



Australian Government

Department of Education, Employment and Workplace Relations

MEM18059B Modify electronic systems

Release: 1

MEM18059B Modify electronic systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers undertaking modifications to electronic system(s) including the testing and evaluating the modified system.
------------------------	--

Application of the Unit

Application of the unit	This unit applies to modifications including approved design changes and/or replacement of components or sub-assemblies on electronic analog and digital systems. Where drafting skills are required, then Unit MEM09003B (Prepare basic engineering drawing) or Unit MEM09004B (Perform electrical/electronic detail drafting) should be considered. Unit MEM05002B (Perform high reliability soldering and desoldering) must also be selected if soldering of components is required to advanced or military specifications, where the reliability of electrical connections is critical, or where surface mounted devices are being soldered/de-soldered. Band: B Unit Weight: 4
--------------------------------	---

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05001B	Perform manual soldering/desoldering - electrical/electronic components
	MEM09002B	Interpret technical drawing
	MEM12004B	Perform precision electrical/electronic measurement
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18056B	Diagnose and repair analog equipment and components
	MEM18057B	Maintain/service analog/digital electronic equipment
	MEM18058C	Modify electronic equipment
	MEM18065B	Diagnose and repair digital equipment and components

Employability Skills Information

Employability skills	This unit contains employability skills.
-----------------------------	--

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	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.
---	--

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine modification	1.1. Modification requirements are determined and understood by reference to schematics, circuit diagrams, documentation and/or consultation with appropriate authority. 1.2. Where appropriate, maintenance reports and system output information is analysed to confirm the need and nature of modification. 1.3. Scope and nature of modifications are determined, recorded to standard operating procedures and confirmed with appropriate authority.
2. Undertake modification/s	2.1. Modification/s are undertaken using correct and appropriate techniques, tools and procedures. 2.2. Correct and appropriate amendments are undertaken to documentations, circuit drawing etc. using standard operating procedures.
3. Test and evaluate modified electronic systems	3.1. Modifications are checked/tested and evaluated for compliance with desired outcome or specification using correct and appropriate techniques, tools and test equipment. 3.2. Additional modification changes, if required, are recommended using standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- obtaining relevant instructions, schematics, circuit diagrams
- obtaining relevant maintenance reports and system output information
- recording proposed modifications
- obtaining approval to for the proposed modifications
- modifying electronic systems
- amending relevant documents, circuit drawings, schematics etc.
- checking modified electronic system for conformance to specification

REQUIRED SKILLS AND KNOWLEDGE

- programming computers including uploading/downloading of proprietary software
- testing and evaluating modified electronic system

Required knowledge

Look for evidence that confirms knowledge of:

- advanced analogue and digital electronics theory
- system/computer protocols including communications, networks, intranet, SCADA etc.
- modifications to be made to the electronic system
- reasons for undertaking the modification
- appropriate personnel to consult for technical advice
- hazards associated with the electronic system including electro-static discharge (ESD)
- probable causes for any detected trends and/or deviations from specification
- appropriate authority to authorise modifications to electronic systems and changes to documentation, circuit drawings, schematics etc.
- procedures to be followed when undertaking and recording modifications to electronic systems
- tools and techniques to be used to modify the electronic system
- procedures for amending documents, circuit drawings, schematics etc.
- procedures for checking the performance of the modified electronic system
- test equipment and techniques to be used to evaluate the modified electronic system
- operational specifications to be achieved by the modified electronic system
- deviations/variations of test results from operational specifications
- probable causes of any deviations/variations from specification
- likely effect of further modifications on electronic system performance

Evidence Guide

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

A person who demonstrates competency in this unit must be able to modify electronic systems. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, i.e. the candidate is not in productive work, an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with modifying electronic systems, or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE

Guidance information for assessment	
--	--

Range Statement**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.

Modification	Approved design changes and /or replacement of components or sub-assemblies on electronic analog or digital systems
System	Interdependent equipment including computer, process, communication, digital, security/fire etc.
Test equipment	Continuity testers, ammeters, voltmeters, cathode ray oscilloscopes, frequency counters, signal generators, digital probes etc.

Unit Sector(s)

Unit sector	
--------------------	--

Co-requisite units

Co-requisite units	

Competency field

Competency field	Maintenance and diagnostics
------------------	-----------------------------