



Australian Government

Assessment Requirements for ICTOPN402 Use advanced optical test equipment

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:

- obtain operation documentation for advanced optical test instruments
- plan and prepare a schedule of tests to be performed
- conduct optical tests
- record measurements for a range of parameters
- test, calculate and document optical link budget
- comply with all related 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:

- describe an optical system and its main components
- identify hazards and risks for health and safety associated with optical systems
- identify and describe common tests, measurements and testing plans used for optical systems
- identify common wavelengths involved with optical systems
- list and describe use of tools and test equipment for optical systems
- explain consequences of mating contaminated optical connectors
- perform calculations using decibels, dBm
- discuss downstream and upstream signals
- outline dense wavelength division multiplexing (DWDM) metro and long haul system architecture
- summarise measurement of DWDM signals
- explain measurement of gain and gain flatness of optical amplifier

- discuss measurement of laser spectral stability, drift and unexpected variation in spectral transmission characteristics
- explain non-linear effects, four-wave mixing
- identify optical connector types
- outline optical signal to noise ratio (OSNR)
- summarise optical spectrum limits, wavelengths used in various applications and International Telecommunications Union (ITU) grid
- identify optical transmitters and receivers
- describe optical return loss (ORL)
- discuss OTDR dead zones, dynamic range and launch cable reflectance
- outline safe handling procedures with optical fibres
- describe transmission system line rates:
 - optical ethernet
 - optical transport network (OTN)
 - synchronous digital hierarchy (SDH)
- explain wavelength division multiplexing (WDM), coarse wavelength division multiplexing (CWDM) and DWDM principles and optical multiplexers
- identify and explain influence of legislation, regulations, standards and codes of practice relevant to advanced optical work.

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:

- tools and equipment required for measurements
- manufacturer's documentation for test instruments and equipment under test.

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.education.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>