

1. Module details**Module name****TV Micro Controllers****Module duration**

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 36 - 40 hours.

Module code

NUE901

Discipline code

0703230

2. Module purpose

This module provides students with the knowledge and skills to diagnose and fault find the control sections of a typical television receiver.

3. Prerequisites

NUE101 Introduction to Television.

4. Relationship to competency standards

This module provides some of the knowledge and skills underpinning competence in the following standards: Metals and Engineering Industry National Competency Standards, Units 18.45A, 18.56A, 18.65A. National Electrotechnology Industry Standards, Units NES205, NES302, NES303, NES305, NES306, NES402, NES403, NES406, NES407.

5. Content**Micro controller**

Block diagram

I/O

Typical faults and fault finding

Remote controls

Block diagram of transmitter and receiver

Service

Typical faults

Fault funding

On screen display

Circuitry

Adjustments

Fault finding

Field storage systems

Circuitry

Picture-in-picture

Typical faults

Teletext

Operation

Circuitry

Typical faults

6. Assessment strategy

Assessment methods

Assessment should be progressive reflecting an holistic approach to ensure the module purpose is met. To assist in ensuring validity, reliability and fairness assessment instruments should include practical exercises, assignments and written tests consisting of a number of item types, such as multiple choice, short answer and problem solving.

Conditions of assessment

Normally learning and assessment will take place in a classroom / laboratory environment.

7. Learning outcome details

Learning outcome 1

Describe the operation of, and diagnose faults in, the microprocessor in a typical TV receiver.

Assessment criteria

- 1.1 Draw a basic block diagram of a typical microprocessor used in a TV set.
- 1.2 Identify the input and output pins of a typical TV microprocessor and state the functions of the scanned inputs.
- 1.3 Describe the functions of the clock input and the symptoms of its failure.
- 1.4 Describe the television turn-on process from standby mode.
- 1.5 Describe typical fault finding techniques.
- 1.6 Diagnose and fault find as appropriate.

Learning outcome 2

Describe the operation of typical television remote control systems and describe typical faults.

Assessment criteria

- 2.1 Dismantle a typical hand held remote control.
- 2.2 Service remote control transmitter.
- 2.3 Test the remote control systems.
- 2.4 Identify the receiver remote control section and describe its operation.
- 2.5 Describe typical faults.
- 2.6 Repair a typical remote control system to component level where appropriate.

Learning outcome 3

Describe the operation of the on-screen display block or circuit in a typical TV receiver and diagnose and fault find where appropriate.

Assessment criteria

- 3.1 Identify the on screen display circuitry in typical TV sets and describe their operation.
- 3.2 Perform appropriate adjustments.
- 3.3 Measure appropriate waveforms in the on-screen circuitry.
- 3.4 Describe typical faults.
- 3.5 Diagnose and fault find to component level as appropriate.

Learning outcome 4

Describe the function, operation and fault finding of field storage techniques in typical TV receivers.

Assessment criteria

- 4.1 Identify the field storage circuitry and describe its operation.
- 4.2 Describe the operation of the picture-in-picture facility.
- 4.3 Describe typical faults and repair techniques.

Learning outcome 5

Describe the operation of the teletext system and describe typical faults.

Assessment criteria

- 5.1 Describe the operation of the teletext system.
- 5.2 Demonstrate use of teletext features.
- 5.3 Identify the teletext section in a typical TV receiver.
- 5.4 Describe typical faults and repair techniques.

8. Delivery of the module

Delivery strategy

Delivery strategies must be suitable for learning both theoretical and practical aspects described in the module purpose. It is considered that the most effective way to achieve this is by the integration of theory and practice where students learn by experimentation and through research and laboratory reports. It is recommended that learning and assessment be facilitated in an holistic manner which may require a learning outcome sequence other than that indicated in the module.

Resource requirements

Resources should be sufficient for students to carry out experiments on an individual basis. This will require a range of typical TV receivers and test equipment.

Useful references include:

Ibrahim KF 1994, *Television Receivers*
Longman Essex, England
ISBN 0-582-086175

Liff A et al 1993, *Colour and Black and White Television*
Prentice Hall, Englewood Cliffs
ISBN 0-13-150012-0

Zarach et al 1985, *Television: Principles and Practice*
MacMillan, Hampshire

Trundle E 1996, *Newnes Guide to TV and Video Technology*
Butterworth-Weinermann Oxford
ISBN 07506 23748

Botto D 1992, *A Basic Guide to Colour TV and VCRs*
Electronics Australia, Federal Publishing, Alexandria

Occupational health and safety requirements

A safe and healthy environment will be provided for students and teachers as well as safe procedures with regard to learning / teaching activities.