



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **ICTCBL3011A Install and terminate coaxial cable**

**Release: 1**

## **ICTCBL3011A Install and terminate coaxial cable**

### **Modification History**

Not Applicable

## Unit Descriptor

<p><b>Unit descriptor</b></p>	<p>This unit describes the performance outcomes, skills and knowledge required to install and terminate coaxial cable on customer premises in communications applications, digital and analogue, including telephony, data and video, including digital broadcasting, computer networks, including local area networks (LAN), wide area networks (WAN) and multimedia.</p> <p>Assessment by a TITAB registered assessor is recommended.</p> <p>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.</p> <p>Cable and cabling products used must be compliant with appropriate ACMA technical standard requirements.</p>
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## Application of the Unit

<p><b>Application of the unit</b></p>	<p>Technical staff who install and terminate customer premises coaxial cable apply the skills and knowledge in this unit.</p> <p>They may be required to do new installations, upgrades or maintain existing networks in domestic, commercial and industrial installations.</p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	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 to install and terminate coaxial cable	1.1. Prepare for given work according to <i>relevant legislation, codes, regulations and standards</i> 1.2. Arrange access to the site according to required procedure 1.3. Inform appropriate personnel of identified <i>hazards</i> on worksite 1.4. Select <i>coaxial cable type, connectors</i> and <i>manufacturer's tool</i> to comply with installation environment and customer requirements 1.5. Check proposed route and bend radius to meet <i>manufacturer's specifications</i> and industry standards 1.6. Test cable on drum for radio frequency (RF) continuity
2. Install, terminate and test coaxial cable	2.1. Maintain cable segregation to industry standards 2.2. Protect the integrity of the coaxial shield cable to ensure no loss of signal during operation and maintain bend ratios to not exceed manufacturer's specifications and industry standard 2.3. Locate securing hardware at uneven distances to minimise the cumulative effect on cable wave shape properties 2.4. Install cable following occupational health and safety ( <i>OHS</i> ) and <i>environmental requirements</i> and complying with manufacturer's specifications and industry standards 2.5. Terminate the cable and perform the <i>type of termination</i> specified in the plan using safe work practices and according to manufacturer's specifications 2.6. Test the termination for transmission loss and strength and re-terminate the coaxial cable if the transmission loss exceeds the manufacturer's specifications 2.7. Record all measurements 2.8. Fit <b>over-voltage protection devices</b> to all cables with metallic component where required
3. Remove fibre hazards from work area	3.1. Clean work area thoroughly to minimise risk of injury from loose glass fibre 3.2. Dispose of waste safely according to relevant

ELEMENT	PERFORMANCE CRITERIA
	environmental requirements 3.3.Restore worksite to the customer's satisfaction
4. Document installation	4.1.Update plans and records with details of installation and test results 4.2.Notify client of work completion 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

- 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 organisational 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

**REQUIRED SKILLS AND KNOWLEDGE**

- use hand and power tools

**Required knowledge**

- detailed knowledge of:
  - AS/NZS 3080:2003 Telecommunications Installations - Generic cabling for commercial premises, clause 10.3.2
  - ACMA Competency Requirements for Telecommunications Cabling Provider Rules 2000
- features and operating requirements of test equipment for optical fibre cable
- information required to operate equipment according to a test specification
- manufacturer's requirements for safe operation of optical fibre equipment
- safety precautions when working with laser 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
  - fusion splicing
  - mechanical splicing
- typical issues and challenges that occur on site

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>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.</p>	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• install different connector types</li> <li>• conduct and interpret test results</li> <li>• determine compliance with manufacturer's certification and warranties</li> <li>• provide report documenting the installation and test results to client</li> <li>• comply with all related OHS requirements and work practices.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• sites where installation and termination of coaxial cabling may be conducted</li> <li>• use of equipment and personal protective equipment currently used in industry</li> <li>• use of testing equipment currently used in industry</li> <li>• relevant regulatory and equipment documentation that impact on installation activities.</li> </ul>
<b>Method of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>• review of a hands-on project completed by the candidate</li> <li>• review of an oral and written report with completed documentation, including test results</li> <li>• direct observation of the candidate installing and terminating coaxial cable.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p>



**EVIDENCE GUIDE**

	<ul style="list-style-type: none"> <li>• ICTCBL3009A Install, terminate and certify structured cabling installation.</li> </ul> <p>Aboriginal people and other people from a non-English speaking background may have second language issues.</p> <p>Access must be provided to appropriate learning and assessment support when required.</p> <p>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.</p> <p>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.</p> <p>Where applicable, physical resources should include equipment modified for people with special needs.</p>
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**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.

***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 3000:2007

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• AS/NZS 3080:2003</li> <li>• AS/NZS 3084:2003</li> <li>• AS/NZS 3085.1:2004</li> <li>• AS/NZS IEC 61935.1:2006</li> <li>• AS/NZS IEC 61935.2:2006</li> <li>• AS/NZS ISO/IEC 14763.3:2007</li> <li>• AS/NZS ISO/IEC 15018:2005</li> <li>• AS/NZS ISO/IEC 24702:2007</li> <li>• Australian building codes and regulations</li> <li>• cabling security codes and regulations</li> <li>• OHS</li> <li>• other services and utilities codes of practice and standards: <ul style="list-style-type: none"> <li>• electricity</li> <li>• gas</li> <li>• water</li> </ul> </li> <li>• relevant Institute of Electrical and Electronics Engineers (IEEE) standards</li> <li>• technical standards AS/ACIF S008:2006 and AS/ACIF S009:2006.</li> </ul>
<b>Hazards</b> may include:	<ul style="list-style-type: none"> <li>• building debris</li> <li>• earth potential rise (EPR): <ul style="list-style-type: none"> <li>• event at a site, such as an electrical distribution substation, may expose telecommunications personnel, users or plant to hazardous voltages</li> </ul> </li> <li>• live power lines</li> <li>• manual handling</li> <li>• mud and water</li> <li>• natural gas and other gas build up</li> <li>• radio frequency equipment emitting radiation</li> <li>• remote power feeding services which operate at above telecommunications network voltage (TNV)</li> <li>• slippery surfaces</li> <li>• vermin.</li> </ul>
<b>Coaxial cable type</b> may relate to:	<ul style="list-style-type: none"> <li>• aerial</li> <li>• compliance with appropriate ACMA technical standard requirements</li> <li>• flexible (internal and external)</li> <li>• hard line (internal and external)</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• installed individually or in small teams</li> <li>• powered and unpowered</li> <li>• underground</li> <li>• various grades as designed for different environments and intended uses.</li> </ul>
<i>Connectors</i> may relate to:	<ul style="list-style-type: none"> <li>• fitting retains the segregation of conductor and shield</li> <li>• terminating method according to manufacturer specification</li> <li>• termination maintains a continuous reference</li> <li>• terminations are waterproof where appropriate to prevent risk of damage to termination and cable function.</li> </ul>
<i>Manufacturer's tool</i> may include:	<ul style="list-style-type: none"> <li>• hand or power tools including: <ul style="list-style-type: none"> <li>• coring</li> <li>• crimping</li> <li>• stripping and preparation tool</li> <li>• torque spanner.</li> </ul> </li> </ul>
<i>Manufacturer's specifications</i> may include:	<ul style="list-style-type: none"> <li>• bend radius not exceeding manufacturer placement of cable with sufficient slack to allow termination</li> <li>• cable lengths not exceeding manufacturer or design specifications and maintain RF signal integrity</li> <li>• installation of cable safely without damage to cable or clients premises</li> <li>• use of cable ties and brackets that are flexible and do not damage cable.</li> </ul>
<i>OHS and environmental requirements</i> may relate to:	<ul style="list-style-type: none"> <li>• identifying other services, including power and gas</li> <li>• need for decommissioning and isolating worksite and lines prior to commencement</li> <li>• personal protective clothing: <ul style="list-style-type: none"> <li>• earmuffs</li> <li>• gloves: <ul style="list-style-type: none"> <li>• leather</li> <li>• plastic</li> <li>• rubber</li> </ul> </li> <li>• head protection</li> <li>• kneepads</li> </ul> </li> </ul>

**RANGE STATEMENT**

	<ul style="list-style-type: none"> <li>• masks</li> <li>• protective suits</li> <li>• safety boots</li> <li>• safety glasses</li> <li>• safety harness</li> <li>• safety line</li> <li>• safe working practices, such as the safe use and handling of: <ul style="list-style-type: none"> <li>• asbestos</li> <li>• chemicals</li> <li>• materials</li> <li>• tools and equipment</li> <li>• work platforms</li> </ul> </li> <li>• safety equipment: <ul style="list-style-type: none"> <li>• flashing lights</li> <li>• gas and other hazard detection equipment</li> <li>• safety barriers</li> <li>• trench guards</li> <li>• warning signs and tapes</li> <li>• witches hats</li> </ul> </li> <li>• special access requirements</li> <li>• suitable light and ventilation</li> <li>• environmental considerations: <ul style="list-style-type: none"> <li>• clean-up protection</li> <li>• stormwater protection</li> <li>• waste management.</li> </ul> </li> </ul>
<i>Over-voltage protection devices</i> includes:	<ul style="list-style-type: none"> <li>• ACMA standards</li> <li>• manufacturer's, enterprise or local environmental hazard requirements.</li> </ul>

**Unit Sector(s)**

<b>Unit sector</b>	Telecommunications
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## Co-requisite units

<b>Co-requisite units</b>		

## Competency field

<b>Competency field</b>	Cabling
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