

Features:

- * Microwave Trainer with 21 Antennas like Parabolic dish, Patch arrays, Horn etc.
- * X Band DRO stabilized antenna transmitter and receiver
- * Microwave power meter receiver with 0.1dB resolution 70 dB dynamic range.
- * Directional Coupler for VSWR/ Return Loss.
- * Stepper motor antenna rotator with 1 degree resolution
- * RS232 interface with polar/cartesian plotting software
- * Microstrip antennas
- * All antenna gain, return loss and pattern plot provided
- * 1000 location Frequency and level storage in receiver
- * Ability to transfer Digital signal over microwave.

1. X band DRO Transmitter



Frequency : X band Dielectric Resonator stabilized MESFET source on microstrip
 Accuracy : 0.1%
 Modulation: CW/ASK(DC-15 KHz) Ext
 RF Level: 1mW typical
 Output Z : 50 ohms with SMA connector

2. X Band DRO Receiver



Frequency : X band
 Microwave receiver power meter
 Accuracy : 0.1%
 Sensitivity : -70 dBm typical
 Input Z: 50 ohms with SMA connector

3. Signal Analyser/Stepper motor controller



Measure : Microwave power level in dBm & dBu
 Resolution : 0.1dB
 Demod : Digital out
 PC interface : RS 232 to PC for antenna Plotting using supplied software
 Display : 16x2 backlit LCD for angular Position and power level
 Rotation : 0-359 degrees
 Control : Menu , Enter , Escape, Up & Down
 Angle : User selectable steps of 1, 5, 10, 45 degrees
 Memory : 1000 memories for storing positions and RF levels for quick recall
 Auto Mode : Automatic rotation in user steps with Datalogging facility.
 Indication : Beep on reaching the selected Position
 Power Supply : 100-240V AC, 50-60 Hz

1. Monopole



S11: >6dB
 Bandwidth: 10.3 ± 0.5GHz
 Gain: 1dB
 Beamwidth : E plane 80°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector: SMA

2. Dipole



S11: >6dB
 Bandwidth: 10.3 ± 0.5GHz
 Gain: 2dB
 Beamwidth : E plane 60°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector: SMA

3. Slot WG narrow wall



S11: >6dB
 Bandwidth: 10.3 ± 0.5GHz
 Gain: 4dB
 Beamwidth : E plane 60°
 Beamwidth : H Plane 60°
 Polarisation : Linear
 Front to Back Ratio: 10dB

4. Slot WG broad wall



S11: >6dB
 Bandwidth: 10.3 ± 0.5GHz
 Gain: 4dB
 Beamwidth : E plane 60°
 Beamwidth : H Plane 60°
 Polarisation : Linear
 Front to Back Ratio: 10dB

5,6. Helix (LHCP) X2Nnos



S11: >6dB
 Bandwidth: 10.3 ± 0.5GHz
 Gain: 16dB
 Beamwidth : E plane 40°
 Beamwidth : H Plane 40°
 Polarisation : Circular LH
 Front to Back Ratio: >10dB
 Connector: SMA

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7,8. Helix (RHCP) X2 Nos



S11: >6dB
 Bandwidth: 10.3 ± 0.5 GHz
 Gain: 16dB
 Beamwidth : E plane 40°
 Beamwidth : H Plane 40°
 Polarisation : Circular RH
 Front to Back Ratio: >10dB
 Connector: SMA

13. Parabolic Dish



S11: >10dB
 Bandwidth: 10.3 ± 0.5 GHz
 Gain: 16dB
 Beamwidth : E plane 10°
 Beamwidth : H Plane 20°
 Polarisation : Linear
 Front to Back Ratio: 25dB

9. Patch Microstrip



S11: >6dB
 Bandwidth: 10.3 ± 0.5 GHz
 Gain: 6dB
 Beamwidth : E plane 10°
 Beamwidth : H Plane 20°
 Polarisation : Linear
 Front to Back Ratio: >10dB
 Connector: SMA

14. Conical Horn



S11: >6dB
 Bandwidth: 8.2 - 12.4 GHz
 Gain: 10dB
 Beamwidth : E plane
 Beamwidth : H Plane
 Polarisation : Linear
 Connector: SMA

10. Patch Microstrip Array 2x1



S11: >6dB
 Bandwidth: 10.3 ± 0.5 GHz
 Gain: 6dB
 Beamwidth : E plane 10°
 Beamwidth : H Plane 20°
 Polarisation : Linear
 Front to Back Ratio: >10dB
 Connector: SMA

15. Pyramidal Horn



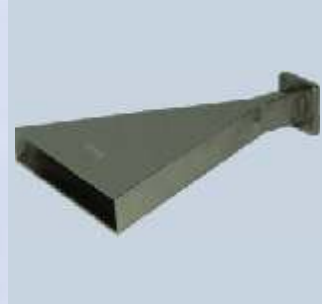
S11: >20dB
 Bandwidth: 8.2 - 12.4 GHz
 Gain: 16dB
 Beamwidth : E plane 20°
 Beamwidth : H Plane 22°
 Polarisation : Linear

11. Patch Microstrip Array 4x1



S11: >6dB
 Bandwidth: 10.3 ± 0.5 GHz
 Gain: 10dB
 Beamwidth : E plane 10°
 Beamwidth : H Plane 20°
 Polarisation : Linear
 Front to Back Ratio: >10dB
 Connector: SMA

17. E Plane Sectoral Horn



S11: >20dB
 Bandwidth: 8.2 - 12.4 GHz
 Gain: 13dB
 Beamwidth : E plane 20°
 Beamwidth : H Plane 80°
 Polarisation : Linear

12. Patch Microstrip Array 4x4



S11: >6dB
 Bandwidth: 10.3 ± 0.5 GHz
 Gain: 11dB
 Beamwidth : E plane 10°
 Beamwidth : H Plane 20°
 Polarisation : Linear
 Front to Back Ratio: >10dB
 Connector: SMA

18. H Plane Sectoral Horn



S11: >20dB
 Bandwidth: 8.2 - 12.4 GHz
 Gain: 10dB
 Beamwidth : E plane 100°
 Beamwidth : H Plane 22°
 Polarisation : Linear

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19. Dielectric Rod



S11: >6dB
 Bandwidth: 10.3 ± 0.5 GHz
 Gain: 1dB
 Beamwidth : E plane 50°
 Beamwidth : H Plane 60°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector: SMA

20,21, 22. Waveguide to Coax adapter X 3 Nos



S11: 10dB
 S12: 1.5dB
 Frequency: 8.2-12.4 GHz
 Connector: SMA

23. Multi Hole Directional Coupler



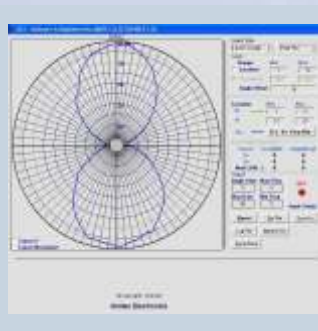
Coupling: 10dB
 Directivity: 30dB
 Insertion Loss: <1.5dB
 Bandwidth: 8.2-12.4 GHz

24. Stepper motor controlled antenna monopod



Rotation: 0-359 degree
 Azimuth
 Mount: Waveguide WR990 E or H, 1/2" BSW
 Offset: Adjustable for phase center
 RCS: Low Non magnetic, non conductive, low dielectric
 Motor: Stepper Motor with heavy duty reduction gearbox

25. Windows Software



RS232 interface with polar plotting software with log, linear cartesian and polar plots, Multiple pattern overlay, Double cursor measurement, Zoom, Colour editing, 1000 location editor, Absolute/Relative, 3dB/10dB beam-width measurement

26. Accessories

Non-radiating monopod for transmitting Antenna
 All necessary connectors and cables
 Students activity, Teachers Reference Manual
 SMA - N, N-N Adapter,
E-Manual: Installation Video for ease of Learning
Dimensions: 58X52X44cm.
Weight: 21kg.
Warranty: 3 yrs

List of Experiments:

- To measure the variation of field strength of radiated wave, with distance from transmitting antenna.
- To plot the radiation pattern of an omnidirectional antenna.
- To plot the radiation pattern of a directional antenna
- To measure axial ratio and cross polarisation discrimination of vertically horizontally and circularly polarized antennas.
- To measure the VSWR of the antenna
- To demonstrate that transmitting and receiving patterns of an antenna are equal and hence confirm the reciprocity theorem of antennas
- To plot the radiation pattern (E & H Plane Polar & Cartesian Plots on Log/Linear scale of an antenna on PC.
- To measure the ANTENNA PARAMETERS (directivity, gain, beam width (Half Power/10dB), front to back ratio, plane of polarization, cross polarization discrimination, side lobe level and its angular position from polar plot, VSWR/return loss) of Dipole antenna.
- To measure antenna parameters of Horn (E, H, Pyramidal) & open waveguide antenna.
- To measure antenna parameters of conical Horn antenna
- To measure antenna parameters of monopole antenna
- To measure antenna parameters of Slot(Narrow Wall & Broad Wall) Antenna
- To measure antenna parameters of Parabolic dish antenna
- To measure antenna parameters of Patch array antenna
- To measure antenna parameters of Helix (RHCP & LHCP) antenna. To measure the cross polarization discrimination for circular polarisation.
- To setup microwave data communication link.

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