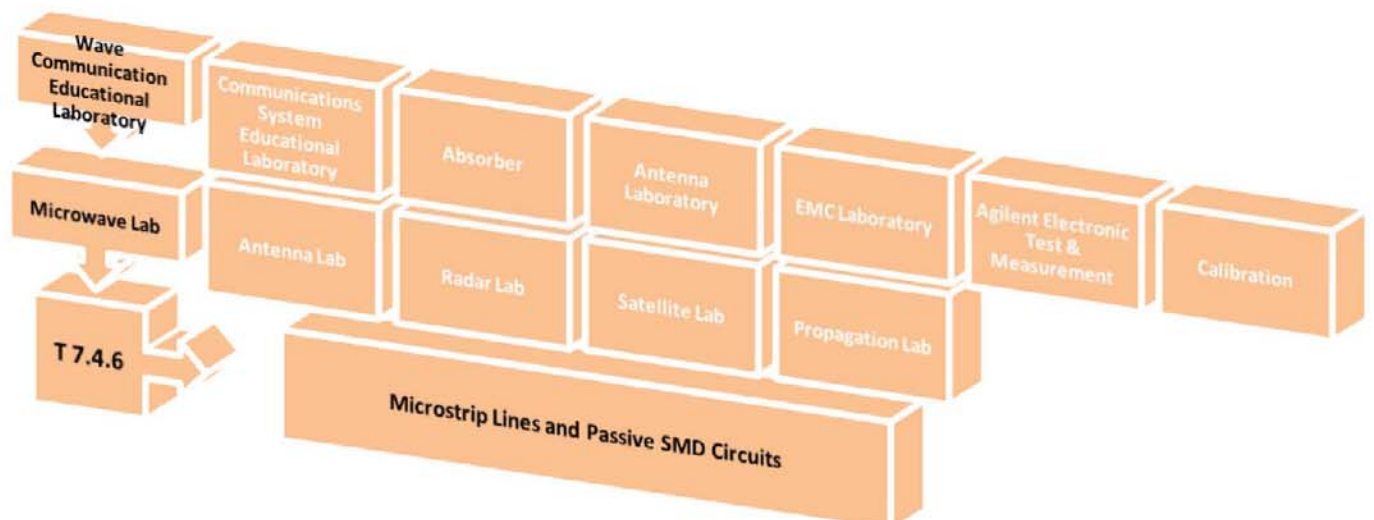


Topics

- Display formats for network analyzers, Smith chart and Bode plot
- Reference measurements and SOLT calibration
- Pi filters
- Stubs as reactive elements
- Return loss of resistive terminations
- Frequency response of reflection-free termination and mismatch
- The $\lambda/4$ stub and the $\lambda/4$ transformer
- Matching with open end parallel stub
- Line resonators
- Equivalent circuits and simulation with microwave CAD
- Standing wave effect for different line terminations
- Assessing wavelength through open/short comparison
- Shifting the standing wave by elongation of the line
- Measuring wavelength for different frequencies
- Phase trend in a standing wave
- Wilkinson dividers and resistive dividers
- Insertion loss of power dividers
- Insertion/coupling loss and isolation of the rat race coupler
- Directional coupler investigations (main branch/auxiliary branch)



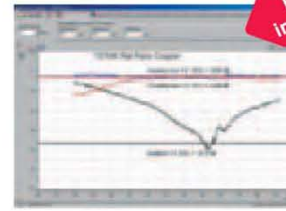
The COM3LAB course Microwave Technology I is a completely equipped multimedia training course. It conveys an understanding for elementary assemblies and the most modern measuring techniques for radar systems, satellite communications and wireless networks. Measurements are performed with a vector network analyzer. Experimental measurements with the UHF measuring line are also possible. Passive UHF circuits made with microstrip lines and SMD components serve as test objects.

EQUIPMENT SET LIST

Microstrip Lines and passive SMD Circuits

QUANTITY	CAT. NO	DESCRIPTION
1	737 51	COM3LAB Course: Microwave Technology I
		Within the scope of delivery of 737 51:
1	737 530	Network Analyzer incl. power supply and USB cable
1	737 531	Network Analysis Accessories
1	737 540	Attenuators & Filters fixed value attenuators 3/6/10 dB in Pi-form, low pass and high pass filter
1	737 541	Resistive Terminations reflex free termination, ohmic mismatch 2R, $\lambda/4$ -stub and $\lambda/4$ transform.
1	737 542	Complex Terminations matching with parallel stubs, line resonator
1	737 543	UHF Measuring Line measurement range 30 cm, incl. displacement transducer
1	737 544	Power Divider Wilkinson type coupler and resistive power divider
1	737 545	Rat Race Coupler
1	737 546	Directional Coupler, stripline technology
1	737 547	Ring Resonator
1		Multimedia training software

The COM3LAB course „Microwave Technology I“ includes all necessary accessories (cables, connectors, multimeter, etc.) and is delivered in a storage case.



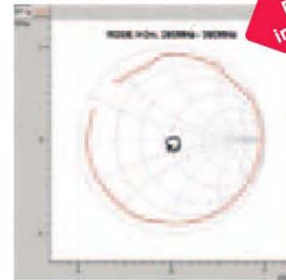
Professional instrumentation

Bode plot of a rat race coupler

Calibrated amplitude response in a frequency range of 260 MHz to 520 MHz:

- red curve: coupling losses
- black curve: isolation
- blue curve: insertion losses

Mean values and markers are used as evaluating functions.



Professional instrumentation

Smith chart of a coaxial line

Composite depiction of magnitude and phase in a polar diagram for the frequency range 300 MHz to 400 MHz:

- red curve: insertion losses
- black curve: reflection

