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Course : Fiber optic network measurement (photometry and reflectometry)

Practical course - 4d - 28h00 - Ref. MFO
Price : 2520 € E.T.

This course enables you to acquire all the technical skills needed to independently analyze and control a fiber optic network, whether operator or private, using OTDR and balance measurement equipment (transmitter, receiver).

Teaching objectives

At the end of the training, the participant will be able to:

- Understand the basic principles of photometry and reflectometry in fiber optic networks
- Use a photometer to measure optical power and evaluate the optical balance of a grating
- Interpret photometric and reflectometric measurement results using analysis software
- Diagnose problems and optimize network performance

Intended audience

Anyone wishing to deepen their knowledge of fiber optic network measurement and evaluation, or to start a related technical activity.

Prerequisites

This course is aimed at technical and professional people with a prior understanding of the fundamental concepts of fiber optic networks.

Course schedule

PARTICIPANTS

Anyone wishing to deepen their knowledge of fiber optic network measurement and evaluation, or to start a related technical activity.

PREREQUISITES

This course is aimed at technical and professional people with a prior understanding of the fundamental concepts of fiber optic networks.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

1 Fibre optics basics

- Origin of transmissions.
- Optical fiber applications: communication and light transport.
- History of network technologies: LAN, MAN, WAN, FTTx...
- Arcep regulations.
- Wavelength: dBm/dB, n (refractive index).
- Electromagnetic spectrum of silica, transmission window.
- Recall the principles of geometrical optics.
- Elementary structure of an optical fiber.
- Optical fiber manufacture, transmission performance characteristics.
- Single-mode and multi-mode propagation.
- Overview of optical fibers: OM1- OM2- OM3- G652-G655, etc.
- Fiber used.
- Principle of PON and GPON.

2 Essential reminders of connection points

- Connectors: PC and APC splices and connectors.
- Radii of curvature.
- Humidity (cable protection).

Hands-on work

Optical face cleaning and network maintenance.

3 Measurement principles and methods

- Fresnel and Rayleigh.
- Theoretical balance calculation.

4 Photometric measurement

- Fundamental concepts of photometry and its role in measuring the optical parameters of a grating.
- Understand the units of measurement used in photometry, such as optical power and optical loss.

Hands-on work

Line measurement by insertion and photometry.

5 Reflectometry measurement

- Fundamental concepts of optical reflectometry and its role in network measurement.
- Basic operation of a reflectometer.
- Influence of reflectometer setting parameters.
- Identify the different applications of reflectometry.
- Impact of loss location, reflections and fiber breaks.
- Explore multi-wavelength optical reflectometry measurement methods.

Hands-on work

Measure the line by reflectometry.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

6 Interpret and analyze reflectometry measurement results

- Evaluate reflectometry results and detect potential network quality problems.
- Use analysis software and interpret measurement data, generate accurate reports on network status.

Hands-on work

Generate measurement files with appropriate software.