



Australian Government

ICTBWN305 Use optical and radio frequency measuring instruments

Release: 1

ICTBWN305 Use optical and radio frequency measuring instruments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to set up and use hand-held optical and radio frequency (RF) communications instruments to perform installations, upgrades and fault-finding on optical and RF equipment.

It applies to individuals who are able to combine technical skills with organisational and administrative skills. They often work as members of a team and communicate well with others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – broadband and wireless networks

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to use measuring instruments	1.1 Obtain approval for site access with client or site owner prior to site entry 1.2 Identify purpose of test and type of measurement required 1.3 Select appropriate tools and instruments according to required measurement 1.4 Check tools and instruments and calibrate to ensure accuracy 1.5 Obtain resources required

	1.6 Devise and implement risk control measures in consultation with appropriate personnel, and document safety hazards
2. Conduct measurements	2.1 Follow site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures 2.2 Set up test equipment according to manufacturer's instructions and safe industry practice 2.3 Perform measurement using knowledge of appropriate testing techniques to assess overall system performance 2.4 Record and interpret test results and compare with standard test specifications 2.5 Clean work area and make safe according to established procedures
3. Document measurement results	3.1 Document test results and make recommendations to achieve optimum performance 3.2 Notify client of work completion

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.1, 2.2, 2.4	- Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements - Interprets and consolidates test results and data from a range of sources, against defined requirements
Writing	1.1, 1.6, 2.4, 3.1, 3.2	Accurately records and completes organisational documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	1.1, 1.6, 3.2	- Participates in verbal exchanges with key personnel using appropriate, clear and detailed language to exchange information, ideas or solutions - Uses listening and questioning skills to confirm understanding of requirements
Numeracy	1.4, 2.3	Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	2.1, 2.2, 2.5	- Complies with explicit policies and procedures - Explores and implements where identified the

		implicit expectations of policies and procedures
Interact with others	1.1, 1.6, 3.2	• Uses a limited range of accepted practices for communicating in a work environment • Complies with work instructions and contributes to work group discussions using accepted conventions
Get the work done	1.2-1.6, 2.2-2.5, 3.1	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome • Uses the main features and functions of digital tools to complete work tasks and access information

Range of Conditions

This field allows for different work environments and conditions that may affect performance. 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) should be included.

Type of measurement must include:	• optical measurement: • detecting the presence of an active optical network terminal (ONT) • determining absolute optical power (in dBm) • determining insertion loss (in dB) • determining relative optical power level (in dB) • RF measurement: • determining absolute RF power (in dBm) • determining relative RF power level (in dB) • determining relative RF voltage (in dBmV).
Instruments must include:	• hand-held optical power meter • hand-held optical source • handheld optical fiber identifier (OFI-FTTx) active optical network termination (ONT) detector • operate optical loss test set (OLTS) • passive optical network (PON) meter • signal level meter (SLM).

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTBWN305 Use optical and radio frequency measuring instruments	ICTBWN3205B Use optical and radio frequency measuring instruments	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTBWN305 Use optical and radio frequency measuring instruments

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Performance Evidence

Evidence of the ability to:

- comply with all job requirements and work health and safety (WHS) regulations, standards and work practices
- check and calibrate tools and instruments
- perform optical measurements using hand-held instrument
- perform radio frequency (RF) measurements using hand-held instrument
- operate the following equipment:
 - hand-held optical power meter
 - hand-held optical source
 - passive optical network (PON) meter
 - radio frequency (RF) signal level meter (SLM)
- perform the following optical measurements:
 - detect the presence of an active optical network terminal (ONT)
 - determine absolute optical power (in dBm)
 - determine insertion loss (in dB)
 - determine relative optical power level (in dB)
- perform the following RF measurements:
 - determine absolute RF power (in dBm)
 - determine relative RF power level (in dB)
 - determine relative RF voltage (in dBmV).

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe the various instruments used in measuring RF and optical frequencies
- list the types of measurements and their respective interpretation for optical and RF frequencies
- explain the consequences of mating contaminated optical connectors
- correctly record and discuss data using the units decibels, dBm and dBmV
- discuss the variations between optical and RF connector types
- identify and describe the WHS hazards and risks, and describe controls when working with RF frequency measuring equipment
- outline RF spectrum and optical spectrum limits and allocations
- discuss safe handling procedures with optical fibres.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – broadband and wireless networks field of work and include access to:

- a site where measuring instruments can be used
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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