

## Microwave Office Software with ACE Technology Dramatically Cuts Simulation Times of Multitest's High-performance IC Test Boards

### CUSTOMER BACKGROUND

Multitest is one of the world's leading suppliers of test equipment for semiconductor integrated circuits (ICs). It markets test handlers, contactors, and automatic test equipment (ATE) printed circuit boards (PCBs), which are used for the functional test of individual chips. They act as a mechanical and electrical interface between the semiconductor and the actual tester with the test software. A high throughput rate, measurement accuracy to the thousandth of a millimeter, precision temperature accuracy, and the latest in measurement and production technology are all important factors.

### THE DESIGN CHALLENGE

Multitest's main customers are multinational manufacturers of semiconductors who insist on the highest quality standards in their products. In order to ensure this high quality, the company provides its clients with highly innovative test handling solutions, custom-tailored to fit individual needs and requirements. Because high throughput rate and accuracy are critical, Multitest uses AWR's Microwave Office with ACE (automated circuit extraction) to simulate and optimize its PCB designs simply, accurately, and efficiently.

### THE SOLUTION

#### What design problem did AWR's software help you to solve?

Microwave Office enabled us to readily create libraries for several different PCB stackups (various numbers of layers and thicknesses) characterized previously in 3D EM. Within each of these libraries, via models were linked to .s2p files that were simulated in a 3D simulator. Proper via modeling (through-hole and back-drilled) is a critical component to accurate PCB simulations. With the ACE technology enabled within AWR's Microwave Office software, we were able to leverage the ease, simplicity, and efficiency of ACE, and the Microwave Office user interface for that matter, to successfully simulate any board desired while maintaining appropriate via models as well.

AWR's Microwave Office software with its ACE innovation simplified a job that used to take many hours into one that is more streamlined – completed in significantly less time.



Application:  
Signal Integrity -  
Printed Circuit Boards

AWR Software:  
Microwave Office®  
Featuring ACE™ -  
Automated Circuit  
Extraction



“Using AWR's ACE technology, Multitest is able to accurately and efficiently simulate PCB interfaces prior to fabrication.

This gives our customers the confidence they need before they even receive our hardware.”

Ryan Satrom  
Signal Integrity Engineer  
Multitest  
[www.multitest.com](http://www.multitest.com)

## Why did you choose AWR?

We chose AWR software for several reasons:

- 1) The user-friendly interface of the software makes it easy to learn
- 2) PCB layout importing is straightforward and robust
- 3) ACE is accurate and fast, giving us a quick design turnaround

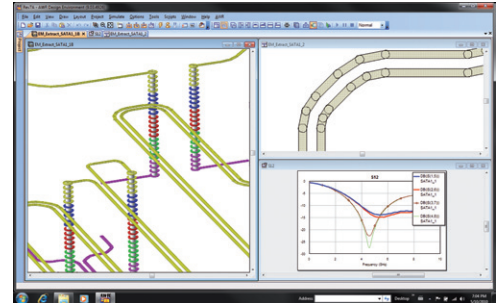
For these reasons and more, AWR's Microwave Office featuring ACE is a winning combination for the design of Multitest's high-performance PCB test boards. Personally, I've seen some designs realize more than 50% saving in simulation time (including set-up steps) by adopting this methodology.

## ABOUT MICROWAVE OFFICE

Microwave Office design suite is the industry's fastest growing microwave design platform and has revolutionized the communications design world by providing users with a superior choice. Built on the AWR high-frequency design environment platform with its unique Unified Data Model™, Microwave Office software is intuitive and offers powerful, innovative technologies and unprecedented interoperability, enabling integration with best-in-class tools for each part of the design process. The Microwave Office design suite includes all of the essential technology: linear and nonlinear circuit simulators, EM analysis tools, integrated schematic and layout, statistical design capabilities, and parametric cell libraries with built-in DRC.

## ABOUT ACE

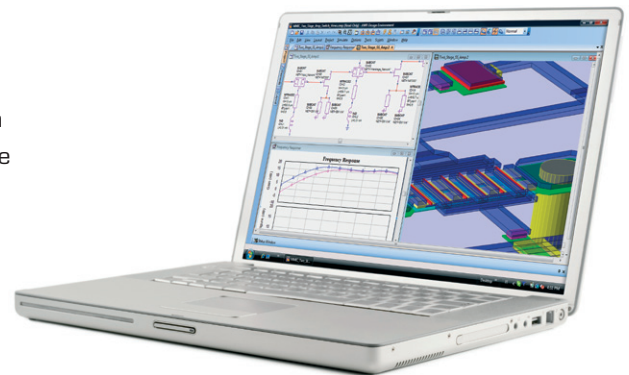
Innovative ACE circuit extraction technology dramatically reduces from hours to seconds the time required to do the initial modeling of complex interconnects. The technology enables designers to perform interconnect modeling at the earliest stages of the design flow, where problems can be identified and corrected before costly and time-consuming redesigns are required.



*Analysis of routing strategy is straightforward with ACE: if layout is tuned, the RF model is automatically updated and simulated. Image shows Multitest's test board routing layout and simulation results.*



*Proper via modeling is a critical component to accurate PCB simulations. Microwave Office thru vias showed in the layout view.*



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