

RFL-AMS-A

4GHz Motorised Antenna Training System

FEATURES

- Antenna Measurement System has been designed to Teach, Measure and Test Various parameters and categories of Antennas
- This system consists of a wide band PLL based source and detector module working up to 4GHz, a very sturdy non magnetic Transmitter and Receiver stand, Universal Antenna Mount with plug and fit assembly and radiation pattern plotting software.
- This system can be interfaced with PC for remote access of the system and supplied software enables to plot the radiation pattern and perform measurement.

SPECIFICATIONS

- Single training system to teach all types of antenna measurement
- Covers UHF, L, S and ISM bands
- Software controlled PLL Synthesized Source and Detector working upto 8GHz with high dynamic range of power
- Customized selection of antenna from the list as per syllabus requirement
- Non conductive and non magnetic Transmitter and Receiver stand
- Radiation pattern plotting software
- Stepper motor controlled receiver stand

Antenna Measurement System - RF Source

- Source types - PLL Synthesized with Integrated VCO
- Frequency range - 100MHz to 4GHz
- Frequency resolution - 1MHz
- Transmitted power min - -50dBm
- Transmitted power max - +5dBm
- Impedance - 50Ω / SMA

RF Detector

- Detector type - Logarithmic detector
- Frequency range - 100MHz to 8GHz
- Resolution - 0.1dB
- Dynamic range - 65dB (±3dB)



- Impedance - 50Ω /SMA
- Representation of RF level - dBm

Display

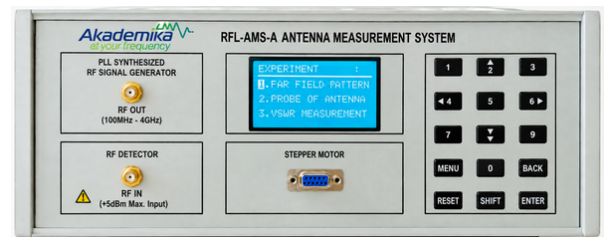
- 128x64 Graphic LCD Display with backlit

Keypad

- 15 Key Membrane Keypad for user entry

Stepper motor controller

- 1.8° and 5.4° resolutions



ANTENNA 3D PLOT VISUALIZATION

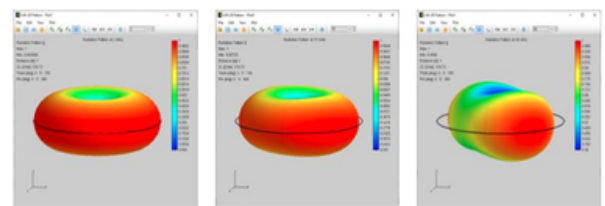


Fig. 3(a): Doughnut-shaped radiation pattern of the loop antenna at 3 MHz

Fig. 3(b): Radiation pattern of the loop antenna at 15 MHz, showing a transition

Fig. 3(c): Radiation pattern of the loop antenna at 30 MHz

List of Standard 22 Antenna Supplied with The Setup

Wire Antenna

- Monopole Plane base ground : 705 MHz
- Dipole (2nos.) : 700 MHz
- Yagi : 716 MHz
- Folded Dipole : 700 MHz
- Vee Dipole : 715 MHz
- Rectangular Loop : 702 MHz
- Helical : 1555 MHz
- Circular Loop : 705 MHz
- Cross Dipole : 710 MHz

Microstrip Antenna

- Planar Dipole : 2402 MHz

- Planar Monopole : 1598 MHz
- CMSA : 2405 MHz
- TMSA : 2437 MHz
- 2X1 ARRAY : 2400 MHz
- Annular ring : 2445 MHz
- Chip Antenna : 2420 MHz
- RMSA : 2438 MHz
- RMSA- Circular Polarized : 2450 MHz
- Insert Feed : 2440 MHz

Aperture Antenna

- E- Horn : 2400 MHz
- Open ended Waveguide Rectangular : 2450 MHz

Array Antenna

- Broadside Array : 1580 MHz
- Collinear Array : 1000 MHz
- Endfire Array : 1580 MHz

Reflector Antenna

- Corner Reflector : 1580 MHz
- Parabolic Reflector : 2440 MHz

Optional Antenna Set

Wire Antenna

- Monopole with loading : 700 MHz
- 3/2 linear dipole : 700 MHz
- Logperodic : 750 MHz

Aperture Antenna

- Dipole-SLOT : 2400 MHz
- H-Horn : 2400 MHz

Planner Antenna

- RMSA - Shorting pin : 2438 MHz
- RMSA - Shorting Plate : 2430 MHz
- Yagi-Uda : 2420 MHz
- RMSA-Stub loaded : 2436 MHz

Reflector Antenna

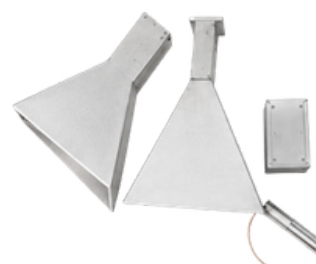
- Dipole-Plane Reflector : 1580 MHz



Wired Antenna



Planner Antenna



Aperture Antenna



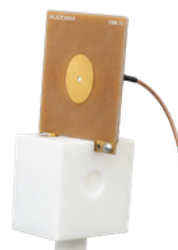
Reflector Antenna



Array Antenna

ACCESSORIES

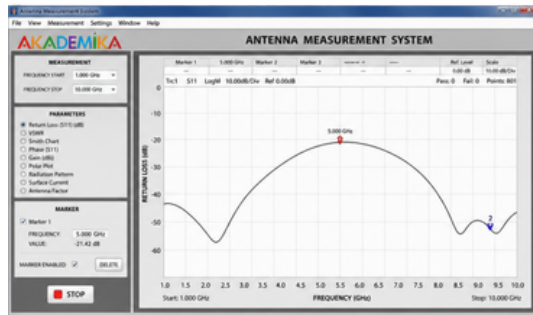
- SMA to SMA Male Adapter - 01no
- SMA (M) to SMA (M) 1m cable - 01no
- SMA (M) to SMA (M) 2m cable - 01no
- USB A Male to USB B Male cable - 01no
- 9 pin D type Male to Female cable - 01no
- Power Cord - 01no
- Manual - 01no
- Software on Pendrive - 01no



Antenna Mount

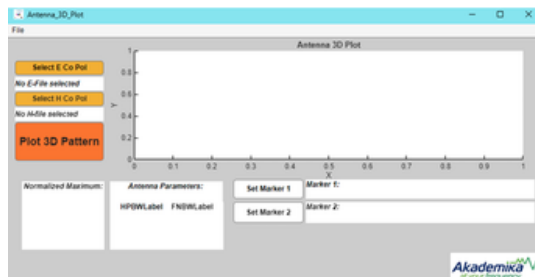
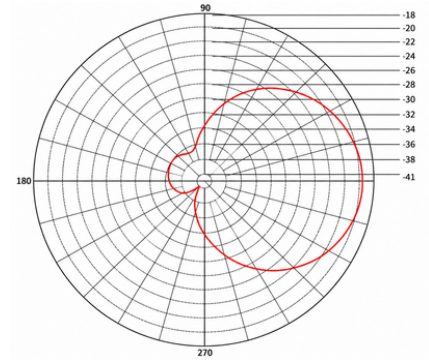
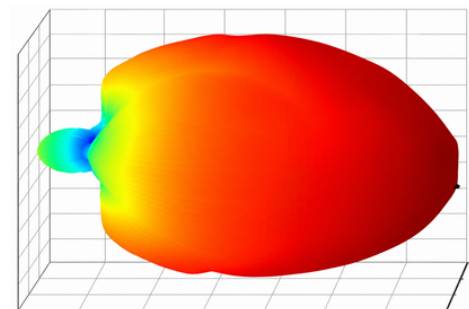
SOFTWARE

- Radiation pattern plotting and analysis software suitable for windows environment



AMS-A Antenna_3D_Plot

- Antenna 3D pattern visualization in Antenna3D_Plot software



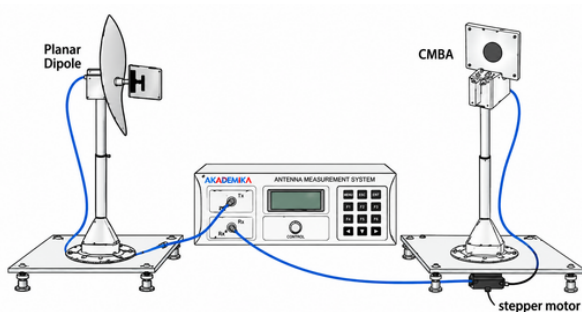
Normalized Maximum: E = - 26.12 dB at $\theta = 101^\circ$
HPBW: E = 130.0° H = 25.1°
FNBW: E = 173.0° H = 59.2°

Measured 3D plot of supplied RMSA

ANTENNA POSITIONER

- The Transmitter and Receiver Antenna stand is made of special material which is inert to EM frequency and it has engraved height and angle scale on it. It has facility to adjust the height and level.
- Universal plug and fix Antenna mounts are provided to hold the antenna assembly in vertical and horizontal orientation for co and cross polarization.

Radiation Pattern of Planar (MICROSTRIP) Antenna



- TX antenna : Planer Dipole 1QTY
- RX antenna : RMSA 1QTY
- Transmitter input : Source (RF out) 1QTY
- Receiver output : Detector (RF input) 1QTY
- CABLE : SMA To SMA cable 2QTY

EXPERIMENTS

- Measure the variation of field strength /inverse square law
- Prove the reciprocity theorem of antenna
- Plot Radiation pattern and 3D view for radiation pattern of all WIRED Antenna
- Plot Radiation pattern and 3D view for radiation pattern of all Reflector Antenna.
- Plot Radiation pattern and 3D view for radiation pattern of all Aperture Antenna.
- Measure co-polarization , cross polarization
- Measurement of Circularly polarised Antenna.
- To study Planer (microstrip) antenna category.
 - Plot Radiation pattern and 3D view for radiation pattern of all Planar (Microstrip) Antenna.
 - Design and Study of Basic Micro strip Shapes and its configuration.
 - Effect of different feeding techniques in Micro strip Antenna.
- Gain measurement of RMSA antennas
- Calibration of Planer Dipole Antenna