Q & A

CASCADE MICROTECH

Innovating Test Technologies®

Wavevue Measurement Studio™ Software for Device Characterization

Why is this announcement important?

In today's competitive market place the characterization of semiconductor devices for modeling, design applications and process improvement must be faster, more efficient, and more repeatable and accurate as companies strive to improve their product performance, design productivity and time to market.

This software is designed to meet the demanding requirements of device characterization by integrating 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.

How do engineers perform their tests today?

The key barriers to increasing lab productivity and reducing the cost of test are the lack of test automation and management of large quantities of test data. The test data productivity issue is making it easy to find and retrieve in a useful format that can be shared amongst users.

There are two main options that are used to perform tests:

Modeling software: The existing modeling software packages when used for measurements with data acquisition often require a highly skilled operator proficient in a script language to create the test plans. The complexity makes automation of the tests difficult and subsequently it is easy to make errors. This can be very time consuming resulting in increased backlog of measurements due to poor asset utilization. When the software is being utilized for measurements, it cannot be used for modeling, thereby reducing the overall return on investment of the modeling software.

In-house developed tools: In-house tools tend to be only a partial solution for a specific task. Once the task has been completed, the software can become redundant and new software will need to be developed from the beginning for future projects. There are a number of hidden costs for companies that decide to write their own software. If they had foreseen programming, verification and QA costs, they probably would have decided that a commercial alternative would be more attractive, since it would actually be cheaper and enable the measurements to be performed immediately. The main issues are:

- Test program development time (usually underestimated and never ending) – no cap on expenses
- Internal support
- Internal documentation on software and measurement sequence
- Growth
- Quality training programs that work
- Availability of engineers who have both measurement and software expertise
- Lack of availability for information on new instruments for future integration

The main implications of these variables are that projects can be delayed and run over budget. This can also lead to missing the market window of the product and subsequently lost incremental revenue.

What kinds of companies would be suited with Wavevue?

Wavevue is well suited for companies that:

- are new to the RF market and that have no software
- are doing device characterization working at either wafer or package level
- are utilizing IC-CAP for measurements and want to utilize it solely for modeling
- has a Cascade Microtech probe station or a manual probe station
- have a VNA, parametric analyzer and LCR meter and are looking to automate test
- do not like programming
- have outgrown their in-house legacy tools

How do Wavevue and Agilent IC-CAP compliment each other?

Wavevue is a complimentary software package to Agilent IC-CAP modeling software that enables a fully integrated device characterization and modeling solution.

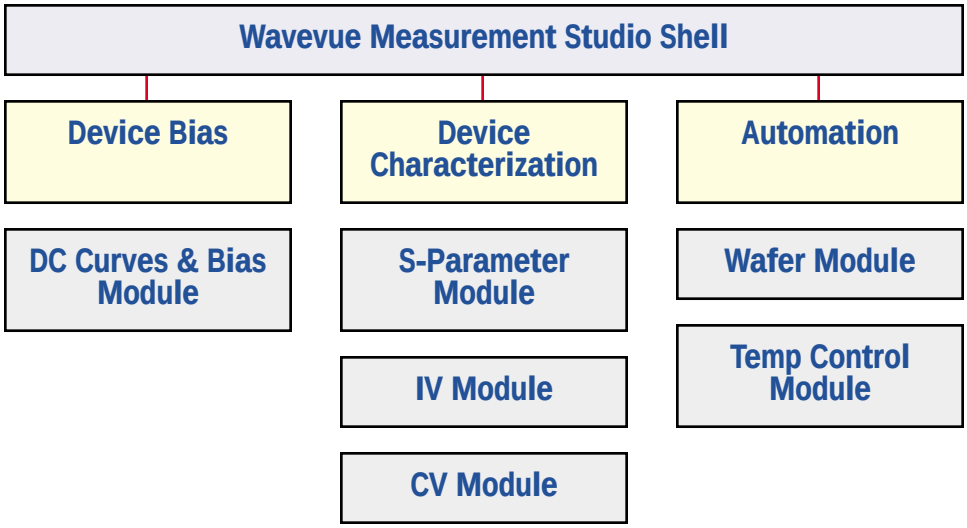
Wavevue is a device characterization software package that:

- Enables fully automated on-wafer test
- Allows transfer of data directly to IC-CAP for extraction

Engineers can perform their measurements and model extraction in parallel, improving overall productivity and the return on investment on the whole solution

What is Wavevue Measurement Studio?

Wavevue is designed for on-wafer, fixture and module applications so the same software can be used as products flow vertically throughout an organization. Wavevue has a modular architecture as shown below allowing users to add functionality, as they need.



The measurement capability is:

S-parameter Module: Supports measurements of S-parameters of 1 and 2 port active or passive devices. Two methods of parasitic de-embedding are provided. Standard input/output network deembedding and probe parasitic removal.

DC Module: Automated DC biasing of active devices. A device set-up wizard assists with details of setting up each channel of bias including source mode, monitor channels, sequencing and timing. DC curves to determine desired operating point of device.

IV Module: Gummels, forward and reverse breakdowns

CV Module: CV measurements versus bias, frequency, AC signal level

Wafer Module: Wavevue is fully integrated with Nucleus, the control software for Cascade Microtech automated probe stations.

The common software shell enables all the measurement modules to share:

- File and data object management
- Report creation
- Data analysis functions

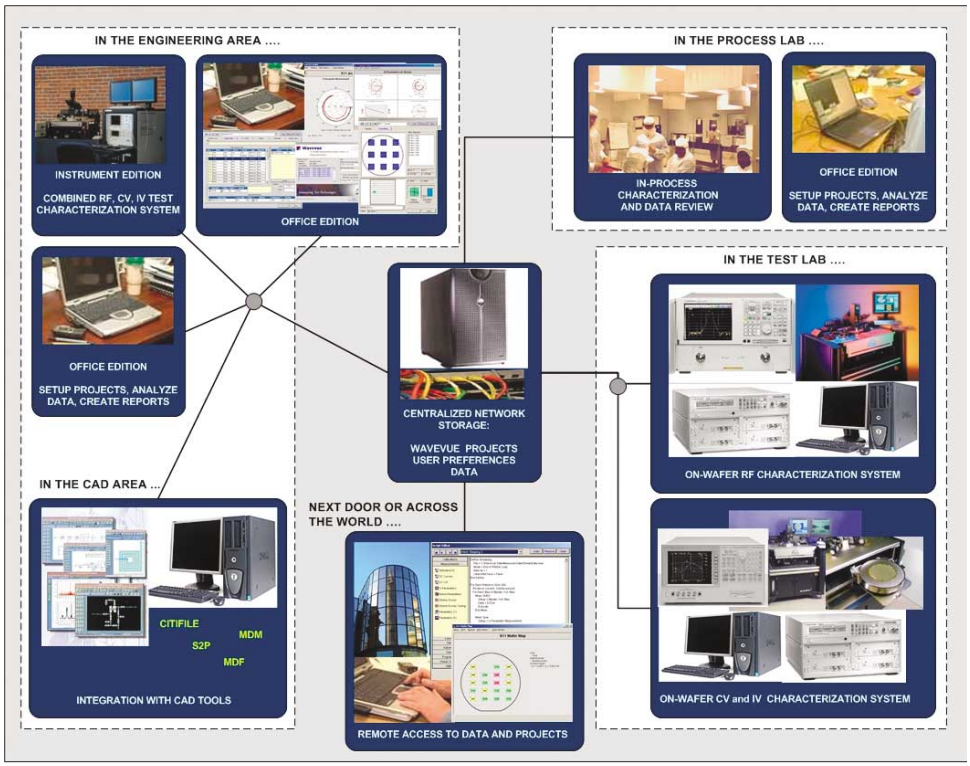
Reports and data: Wavevue has extensive report generation capability. The Report Manager helps users create reports that can then be combined into custom layouts. All the most common types of reports (X-Y, Smith, polar, wafer maps, tabular) can be provided. Wavevue's power lies in its ability to arbitrarily slice across multi-dimensional data and combine data from different measurement objects in a single plot. As extensive data fitting capability enhances the ability to present meaningful data. Parametric sweep plots (S11 versus frequency swept versus wafer reticle, for example) can identify trends that are not commonly seen.

Data manager: enables users to selectively retrieve data from many previous measurement sessions (files) and combine it with measurements in memory for comparison in reports.

CAD Links and Exports: The software exports S-parameter data in Touchstone (S2P), IC-CAP compatible format (MDM), and MDIF format. Direct export of reports and layouts to Microsoft Word is also supported.

What is the Enterprise Vision for Wavevue?

Wavevue is a total solution serving the needs of all members of the characterization and design teams both in the lab and their lab. There are two different editions of Wavevue that formulate the Enterprise Vision architecture.
A typical workflow is shown below where a test engineer running the Office Edition sets up a project that's defines all the measurements and reports. The project is then stored on the server and retrieved in the lab by the operator, who using the Instrument Edition, runs the measurement script.
Data is stored back on the server and is then available to the design, modeling and process engineers using the Office Editions. They can export to CAD applications, generate user-defined reports, compare new data with previously measured data, etc. This process ensures tests on a particular device are performed repeatable regardless of the operator. It also enables the immediately availability of the test equipment after the test plan is complete to make it available for other engineers to run their device-specific tests.



How does Wavevue help RF semiconductor companies meet their strategic objectives?

Implementation of Wavevue and its networked architecture, combined with Cascade's leading-edge test system capabilities, provides semiconductor companies with:

- Significantly improved characterization engineering productivity
- Improved asset utilization and
- The most advanced test system capability available

All of these factors contribute to reduce a manufacturer 's time-to-market of next generation chips.

How does Wavevue assist productivity of the Test Engineering staff?

The project-based user environment encourages the concentration and coordination of test activities (planning, design, measurement and analysis), which results in increased accuracy and measurement repeatability. This approach also ensures correlation of data between separate systems, subsequently reducing modeling and design cycle time. The result is substantial cost and time savings.
The flexible and instant report generation brings increased productivity in application data workflow.
The Wavevue modular architecture reduces cost of ownership and protects long term investments by offering customers the ability of adding modules as their characterization needs expand.
The consistent user interface for multiple test types reduces training and support requirements.

What wafer probe stations does Wavevue support?

Wavevue is a complimentary product to both Cascade Microtech's Nucleus prober control software and WinCal® VNA calibration software. Wavevue can be used with a manual probe station or Cascade Microtech's Summit 12000 series or S300 series semi-automatic probe stations.

How does Wavevue complement Cascade's test systems offerings?

Wavevue is an integral part of a complete Cascade Microtech test system solution for on-wafer device characterization. This complete solution includes,

- Measurement and calibration software integrated on a single system controller
- Infinity Probes,
- Comprehensive range of analytical probe stations
- Installation, support and training

Having a complete test systems solution available nearly eliminates the amount of RF engineering time needed in the past to design, coordinate, locate, assemble and troubleshoot a test system compiled from various disparate equipment and component sources. Now, an engineering team can look to Cascade to handle those details and assure the solution is integrated and tested beforehand.

Who do I contact for more information?

Customers, who are interested in this new integrated solution, should contact Cascade Microtech. Cascade Microtech is offering a range of value packages for new wafer probing customers as well as upgrade packages for our customer base, which ensure seamless integration of this new offering to their existing on-wafer RF test systems. To ensure customer success with these packages, Cascade Microtech is offering full support and at-factory training classes.

Why Cascade and Microvue?

Cascade has proven to be the successful world leader in on-wafer device characterization measurement solutions. Partnering with Microvue brings a strongly differentiated offering that provides high value to the device engineering community.

About Cascade.

Cascade Microtech, Inc. is the worldwide leader in providing high frequency and parametric on-wafer test solutions. Engineers use our solutions to test and characterize integrated circuits (ICs) and photonic devices. These devices are then used in semiconductor applications, such as personal computers, servers, cell phones, consumer and automotive electronics, fiber optics, PDAs, and other wireless products. Cascade Microtech also produces thin-film probe cards for production-level on-wafer testing of fine pitch, high-speed IC devices for broadband communications and networking, wireless and cell phones as well as other market applications. For more information visit www.cascademicrotech.com.

About Microvue.

Microvue, Inc, based in North Chelmsford,Massachusetts, develops commercial software, Wavevue Measurement Studio™, and custom hardware solutions for the characterization of RF and microwave devices and components. These devices are typically found in commercial communications devices such as cellular phones, wireless LAN adapters and access points, GPS receivers, and Bluetooth applications. Microvue focuses on providing versatile yet easy to use characterization software to design, modeling, process, and applications engineers working in both emerging and mature technologies. Microvue's prior design and device development experience, coupled with a commitment to customer productivity enhancement and support, position it as a unique supplier of characterization solutions. For more information about Microvue, please visit www.microvueinc.com.

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