



**Australian Government**

# **UEENEEF109A Install and connect data and voice communication equipment**

**Release 2**

# **UEENEEF109A Install and connect data and voice communication equipment**

## **Modification History**

Not applicable.

## **Unit Descriptor**

### **Unit Descriptor**

#### **1) Scope:**

##### **1.1) Descriptor**

This unit covers the installation, termination and setting up of data and voice equipment for high performance LANs in buildings and premises and intended for connection to a telecommunications network. It encompasses working safely and to standards, installing hubs, routers, switches, decoders, PABXs connected by structured, coaxial and optical fibre cabling, and completing network 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

**License to practice****3)**

training such as apprenticeships.

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 communications equipment 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

**Prerequisite Unit(s) 4)**

UEENEEF10 4A Install and modify performance data communication copper cabling

UEENEEF10 5A Install and modify optical fibre performance data communication cabling

**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 communications equipment and associated equipment.	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 identified are noted and established risk control measures are implemented.
	1.4 Installation of communications equipment 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 A location of communications equipment and associated equipment is planned within the constraints of the building structure, significant 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 communications equipment and associated equipment.	2.1 OHS risk control measures and procedures for carrying out the work are followed.
	2.2 Tests are carried out in strict accordance with OHS established safety procedures.

**ELEMENT****PERFORMANCE CRITERIA**

- |   |  |   |
|---|--|---|
|   | 2.3  | Communications equipment is installed to comply with technical standards and job specifications and requirements with sufficient access to affect terminations, adjustment and maintenance.                                   |
|   | 2.4  | Cabling is terminated at communications equipment in accordance with manufacture's specifications and functional and regulatory requirements.   |
|   | 2.5  | Established methods for dealing with unexpected situations are discussed with appropriate person(s) and documented.   |
|   | 2.6  | Unexpected situations are dealt with safely and with the approval of an authorised person.  |
|   | 2.7  | Ongoing checks of the quality of installed communications equipment are undertaken in accordance with established procedures.   |
|   | 2.8  | Communications equipment installation is carried out efficiently without waste of materials or damage to communications equipment, circuits, the surrounding environment or services and using sustainable energy principles. |
| 3 | Completion and report installation activities. |   |
|   | 3.1  | OHS work completion risk control measures and procedures are followed.  |
|   | 3.2  | Work site is cleaned and made safe in accordance with established procedures.   |
|   | 3.3  | Final checks are made to ensure that the installed communications equipment conforms to requirements.   |
|   | 3.4  | 'As-installed' communications equipment is documented in accordance with requirements and appropriate person(s) notified in accordance with established procedures.   |

## 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 connecting voice and data communications equipment.

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

#### KS01-EF109A

#### Voice and Data Communication Equipment

T1. Analogue and digital signals encompassing:

- How information is carried
- Signal distortion

Examples include attenuation, reflection, noise, dispersion, jitter, latency and collisions

T2. Types of networks, network components and hardware

T3. Local Area Network (LAN) architectures

T4. Networking protocols and the OSI model

T5. Network signal propagation

T6. Transmission Control Protocol / Internet Protocol (TCP/IP)

T7. Basics of Encoding Networking Signals

T8. Internet services

## 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 connect voice and data communications equipment as described in 8) and including:
    - A Reading and interpreting drawings related to and communications equipment locations and connections.
    - B Placing and securing communications equipment accurately

- C Maintaining fire integrity
- D Connecting communications equipment to comply with requirements
- E Completing the required documentation accurately
- F 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

**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 connecting voice and data communications equipment.

**Method of assessment** 9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this competency standard unit

applies. This requires assessment in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

**Concurrent  
assessment and  
relationship with  
other units**

9.5)

For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:

UEENEEF10 4A Install and modify performance data communication copper cabling

UEENEEF10 5A Install and modify optical fibre performance data communication cabling

## Range Statement

### RANGE STATEMENT

10) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to installing and connecting at least 5 different types of voice and data communications equipment terminating three types of communications cable.

Note:

1. Examples of communications equipment are distribution frames, hubs, routers, switches, decoders, PABXs and the like
2. Example of connecting cables are by structured cable, coaxial cables and optical fibre cabling.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

## **Unit Sector(s)**

Not applicable.

## **Competency Field**

**Competency Field**            11)

Data and Voice Communications