



Australian Government

Department of Education, Employment and Workplace Relations

UEENEEF104A Install and modify performance data communication copper cabling

Release: 1

UEENEEF104A Install and modify performance data communication copper cabling

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit covers the installation and termination of high performance data copper cabling in buildings and premises and intended for connection a telecommunications network. It encompasses working safely and to standards, installing multiple data lines and backbones using structured twisted pair cabling, terminating at distributors, termination modules and in socket outlets, testing and compliance checks and completing cabling documentation.

Application of the Unit

Application of the Unit 2)

This unit is intended for competency development in entry-level employment based programs incorporated in approved contracts of training.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit require a registration to practise in the workplace subject to requirements set out ACMA 'Open' Cabling Provider Rule. Practice in workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

License to practice

3)

Note:

1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control and lifting equipment. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.
2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures.

Pre-Requisites

Prerequisite Unit(s)

4)

Competencies

4.1)

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE1 01A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE1 02A Fabricate, assemble and dismantle utilities industry components

UEENEEE1 04A Solve problems in d.c. circuits

UEENEEE1 05A Fix and secure electrotechnology equipment

UEENEEE1 07A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEF10 2A Install and maintain cabling for multiple access to telecommunication services

For the full prerequisite chain details for this unit please refer to Table 2 in Volume 1, Part 2

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 ‘Literacy and Numeracy’

Reading 3 Writing 3 Numeracy 3

Employability Skills Information

Employability Skills 5)

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

- | | | | |
|---|--|-----|---|
| 1 | Prepare to install and/or modify copper cabling. | 1.1 | OHS procedures for a given work area are identified, obtained and understood. |
| | | 1.2 | Health and safety risks are identified and established risk control measures and procedures are followed in preparation for the work. |
| | | 1.3 | Safety hazards that have not previously been |

ELEMENT	PERFORMANCE CRITERIA
	identified are noted and established risk control measures are implemented.
1.4	Installation or modification of wiring is prepared in consultation with others affected by the work and sequenced appropriately.
1.5	The nature and location of the work is determined from documentation or in discussion with appropriate person(s) to establish the scope of work to be undertaken.
1.6	Cable routes are planned within the constraints of the building structure, fire walls, cultural/heritage requirements and regulations.
1.7	Advice is sought from appropriate persons to ensure the work is coordinated effectively with others.
1.8	Material needed for the installation work is obtained in accordance with established procedures and checked against job requirements.
1.9	Tools, equipment and testing devices needed to for the installation work are obtained in accordance with established procedures and checked for correct operation and safety.
1.10	Preparatory work is checked to ensure no damage has occurred and that it complies with requirements.
2 Install copper cables or modify.	2.1 OHS risk control measures and procedures for carrying out the work are followed.
	2.2 Cables are installed or modification to comply with manufacturer specifications, technical standards and job requirements with sufficient excess to affect terminations.
	2.3 Established methods for dealing with unexpected situations are discussed with appropriate person(s) and documented.
	2.4 Unexpected situations are dealt with safely and

ELEMENT

PERFORMANCE CRITERIA

- with the approval of an authorised person.
- 2.5 Ongoing checks of the quality of installed or modified wiring are undertaken in accordance with established procedures.
- 2.6 Cable installation/modification is carried out efficiently without waste of materials or damage to apparatus, circuits or the surrounding environment and using sustainable energy practices.
- 3 Terminate copper cables.
- 3.1 OHS risk control measures and procedures for carrying out the work are followed.
- 3.2 Cable termination work area is cleaned and safety measure implemented.
- 3.3 Cables are prepared for termination in accordance with manufacturer specifications and technical standards.
- 3.4 Over voltage protection devices are fitted to cables with metallic components.
- 3.5 Cable shields are earthed in accordance with manufacturer specifications and technical standards.
- 3.6 Twist ratio of structured metallic cables is maintained in accordance with manufacturer specifications and technical standards.
- 3.7 Twisted pair cables are terminated in accordance with manufacturer specifications and technical standards.
- 3.8 Cable performance tests are conducted accurately and results documented.
- 3.9 Causes of defects indicated by test results are identified and rectified.
- 3.10 Unexpected situations are dealt with safely and with the approval of an authorised person.
- 3.11 Ongoing checks of the quality of installed wiring are undertaken in accordance with established

ELEMENT

PERFORMANCE CRITERIA

- procedures.
- 3.12 Cable terminations are carried out efficiently without waste of materials or damage to apparatus, circuits or the surrounding environment and using sustainable energy practices.
- 4 Document and verify copper cabling installation and performance.
- 4.1 OHS work completion risk control measures and procedures are followed.
- 4.2 Work site is cleaned and made safe in accordance with established procedures.
- 4.3 Final checks are made to that the installed cabling conforms to requirements.
- 4.4 Documentation certifying system performance is issued to an appropriate person(s).

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and installing and modifying performance data communication structured cabling.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EF104A Copper communication cable installation and modification practices

Evidence shall show an understanding of copper communication cable installation and modification practices, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects:

T1. Telecommunication cable types

- construction
- characteristics and
- applications

T2. Cable identification

- plans and drawing
- labelling
- documentation

T3. Cable installation

- Hazards
- Cable damage prevention
- Cable dispensers

T4. Building construction

- Domestic buildings
- Commercial buildings

T5. Fixing devices

- Bracketed assemblies
- Hard wall fixing devices
- Soft wall fixing devices
- Ties

T6. Cable enclosures

- Types
- Fixing
- Regulations

T7. Distribution boxes and back mounts

- Systems

REQUIRED SKILLS AND KNOWLEDGE

- Termination Boundaries and devices
- T8. Electrical connections
- Hazards
 - Regulations
- T9. Cable preparation and terminations and hauling mechanisms
- Indoor Methods
 - Outdoor Methods
- T10. Category 5 and 6 structured cabling
- design principles
- T11. Category 5 and 6 structured cabling installation systems
- coaxial cable construction
 - uses
 - requirements
- T12. Category 5 and 6 structured cabling performance requirements
- approved practices
 - safety requirements
 - connectors
 - terminating tools
 - continuity tests
 - fault diagnosis
 - recording results
- T13. Selecting cable and cabling hardware
- cable characteristics
 - higher performance cable types
 - requirements of Australian Standards
- T14. Testing Category 5 and 6 cabling
- Testing
- T15. Local area network cabling systems
- T16. Coaxial cables
- Coaxial cables
 - Coaxial cable installation systems
 - Twisted pair cable installation systems

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit and must be read in conjunction with the performance criteria and the range statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment 9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit 9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the ‘Assessment Guidelines – UEE11’. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement
 - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
 - Demonstrate an appropriate level of skills enabling employment
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - Install and modify performance data communication structured cabling as described in 8) and including:
 - A Reading and interpreting drawings related to cable layouts, cable schedules and apparatus locations.
 - B Routing, placing and securing cables to comply with requirements

- C Maintaining fire integrity
- D Preparing and terminating each type of cable to comply with requirements.
- E Conducting cable performance test accurately
- F Identifying and rectifying anomalies
- G Completing the necessary documentation accurately.
- H Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items.

Note:

Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

Context of and specific resources for assessment 9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be used in the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to installing and modifying performance data communication structured cabling.

Competency Field

Competency Field **11)**

Data and Voice Communications