Australian Government

# ICTWHS2081A Work safely in a radio frequency electromagnetic radiation environment

**Release 1**

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

# ICTWHS2081A Work safely in a radio frequency electromagnetic radiation environment

## Modification History

| Release | Comments |
|---|---|
| Release 1 | This unit of competency first released with *ICT10 Integrated Telecommunications Training Package version 2.0*. |

## Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to use organisational risk-control procedures when working with a risk of exposure to radio frequency (RF) electromagnetic radiation (EMR) hazards.

Note: In certain environments EMR may be referred to as electromagnetic emissions (EME). Users should confirm EMR regulatory requirements with the relevant federal, state or territory authority.

## Application of the Unit

The unit applies to site maintenance staff, technicians and installers who install or maintain equipment at installations that are sources of RF EMR.

## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

This unit contains employability skills.

# Elements and Performance Criteria Pre-Content

| Element | Performance Criteria |
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| *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.* |

# Elements and Performance Criteria

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| 1. Prepare to work in an RF EMR environment | 1.1 Identify ***characteristics of RF EMR*** and situations that can lead to exposure to ***RF EMR hazards*** |
| | 1.2 Identify ***potential effects*** of RF EMR on the human body and contributing factors that affect it |
| | 1.3 Identify ***relevant regulations and standards*** that apply to working with and controlling RF EMR hazards |
| | 1.4 Obtain and review RF EMR information required for work environment |
| 2. Assess RF EMR risks | 2.1 Assess potential RF EMR hazards in the telecommunications work environment |
| | 2.2 Estimate the likely field strength pattern of a potential RF EMR hazard |
| 3. Control RF EMR risks | 3.1 Identify ***typical organisational controls*** to manage and control identified RF EMR hazards |
| | 3.2 Choose and apply appropriate RF EMR controls |
| | 3.3 Report EMR exposure that exceeds acceptable levels according to ***organisational work health and safety (WHS) requirements*** |

# Required Skills and Knowledge

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

### Required skills

- communication skills to:
  - access information on organisational control measures for RF EMR hazards
  - determine response requirements
  - enable clear and direct communication to identify and confirm requirements and share information
  - follow instructions
  - report EMR exposure over acceptable levels
  - use language and concepts appropriate to cultural differences
- literacy skills to:
  - complete workplace documentation
  - document scope of work and work practices
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications relating to the work to be done
- numeracy skills to estimate and calculate measurements of ambient RF signals
- planning and organising skills to plan and set out work
- technical skills to:
  - access and understand site-specific instructions in a variety of media
  - use communications equipment.

### Required knowledge

- characteristics of RF EMR and sources of RF EMR
- nature of work undertaken close to sources of RF EMR
- relevant statutory and regulatory requirements relating to working safely with RF EMR
- control processes for managing safe exposure to RF EMR.

# 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.

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| **Overview of assessment** | |
| **Critical aspects for assessment and evidence required to demonstrate competency in this unit** | Evidence of the ability to:<br><br>• apply knowledge of the effect of RF EMR on the body<br>• locate, interpret and apply relevant information, standards and specifications for working safely with RF EMR<br>• identify organisational controls for exposure to RF EMR, including lock-out procedures and the use of personal protective equipment<br>• carry out two risk assessments demonstrating:<br>  • correct identification of risks and safety requirements recorded in a job safety analysis (JSA) sheet or safe work method statement (SWMS) or similar record sheet<br>  • correct selection and use of appropriate processes, tools and equipment to minimise RF EMR risk<br>  • compliance with regulations, standards and organisational procedures and processes<br>  • communicating and working effectively and safely with others. |
| **Context of and specific resources for assessment** | Assessment must ensure access to:<br><br>• induction procedures and requirements<br>• relevant specifications and work instructions<br>• tools and equipment appropriate to applying safe work practices<br>• support materials appropriate to activity<br>• workplace instructions relating to safe work practices and addressing hazards and emergencies<br>• relevant regulations, standards, specifications and manuals, including industry-related systems information. |
| **Method of assessment** | A range of assessment methods should be used to assess awareness of RF EMR hazards. The following examples are appropriate for this unit: |

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| | • direct observation of the candidate preparing and carrying out work close to sources of RF EMR<br>• oral or written questioning of the candidate to assess awareness of RF EMR hazards<br>• review of JSAs and documentation prepared by the candidate. |
| **Guidance information for assessment** | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.<br><br>This assessment may be carried out in a simulated environment to minimise risks of injury or loss.<br><br>Access must be provided to appropriate learning and assessment support when required.<br><br>Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed.<br><br>In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.<br><br>Where applicable, physical resources should include equipment modified for people with special needs. |

# 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.*

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| ***Characteristics of RF EMR*** include: | • electrical fields<br>• electromagnetic spectrum<br>• energy<br>• frequency<br>• magnetic fields<br>• non-ionising radiation<br>• radiation<br>• wavelength. |
| ***RF EMR hazards*** include: | • air navigation aids<br>• amateur and ham radio<br>• broadcast radio and television<br>• business services for voice and data<br>• cordless phones<br>• emergency services<br>• marine safety and operations<br>• mobile phones and associated towers<br>• radar. |
| ***Potential effects*** relate to: | • brain cancer<br>• dysaesthesia (abnormal sensation)<br>• eye damage<br>• infertility<br>• risk to pregnancy<br>• tissue heating. |
| ***Relevant regulations and standards*** may include: | • appropriate Australian Communications and Media Authority (ACMA) technical standard requirements relating to RF EMR and sources of RF EMR<br>• Australian Communications Industry Forum (ACIF) standards and codes<br>• Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Radiation Protection Standard - Maximum Exposure Levels to Radiofrequency Fields - 3 kHz to 300 GHz. |
| ***Typical organisational controls*** may include: | • appropriate signage<br>• commitment to the exposure limits set out in the |

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| | ARPANSA Standard<br>• controlled access and sign-in at each site for employees, contractors and visitors<br>• creation of locked out procedures and areas<br>• identification of areas where equipment generates RF EMR<br>• identification of the boundaries of RF EMR hazard areas<br>• induction processes<br>• placement assessments<br>• prohibition of workers from any site where RF EMR hazard exceeds the limit for occupational exposure<br>• provision of appropriate testing equipment, such as personal monitor or radiation meter<br>• restricted access to the general public<br>• secure barrier around the RF EMR hazard areas<br>• training for staff and contractors. |
| ***Organisational WHS requirements*** relate to: | • Australian standards<br>• construction industry WHS standards and guidelines<br>• duty of care<br>• health and safety representatives, committees and supervisors<br>• industry WHS standards and guidelines<br>• licences, tickets and certificates of competency<br>• National Code of Practice for Induction Training for Construction Work<br>• national safety standards<br>• person conducting a business or undertaking (PCBU) or officer of the PCBU safety codes of practice<br>• WHS and Welfare Acts and regulations. |

# Unit Sector(s)

Work health and safety - Telecommunications