

# Advanced OTDR Testing - Telecom Networks

## COURSE DESCRIPTION

This advanced course builds on the fundamentals of fibre optic testing and focuses specifically on the effective use of Optical Time Domain Reflectometers (OTDR) for telecom network testing.

Participants will learn how to correctly configure an OTDR, optimise testing parameters, and efficiently perform fibre acceptance testing and fault diagnosis. The course also covers trace analysis, test result validation, and reporting processes to ensure accurate and reliable fibre infrastructure testing.

The training combines theoretical learning with practical hands-on exercises, enabling technicians to gain confidence in both data acquisition and interpretation of OTDR test results.

## WHO SHOULD ATTEND?

Fibre optic technicians, test engineers, network engineers, technical support staff and managers involved in fibre network installation, testing and fault diagnosis.

## SOME COURSE BENEFITS

- Improve efficiency when performing OTDR testing
- Optimise OTDR configuration and measurement conditions
- Identify and troubleshoot fibre network faults faster
- Interpret OTDR traces and event tables with confidence
- Ensure testing meets telecom network specifications

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## COURSE OBJECTIVES

By the end of this course participants will be able to:

- Explain the purpose and applications of OTDR testing
- Optimise OTDR test parameters and measurement settings
- Perform OTDR testing efficiently in telecom networks
- Interpret OTDR traces, event tables and link maps
- Recognise issues encountered when performing OTDR testing
- Assess the quality of fibre optic infrastructure
- Carry out inspection of connectors and adaptors using a video probe
- Perform continuity and insertion loss testing

## FORMAT

2-day interactive classroom training including theory sessions, hands-on exercises and practical OTDR testing.

Maximum attendees: 10 per course.

## CONTENT

### Day 1 – Fundamentals Review & OTDR Operation

#### Routine Testing Review

#### Inspect & Clean Connectors

- Why inspection and cleaning is important
- Inspection standards
- Inspection equipment
- Cleaning equipment
- Connector care

Hands-on practical: cleaning and inspecting connectors.

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### **Continuity & Polarity Testing**

- Continuity and polarity checking

Hands-on practical: continuity and polarity testing.

### **Testing Telecom Links**

- Optical power and loss budgets
- Test equipment
- Insertion loss measurements
- Reporting test results

Hands-on practical: insertion loss measurements.

### **OTDR Testing**

#### **Preparing for OTDR Testing**

- Specification of test parameters
- Resource checklist
- Management of test results

Hands-on practical session.

#### **OTDR Introduction**

- What is OTDR testing
- What it can be used for
- How OTDR testing works

#### **OTDR Capabilities**

- Distance measurements
- Fibre loss measurements
- Bending losses
- Splice loss measurements
- Connector losses
- Optical Return Loss (ORL)

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### OTDR Limitations

- Dynamic range
- Dead zones
- Resolution

## Day 2 – Advanced OTDR Analysis & Troubleshooting

### Test Configurations

- Cable on a drum
- Installed cable before termination
- Connectorised systems

### Using the OTDR

- Step-by-step testing process
- Manipulating OTDR traces
- Measurement parameters

Hands-on practical: setting up the OTDR and testing links.

### OTDR Issues

- Poor launch conditions
- Interfacing with bare fibres
- Ghost reflections
- Fibre mismatches

Hands-on practical: testing complex links and channels.

### OTDR Trace Analysis

- Information obtained from OTDR traces
- Analysis of single traces
- Multiple wavelength traces
- Analysis of multiple fibres
- Bi-directional testing

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Hands-on practical: trace analysis exercises.

### Using OTDR Software


- OTDR viewer software
- Automatic event detection
- Comparing OTDR traces

### PON Testing Overview

- Designing PON networks for testability
- When and what should be tested
- PON testing equipment
- PON testing methods

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