

**1. Module details****Module name****MATV - Small Commercial Antenna Distribution Systems****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**

NUE907

**Discipline code**

0703230

**2. Module purpose**

This module will provide students with the knowledge and skills to design, test, and fault find a television signal distribution system supplying signals to up to twenty outlets, fed from a master antenna (or combination antenna) throughout a single property or building.

**3. Prerequisites**

NUE101 Introduction to Television.

NUE801 TV Antenna Systems.

**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****MATV distribution systems**

wide band distribution amplifiers  
single channel distribution amplifiers  
directional couplers  
trunked Tee feed distribution system  
signal equalisers  
outlet isolation

**Channelised distribution systems**

single channel amplifiers  
high level launch amplifiers  
signal equalisers

**Signal reticulation**

VCR signals  
signal combiners

**System design**

design factors  
component specifications

	<p><b>Fault Finding</b> measurement typical faults symptoms</p>
<b>6. Assessment strategy</b>	
<b>Assessment methods</b>	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.
<b>Conditions of assessment</b>	Normally learning and assessment will take place in a classroom / laboratory environment.
<b>7. Learning outcome details</b>	
<b>Learning outcome 1</b>	<b>Describe a MATV distribution system.</b>
<b>Assessment criteria</b>	<p>1.1 State the limitations of ‘splitter only’ distribution systems</p> <p>1.2 Describe the operating principles and advantages of using directional coupler signal distribution in multiple outlet systems.</p> <p>1.3 Define the terms “insertion loss” and “isolation loss” associated with directional couplers and interpret these figures from manufacturer’s data.</p> <p>1.4 State the applications for “trunk tap” and ‘distribution tap’ directional couplers within a system.</p> <p>1.5 Explain the terms “head end”, “main trunk” and “distribution trunk” within a MATV system and list the components likely to be found in each.</p>
<b>Learning outcome 2</b>	Describe the operation of a channelised head-end system.
<b>Assessment criteria</b>	<p>2.1 Draw a block diagram and describe the operation of a channelised head-end system.</p> <p>2.2 Describe the advantages of using individual single channel distribution amplifiers over broad band distribution amplifiers in some systems.</p> <p>2.3 State the factors to be considered when selecting channelised system hardware.</p>

<b>Learning outcome 3</b>	<b>Describe the principles of reticulating VCR or other video signals through a distribution system.</b>
<b>Assessment criteria</b>	<p>3.1 Draw a block diagram of a VCR and off air distribution system.</p> <p>3.2 Describe how off air and VCR signals can be combined using directional couplers and splitters within a MATV system.</p>
<b>Learning outcome 4</b>	<b>Design an MATV distribution system for up to 20 outlets.</b>
<b>Assessment criteria</b>	<p>4.1 Sketch the plan for a 10-20 outlet master antenna distribution system.</p> <p>4.2 Given a set of specifications, select appropriate hardware.</p> <p>4.3 Calculate the desired signal level at relevant points in dB<math>\mu</math>V and dBmV for both VHF and UHF channels and describe the problems associated with incorrect signal levels.</p> <p>4.4 Describe the effects of incorrect signal levels.</p> <p>4.5 Use a field strength meter to measure signals levels at appropriate points in the distribution system.</p>
<b>Learning outcome 5</b>	<b>Carry out performance testing and fault find a multiple outlet antenna system.</b>
<b>Assessment criteria</b>	<p>5.1 Describe and carry out performance testing of multiple outlet antenna systems.</p> <p>5.2 Carry out fault finding within an antenna system.</p>
<b>8. Delivery of the module</b>	
<b>Delivery strategy</b>	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 cables, antenna systems and measuring instruments.

Useful references include:

Hills Industries, *Antenna Installation Manual*  
Hills Industries, Edwardstown, SA 5036  
ISBN 007573413

ESIA, *Antenna Standards*  
Electronic Services Industry Association  
PO Box 154 Carlingford, NSW 2118

AS 3815-1998, *A guide to coaxial cabling in single and multiple premises*  
Standards Australia, Homebush

AS 1367-1985, *Multiple outlet distribution systems – sound and vision*  
Standards Australia, Homebush

**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.