



Australian Government

UEEEEC0009 Commission satellite and microwave communication systems

Release: 1

UEEEEC0009 Commission satellite and microwave communication systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to set up and adjust satellite and microwave communication systems.

It includes setting up and adjusting of satellite and microwave communication systems for optimum performance. It also includes working safely, signal testing and analysis, adjusting equipment, following procedures and completing documentation.

Permits may be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

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

Pre-requisite Unit

UEEEEC0038 Find and repair microwave amplifier section faults in electronic apparatus

Competency Field

Electronics and Communications

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to set up satellite and microwave system 1.1

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures

measuring instruments	for a given work area are identified and applied
1.2	WHS/OHS risk control measures and workplace procedures are followed in preparation for communication system work
1.3	Safety hazards that have not previously been identified are noted on job safety assessments, risk assessed and risk control measures implemented
1.4	Appropriate person/s is consulted to ensure work is coordinated effectively with others involved on the worksite
1.5	Measurement parameters are identified by reviewing transmission/reception requirements and equipment manufacturer instructions
1.6	Tools, equipment and testing devices needed for the communication system work are obtained in accordance with workplace procedures and checked for correct operation and safety
1.7	Preparatory work is checked to ensure no unnecessary damage has occurred and complies with job requirements
1.8	Need to inspect, test and measure live work is determined in accordance with WHS/OHS requirements and conducted within workplace safety procedures
1.9	Circuits are checked and isolated in accordance with WHS/OHS requirements and workplace procedures
2 Set up satellite and microwave communication system measuring instruments	2.1 WHS/OHS risk control measures and workplace procedures for carrying out satellite and microwave communication work are followed
	2.2 Testing/measuring instruments and devices are connected and set up in accordance with requirements for satellite and microwave communication system
	2.3 Measuring instruments are set up and adjusted in accordance with transmission/reception requirements and equipment manufacturer instructions
	2.4 Adjustments are made to provide optimum transmission/reception performance within regulatory

		requirements
	2.5	Decisions for dealing with unplanned situations are made from discussions with appropriate person/s and job specifications and requirements
	2.6	Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
	2.7	Setting-up satellite and microwave communication system is carried out efficiently without waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy principles
3	Complete and report set-up activities	
	3.1	WHS/OHS risk control work completion measures and workplace procedures are followed
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Adjustment settings are documented and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Commissioning satellite and microwave communication systems must include at least the following:

- two microwave/satellite communication systems

Unit Mapping Information

This unit replaces and is equivalent to UEENEEH186A Commission satellite and microwave communication systems.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEC0009 Commission satellite and microwave communication systems

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- identifying measurement parameters
- setting up and adjusting in accordance with communication systems requirements and equipment manufacturer's instructions
- documenting adjustment settings with established procedures
- dealing with unplanned events
- applying sustainable energy principles and practices
- commissioning microwave and satellite communications system
- implementing relevant work health and safety (WHS)/occupational health and safety (OHS) workplace procedures and practices, including the use of risk control measures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- electronic communications, satellite and microwave, safe working practices and relevant standards, codes and regulations, including:
 - propagation of electromagnetic waves through the atmosphere, transmission lines and waveguides, including characteristic impedance, impedance matching, standing waves and microwave frequency bands
 - microwave device parameters involving wavelength, phase, voltage standing wave ratio (VSWR), impedance matching, circuit parameters, amplifiers, transmission, reception, oscillation, noise figure and noise temperature
 - microwave devices and components
 - microwave operational constraints and operating parameters such as power, bandwidth, gain, efficiency, operational life, electrical parameters, stability, cooling, size, testing and device selection
 - microwave measurements, test equipment and testing techniques
 - EMI/EMC, generation, suppression and reduction

- satellite communications systems encompassing:
 - types of satellite systems and sub-systems
 - earth station locality and antenna parameters
 - link specifications and link calculations
 - base band signalling processes
 - modulation and system access
- commissioning electronic communication systems encompassing:
 - purpose of commissioning
 - commissioning planning and documentation
 - initial tests and adjustments
 - commissioning procedures
- relevant manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to commissioning microwave and satellite communication systems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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