Australian Government

ICTCBL3011B Install and terminate coaxial cable

Release 1

INDUSTRY
SKILLS
COUNCILS
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Modification History

Release	Comments
Release 2	This version first released with *ICT10 Integrated Telecommunications Training Package Version 3.0.*
	Minor changes to an element, performance criteria, required knowledge and range statement.
	Outcomes deemed equivalent.
Release 1	This version first released with *ICT10 Integrated Telecommunications Training Package Version 1.0.*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to install and terminate coaxial cable on customer premises in communications applications, digital and analog, including telephony, data and video, including digital broadcasting, computer networks, including local area networks (LAN), wide area networks (WAN) and multimedia.

Assessment by a TITAB-registered assessor is recommended.

All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA)-accredited registrar.

Cable and cabling products used must be compliant with appropriate ACMA technical standard requirements.

Application of the Unit

Technical staff who install and terminate customer premises coaxial cable apply the skills and knowledge in this unit.

They may be required to do new installations or upgrades, or maintain existing networks in domestic, commercial and industrial installations.

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements	Performance Criteria
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.*

Elements and Performance Criteria

1. Prepare to install and terminate coaxial cable	1.1 Prepare for given work according to requirements of *relevant legislation, codes, regulations and standards*
	1.2 Arrange access to the site according to required procedure
	1.3 Inform appropriate personnel of identified *hazards* on work site
	1.4 Select *coaxial cable type, connectors* and *manufacturer's tool* to comply with installation environment and customer requirements
	1.5 Check proposed route and bend radius to meet *manufacturer specifications* and industry standards
	1.6 Test cable on drum for continuity and inspect visually for crushing and kinks
	1.7 Discuss proposed method of installation and cable route with customer and adjust if necessary
2. Install, terminate and test coaxial cable	2.1 Maintain cable segregation to industry standards
	2.2 Protect integrity of coaxial shield cable to ensure no loss of signal during operation and maintain bend ratios to not exceed manufacturer specifications and industry standard
	2.3 Install cable securing hardware to ensure cable is not crushed or kinked while maintaining cable manufacturer's bend radius
	2.4 Install cable following occupational health and safety *(OHS) and environmental requirements* and complying with manufacturer specifications and industry standards
	2.5 Terminate the cable and perform the type of termination specified in the plan using safe work practices and according to manufacturer specifications
	2.6 Test termination for transmission loss and strength and re-terminate the coaxial cable if transmission loss exceeds manufacturer specifications
	2.7 Record all measurements
	2.8 Fit *over-voltage protection devices* to all cables with metallic component where required
3. Remove termination waste from work area	3.1 Clean work area thoroughly to minimise risk of injury from loose metal strands
	3.2 Dispose of waste safely and according to relevant environmental requirements

	3.3 Restore work site to original condition
4. Document installation	4.1 Update plans and records with details of installation and test results
	4.2 Show customer completed work and ensure work matches agreed method of installation and cable route
	4.3 Notify client of work completion and obtain sign-off

Required Skills and Knowledge

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

Required skills

- communication skills to:
    - liaise with internal and external personnel on technical and operational matters
    - relate to work associates, supervisors, team members and clients
- literacy skills to interpret technical documentation, such as equipment manuals, specifications and requirements for coaxial cable installation
- numeracy skills to take and analyse measurements
- planning and organising skills to organise and maintain equipment
- problem-solving skills to solve equipment and logistics problems
- 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
- task-management skills to work systematically with required attention to detail and adherence to all safety requirements
- technical skills to:
    - perform fault clearance
    - read and interpret drawings related to:
        - cable coding system and identifiers
        - cable layouts
        - frame locations
        - outlet location
    - use diagnostic equipment
    - use hand and power tools.
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Required knowledge

- detailed knowledge of:
    - AS/NZS 1367:2007 Coaxial cable and optical fibre systems for the RF distribution of analog and digital television and sound signals in single and multiple dwelling installations
    - ACMA Competency Requirements for Telecommunications Cabling Provider Rules 2000
- features and operating requirements of test equipment for coaxial cable
- information required to operate equipment according to a test specification
- manufacturer requirements for safe operation of coaxial cable equipment
- safety precautions when working with coaxial cable and RF-based systems

- specific OHS requirements relating to the activity and site conditions
- test methods and performance requirements
- techniques for types of termination, including:
    - direct termination
    - crimp termination
    - mechanical connectorisation.

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: • install and terminate coaxial cable types, including hard line (internal or external) and flexible (internal or external) to industry standards, applying related OHS requirements and work practices • install different connector types • conduct and interpret test results • determine compliance with manufacturer's certification and warranties • provide report documenting installation and test results to client • comply with all related OHS requirements and work practices.
Context of and specific resources for assessment	Assessment must ensure: • sites where installation and termination of coaxial cabling may be conducted • use of equipment and personal protective equipment currently used in industry • use of testing equipment currently used in industry • relevant regulatory and equipment documentation that impacts on installation activities.
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: • review of a hands-on project completed by the candidate • review of an oral and written report with completed documentation, including test results • direct observation of the candidate installing and terminating coaxial cable.
Guidance information	Holistic assessment with other units relevant to the industry

for assessment	sector, workplace and job role is recommended, for example: • ICTCBL3009B Install, terminate and certify structured cabling installation. 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

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.

***Relevant legislation, codes, regulations and standards* may include:**	• Australian Communications Industry Forum (ACIF) standards and codes
	• AS Communications Cabling Manual (CCM) Volume 1
	• AS/NZS 1367:2007
	• AS/NZS 3080:2003
	• AS/NZS 3084:2003
	• AS/NZS 3085.1:2004
	• AS/NZS IEC 61935.1:2006
	• AS/NZS IEC 61935.2:2006
	• AS/NZS ISO/IEC 14763.3:2007
	• AS/NZS ISO/IEC 15018:2005
	• AS/NZS ISO/IEC 24702:2007
	• Australian building codes and regulations
	• cabling security codes and regulations
	• OHS Acts and relevant codes and standards
	• other services and utilities codes of practice and standards:
	   • electricity
	   • gas
	   • water
	• relevant Institute of Electrical and Electronics Engineers (IEEE) standards
	• technical standards AS/ACIF S008:2006 and AS/ACIF S009:2006.

***Hazards* may include:**	• building debris • earth potential rise (EPR) • live power lines • manual handling • mud and water • natural gas and other gas build-up • radio frequency equipment emitting radiation • remote power feeding services that operate at above telecommunications network voltage (TNV) • slippery surfaces • vermin.

Coaxial cable type may relate to:	- aerial - compliance with appropriate ACMA technical standard requirements - flexible (internal and external) - hard line (internal and external) - installed individually or in small teams - powered and unpowered - underground - various grades as designed for different environments and intended uses.
Connectors may relate to:	- fitting retains the segregation of conductor and shield - terminating method according to manufacturer specification - termination maintains a continuous reference - terminations are waterproof where appropriate to prevent risk of damage to termination and cable function.
Manufacturer's tool may include:	- hand or power tools, including: - coring - crimping - stripping and preparation tool - torque spanner.
Manufacturer specifications may include:	- bend radius not exceeding manufacturer placement of cable with sufficient slack to allow termination - cable lengths not exceeding manufacturer or design specifications and maintaining RF signal integrity - installation of cable safely without damage to cable or clients premises - use of cable ties and brackets that are flexible and do not damage cable.
OHS and environmental requirements may relate to:	- identifying other services, including power and gas - need for decommissioning and isolating work site and lines before beginning work - personal protective clothing: - earmuffs - gloves: - leather - plastic - rubber - head protection - kneepads - masks

	- protective suits - safety boots - safety glasses - safety harness - safety line - safe work 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 - environmental considerations: - clean-up protection - stormwater protection - waste management.
Over-voltage protection devices includes:	- ACMA standards - manufacturer, enterprise or local environmental hazard requirements.

Unit Sector(s)

Telecommunications - Cabling

Innovation and Business Skills Australia