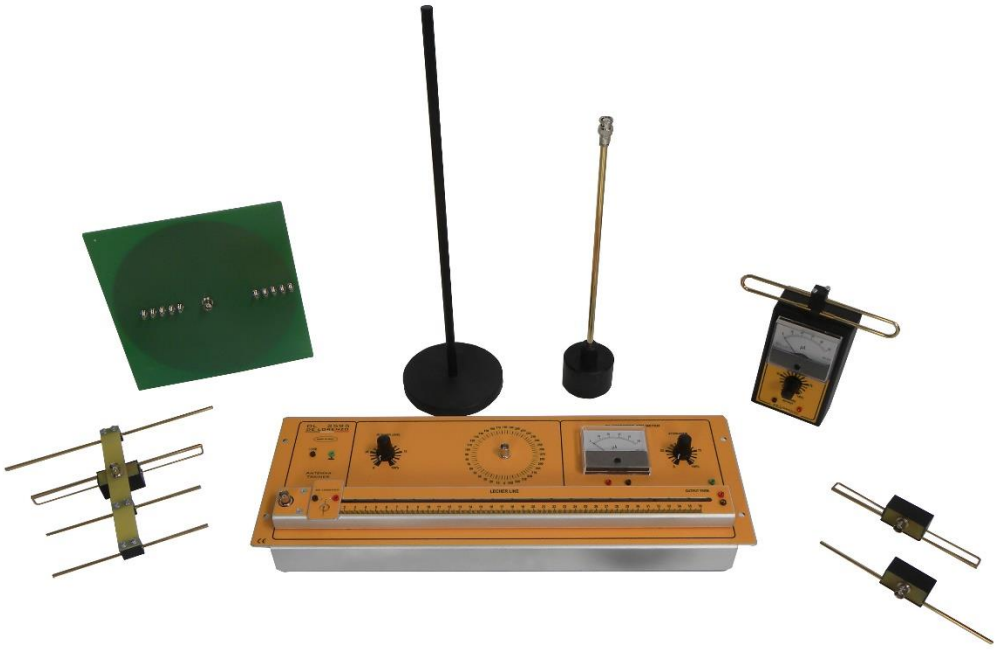
ANTENNA TRAINER
DL 2595



The trainer has been designed to introduce students to the comprehension of the antenna's operation mode.

TECHNICAL FEATURES:

The trainer includes: basic panel with generator, Lecher line, RF detector, mobile receiver, joint for fixing to the base, supporting base for receiver, reflector, locking knob, shielded connecting cable between the Lecher line and the detector with banana plugs, diam. 2 mm (length = 60 cm), set of cables for measuring and connections, coaxial support for antenna (mast) with turning base, 'T' BNC, set of 5 monopoles with banana terminations, different lengths, ground-plane antenna, Yagi antenna, folded dipole antenna, simple dipole antenna, coaxial cable RG59 with F/F BNC, length = 60 cm complete with M/M and F/F adapters. Working frequency: from 860 to 950 MHz. Input power supply: - 15 Vdc, 200 mA

EXPERIMENTS:

- The Lecher line
- Polarization
- The elementary dipole
- The folded dipole
- The Yagi antenna
- The ground plane antenna
- The matching stub

NECESSARY MODULE: DL 2555ALG – Power Supply

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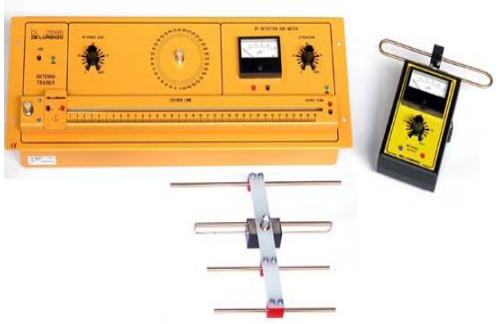
EXPERIMENTS DESCRIPTION:



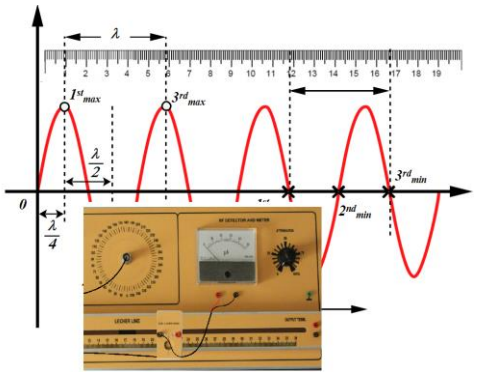
Antenna trainer basic components studies

As introductory experiment, its major role is to offer the opportunity to touch the components of the Antenna Trainer. Little by little, you will get familiar with the methods of handling Ultra High Frequency radio systems.
You will see how difficult is to make a clean and not disturbed radio communication

Study of the wavelength using the Lecher line

With the Lecher Line module, you will study a short-circuited transmission line, by "visualizing" on a current measuring device, two maximum / minimum current point on an imaginary standing wave.

This experiment offers the students a simple methodology to calculate the value of the wavelength and of the frequency generated by the RF Power Unit.



Simple polarization studies

A simple irradiation detector located at 0.5 m distance of the dipole will allow you to study the influence of deviation from the polarization plane.
The experiment usually starts from the correct polarized antennas (the axis of antennas are located in the same plane), and, by rotating the dipole antenna along its axis you will see the relationship between signal strength and polarization deviation.

Study of elementary dipoles

"The dipole antenna is cut and bent for effective radiation." Also called half-wave dipole antenna.

The objective of this experiment is to study the detection of the irradiation diagram of the elementary dipole. With this simple, proposed setup you will figure out the shape of a rotational toroid, with the axis along the axis of the dipole.

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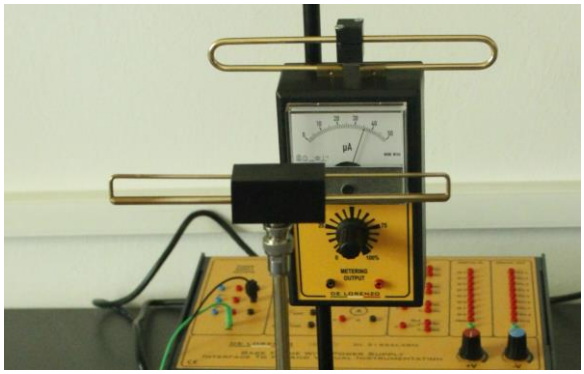
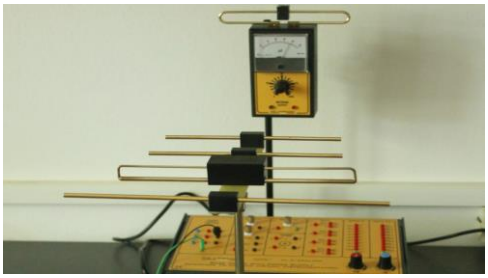


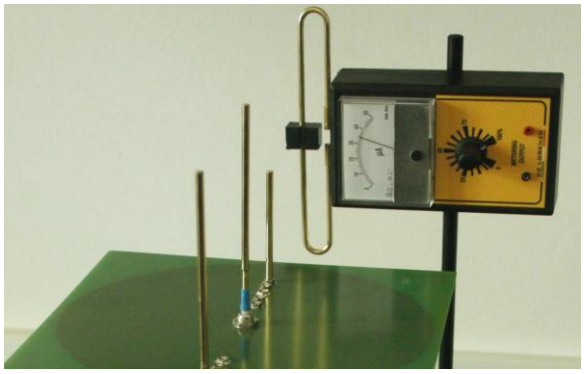
Study of the folded dipole

As you know, a folded dipole is an antenna with two conductors connected on both sides and folded to form a cylindrical closed shape, to which feed is given at the center. The length of the dipole is half of the wavelength.
This experiment is the right one for exercising with installing, aligning, and received signal dependency according to the alignment angle in a typical radio link.

Use of the Yagi Antenna

Reflector, folded dipole, and few director elements create one of the most performing antennas. During experiment you will realize that the waves from the multiple elements superpose and interfere to enhance radiation in a single direction, achieving a very substantial increase in the antenna's gain compared to a simple dipole, with substantial improvement of directional irradiation pattern.





Study of the use of the Ground Plane Antenna

The ground plane antenna acts as a simulated ground. It is found that for a monopole antenna like a quarter wavelength vertical, the ground acts as a plane to reflect the radio waves so that an image of the top half of the antenna is seen in the Earth.
During the experiment you will prove that the ground plane antenna has a broad vertical beam-width, which offers excellent null fill for consistent signal coverage. You will detect an irradiation lobe which is unique and symmetrical.

Study of the experimental setup with both emitting and receiving antennas measurements

This is the “exam” experiment- This experiment consists in verifying the use of the Lecher line as a matching stub of the antenna seen as a load for the generator. During the experiment you will find the answers to the most important questions:

- Is the radiation antenna correctly adapted to the radio power generator?
- Can we estimate, at least relatively, the power ratio transfer in different situations (distance between antennas, different levels of alignment)?