David S. Ricketts

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1. EDUCATION

Harvard University
Ph.D., 2006.
Thesis: Electrical Soliton Modelocking.
Advisor: Donhee Ham.

Worcester Polytechnic Institute
M.S.E.E., 1997.
Thesis: AD6509, A 622 MHz Frequency Synthesizer.
Advisor: John A. McNeill

Worcester Polytechnic Institute
B.S.E.E., 1995, with *High Distinction*.
Thesis: Development methodology and control systems in a NASA GASCAN project.

2. REASEARCH INTERESTS

- Mm-wave and Microwave circuits and systems
- RFID
- Wireless Power Transfer
- Analog and RF circuits

3. AWARDS & FELLOWSHIPS

- Best Paper Award, IEEE Asia-Pacific Microwave Conference 2016.
- Certificate of Teaching Excellence, Derek Bok Center, Harvard University, 2013
- NSF CAREER Award, 2011
  Spin-torque Oscillator Arrays. 13 % funding rate in 2011.

- Wimmer Teaching Fellow, Carnegie Mellon University, 2009
  One of five fellows selected per year on a university wide bases. Award is for development of educational content for new courses.

- George Tallman Ladd Research Award 2009
  Awarded to the two junior faculty in the College of Engineering at CMU for outstanding research.

- National Academy of Engineers Frontiers of Engineering Education Recipient, 2009.
  Visualization of E&M for undergraduate course.

- DARPA Young Faculty Award, 2008
  Spin-torque oscillators for agile RF systems.

- McGraw-Hill Yearbook of Science and Technology, 2008
  Research on solitons selected as top research highlight for 2008.

4. Expert Witness Experience

District Court, International Trade Commission, Inter Party Reviews

Expert in:

- Integrated circuits - Power management (PMIC) and power electronics
- Integrated circuits - Analog to Digital Converters and Digital to Analog Converters
- Integrated circuits - Radio Frequency Integrated Circuits (RFIC)
- Microwave circuits & systems
- Communication systems - 5G, wi-fi, Bluetooth, etc.
- Wireless power transfer (all types)
- Radio Frequency Identification (RFID)
- Low frequency electromagnetics

I bring a unique background to my expert witness work having worked in industry for a decade prior to joining academia. This allows me to provide not only the depth of an academic, but also the knowledge of how technology is applied, the trends in industry and how technology is used in industry.

My previous and current expert witness work includes the following.

Feinberg Day, Burlingame/Spencer Fane Curry, Plano TX (2020-)
Case - *Garrity Power Services LLCvs. Samsung Electronics Ltd.*
Case Number – Texas Eastern District Case No. 2:20-cv-00269
Represented Patent Owner (Garrity)
Subject Matter – Wireless power transfer.
Service performed - Expert consulting.

 Perkins Coie, San Francisco, CA (2021-)
Case – *The NOCO Company vs. Shenzhen Carku Technology Co., Ltd. And others*
Case Number - USITC 337-TA-1256
Representing Respondents
Subject Matter - Certain Portable Battery Jump Starters & Components Thereof,.
Service performed - Expert consulting.

Stern Kessler Goldstein & Fox, Washington, DC (2019-2020)
Case - *Samsung Electronics Co., Ltd. et al. v. NuCurrent, Inc.*
Case Number - IPR2019-00858,
Case Number - IPR2019-00859
Case Number - IPR2019-00860
Case Number - IPR2019-00861
Case Number - IPR2019-00862
Case Number - IPR2019-00863
Case Number - IPR2019-01217
Case Number – PGR2019-0049
Case Number – PGR2019-0050
Represented Patent Owner (NuCurrent)

David S. Ricketts

Subject Matter - Wireless power transfer, inductor design, manufacture and operation.
Service performed - Expert consulting in validity and infringement, author of expert reports for inter party reviews. Deposed multiple times.

Caldwell Cassady Curry, Dallas TX (2019)
Case - *Samsung Electronics Co., Ltd. et al. v. NuCurrent, Inc.*
Case Number - IPR2019-00858,
Case Number - IPR2019-00859
Case Number - IPR2019-00860
Case Number - IPR2019-00861
Case Number - IPR2019-00862
Case Number - IPR2019-00863
Case Number - IPR2019-01217
Case Number – PGR2019-0049
Case Number – PGR2019-0050

Represented Patent Owner (NuCurrent)
Subject Matter - Wireless power transfer, inductor design, manufacture and operation.
Service performed - Expert consulting in validity and infringement. Case continued by Stern Kessler.

Quinn Emanuel, San Francisco, CA (2018-2019)
Case - *Qualcomm vs. Apple*
Case Number – California Southern District Case No. 3:17-CV-02398-DMS-MDD
Represented Patent Owner (Qualcomm)
Subject Matter - Radio Frequency Integrated Circuits for mobile electronic devices.
Service performed - Expert consulting in validity and infringement, preparation of expert witness report for trial. Case settled prior to filing of witness report.

Quinn Emanuel, San Francisco, CA (2018-2019)
Case - *Qualcomm vs. Apple*
Case Number - USITC 337-TA-1093
Represented Patent Owner (Qualcomm)
Subject Matter - Radio Frequency Integrated Circuits for mobile electronic devices.
Service performed - Expert consulting in validity and infringement.

5. PROFESSIONAL EXPERIENCE

Professor of Electrical and Computer Engineering, North Carolina State University, 2020-

Associate Professor of Electrical and Computer Engineering, North Carolina State University, 2012- 2020

My research centers on the application of physical phenomena to electrical devices, circuits and systems, covering a range of areas in electrical engineering. I focus on ultra-fast electronics and microwave systems.

David S. Ricketts

Visiting Researcher (Research Scientist), Massachusetts Institute of Technology, 2012-2013
(On leave from NCSU)

I am working with a team of 13 members on the DARPA ELASTx program. I am focusing on developing state-of-the-art power amplifier (PA) and power combining systems for mm-wave applications (Q-W band).

Innovation Fellow and Visiting Associate Professor (2012), School of Engineering and Applied Science, Technology and Entrepreneurship Center, Harvard University, 2010-

Research with graduate students at the School of Engineering and Applied Science and the Harvard Business School on Innovation in Science and Creativity, specifically the role of the individual in the creation of new knowledge. This work supports both scholarly research in this area as well as the development of educational material for courses taught at Carnegie Mellon and Harvard.

Assistant Professor of Electrical and Computer Engineering, Assistant Professor (Courtesy) of Materials Science and Engineering, Carnegie Mellon University 2006-2012

I was the PI of a successful 15 member DARPA team on Tip-directed Field-emission Assisted Nanofabrication, where we developed arrays of MEMS cantilevers to write nanoscale features (< 10 nm) on Si and Ti surfaces with application in quantum electronic devices. In addition, I received my NSF CAREER award for my work on a nanoscale magnetic device, the spin-torque oscillator, where I am pursuing fundamental research on its ultimate performance and application into wider electronic systems. I also investigated many other interdisciplinary programs in circuits, systems and sensing, including a large DARPA program on high-speed circuits & energy with MIT. I received the NSF CAREER award, the DARPA Young Faculty Award and the George Tallman Ladd Research Award. I have also developed/redesigned several new courses at CMU in device physics, circuit design and innovation in science and have developed a new outreach program with Disney Animal Kingdom on animal conservation. I am a 2008 Wimmer Teaching Fellow and an invited participant in the 2009 NAE, Frontiers of Engineering Education Symposium.

Research Assistant (Ph. D), Ham Group, Harvard University, 2004 – 2006.

Doctoral research in Ultrafast electronics, nonlinear wave and soliton based electronics and nanowire based circuits. Developed the first electrical soliton modelocked oscillator and also the first chip-scale modelocked oscillator in any field. Through collaboration with the Lieber group, helped to develop the fastest integrated nanowire circuit to date. Other projects included phase noise analysis and stochastic resonance.

Staff Research Assistant, Harvard University, 2003 – 2004.

Supported research efforts in high-speed electronics.

Advanced System Engineering Manager, ON Semiconductor, 2002-2003.

David S. Ricketts

Directed a highly skilled team of system engineers to develop next generation technology for multi-phase power management ICs for Intel and AMD microprocessors. Initiated 10 new products in first 12 months and generated eight new patent/IP disclosures in first 6 months. Responsible for the development of new IP for the product line and the investigation of emerging technologies for acquisition.

Manager of New Product Development, ON Semiconductor, 2000-2002.

Responsible for 6 product development teams consisting of technical members across design, test, application engineering and layout. Oversaw the development of over 20 power management ICs in bipolar, CMOS and BiCMOS technologies. Responsible for ensuring technical excellence in design and system engineering as well as mentoring engineering staff.

Principal Consultant, Renaissance Design, Inc. 1999-2001.

Provided design and system engineering services for the power management semiconductor industry. Led the system architecture and transistor level design of a custom 2-stage dc-ac inverter. Used Verliog to develop an all-digital controller which enhanced controller functionality and robustness. Designed system supervisory circuitry and peripherals, including a 5V LDO, ac line sense, current sense and protection, etc.

IC Technology Unit Manager/Staff IC Designer, APC, 1995-1999.

Responsible for the development of custom power management ICs for uninterruptible power supplies (UPS). Developed a custom controller for push-pull dc-ac inverters, an 8-bit A/D supervisory IC for sine wave inverters, and a next generation sine-wave inverter controller. Designs utilized bipolar, CMOS and BiCMOS technologies.

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