

Qing Cai, MSEE



Address: 5007 Broadmoor Dr, APT 128
Mission, KS 66202

Phone: (913) 748-1411

Email: qingcai.huang@gmail.com

OBJECTIVE To obtain a full-time position in the field of ESD, Signal Integrity (SI), or EMC/EMI, related to design and/or application, or customer support

EDUCATION M.S in Electrical Engineering, Missouri University of Science and Technology (May 2008)
M.S in Precision Instrument of Instrument Science and Opto-Electronic Engineering, Hefei University of Technology (May 2002)
B.S. in Precision Instrument of Instrument Science and Opto-Electronic Engineering, Hefei University of Technology (July 1999)

EXPERIENCE **Network Engineer, Switch Network Planning**
Sprint Nextel Corporation

May 2008 –Mar. 2009

Network engineering is responsible for the capacity management, engineering, building construction, installation, and performance management of the domestic and international voice, data and Internet networks. Switch network engineer supports and provides all physical and logical assignments to support traffic growth, capacity plans, special events, special projects, equipment redeployment, affiliate modernization.

Graduate Research Assistant, Electromagnetic Compatibility Laboratory
University of Missouri-Rolla

Jan. 2006 – May 2008

Advisor: Dr. David Pommerenke Tel: 573-341-4531

davidjp@mst.edu

Primary projects:

- Developed frequency-domain measurement method for the analysis of ESD generators and coupling: build ESD generator module for frequency domain method use; perform measurements to verify the method and investigate the limitation due to nonlinear effects (in collaboration with Intel Corp., published in IEEE International Symposium on EMC and IEEE Transactions on EMC)
- ESD coupling analysis using frequency-domain measurement method: perform measurements on a mobile computer system using frequency domain ESD method; analyzed data for quantifying ESD coupling, a step toward predicting ESD failure (in collaboration with Intel Corp.)
- Round Robin testing to investigate reproducibility of ESD results: the IEC TC77b group decided to add an envelope function for discharge current in the standard to improve the test reproducibility. ESD generators manufacturers modified their ESD generator design to satisfy the new envelope requirement; pairs of ESD generators (modified and unmodified) from different manufacturers have been tested by determining the pass/fail levels of electronic systems to analyze if the modification improved the test reproducibility.
- System level ESD design analysis using full-wave simulation: evaluation of the abilities and limits of board level and system level ESD simulation; improved models for ESD simulations and tested the model on test structures provided by our research partner (in collaboration with Samsung Electronics CO.)
- Participated in E-field and H-field probe development: developed PCB loop probes with different dimensions to measure the magnetic coupling or electric coupling for immunity or emission testing

Course Projects:

- Designing and developing a simplified Network Analyzer which can perform magnitude S11 and S21 measurements in a frequency range of MHz to 1 GHz. The project is for tuning the systems which perform analysis using Magnetic resonance methods in Chemistry department.
- Modeling using Zuken: developing models to determine the characteristic impedance for some specified geometries; modeling and simulating transmission line and parasitic effects of interconnects and discontinuities.
- Using Mentor Graphics Design Architect and Accusim to simulate a cascade current sink; simulate and layout a known operational amplifier; layout synthesizable VHDL code which is a 4 bit adder

Taken Courses:

- Electromagnetics
- Computer-Aided Network Design
- Communication Systems
- Grounding and Shielding
- Antennas & Propagation
- Advanced VLSI Design
- Signal Integrity in High-Speed Digital & Mixed Signal
- Digital / RF Laboratory

Laboratory Instrument:

Network analyzer, oscilloscope, spectrum analyzer, time domain reflectometer (TDR), signal generator and some ESD instruments, experienced in ESD and EMC/EMI measurement

Computer Skills:

Familiar with full wave simulation tool FLO/EMC (Microstripes); circuit simulation tools Pspice and Zuken; PCB design tool Protel DXP; IC design tool Mentor Graphics IC station, Accusim; familiar with language Matlab

PUBLICATIONS:

- Q. Cai, J. Koo, A. Nandy, J. S. Lee, B. S. Seol, and D. Pommerenke, "Advanced full wave ESD generator model for system level coupling simulation," *IEEE Int. Symp. on EMC*, Aug. 2008
Best Symposium Paper Award
- Q. Cai, J. Koo, G. Muchaidze, A. Martwick, K. Wang, and D. Pommerenke, "A novel method for the analysis of ESD generators and coupling using frequency domain," *IEEE Int. Symp. on EMC*, Vol. 2, 14-18, Pages: 319 – 323, Aug. 2006
- J. Koo, Q. Cai, G. Muchaidze, A. Martwick, K. Wang, and D. Pommerenke, "Frequency domain measurement method for the analysis of ESD generators and coupling", *IEEE Trans. on EMC*, Vol. 49, Pages: 504 – 511, Aug. 2007
- J. Koo, Q. Cai, K. Wang, J. Mass, T. Takahashi, A. Martwick, and D. Pommerenke, "Correlation between EUT failure levels and ESD generator parameters", *IEEE Trans. on EMC*, Aug. 2008

AWARD:

- Excellence Cash Award, Sprint Nextel Corp., March, 2009
- Top Hat Award, Sprint Nextel Corp., July, 2008
- IEEE Best Symposium Paper Award, August, 2008