

An inverted-F antenna simulated with IE3D-SSD

Major product benefits

- High Accuracy — Based on production-proven IE3D EM simulation technology; yields reliable, predictable results
- High Capacity — The EM simulation and modeling limits have been extended. Full package, PCB, and IC/MMIC circuits can be solved within a compact memory footprint
- Fast Throughput — Leverage the 50X-100X run-time advantage over other solutions on a single processor computer, or use any combination of multi-core/multi-node distributed processing to return results on challenging designs in hours instead of days

Overview: Fast, Accurate Electromagnetic Simulation for Large Structures

High-frequency designs are using more — and larger — specialized planar and full-3D electromagnetic (EM) structures than previous generations. In turn, the need for fast, high-capacity, full-3D EM simulation solutions that render dependable results are now considered “must-have” for every high-frequency designer’s toolbox. IE3D-SSD™ is regarded as the industry’s *de facto* standard EM structure design tool built upon the only full-wave 3D method-of-moments platform. IE3D-SSD is ideally suited for the design of monolithic microwave integrated circuits (MMICs), radio-frequency integrated circuits (RFICs), low-temperature co-fired ceramic (LTCC) circuits, high-temperature superconducting (HTS) circuits, radio-frequency identification (RFID) antennas, patch antennas, slot antennas, wire antennas, and most other RF and wireless antennas.

Because of its proven accuracy, speed, capacity, and flexibility, IE3D helps designers quickly turn ideas into designs, and designs into products.

Efficiency Enhancing Features

IE3D-SSD incorporates the industry's only Full-Wave 3D Method-of-Moments (MoM) EM simulation implementation. The MoM provides full 3D capability in the frequency domain, treating both planar and 3D high-frequency structures in a multilayer environment.

The built-in, powerful EM structure editor has a flexible input mode in both 2D or 3D. The editor also provides full support for major CAD formats, such as GDS, DXF, and ACIS

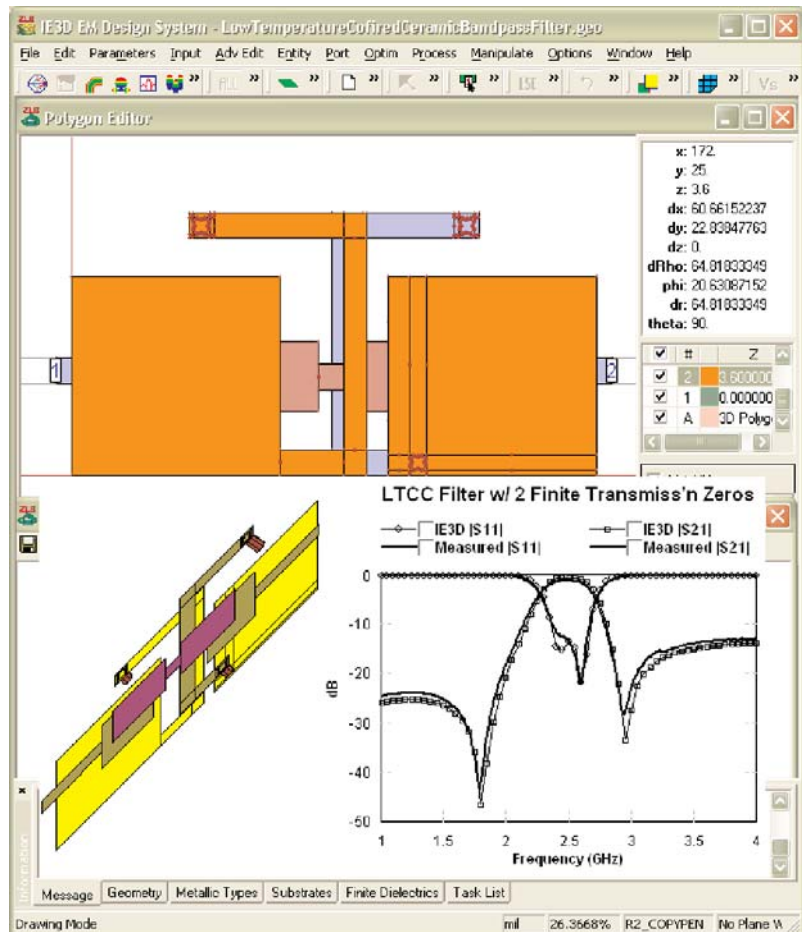
Adding to efficiency, IE3D-SSD also includes an automatic mixed mesh (rectangular and triangular cells) to model structures of arbitrary shapes with minimum computational effort. This is key to IE3D-SSD's high performance.

Other important features include:

- Built-in optimization and parameterization/fastEM schemes
- Automatic magnetic current formulation enhances usability
- Unlimited number of layers and ports
- Finite dielectric or different dielectric portions within the same layer
- EM and circuit co-simulation of structures with active devices or lumped elements
- Lumped element equivalent (RLC) extraction
- Turn s-parameters into time-domain response using MD-Spice

Varied Applications

There are many applications that will benefit using IE3D-SSD. Among these are Integrated circuit design — simulate signal integrity, power integrity, and packaging; RF/Microwave circuits — simulate passive components, active components, LTCC circuits, and even high-temperature superconducting circuits; Antennas — full simulation for



An LTCC bandpass filter simulated with IE3D-SSD and verified with measurements.

a number of antenna geometries including patch, slot, wire, inverted-F, dielectric resonators, and even RFID tags and optical frequency antennas.

System Requirements

- Windows 32-bit systems
- Windows 64-bit systems
- Linux 32-bit systems (IE3D engine only)
- Linux 64-bit systems (IE3D engine only)

To learn more, call Mentor Graphics or visit our web site at www.mentor.com/pcb.

Copyright © 2010 Mentor Graphics Corporation. The marks for the Mentor products and processes mentioned in this document are trademarks or registered trademarks of Mentor Graphics Corporation. All other trademarks mentioned in this document are trademarks or registered trademarks of their respective owners.

Corporate Headquarters
Mentor Graphics Corporation
8005 SW Boeckman Road
Wilsonville, OR 97070-7777
Phone: 503.685.7000
Fax: 503.685.1204
Sales and Product Information
Phone: 800.547.3000

Silicon Valley
Mentor Graphics Corporation
1001 Ridder Park Drive
San Jose, California 95131 USA
Phone: 408.436.1500
Fax: 408.436.1501
North American Support Center
Phone: 800.547.4303

Europe
Mentor Graphics
Deutschland GmbH
Amulfstrasse 201
80634 Munich
Germany
Phone: +49.89.57096.0
Fax: +49.89.57096.400

Pacific Rim
Mentor Graphics (Taiwan)
Room 1001, 10F
International Trade Building
No. 333, Section 1, Keelung Road
Taipei, Taiwan, ROC
Phone: 886.2.87252000
Fax: 886.2.27576027

Japan
Mentor Graphics Japan Co., Ltd.
Gotenyama Hills
7-35, Kita-Shinagawa 4-chome
Shinagawa-Ku, Tokyo 140
Japan
Phone: 81.3.5488.3033
Fax: 81.3.5488.3004

