



Australian Government

MEA263 Modify/repair aircraft component multi-layer printed circuit boards

Release: 2

MEA263 Modify/repair aircraft component multi-layer printed circuit boards

Modification History

Release 2. Equivalent to MEA263 Modify/repair aircraft component multi-layer printed circuit boards with amended prerequisite codes.

Application

This unit of competency requires application of hand skills (including those required to gain access to inner layers and repair outer layers after track repair), including high reliability hand soldering, and knowledge of standard practices and techniques in the repair of multi-layer printed circuit boards from aircraft avionic components that are repaired in aviation workshops during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

This unit is part of the Avionic Certificate IV training pathways.

The unit is used in workplaces that operate under the airworthiness regulatory systems of the Australian Defence Force (ADF) and the Civil Aviation Safety Authority (CASA).

Pre-requisite Unit

MEA261 Use electronic test equipment

MEA296 Use electrical test equipment in aviation maintenance activities

Competency Field

Aviation maintenance

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

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

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| 1. Inspect multi-layer printed circuit cards and associated components | 1.1 Relevant maintenance documentation, including component defect reports where applicable, is interpreted and matched by part and serial number |
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- 1.2 Preparation of work area and circuit card assemblies is appropriate to allow for effective detailed inspection of all substrate, circuit tracks, edge connectors and attached components, taking into account any static discharge procedures
 - 1.3 Circuit card assemblies are visually or physically inspected for physical integrity of substrate, circuit tracks, edge connectors and attached components
 - 1.4 Modification status is established to assist in determining repair requirements
 - 1.5 Defects are correctly identified and reported
2. Test multi-layer printed circuit cards and associated components
 - 2.1 Circuit card assemblies are correctly prepared and connected to the appropriate test facility in accordance with approved procedures, or circuit card assemblies are correctly prepared and connected in situ to allow required test procedures to be performed
 - 2.2 Circuit card assemblies are functionally tested in accordance with normal trade practice and approved maintenance documentation for evidence of serviceability or malfunction
 - 2.3 Circuit card assemblies, attached hardware and electronic components are electronically and/or physically adjusted/aligned in accordance with maintenance manuals or other prescribed procedures
3. Troubleshoot multi-layer printed circuit cards and associated components
 - 3.1 Maintenance documentation, physical inspection and test results are used, where applicable, to assist in fault determination
 - 3.2 Maintenance manual fault diagnosis guides, logical processes and test equipment are used appropriately to ensure efficient and accurate troubleshooting
 - 3.3 Component faults are located and the causes of the faults are clearly identified and recorded in maintenance documentation, where required
 - 3.4 Rectification requirements are determined
4. Dismantle multi-layer printed circuit cards
 - 4.1 Conformal/protective coatings are removed from the circuit card assembly to the extent required to effect

- and associated components
- necessary repairs and in accordance with maintenance manuals, industry or enterprise standards as applicable
- 4.2 Appropriate work health and safety (WHS) requirements are observed at all times during maintenance procedures and applicable material safety data sheets (MSDS) and personal protective equipment (PPE) are used
- 4.3 Circuit card assembly is dismantled to the extent necessary to allow repair of all identified faults
- 4.4 Parts for processing are correctly tagged and despatched
- 4.5 Parts for retention and re-fitment are correctly packaged and stored in accordance with approved procedures to avoid physical and electrostatic damage
- 4.6 Parts for disposal are correctly packaged and processed to accord with statutory requirements pertaining to dangerous goods
5. Assemble multi-layer printed circuit cards and associated components
- 5.1 Parts removed for access, and replacement parts, are collected ensuring appropriate modification status, component tolerances and assembly configuration is maintained
- 5.2 Any conformal/protective coatings removed are replaced to the approved standard of the equipment manufacturer, or industry standard, as appropriate
- 5.3 Rework techniques are in accordance with industry approval procedures and relevant WHS precautions are observed and applicable MSDS and items of PPE are used
- 5.4 Printed circuit card and associated components are assembled in accordance with maintenance manuals, and all electrical joints meet the approved standard of the equipment manufacturer, or industry standard, as appropriate
- 5.5 Circuit substrate material, circuit tracks, edge connectors and through-hole eyelets are reworked, as necessary, to restore printed circuit card to a serviceable condition

Foundation Skills

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

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Circuit card attached components include:

- Capacitors, resistors, wires, semiconductors, inductors, transformers, switches, connectors, multi-pin ICs, terminal posts and heat-sink materials, and will include electrostatic sensitive devices

Procedures and standards include:

- Procedures and standards for repair of printed circuit card assemblies, including a range of general engineering hand skills in addition to specific high reliability soldering skills.
- Standards applicable in a given situation will be defined by equipment manufacturers and/or regulatory authorities and the enterprise

Unit Mapping Information

Release 2. Equivalent to MEA263 Modify/repair aircraft component multi-layer printed circuit boards

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>