



Australian Government

Assessment Requirements for ICTOPN604 Analyse optical transmission systems

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:

- conduct optical transmission measurements
- analyse complex optical measurement results
- liaise with the customer as required.

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:

- list and describe legislative and regulatory frameworks that govern optical transmission systems
- list and describe work health and safety (WHS) and environmental issues associated with optical transmission systems
- describe attenuation characteristics of optical fibres
- summarise the chromatic dispersion (CD) test
- explain principles of operation of dense wavelength division multiplexing (DWDM)
- discuss dispersion and outline dispersion characteristics of various fibres and devices used for compensation
- discuss precautions required to minimise electrostatic discharge
- identify features and operating requirements of test equipment including:
 - a hand-held optical power meter
 - an optical spectrum analyser
 - a transmission test set
- identify functions of an optical add-drop multiplexer (OADM) and reconfigurable optical add-drop multiplexer (ROADM)

- explain gain equalisation
- describe the insertion loss test
- summarise the International Telecommunications Union (ITU) wavelength grid for DWDM
- discuss measurement of dispersion
- summarise methods to reduce dispersion
- discuss optical amplifier operation
- identify optical fibre connector types and characteristics
- identify optical fibre types and characteristics
- summarise the optical return loss (ORL) test
- outline the optical signal-to-noise ratio (OSNR) test
- discuss the optical time domain reflectometer (OTDR) test
- clarify path protection and protection switching
- explain performance qualification of 40 Gbit/s and 100 Gbit/s transceivers
- summarise the polarisation mode dispersion (PMD) test
- outline protocols used on optical DWDM systems
- explain reflectance in fibre optic systems
- discuss ring topologies and linear network topologies
- explain specific work health and safety (WHS) requirements and environmental constraints that impact safe inspection of optical connectors and 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:

- test equipment currently used in industry
- test equipment and manufacturer's technical documentation.

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>