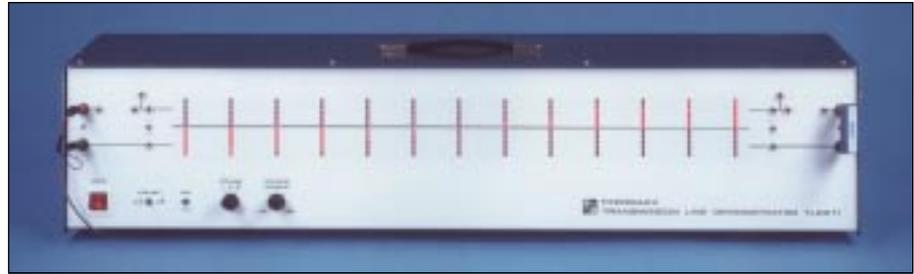


Transmission Lines, Antennas & Radio

Transmission Line Demonstrator TLD511

This system is provided to demonstrate the characteristics of transmission lines in a graphic manner. The system uses a simulated line that effectively displays at low frequencies the high frequency characteristics of a transmission line so that they can be easily observed. The line characteristics can be easily adjusted by the operator. The line is completely symmetrical so that either end may be regarded as an input or an output. The unit features large, bright LED's, a built-in step function generator and is supplied with a manual.



Curriculum Coverage

- Propagation of a wave front
- Propagation of a sinewave
- Effect of wavelength
- Attenuation and dispersion
- Terminations
- Considering reflection, standing waves & characteristic impedance
- Partial reflection, standing waves and superposition of incident and reflected waves
- $n\lambda/2$ lines
- Resonance and effect on it of attenuation
- One to one impedance transformations
- Lines with dissimilar lossless terminations
- Resonance, capacitive detuning
- Reactive line impedance either side of resonance

Antenna System Demonstrator ASD512

This is a fully operational Antenna System Demonstrator working at a frequency of 167.2MHz, giving a half-wave element of approximately 90cm. It has been designed to provide an ideal classroom demonstrator. The system is provided with a kit of parts allowing many types of antenna to be constructed, making the system versatile as a demonstrator of antenna principles and practice. The system has two hand-held detectors which show relative magnitudes of voltage and current fields around the antenna and the field strength of the antenna. Practical demonstrations are described in the accompanying manuals, illustrating the principles involved and introducing the student to the various basic concepts of most types of antennas in common use.



Curriculum Coverage

- Basic theory of radiation
- Radiating and non-radiating systems
- Feeders
- Radiation resistance
- Drive point impedance and ground resistance
- Physical and electrical length
- Directional antennas and radiation patterns
- Parasitic arrays and Antenna gain
- Antenna with folded elements
- Slot radiators
- Three dimensional polar diagrams
- Loop Antenna

Telecommunications

AntennaLab 57-200

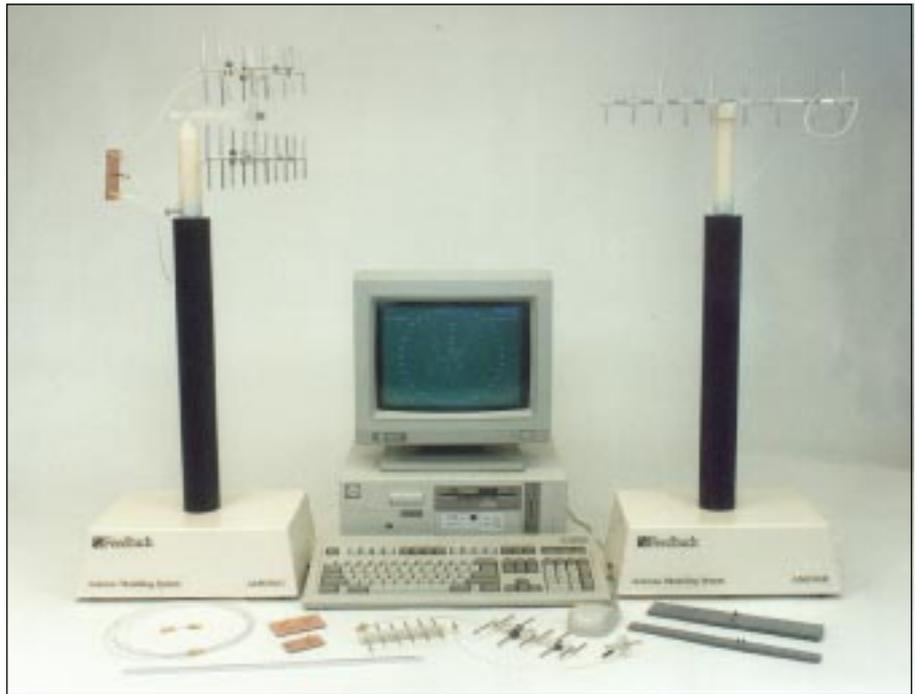
This is a unique system designed to be used in two distinct ways: it can be used for teaching and demonstrating common antenna configurations at all levels of study and as a design tool by those engaged in research and development.

The system operates in conjunction with a PC and is supported by **Discovery** interactive software and NECWIN simulation software. The equipment comprises two towers, one being a low power Transmitter, controlled by a frequency synthesizer. The second contains a frequency synthesiser controlled Receiver. The antenna to be investigated is mounted on top of the Transmitter tower. The PC controls the transmitter tower and rotates it through 360 degrees and displays the following characteristics.

- Frequency Response
- Signal Level
- Polar Diagrams
- E & H Planes in 3 Dimensions
- Return Loss Plots
- Bandwidth

A selection of components are provided allowing the following antenna's to be constructed:

- Monopoles ● Dipoles ● Log Periodic ● Yagis - Stacked & Bayed ● Horn ● Parabolic Dish



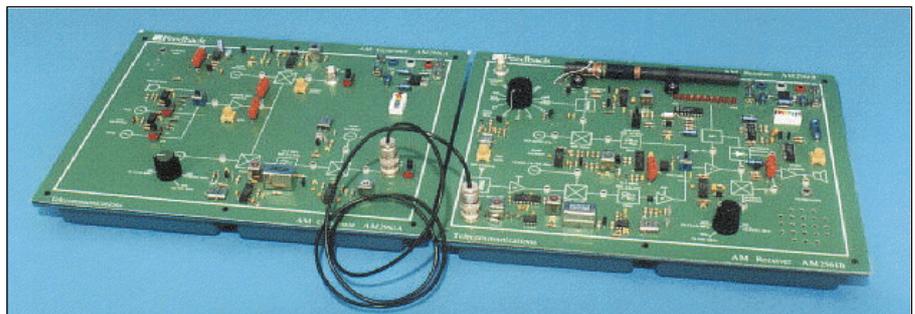
Curriculum Coverage

- Familiarisation
- The Dipole in free space
- Effects of the surroundings
- Dual sources
- Gain, Directivity and Aperture
- Ground Reflections
- The Monopole
- Phased Monopoles
- Resonance, Impedance and standing waves
- Return loss & VSWR measurements
- Parasitic Elements
- Multi-element Parasitic Arrays
- Stacked and Bayed Arrays
- The Log Periodic Antenna
- The Horn Antenna
- The Dish Antenna
- Projects

AM & FM Radio AM2961 & FM2962

These are two autonomous systems, one for AM & one for FM. Each contains a generator and a receiver. Both are capable of transmission and reception of their respective format.

Faults can be set on both the Transmitter & Receiver in order to help teach troubleshooting techniques.



AM Curriculum

- Modulation & demodulation
- Mixing techniques
- Filtering
- RF and Audio AGC
- RF, IF and AF amplification
- LC, Crystal & VCO oscillators
- Single & Double sideband

FM Curriculum

- Familiarisation with FM Multiplex stereo transmission and reception
- Frequency modulation
- Stereo multiplex encoding, pre-emphasis, pilot tones & sub-carriers
- FM reception, filtering, limiting and AFC
- FM demodulation
- Stereo multiplex decoding, de-emphasis & audio amplification

For further information on these and other equipment in the Feedback range please contact

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