MARK S. HOFFMAN

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SUMMARY

Senior Electrical Design Engineer with four US patents and extensive experience as project leader and individual contributor in system architecture, analog, digital, and power design.

- Contributed and collaborated in developing Teradyne's highest selling system with over $1.25 billion sales.
- Designed and debugged new digital channel boards (for two platforms) resulting in 100% speed increase.
- Secured a strategic patent for creating a unique, inexpensive cooling technology that allowed reliable operation of a digital channel board.
- Detail-oriented, results focused team player with specific expertise in:
  - Analog and Digital design
  - Low noise
  - Signal integrity
  - Heat removal and isolation
  - High speed timing analysis
  - High current
  - Power distribution
  - HW/software/firmware trade-offs
- Proficient with Cadence design entry, Allegro and Express PCB design, P-SPICE, H-SPICE.

EDUCATION

Bachelor of Science in Electrical Engineering	Cornell University	Ithaca, New York
Master of Business Administration	Boston University	Boston, Massachusetts

PROFESSIONAL EXPERIENCE

Varian, Gloucester, MA 2010 – Present

Principal Engineer in Hardware Design
Designed improvements in ion implanter systems.

Green Group Boston, Burlington, MA 2009 – 2010

Ran Green Group Boston to teach professionals about sustainable energy and the green economy.

Teradyne, Bedford and North Reading, MA 1998 – 2008

Principal Engineer in Hardware Design
Designed high speed digital and analog instruments.

Projects:

- Contributed and collaborated in developing Teradyne's highest selling system resulting in over $1.25 billion sales.
- Designed new digital channel boards (two platforms: 48 and 64 channels) resulting in 100% speed increase.
- Redesign of 400MS/S source and 125MS/S (300MHz BW) digitizer to replace unreliable relays with FETs.

Accomplishments:

- Secured a strategic patent for creating a unique, inexpensive cooling technology that allowed reliable operation of a digital channel board.
- Created OptoFET model for P-SPICE that included parameters to control min/typ/max.
- Modeled attenuator using OptoFETs and improved the design to match frequency response to 0.1 dB.
- Figured out a way to modify an FPGA to allow the old SW to work on the new architecture.
- MTBF improvement from 6,000 hours measured to 25,000 hours predicted.
- Acted as technical consultant and coordinated the work of various engineers on a project.
- Created Excel worksheet to estimate crosstalk from 4 3D analyses using Trend and SeriesSum functions.
- Modified web application to use more accurate formulas to calculate the characteristic impedance of PC stripes.
- Helped junior engineers understand principles of electronics and design trade-offs.

PictureTel, Andover, MA (bought by Polycom in 2000) 1992 – 1998

Testability Design Engineer
Advised system designers on ways to make product easier to test/debug.
Coordinated the development of checkers.

- Analyzed new designs for testability. Saved projected $2M by improving one design.
- Wrote diagnostic tests for Network interface boards.
- Rewrote vendor's diagnostics to eliminate computer speed dependent timing loops.
- Created a new way of injecting short delays in code.
- Wrote specification to allow vendors to modify their diagnostics to be run from our environment.
- Project manager: Technical supervisor of up to 6 people. Provided technical guidance, coordinated efforts, created schedules, reported progress to management.

Teradyne, Boston, MA 1970 – 1990
Various positions from starting engineer to team leader

- Awarded two patents in nV measurement techniques
- Awarded a patent in Combinatorial Relay Multiplexing
- Designed 300 IC system controller/timing generator including ECL running at 100 MHz in a 100 IC synchronous state machine using VALID schematic capture, ABEL, and DATA I/O.
- Technical leader of team of four engineers.
- Designed backplane with controlled impedances, matched timing, and multiple power planes.
- Guided Hardware based Simulater project from inception to product introduction well under scheduled time, including artwork, production, and test.
- Visited customer sites to solve technical problems and insure customer satisfaction.
- Designed special cable for high current references with 1/100 the inductance of the previous cable.
- Wrote internal article on designing backplanes for high current.
- Designed computer controlled 10A 25v programmable power supply with opto-coupled interface.
- Designed application packages for testing and automatically adjusting (using active laser trim) electronic ignitions (for General Motors and Chrysler) and electronically controlled wide angle tachometers.
- Did root cause analysis and correction for failures in a vendor supplied CRT and persuaded the manufacturer to implement most of them. Field failures per year improved to 5% from 30%.

Other Accomplisments

- Worked on Electric Car project at Cornell. Won cross country race.
- Designed 50W DC-DC power supply optimized for low idle power.
- Designed and built a sculpture, inspired by the Tara Donovan exhibit at the ICA, from 212 plastic cups.

PROFESSIONAL DEVELOPMENT

Member IEEE; volunteer for CNET

Volunteer science interpreter at Boston Museum of Science

On the advisory board for the Harris Communications Group, a PR firm

Learned proficiency in Cadence design entry, Allegro and ExpressPCB PCB design, P-SPICE, H-SPICE

Learned Verilog, Xilinx, Altium, HTML/Java script, VBA, introduction to MATLAB

PATENTS

4178543	Analyzing Electrical Circuit Boards (Architecture)
4178544	Electrical Measurement Circuitry for Low Level AC Signals (Circuitry)
4724379	Relay Multiplexing for Circuit Testers (Combinatorial Multiplexer)
6765796	Circuit Board Cover with Exhaust Apertures for Cooling Electronic Components