

An Overview of Cascade Microtech's RF Probing Solutions





These measurement solutions demonstrate Cascade Microtech's continuing commitment to provide complete, integrated test solutions to the device characterization and modeling community. Our goal is to continue to expand characterization capabilities and to provide solutions to semiconductor companies that will provide massive gains in productivity.



CASCADE® MICROTECH

Innovating Test Technologies®

Device Characterization Solution to 110 GHz

Solution Architecture

Cascade Microtech:

- Infinity Probes to 110 GHz
- High Performance millimeter-wave calibration standards
- WinCal® calibration software
- Wavevue Measurement Studio™ device characterization software
- State-of-the-art 150mm, 200mm and 300mm analytical probe stations

Agilent:

- N5250A (PNA series 110 GHz network analyzer)
- E5270 Parametric analyzer

Leading-edge devices using SiGe, InP and GaAs technologies now operate at frequencies to 110 GHz and beyond. The transition to silicon germanium processes allows companies to create powerful new micro-communication devices. Due to increased competition, bringing these devices to market faster, cheaper and with higher performance is now a requirement. This turnkey solution combines the necessary tools to fully characterize these devices from 10 MHz to 110 GHz.



Device Characterization Solutions to 67 GHz

Solution Architecture

Cascade Microtech

- Infinity Probes to 67 GHz
- High Performance calibration standards
- WinCal calibration software
- Wavevue Measurement Studio device characterization software
- State-of-the-art 150mm, 200mm and 300mm analytical probe stations

Agilent:

- E836x and E835x PNA series network analyzers
- E5270 Parametric analyzer

The demand for high-frequency ICs is being driven by the growth of complex electronic systems with clock rates of >1 GHz (PCs, PDAs, wireless LANs, Bluetooth chips). This turnkey solution combines the necessary tools to fully characterize these leading edge devices and circuits from 10 MHz to 67 GHz.



Differential/Multiport Characterization Solution to 8.5 GHz

Solution Architecture

Cascade Microtech:

- High performance single and dual signal characterization RF probes
- Dual and differential on-wafer calibration standards
- State-of-the-art 200mm and 300mm semiautomatic or manual RF probe stations
- ENA Wafer Cal calibration software

Agilent:

- ENA Series RF network analyzer

The use of differential circuit topologies is becoming increasingly common in a wide range of RF applications.

This solution enables the differential-differential or single-ended-to-differential linear device or circuit to be fully characterized under its desired mode of operation to 8.5 GHz



Differential/Signal Integrity Characterization

Solution Architecture

Cascade Microtech

- Dual ACP characterization probes
- Series of dedicated dual calibration standards for use to 50 GHz
- Broad range of probing systems

Agilent:

- N1957A Agilent Physical Layer Test System (PLTS) (10 MHz – 50 GHz)

As demand for higher bandwidth and faster switching edge rates increase, designers must analyze interconnects as transmission lines. It is crucial that designers understand the electrical characteristics associated with transmission lines when designing, for example, high-speed printed circuit boards (PCBs). If they are not properly handled, transmission lines can exhibit high frequency effects, such as reflections from discontinuities, dispersive loss, crosstalk, potentially resulting in functional system failures. As data rates increase from 10 GB/s to 40 GB/s, characterization of these passive linear devices is required to 50 GHz.



RF Impedance Solution

Solution Architecture

Cascade Microtech

- Summit 9100 probe station
- Infinity Probes
- High performance calibration standards
- Adapter Kit for E4991A module to probe station

Agilent:

- E4991A RF impedance analyzer

As more ICs or circuit modules are used in electronic circuits to save space, more capacitors or inductors, such as thin dielectric layers and pattern inductors, tend to be developed on wafer or substrate. These devices usually have a small capacitance or inductance in the pF or nH range. This solution enables accurate impedance measurements between 1 MHz and 3 GHz.



Noise/Load-Pull Device Characterization Solution

Solution Architecture

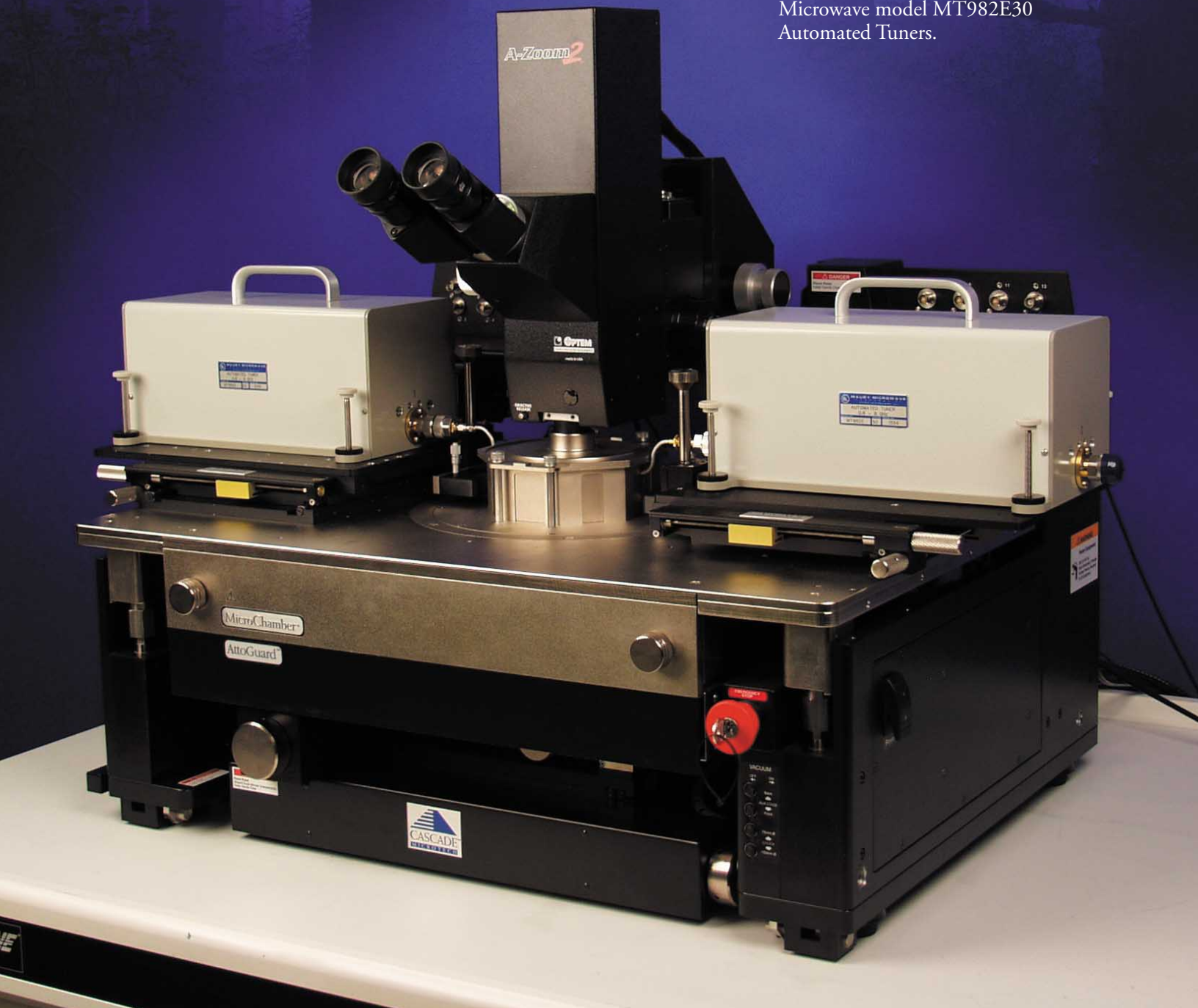
Cascade Microtech

- Semiautomatic probe station with MicroChamber
- High performance characterization probes
- High performance on-wafer calibration standards
- WinCal calibration software

Maury Microwave

- MT982E30 Automated Tuners

This type of characterization speeds the design cycles for device modeling and circuit design, and the deembedded data allows development of integrated RF solutions for low-cost, high volume markets. The non-contacting tuner design provides high matching range, high repeatability, and vibration-free operation essential for precise on-wafer measurements. The system solution includes the Maury Microwave model MT982E30 Automated Tuners.



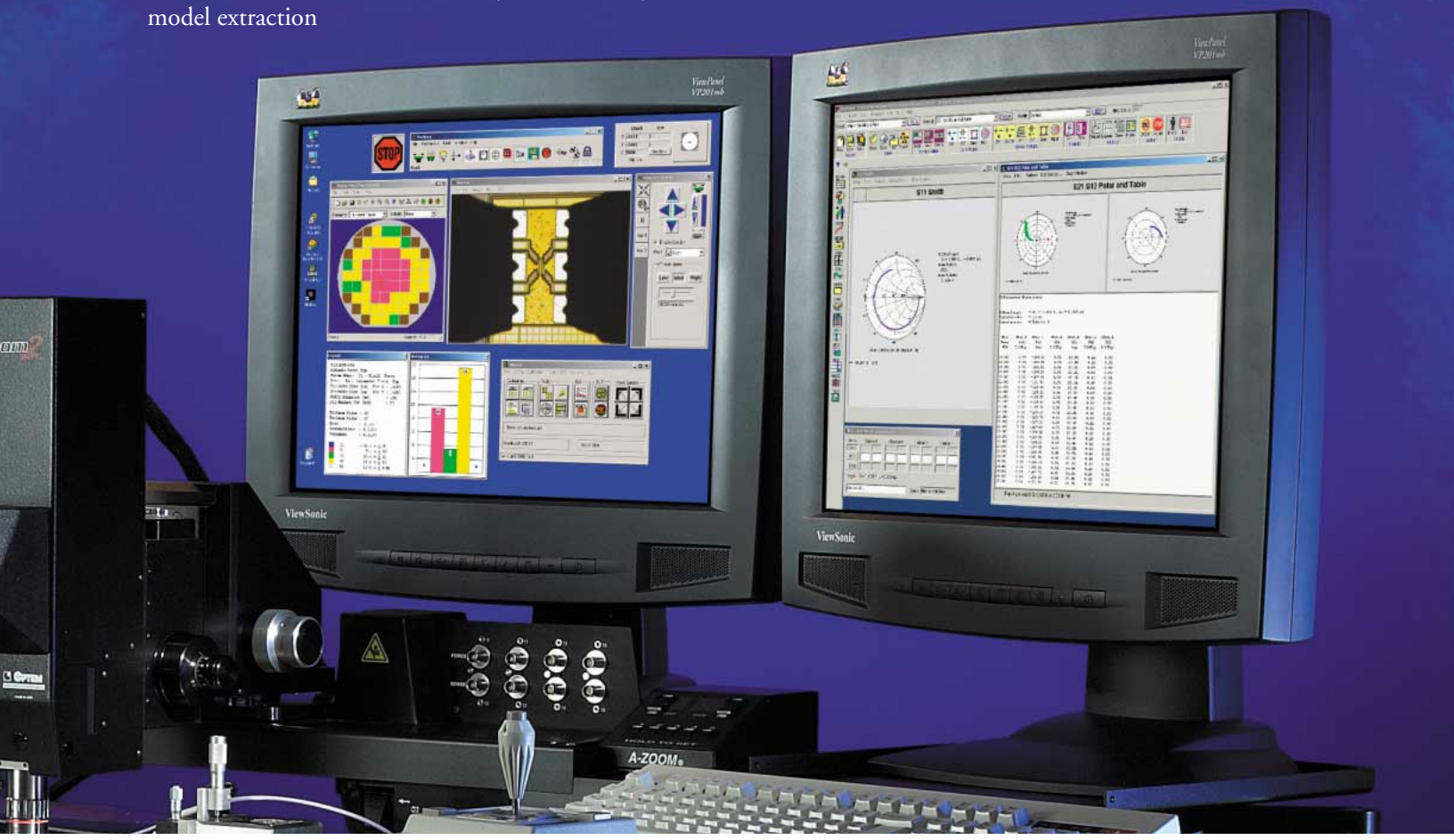
Wavevue Measurement Studio™ Software & WinCal® Calibration Software

Measurement Capability:

- S-parameters of 1 and 2 port active or passive devices
- Automated DC Biasing of active devices, DC curves
- IV (Gummels,forward and reverse breakdowns)
- CV measurements versus bias, frequency, AC signal level
- Temperature control
- Wafer Stepping
- Instant report generation and export
- Data Manager (Select and compare data from different measurement sessions)
- Transfer data to IC-CAP software (MDM format) for model extraction

Measurement application software that enables on-wafer tests to be fully automated and the data exported to a modeling software program.

Wavevue integrates all the tasks of calibration and measurement, data collection, data archiving and analysis, and comprehensive reporting and export of data into a single easy-to-use package.



CASCADE MICROTECH

Innovating Test Technologies® for better measurements faster

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