

CHRIS CAPELLE

697 Pettis Avenue NE, Ada, MI 49301

(678) 977-5522 (C)

cdcappelle@att.net

SUMMARY

Electrical engineer with 15+ years of EMC experience in design, analysis, test, and management of consumer, aerospace, military, medical, and industrial products for Electromagnetic Compatibility requirements.

- New Product Development and Research
- EMI/EMS Analysis, Design, and Test
- Product and Test Requirement Definition
- Rational DOORS, PSpice, QuietExpert
- Multi-Project Management
- Test Planning and Implementation
- EME Test Lab Design/ Procurement
- Problem Determination and Resolution
- Offshore Experience
- Detailed-Oriented
- International Team Lead/Mentor
- Interdisciplinary Communication
- Organized in Fast-Paced Environments
- Control Plan, Test Procedure/Plan Writing

PROFESSIONAL EXPERIENCE

EATON AEROSPACE – Grand Rapids, MI

2011 – 2016

Lead EMC Engineer

2011 – 2016

- Defined, directed and implemented EMC design, analysis, and test activities for each product phase; including, but not limited to, component, schematic, filter, PCB/PWA layout and mechanical design.
- Implemented EMI/EMS design, analysis, modeling/simulation (Pspice) at the circuit level, system, and product+test setup levels for compliance and risk mitigation to EME requirements.
- Performed MIL-STD/ DO-160 testing, scheduling, planning, test procedure design, setup design, test equipment design, and procurement.
- Creation of EMC Program (Control) Plans, EMI/EMS Analysis Engineering Reports, EMC Development and Qualification Test Plans/ Test Procedures; and Test Failure & Resolution Reports.
- Directed international teams and/or personally performed the above activities during four (>1.5 yr duration) electromechanical actuation programs, achieving an average 85% 1st-pass yield in EMC qualification/certification testing and required no final deviation to customer qualification requirements.
- Experienced in successfully meeting Boeing Military, Boeing Commercial, Bombardier, COMAC, and Embraer EMC requirements on programs KC-46, 737 MAX, C Series, C919, and KC-390, respectively.
- Determination of non-recurring engineering hours of EMC program activities for bid proposal and EMC piece-part cost estimates.
- Interpretation and negotiation with the customer on program EMC requirements for product design, sub-level flow-down requirements, and test planning/ test requirements.
- Planned, designed, and procured \$1.5M, in-house, MIL/Aero EMC lab, covering MIL-STD-461E/F, DO-160E/F/G, Boeing D6-16050-4/5/6/7 and Aerospace ABD0100.1.2, Rev. G, test standards.
- Directed, trained, and mentored Chinese, British and Indian engineering teams as subject matter expert in EMC requirements, design, analysis, test planning, and test implementation.
- Acted as sole EMC subject matter expert in new product development design reviews.
- Provided hands-on EMC diagnostic, failure investigation, and resolution identification techniques, as well as leading corrective actions.
- Developed and distributed company-wide EMI/EMS filter design/analysis and indirect lightning design/analysis process documents, EMC test procedure standards and EMI control plan standards.

INTERTEK – Duluth, GA

2004 – 2011

***Senior Project Engineer/ Team Leader
Project Engineer***

2006 – 2011

2004 – 2006

- Manage/Implement product-testing workflow from receipt of service order through testing/application of various EMC/EMI and safety standards to final report communication, including failure analysis and resolution with the client.
- Possesses a strong working knowledge of and test experience with global EMC/EMI and safety standards from IEC, CISPR, EN, FCC, ANSI, ETSI, UL, Telcordia, MIL, FDA, etc. Working familiarity with international deviations in many countries.
- Hands-on test experience with FCC pt15 intentional radiator testing and certification, FCC/EN/IEC/ CISPR unintentional radiator emissions/susceptibility testing and declaration of conformity, IEC/EN 60601-1-2 medical testing, GR-1089 NEBS telecom testing, and MIL-STD-461F emissions testing.
- Communicates one-on-one with clients regarding interpretation of test standards, procedures, test result analysis, root-cause analysis, failure resolution and design review.
- Departmental report reviewer status of all completed projects for sign-off of final deliverables and CB scheme engineer.
- Safety test engineering experience with medical equipment (IEC 60601-1-2), including support of 501(k) submittal; telecom equipment; appliances and IP Rating dust/water.
- Skilled in the use of RF/EMC lab equipment including EMI receivers, spectrum analyzers, antennas, amplifiers, immunity test equipment, signal generators, etc.
- Research experience with Global Marketing Access Program, which researches global regulations and requirements for client products within various categories, such as electromagnetic compatibility, electrical safety, energy efficiency, waste/recycling, etc.
- Maintained a considerable amount of field-testing experience (6-12 one-week trips/ year) of medium to large-scale industrial and commercial products, throughout the United States and Kyoto, Japan.

APPLE COMPUTER, INC. – Cupertino, CA

2000 – 2003

Electromagnetic Compatibility Engineer

2001 – 2003

- Responsible for design, implementation, and verification of hardware solutions to ensure product compliance to FCC, CISPR, VCCI, & BSMI agencies of laptop and related accessory projects.
- Completed 9 products, consisting of numerous Titanium PowerBooks, power adapters, and modem models. Each project was designed & verified to comply with country regulations for electromagnetic interference and susceptibility. Several projects were audited by one or more domestic/foreign regulatory bodies for compliance and complied with margin, and included multiple trips to Taiwan OEM's for oversee of prototype manufacture and EMC testing. Filed report on design, testing, results, and documentation for regulatory body review.
- Reviewed, daily, printed circuit board (PCB) CAD design, mechanical CAD design, schematics, and component specifications for design changes pertaining to EMC.
- Worked closely with a diversity of corporate professionals such as Mechanical, Electrical, Industrial Design, Audio, Wireless & Modem, Safety, Environmental, Component, Power, PCB design, Manufacturing, Marketing and OEM vendors in design, analysis, and review.
- Designed, developed, and led Taiwanese OEM and component vendor teams on the manufacturing floor and at 3rd party test sites onsite.

- Designed, dimensioned, and documented main or daughter boards for Apple Computer, using Cadence software, Allegro, Spectra, & Spectraquest.

MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY - Rolla, MO

1999-2000

Waterjet-Demining Project Researcher/Technician

- Modified and created LabView programs for video acquisition/ processing in data acquisition systems.
- Assisted in thermal imaging and ground penetrating radar testing.
- Implemented distributed computing techniques for real-time data analysis and hardware synchronization.

AVX CORPORATION - Myrtle Beach, SC

1998

Advanced Project Technologies Center (R&D) Co-op and Summer Intern

- Completed testing and analyzing of thin-film RC components and multi-layered capacitor components.
- Performed daily electrical, mechanical, and thermal tests on experimental capacitor components.
- Obtained an understanding of the various processes for making capacitors, the thin-film photolithography process for making integrated circuits, and the capacitor producing industry.

EDUCATION

BSEE, Missouri University of Science and Technology (Previously Univ. of Missouri – Rolla)

Major: Electrical Engineering with emphasis in Electromagnetic Compatibility, RF Filters & Electronics

Minor: Speech & Media Studies

POST-GRADUATE/ PROFESSIONAL DEVELOPMENT

- Lean Six Sigma Green Belt Certification and 8D Training
- “MIL-STD-461G – Draft for Industry Review”, 2015, Rohde & Schwarz and Ken Javor
- “Simulating Lightning and EMP Effects in Aerospace Applications”, 2015, Computer Simulation Tech.
- “Simulators for SI, PI, EMC Can Minimize/Eliminate Design Iterations – Justifying Their High Cost is Easy”, 2015, Keith Armstrong, Cherry Clough Consultants Ltd
- “Early-Time HEMP vs IEMI Protection Measures: How are they similar; different”, 2015, ETS Lindgren
- “Improving EMI Compliance and Pre-compliance Testing Throughput with Time Domain Scanning”, 2015, Keysight Technologies
- “Choosing the Right Antenna for Today’s Testing Requirements”, 2015, A.H. Systems
- “Electromagnetic Simulation Supporting Aircraft Certification”, 2015, Computer Simulation Tech.
- “EMC Simulation of a Motor Control”, 2015, Computer Simulation Technology
- “Fundamentals of EMC: A Tutorial”, 2007, Clayton Paul
- “How to Handle People With Tact and Skill”, 2002, CareerTrack
- “EMC Diagnostics and Fixes”, 2002, Henry W. Ott
- “EMC Aspects of High Speed ASIC Design”, 2002, Henry W. Ott
- “EMC Considerations in PCB Design & Layout”, 2001, Henry W. Ott
- “Shielding”, 2001, Henry W. Ott
- “Using Cadence PCB CAD software class”, 2001, Cadence
- “PCB Design for Analog/RF Circuits”, 2001, Copper Connection, Inc.
- “High Frequency RF Filter Design”, 2000, Missouri S&T (Univ. of Missouri)
- “Grounding, Shielding, and PCB Layout“, 1999, Dr. Todd Hubing of Missouri S&T (Univ. of Missouri)