



Australian Government

ICTRFN402 Select antenna system for radio communications

Release: 1

ICTRFN402 Select antenna system for radio communications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to interpret industry practices and theories, and select appropriate antenna equipment for small projects or parts of larger projects to a job specification.

It applies to individuals working alone or responsible for a technical team within regulatory authorities or other private and public organisations where they combine technical radio communications skills with broader organisational and administrative skills.

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

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare to select antenna system	1.1 Establish extent of project from design brief or specification within team environment 1.2 Obtain and review plans and drawings of existing or proposed installation site 1.3 Determine whether antenna system hardware requires secure hut or shelter 1.4 Determine antenna requirements and antenna feedline requirements from design brief or specifications, and research available commercial

	products 1.5 Determine earthing components to meet regulatory and earthing requirements of antenna system 1.6 Prepare antenna feedline route to comply with job specifications and regulatory requirements 1.7 Identify installation options, and assess against performance requirements and client requirements
2. Select antenna system	2.1 Evaluate potential antenna system solutions that satisfy required performance, budgetary and regulatory requirements, and are suitable for installation in specified environment 2.2 Make recommendations and select optimum antenna system
3. Document antenna system selection	3.1 Document calculations, final specifications and reasons for selection of antenna system 3.2 Prepare final report, including documentation and drawings of selected antenna system, and distribute to appropriate persons in accordance with enterprise policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 1.6, 2.1, 3.2	Examines and interprets plans, specifications and data from relevant sources to determine all technical requirements
Writing	3.1, 3.2	Uses clear, specific and industry related terminology in appropriate formats to complete and update workplace documentation
Numeracy	1.4, 2.1, 2.2	Evaluates and reviews numerical information when evaluating budgetary considerations, test results and technical data, and when converting values to ratios
Interact with others	1.1, 2.2, 3.2	- Collaborates with others as part of familiar routine activities and contributes to specific activities requiring joint responsibility and accountability - Understands what to communicate to relevant personnel in routine work situations
Get the work	1.2, 1.3,	Determines job priorities and works logically and systematically to undertake clearly defined and

done	1.5-1.7, 2.1, 2.2	familiar tasks • Identifies and assembles the instruments, equipment and other resources required to competently undertake the job • Uses formal decision making processes with support to clarify goals in more complex, non-routine situations • Gathers information and identifies and evaluates choices against a limited set of criteria • Applies formal problem solving processes, breaking difficult issues into manageable parts and identifying relevant options for action
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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTRFN402 Select antenna system for radio communications	ICTRFN4158A Select antenna system for radio communications	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTRFN402 Select antenna system for radio communications

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Performance Evidence

Evidence of the ability to:

- identify the antenna installation parameters
- select an antenna system required to meet the parameters
- determine the feedline installation from design and specifications
- document the recommendations for the antenna system selection
- comply with specifications and regulatory requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the principles of antenna wave propagation and the impact on antenna array design
- describe the principles of transmission line design and operation, and the impact on antenna design and installation including:
 - allowable loss in dB
 - characteristic impedance
 - mechanical characteristics
 - method of securing
 - radio frequency (RF) connector type
 - weatherproofing.
- describe the process for selecting an antenna design based on the application and performance requirements
- identify and describe a range of antenna systems

- summarise specific issues related to antenna installations and the creation of particular radiation patterns
- identify and describe the regulatory and industry standards relevant to antenna installations.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- antenna resources such as manufacturers' data sheets, specifications and catalogues
- transmission line resources such as manufacturers' data sheets, specifications and catalogues.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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