Open Awards Qualification Unit

This unit forms part of a regulated qualification.

1 Unit Details

Unit Title:	Copper Communications Cable Testing and Fault Finding
Unit Reference Number:	H/618/8301
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 the principles of electrical circuits	1.1 Explain the principles of: • Electrical current flow • Potential difference Electrical resistance
	1.2 Identify the units used for measuring and quantifying electrical current
	1.3 Explain that current will only flow when there is a complete circuit
	1.4 Explain Ohm's Law
2. Understand the reasons for testing copper communications lines	2.1 Describe the copper communications cables used in different networks
	2.2 Discuss potential testing methods for different copper communication cable network installations
	2.3 Explain that lines may be tested to: a) Check for normal line conditions. b) Test for fault conditions c) Identify the type of fault d) Check that the correct cable, pair or wire has been identified
	2.4 Describe when and why cables are tested:

		a) Prior to installation b) After they are first installed c) As part of a maintenance programme d) To find faults
3.	Be able to use multi-meters to test copper cables	3.1 Set up multi-meters to perform testing using suitable test settings (resistance, voltage and current etc.) for the circuit under test
		3.2 Explain why testing for power on the line is the first test
		3.3 Test for the correct line conditions with a multi-meter using the correct sequence of testing
		3.4 Demonstrate how to measure: • Battery • Earth • Short circuit • Contact • Disconnections with a multimeter
4.	Be able to use an Ohmmeter and Insulation Resistance Tester (Bridge Megger or similar) to test copper cables	4.1 Set up an Ohmmeter to perform resistance measurements using the correct test leads and instrument settings
		4.2 Set up an Insulation Resistance Tester to perform an insulation Resistance measurement
		4.3 Demonstrate the ability to record the results of Loop Resistance and Insulation Resistance
5.	Be able to use a Certification Tester to test FTP, UTP and multicore copper links	5.1 Explain how to set up a Certification Tester with suitable parameters to test: a) FTP and UTP copper cable links b) A multi-core cable installation c) Installations to relevant performance standards
6.	Be able to operate a TDR (Time Domain Reflectometer)	6.1 Connect a TDR (Time Domain Reflectometer) to a copper line
		6.2 Explain the theory and principles of operation of the TDR
		6.3 Describe the more common events on a line and the resulting effects on the TDR trace
7.	Understand how to interpret test results	7.1 Analyse the information from a multi-meter to ascertain the line condition and possible cause of fault
		7.2 Analyse the information from an Ohmmeter and Insulation Resistance Tester to ascertain the condition of a cable
		7.3 Analyse the information from a TDR to ascertain the line length, the location of any events on the line, and the most likely cause of each event

Required Equipment List
In order to deliver this unit, centres must have the following equipment for every **six** (6) learners: Multimeter with analogue scale (optional) Three (3) digital multimeters Insulation tester TDR (Time Domain Reflectometer) Copper cable certification tester (Fluke or similar) Assorted test leads Copper cable for testing, sich as three (3) rolls of 100 m Cat5E or Cat6 cable