3-Day Practical Antenna Design

From Initial Specification to Final Testing

Practical Antenna Design

Antenna is an essential component of all equipment that uses radio frequency (RF). Today, antennae are used everywhere ranging from complex systems such as communication satellites, radars, GPS, TV broadcasting, to consumer devices such as cell phones, garage door openers, wireless mouse, RFID tags and so on. This course is aimed to provide a useful guide on the basics of antennae with special emphasis on practical antenna design, simulation, prototyping and measurements. Design examples of modern antennae will be discussed and shown from initial specifications to a final workable prototype – all without complicated mathematical formulae!

Course Outline

Day 1
Antenna Basics
- Types of antennas
  - Wire vs. aperture
  - Self-resonating vs. non-self-resonating
- Antenna parameters
  - S-parameter, VSWR, antenna bandwidth, resonance frequency
  - Far field, directivity, gain, radiation impedance, antenna pattern, polar plot, Cartesian plot, polarization, efficiency
- Analyzing antenna parameter from Smith Chart
- Matching networks and balun
- Antenna examples and applications

Day 2
Practical Antenna Design
- Workflow for practical antenna design
  - Theory and working principle
  - Simulation
  - Prototyping / fixturing
  - Measurement
- Tools and laboratory supplies for antenna design work

Antenna Design Examples – Part 1
- Wire antenna for wireless communication
- Dipole antenna/Yagi for base stations

Hands-on: Antenna design case study using CST tools

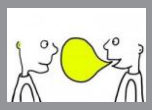
Day 3
Antenna Design Examples – Part 2
- Monopole antenna for land mobile radio applications
- PIFA antenna for mobile phone application
- HF RFID tag @ 13.56MHz

Practical Antenna Measurement
- Antenna chamber
- 2D vs. 3D antenna chamber
- Measurement equipment
  - Vector network analyzer, site master, SWR meter, MFJ antenna analyzer

Hands-on: Measuring various types of antennas

Public Training Session

Open for Registration



"Useful Antenna design tips"
"No complicated formula"
"Hands-on with Design Examples"
"Case Study using CST Software"
"Comprehensive coverage from design, simulation to measurements"

Date: 24-26 September 2013 (Tuesday - Thursday)

Time: 0900 - 1700

Venue: Melia Kuala Lumpur
No. 16, Jalan Imbi,
55100 Kuala Lumpur,
Malaysia.

This public training is HRDF (PSMB) claimable.
Register by 23 August 2013 to enjoy early bird discount.
IEEE members are eligible to registration fees at a special rate.
Certificate will be awarded to participants who complete the training.

Jointly organized by:

Go Training **IEEE AP/MTT/EMC Joint Chapter** Malaysia

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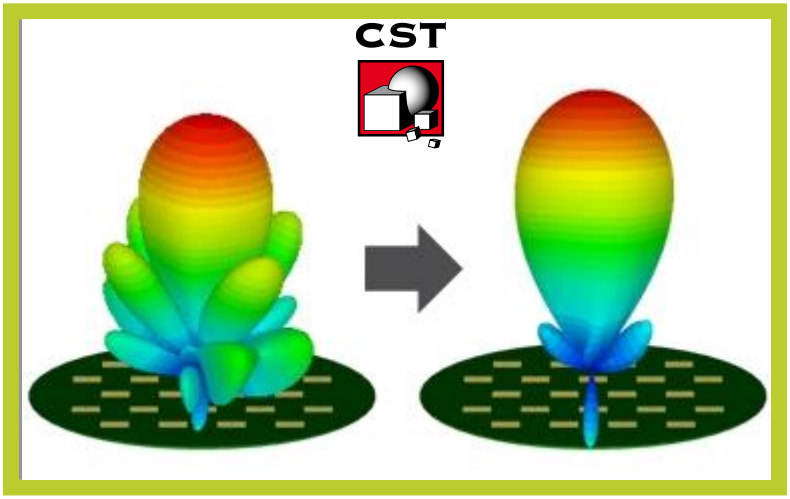
About the Instructors

Mr Por Chee Seong graduated from The Queens' University of Belfast, Northern Ireland in 1993 with M.Sc in Electronics Engineering, majoring in Microwaves and Telecommunication. Mr Por started his career in 1994 as a Research & Development design engineer, specializing in receiver design. In his 19 years of experience, he has successfully set up 2 R&D departments for antenna design. He is currently an RF Engineering Manager in Laird Technologies, leading a team of RF engineers doing antenna design for wireless portable devices, base stations, in-building wireless, machine-to-machine (M2M) applications and land mobile radio applications. Mr Por has successfully filed a joint utility patent titled "Current Comparator Automatic Output Control". In 2008, he was elected as Chairperson for Portable Antennas session for International Symposium on Antennas and Propagation. He is also an active licensed Class-B Amateur radio operator.

Mr Chai Ched Chang received his B.Eng (Hons) from University of Malaya, and M.EngSc from Multimedia University, Malaysia. Mr Chai began his career as a Signal Integrity engineer in 2001, specialized in designing High-Speed PCB. He had delivered many consumer electronics PCB designs, where he is specifically experienced in resolving SI issues associated with high-speed memory (SDRAM, DDR, DDR2, DDR3), differential signaling (LVDS, HDMI, USB, PCI Express, Ethernet), and other digital interfaces (FPGA interface, FLASH memory, Video bus, ADC & DAC). He also has vast experience in making PCB stack-up, high-speed signal simulation and analysis. In 2012, Mr Chai left his former company as Chief Technical Officer, and started his own company, iRtec Consulting Sdn Bhd. With 14 years of combined experience in both research and industry, he continues to strive to provide the best Signal Integrity consultation service to his clients.

About the Hands-on Tool

CST offers a wide range of EM simulation tools to address design challenges across the electromagnetic spectrum, from static to terahertz frequency, for wide range of applications, including EDA electronics on SI, EMC & EMI simulations.



Antenna design case study using CST tools

HANDS ON LEARNING WITH LATEST TECHNOLOGY

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HRDF Approved Training Provider (Category A)

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