QUICKWAVE 2016

SOFTWARE FOR ELECTROMAGNETIC DESIGN AND SIMULATIONS

QUICKWAVE-3D QUICKWAVE-V2D
QW-MODELLER
QW-ADDIN FOR AUTODESK® INVENTOR® SOFTWARE
QW-BHM QW-GPUSIM QW-MULTIGPUSIM QW-OPTIMISERPLUS QPRONY

QWED has continued efforts on extending availability and functionality of the *QuickWave* software for electromagnetic design as well as the scope of its applications.

In this release we focus mainly on the flexibility of the *QuickWave* licensing by introducing short-term licences and free CAD modeller: *QW-Modeller*. This approach allows preparing the complete simulation scenario with *QW-Modeller*, without any functionality or time restrictions and when needed using short-term licence of *QuickWave* electromagnetic simulator for calculations.

Our longstanding experience in EM modelling show that the simulation speed is an important issue. *MultiGPU* version of *QW-Simulator* allows very fast simulations of large real-life problems with very high accuracy of the simulation results by taking advantage of extremely high performance of multiple graphic cards.

To support young engineers in their researches, new *QuickWave* package has been released. *QuickWave* STUDENT Release is addressed to all who want to become familiar with and understand basic electromagnetic phenomena.

QW-MODELLER

QW-Modeller for *QuickWave* is a workbench for the open source FreeCAD general purpose parametric 3D CAD modeller (http://www.freecadweb.org). FreeCAD features tools are similar to Catia®, SolidWorks®, or Solid Edge®. It is a feature-based parametric modeller with a modular software architecture, which makes it easy to provide additional functionalities without modifying the core system. The CAD capabilities of FreeCAD are based on the OpenCasCade® kernel, a professional-level CAD kernel, featuring advanced 3D geometry manipulation on complex shape types, a wide range of geometric entities, boolean operations and fillets, and built-in support of STEP and IGES formats.
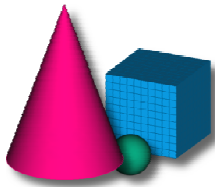
QW-Modeller for *QuickWave* allows preparing a **complete project** for electromagnetic simulation with *QuickWave* software.

It is **free** and can be used without any restrictions for creating geometry, assigning the materials, adding ports, boundary conditions, wires, setting excitation parameters, postprocessings, etc.

The Ribbon of *QW-Modeller* groups all necessary menus and commands that guide the user during project preparation, setting of the simulation parameters, and simulation starting process.
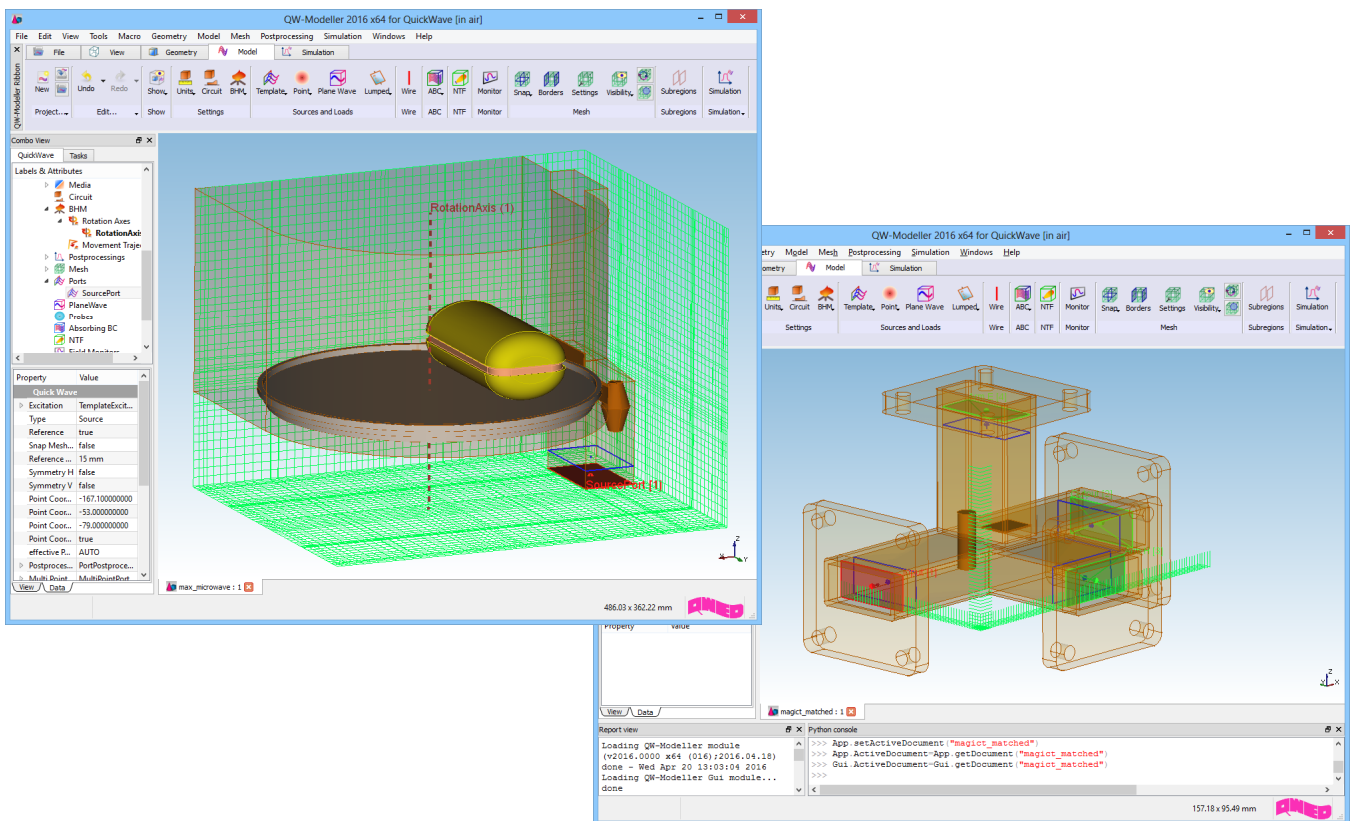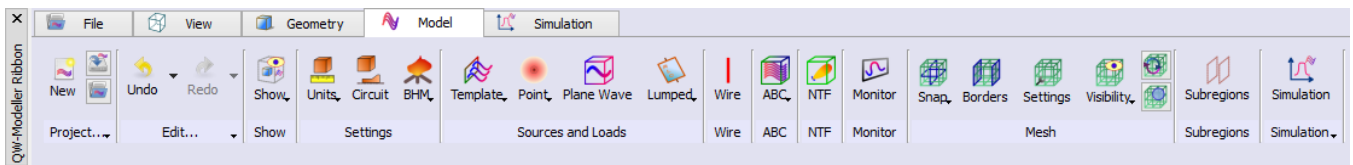
QUICKWAVE STUDENT RELEASE

QuickWave STUDENT Release is addressed to all who want to become familiar with and understand the basic electromagnetic phenomena.

QuickWave STUDENT Release gives the opportunity to go inside the electromagnetic world and follow the newest trends in electromagnetic simulation technologies.

QuickWave STUDENT Release includes 3D conformal FDTD solver, although the number of FDTD cells available for a single project as well as usage of some specialised modules have been restricted.

QUICKWAVE STUDENT RELEASE – MICROWAVE COURSE

To facilitate using *QuickWave* STUDENT Release in microwave courses, the examples investigating basic electromagnetic scenarios are included, as well as a short background description. These examples, together with microwave background description, become complementary introductory to fundamental microwave phenomena.
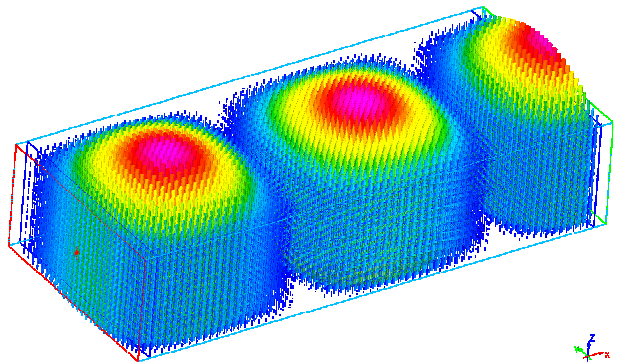

SHORT-TERM LICENCES

Short-term licences involve time periods from 1 month to 6 months and are available for *QuickWave Professional* package, *QuickWave Standard* package, and all *QuickWave* optional modules.
The new licences are protected with a software licencing procedure.

qwStore gives the possibility of getting quotation and purchasing short-term licence of your choice for *QuickWave* software.

MultiGPU version of QW-Simulator

Graphic cards (GPU) while offering great performance have one important issue - very limited memory space. This becomes crucial in big projects, where their speed performance cannot be used and where it is the most desired. In such situations the CPU implementation of *QW-Simulator* is used, what substantially decreases the simulation speed. To circumvent this limitation we introduce *QW-MultiGPU* Simulator (*QW-MultiGPUSim*) that enables running single simulation on multiple GPU devices.

QW-MultiGPUSim performs spatial decomposition and divides analysed circuit into subregions, which are simulated on separate GPU cards. Using multiple GPU cards of a massively parallel architecture extends the available memory and significantly reduces the simulation time.
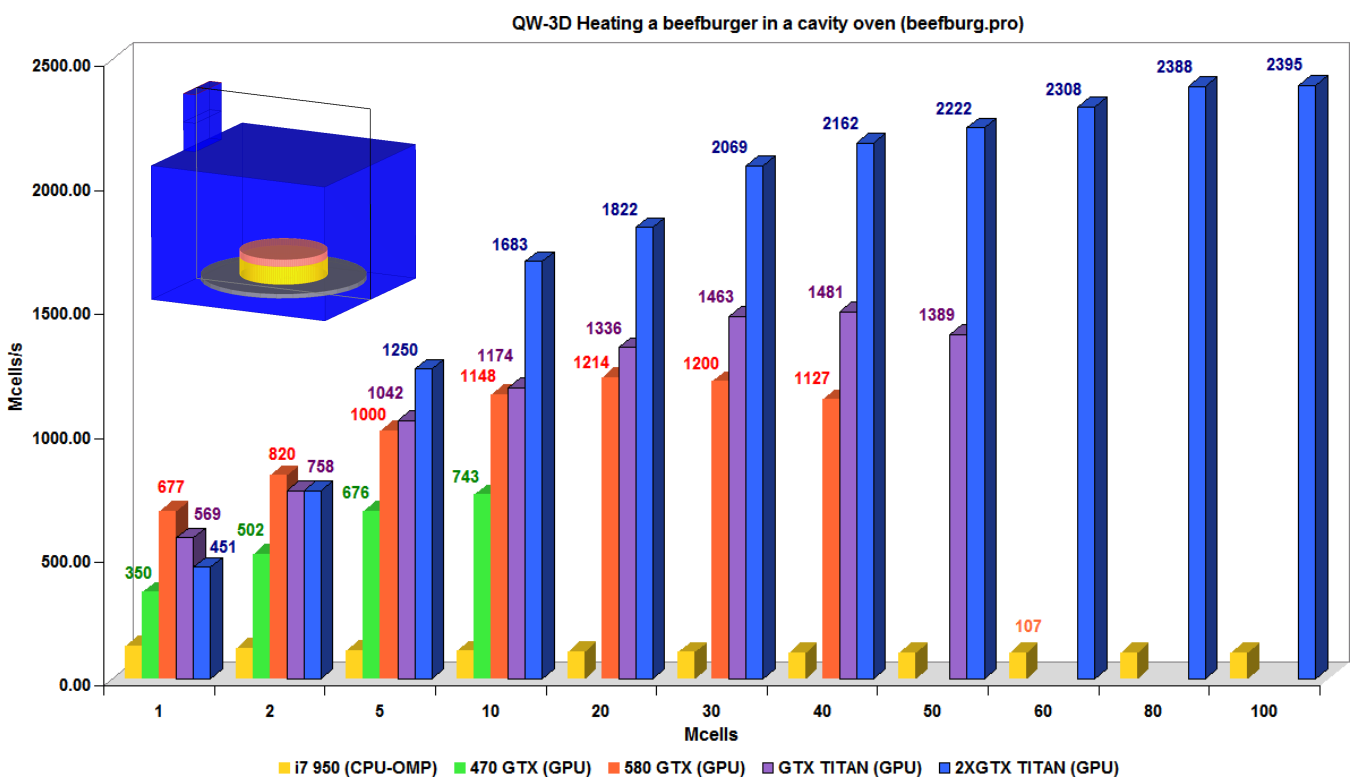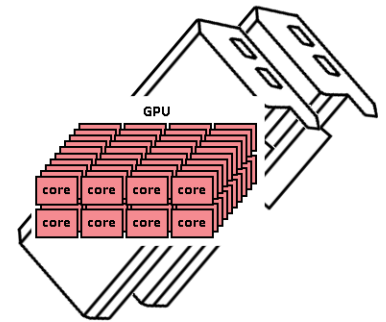
SpeedUp of the GPU and MultiGPU simulation scenario (project divided along Y direction into two symmetrical subregions) computation of a beefburger placed in a cavity oven (3D example) compared to QW-OMP version on Intel I7 950.

3D RADIATION PATTERN WITH PROJECT STRUCTURE

Project structure can be viewed together with 3D radiation pattern. Antenna 3D Settings dialogue allows configuring the transparency and the size of the farfield pattern and the structure, changing the spatial position of the farfield pattern and showing/hiding axes and planes.
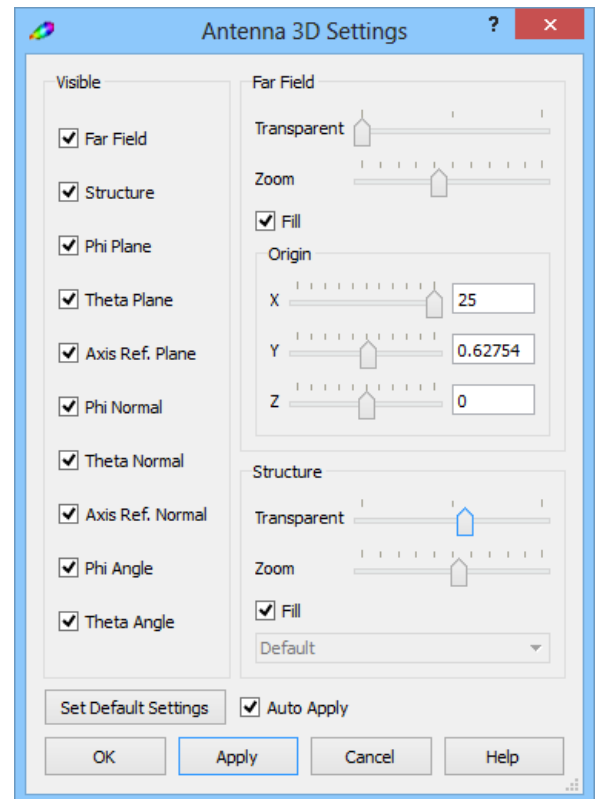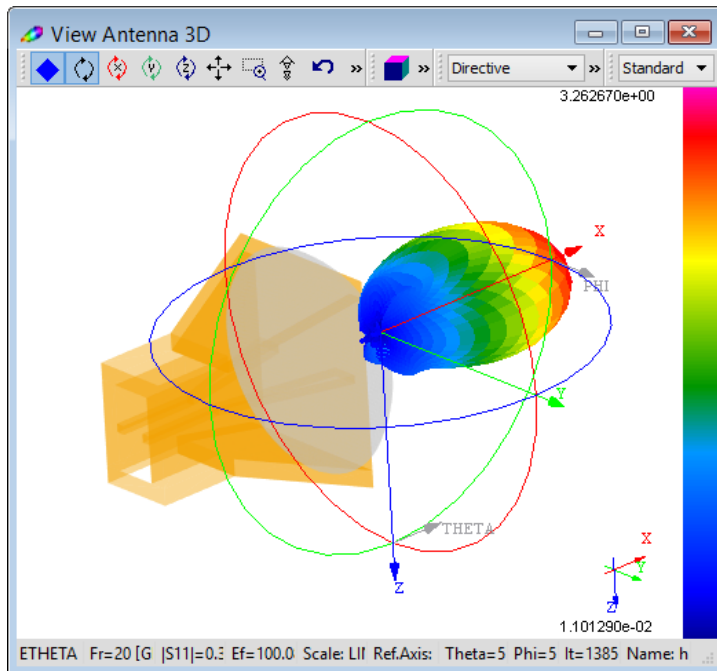
FREQUENCY UNITS

QuickWave enables setting one of six different frequency units for the project:

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PHz	– 10^{15} Hz	– petahertz
THz	– 10^{12} Hz	– terahertz
GHz	– 10^{9} Hz	– gigahertz *(default)*
MHz	– 10^{6} Hz	– megahertz
kHz	– 10^{3} Hz	– kilohertz
Hz	– 1 Hz	– hertz
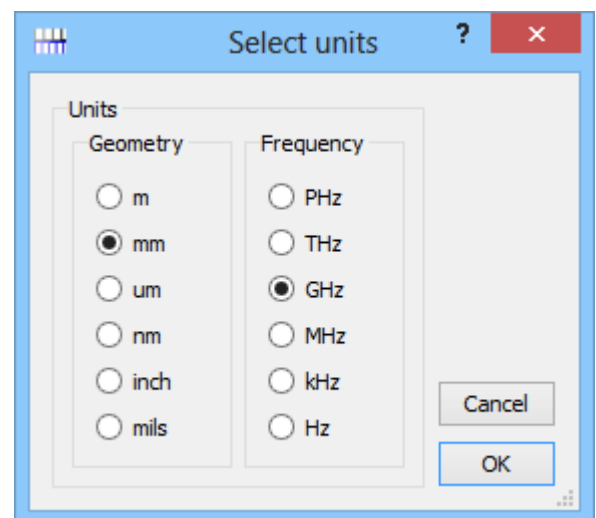
NEW REGIME OF TIME PROBES EXTRACTION

Designated for circuits with low frequency and enabled from ViewEnvelope dialogue and from Breakpoints Group Commands.

Save time probes allows saving the values of electromagnetic field or power quantities (in specified coordinates), voltages and currents (at lumped sources / probes or integrated along contours), E and H fields (at lumped sources / probes), and fields in the far zone Ephi, Etheta – within the NTFFA (Fixed Angle) postprocessing.

The default sampling rate (every 1 iteration) can now be change to an optional value.
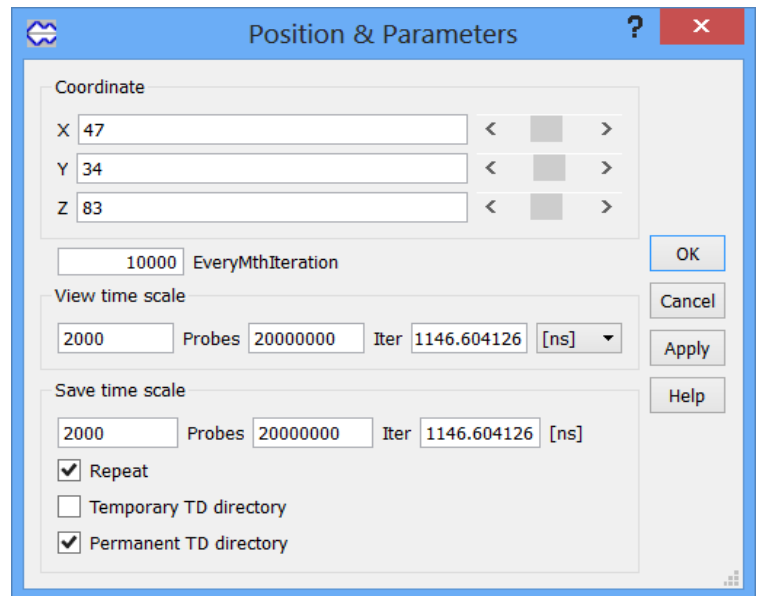
OTHER IMPROVEMENTS

1. Improved accuracy of conformal FDTD cells.
2. New UDO commands: *UNITSGEOMETRY*, *UNITSFREQUENCY*, *VERSION* and *MESSAGE*.
3. Saving *Gamma K at ref. planes* postprocessing results available through tasker commands.
4. User defined visualisation settings (i.e. fonts) in View Fields, View Monitors and Antenna 3D Radiation Pattern windows.
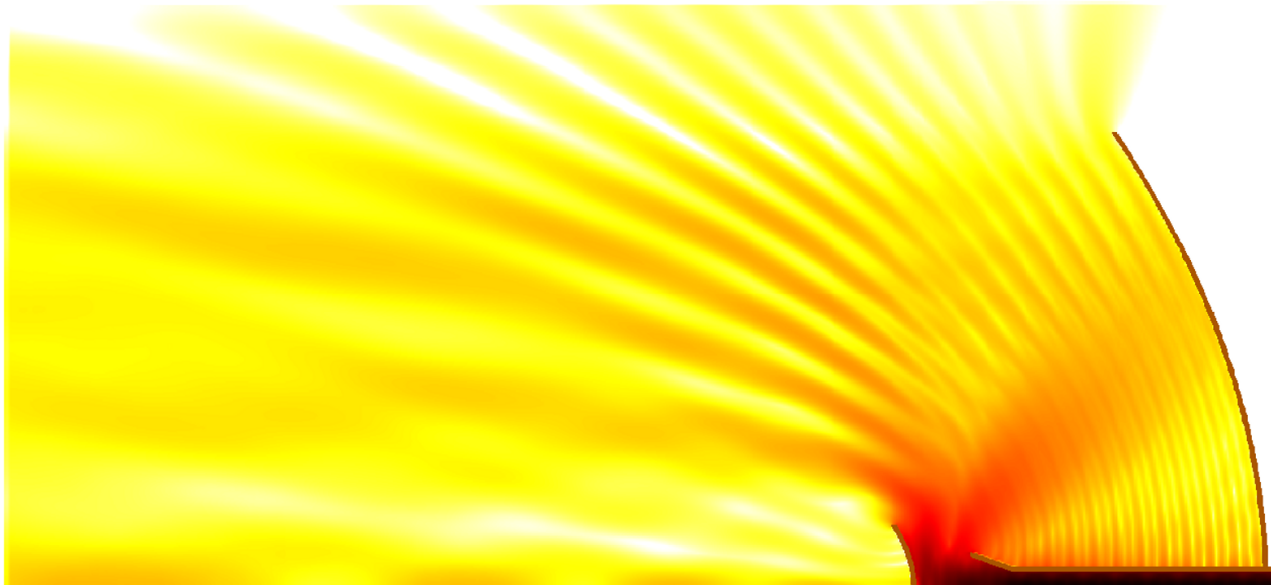
Design is as simple as it can be.

Simulation is as fast as you want it to be.

Results are as accurate as they should be.

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