



Australian Government

**Assessment Requirements for ICTOPN603
Design a dense wavelength division
multiplexing system**

Release: 1

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Modification History

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

Performance Evidence

Evidence of ability to:

- determine fibre loss between sites
- calculate link budget and link margin
- prepare dense wavelength division multiplexing (DWDM) shelf configuration and specifications
- produce configuration documentation
- investigate an emerging DWDM technology.

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 the configuration of DWDM shelf
- outline operation principles of DWDM
- clarify electrostatic discharge
- identify features and operating requirements of test equipment including:
 - an optical time domain reflectometer (OTDR)
 - a hand-held optical power meter
 - a transmission test set
 - an optical spectrum analyser
- describe functions of an optical add-drop multiplexer (OADM)
- summarise functions of reconfigurable optical add-drop multiplexer (ROADM)
- explain internet protocol (IP) addressing, subnet mask, dynamic host configuration protocol (DHCP) and default gateway

- summarise International Telecommunications Union (ITU) wavelength grid for DWDM
- explain laser stability
- identify dispersion compensation devices
- describe the importance of a link budget and calculate a link margins
- identify optical fibre connector types and characteristics
- identify optical fibre types and characteristics
- discuss path protection and protection switching
- explain physical optical loopbacks and software loopbacks
- summarise traditional protocols and emerging Optical Transport Network (OTN) technologies used on optical DWDM systems
- describe 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.

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:

- manufacturer's technical documentation
- relevant regulations
- system specifications.

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

Links

Companion Volume implementation guides are found in VETNet -

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