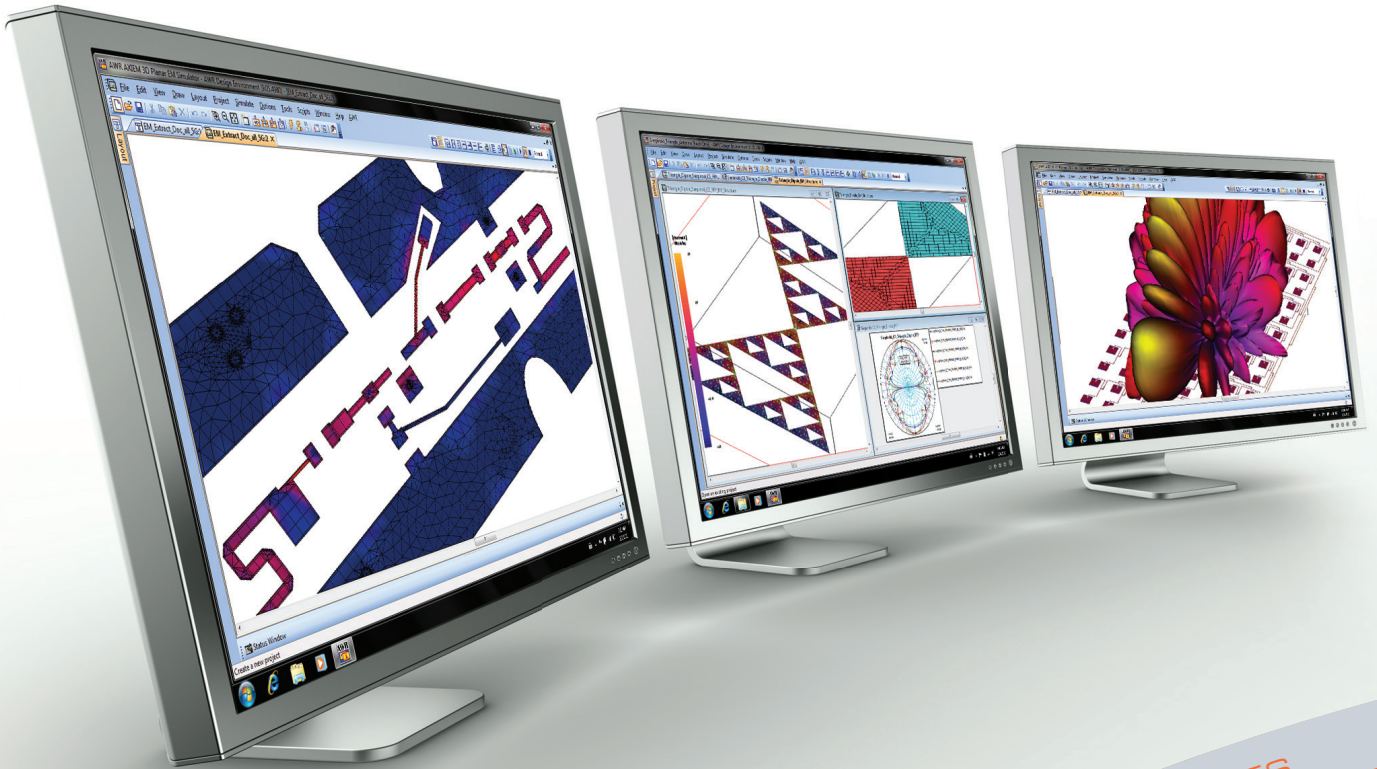




A National Instruments Company™

AXIEM®



3D PLANAR ELECTROMAGNETIC SOFTWARE FOR ANTENNAS AND PASSIVES

www.awrcorp.com

Advancing the Design of 3D Planar Interconnects

INTRODUCTION

AXIEM® 3D planar electromagnetic analysis software is a valuable addition to the AWR Design Environment™. Whether you're characterizing and optimizing passive components on RF printed circuit boards (PCBs) and modules, low temperature co-fired ceramic (LTCC) structures, monolithic microwave integrated circuits (MMICs) and RFICsm, or antennas, AXIEM's accuracy, capacity, and speed shorten or even eliminate design cycles, saving precious time and money.

TOSHIBA

"We chose AXIEM because of its speed, capacity and accuracy. It enabled us to shorten our design process. AXIEM helped us deliver a higher performing antenna product in less time while also reducing design and manufacturing costs."

Shinichi Goto

Design Manager

Toshiba, Antenna & Media Division

YOUR PRODUCTIVITY MATTERS

AXIEM technology is an open-boundary, non-gridded, method-of-moments (MoM) solver that supports thick metal in layered dielectric media. It incorporates the most recent advancements in EM solver technology, meshing algorithms, and software architecture to deliver unprecedented speed and accuracy. You'll find its exceptional performance becomes more and more evident as your design complexity grows and unknown count increases.

AXIEM TECHNOLOGY & INNOVATIONS

Method-of-Moments: 3D planar solvers that rely on the Sommerfeld or similar integral formulations are often fast for small to medium-size problems, but have limited accuracy and dynamic range and excessive simulation time for large problems. AXIEM overcomes all of these limitations. Its solver scales as $N \cdot \log(N)$, dramatically reducing simulation time and allowing it to handle much larger problems than would be possible with other 3D planar EM tools.

Solver Technology: AXIEM's solver technology is also accurate and robust down to DC, which is essential for determining correct bias conditions and setting the DC operating points for active structures. The integrity of these broadband results mitigates design issues associated with using "DC-to-daylight" data in subsequent harmonic balance or transient simulations performed within Microwave Office® or Analog Office® design environments.

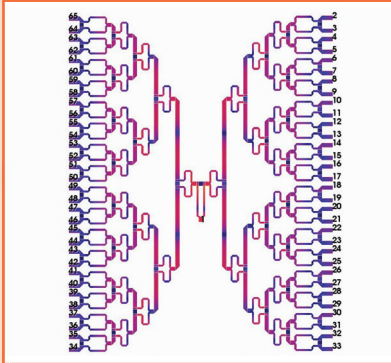
Meshing Technology: AXIEM's hybrid meshing technology automatically fractures structures with triangular and rectangular elements, optimizes accuracy with minimal unknowns, and employs intelligent automatic geometric defeaturing. Its heuristic approach extends its capacity beyond what can be achieved with traditional single-element approaches, making it well-suited for large RF and microwave designs. In addition, AXIEM's thick metal capability is essential for successful solution of ICs and multilayer RF boards where line thickness is often in parity with line width.

MMIC/RFIC PASSIVE
CIRCUITRY

RF PCBs, LTCC,
MODULES

ANTENNAS

AXIEM APPLICATIONS



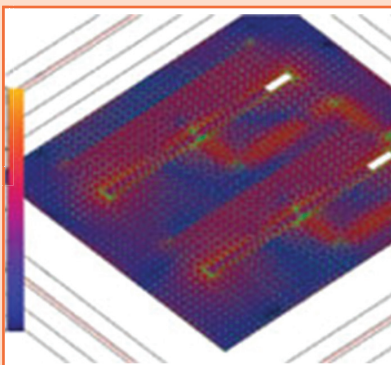
MMIC/RFIC Passives:

AXIEM excels at characterizing passive circuitry in MMICs and RFICs that range from interdigitated capacitors to spiral inductors. It not only accurately captures circuit response in the form of S-parameters, but visually displays current densities and other parameters as well. **AXIEM** can solve designs an order of magnitude more complex than other MoM point tools, making it possible to simulate all passive circuits in a MMIC or RFIC.



RF PCBs, LTCC, Modules and More:

AXIEM analyzes 3D planar interconnects within RF circuit boards, LTCC structures, modules, and packaging. It accurately captures coupling and parasitic effects of passives such as stripline, microstrip, and vias, streamlines EM analysis through its seamless integration within the Microwave Office environment, and links to layouts from Cadence, Intercept, Mentor, Zuken, and other tools.



Antennas:

AXIEM is an excellent choice for antenna analysis and post-processing of planar antennas and arrays. Fast $N \cdot \log(N)$ solver technology lets you analyze large, complex arrays that were previously impractical to simulate in their entirety. Post-processing capabilities include the ability to not only show the currents on antennas but also 2D and 3D far-field antenna pattern measurements for linear, circular, and elliptical polarizations.

FEATURES AT A GLANCE

- Seamless integration with Microwave Office and Analog Office software
- Proprietary full-wave planar EM solver technology
- Open-boundary MoM approach
- Advanced hybrid meshing technology
 - Geometrically-aware and optimized
 - True thick metal support
- Numerous source/excitations including auto-calibrated internal ports
- Shape pre-processing (rule-based shape modifiers)
- Parametric studies, optimization, tuning, and yield analysis
- 3D visualization and animation
- Antenna analysis and post-processing
- Support for 64-bit PC platform, multi-core configurations, and asynchronous simulation



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CAPABILITIES

- Schematic-driven EM via AWR's EM-extraction technology
- Layout/drawing editor
- Automatic and adaptive meshing
- Discrete and fast-frequency sweeps
- Visualization and results post-processing

APPLICATIONS

- On-chip passive components
- RF PCB, modules and packaging interconnects
- Antenna and antenna arrays

Advancing the wireless revolution®



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