

Features:

- * Antenna Training System with over 35 Antennas
- * PLL transmitter and receiver 0.005-2 GHz.
- * 50 KHz step size with measurement in 0.1 dB resolution
- * 110 dB dynamic range.
- * Directional Coupler for VSWR/ Return Loss.
- * Stepper motor antenna rotator.
- * 1 degree resolution stepper motor
- * RS232 interface with polar/cartesian plotting software
- * Microstrip antennas
- * All SMA connectors, Teflon Cables
- * All antenna gain, return loss and pattern plot provided
- * 1000 location Frequency and level storage in receiver

1. PLL Synthesized Digital RF Transmitter



Frequency range : 5-2000 MHz PLL in 3 ranges
 Step size : 0.05, 0.1, 0.25, 0.5, 1, 10, 100 MHz
 Accuracy: 0.01%
 Display: 16X2 Backlit LCD
 Controls: Menu, Enter, Escape, Up & Down
 Memory : 1000 frequency store/recall
 Modulation FM: Internal 1KHz/ External Microphone
 RF Level: +3dBm typical
 Attenuator : 20dBX2 (external SMA(M)-SMA(F))
 Output Z: 50 ohms SMA
 Auto mode: Tracking operation with receiver
 Power Supply : 100-240V AC, 50-60 Hz

2. PLL Synthesized Digital RF Receiver



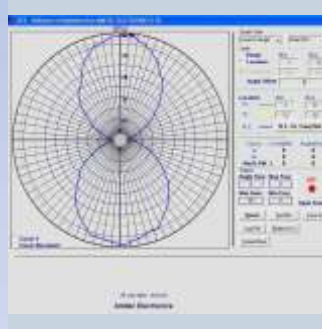
Frequency : 5-2000MHz PLL
 Step size: 0.05, 0.1, 0.25, 0.5, 1, 10, 100 MHz
 Accuracy: 0.01%
 Display : 16X2 Backlit LCD
 Memory: 1000 frequency & level store/ recall
 Measure : RF power in dBuV, dBm, pW, nW, dBr- dB relative
 Resolution: 0.1dB
 Dynamic range: 110 dB (70dB log +40dB attenuator)
 Input Z : 50 ohm SMA
 Speaker : Inbuilt for Audio
 PC interface: RS 232 to PC for antenna plotting
 Auto mode: Gain/SWR bandwidth with Tx & polar/cartesian plots with Stepper.
 Demodulation : FM out
 Down converter: 39MHz out for spectrum analyser
 RSSI : RF power level Fading analysis
 Power Supply : 100-240V AC, 50-60 Hz

3. Stepper Motor Controller Unit



Display: 16X2 backlit LCD
 Rotation: 0-359 degrees
 Resolution: 1 degree.
 Angular steps: 1, 5, 10, 45°
 Memory: 1000 angular position store/recall
 Auto mode: Automatic rotation with receiver
 Mode: CW/CCW rotation, Fast Slow speed modes
 Power Supply: 100-240V AC, 50-60 Hz

4. Software



RS 232 interface with polar plotting with log, linear cartesian and polar plots, V_i , V_r & Return loss plots, Multiple pattern overlay, Double cursor, Zoom, Colour editing, 1000 location editor, Absolute/Relative, 3dB/10dB beam-width, Gain, Front to back, Side lobe level and position, Plot rotate, File-edit, save, get.

5. Directional Coupler



Coupling: 17dB
 Directivity: 20dB
 Insertion Loss: <1.5dB
 Bandwidth: 0.05 -2 GHz
 Usage: Antenna forward & reverse power & VSWR measurements.
 Connector : SMA

6, 7. Microstrip Log Periodic Dipole Array



S₁₁: >10dB
 Bandwidth: 1500 ± 500 MHz
 Gain: 6dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 80°
 Polarisation : Linear
 Front to Back Ratio: 6dB
 Connector : SMA

8. Microstrip Dipole



F_c : 1.5 ± 0.1 GHz
 S₁₁ : 10 ± 2dB
 Polarisation : Linear
 X Pol discrimination : 20dB
 Gain : 2dBi
 Feed: Microstrip balun
 Impedance : 50 Ohms
 Connector : SMA

Mfd by: Amitec Electronics Ltd.

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9. Microstrip Yagi



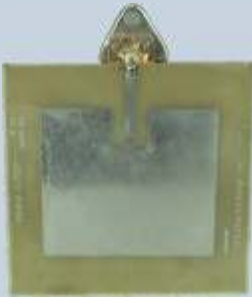
F_c : 1.5 ± 0.1 GHz
 S_{11} : 10 ± 2dB
 Polarisation : Linear
 Gain : 4dBi
 Feed : Microstrip balun
 Impedance : 50 Ohms
 Connector : SMA

14. Microstrip Slot



S_{11} : >10dB
 Bandwidth: 750 ± 20 MHz
 Gain: 2dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

10. Microstrip Patch Inset Fed



F_c : 1.5 ± 0.1 GHz
 S_{11} : 10 ± 2dB
 Polarisation : Linear
 Gain : 5dBi
 Impedance : 50 Ohms
 Connector : SMA

15. Circular Polarized Patch Array 2 X 2



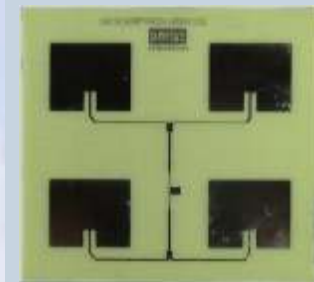
F_c : 1.5 ± 0.1 GHz
 S_{11} : 10 ± 2dB
 Polarisation : Circular
 Gain : 7dBi
 Impedance : 50 Ohms
 Connector : SMA

11. Log Spiral



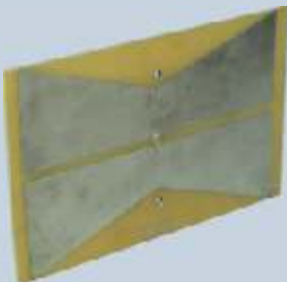
S_{11} : >10dB
 Bandwidth: 1.5 ± 1.0GHz
 Gain: 2dBi
 Beamwidth : E plane 80°
 Beamwidth : H Plane 120°
 Polarisation : Circular
 Front to Back Ratio: 0dB
 Connector : SMA

16. Microstrip Patch Array 2 X 2



F_c : 1.5 ± 0.1 GHz
 S_{11} : 10 ± 2dB
 Polarisation : Linear
 Gain : 9dBi
 Impedance : 50 Ohms
 Connector : SMA

12. Batwing



S_{11} : >10dB
 Bandwidth: 1850 ± 50 MHz
 Gain: 6dBi
 Beamwidth : E plane 40°
 Beamwidth : H Plane 60°
 Polarisation : Linear
 Front to Back Ratio: 10dB
 Connector : SMA

17. Parabolic Dish



S_{11} : >10dB
 Bandwidth: 1850 ± 50 MHz
 Gain: 6dBi
 Beamwidth : E plane 40°
 Beamwidth : H Plane 60°
 Polarisation : Linear
 Front to Back Ratio: 10dB
 Connector : SMA

13. Microstrip Patch Transformer Fed



F_c : 1.5 ± 0.1 GHz
 S_{11} : 10 ± 2dB
 Polarisation : Linear
 Gain : 5dBi
 Impedance : 50 Ohms
 Connector : SMA

18. Biconical



S_{11} : >10dB
 Bandwidth: 600 ± 300 MHz
 Gain: 2dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

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19, 20. Endfire & Broadside phased array



S11: >10dB
 Bandwidth: 800 ± 50 MHz
 Gain: 3dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 120°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

26. V antenna



S11: >10dB
 Range: 800 ± 100 MHz
 Gain: 2dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 100°
 Polarisation : Linear
 Front to Back Ratio: 6dB
 Connector : SMA

21, 22. Helix LHCP & RHCP



S11: >10dB
 Bandwidth: 750 ± 100 MHz
 Gain: 4dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 120°
 Polarisation : Circular RH
 Front to Back Ratio: 6dB
 Connector : SMA

27. Discone



S11: >10dB
 Bandwidth: 600 ± 300 MHz
 Gain: 0dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

23. Square Loop



S11: >10dB
 Bandwidth: 600 ± 50 MHz
 Gain: 2dBi
 Beamwidth : E plane 80°
 Beamwidth : H Plane 120°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

28. Conical Horn



S11: >10dB
 Bandwidth: 1850 ± 50 MHz
 Gain: 6dBi
 Beamwidth : E plane 40°
 Beamwidth : H Plane 60°
 Polarisation : Linear
 Front to Back Ratio: 10dB
 Connector : SMA

24. Quad



S11: >10dB
 Bandwidth: 600 ± 50 MHz
 Gain: 4dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 80°
 Polarisation : Linear
 Front to Back Ratio: 6dB
 Connector : SMA

29. Stacked Yagi



S11: >10dB
 Bandwidth: 700 ± 100 MHz
 Gain: 4dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 80°
 Polarisation : Linear
 Front to Back Ratio: >6dB
 Connector : SMA

25. Log Periodic Dipole Array



S11: >10dB
 Bandwidth: 600 ± 300 MHz
 Gain: 4dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 80°
 Polarisation : Linear
 Front to Back Ratio: >6dB
 Connector : SMA

30, 31. Crossed Dipole



S11: >10dB
 Bandwidth: 700 ± 50 MHz
 Gain: 2dBi
 Beamwidth : E plane 90°
 Beamwidth : H Plane 180°
 Polarisation : Circular LH & Circular RH
 Front to Back Ratio: 0dB
 Connector : SMA

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32. Yagi 3el



S11: >10dB
 Bandwidth: 700 ± 100 MHz
 Gain: 4dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 80°
 Polarisation : Linear
 Front to Back Ratio: >6dB
 Connector : SMA

33. Yagi 4el



S11: >10dB
 Bandwidth: 700 ± 50 MHz
 Gain: 5dBi
 Beamwidth : E plane 60°
 Beamwidth : H Plane 80°
 Polarisation : Linear
 Front to Back Ratio: >6dB
 Connector : SMA

34. Sleeve



S11: >10dB
 Bandwidth: 750 ± 20 MHz
 Gain: 2dBi
 Beamwidth : E plane 70°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

35. Monopole



S11: >10dB
 Bandwidth: 600 ± 300 MHz
 Gain: 1dBi
 Beamwidth : E plane 70°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

36,37. Dipole L/2, L/4



S11: >10dB
 Bandwidth: 600 ± 300 MHz
 Gain: 2dBi
 Beamwidth : E plane 70°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

38. Folded Dipole



S11: >10dB
 Bandwidth: 600 ± 200 MHz
 Gain: 2dBi
 Beamwidth : E plane 70°
 Beamwidth : H Plane 180°
 Polarisation : Linear
 Front to Back Ratio: 0dB
 Connector : SMA

39. Antenna azimuth positioner



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

Accessories

- 1) Transmitter antenna mounting stand.
- 2) Condenser microphone
- 3) All necessary connectors & Teflon RF cables.
- 4) Students activity & Teachers reference Manual
- 5) Software CD
- 6) Antenna Kit
- 7) Voltage Probe
- 8) Power Divider (2 way)
- 9) RS232 Lead
- 10) SMA-SMA lead 30cm X2
- 11) SMA-SMA lead 1.5m X2
- 12) Measuring Tape
- 13) Whip antenna

E-Manual: Installation Video for ease of Learning

Dimension : 75 X 55 x 45 cms. Weight : 30 Kg

Warranty: 3 yrs.

Areas of Experimentation and scope of study

- * Inverse square law of propagation.
- * Radiation pattern of an Omni and directional antenna.
- * Vertical, Horizontal and Circularly polarized antennas.
- * Polarization discrimination linear & circular antennas
- * Resonant and non-resonant antenna.
- * Reciprocity of antenna.
- * Current distribution of an antenna.
- * Antenna parameters:
- * Radiation pattern E & H Plane - Polar & Cartesian Plots
- * Directive gain, beam width (Half Power/10dB), front to back ratio, plane of polarization, side lobe level & angle.
- * Antenna resonance, VSWR and bandwidth using directional coupler and adjust the antenna.
- * Comparative study of antennas.
- * Significance of parasitic element dimensions.
- * Construct antenna using antenna kit
- * Voice communication link using antennas. Plus lot more.

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