IE3D-SSD

Full-Wave 3D Simulation

An inverted-F antenna simulated with EI3D-SDD

Major product benefits

- High Accuracy — Based on production-proven IE3D EM simulation technology; yeilds 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, ful- 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.

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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 efficienty, 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 deisgn — 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
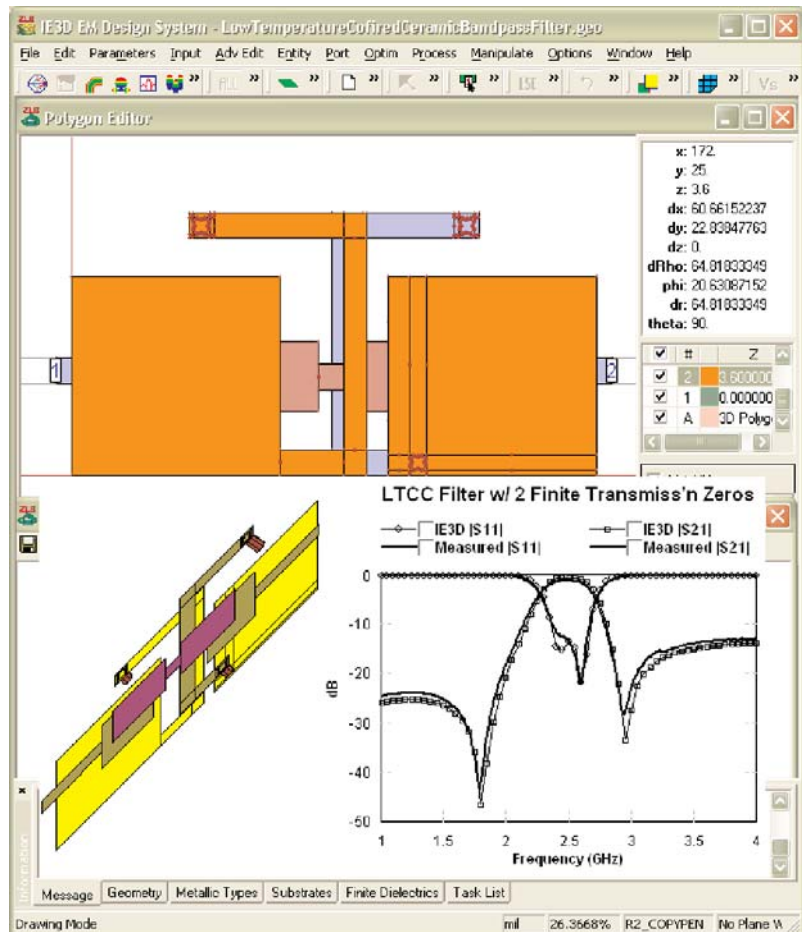
An LTCC bandpass filter simulated with IE3D-SSD and verified with measurements.

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.