



Australian Government

Department of Education, Employment and Workplace Relations

CUFBRT403A Ensure quality of broadcast output

Revision Number: 1

CUFBRT403A Ensure quality of broadcast output

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to monitor and maintain quality broadcast output from television and/or radio broadcasting facilities. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.
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Application of the Unit

Application of the unit	Broadcast technicians or technologists apply the skills and knowledge described in this unit. Although they work under the direction of a senior technologist or broadcast engineer, they are expected to work with minimum supervision and may, on occasions, be responsible for supervising others. This unit covers the monitoring the quality and performance of equipment in television and/or radio studios. Skills associated with the maintenance of equipment and facilities are covered in: • CUFBRT402A Maintain broadcasting facilities and equipment. Note: To meet the requirements of this unit, candidates need to demonstrate competency in the maintenance of facilities and equipment for either television or radio. The Required Skills and Knowledge section should be tailored accordingly.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Maintain quality control for broadcast systems	1. Ensure correct output level devices are placed in circuit to correct for losses, deficiencies or degradation 2. Make adjustments to broadcasting equipment, with reference to equipment and maintenance manuals as required 3. Contact play out source to adjust levels if required 4. Monitor and track the signal source 5. Locate problems and determine arrangements for rectification in consultation with relevant personnel 6. Monitor performance and condition of broadcast systems and broadcasting equipment according to enterprise procedures 7. Complete workplace documentation as required
	8. Confirm purpose of data analysis 9. Obtain relevant test data and promptly resolve data inconsistencies 10. Analyse data using approved methods and procedures 11. Check that data analysis is accurate and thorough and takes account of test conditions 12. Compare analysis against product or asset specification and identify faults or variations from specification 13. Record results of analyses in the appropriate format
Rectify distortion problems	14. Use appropriate test equipment to test that broadcast outputs are within specification and phase 15. Use level meters to check frequency response 16. Report noise and distortion problems to relevant personnel 17. Negotiate solutions to distortion problems with the originator/source according to enterprise procedures 18.
Monitor quality of broadcast output	19. Check/calibrate monitoring equipment to ensure it is functioning correctly 20. Analyse broadcast output to identify problems and faults. 21. Check inbound and outbound equipment, satellite and telecom units 22. Monitor quality of transmission according to enterprise operating procedures 23. Carry out monitoring activities effectively with

ELEMENT	PERFORMANCE CRITERIA
	minimum disruption to broadcasting operations 24. Determine problems with transmission and take remedial action as required 25. Record details of monitoring activity according to enterprise procedures and <i>regulatory and industry standards</i>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- communication and literacy skills sufficient to:
 - interpret information from system drawings, equipment specifications and technical handbooks
 - liaise effectively with customers/clients on the job, including ability to communicate technical terminology in plain English
 - complete workplace documentation
 - work and communicate effectively as a team member, including seeking advice and assistance with non-routine equipment or system malfunction
- planning and problem solving skills sufficient to:
 - diagnose electronic faults in specified equipment and broadcast systems
 - plan maintenance activities to cause minimum disruption to normal work flows
- technical skills sufficient to:
 - use test equipment in a safe manner to undertake regular monitoring of broadcasting equipment and facilities
 - carry out measurements and adjustments, such as amplitude and frequency response, distortion, noise performance, phase, timing, bit error rate (BER), data network performance and mechanical performance
 - adjust sync timing and sub-carrier phasing
 - adjust signal timing for analogue components
 - judge quality of sound and/or vision output
- self-management skills sufficient to:
 - prioritise work tasks
 - meet deadlines
 - seek expert assistance as required
- numeracy skills sufficient to interpret and record test measurement data

Required knowledge

- light, human vision and colourimetry:
 - visible light and its position within the electromagnetic spectrum
 - structure and function of the human eye
 - human vision and the ability to perceive motion from a series of still images
 - colourimetry and the television system
- features of test measurement equipment, including:
 - waveform monitor
 - peam program meter (PPM)

REQUIRED SKILLS AND KNOWLEDGE

- reference signals, e.g. video or audio line-up signals
- performance limitations of signal paths, e.g. cliff effect
- variations of test methods, e.g. waveform display errors, meter errors
- effect of the measurement equipment itself on the measured system
- industry knowledge, including:
 - structure of the broadcasting industry
 - roles and responsibilities of personnel in the broadcasting industry
 - impact of technological changes on maintenance procedures
 - correct terminology, e.g. symbols, terminology and conventions used for electrical, mechanical and electronic drawings and specifications
 - regulatory and industry standards relevant to field of work (see range statement for examples)
 - product knowledge, e.g. manufacturer standards and specifications
 - sources of advice, information, and technical support
 - issues and challenges that arise in the context of maintaining broadcasting facilities and equipment
- features and operational standards for enterprise-specific equipment, facilities and systems, e.g.:
 - audio transmission systems, e.g. basic radio systems, AM/FM transmission, FM VHF transmission, digital radio, streaming audio
 - television transmission systems, e.g. analogue, digital, multi-channelling and high definition
 - aspect ratios, e.g. aspect ratio converters (ARCs), wide-screen signalling (WSS) and aspect format descriptors (AFD) codes
 - signal routing system, e.g. principles of signal routing, network switching, source selection in the radio environment, network routing systems, timed switching systems
 - server-based audio systems
 - audio mixing systems, e.g. analogue on-air mixing systems, analogue production mixing consoles, digital on-air mixing systems, digital production mixing systems, digital production environments
- television standards, e.g. PAL, NTSC, SECAM, digital
- OHS requirements as they relate to maintenance operations, e.g. protective clothing and personal safety systems; safe isolation of equipment, such as mechanical, electricity, gas, air or fluids; weight loading; and manual handling

Evidence Guide

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.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- correct interpretation of manufacturer specifications to maintain audio and/or image quality
- ability to work as a team member with minimum supervision
- efficient monitoring of performance and quality of either radio **or** television broadcast systems according to enterprise requirements
- ability to complete scheduled work on time.

Context of and specific resources for assessment

Assessment must ensure:

- access to a range of equipment used in either radio or television broadcasting facilities
- access to regulatory and industry standards
- access to appropriate learning and assessment support when required
- use of culturally appropriate processes and techniques appropriate to the language and literacy capacity of learners and the work being performed.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance
- observation of the candidate monitoring the quality and performance of broadcasting equipment or systems
- written or verbal questioning to test knowledge as listed in the required skills and knowledge section of this unit.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- CUFBRT401A Install or upgrade broadcasting

EVIDENCE GUIDE

	equipment and facilities • CUFBRT402A Maintain broadcasting facilities and equipment • ICTTC101C Locate and diagnose electronic faults • UEENEEH080A Diagnose and rectify faults in digital transmission systems.
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Range Statement

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.

Broadcasting equipment may include:

- master control
- outside broadcast van
- post-production facilities
- studio.

Signal source may be:

- multiple
- single.

Relevant personnel may include:

- architect
- building personnel
- designers
- equipment operators
- floor manager
- head of department
- other specialist personnel
- other technical personnel
- producer
- production assistant
- production designer
- production manager
- station manager
- subcontracted personnel
- supervisor
- technical director.

Faults in ***performance and condition*** of equipment may include:

- electrical, e.g.:
 - power supply
 - earthing
 - motors
 - indicators
 - switches
 - relays
- electronic, e.g.:
 - signal presence
 - waveform

RANGE STATEMENT	
	• component condition • mechanical, e.g.: • wear and tear • alignment • movement • interference.
Broadcast systems may include:	• analogue • computer • digital.
Documentation may include:	• fault reports • history cards • instruction sheets • logbooks • purchase orders.
Methods and procedures may include:	• computer modelling • databases • flow/process diagrams • graphical analysis • spreadsheets.
Test equipment may include:	• audio test set • automatic measuring equipment • computer • digital analysis equipment • multimeter • oscilloscope • RF measurement test set • test signal generator • video waveform monitor.
Broadcast outputs may relate to:	• audio transmission • video transmission.
Monitoring equipment may include:	• picture monitor • vectorscope • video waveform monitor.
Regulatory and industry standards may include:	• ACMA technical standards • Australian and international standards • Australian building codes and regulations • confined spaces regulations • environmental legislation • fire regulations

RANGE STATEMENT

	• heritage legislation • industry codes of practice • noise abatement • OHS • trade practices legislation.
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Unit Sector(s)

Unit sector	
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Competency field

Competency field	Media and entertainment production - broadcast technology
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Co-requisite units

Co-requisite units		