Open Awards Qualification Unit

This unit forms part of a regulated qualification.

1 Unit Details

Unit Title:	Advanced OTDR Testing
Unit Reference Number:	M/618/8303
Level:	3
Credit Value:	5
Minimum GLH:	30

2 Learning Outcomes and Criteria

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Understand and use dB units	1.1 Explain why dB units are used in fibre optic testing
	1.2 Describe the origins of the dBm unit
	1.3 Convert dB loss/gain to equivalent linear (percentage) unit
	1.4 Analyse loss budgets against power budgets and measured link loss results
	1.5 Compare loss budgets against power budgets ad measured link loss results
2. Perform insertion loss measurement (ILM) tests and basic fault finding	2.1 Explain different methods of referencing a light source and power meter or an equivalent ILM test set
	2.2 Evaluate the components included and excluded in a given test method and potential sources of measurement errors
	2.3 Explain the tests that could be carried out to fault find a fibre system and the limitations of such tests
3. Be able to use an OTDR effectively to test or measure a fibre system	3.1 Set-up an OTDR to perform a measurement, using suitable test parameters for the system
	3.2 Manipulate the OTDR trace

	3.3	Measure features and events on the OTDR trace such as: connectors; splices; bends; and combination events
	3.4	Identify features and events on the OTDR trace
	3.5	Analyse features and events on the OTDR trace
	3.6	Analyse connector reflectance or return loss, demonstrating an understanding of the measurement sign (positive or negative)
	3.7	Explain the purpose of and use of launch leads and tail leads
	3.8	Explain why it is important to match the fibre types in the launch lead and the fibre under test
4. Understand and overcome measurement problems	4.1	Identify poor launch couplings to the OTDR
	4.2	Take appropriate corrective action for poor launch couplings to the OTDR
	4.3	Explain the causes and effects of mismatches.
	4.4	State solutions for correctly measuring losses caused by mismatches
	4.5	Recommend steps to eliminate the causes of “ghosts”
	4.6	Explain how events and portions of OTDR traces are saturated and how this affects the measurement
	4.7	Identify possible problems caused by polarisation effects, coherent pick-up/noise and trace merging
5. Be able to use advanced OTDR facilities to aid efficient testing	5.1	Demonstrate awareness of the capabilities of OTDR emulation/analysis software
	5.2	Explain how the manual (or semi-automatic) marking and OTDR events can aid the subsequent off-site analysis with emulation software
6. Understand and evaluate OTDR limitations and specifications	6.1	Demonstrate an awareness of different definitions of resolution
	6.2	Demonstrate an awareness of dynamic range, different definitions of dynamic range, and the effective measurement range in dBs
	6.3	Explain the significance of distance measurement range specifications
	6.4	Compare distance measurement range specifications with realistic fibre loss measurements distances
	6.5	Describe how specialist OTDRs can aid more efficient testing of various fibre components or systems

Required Equipment List
In order to deliver this unit, centres will need to following equipment: Sample traces from real fibre systems CD and PMD test equipment or equivalent test system emulation software Suitable fibre test systems and accessories