amitec MICROWAVE ANTENNA TRAINING LAB MAT10

Features:

* Microwave Trainer with 22 Antennas like Parabolic dish, Patch arrays, Horn , Slots, Helices, Dipole, Monopole etc.
* X Band DRO stabilized antenna transmitter and receiver
* Microwave power meter receiver with 0.1dB resolution
* 70 dB dynamic range.
* Directional Coupler, Slotted Line for VSWR/ Return Loss.
* Stepper motor antenna rotator with 1 degree resolution
* RS232 interface with polar/cartesian plotting software
* Microstrip & aperture 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 : 0dBm typical
Output Z : 50 ohms with SMA connector

2. X Band DRO Receiver

Frequency : X Band Microwave receiver power meter
Accuracy : 0.1%
Sensitivity : -70dBm 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
Display : 16x2 backlit LCD for angular Position & power level
Rotation : 0-359 deg Stepper Motor with reduction gearbox
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
Auto Mode : Automatic rotation in user steps with Datalogging
Indication : Beep on reaching the selected Position
Power Supply : 100-240V AC, 50-60 Hz

4. Monopole

S11 : >6dB
Bandwidth : 10.5 ± 0.5GHz
Gain : 1dB
Beamwidth : E plane 80°
Beamwidth : H Plane 180°
Polarisation : Linear
Front to Back Ratio : 0dB
Substrate : Ceramic based
Connector : SMA

5. Dipole

S11 : >6dB
Bandwidth : 10.5 ± 0.5GHz
Gain : 2dB
Beamwidth : E plane 60°
Beamwidth : H Plane 180°
Polarisation : Linear
Front to Back Ratio : 0dB
Substrate : Ceramic based
Connector : SMA

6. Slot WG narrow wall

S11 : >10dB
Bandwidth : 10.5 ± 0.1GHz
Gain : 4dB
Beamwidth : E plane 60°
Beamwidth : H Plane 60°
Polarisation : Linear
Front to Back Ratio : 10dB

7. Slot WG broad wall

S11 : >10dB
Bandwidth : 10.5 ± 0.1GHz
Gain : 4dB
Beamwidth : E plane 60°
Beamwidth : H Plane 60°
Polarisation : Linear
Front to Back Ratio : 10dB

8, 9. Helix (LHCP)-2 Nos

S11 : >6dB
Bandwidth : 10.5 ± 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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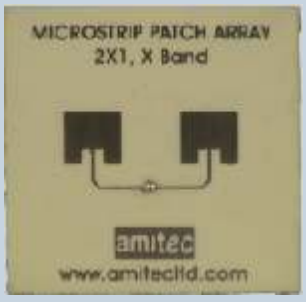
10. Patch Microstrip circularly polarized

S11 : >10dB
Bandwidth : 10.5 ± 0.1GHz
Gain : 4dB
Beamwidth : E plane 10°
Beamwidth : H Plane 20°
Polarisation : Circular
Front to Back Ratio : >10dB
Substrate : Ceramic based
Connector : SMA

11. Patch Microstrip

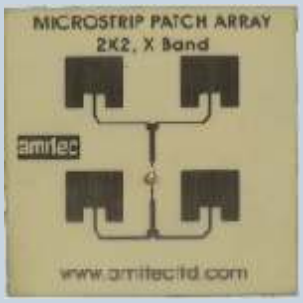
S11 : >10dB
Bandwidth : 10.5 ± 0.1GHz
Gain : 6dB
Beamwidth : E plane 10°
Beamwidth : H Plane 20°
Polarisation : Linear
Front to Back Ratio : >10dB
Substrate : Ceramic based
Connector : SMA

12. Patch Microstrip Array 2x1



S11 : >10dB
Bandwidth : 10.5 ± 0.1GHz
Gain : 6dB
Beamwidth : E plane 10°
Beamwidth : H Plane 20°
Polarisation : Linear
Front to Back Ratio : >10dB
Substrate : Ceramic based
Connector : SMA

13. Patch Microstrip Array 4x1



S11 : >10dB
Bandwidth : 10.5 ± 0.1GHz
Gain : 10dB
Beamwidth : E plane 10°
Beamwidth : H Plane 20°
Polarisation : Linear
Front to Back Ratio : >10dB
Substrate : Ceramic based
Connector : SMA

14. Patch Microstrip Array 4x4

S11 : >10dB
Bandwidth : 10.5 ± 0.1GHz
Gain : 11dB
Beamwidth : E plane 10°
Beamwidth : H Plane 20°
Polarisation : Linear
Front to Back Ratio : >10dB
Substrate : Ceramic based
Connector : SMA

15. Parabolic Dish

S11 : >10dB
Bandwidth : 10.5 ± 0.5GHz
Gain : 16dB
Beamwidth : E plane 10°
Beamwidth : H Plane 20°
Polarisation : Linear
Front to Back Ratio : 25dB
Diameter : 300mm
Weight : 500g

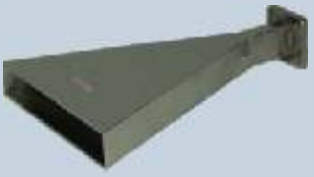
16. Conical Horn

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

17, 18. Pyramidal Horn- 2 Nos.

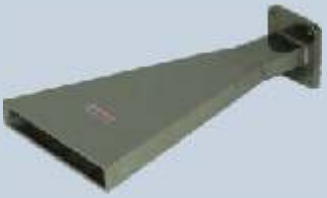
S11 : >20dB
Bandwidth : 8.2- 12.4 GHz
Gain : 16dB
Beamwidth : E plane 20°
Beamwidth : H Plane 22°
Polarisation : Linear

19. E Plane Sectoral Horn



S11 : >15dB
Bandwidth : 8.2- 12.4 GHz
Gain : 13dB
Beamwidth : E plane 20°
Beamwidth : H Plane 80°
Polarisation : Linear

20. H Plane Sectoral Horn



S11 : >15dB
Bandwidth : 8.2- 12.4 GHz
Gain : 10dB
Beamwidth : E plane 100°
Beamwidth : H Plane 22°
Polarisation : Linear

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21. Dielectric Rod

S11 : >6dB
Bandwidth : 10.5 ± 0.5GHz
Gain : 1dB
Beamwidth : E plane 50°
Beamwidth : H Plane 60°
Polarisation : Linear
Front to Back Ratio : 0dB
Connector : SMA

27, 28. Helix (RHCP) -2 Nos

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

22, 23, 24. Waveguide to Coax adapter X 3 Nos

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

29. Broadband Matched Termination

S11 : >25dB
Bandwidth : 8.2 -12.4 GHz
Waveguide Flange : WR90

25. Multi Hole Directional Coupler

S41 Coupling : 10dB
S34 Directivity : 30dB
S21 Insertion Loss : <1.5dB
Bandwidth : 8.2 -12.4 GHz
Waveguide Flange : WR90

30. Precision Slotted Line

S11 : >20dB
S12 : <1dB
Resolution : 0.05mm using vernier
Coupling factor : - 20dB
Waveguide Flange : WR90
Probe Connector : SMA

26. Fixed Short

S11: >60dB
Flange: UG39/U

31. Microwave absorber

Absorber : EM Lossy PU Foam Cones
Reflection : -40dB @10GHz
Fire retardancy : As Per NRL USA-8093 Standard complying Tests No.1,2 and 3 with zero halogen means
Equivalent RCS : -30dBsm 8-40GHz

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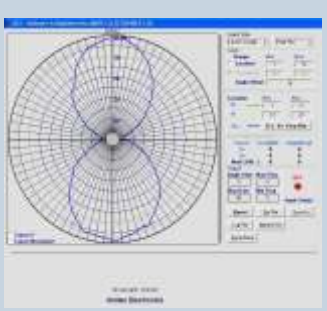
32. Windows Software



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

33. Attenuator

Attenuation : 20dB

34. SMA-SMA Adapter

Frequency : DC-12 GHz
Used with waveguide to Coax adapter for measuring return loss of antennas.

35. RG 316 cable

Low Loss RG 316 Teflon Cable

36. Stepper motor controlled antenna Monopod

Mount : Waveguide WR90 E or H, 1/2" BSW
Offset : Adjustable for phase center
RCS : Low Non magentic, non conductive, low dielectric
Non-radiating monopod for transmitting Antenna

37. Waveguide Stands- 2 Nos.

Waveguide Stands : E & H plane WR90 Mount

38. Accessories

Students activity manual, Teachers reference manual, M4X20 Screw & Nut, Screw driver, Measuring tape, Spanner, SMPS, RS232 Lead

E-Manual: Installation Video for ease of Learning

List of Experiments:

1. To measure the variation of field strength of radiated wave, with distance from transmitting antenna.
2. To plot the radiation pattern of an omnidirectional antenna.
3. To plot the radiation pattern of a directional antenna
4. To measure axial ratio and cross polarisation discrimination of vertically horizontally and circularly polarized antennas.
5. To measure the VSWR of the antenna
6. To demonstrate that transmitting and receiving patterns of an antenna are equal and hence confirm the reciprocity theorem of antennas
7. To plot the radiation pattern (E & H Plane Polar & Cartesian Plots on Log/Linear scale of an antenna on PC.
8. 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.
10. To measure antenna parameters of Horn (E, H, Pyramidal) & open waveguide antenna.
11. To measure antenna parameters of conical Horn antenna
12. To measure antenna parameters of monopole antenna
13. To measure antenna parameters of Slot(Narrow Wall & Broad Wall) Antenna
14. To measure antenna parameters of Parabolic dish antenna
15. To measure antenna parameters of Patch array antenna
16. To measure antenna parameters of Helix (RHCP & LHCP) antenna. To measure the cross polarization discrimination for circular polarisation.
17. To setup microwave data communication link.

Dimensions:56X45X36cm.Weight: 18kg.
Warranty: 3 yrs

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