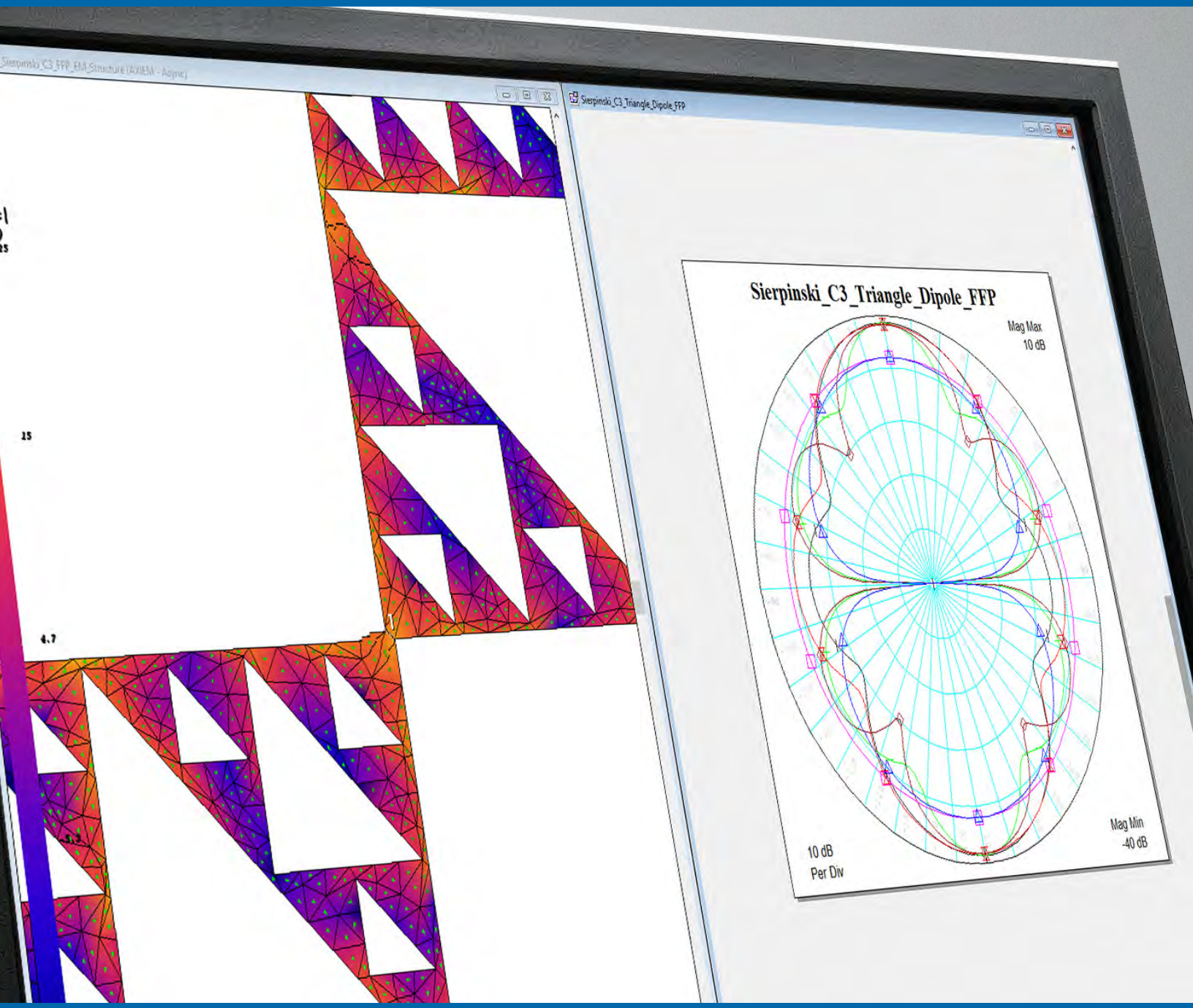
AXIEM

3D Planar EM Analysis Software



cadence®

AXIEM

3D Planar EM Analysis Software

AXIEM is the 3D planar electromagnetic (EM) analysis software found within the AWR Design Environment platform. Its fast solver technology readily addresses passive structure, transmission line, large planar antenna, and patch array designs. Whether characterizing and optimizing passive components on RF PCBs, modules, LTCCs, MMICs, RFICs, or antennas, AXIEM has the accuracy, capacity, and speed needed to ensure a right-the-first-time design.

AWR Design Environment

Microwave Office

Visual System Simulator

Analog Office

AXIEM

Analyst

Advantages

Fast and Accurate

Fast, adaptive hybrid-meshing technology supports thick-metal planar structures and vias to automatically break down structures into triangular and rectangular elements for maximum accuracy and robust broadband results, from DC to daylight.

Unparalleled Integration

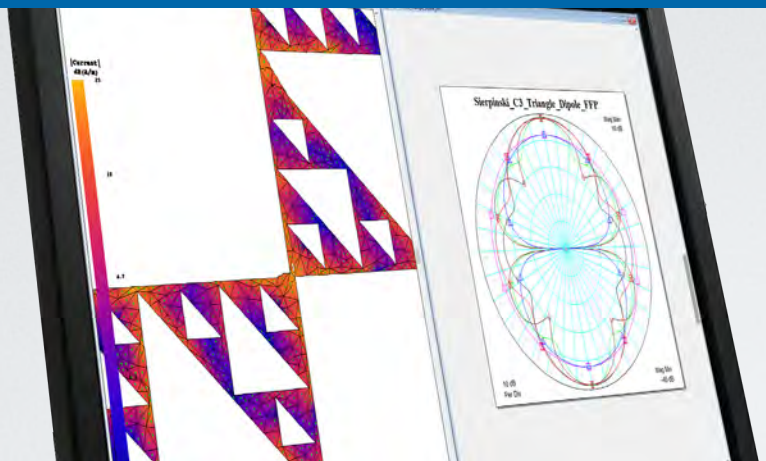
AXIEM is seamlessly integrated into circuit and system designs to support direct EM co-simulation of planar structures such as passive components and interconnects. The proprietary AWR unified data model enables EM extraction and design verification, directly incorporating the results into circuit and/or system simulations without having to perform explicit layout definition, EM simulation setup steps, or data importing.

Versatile

Extensive sources/ports, including auto-calibrated internal ports and de-embedding options, provide greater flexibility while maintaining accuracy for structures with embedded circuit-based, lumped-element components and active devices such as transistors.

"Microwave Office, AXIEM, and Analyst were pivotal in the analysis of circuit parasitics, tuning towards optimization, and analysis of the effects of environmental disturbance, enabling us to produce an overall more robust product."

Nicolas Henriet, Sensata Technologies



Features at a Glance

- Layout/Drawing Editor – 2D and 3D views
- Proprietary Method-of-Moments (MoM) Technology
- Meshing Technology – Automatic adaptive meshing
- Numerous Sources and Excitations
- Visualization and Results Post-Processing
- Parametric Studies – Optimization, tuning, and yield analysis
- HPC – Multi-core configurations and asynchronous simulation

Capabilities

Design Flow – In addition to being fully integrated within AWR Design Environment, AXIEM supports database imports from enterprise layout tools such as Cadence, Mentor Graphics, Zuken and more. AXIEM further supports many design automation features such as automatic addition of ports to EM sub-circuits that greatly simplify using EM simulation throughout the design process.

Passive Modeling – Provides 3D planar EM simulation of transmission lines and arbitrary structures on single- and multi-layer circuits using MoM technology with advanced meshing to accurately compute S-, Y-, and Z-parameters, as well as current densities of multilayer RFICs, MMICs, PCBs, hybrids, and MCMs.

Optimization and Yield – Perform accurate design diagnostics such as yield analysis and optimization for passive components and complex interconnects, capturing true coupling and parasitic effects of circuit topologies that are specified parametrically and/or defined through rules-based shape modifiers/de-featuring.

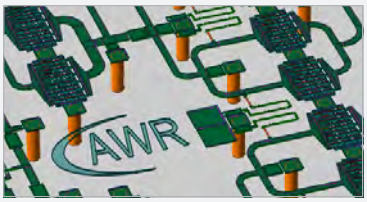
Visualization – Plot color-coded currents and electric field strength directly on an analyzed structures to gain insight into component behavior and the source of potential design failures.

Simulation

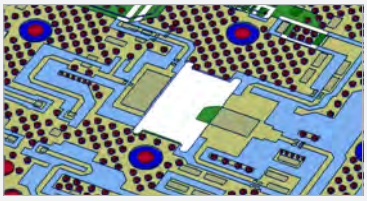
Meshing – With advanced hybrid meshing technology that automatically fractures structures with triangular and rectangular elements, AXIEM is optimized to maximize accuracy with minimal unknowns. Its heuristic approach extends the capacity reach of AXIEM above and beyond traditional homogeneous mesh types.

Method of Moments – AXIEM employs a unique and proprietary technique similar to the fast multi-pole method, yet adapted for full-wave analysis. As such, the AXIEM solver algorithm scales on the order of N*log(N) as opposed to N^3 which is the case for most existing MoM products.

Antenna Analysis – Perform analysis and post-processing of planar antennas and planar arrays. The fast N*Log(N) solver technology addresses large, complex arrays that were previously impractical to simulate in their entirety.



MMIC/RFIC
Supporting thick metal, AXIEM creates 3D meshes of extruded planar geometries, correctly accounting for all x, y, and z directed currents on all surfaces—a prerequisite for successful design of III-V and silicon MMIC/RFIC designs.



RF/High-Speed PCB
The layout-driven PCB design flow supports accurate simulation of the entire RF signal path. EM co-simulation ensures first-pass design success with direct analysis of complex electrical interconnects as well as embedded and distributed passive elements.

Modules and Packaging
AXIEM analyzes 3D planar interconnects within RF modules and packaging, accurately capturing the coupling and parasitic effects of stripline, microstrip, and vias, thereby streamlining EM analysis from within the Microwave Office environment.

Services and Support

Technical Support
Get started faster or work through tough issues by contacting AWR software support engineers who are ready to help via phone and email during normal business hours.

Technical Resources
Access volumes of self-help information at awr.com/support, including application tips, example projects, user forum, and more.

Online Training
Get a jump start with self-paced modular training videos on awr.com/elearning that aim to educate new users on AWR software.

Academic Resources
AWR software donations are available to support academic institutions with an emphasis on teaching and/or non-proprietary research.

Learn more at awr.com

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