



Australian Government

ICTDRE3157B Locate and rectify digital reception equipment faults

Release 1

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Modification History

Release	Comments
Release 2	This version first released with <i>ICT10 Integrated Telecommunications Training Package Version 3.0</i>. References to other units updated. Outcomes deemed equivalent.
Release 1	This version first released with <i>ICT10 Integrated Telecommunications Training Package Version 1.0</i>.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to locate and rectify all types of customer digital reception equipment (DRE) faults on customer premises as part of a home network.

Home networks integrate many services, such as broadband, digital TV, free to air (FTA), subscription TV (pay TV) and internet protocol TV (IPTV).

Application of the Unit

Technicians who install and maintain integrated services in digital reception equipment in the home network or small business network apply the skills and knowledge in this unit to locate and rectify faults of DRE.

Integrated services include broadband services, FTA, pay TV and IPTV.

Licensing/Regulatory Information

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.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>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.</i>

Elements and Performance Criteria

1. Prepare for DRE fault identification	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify customer to verify fault report and arrange for site access to comply with security arrangements 1.3 Notify supervisor of identified safety hazards at the worksite and complete a job safety analysis (JSA) before commencing work 1.4 Identify existing warranties, service agreements and equipment specifications and documentation covering digital reception equipment 1.5 Select and obtain tools and materials appropriate for the work order
2. Assess likely cause and location of fault	2.1 Verify system details to assist with fault identification 2.2 Assess available data and historical trends to determine likelihood of fault being the set top fault or existing customer equipment fault 2.3 Rank likely causes of fault in order of probability ensuring a methodical approach to fault-finding is used 2.4 Discuss problem fully with the customer and advise of likely charges
3. Perform tests to diagnose fault	3.1 Conduct visual inspection of system for likely damage following occupational health and safety (OHS) and environmental requirements 3.2 Check connections, plugs, terminations and leads for operation 3.3 Measure signal strength at wall plate and beyond to ensure adequate signal level for equipment processing 3.4 Conduct functional test of facilities to identify faulty equipment 3.5 Progressively isolate fault to remove likely variables from assessment using manufacturer's diagnostic chart 3.6 Locate fault with minimal disruption to client activity and in the shortest possible time 3.7 Provide customer with regular progress reports
4. Rectify faults	4.1 Identify faulty parts and equipment and replace or repair according to service agreement 4.2 Advise customer of cost of repair if service agreement does

	not exist 4.3 Re-program equipment to customer requirements if required 4.4 Complete work in a manner that is safe to repairer and customer
5. Provide replacement service to customer	5.1 Provide customer with temporary replacement equipment similar to existing equipment whilst faulty equipment is being repaired 5.2 Program replacement equipment to customer requirements 5.3 Test replacement service for functionality prior to meet customer satisfaction
6. Clean up worksite and complete documentation	6.1 Remove waste and debris from site and dispose of in a safe and environmentally appropriate manner 6.2 Restore site to original condition and customer satisfaction 6.3 Prepare invoices and other financial documentation, where required, and present to customer 6.4 Obtain authorised signatures on required documentation to confirm acceptance of completed work

Required Skills and Knowledge

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

Required skills

- communication skills to liaise with customer and colleagues and negotiate with site owner
- literacy skills to interpret technical documentation, specifications and service orders
- numeracy skills to:
 - setup
 - take measurements
 - interpret results
- planning and organisational skills to organise and prepare installation resources
- problem solving skills to respond to typical installation challenges
- task management skills to:
 - adhere to all safety requirements
 - work systematically with required attention to detail
- technical skills to:
 - perform diagnostic procedures
 - problem solving and fault-finding techniques:
 - enterprise methods
 - escalation level
 - halving technique
 - use hand and power tools.
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Required knowledge

- broad knowledge of whole industry product range
- customer service principles, particularly dealing with customers face to face
- enterprise diagnosis methods for test analysis and diagnosis
- enterprise or service specific knowledge of products and services supplied
- OHS general principles and enterprise specific JSA requirements
- overview knowledge of:
 - objectives and methods of training for product use for customer education
 - radio frequency (RF) theory, principles and safety
 - telephony principles to support return path awareness
- pre-installation enterprise-specific requirements
- quality assurance of enterprise requirements
- return path technology
- signal measurement and other enterprise-specific tools
- understanding of contemporary equipment and connection methods
- use test equipment.

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.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • demonstrate methodical approach to fault identification • interpret test results • repair fault and test to verify outcomes • document fault, including nature, location, likely causes and repair methodology.
Context of, and specific resources for assessment	Assessment must ensure: • site for locating and rectifying DRE faults • range of DRE currently used in industry • range of test equipment required for DRE testing.
Methods 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 performing diagnostic tests • direct observation of the candidate locating and rectifying DRE faults • oral or written questioning of the candidate to assess knowledge of DRE and test methods and repair methodology.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • ICTDRE3156B Install digital reception 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.
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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 • 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 • cabling security codes and regulations • Environmental Protection Acts • Trades Practices Act • ISO Draft 11801 • OHS • regulated or industry codes of practice including appropriate Australian Communications and Media Authority (ACMA) standards • relevant Institute of Electrical and Electronics Engineers (IEEE) standards • technical standards AS/ACIF S008:2006 and AS/ACIF S009:2006.
Safety hazards may refer to:	• debris • excessive dust or noise • exposed electrical wiring • exposed machinery • industrial • spilled chemicals • unsafe spatial separation of cables • unsafe structures • wet areas.
Warranties may refer	• support as specified by the equipment manufacturer or supplier

to:	support by network provider.
Service agreements may refer to:	- agreements between customer and third party - maintenance agreements between communication companies and their clients.
Equipment specifications and documentation may be found in:	- contract documents - specification schedules - system configuration diagrams and manuals.
Digital reception may include:	- services: - community television - FTA (open broadcast TV) - IPTV - pay TV - service provision media: - cable - satellite - terrestrial - wireless.
Tools may include:	- crimping - fold covering sack - general electrical - general hand - stripping - terminating.
System details may include:	- functions - product - product model - type of system.
Available data may include:	- customer questioning details - customer records - details of system checks - equipment and product manuals and guides - test data.
Set top fault may include:	- aerial problems - equipment failure - faulty circuit board - faulty parts - power and TV terminations - program errors.
Existing customer	colour variation

equipment fault may include:	• customer TV and video • distorted sound quality • ghosting • picture not filling the screen • poor reception • pre-made fly leads • rolling picture • use of non-approved peripheral equipment connected to pay TV equipment.
Methodical approach may include:	• fault-finding methodology described in system, equipment and product manuals and guides • methods for fault finding and repair: • equipment reprogram • functionality tests • replacement repair or modification • visual inspections.
Fault-finding may be done:	• as part of a service agreement • on a fee for service basis as agreed with client.
Likely damage may include:	• broken display • broken remote control • damaged cable • damaged connectors • excessive dust • heat damage • spillage • water damage.
OHS and environmental requirements may relate to:	• identifying other services, including power and gas • personal protective equipment: • earmuffs • gloves • head protection • masks • protective suits • safety boots • safety glasses • safe working practices, such as the safe use and handling of: • chemicals • materials • tools and equipment

	• safety equipment: • flashing lights • safety barriers • warning signs and tapes • witches hats • special access requirements • environmental considerations: • clean-up protection • stormwater protection • waste management.
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Unit Sector(s)

Telecommunications - Digital reception technology