



Australian Government

# **Assessment Requirements for MEA229 Test and troubleshoot aircraft radio frequency navigation and communications systems and components**

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## **Modification History**

Release 2. Equivalent to MEA229 Test and troubleshoot aircraft radio frequency navigation and communications systems and components with amended prerequisite codes.

## **Performance Evidence**

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria under the specified conditions of assessment, and must include:

- applying relevant WHS practices
- using approved maintenance documentation and aircraft publications relating to the RF and communications system being maintained
- recognition of system and component defects/external damage, correct installation, and attaching hardware (including cabling/harnesses/transmission lines) and security in:
  - external communications systems:
    - HF
    - UHF
    - VHF
    - SATCOM and microwave
  - internal communications systems, including:
    - intercommunication
    - cabin intercommunication data systems (where applicable to the enterprise)
    - cabin network services (where applicable to the enterprise)
    - CVR
  - information systems, such as air traffic and information management systems, and network server systems (where applicable to the enterprise)
  - RF navigation systems:
    - ILS
    - VOR
    - ADF
    - GNS
    - ACARS
  - ELT systems
- applying logic processes, taking and interpreting system measurements to accurately and effectively isolating malfunctions within the systems

- performing system testing to isolate system faults and assess post-maintenance serviceability.

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the aircraft communication and RF navigation system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) is critical.

Evidence of transferability of skills and knowledge related to testing and troubleshooting is essential. This is to be demonstrated through application across a range of aircraft communication and RF navigation systems and components listed in the Assessment Conditions.

## Knowledge Evidence

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

- component attachment methods
- explaining the basic layout (block diagram level), function and operation of:
  - external communications systems:
    - HF
    - UHF
    - VHF
    - SATCOM and microwave
  - internal communications systems, including:
    - intercommunication
    - cabin intercommunication data systems (where applicable to the enterprise)
    - cabin network services (where applicable to the enterprise)
    - CVR
  - information systems, such as air traffic and information management systems, and network server systems
  - RF navigation systems:
    - ILS
    - VOR
    - ADF
    - GNS
    - ACARS
  - ELT systems
- explaining basic principles/functions relating to the above systems and associated with:
  - electromagnetic radiation and propagation
  - basic AC and DC circuit theory

- digital fundamentals
- analogue fundamentals
- antenna characteristics
- transmission line characteristics
- WHS requirements
- system and component maintenance requirements and troubleshooting procedures
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.

## Assessment Conditions

- Competency should be assessed in the workplace or simulated workplace using tools and equipment specified in the maintenance manuals. It is also expected that applicable general and special purpose tools, and test and ground support equipment would be used where appropriate.
- The application of testing procedures should clearly indicate knowledge of system operation, the relationship of individual components and the links with other systems (if applicable) within the limits of the aircraft/system fault-finding guide before undertaking any action. The work plan should take account of applicable safety and quality requirements in accordance with the industry and regulatory standards.
- The following conditions of assessment represent the requirements of the Regulators (ADF and CASA) and maintenance stakeholders and must be rigorously observed.
- A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements and performance criteria of the unit of competency are being achieved under routine supervision on at least one (1) system and its major components from each of the following groups:
  - control and sensing associated with cockpit radio, ground and flight crew communications including FM and AM modes of operation in the HF, UHF, and VHF bands, microwave systems and SATCOM
  - passenger communications, CVR, audio integration system, cabin intercommunication data systems and cabin network services (may be omitted if not applicable to the enterprise)
  - information systems, such as air traffic and information management systems, and network server systems (may be omitted if not applicable to the enterprise)
  - ILS, VOR, ADF, GNS, emergency beacons and ACARS
- and the following general associated components:
  - antennae, impedance audio matching devices, microphones and headphones, transmission lines, computer controls, line replaceable units, transmitters/receivers and indicators.
- This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide (for details refer to the Companion Volume Assessment Guidelines).
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).

- Where the unit is to be used for CASA licensing purposes the Assessor must also meet the criteria specified in the CASR Part 147 Manual of Standards.
- Individuals being assessed who have already attained any of MEA214 Inspect, test and troubleshoot aircraft basic communication and radio navigation systems and components, MEA215 Inspect, test and troubleshoot advanced aircraft communications systems and components, MEA216 Inspect, test and troubleshoot instrument landing systems and components, MEA234 Inspect, test and troubleshoot aircraft global navigation systems and components, MEA276 Maintain basic aircraft communication and radio navigation systems and components and MEA297 Maintain basic avionic systems and components, will have covered Element 1 plus a significant proportion of the Performance Criteria for Elements 2 and 3 and will have covered common Range of Conditions variables. The Log of Industrial Experience and Achievement records relating to these units may be accepted as also meeting the evidence requirements for this unit in the applicable areas.

## Links

Companion Volume implementation guides are found in VETNet -

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