Edward A. Richley

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SUMMARY

Electrical Engineer with strong background in Applied Physics, Physical Electronics, RF Design, and Analytical Methods. Held senior leadership role in development of commercial microwave wireless products. Held research position developing advanced display, printing, and wireless networking concepts. Good communcation skills, both verbal and written. Demonstrated areas of expertise include:

- RF design
- High voltage design
- Instrumentation
- Analysis of ionized fluids
- Computational techniques
- Communication theory
- Quantitative analysis
- Micropower electronics
- C programming
- Linux

PROFESSIONAL EXPERIENCE

ZEBRA TECHNOLOGIES, INC.(formerly *Multispectral Solutions, Inc.*), Germantown, MD 1999-present

Zebra Technologies is a publicly held corporation present in over 100 countries with over $1B in sales focused on delivering innovative asset identification solutions for business improvement and security applications. In 2008, Zebra acquired Multispectral Solutions, which had developed ultra wideband (UWB) technology for real time tracking of personnel and assets.

Chief Scientist(1999-present)

Developed circuitry and architectures for a variety of communication and locating systems based on short-pulse electromagnetics. Assisted in the transition of several UWB-based systems from SBIR projects through to commercialization. Activities have included:

- Development of system architecture and initial software for the Sapphire commercial real-time locating system (RTLS). Sapphire uses time-difference-of-arrival (TDOA) principles to track positions of small low-power tags intended to be attached to various assets.
- Transmitter and receiver design from HF through K-band. Particular emphasis on C-band UWB electronics for the Sapphire RTLS tracking system. Developed extremely low power transmitters and cost-effective receivers down to the discrete component level. Particular emphasis on power consumption, noise figure, gain flatness, temperature compensation, and transmit power.
- Obtaining FCC Part 15 certification for both intentional and unintentional emissions. Worked with test labs to perform certification measurements. Developed appropriate EMI suppression for both digital and RF circuitry.
- Oversight of intellectual property matters. Very familiar with the patent prosecution process.

XEROX PALO ALTO RESEARCH CENTER, Palo Alto, CA 1987-1999

Xerox PARC was an industrial research laboratory operated by Xerox Corporation which covered a wide variety of disciplines including computer science, materials, imaging, and human-computer interface.

Member of Research Staff(1987-1999)

- Developed processes and electronics for an electrophoretic display technology
- Developed RF electronics for several experimental wireless LAN technologies
- Developed much instrumentation, high speed and high voltage electronics for various printing technologies

PATENT DEVELOPMENT AND MARKETING CORPORATION, Design of all electronics and software for a blood-pressure measurement instrument.

EDUCATION

- *Carnegie-Mellon University*, Pittsburgh, PA Ph.D. Electrical Engineering, (May, 1984). Thesis: "A Computational Methodology for Modeling Non-Equilibrium Phenomena in High Pressure Electric Arcs". Advisor: Dr. J. L. Lawless
- *Carnegie-Mellon University*, Pittsburgh, PA M.S. Electrical Engineering, 1981.
- *Carnegie-Mellon University*, Pittsburgh, PA B.S. (University Honors) Electrical Engineering, 1979.

PRESENTED PAPERS

- Richley, E., "An Elliptic Angular Moment Representation of the Boltzmann Equation", presented at: *51st Annual Gaseous Electronics Conference*, Maui, HI, October 1998.
- Richley, E., "A Model of the D. C. Positive Column based on the Elliptic Representation of the Boltzmann Equation", presented at: *51st Annual Gaseous Electronics Conference*, Maui, HI, October 1998.
- Preas, B., Richley, E., Vest, F., Sheridon, N. and Sprague, R. "A large area, Tiled Gyricon Display", presented at: *SID 1998*, Anaheim, CA, May 1998.
- Richley, E. "An energy-resolved self-consistent model of the DC positive column", presented at: *50th Annual Gaseous Electronics Conference*, Madison, WI, October, 1997.
- Richley, E. and Tuma, D. T. "On the validity of the Saha Equation in Multi-temperature Plasmas", presented at: *1982 IEEE International Conference on Plasma Science*, Ottawa, Ontario, Canada, 1982.

PUBLICATIONS

- Pinhao, N. R., Donko, Z., Loffhagen, D., Pinheiro, M. J., and Richley, E.A., "Comparison of kinetic calculation techniques for the analysis of electron swarm transport at low to moderate E/N values",Plasma Sources Sci. Technol., v13 pp719-728.
- Richley, E. A., "Analysis of the low-pressure low-current dc positive column in neon", Physical Review E, Vol. 66, No. 2, August 2002, Art. No. 026402.
- Richley, E. A. and Mikkelsen, J. C., "Electrical processes in nonpolar liquids based on initial transient response and recovery", *Journal of Applied Physics*, Vol. 86, No. 12, December 1999, pp. 7029-7038.
- Richley, E., "Elliptic representation of the Boltzmann equation with validity for all degrees of anisotropy", *Physical Review E*, Vol. 59, Issue 4, April 1999, pp. 4533-4541.
- Richley, E., "Extending the Calculation of Electron Velocity Distribution Functions for Electrical Discharges to Large Values of E/N", *Journal of Applied Physics*, Vol. 71, No. 9, May 1 1992, pp. 4190-4195.
- Barth, R. and Richley, E., "Phase-Slip Technique for Direct Sequence Spread Spectrum Communication", *Xerox Technical Report, PARC Blue-and-White*, 1990.

- Richley, E., "Marx Generator for High Voltage Experiments", *Electronics and Wireless World*, Vol. 93, No. 1615, May, 1987, pp. 519-523.
- Richley, E. and Tuma, D. T., "On the Determination of Particle Concentrations in Multi-temperature Plasmas", *Journal of Applied Physics*, Vol. 53, No. 12, December 1982, pp. 8537-8542.
- Richley, E. and Tuma, D. T., "Mechanisms for Temperature Decay in the Freely Recovering Gas Blast Arc", *IEEE Transactions on Plasma Science*, Vol. PS-10, No. 1, March 1982, pp. 2-7.
- Richley, E. and Tuma, D. T., "Free Recovery of the Gas Blast Arc Column", *IEEE Transactions on Plasma Science*, Vol. PS-8, No. 1, December 1980, pp. 405-410.

OTHER ARTICLES

- Richley, E., "Design of Quadrature Detectors", *RF Design*, May, 1991, pp. 68-72.
- Richley, E., "Marx Generator for High Voltage Experiments", *Electronics and Wireless World*, Vol. 93, No. 1615, May, 1987, pp. 519-523.
- Richley, E. and Caimi, F. "Converting Mobile Microphones for Handheld VHF Transceivers", *Ham Radio*, Vol. 19, No. 3, March 1986, pp. 79-86.
- Richley, E.. "Improving the Audio on the ICOM IC-27", *Ham Radio*, Vol. 19, No. 2, February 1986, pp. 61-62.
- Richley, E. and Caimi, F. "A Carrier Operated Relay for VHF Amplifiers", *Ham Radio*, Vol. 18, No. 4, April 1985, pp. 45-47.

SELECTED U.S. PATENTS

- 7,907,065, E. Richley, "Device for Activating Inductive Loop Sensor of a Traffic Light Control System"
- 7,432,827, E. Richley, "Device for Activating Inductive Loop Sensor of a Traffic Light Control System"
- 6,766,988, E. Richley, "Block Occupancy Detector for Model Railroads"
- 5,752,677, E. Richley, "Block Occupancy Detector for Model Railroads"
- 5,437,057, E. Richley and L. Butcher, "Wireless Communications using Near Field Coupling"
- 5,262,098, J. Crowley, E. Richley, and N. Sheridon, "Method and Apparatus for Fabricating Bichromal Balls for a Twisting Ball Display"
- 5,223,755, E. Richley, "Extended Frequency Range Variable Delay Locked Loop for Clock Synchronization"
- 5,222,075, E. Richley, "Transmitted Code Clock Code-Matching Synchronization for Spread-Spectrum Communication Systems"
- 5,101,417, E. Richley and R. Barth, "Phase Controlled Synchronization for Direct Sequence Spread Spectrum Communication Systems"
- 5,122,818, S. Elrod, E. Richley, and E. Rawson, "Acoustic Ink Printers having Reduced Focusing Sensitivity"
- 5,025,793 E. Richley and C. Russell, "Finger Blood Pressure Measurement System"

AWARDS

- Fannie and John Hertz Foundation Graduate Fellowship 1979-1984.
- IEEE Nuclear and Plasma Science Graduate Student Award 1983.
- Carnegie-Mellon University, Electrical Engineering Department, E. M. Williams award 1979.

AFFILIATIONS

American Physical Society, member