



Antenna Technology

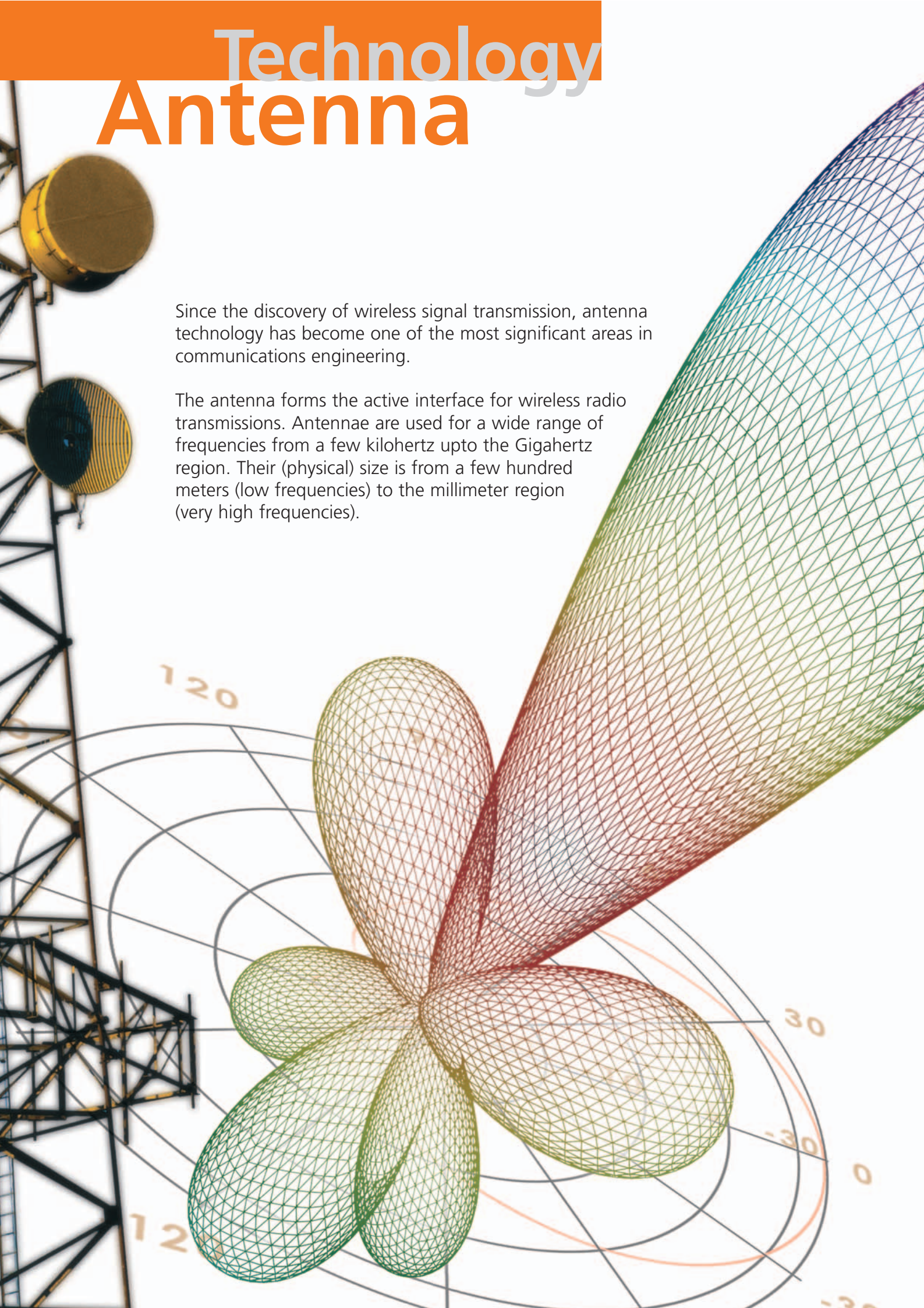
... experience the world of antennae with a state-of-the-art method of training techniques

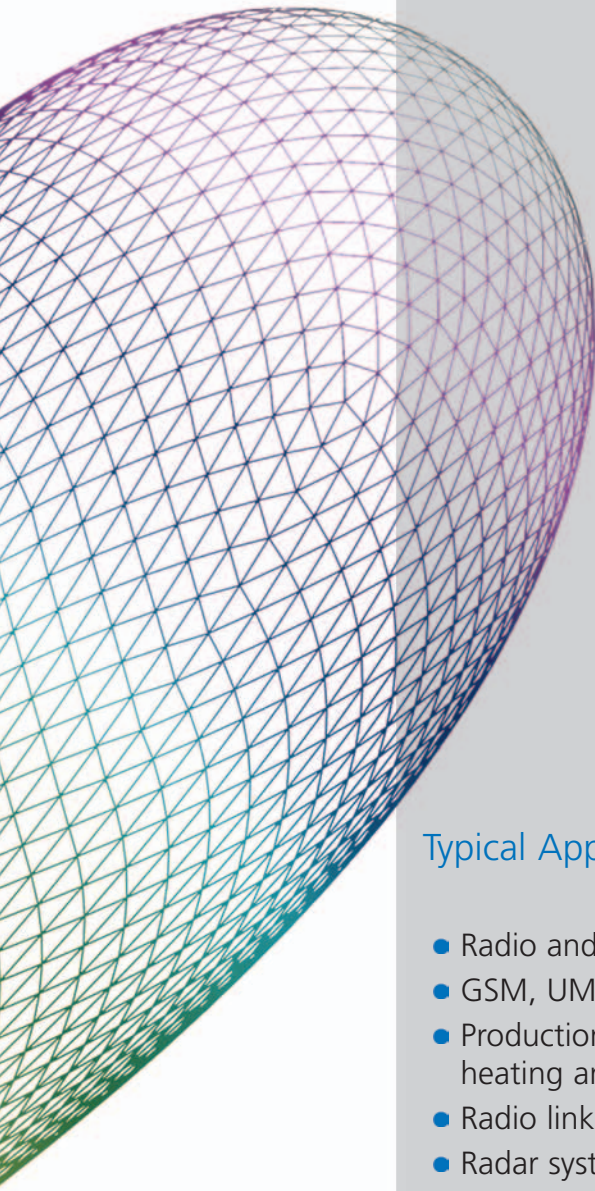


Technology Antenna

Since the discovery of wireless signal transmission, antenna technology has become one of the most significant areas in communications engineering.

The antenna forms the active interface for wireless radio transmissions. Antennae are used for a wide range of frequencies from a few kilohertz upto the Gigahertz region. Their (physical) size is from a few hundred meters (low frequencies) to the millimeter region (very high frequencies).





Typical Applications of Antennae:

- Radio and television
- GSM, UMTS, W-LAN, Bluetooth
- Production engineering for measurement, heating and cleaning
- Radio links
- Radar systems



The use of antennae is no longer exclusive to communications engineers! A basic understanding of antennae together with the way they function and their characteristics, belongs to the central competence of skilled workers, technicians and engineers.

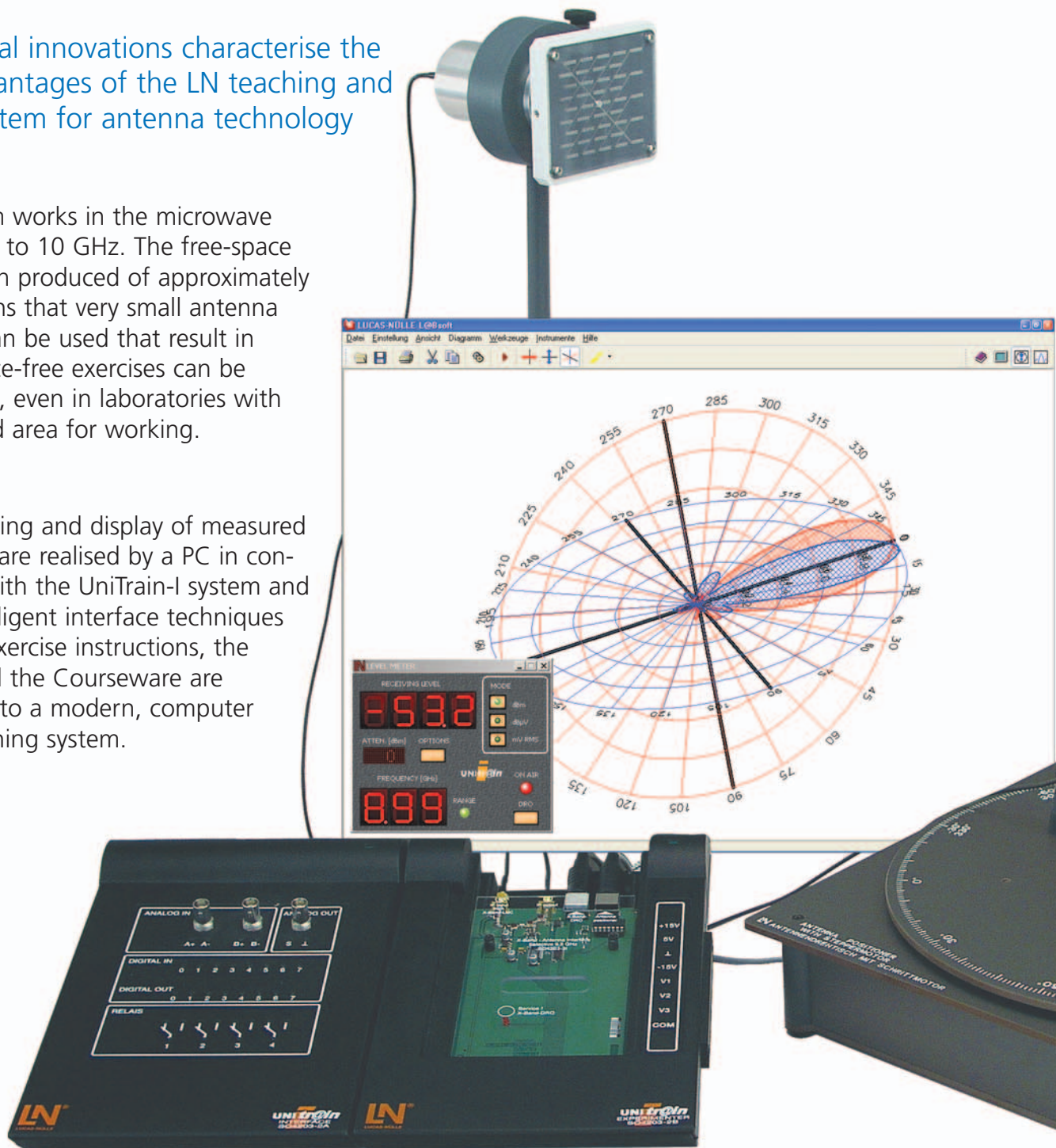
**Gain this knowledge and learn the skills
with our training system for antenna technology...**



Computer based Measurement, Evaluation & Training

Fundamental innovations characterise the system advantages of the LN teaching and exercise system for antenna technology

- The system works in the microwave range of 8 to 10 GHz. The free-space wavelength produced of approximately 3cm, means that very small antenna sections can be used that result in interference-free exercises can be completed, even in laboratories with a restricted area for working.
- The recording and display of measured quantities are realised by a PC in conjunction with the UniTrain-I system and using intelligent interface techniques with the exercise instructions, the theory and the Courseware are combined to a modern, computer based training system.



- Polar diagrams are recorded by way of a PC-controlled antenna rotation platform, in the horizontal and vertical planes.

Then, the polar diagram can be displayed from various viewpoints as a 3-D representation.

Transmitter

- X-band oscillator with dielectric resonator, extremely stable and maintenance-free
- Safety First – low transmission power and energised only during measurements
- A selection of frequencies is available (8.5 / 9.0 / 9.5 GHz)

Receiver

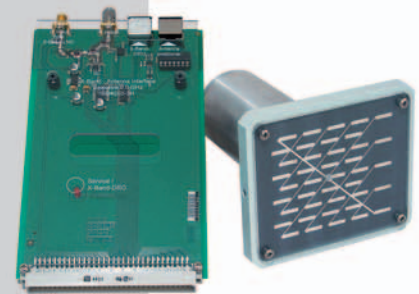
- X-band LNC for a frequency range of 8 to 10 GHz
- Creates the principle of satellite reception
- Precise measurement with a high degree of sensitivity upto -65dBm and high dynamics
- True frequency measurement of 8 to 10 GHz
- Several workplaces can be operated in the same room by frequency selection

Antennae

- Monopole
- Dipole
- Yagi-arrays
- Helix antennae; right and left polarisation
- Patch antennae, linear and circular polarisation

Add-on section:

- Horn antennae 10, 15, 20 dB
- Configurable slot antenna
- Dielectric antenna
- Microstrip antenna
- Parabolic antennae
- Luneberg lens antenna



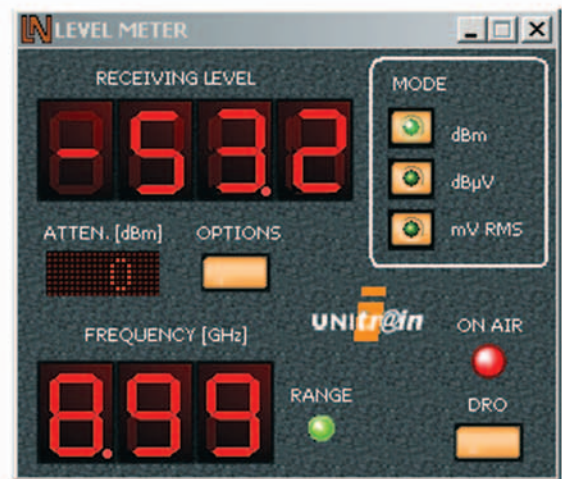
Practice-oriented Training

Topics covered

The training system has been developed for teaching in trade-training schools, colleges, technical colleges and universities. This applies to civilian and military training. The subject of antenna technology is divided into two courses. The first course, "Fundamentals of Antenna Technology" introduces the basic function and applications of antennae. The second course, "Complex Antenna Systems" builds on the knowledge gained in the Fundamentals course and concentrates on the functioning of special antennae and antenna systems.

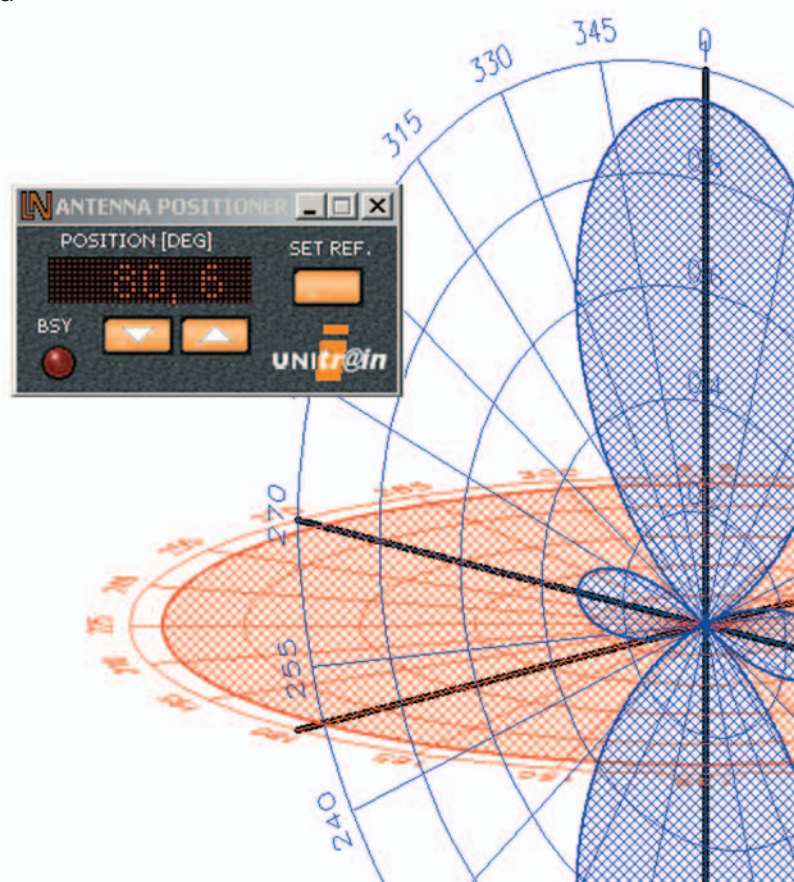
Automatic measured value recording system and LabSoft "Antenna Technology"

- Measured value recording and control of the antenna rotation platform
- Measurement, evaluation and display of all measured results on the computer monitor screen
- Theory with numerous graphics and illustrations
- Description of the hardware
- Exercise descriptions and procedures
- Storage of measured results and exercises
- Feedback of the learning progress by control questions
- Pre-prepared intermediate and final exam question papers
- Course topics and control questions can be edited



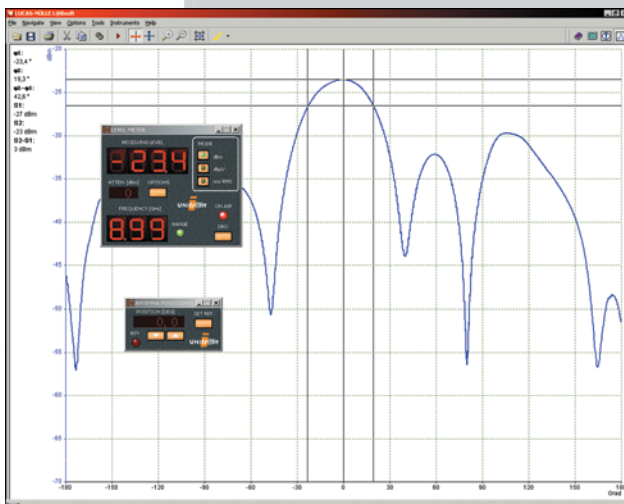
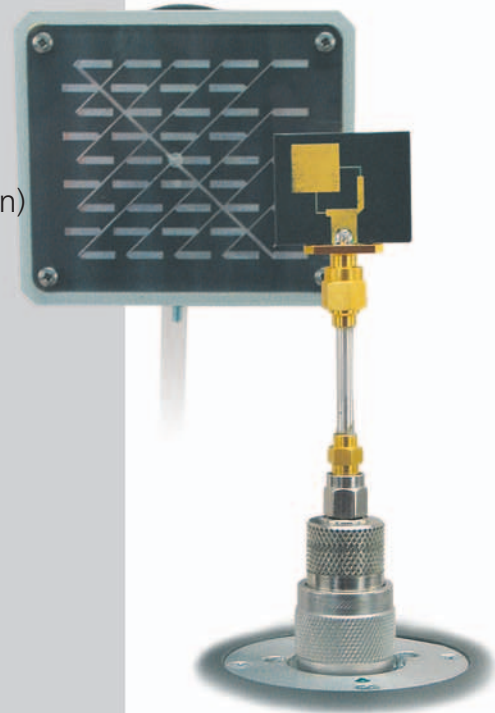
Special integrated test instruments for antenna techniques

- Level meter from 0 to -65dBm
- True measurement of the carrier frequency
- Polar diagram plotter for horizontal and vertical planes
- 3-D display of the polar diagram
- Display of Cartesian and polar co-ordinates



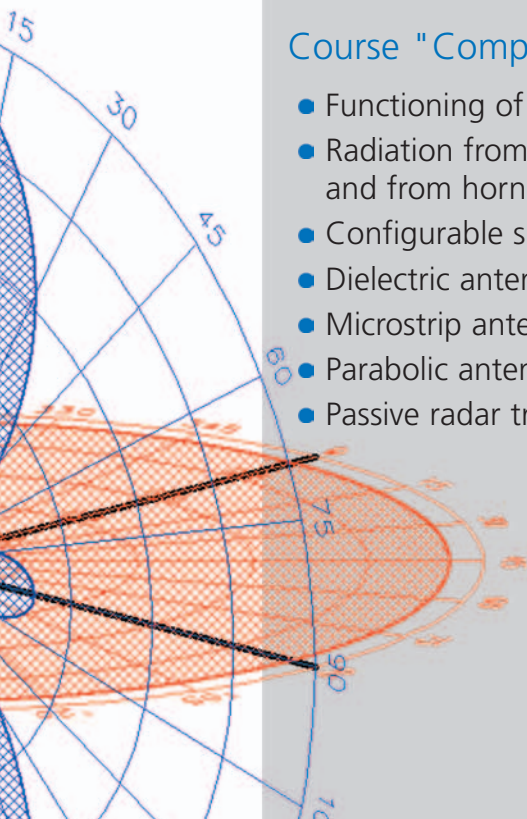
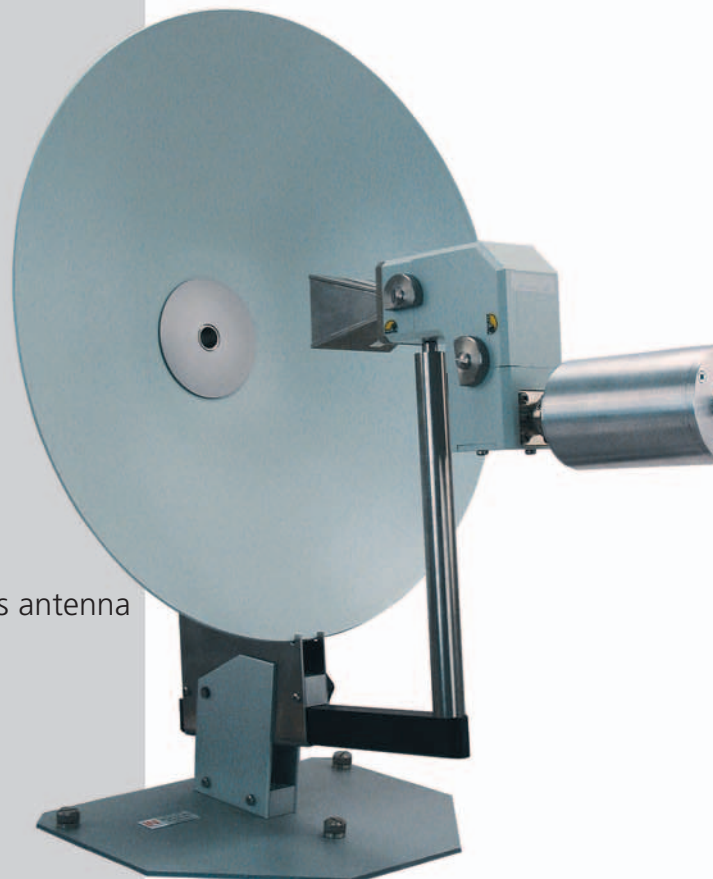
Course "Fundamentals of Antenna Technology"

- Introduction to antenna techniques
- Types of antenna and examples
- The physics of radiation (propagation) and reception
- Resistance (impedance) of an antenna; impedance matching and balancing (Balun)
- Radiation characteristics in near-field and far-field regions
- The gain of an antenna
- The formation of a polar diagram
- Measurement of polar diagrams for various types of antenna



Course "Complex Antenna Systems"

- Functioning of Patch antennae
- Radiation from an open waveguide and from horn antennae 10, 15, 20 dB
- Configurable slot antenna, Arrays
- Dielectric antenna, Arrays
- Microstrip antenna, Arrays
- Parabolic antennae
- Passive radar transponder, Luneberg lens antenna



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