

Tutorial Proposal: Advanced Computer Aided Antenna Design

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Abstract

The present day antenna design engineer faces an increasing number of challenges that can go far beyond the optimization of farfield pattern and input impedance. The design of modern antennas requires the consideration of cost, profile, farfield phase, and other parameters. Powerful simulation software has become an invaluable tool in the antenna design process. However, as for the devices that are being simulated, the demands to those simulation tools have grown significantly over the recent years. Aside from a fast and accurate simulation algorithm, powerful pre- and post processing options have to be available.

In this tutorial we give an insight into what modern simulation tools are capable to achieve and how they can be integrated into the design workflow.

Agenda

- **Rapid Design using Antenna Model Libraries**
Do not reinvent the wheel! Modern antenna design can be accelerated drastically with design tools that rely on extensive model libraries that aid the engineer in the selection of initial antenna models that can be adapted to meet the given design constraints.
- **RFID Antennas**
The challenges of RFID antenna design lie in the consideration of the environment that the antenna is placed in. We illustrate the complete design workflow including tag design, bending, positioning, background material effects, and complete system analysis.
- **UWB Antennas**
As the name suggests UWB antennas require broadband simulation. Broadband and transient farfields are of particular interest. We demonstrate how powerful post processing is applied in a successful design of such an antenna.
- **Transient and Standard Co-Simulations**
No antenna is operated by itself. In many cases, particularly for antenna arrays, the feeding network needs to be considered. We illustrate conventional and progressive ways in, which such a co-simulation of network and distributed components can be performed.
- **Specialized Post Processing**
In many cases very specialized design parameters are of interest. We demonstrate how we can extract quantities such as Full System Total Radiated Power (TRP) and Total Isotropic Sensitivity (TIS), Diversity Gain for MIMO Antennas, Specific Absorption Rate (SAR), or Hearing Aid Compatibility (HAC).

Duration

Full day or half day

Speakers

- **Linus Lau Ngie Ung**

Dr. Linus Lau obtained First Class Honor B.Eng. in Mechatronics Engineering, Master of Research in Mechanical Engineering and PhD in Microwave Engineering from the University of Manchester Institute of Science and Technology (UMIST) in the UK between 1995 and 2003. Subsequently, he worked as a Senior Test Module Development Engineer at Intel Penang in Malaysia (2004-2005). He is currently with Computer Simulation Technology (CST) as the main technical consultant for the South East Asia region. He is responsible for both business development and technical support for customers in this region and currently based in Kuala Lumpur, Malaysia.

- **Chiang Chun Tong**

CT Chiang obtained his B.Eng. (Hons) in Electronics majoring in Telecommunication Engineering and M.Eng.Sc. in Microwave Engineering from the Multimedia University in Malaysia in 2001 and 2005, respectively. He is now attached to Computer Simulation Technology (CST) as a technical consultant for the South East Asia region. He is responsible for technical customer support in this region and currently based in Kuala Lumpur, Malaysia.

- **Klaus Krohne**

*Dr. Klaus Krohne received his electrical engineering degree (Dipl.-Ing.) from the Darmstadt University of Technology in Germany in 2001 and is PhD Degree (Dr. sc.) from the Swiss Federal Institute of Technology in Zurich in 2007. From 2007 to 2009 he worked as a research fellow at the A*STAR Institute of High Performance Computing in Singapore. His research interests include the development of simulation codes for electromagnetic fields as well as device optimization. He is currently with Computer Simulation Technology (CST) as a Sales and Technical Support Manager based in Singapore.*

Contact

Dr. Linus Lau Ngie Ung, Consultant for CST South-East Asia

21, Jln Dutamas, Anggerik 2, Duta Kensington, Sri Hartamas, 50480, Kuala Lumpur, Malaysia.

Phone: +60 3 6203 7690

Fax: +60 3 6203 7680

Mobile: +60 1 2214 0460

Email: linus.lau@cst.com