



Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN5059A Commission telecommunications network equipment

Release: 1

ICTTEN5059A Commission telecommunications network equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to effectively inspect and test telecommunications network equipment. It includes processes for checking plans, obtaining and proper handling of equipment and supplies, testing procedures and administrative tasks. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.
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Application of the Unit

Application of the unit	Field officers, technicians or technical supervisors from carriers, contractors or other service providers apply the skills and knowledge in this unit in the installation of new, additional and replacement equipment. This unit may apply to switching, transmission and fixed and mobile radio network and the various transmission paths i.e. cable, optical fibre, radio, microwave and satellite.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for commissioning procedures	1.1. Prepare for work following occupational health and safety (OHS) requirements 1.2. Organise resources based on existing and potential site hazards 1.3. Notify network operations personnel for site access and network specifications 1.4. Determine from specifications the type and complexity of the network equipment 1.5. Establish commissioning dates and confirm with all parties 1.6. Determine commissioning parameters according to specification and establish planned outage if required 1.7. Obtain test equipment and check for suitability and accuracy 1.8. Produce a preliminary commissioning plan according to manufacturer's instructions and company guidelines for discussion with the customer 1.9. Inform affected customers of impending action and likely timing and impact by the work
2. Organise planned outages if necessary	2.1. Negotiate outage times with appropriate groups and affected customers to minimise any disruptions 2.2. Develop contingency plans if required and arrange for emergency communications 2.3. Notify alarm management centre of action planned 2.4. Obtain authority to proceed from the relevant control centre and notify customers affected by the outage
3. Complete installation procedures of network equipment	3.1. Install applications programmes and management data according to specification to complete installation procedures 3.2. Complete all hardware connections according to commissioning instructions 3.3. Undertake all specified performance tests to ensure operation meets all prescribed parameters and specifications as detailed in the original design brief 3.4. Undertake tests to verify compatibility between the hardware and the software 3.5. Correct performance defects or bring to the attention of designers for corrective action

ELEMENT	PERFORMANCE CRITERIA
4. Complete commissioning procedures with network management	4.1. Test alarms in conjunction with network management and operational groups to maintain network integrity 4.2. Simulate traffic tests through the new installation to emulate a live network 4.3. Test installed specific equipment features and operations administration maintenance system according to instructions 4.4. Diagnose, repair or escalate faults detected to the appropriate area when fault cannot be clearly diagnosed or repaired 4.5. Initiate vendor related tests where required
5. Finalise commissioning tasks	5.1. Complete administrative tasks as required by enterprise 5.2. Undertake operational staff training where required 5.3. Restore site to customers satisfaction 5.4. Notify customer and obtain sign off

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to interpret test equipment settings and readings
- communication skills to liaise with customers and technical staff to ensure requirements are known and can be met within timeframes
- literacy skills to interpret technical specifications and related documentation
- numeracy skills to make calculations and evaluate test results
- problem solving to account for unexpected faults or equipment configuration anomalies
- safety awareness skills to:
 - apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
 - select and use required personal protective equipment conforming to industry and OHS standards
 - work systematically with required attention to detail without injury to self or others, or damage to goods or equipment

REQUIRED SKILLS AND KNOWLEDGE

- technical skills to:
 - correctly test and carry out commissioning procedures
 - use hand tools for removing and securing equipment covers

Required knowledge

- electrical and or optical properties to be measured
- extensive range of networking equipment
- legislation and licensing surrounding installation of telecommunications equipment including spectrum allocation
- network operation procedures
- power requirements and electrical safety
- transmission type and signals that may be encountered
- various test equipment types suitable for tests to be made

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- interact with enterprise personnel, customers and other contractors keeping a customer focus and consideration of customer needs
- produce outage management plan and contingency plan
- negotiate activity on the network and timing of commissioning
- commission networking equipment to plan or specification
- implement test plan, and interpret and analyse results against expected outcomes
- test alarms and alarm regime
- analyse faults, problems and anomalies and provide solutions
- comply with all related OHS requirements and work practices.

Context of and specific resources for assessment

Assessment must ensure:

- sites on which installation and commissioning procedures can be conducted
- relevant regulatory and equipment documentation that impact on commissioning
- use of testing equipment currently used in industry.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct observation of the candidate completing commissioning procedures of network equipment
- review of reports completed by the candidate outlining test plan and test results complete with analysis of faults with solutions
- oral or written questioning to assess knowledge of commissioning procedures and types of systems.

Guidance information for

Holistic assessment with other units relevant to the

EVIDENCE GUIDE**assessment**

industry sector, workplace and job role is recommended, for example with:

- ICTTEN5058A Acceptance test new system and equipment.

Aboriginal people and other people from a non-English speaking background may have second language issues.

Access must be provided to appropriate learning and assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed.

In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

Where applicable, physical resources should include equipment modified for people with special needs.

Range Statement**RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

OHS requirements may relate to:

- identifying other services, including power and gas

RANGE STATEMENT	
	• need for decommissioning and isolate worksite and lines prior to commencement • personal protective clothing: • earmuffs • gloves: • leather • plastic • rubber • head protection • kneepads • masks • protective suits • safety boots • safety glasses for laser work • safe working practices, such as the safe use and handling of: • asbestos • chemicals • materials • tools and equipment • work platforms • safety equipment • flashing lights • gas and other hazard detection equipment • safety barriers • trench guards • warning signs and tapes • witches hats • special access requirements • suitable light and ventilation.
Hazards may include:	• earth potential rise (EPR): • event at a site, such as an electrical distribution substation, may expose telecommunications personnel, users or plant to hazardous voltages • optical fibre cable: • bare fibres • hazardous laser light • radio frequency (RF) equipment emitting

RANGE STATEMENT	
	radiation remote power feeding services which operate at above telecommunications network voltage (TNV).
Network operations personnel may include:	- alarm operations - network operations centre staff - network operations manager - project manager.
Network equipment may include:	- broadband - cellular radio - computer network: - gateways - router - servers - switches - voice over internet protocol (VoIP) - wireless local area network (LAN) - multiplexing - network management - optical transmission - switching - transmission.
Planned outage may relate to:	- allocation of additional services and support - notification to affected customers - plan for: - redundant path - standby equipment.
Test equipment may include:	- adaptors - analog transmission measuring sets - communication system analysers - digital analysers - error meter - global system for mobiles (GSM) spectrum frequency synthesiser - lap top computer - laser source - microwave link analyser - modulator tester - multimeters

RANGE STATEMENT	
	• optical attenuators • optical fibre power meters • oscillator • oscilloscopes • optical time domain reflectometer (OTDR) • pattern generators • power meters • RF band noise measurer • RF microwave test sets • RF sweep tester • spectrum analysers • sweep test coaxial and wave guide antenna systems • standing wave ratio (SWR) meters • transmitter/receiver filter combiner equipment.
Affected customers may include:	• building owner • communications consultant • contractor to a major supplier • end users • equipment owner • operations staff.
Contingency plans may include:	• additional notification to affected customers • provision of: • additional services • additional technical support • redundant path • standby equipment.
Hardware connections may refer to:	• connecting equipment to the appropriate transmission bearers with distant end notification • checking alarms associated with the bearer and infrastructure • installing artificial links and dismantle on completion of the commissioning process.
Performance tests may include:	• bit error rate (BER) • crosstalk • impedance • loopback • power level • return loss

RANGE STATEMENT	
	• wire maps.
Administrative tasks may refer to:	• checking correct labelling of all equipment and amending • completing job orders and submitting to appropriate enterprise organisational unit • completing test sheets and logging test instrument usage • following quality control procedures • handing over installation briefs, documents and equipment manuals to operational staff • recording test results and updating appropriate data bases • tasks complying with enterprise requirements and policy • updating design specifications and returning to design area.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units	

Competency field

Competency field	Telecommunications networks engineering
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