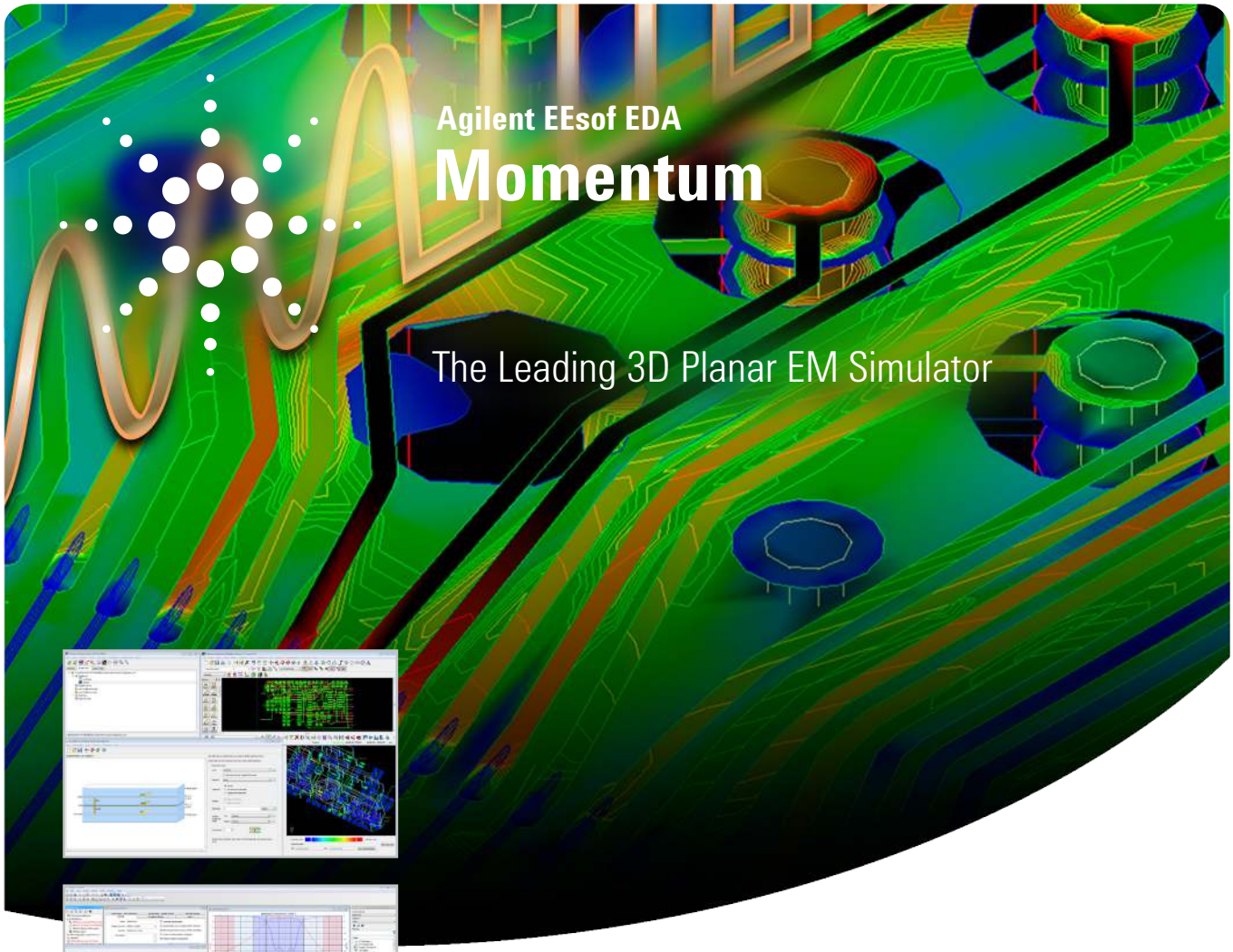
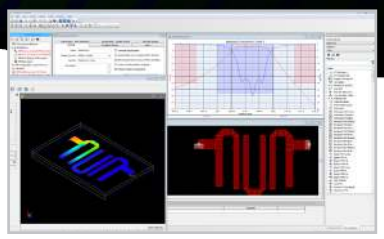
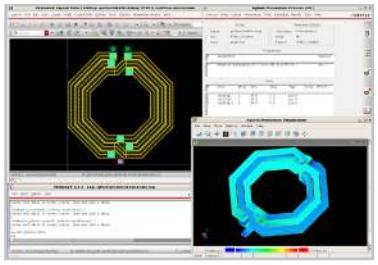


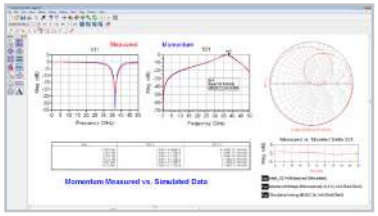
Agilent EEsof EDA

Momentum

The Leading 3D Planar EM Simulator







Momentum is the leading 3D planar electromagnetic (EM) simulator from Agilent EEsof EDA. It combines full-wave and quasi-static EM solvers to provide greater insight into the EM behavior of designs enabling MMIC, RFIC, RF Board, Signal Integrity, and antenna designers to improve overall performance. The Momentum simulation engine is seamlessly integrated into Agilent ADS and Genesys, as well as Cadence Virtuoso to support various design flows and applications. This makes the co-design of ICs, packages and boards possible in high-frequency and high-speed applications. Visualization of the results in terms of surface currents or radiated fields provides insight to determine the location of problem areas.

Anticipate ___Accelerate ___Achieve

Agilent Technologies

The Momentum simulator engine is delivered in multiple design flows.

Momentum for use with Advanced Design System (ADS)

With ADS, Momentum is provided in almost all of the key product bundles. For more information, refer to the ADS Product Structure and Options webpage.

The two key ADS elements related to Momentum are:

- W2341 Momentum G2 Element
- W2343 Momentum Turbo Element

Momentum G2 requires the W2321 Layout Element as the 2D drawing environment.

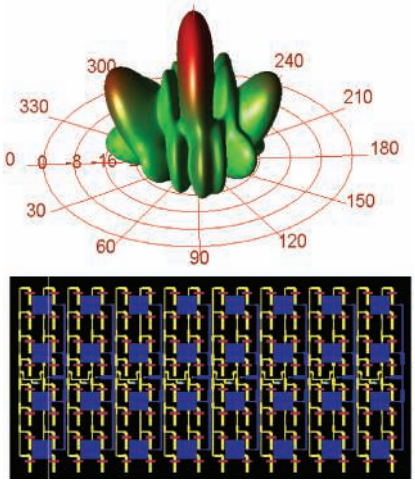
Momentum for use with Genesys

With Genesys, Momentum is integrated into an EM block provided in several key Genesys bundles:

- W1325BP Genesys Core, Synthesis, EM Bundle
- W1327BP Genesys Core, Synthesis, Circuit, EM Bundle
- W1328BP Genesys Core, Synthesis, Circuit, System, EM Bundle

Momentum for use with Cadence Virtuoso

The Momentum G2 Element integrates seamlessly into the Cadence® Virtuoso platform. It requires at a minimum a license for the Cadence Virtuoso Layout supporting either IC51 or IC61.



Use Momentum Turbo to quickly analyze large planar phased-array antennas through multi-threaded parallel simulation with optimized NlogN algorithm and adaptive frequency sweep.

The Momentum Simulator includes:

- Method of Moments 3D planar electromagnetic simulator engineered for speed and capacity through advanced NlogN solver technology.
- Multi-threaded simulation for additional speed.
- Visualization of surface currents and planar antenna radiation in 3D space.
- Sophisticated post processing of S-parameters and other data.
- User selectable microwave full-wave or faster RF quasi-static mode EM simulation.
- Adaptive frequency sweep to automatically and quickly find all resonant frequencies across the full simulation frequency band.
- Arbitrary polygonal meshing with adaptive mesh reduction for optimal speed, accuracy, and capacity.
- Frequency-dependent dielectric loss model.
- Advanced conductor surface roughness model.
- Efficient bond wire model.
- Efficient via model.
- Thick metal analysis.
- Co-simulation with circuit simulators in ADS and Genesys.

The following additional capabilities are included with Momentum in ADS:

- Advanced Model Composer to create custom parameterized EM-based component libraries for fast simulation and optimization.
- Optimization of parameterized geometries together with circuit and system components.
- Layout look-alike symbols in schematic for error free hookup with circuit or system components.
- SI/PI Analyzer with easy setup of net-based, connection-oriented simulations for signal and power integrity.
- Post-processing with excitations extracted from circuit simulation.

Momentum Turbo Element details:

Available for use with Momentum in ADS, Momentum Turbo accelerates the simulation of Momentum G2 through parallel computing on a compute cluster. This is especially useful for large simulations requiring many frequency samples, such as complex boards or packages for signal integrity applications.

- One Momentum Turbo Element allows distributing a frequency sweep over up to eight nodes of a computer cluster.
- Multiple Turbo Element licenses can be stacked to go over eight nodes in parallel.
- Requires separate compute cluster management system such as LSF or SGE.
- Requires Momentum G2 in ADS as the master simulator.

Unlike other planar stand-alone EM simulators with restrictive rectangular grid meshes or socket-based integration with inconsistent user interfaces, Momentum G2 and Momentum Turbo provide the most efficient and fastest 3D planar EM simulation capability.

Integrated into ADS, Genesys , and Cadence Virtuoso, Momentum helps you to consistently deliver optimal designs at peak efficiency.

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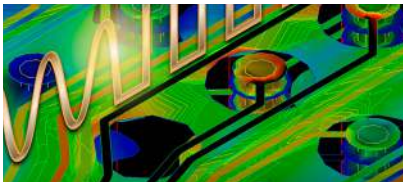

Product specifications and descriptions in this document subject to change without notice.

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