

JONATHAN W. DIXON

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SUMMARY: RF, microwave, and millimeter-wave engineer. Excellent design and troubleshooting abilities. Strong computer and laboratory skills. Extensive leadership and education experience.

- Military projects in radar, satellite communications, and electronic warfare.
- Commercial projects in LMDS and mm-wave point-to-point communications.
- Directed actions of assembly specialists, technicians, and engineering assistants.
- Extra Class amateur radio license.
- Secret clearance.
- Co-holder of US Patent # 5,539,758.

COMPUTER SKILLS

- Computer Languages: Perl, Fortran, VisualBasic, C, Assembly
- Operating Systems: Linux, HP-UX, MS Windows (95, NT, ME, 2000, and XP)
- Familiar with wide variety of software, including office applications, circuit simulation tools, and graphics packages.

WORK EXPERIENCE

2001-present Senior Engineering Specialist, Microwave Systems Group, Advanced Engineering and Sciences Division, ITT Industries, Inc., Lowell, MA

- Primary RF engineer for developing and prototyping X-band exciter for an Army radar system upgrade. Supported system integration and testing including troubleshooting and repairs. Upgraded two of five modules to reach production status in follow-on Product Improvement Phase, resulting in a multi-million dollar order, the largest in group history.
- Designer for high frequency modules to support space-based transceiver program. Implemented modules using a variety of technologies, including channelized housings and LTCC substrates. Oversaw testing of modules for engineering prototypes and updated designs for production.
- Co-designer of Modular Synthesizer architecture, a high-performance airborne-qualified precision synthesizer with bandwidth of 50 MHz to 20 GHz. Designed, developed, and tested modules for frequencies from 2.5 GHz to 20 GHz.
- Production support engineer for several ongoing exciter systems. Interfaced with manufacturing and support to address issues in shipping products. Developed replacement comb generator to enable shipments of several million dollars of product to proceed.
- 2002 Peer Recognition Award for outstanding performance.

2000-2001 Principal Engineer, mm-Wave and Sensor Products, Components Business Unit, M/A-COM, Inc., Lowell, MA

- Lead engineer, 38-GHz LMDS mm-wave module production troubleshooting. Collaborated with production personnel to identify issues causing excessive fall-out of modules at production test. Compiled results, implemented fixes, and updated engineering designs and documentation. Interfaced with production personnel to ensure manufacturability of changes. These changes resulted in lower assembly times and higher first-pass yields for TX and RX modules.
- Member of design team for 38-GHz point-to-point TX and RX radio modules. Participated in selection of appropriate MMICs and components to meet customer specifications. Performed system- and component-level simulation. Presented results at PDR. Design resulted in customer placing significant order for modules.
- Support engineer, 38-GHz point-to-point radio module prototype effort. Developed and implemented test procedure for DC boards. Advised and oversaw efforts of engineering assistants to attain compliance to specifications for TX modules. Directed testing for detector circuit options, resulting in change of circuit for better manufacturability while meeting customer specifications. Assisted in preparing drawing changes resulting from prototype efforts to enable successful transition to production effort.
- Developed and presented tutorial on LMDS for M/A-COM Engineering Conference.
- Member of Emergency Response Team and Environmental Health and Safety Committee. Assisted company nurse with emergency situations and collaborated to remedy safety issues within company.

- 1997-2000** Member of Technical Staff, Advanced Electromagnetic System Group, Massachusetts Institute of Technology Lincoln Laboratory, Lexington, MA
- Design engineer for PA proposal. Combined experimental multi-layer technology and materials with a revolutionary power amplifier topology to enhance performance and expand available design options. Led to project interest by sponsors to further the development effort.
 - Lead engineer, RF subsystem for submarine-satellite communications. Evaluated power amplifier options for transmitter, especially high-efficiency designs. Developed system topology and specifications for transmit and receive RF electronics. Resulted in program receiving authorization to proceed to experimental phase.
 - Lead engineer, RF front end for photonics receiver. Designed, fabricated, and tested circuits and RF system to meet space and performance specifications. Replaced previously-designed custom LNA with COTS part, resulting in better performance at 13% of the cost. Interfaced with industry partners to improve design manufacturability. Resulted in successful completion of prototype phase and transition to industry partners for implementation.
 - Supervisor for SMT prototyping facility. Developed facility resources and directed work of assembly specialist. Cut minimum fabrication and rework times from 1 day to minutes for rewiring or an hour for part replacement.
 - Trained assembly specialist in use of RF measurement equipment to measure gain, return loss, noise figure, and linearity. Resulted in coupling of rework and measurement processes, improving cycle time for design evaluation.
 - Trained fellow staff members in the use of CAD/CAE software, allowing them to increase their design abilities.
- 1993-1994** Summer Fellow, Optical Techniques Branch, Naval Research Laboratory, Washington, DC
- Investigated fiber loop properties for use in fiber gyroscope. Reported results to supervisor, enabling selection of appropriate fibers for desired applications.
 - Characterized doped fibers for amplifying properties. Developed 810 nm fiber laser, resulting in awarding of U. S. Patent # 5,539,758.
- 1992** Undergraduate Research Assistant, Department of Electrical Engineering, Michigan State University, East Lansing, MI
- Research assistant for development of Electromagnetic Wave Life-Detection System for Post-Earthquake Rescue Operations. Member of team that developed prototype unit. Designed simulated victim to provide system testing in realistic clutter environment. Testing was ongoing at the conclusion of my involvement.
- 1990-1993** Private Government Contractor and Commissioned Officer Student Training and Extern Program participant, Electro-physics Branch, Food and Drug Administration, Rockville, MD
- Programmer and research assistant for cell impedance measurement effort. Designed and coded automated test program to control and augment capabilities of Solartron Impedance Analyzer. Characterized and reported on frequency response problems of analyzer. Measured red blood cell impedances from 1 Hz to 32 MHz.
- 1986-1988** Science and Engineering Apprenticeship Program participant, Microwave Technology Branch, Naval Research Laboratory, Washington, DC
- Implemented, adapted, and executed device simulations. Coded programs to enable automated measurement of superconductive cavity resonances. Resulted in receiving AFCEA Educational Fund award in 1987.

EDUCATION

- 1997** University of Colorado, Boulder, CO
Ph. D., Electrical Engineering (Electromagnetics), Zoya Popović, Advisor
Thesis: *Linear and Nonlinear Modeling of Quasi-Optical Oscillators and Amplifiers.*
- 1993** University of Colorado, Boulder, CO
M. S. Electrical Engineering (3.8/4.0 GPA)
- 1992** Michigan State University, East Lansing, MI
B. S. Electrical Engineering, B. S. Mathematics (3.9/4.0 GPA)
- other** M/A-COM Global Learning Center
System Level Electronic Packaging, 2001
ERP PDM for Engineers, Designers, and Approvers, 2000

The New England Consortium
 24-Hour Basic Health and Safety for Emergency Responders, 2000

Massachusetts Institute of Technology Lincoln Laboratory
 Presentation Skills Course, 2000
 Managing Small Projects Course, 1999
 Electro-Optics II (Photonic System Applications) Course, 1998
 Electro-Optics I (Photonic Physics and Engineering) Course, 1997-1998
 Radar Systems Course, 1997-1998

Boy Scouts of America Wood Badge Leadership Training
 Longs Peak Council, CO, Owl Patrol, 1996

HONORS

2002 Yankee Clipper Council District Award of Merit

1992 Office of Naval Research Graduate Fellowship, National Science Foundation Graduate Fellowship, Alton B. Zerby Outstanding Electrical Engineering Student Award Honorable Mention, Churchill Scholarship finalist

1990 Phi Kappa Phi, Tau Beta Pi

1989 Eta Kappa Nu, Order of the Arrow Vigil Honor, Golden Key National Honor Society

1988 National Merit Scholarship finalist, MSU Alumni Distinguished Scholarship

1985 Eagle Scout

ACTIVITIES

Extra Class amateur radio operator (AA1VO). Elmer and instructor for Novice and Technician Class amateur radio license for several people in Chelmsford, MA.

Member of Planning Council, Trinity Lutheran Church, Chelmsford, MA, since 1999 (Chair of Youth Ministry Committee, 1999-2004; Member-at-Large, 2004-present). Served as Council Representative to Pastoral Search Committee and as member of Revisioning Committee. President, Christus Rex Lutheran, Boulder, CO, from 1995 until 1997. Served in other capacities on planning councils of Christus Rex Lutheran and University Lutheran Church, East Lansing, MI, for 6 years.

Scoutmaster, Troop 212, Chelmsford, MA, since 1998. Directed reactivation of oldest American Legion-sponsored troop, with continued efforts at growth of the troop membership and programs. Before that, served one year as Scoutmaster for Troop 273, Boulder, CO, overseeing a 55% growth in troop membership. Committee Member, Pack 170, Chelmsford, MA, since 2002. Training Committee Chair and member of District Committee, Greater Lowell District, Yankee Clipper Council, since 2004. Prior scouting service includes eight years as an Assistant Scoutmaster in MD and CO.

Manager, Careers & Demonstrations Committee, IEEE eMeritBadges.org Project, since 2004. Responsible for the development and execution of a high-energy presentation aimed at attracting middle and high school boys and girls to electrical, electronic, and computer engineering.

Member of IEEE MTT-S, APS, and LEOS societies.

Trumpet performance and composition.

PUBLICATIONS

Jason Mix, Jonathan Dixon, Zoya Popovic, and Melinda Piket-May, "Incorporating non-linear lumped elements in FDTD: the equivalent source method," *Int. J. Numer. Model.*, vol. 12, pp. 157-170, 1999.

Jason Mix, Jon Dixon, Zoya Popovic, and Melinda Piket-May, "Modeling nonlinear devices in FD-TD: The equivalent source method," in *USNC/URSI National Radio Science Meeting 1998 Digest*, June 1998, p. 75.

Jonathan Dixon, Gary O'Dell, Jon Schoenberg, Scott Duncan, and Zoya Popovic, "60 GHz monolithic active antenna array," in *IEEE AP-S Internat. Symp. 1997 Dig.*, July 1997, pp. 38-41.

Jonathan Dixon, Elizabeth Bradley, and Zoya Popovic, "Nonlinear time-domain analysis of injection-locked microwave MESFET oscillators," *IEEE Trans. Microwave Theory Tech.*, vol. 45, no. 7, pp. 1050-1057, July 1997.

Jonathan Dixon and Zoya Basta Popovic, "Analysis of injection-locking of microwave oscillators using nonlinear transistor models," in *Proc. National Radio Science Meeting*, Jan. 1996, p. 151, Boulder, CO.

Zoya Popovic, Jon Schoenberg, Tom Mader, Wayne Shiroma, Stein Hollung, Milica Markovic, Jonathan Dixon, and Scott Bundy, "Quasi-optical components and subsystems for communications," in *ISSSE'95 Proceedings*, Oct. 1995, pp. 93-98.

Jonathan Dixon and Zoya Popovic, "Coupled nonlinear microwave oscillators," *Electromagnetics Laboratory Report 120*, University of Colorado, Feb. 1995.

Michael L. Dennis, Jonathan W. Dixon, and Ishwar Aggarwal, "High power upconversion lasing at 810 nm in Tm:ZBLAN fibre," *Electronics Letters*, vol. 30, pp. 136-137, Jan. 1994.

Michael L. Dennis, Jonathan W. Dixon, and Ishwar Aggarwal, "Upconversion-pumped thulium-fiber laser at 810 nm," in *OFC'94 Technical Digest*, 1994, pp. 133-134.

Jon Schoenberg, Jonathan Dixon, and Zoya Basta Popovic, "A planar transmission wave amplifier for free space power combining," in *Proc. National Radio Science Meeting*, Jan. 1994, p. 22, Boulder, CO.

Robert E. Schmukler and Jonathan W. Dixon, "Microprocessor controlled bioimpedance measurements," in *Proc. 14th Annual Internat. Conf. IEEE EMBS*, Oct. 1992, p. 2381, Paris, France.

Jonathan W. Dixon and Robert E. Schmukler, "Computer control of the Solartron 1260 impedance analyzer," in *Proc. 14th Annual Internat. Conf. IEEE EMBS*, Oct. 1992, pp. 2362-2363, Paris, France.