2013 IEEE EMC Chapter Chair Training Session & Dinner
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The Chicago Chapter Education Program

IEEE EMC Society Chicago Chapter
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Agenda

• Motivation
• Summary of the class
• Goal of the Activity
• Lessons Learned
• Measure of Success
Motivation

• More and more colleges are moving towards more computer engineering
  – Less emphasis on electronics: hence less on robust designing
  – “Software can’t cause EMC problems”
• Electromagnetics == Black Magic
  – Step 1: Develop the understanding of why and how
    • Basic principals of *Maxwell Equations Applied*
      – Capacitance and Inductance
  – Step 2: Develop a Model
Summary of the class

• Introductory Class to electromagnetic problems.
  – 4 week class- over 4 Saturdays.
    • 2 hours of lectures
    • 2 hours of hands on lab
• FREE to students -Chicago Chapter underwrote (~90%) the class
  – Approx. $11k for the class with test equipment
• Was co-hosted with Illinois Institute of Technology University Chicago
  – 1.6 Continuing Education Credits (CEUs)
• Summary of Topics
• Henry Ott’s latest book “Introduction to EMC”
Goals of Activity

• Two Connected Goals
  – Expected Outcomes for students
    • Describe the motivation and need for electromagnetics regulations and modeling
    • Describe and identify the components an electromagnetics model, and create the electrical schematic of the coupling paths that produce the model
    • Apply grounding techniques & shielding techniques...
    • PCB strategies to minimize radiated emissions and susceptibility
  – Foster Growth among potential IEEE EMC Chicago Members
    • Increase the value of the society and develop a new

Differential mode
Min. ground loops
Proper # ground connections
Common Mode Chokes
Balanced Circuits
Braided or Shielded cables
Terminations cables and systems
Key Takeaways

• Class offered Free to Students (Chicago Chapter funded the event)
• Class provided 1.6 CEUs to successful candidates
• Hands On Labs
• Co-hosted with an esteemed University (IIT)
• Retention: 25 of the 27
Lessons Learned & Success

• Need to have a cost associated with Class
• Hands On Labs are crucial to this type of Class
  – IEEE is a perfect organization to help facilitate young engineers develop their careers
• Labs need to be designed to be reused effectively
• Develop this class with a university interested in offering CEUs {Professional Education}
• Permanent Lab
• Longer Class 6 – 8 weeks ~ 5 hrs per week

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Success

• Education Committee will be offering the class again
  – Tentative Spring 2014
  – IIT
  – CEUS
  – Longer Class duration (wks and hrs)
  – Extended hands on labs.
Thank You!