MICHAEL BELLA

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TECHNICAL STRENGTHS

Design Experience	High Precision Analog Measurement and Design, PCB Layout Verilog, I2C, SPI, JTAG, RF Matching Network & Amplifiers Design
Lab Skills	Experienced with Oscilloscopes, Network Analyzers, 4Wire LCR Meters Multimeters, Root Cause Analysis, SMD Soldering, Prototyping
Software Tools	JMP, Spice, AWR Microwave Office, CADSoft Eagle, IAR Code Composer Studio, Eclipse, Git, SVN
Programming Languages	Python, Matlab, C, LabView

WORK EXPERIENCE

Apple Inc. – Hardware Test Engineering October 2013 - Present
Electrical Engineer *Cupertino, CA*

- Manage test vendors and contract manufacturers working on fast paced projects in order to provide test coverage for new product designs.
- Work with cross functional engineering teams and vendors to expedite the root cause of test line issues.
- Automate functional testing and data processing tasks using Python.
- Design and implement test plans for component and system level testing on new product introductions of iOS devices and accessories.

KLA-Tencor – SensArray Group December 2011 - October 2013
Electrical Engineer *Milpitas, CA*

Low Power Embedded Data Acquisition System Design

- Rewrote MSP430 family MCU scheduling system, sensor interface code, and flash storage management code in order to use a new sensor with the existing low power embedded measurement platform.
- Worked as part of a team to design a new embedded system architecture to lower power consumption, improve measurement accuracy, increase system flexibility, and increase product reliability.
- Developed MSP430 firmware to interface with new sensor types being researched for customer applications.

Custom RFID System Improvements

- Characterized the existing 1MHz RFID communication system in order to identify areas for improvement.
- Designed a band pass filter to select the 8kHz data from the output of the RFID coil envelope detector.
- Built a proof of concept circuit with my band pass filter and a comparator to recover the digital data.
- My design improved the bit error rate of the system by improving the selectivity of the detector.
- Developed spice model of a newer thin film aluminum RFID antenna to predict the differences due to the distributed capacitance.

RF Current Measurement Probe

- Worked on the design of an RF E-Field probe and detector circuit to measure field uniformity.
- Developed firmware for an MSP430 to take differential measurements from the RF envelope detector circuit and store the results in flash memory on the MCU.
- Worked with the senior electrical engineer, materials engineers, and packaging engineers to take the standalone design and integrate it into an existing measurement product for R&D use at customer sites.

13.56MHz Displacement Current Calibration System

- Improved the existing resonant LC circuit in the calibration system by reducing the total DC resistance.
- Built a higher quality factor LC circuit with a Q of 500 using a silver plated inductor and capacitor.
- Designed and built a matching network to couple power into the higher Q LC system's inductor.

- Designed and simulated a 13.56MHz Class E amplifier and matching network for use with the higher Q calibration system.

Automated Curve Tracer Fault Detector

- Built a curve tracer using an Aglient U3606A power supply and multimeter combination and a 34970A mulitfunction meter.
- Wrote a LabView application to sweep the compliance voltage, measure the current draw, and control the switch matrix cards.
- The LabView application identified shorts between the silicon substrate and the network of thin film aluminum traces based on the peak current draw and the shape of the IV curve.

Embedded Temperature Measurement System RF Shielding

- Designed experiments to identify the primary interference mechanisms.
- Built and tested experimental setups to measure the shielding efficacy from 1MHz up to 100MHz.
- Worked with a team of Electrical Engineers, Physicists, and Materials Engineers to design shielding solutions that fit the existing system constraints.

KLA-Tencor/SensArray Internship June 2005 - December 2011
Electrical Engineering Intern *Milpitas, CA*

- Debugged and performed failure analysis on test systems, embedded hardware, and plasma systems.
- Developed LabView applications to interface with test equipment and embedded systems for automated testing.

PERSONAL & STUDENT PROJECTS

Class D Amplifier - SJSU EE124 Final Project *2012*

- Designed a 10W class D amplifier using discrete components and operational amplifier ICs.
- Built a 300kHz triangle wave generator in order to generate PWM from my audio with a comparator.
- Built a power MOSFET output stage with gate driver and an LC low pass filter to drive the speaker.
- Realized my entire design on a breadboard and demonstrated my amplifier as my final project in my analog design class.

Bike Light - 1000 lm Headlamp and RGB Tail Lamp *2012*

- Designed a controller using an MSP430 MCU to manage the battery and control the LEDs.
- Wrote firmware to schedule battery measurements, change LED duty cycles, and debounce a button for user input.
- Calculated power budget and selected appropriate LED drivers for my application.

Formula Hybrid Vehicle Team - SJSU *2010 - 2011*

- Developed and tested battery management firmware for a dsPIC30 to perform pack safety monitoring and cell balancing.
- Worked with teammates to debug their 10kW switching power converter stability and ringing issues.
- Managed the EE team, developed project time lines, and drove schedules in order to meet our technical deadlines.
- Presented team progress updates to the Silicon Valley IEEE Chapter Meeting as part of their continued funding of our student team.

EDUCATION

San Jose State University *December 2011*
B.S. in Electrical Engineering