Agilent EEsof EDA

Momentum GX

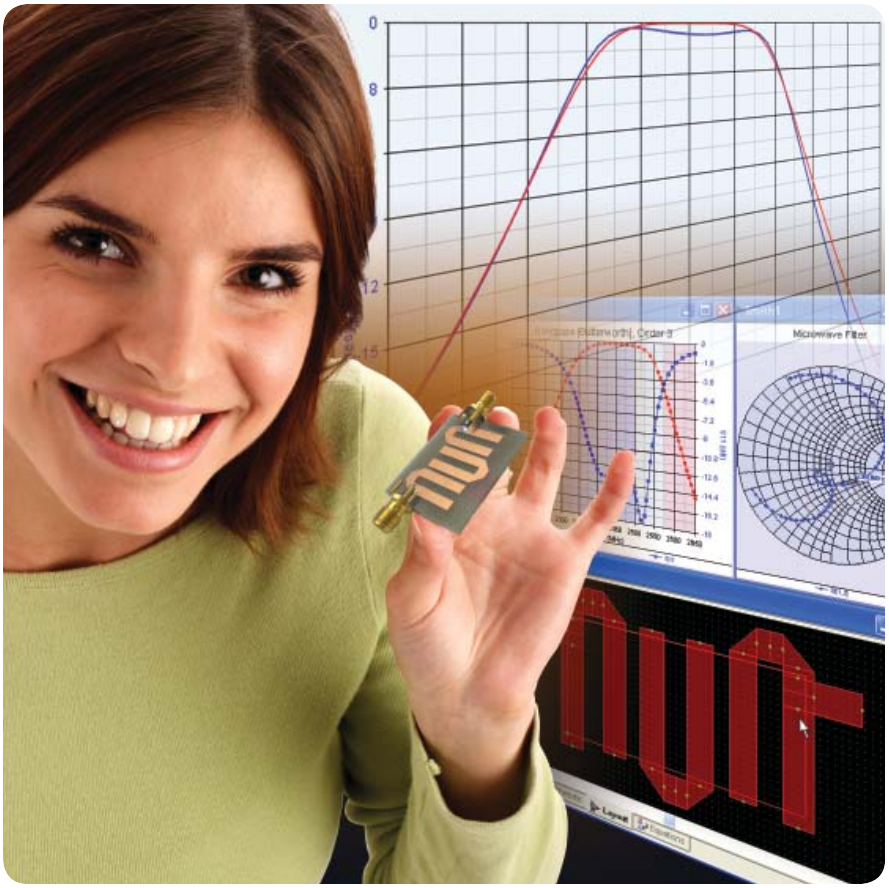
Electromagnetic Simulation for Genesys

Integrated inside Genesys

Accurate co-simulation of RF board/microwave components/subsystems

Computes S-, Y- and Z-parameters

Affordable EM for the entire RF/microwave design community



Agilent Technologies

Momentum GX

Powerful EM Simulation for First-Pass Accuracy

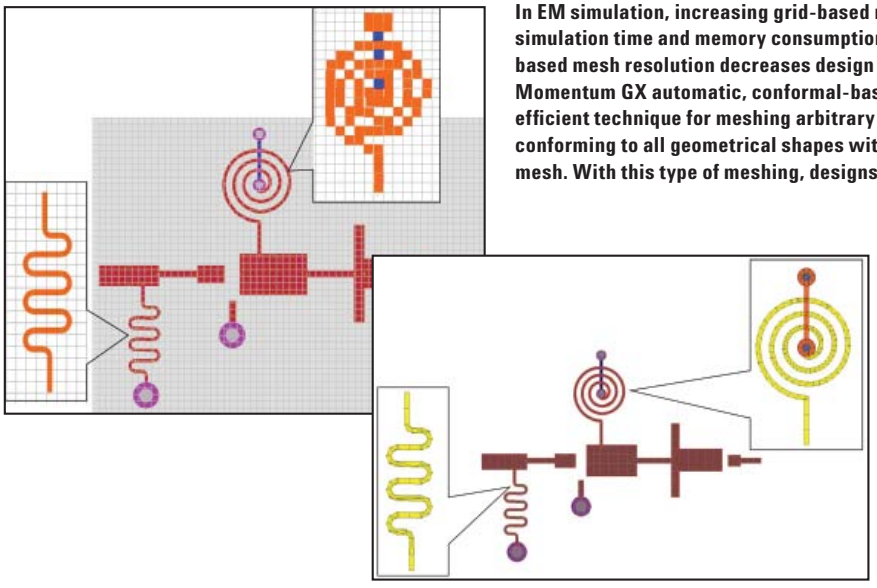
Momentum GX is an industry-proven 3D-planar electromagnetic (EM) simulator that brings first-pass accuracy and fast, affordable co-simulation to designers of traditional RF board and microwave components. The ability to analyze arbitrary shapes on multiple layers and to consider real-world design geometries when simulating coupling and parasitic effects makes Momentum GX an indispensable tool for customized RF and microwave passive circuit design.

Momentum GX works from within the easy-to-use yet powerful Agilent Genesys environment to compute S-, Y- and Z-parameters of general planar circuits without ever leaving the Genesys design flow. It quickly and accurately analyzes microstrip, stripline, slotline, coplanar waveguide, and other circuit topologies. Vias that connect one layer to another can also be simulated, enabling design engineers to more fully and accurately simulate multilayer MMICs, printed circuit boards and hybrids.

The simulator is based on Method of Moments (MoM) — a technology that is particularly efficient for analyzing planar conductor and resistor geometries. It evaluates multi-layer planar geometries and generates EM accurate models that can be used inside Genesys for co-simulation with circuit elements.

Momentum GX is for RF and microwave designers who want to simulate the shape, size and position of passive distributed circuits and account for their proximity. It supplements other simulators by significantly expanding the valid range and accuracy of the designer's passive circuit libraries, including parasitic models or entire circuits. Unlike conventional circuit simulators, Momentum GX provides S-parameter data where no models exist or where model ranges are exceeded.

Momentum GX includes two unique simulation modes: an RF, or quasi-static, mode and a microwave, or full-wave, mode. Both are available in 32- and 64-bit versions. The RF mode provides a quasi-static EM solver for significantly faster simulation of much larger circuits without sacrificing accuracy. The quasi-static solver in Momentum GX makes it possible to neglect loss mechanisms such as space and substrate radiation and provides accurate results in a fraction of the time. The microwave mode provides a full-wave EM solver that is capable of full dispersion and radiation simulation.



In EM simulation, increasing grid-based mesh resolution increases simulation time and memory consumption, while decreasing grid-based mesh resolution decreases design simulation accuracy. The Momentum GX automatic, conformal-based meshing is the most efficient technique for meshing arbitrary design geometries by conforming to all geometrical shapes with a polygonal-based mesh. With this type of meshing, designs are analyzed as drawn.

When to Use the Momentum GX 3D-Planar EM Simulator

Momentum GX 3D-planar EM modeling is uniquely equipped to handle the following design situations:

When Parasitic Coupling is Present. Even when circuit models are physically far apart, unexpected coupling can take place. Examples include stubs that seem sufficiently separated, but are actually inductively coupled because of a resonance condition, and surface waves that are bound to substrate interfaces and are excited when the right substrate parameters and frequencies are present. Momentum GX predicts both parasitic coupling and radiation.

When a Circuit Model Does Not Exist. Designers may need to analyze circuits not included in passive circuit libraries, such as a microstrip Y-junction. Momentum GX provides S-parameter data where no models exist.

When There are Slots in Ground Planes. Designers remove portions of ground planes for a variety of reasons, such as to reduce the capacitance to ground of a spiral inductor or to allow a via to pass through a ground plane. In these cases Momentum GX can treat metal slots as metal patterns to perform efficient coplanar waveguide circuit analysis.

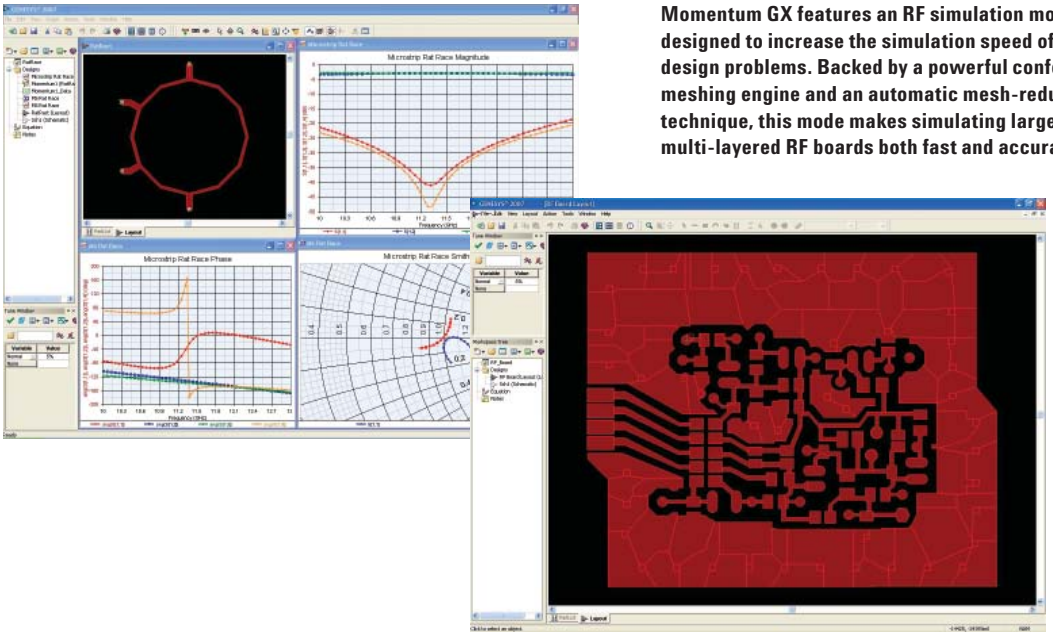
When the Model Range is Exceeded. All circuit simulator models are developed with a number of range-limited control parameters (for example, width, length, height, or dielectric constant). Some models break down gradually, while others generate significant errors as soon as the range limits are exceeded. Momentum GX allows designers to generate highly accurate models beyond these built-in range limits.

Genesys and Momentum GX: An Affordable Combination for the Entire RF/Microwave Design Community

Genesys is an affordable platform that integrates linear, layout, harmonic balance, SPICE, yields/optimization, SMT libraries, and RF system synthesis into a single environment. Adding Momentum GX to this highly integrated environment broadens its functionality to include support for microwave component and subsystem design up to 100 GHz. Its affordable price makes this functionality readily available to the entire RF community.

As traditional RF and microwave component designs move higher in frequency, the accuracy of physical design verification has become a key factor in enabling first-pass design success. EM solvers play an important role in the accuracy that drives high-performance, small size and faster time-to-market for today's designs. With Momentum GX, this EM solver accuracy is built directly into the Genesys platform, delivering a powerful combination of a compact, general-purpose EDA environment and the performance required to achieve first-pass success in traditional high-frequency design.

Make Momentum GX a key part of your design flow. Start from the schematic or layout environment in Genesys and then mesh and solve it to produce S-parameters. You can then use these S-parameters as schematic elements for further simulations or as part of another circuit to achieve first-pass design success at a price that is significantly lower than comparable solutions.



Momentum GX features an RF simulation mode designed to increase the simulation speed of larger design problems. Backed by a powerful conformal meshing engine and an automatic mesh-reduction technique, this mode makes simulating large, multi-layered RF boards both fast and accurate.

Momentum GX W1610L for PC users

The W1610L Momentum GX software suite runs on PCs and performs EM analysis, layout and linear analysis of RF and microwave designs in a single, integrated environment.

Momentum GX platform compatibility

Momentum is supported on the following PC platforms equipped with Agilent Genesys:

- Windows® 2000, XP or Vista

System requirements

To effectively run Momentum GX, your system should meet these specifications:

- 512 (minimum) MB of RAM for Windows 2000/XP
- 2 GB for Windows® Vista
- 600 MB hard disk space for complete program installation
- CD-ROM drive

For more information about Momentum GX, visit:
www.agilent.com/find/eesof-momentum-gx

For a free Genesys software evaluation, visit:
www.agilent.com/find/eesof-genesys-evaluation

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Eagleware-Elanix, the originator of Genesys, was acquired by Agilent Technologies in 2005. Agilent EEsof EDA continues to build on and enhance the Genesys platform.

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