Perform a LSA loss estimation and reflection estimation on a connector pair.
- Perform a LSA loss estimation on a fusion splice.

Explain procedures for identifying and troubleshooting a cross-splice

Explain procedures for isolating a fault and reconciling optical/sheath distance in links with various cable types and constructions

Explain the basic fiber optic system records required to effectively troubleshoot a network