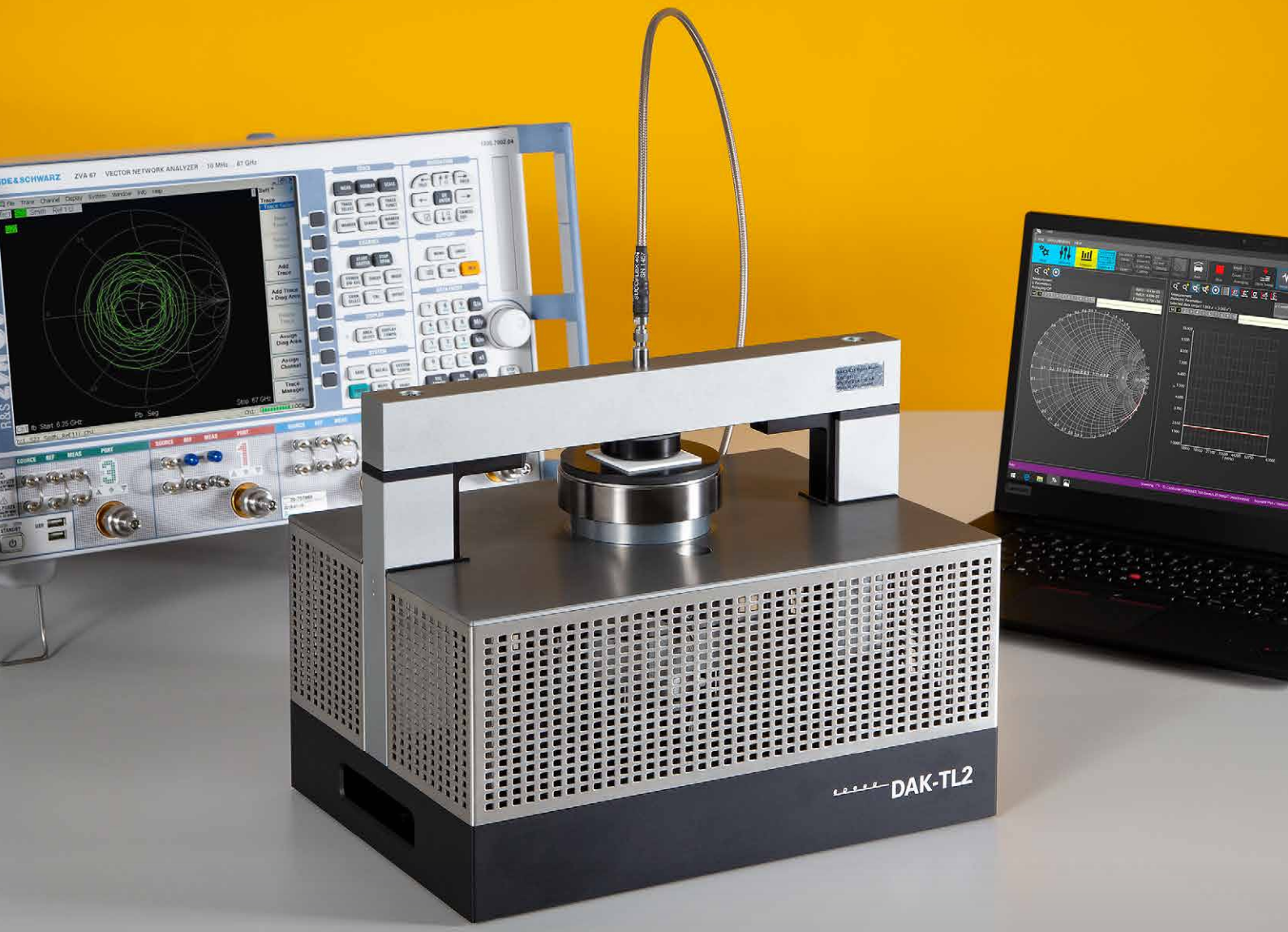
DAK-TL2 Fully Automatic Dielectric Material Measurement



What is DAK-TL2?

DAK-TL2 represents the latest technology for broadband characterization of the dielectric properties of materials. DAK-TL2 is based on a recent breakthrough in computational electromagnetics that overcomes the limitations of the now discontinued DAK-TL series. The novel high-performance solver in DAK-TL2 allows dielectric parameters to be determined directly from measured S_{11} values instead of interpolated from lookup tables. The new system is both more flexible and more precise, a fully automated turnkey solution that drives measurement of the dielectric parameters of thin layers of solids (thickness 0.1 – 10 mm) or of small volumes of liquids or biological samples (10 – 50 ml) over the frequency range 4 MHz – 67 GHz.

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DAK-TL2

Fully Automated Measurement of Dielectric Parameters of Thin Solid Layers or Small Liquid Volumes over a Broad Frequency Range

Applications

- evaluation of raw printed circuit board materials
- characterization of microwave substrates, antennas, and casing materials
- analysis of dielectric materials for electronic components (e.g., capacitors, coils, resonators)
- characterization of liquids available in only small quantities (e.g., pharmaceutical or biochemical samples)
- evaluation of small biological samples (e.g., human skin, tumor tissue)

Hardware

probe beam	frequency range	connector type
DAK12–TL2	4 MHz – 600 MHz	3.5 mm
DAK3.5–TL2	200 MHz – 20 GHz	3.5 mm
DAK1.2E–TL2	5 GHz – 67 GHz	1.85 mm

- beam dimensions: 40 × 30 × 350 mm
- thickness measurement range: 0.1 – 10 mm
- thickness measurement precision: <3 µm
- force measurement range: 0 – 1000 N
- USB connector: Type B, Weight: ~16 kg
- operating temperature range: 10 – 50°C
- hardware customization to integrate with other systems

Software

- modern intuitive graphical user interface (GUI)
- streamlined workflows for dielectric measurements
- compatible with most vector network analyzers (VNAs) on the market
- fast and robust VNA control, data acquisition, and calculation of dielectric parameters based on averaging function and numerical noise filtering
- flexible scripting for automation and hardware customization
- automated software-guided measurement workflow
- data exported to DASY6/8 and SEMCAD X

Benefits

- broad-band measurement system is much more accurate than other technologies on the market
- direct, rapid, and accurate conversion of S_{11} to dielectric parameters
- novel multilayer algorithm compensates for the-formation of an air-gap between sample and probe
- new lossy platform to overcome flange resonance effects
- improved probe alignment repeatability with new mechanics
- enhanced user experience with improved GUI and software
- outstanding performance from 4 MHz – 67 GHz over a wide permittivity range

Accuracy

- typically <3%
- novel multilayer calibration algorithm
- improved short
- measurement repeatability typically ±1%

Calibration

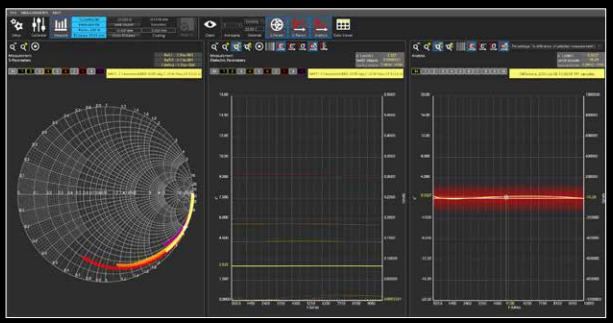
DAK-TL2 systems are calibrated according to SPEAG's high-quality procedures that are ISO/IEC 17025 accredited by the Swiss Accreditation Service (SCS 108). More information can be found on our website: www.speag.swiss/services/cal-lab.

For further information and technical specifications, visit **www.speag.swiss**

DAK-TL2 with protective covers required for user safety

Short calibration with DAK-TL2

DAK-TL2 calibration set



Graphical user interface

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