



Australian Government

ICTRFN405 Install radio communications base station equipment

Release: 1

ICTRFN405 Install radio communications base station equipment

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 skill and knowledge required to operate transmitters, receivers, feedline, multicoupling, data and voice equipment to connect a station in the very high frequency (VHF), ultra high frequency (UHF) or microwave bands.

It applies to individuals working as field officers from private or public organisations. They combine technical radio communications skills with organisational and administrative skills in a range of commercial and community contexts.

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 install radio communications base station equipment	1.1 Assess available installation options against client requirements and relevant legislation, codes, regulations and standards 1.2 Arrange access to site according to required procedure 1.3 Confirm equipment locations 1.4 Confirm base station equipment listings and manufacturer's and enterprise documents against installation brief 1.5 Review installation briefs in consultation with designers or

	manufacturers 1.6 Adjust tools and equipment to manufacturer's specification
2. Install equipment and terminate voice and data cables, power cables and radio frequency (RF) cables	2.1 Observe anti-static precautions when handling circuit cards and conduct all work in manner that is safe to self, fellow workers and the public 2.2 Install racks, frames and shelves as required for data and voice frequency (VF) interface equipment, transmitter and receiver 2.3 Position equipment and install according to manufacturer's specifications and design detail 2.4 Label equipment, distribution frames and blocks according to enterprise policy 2.5 Strip cables and terminate conductors according to manufacturer's specifications 2.6 Clean optical fibre connectors using appropriate cleaning techniques 2.7 Connect network termination unit (NTU) cables to data and VF interface unit via distribution frame 2.8 Connect data and VF cables to radio equipment 2.9 Connect digital and analog alarm inputs and outputs to supervisory, control and data acquisition (SCADA) controller 2.10 Connect power cables to rectifier, battery rack, circuit breakers and equipment according to manufacturer's and enterprise documents 2.11 Use computer or handheld device to program internal software in data and VF interface equipment, and transmitter and receiver 2.12 Interconnect multicoupling equipment to antenna feedline and transmitter and receiver units 2.13 Mount lightning protection equipment and earth wire according to specification
3. Connect receiver and transmitter multicoupling equipment to antenna feedline	3.1 Perform distance to fault measurement on antenna feedline 3.2 Perform return loss measurement of overall antenna system at transmitter and receiver connector points 3.3 Record test results
4. Finalise installation and complete preliminary tests and administrative	4.1 Complete preliminary tests to verify transmitter and receiver operation prior to commissioning 4.2 Complete installation report, test results and administrative tasks and forward to appropriate person according to enterprise policy 4.3 Dispose of packaging according to accepted environmental conditions

tasks	4.4 Notify appropriate person that base station is ready for commissioning and integration
-------	--

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, 2.3-2.5, 2.10, 2.13, 4.3	Recognises and interprets enterprise, regulatory and technical information from relevant sources to determine all specifications and frameworks
Writing	1.3, 2.4, 3.3, 4.2, 4.4	Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	1.3, 1.5, 4.4	- Liaises with internal and external personnel about technical requirements using specific and relevant language - Uses listening and questioning techniques to confirm understanding
Numeracy	3.1, 3.2	Evaluates and interprets technical data according to predetermined specifications and uses mathematical formulas to solve problems
Navigate the world of work	1.1, 2.1	- Takes personal responsibility for adherence to legal and regulatory requirements with specific reference to safety - Understands the nature and purpose of own role and associated responsibilities
Get the work done	1.2, 1.6, 2.2, 2.3, 2.5-2.13, 4.1-4.3	- Determines job priorities of self and others, and works logically and systematically to undertake clearly defined and familiar tasks - Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues - Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account - Diagnoses faults in different situations and implements standard solutions to network problems - Understands the purposes and specific functions of

		common digital systems and uses them effectively to complete routine tasks
--	--	--

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTRFN405 Install radio communications base station equipment	ICTRFN4177A Install radio communications base station equipment	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 ICTRFN405 Install radio communications base station equipment

Modification History

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

Performance Evidence

Evidence of the ability to:

- assess the client and installation requirements
- ensure relevant regulations and standards will be applied
- install radio communications base station equipment
- perform distance to fault measurement on feedline
- perform return loss measurement on feedline
- document and complete installation report.

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:

- explain the following:
 - anti-static precautions
 - radio frequency (RF) radiation hazard awareness
 - network termination unit
 - radio transmitter system
 - radio receiver system
 - multicoupler
 - supervisory, control and data acquisition (SCADA) system inputs and outputs
- outline the operation and purpose of testing equipment
- interpret the meaning of various test results
- identify network element and system specifications
- outline the principles and performance testing and fault finding techniques of telecommunications networks

- describe the practices and procedures for installation of radio communications equipment for the following:
 - fibre optic connector cleaning techniques
 - computer software installations to various devices
- identify and describe the appropriate test equipment to undertake performance and fault-finding techniques in telecommunications networks including:
 - distance to fault measurement
 - return loss measurement
 - terminate data and voice and RF cable.

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:

- sites on which base station installation can be conducted
- tools and equipment required for installation
- technical specifications, organisational documentation and requirements for installation and testing.

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

Links

Companion Volume implementation guides are found in VETNet -

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