

# MICHAEL BELLA

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## TECHNICAL STRENGTHS

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

#### **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.

#### **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.

#### **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.

#### **Automated Curve Tracer Fault Detector**

- Built a curve tracer using an Agilent U3606A power supply and multimeter combination and a 34970A multifunction 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.

#### **High Density Plasma Chamber**

- Maintained and updated legacy LabView control software handling the machine safety and system automation for the plasma chamber and supporting systems.
- Diagnosed issues with the control systems, high vacuum systems, and robotic stages used on the plasma chamber.

- Performed maintenance on the full system including the high voltage generator, RF generators, and matching networks.

#### 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