



Australian Government

ICTOPN511 Test performance of specialised optical devices

Release: 1

ICTOPN511 Test performance of specialised optical devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to use specialised equipment for integration into existing optical networks or part of an upgrade for higher bandwidths required by services and applications of Next Generation Networks (NGN).

It applies to individuals who design and plan networks using emerging technologies and who work with network carriers, service providers, public utilities and broadcasting companies. They combine technical optical communications skills with broader organisational and administrative skills in a range of commercial contexts and environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to test specialised optical devices	1.1 Obtain and review required legislation, codes, company work practices, regulations and standards, work health and safety (WHS) and environmental requirements, personal protective equipment and hazard identification tools for scoped work. 1.2 Obtain manufacturer testing specifications and determine type of optical device to be tested 1.3 Determine test procedures and equipment required to evaluate optical device suitability
2. Test specialised optical devices	2.1 Set up test layout according to safe industry practice and connect specialised optical device into test set-up

	2.2 Conduct test regimes and determine performance of specialised optical devices 2.3 Analyse test results and determine suitability and compatibility of optical device for network integration
3. Document performance of specialised optical devices	3.1 Prepare evaluation report with recommendations of the suitability of the specialised optical device 3.2 Present and archive documented test results and evaluation report according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	Uses mathematical formulae to evaluate technical data and interpret results
Oral communication	- Uses listening and questioning skills to confirm technical and operational requirements - Participates in verbal exchanges of ideas and solutions, and uses required, detailed and clear language to address key internal and external personnel and clients
Reading	Interprets textual information from required sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	Completes standard reports and documentation using clear and technically specific language and numerical data
Planning and organising	- Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness - Takes responsibility for high impact decisions in complex situations involving many variables and constraints
Problem solving	Identifies requirements of important communication exchanges, selecting required channels, format, tone and content to suit purpose and audience and monitoring impact
Self-management	- Works independently with a strong sense of responsibility and ownership of goals, plans, decisions and outcomes - Monitors adherence to legal and regulatory rights and responsibilities with specific reference to safe industry practices
Technology	Identifies systems, devices and applications with potential to meet current and/or future needs

Unit Mapping Information

Supersedes and is equivalent to ICTOPN505 Test the performance of specialised optical devices.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTOPN511 Test performance of specialised optical devices

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- test at least two specialised optical devices and determine suitability for integration into at least two networks.

During the course of the above, the candidate must:

- plan and coordinate test activities and equipment
- analyse test results
- report and make recommendations on suitability for integration
- comply with all work health and safety (WHS) requirements and work practices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions and features of evaluation reports
- manufacturer testing specifications and distinguishing functions and features of specialised optical devices used in industry
- types of test layouts commonly used in testing specialised optical devices
- purpose of amplified spontaneous emission (ASE) source tests
- attenuation characteristics of optical fibres
- principles of operation for dense wavelength division multiplexing (DWDM)
- features and operating requirements of the following test equipment:
 - a hand-held optical power meter
 - an optical spectrum analyser
 - a transmission test set
- dispersion characteristics of various fibres
- dispersion compensation devices

- standard electrostatic discharge precautions
- functions of an optical add-drop multiplexer (OADM) and reconfigurable optical add-drop multiplexer (ROADM)
- gain equalisation theory
- International Telecommunications Union (ITU) wavelength grid for DWDM
- function of measurement of dispersion
- optical amplifier operation features
- optical fibre connector types and characteristics
- optical fibre types and characteristics
- 'optical return loss' (ORL)
- path protection and protection switching
- polarisation dependent loss (PDL)
- protocols used on optical DWDM systems
- reflectance in optical systems
- ring topologies and linear network topologies
- WHS requirements that impact the safe inspection of optical connectors and the safe measurement of optical power from laser transmission systems
- required legislation, codes, company work practices, regulations and standards and environmental requirements for scoped work.
- tuneable laser sources and characteristics.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- test equipment used in industry
- manufacturer technical documentation, legislation, codes and standards.

Assessors of this unit must satisfy the requirements for assessors in required vocational education and training legislation, frameworks and/or standards.

Links

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