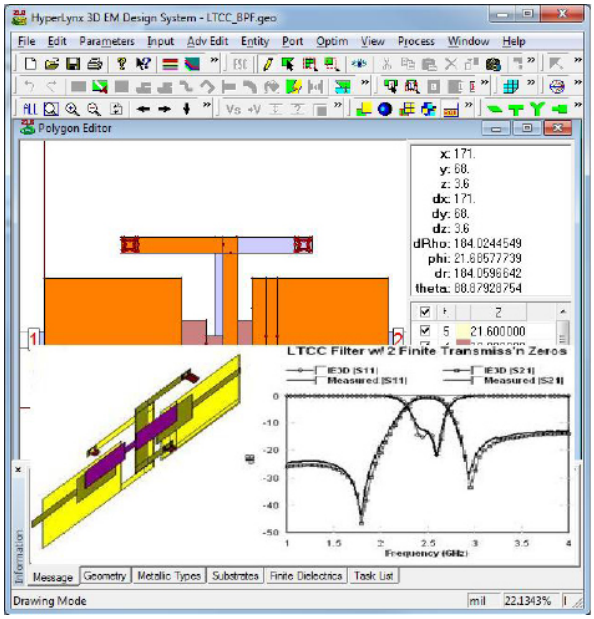
HyperLynx 3D EM SSD

PCB System Design

D A T A S H E E T



An LTCC bandpass filter simulated with HyperLynx 3D EM SSD and verified by measurements

MAJOR BENEFITS:

- Accurate simulation results that match measurement reduces your EM design costs by avoiding expensive design iterations.
- Fast full-wave 3D EM simulation engine speeds up design convergence and improves overall design quality by verifying more design issues in less time.
- Efficient mesh generation shrinks the required memory footprint for even the largest structures, reducing EM design risks through precise geometry modeling.

Overview

HyperLynx® 3D EM SSD™ is the industry's only full-wave 3D method-of-moments based electromagnetic design and verification solution that targets the needs of EM structure designers. HyperLynx 3D EM SSD is ideally suited for the component-level 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, MIMO antennas, patch antennas, slot antennas, wire antennas, and other RF/wireless antennas. Because of its proven accuracy, speed, capacity, and flexibility, HyperLynx 3D EM helps designers to quickly turn ideas into designs and designs into products.

If you are a component-level circuit or antenna designer searching for an accurate, efficient and economical EM solution, HyperLynx 3D EM SSD is the right choice for you.

True 3D Metallic Structure Modeling

HyperLynx 3D EM SSD fully supports the faithful modeling of 3D metallic structures within multiple dielectric layers in open, closed, or periodic boundaries including finite dielectric or different dielectric portions within the same layer. There is no limitation on metallic structure shape or orientation — true 3D structures such as conical vias, conical helix antennas, wire bonds and other 3D as well as any planar microwave and RF structures can be easily modelled.

EM Structure Editing

HyperLynx 3D EM SSD's intuitive graphical user interface provides a large set of polygon and vertex based editing facilities that speed up EM structure definition and parameterization. These rich editing capabilities are supplemented with a rich built-in library of common complicated structures, such as, circles/rings, spheres, rectangular/circular spirals, cylindrical/conical vias, and cylindrical/conical helices that enable the designer to construct complex 3D and multi-layer EM structures in just minutes!

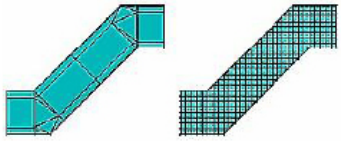
MAJOR FEATURES:

- Full 3D Geometry Editor (MGrid)
- Full-Wave 3D EM Simulation Engine
- Automatic Non-Uniform Mesh Generation
- Automatic Intelli-Fit Broadband Curve Fitting
- Finite Dielectric Support
- FASTEM Structure Optimization

Mentor Graphics®

Automatic Non-uniform Mesh Generation

HyperLynx3D EM SSD fully automates the troublesome task of mesh generation in other EM tools. HyperLynx 3D EM SSD's unique use of both rectangular and triangular mesh cells ensures a compact memory footprint for the design and easily fits structures with irregular boundaries with no user-intervention required. Furthermore, HyperLynx 3D EM SSD's Automatic Edge Cell (AEC) Technique is a fool-proof approach to modeling high current concentrations along metallic structure edges that is critical to accurate simulation of printed circuits and coupled structures. AEC is a critical feature that enables even novice users with limited numerical modeling understanding to easily achieve expert-level results.



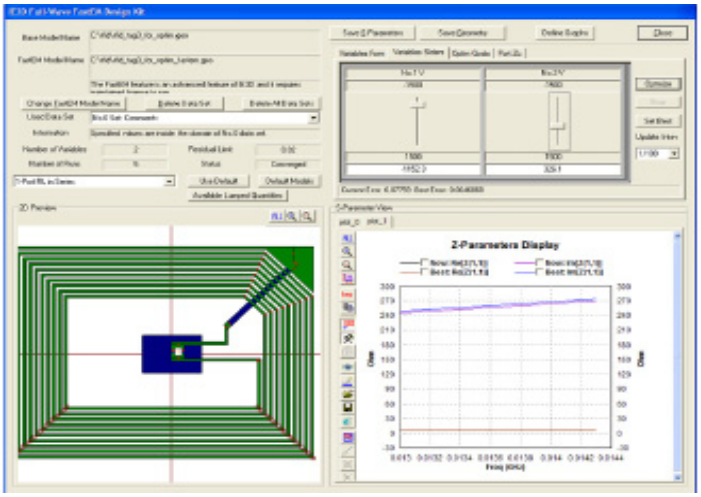
Automatic Non-Uniform Mesh Generation with Automatic Edge Cells Ensures Accurate Simulation Results and Compact Memory Footprint

Adaptive Intelli-Fit (AIF) Speeds Up Simulation

HyperLynx 3D EM SSD employs a proprietary curve-fitting technique based upon both mathematical and physical principles that ensures a fast and accurate simulation results. AIF extracts detailed frequency responses of EM structures with multiple resonances using relatively few frequency points. AIF is a fully integrated feature of the EM simulation engine which adaptively selects the frequency points for actual field simulation. Final detailed frequency responses with multiple resonances are then extracted from the overall simulation results and resolved as part of the final simulation results.

FastEM Delivers Real-Time Geometry Tuning and EM Modeling

HyperLynx 3D EM SSD's FASTEM capabilities combine the tools extensive geometry parameterization and EM simulation engine to create a FASTEM database of solved EM solutions. EM structures can be tuned interactively by varying user-defined parameter sliders to create true geometric representations and associated EM models. Design performance targets can also be entered by the user resulting in real-time geometry creation and EM model to achieve the desired performance targets. FASTEM is ideal for designers tasked with creating families of reusable EM structures for use by non-EM experts and circuit designers.



RFID Antenna is Optimized using FASTEM and Real-Time Structure Tuning and EM Modeling

Graphical Displays

HyperLynx 3D EM SSD provides a variety of displays for plotting S-, Y-, and Z-parameters in data list, rectangular and Smith Chart. In addition, the CURVIEW post-processor displays 2D and 3D current distribution and radiation and near field patterns. CURVIEW also provides current directivity, return loss, efficiency, axial ratio, 3db beam width and RCS displays. The user specifies excitation and loads to investigate the radiation pattern of loaded antennas. Both linear and circular polarization patterns and axial ration plots are also supported.

System requirements

- Windows 32-bit systems
- Windows 64-bit systems
- Linux 32-bit systems (HyperLynx 3D EM engine only)
- Linux 64-bit systems (HyperLynx 3D EM engine only)

For the latest product information, call us or visit: www.mentor.com/hyperlynx

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