

# Christopher R. Madsen

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## SUMMARY

Accomplished electrical engineer with a focus on semiconductor technology and solid state physics. Proven understanding and practical experience with semiconductor production and manufacturing, failure analysis, high frequency test, electromagnetic theory, RF test equipment, circuit fabrication, simulation software, and popular programming languages. Demonstrated ability to effectively coordinate tasks to accomplish complex projects with timeliness and accuracy.

## TECHNICAL SKILLS

### Test Equipment

- Oscilloscopes
- Network analyzers
- RF power meters
- TD Reflectometers
- Antenna analyzers
- Spectrum analyzers
- Signal generators
- Frequency counters
- SWR meters
- Parameter analyzers

### Languages/Software

- C / C++
- L<sup>A</sup>T<sub>E</sub>X
- ADS
- EAGLE
- HFSS
- Verilog
- MATLAB
- LTspice
- SolidWorks

### Analytical Techniques

- X-ray fluoroscopy
- 3D microscopy
- Wafer-level probing
- Acoustic (ultrasound) microscopy
- Scanning electron microscopy (SEM)
- Thin/thick film failure analysis

### Licenses/Certifications

- FCC General Radiotelephone Operator License, FRN: 0018579987
- Certified SolidWorks Associate (CSWA), Cert-ID: C-NCRZTZW9VU
- FCC Amateur Extra License, FRN: 0018579987

## EDUCATION

**Stanford University** – Stanford, CA

expected Dec 2019

**M.S. in Electrical Engineering**

- Specialization in semiconductor physics and solid state technology

**University of Colorado** – Colorado Springs, CO

May 2016

**B.S. in Electrical Engineering, *with special honors***

- Cumulative GPA: 3.883 / Major GPA: 3.946
- Specialization in fields, RF design, and solid state technology

## RELEVANT EXPERIENCE

**Keysight Technologies** – Colorado Springs, CO

May 2016 - Present

**Manufacturing Engineer II**

- Point of contact on in-house production issues and post-production failures in 26 combined oscilloscope probes, probe heads, and application-specific integrated circuits (ASICs).
- Perform failure analysis (FA) and reliability characterization of parts and assemblies to determine root cause of failure and identify reliability concerns.
- Responsible for performance and reliability of manufactured parts.
- Support and implement the transition of products and manufacturing processes from prototype to full production, through the entire life cycle of the product.

**RELEVANT  
EXPERIENCE  
(CONT.)**

**Lockheed Martin** – Colorado Springs, CO Feb 2015 – Apr 2015  
**Test Engineering Associate (Internship)**

- Conducted software testing on SEElod Demand Response Management System software – discovered and reported 18 software defects requiring correction.
- Engineered and executed 132 software test cases focusing on integration of NOAA weather reporting and Pacific Gas & Electric systems.
- Performed root cause analysis of software failures using SQL database querying methods and ISTQB testing principles.

**Forschungszentrum Jülich** – Jülich, Germany May 2014 – Aug 2014  
**Magnetic Resonance Imaging (MRI) Research Assistant (Internship)**

- Engineered and constructed resonant circuits for experimental RF coil array, with the goal of improving field homogeneity in 9.4T MRI system.
- Researched effects of RF coil radius and frequency on Q factor in ultra high field MRI – published internal paper for review by head of institute.
- Designed and etched circuit boards for RF antenna array power supply and logic subsystems.

**MILITARY  
EXPERIENCE**

**U.S. Air Force** – Peterson AFB, CO Jan 2012 – Jan 2014  
**Management Analyst**

- Analyzed workflow, techniques, distribution, simplification, efficiency, and skill mix of United States Air Force Academy (USAF) and Air Force Global Strike Command (AFGSC) assets.
- Used industrial engineering techniques such as Lean and Six Sigma to assess, counsel, and assist unit leaders in aligning organizational functions.
- Advocated and recommended position mix of military, civilian, and contract personnel according to Air Force policy.

**U.S. Air Force** – Hurlburt Field, FL Aug 2008 – Jan 2012  
**RF Transmission Systems Technician**

- Conducted preventative and unscheduled maintenance inspections on 2,820 assets valued at \$22 million.
- Repaired and established satellite simulator module that provided training to four technicians and saved \$30k in satellite access costs.
- Completed Airman Leadership School, a six week professional development course focusing on advancement of leadership abilities and effective communication.

**U.S. Air Force** – RAF Croughton, UK Aug 2006 – Aug 2008  
**Satellite, Wideband, and Telemetry Systems Technician**

- Operated and performed preventative and unscheduled maintenance on 362 major equipment items, to include repairs, overhauls, and modifications.
- Adjusted, inspected, tuned, and aligned communications equipment valued at \$43 million.
- Awarded flight-level *Airman of the Year*, 2007.

**VOLUNTEER  
WORK**

**Civil Air Patrol** – Colorado Springs, CO Aug 2016 – Present  
**Communications Officer**

- Specialized in operation and maintenance of HF, VHF, and UHF systems used in aircraft and land-based scenarios
- FEMA ICS Certified (IS-100.B, IS-200.B, IS-700.A, IS-800.B)