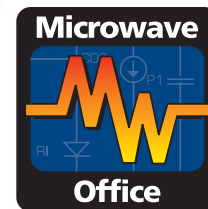


2007 Microwave Office ACE™

ACE — automated circuit extraction technology for modeling complex interconnects

Key Features and Benefits

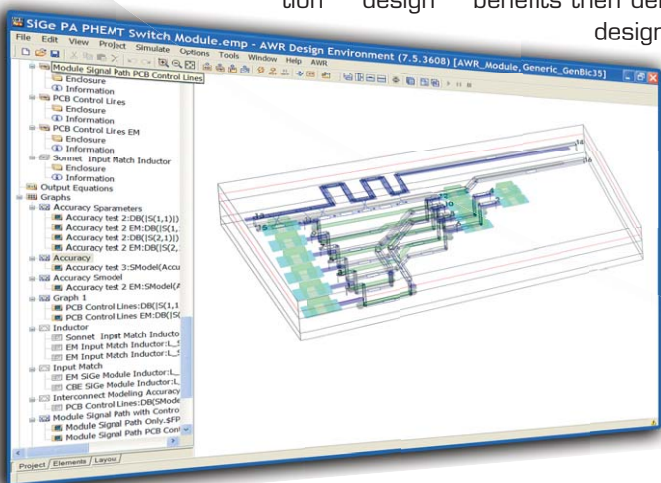
- Unique and innovative AWR technology that reduces from hours to seconds the time required to do the initial design and analysis of complex interconnects
- Models all types of lines: long traces, short coupled segments, multi-layer routes, and discontinuities
- Leverages popular distributed, discontinuity, and coupled circuit models, some with built-in, highly optimized EM solvers, for quick and accurate modeling at the earliest stages of the design flow
- Performance advantage of 1000x or more when compared to generalized EM solvers
- Applicable to printed circuit board (PCB), low-temperature co-fired ceramic (LTCC), modules, and monolithic microwave integrated circuit (MMIC) designs



Overview

The new Microwave Office® 2007 design suite from Applied Wave Research, Inc. (AWR®) introduces ACE™ circuit extraction technology, an innovative new tool developed specifically to deliver productivity benefits to the designers of today's complex, next-generation microwave and RF products. This novel circuit extraction design

approach dramatically reduces from hours to seconds the time required to do the initial modeling of complex interconnects. It enables the designer 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. These benefits then deliver a high degree of design confidence and in less design cycle time.



ACE technology is now available within Microwave Office 2007

What is ACE?

The AWR circuit extraction technology enables designers using Microwave Office software to leverage layout-based models for circuit extraction. It provides a dramatic and revolutionary methodology shift to layout-driven simulation through a sophisticated mechanism for automating the bookkeeping and partitioning of structures into pre-existing models.

The ACE technology is orders of magnitude faster than the electromagnetic (EM) methods traditionally used for RF/microwave interconnect extraction because it groups interconnects together and effectively creates a schematic model using distributed and coupled-line circuit elements. Similarly, rather than using generalized finite element method (FEM) or method-of-moments (MOM) solvers designed for arbitrary arrangements of geometries, many of these circuit elements leverage highly optimized EM solvers, providing a tremendous speed advantage.

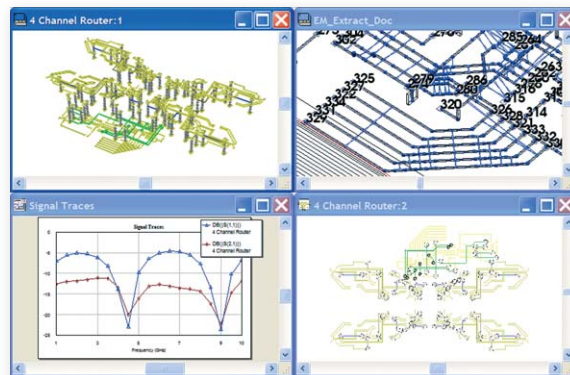
ACE - What's the Benefit?

Effectively, the ACE tool creates parameter-based circuit schematics from layout. The benefit is that designers now have abstracted insight into circuits previously modeled only with S-parameter files. The ACE technology provides a significant speed advantage over EM with similar accuracy, benefiting designers with reduced design cycle time and loops. Even more importantly, by varying the range over which the ACE software looks for coupled lines, and removing those lines individually with a single mouse-click from a larger ACE extraction, designers can actually pin-point which interconnects are the cause of degraded or aberrant performance.

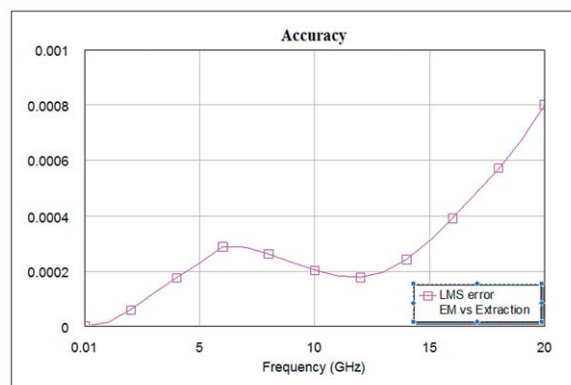
ACE technology can be implemented at any time during the formation of the schematic; there is no need to wait for the completion, capture, and layout of the design. Small sections of the design, such as bias circuitry or control lines, can be analyzed individually and then combined with larger portions of the design as it matures. ACE structures can be instantly re-analyzed during final design verification with any EM solver connected to AWR tools through AWR's EM Socket™, an open, industry-standard interface for the direct integration of popular EM solvers into the AWR design environment.

Summary

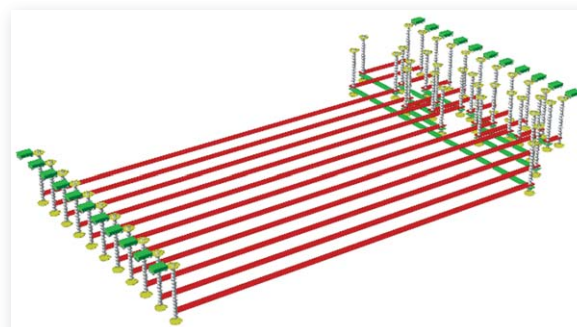
AWR's ACE innovation puts the power of the design process back into the engineer's hands because it provides the user with the ability to parametrically investigate designs by combining the proven technique of circuit extraction with microwave models and understandings. The ACE technology aids the designer in identifying complex interconnect issues during the design process, where it is timely and cost-effective to do so, while at the same time reserving EM analysis for final verification of the design.



20 frequency point simulation of all couplings in a 336 port extracted transmission line network was analyzed in less than 30 seconds



ACE is fast and accurate up to 20GHz and beyond (within 0.1% of EM analysis results)



The ACE technology models this 16 layer PCB structure 1000x faster than generalized EM solvers



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