



Australian Government

ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system

Release: 1

ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system

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 test and commission optical transmission systems using dense wavelength division multiplexing (DWDM) technology.

It applies to individuals 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 commission DWDM transmission system	1.1 Implement hazard risk control measures 1.2 Review system specifications and technical data by identifying system operating parameters 1.3 Obtain and check tools and test equipment needed for the work 1.4 Verify all necessary equipment is installed, and circuit cards and filler cards are correctly located and seated

	1.5 Check interconnecting fibres to optical multiplexers and shelves are intact and correctly routed 1.6 Establish communication between computer and DWDM shelf 1.7 Upload latest software release to each DWDM shelf in the network
2. Commission DWDM transmission system	2.1 Connect an optical test set and a physical optical loopback to the system, and select protocol compatible with DWDM hardware 2.2 Check connection status and that test set data is passing correctly 2.3 Monitor quality of received signal by setting performance monitoring (PM) features and retrieve PM counts 2.4 Verify no errors are counted by the test set during a long term stability test while customer input signal is set to the worst case (minimum) power level 2.5 Verify no alarms are generated during long term stability test period 2.6 Dispose of antistatic packaging to minimise environmental impact
3. Complete test and commissioning documentation	3.1 Finalise documentation on commissioning test results 3.2 Present results to appropriate person according to established procedures

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	1.2, 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 relevant reports and documentation using clear and technically specific language and numerical data
Oral Communication	3.2, 3.2	Uses listening and questioning skills to confirm understanding for requirements, participates in a verbal exchange of ideas and solutions, and uses appropriate, detailed and clear language to address key personnel and clients
Numeracy	1.2, 2.3	Uses mathematical equations to evaluate technical

		data and interpret results
Navigate the world of work	2.6, 3.2	Takes full responsibility for following policies, procedures and legislative requirements, and identifies organisational implications of new legislation or regulation
Get the work done	1.1, 1.3-1.7, 2.1-2.6	- Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness - Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system	ICTOPN5121A Test and commission a dense wavelength division multiplexing transmission system	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 ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system

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Performance Evidence

Evidence of ability to:

- plan and coordinate commissioning
- test and commission dense wavelength division multiplexing (DWDM) transmission system
- complete commissioning documentation.

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 possible causes of alarms in long term stability test
- summarise principles of operation of DWDM
- explain standard electrostatic discharge precautions
- outline features and operating requirements of test equipment including:
 - a hand-held optical power meter
 - a transmission test set
 - an optical spectrum analyser
- describe functions of an optical add drop multiplexer
- explain how to set up the following:
 - internet protocol (IP) addressing
 - subnet mask
 - dynamic host configuration protocol (DHCP)
 - default gateway
- summarise the International Telecommunications Union (ITU) wavelength grid for DWDM

- identify optical fibre connector types and characteristics
- identify optical fibre types and characteristics
- explain path protection and protection switching
- summarise physical optical loopbacks and software loopbacks
- describe protocols used on optical DWDM systems
- summarise ring topologies and linear network topologies
- outline specific health and safety 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:

- test equipment currently used in industry
- 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

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