

# MICHAEL BELLA

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## TECHNICAL STRENGTHS

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

## WORK EXPERIENCE

|   |                        |
|---|------------------------|
| <b>Apple Inc. – Hardware Test Engineering</b> | October 2013 - Present |
| <i>Electrical Engineer</i>                    | <i>Cupertino, CA</i>   |

- 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.

|                                     |                              |
|-------------------------------------|------------------------------|
| <b>KLA-Tencor – SensArray Group</b> | December 2011 - October 2013 |
| <i>Electrical Engineer</i>          | <i>Milpitas, CA</i>          |

### 13.56MHz Displacement Current Calibration System

- Improved existing resonant LC circuit 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 inductor.
- Designed a 13.56MHz Class E amplifier for the higher Q system.

### RF Current Measurement Probe

- Worked on the design of the RF current probe and the detector circuit.
- Developed firmware for an MSP430 to take differential measurements from the RF detector circuit and store the results in flash memory on the MCU.
- Worked with a team to take our stand alone design and integrate it into an existing measurement product for R&D use at customer sites.

### Automated Curve Tracer Fault Detector

- Built a curve tracer using an Agilent U3606A power supply/DMM combo and an 34970A DMM and chassis.
- Wrote a LabView application to increase the compliance voltage while measuring the current, and to control the switch matrix in the 34970A.
- LabView application identified shorts between the silicon substrate and the thin film aluminum traces based on the shape and amplitude of the IV curve.

#### Custom RFID System Improvements

- Designed a band pass filter to select the 8120Hz data from the output of the RFID coil envelope detector.
- Built a proof of concept prototype using the band pass filter and a comparator to recover the digital data.
- Characterized the existing 1MHz RFID communication system in order to identify areas for improvement.
- Developed spice model of a newer thin film aluminum RFID antenna to predict the differences due to the distributed capacitance.

#### High Density Plasma Chamber

- Maintained legacy LabView based control software handling the machine safety and system automation.
- Diagnosed issues with the high vacuum systems used on the plasma chamber.
- Performed maintenance on the full system including the high voltage generator, RF generators

#### Embedded Measurement System Shielding

- Designed experiments to identify the primary interference sources.
- Built and tested experimental setups to test the shielding efficacy at from 1MHz up to 100MHz.
- Identified the primary methods of action

#### **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 amplifiers 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 project.

## EDUCATION

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

*December 2011*