



Australian Government

ICTBWN3088B Install optical fibre splitters in fibre distribution hubs

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>. Minor editorial change to performance criterion. 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 install optical fibre splitters in fibre distribution hubs (FDH) as part of a fibre to the premises (FTTP) network.

Optical networks and FTTP are part of the strategies by service providers using wave division multiplexing (WDM) to deliver very high speed broadband capacity through the access network for the National Broadband Network (NBN) initiative.

Assessment by a TITAB-registered assessor is recommended.

Application of the Unit

Technicians and cable installers who install and maintain optical network cables and equipment in access networks apply the skills and knowledge in this unit to provide services in Next Generation Networks (NGN) using emerging technologies.

NGN services include internet protocol TV (IPTV), video on demand (VoD), interactive TV, mesh networks and cloud computing.

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

Elements	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. Set up and prepare for installation	1.1 Review preparation to ensure work complies with requirements of relevant legislation, codes, regulations and standards 1.2 Scope the work by obtaining project plan from appropriate personnel and arrange for site access to comply with security arrangements 1.3 Notify appropriate personnel of identified safety hazards at the work site 1.4 Determine type of FDH enclosure and optical splitter module from project plan and identify splitter installation requirements using work instructions 1.5 Obtain tools and safety equipment and material to perform tasks safely and efficiently 1.6 Select and use required protective equipment and make site safe and secure for installation work 1.7 Obtain splitter module and visually inspect for splitter module damage and replace if necessary
2. Install splitter module in FDH	2.1 Follow occupational health and safety (OHS) and environmental requirements for the given work and identify and avoid other services 2.2 Open the enclosure and assess the suitability of the FDH according to the project plan 2.3 Locate next available slot in splitter module area of FDH for installation 2.4 Insert splitter module and secure according to manufacturer specifications 2.5 Inspect installed splitter module and surrounding area for completeness of job
3. Prepare and connect splitter input fibres to feeder cable	3.1 Locate feeder port to be connected and remove protective cover in preparation 3.2 Use an optical power meter to verify feeder port is not active 3.3 Clean the adapter according to manufacturer specifications and route splitter input fibre to correct feeder port 3.4 Remove dust cap and clean end face according to manufacturer specifications to prevent possible damage from mating contaminated connectors 3.5 Connect input fibre to feeder port and record connection

	according to organisational policy
4. Connect output fibres and test splitter	4.1 Determine output fibre to be connected and required adapter in distribution field 4.2 Clean adapter and fibre end-face according to manufacturer specifications 4.3 Route output fibre and connect with adapter in distribution field 4.4 Test operation of optical splitter for optical power levels at the operating WDM optical wavelengths 4.5 Record connections, test results and park unused fibre leads for safety reasons according to organisational policy
5. Clean up work site	5.1 Seal any internal enclosures and close FDH 5.2 Remove installation waste and debris from work site and dispose of according to environmental requirements 5.3 Notify appropriate personnel of job 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 work effectively within a group
- literacy skills to interpret work instructions
- numeracy skills to gather and record data from measurements
- 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
- technical skills to:
 - clean optical end face
 - connect optical fibre to feeder port
 - operate WDM test equipment and optical power meter
 - recognise optical devices in a communication system
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Required knowledge

- organisational policy and procedures
- personal safety issues
- propagation of light in optical communication systems
- role of transmitters and receivers in optical communication systems
- site engineering
- specific OHS requirements relating to the handling of optical fibre and the use of laser light sources
- WDM applications
- workplace and industry environment.

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: • use optical power test equipment • measure optical signals at three WDM wavelengths • install splitter in the enclosure • connect input and out optical fibres to the splitter • test optical splitter • complete connection recording • comply with all related OHS requirements and work practices.
Context of, and specific resources for assessment	Assessment must ensure: • a telecommunications operations site where installation of optical fibre splitters in FDH may be conducted • a fibre distribution hub and relevant optical splitter • use of tools, equipment and personal protective equipment currently used in industry • relevant regulatory and equipment documentation that impacts on work activities.
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 candidate installing optical fibre splitters in FDH • direct observation of candidate applying all related OHS requirements and work practices • oral or written questioning to assess required knowledge.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, e.g. • ICTBWN3090B Install lead-in module and cable for fibre

	to the premises • ICTBWN3100B Work safely with live fibre to test and commission a fibre to the x 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.
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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 • Environment Protection Acts • ISO Draft 11801 (International) • OHS Acts and relevant codes and standards • 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.
Appropriate personnel may be:	• consultant • project engineer • project supervisor • site supervisor.
Safety hazards may refer to:	• access points that may contain: • hazardous light (non-visible laser) • radio frequency (RF) emission • active lasers with no safety labels • active optical fibres • contact with remote power feed • electrical supply that require mandatory separation from

	- communications cable - exposed fibres - unsafe support structures - unsafe weather: - heavy rains - high winds - severe heat or cold - thunderstorms.
FDH enclosure may include:	- external cabinet - internal cabinet.
Optical splitter module may include:	4 port 8 port 16 port 32 port.
Tools and safety equipment may include:	- personal protective equipment - safety equipment - test equipment: - passive optical network (PON) meter - optical time domain reflectometer (OTDR) - tools: - fibre cleaning kit - fibre splicer - labeller - screw drivers - spanners - tagging tool.
Splitter module damage may include:	- broken connector - kinks in fibre leads - no end caps on connectors - physical damage to module body.
OHS and environmental requirements may relate to:	- identifying other services, including power and gas - personal protective equipment: - earmuffs - gloves: - leather - plastic - rubber - head protection - masks

	• protective suits • safety boots • safety glasses • safe work 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.
Other services may include:	• alarms • electrical services • fire sprinkler systems • gas and water mains • high voltage (HV) power • other service provider networks.
Contaminated connectors may include:	• chips • dry residue • dust • liquids • scratches.
WDM optical wavelengths are set at:	• 1310 nm • 1490 nm • 1550 nm.

Unit Sector(s)

Telecommunications - Broadband and wireless networks