



Australian Government

Department of Education, Employment and Workplace Relations

MEM18057B Maintain/service analog/digital electronic equipment

Release: 1

MEM18057B Maintain/service analog/digital electronic equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers maintaining/servicing analog/digital electronic equipment.
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Application of the Unit

Application of the unit	This unit applies to the testing and maintenance of electronic equipment and systems, where a series of checks and pre-determined tests is applied in accordance with workshop manuals, testing procedures etc. Checks, tests and calibrations apply to a wide range of electronic systems and sub-assemblies used in engineering environment including telecommunication, process control, computer systems, security monitoring and alarm systems, etc. This unit also covers the replacement of faulty components identified during these tests. Where termination of cables is involved, Unit MEM10002B (Terminate and connect electrical wiring) and/or Unit MEM18063B (Terminate signal and data cables) must also be selected. If diagnosis and repair of electronic equipment is undertaken to component level, Unit MEM18056B (Diagnose and repair analog equipment and components) and/or Unit MEM18065B (Diagnose and repair digital equipment and components) should also be selected. Band: A Unit Weight: 6
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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
	MEM18001C	Use hand tools

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Undertake maintenance checks and routine tests	1.1. Electronic equipment, functions are determined and understood by reference to circuit diagrams, equipment manuals and/or consultation with equipment operator where appropriate. 1.2. Equipment built-in test functions are run and results are recorded to standard operating procedures where appropriate. 1.3. Built-in faults/status display is noted and recorded to standard operating procedures. 1.4. Equipment/sub-assemblies, components, connections, terminations etc. are checked visually and with correct and appropriate test equipment and techniques. 1.5. Faulty components are removed and replaced where appropriate. 1.6. All results are checked for compliance with manufacturers' requirements or specification, and results are recorded to standard operating procedures.
2. Maintain and/or service electronic equipment	2.1. Where appropriate, sub-assemblies are isolated according to standard operating procedures. 2.2. Electronic equipment/sub-assemblies are adjusted to specifications, manufacturers' requirements and/or standard operating procedures using correct and appropriate techniques, tools and test equipment.
3. Return electronic equipment to service	3.1. Equipment/sub-assemblies are returned into service utilising correct and appropriate techniques and procedures. 3.2. Equipment/sub-assemblies are checked for operational compliance to specifications and/or manufacturers' requirements, and documentation requirements are carried out to standard operating procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

REQUIRED SKILLS AND KNOWLEDGE

Required skills

Look for evidence that confirms skills in:

- following relevant circuit diagrams, manuals, specifications, schematics, maintenance records, supplier catalogues etc.
- locating and reading/recording built-in fault indicators
- obtaining error code interpretation documents
- running test functions and recording faults and/or equipment status indicated by built-in test functions/displays
- checking electronic equipment/sub-assemblies, components, connections and terminations for conformance to specifications
- removing and replacing components from the electronic equipment
- isolating electronic sub-assembly from the power supply
- adjusting/tuning and calibrating electronic equipment/sub-assemblies
- returning to service and specification of electronic equipment/sub-assembly
- recording test results

Required knowledge

Look for evidence that confirms knowledge of:

- function(s) of the electronic equipment
- electrical principles associated with electronic sub-assemblies
- implications of electro-static discharge (ESD) upon the electronic equipment
- procedures for running built-in test functions
- errors indicated by built-in devices
- procedures for recording faults and/or equipment status identified by built-in test functions/displays
- safe work practices and procedures
- procedures for checking the following for compliance with specifications: electronic equipment/sub-assemblies, components, connections, terminations
- tools and techniques to be used to remove/replace components from/into electronic equipment
- procedures for removing faulty components from electronic equipment
- procedures for fitting replacement components into electronic equipment
- operational specifications of the electronic equipment
- equipment and techniques to be used to test the electronic equipment
- procedures for testing electronic equipment
- procedures for recording electronic equipment test results
- procedures for isolating electronic equipment/sub-assemblies
- electrical hazards associated with electronic sub-assemblies
- procedures, tools, equipment and techniques to be used to adjust/tune and calibrate

REQUIRED SKILLS AND KNOWLEDGE

- the electronic equipment/sub-assembly
- operational specifications of the electronic equipment/sub-assembly
- procedures equipment and techniques to be used to return the electronic equipment/sub-assembly back into service
- procedures for recording/documenting the maintenance servicing of the electronic equipment/sub-assembly
- procedures, test equipment and techniques to be used to check the electronic equipment/sub-assembly for conformance to specification

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 maintain/service analog/digital electronic equipment. 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 on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then 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 maintaining/servicing analog/digital electronic equipment, 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 of competency. 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.

Electronic equipment

Amplifiers, analogue/digital hardware, communication, consumer audio/video, electronic appliances, scanning systems, security/fire systems, power supplies and test equipment etc.

Components

Discrete component, circuit boards, connectors, plug-in items, power supplies and the like

Test equipment

Includes the use of voltmeters, ammeters, cathode ray oscilloscopes, frequency counters, continuity testers etc.

Unit Sector(s)**Unit sector****Co-requisite units****Co-requisite units**

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics
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