



Australian Government

ICTOPN505 Test the performance of specialised optical devices

Release: 1

ICTOPN505 Test the performance of specialised optical devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

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 telecommunications 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 relevant legislation, codes, regulations and standards and follow work health and safety (WHS) and environmental requirements for the given work 1.2 Work safely according to relevant safety legislation and company work practices, identifying hazards and using personal protective equipment 1.3 Determine type of optical device using the design plan and obtain manufacturer's specifications for testing

	1.4 Determine test procedures and test equipment required to evaluate optical device suitability
2. Test specialised optical device	2.1 Set up test layout according to safe industry practice and connect specialised optical device into the test set-up 2.2 Undertake a test regime to determine performance characteristics of specialised optical device 2.3 Analyse test results to determine suitability and compatibility of optical device for integration into the network
3. Document performance of specialised optical device	3.1 Prepare evaluation report with recommendations on suitability of the specialised optical device 3.2 Present test results and evaluation report to appropriate person with copies filed for later reference according to organisation's policies

Foundation Skills

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

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.3, 3.2	Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	3.1, 3.2	Accurately completes standard reports and documentation using clear and technically specific language and numerical data
Oral Communication	3.2	Uses listening and questioning skills to confirm understanding for technical and operational requirements, participates in a verbal exchange of ideas and solutions, and uses appropriate, detailed and clear language to address key internal and external personnel and clients
Numeracy	2.2, 2.3	Uses mathematical formulae to evaluate technical data and interpret results
Navigate the world of work	1.1, 1.2, 2.1, 3.2	- 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
Interact with others	3.2	Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.1, 1.3, 1.4, 2.2	- 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 - Actively identifies systems, devices and applications with potential to meet current and/or future needs - When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues, using lateral thinking processes to generate possible solutions

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTOPN505 Test the performance of specialised optical devices	ICTOPN5122A Test the performance of specialised optical devices	Updated to meet standards for Training Packages	Equivalent Unit

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for ICTOPN505 Test the performance of specialised optical devices

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Performance Evidence

Evidence of ability to:

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

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain what an amplified spontaneous emission (ASE) source test shows
- summarise attenuation characteristics of optical fibres
- outline the principles of operation for dense wavelength division multiplexing (DWDM)
- identify features and operating requirements of test equipment including:
 - a hand-held optical power meter
 - an optical spectrum analyser
 - a transmission test set
- outline dispersion characteristics of various fibres
- describe dispersion compensation devices
- explain standard electrostatic discharge precautions
- outline functions of an optical add-drop multiplexer (OADM) and reconfigurable optical add-drop multiplexer (ROADM)
- explain gain equalisation

- summarise the International Telecommunications Union (ITU) wavelength grid for DWDM
- describe the measurement of dispersion
- explain optical amplifier operation
- name optical fibre connector types and describe their characteristics
- list optical fibre types and describe their characteristics
- explain 'optical return loss' (ORL)
- clarify path protection and protection switching
- explain polarisation dependent loss (PDL)
- identify protocols used on optical DWDM systems
- explain reflectance in optical systems
- summarise ring topologies and linear network topologies
- explain specific work health and safety (WHS) requirements that impact the safe inspection of optical connectors and the safe measurement of optical power from laser transmission systems
- discuss tuneable laser sources and their characteristics.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

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

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

Links

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