



Exponent®

Engineering & Scientific Consulting

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Professional Profile

Dr. D'Andrade is a licensed professional electrical and computer engineer consultant with 20 years of experience in research, development, risk assessment, and design in a variety of engineering fields including electrical, electronic, semiconductor, computer, software, and network. His expertise is used in a variety of litigation, mediation, and arbitration matters including patent, copyright, trade secret, antitrust, and commercial. He investigates the technical aspects of claims related to flood, fire, power outage, natural disasters, misrepresentations, breach of contract, project management, and software engineering.

Dr. D'Andrade applies engineering principles in his consulting practice to assess how electronic products, electrical systems or software systems fail due to defects, poor development practices, or other stressors exceeding specifications. For example, he investigates failures involving electrical and electronic systems including consumer appliances, smart home devices, network equipment, lighting, building wiring, shock and arc-flash hazards, batteries, and motors in residential homes, apartments, universities, solar farms, data centers and commercial buildings. His risk assessments are based on laboratory tests and compliance to product standards and good practices.

He has 17 years of commercial experience in the semiconductor field including consulting on, research and development of light-emitting diodes (LEDs). He has reviewed numerous semiconductor recipes for GaN semiconductors and non-volatile (Flash) memories in trade-secret and patent matters. His wide band-gap semiconductor experience includes intellectual property litigation matters on MOCVD and MBE growth methods, doping and device architectures. His non-volatile memory work experience includes shallow trench isolation, interlayer dielectrics, spacers and other flash memory structures for either patent or trade secret litigation matters.

In addition, Dr. D'Andrade consults on software, network and computer engineering issues. In terms of software engineering, Dr. D'Andrade helps clients navigate software requirements, installation, breach of contract, fraudulent marketing, and operational issues. He has assessed operational algorithms for embedded systems, various industrial control systems, nuclear facility safety controls and smart devices. In terms of computer engineering, Dr. D'Andrade has experience with enterprise network architectures, domain name system, email systems, Unified Communications, cybersecurity, digital forensics and memory storage.

Dr. D'Andrade examines various software systems (Android, iOS, DVR, NVR) to retrieve data, resolve IP address information, determine timestamps, location and various other log data. He has assessed smart phone apps to determine their source code and capabilities for intellectual property matters. He has examined various networked device traffic information to determine details of the communication between servers and clients including analyzing cell-tower communications, geolocation data and time logs.

Academic Credentials & Professional Honors

Ph.D., Electrical Engineering, Princeton University, 2004

M.A., Electrical Engineering, Princeton University, 2001

B.S.E.E., Electrical Engineering, Penn State University, 1999

IEEE-SA Cloud Working Group Award, 2020

Certificate of Appreciation for Leadership and Service to the American Society for Quality, 2016

New York Intellectual Property Law Association's Inventor of Year, 2015

United States Department of Energy, Significant R&D Achievement, 2006-2008.

Licenses and Certifications

ASQ Certified Reliability Engineer (CRE)

Certified Electrical Safety Compliance Professional (CESCP)

Certified Fire and Explosion Investigator (CFEI)

Certified IPC Specialist (CIS)

Certified Software Development Associate (CSDA)

Certified Software Quality Engineer (CSQE)

Cisco Certified Network Professional (CCNP)

Cisco Certified Network Professional- Security (CCNP-S)

Project Management Professional (PMP)

U.S. Soccer National D Coaching License

Prior Experience

Senior Scientist, Universal Display Corporation, 2004-2008

Research Assistant, Princeton University, 2000-2004

Teaching Assistant, Princeton University, wireless communication and electronic devices, 2000-2001.

Research Assistant, Massachusetts Institute of Technology, 1998

Teaching Assistant, Pennsylvania State University, calculus, signal processing, 1997-1998

Electrical Engineering Co-op, Kimberly-Clark Corporation, 1996

Professional Affiliations

IEEE (Senior Member)

IEEE Standards Association (member)

IEEE Std. 2301 - Guide for Cloud Portability and Interoperability Profiles- working group (Chair)

ISC2-National Chapter Region (Secretary: 2016-2019; President: 2020-2022)

International Information System Security Certification Consortium (ISC)² (member)

National Fire Protection Association (member)

Project Management Institute (member)

Patents

100+ Patents.

Patent 9,385,167: OLED display architecture.

Patent 9,349,954: Stable blue phosphorescent organic light emitting devices, May 24, 2016.

Patent 9,112,171: Organic light emitting device and materials for use in same, August 18, 2015.

Patent 8,866,377: Long lifetime Phosphorescent Organic Light Emitting Device (OLED) Structures, October 21, 2014.

Patent 8,557,399: Stable blue phosphorescent organic light emitting devices, October 15, 2013.

Patent 8,513,658: White phosphorescent organic light emitting devices, August 20, 2013.

Patent 8,476,822: Saturated color organic light emitting devices, July 2, 2013.

Patent 8,372,526: Intermediate connector for stacked organic light emitting devices, February 12, 2013.

Patent 8,148,891: Electron impeding layer for high efficiency phosphorescent OLEDs, April 3, 2012.

Patent 8,080,937: OLED having a charge transport enhancement layer, December 20, 2011.

Patent 8,053,770: Emissive Layer Patterning for OLED, November 08, 2011.

Patent 8,040,053: Organic light emitting device architecture for reducing the number of organic materials, October 18, 2011.

Patent 7,800,295: Organic light emitting device having a microcavity, September, 2010 (with Mike Weaver).

Patent 7,776,456: Organic light emitting devices with an emissive region having emissive and non-emissive layers and method of making, August 17, 2010 (with Theodore Zhou).

Patent 7,728,512: Organic light emitting device having an external microcavity, June 1, 2010.

Patent 7,710,017: Organic light emitting device having a transparent microcavity, May, 2010 (with V. Adamovich).

Patent 7,285,907: High efficiency multi-color electro-phosphorescent OLEDs, October 2007 (with M. Thompson, S. Forrest).

Patent 7,261,954: Organic light emitting devices having carrier blocking layers comprising metal complexes, August 2007 (with M. Thompson, X. Ren, V. Adamovich, S. Cordero, B. Alleyne, S. Forrest).

Patent 7,179,543: Doping of organic opto-electronic devices to extend reliability, February 2007 (with S. Forrest, A. Chwang).

Patent 7,022,421: Organic light emitting devices having carrier blocking layers comprising metal complexes, April 2006 (with M. Thompson, X. Ren, V. Adamovich, S. Cordero, B. Alleyne, S. Forrest).

Patent 7,009,338: High efficiency multi-color electro-phosphorescent OLEDs, March 2006 (with M. Thompson, S. Forrest).

Patent 6,869,695: White light emitting OLEDs from combined monomer and aggregate emission, March 2005 (with M. Thompson, J. Brooks, V. Adamovich, S. Forrest).

Patent 6,863,997: White light emitting OLEDs from combined monomer and aggregate emission, March 2005 (with M. Thompson, J. Brooks, V. Adamovich, S. Forrest).

Patent Application No. US 20070103066: Stacked OLEDs with a reflective conductive layer, filed November 4, 2005 (with R. Hewitt, K. Rajan, V. Adamovich).

Publications

IEEE Std. 2302:- Standard for Intercloud Interoperability and Federation (SIIF), IEEE-SA, 2021

D'Andrade B. Software Engineering: Artificial Intelligence, Compliance, and Security. D'Andrade B (ed), NovaPublishing, 2021

IEEE Std. 2301: Guide for Cloud Portability and Interoperability Profiles (CPIP). IEEE-SA, 2020

D'Andrade B. The Machines are Coming: New Technological Advances and Trends in Construction. Presentation at DRI and IDC sponsored Artificial Intelligence in Construction Seminar, 2020.

D'Andrade B. The Importance of Project Management in Timely Software Deployment. Newsletter. September 2019.

Phan S, Pooley M, D'Andrade B. Data Loss Prevention Strategies in the Era of Cloud. American Bar Association Tort Trial and Insurance Practice Section, Committee News: Cybersecurity and Data Privacy. Summer/Fall 2019.

D'Andrade B, Nauhaus G. Personal Protective Equipment and other Job Site Safety Issues presented at First Party Claims Conference 2018.

Books on Amazon author page: <https://www.amazon.com/Brian-DAndrade/e/B06XDMH2NP> D'Andrade B, Sorini A, Lochner Z. Digital evidence presented at NJDA 51st Annual Convention, 2017.

D'Andrade B. The power grid: Smart, secure, green and reliable. D'Andrade B (ed), Woodhead Publishing, 2017

Murphy PF, Kattamis AZ, Souri SJ, D'Andrade BW. Expert Roles in Antitrust Litigation. Michigan Defense Quarterly 2017; 33(3).

Murphy PF, Kattamis AZ, Souri SJ, D'Andrade BW. Role of technology experts in antitrust litigation. IDC Quarterly 2016; 26(4):38.

D'Andrade B, Schroeder D, Lester S, Miller J. The future is now - Data privacy & cybersecurity liability. FDCC 13th Annual Corporate Counsel Symposium, 2016.

D'Andrade B, Kuehn C, Brennan J. Software recognized as a key subsystem in electrosurgery systems by FDA. Electrical Engineering & Computer Science Newsletter, 2016.

Kothari-Phan S, Shai D, D'Andrade B. Software quality standards: An approach to reduce lifecycle costs. Electrical Engineering & Computer Science Newsletter, 2016.

D'Andrade B, Kattamis A, Murphy P. Flexible organic electronic devices on metal foil substrates for lighting, photovoltaic and other applications. Handbook of Flexible Organic Electronics: Materials, Manufacturing and Applications. Stergios Logothetidis (ed), Woodhead Publishing, 2014.

D'Andrade B. Characterization approaches for blue and white phosphorescent OLEDs: Luminescence: The instrumental key to the future of nanotechnology. Gilmore A (ed), Pan Stanford Publishing, 2014.

D'Andrade B. Phosphorescent organic light-emitting diodes for solid-state lighting in organic light-emitting diodes: Materials, Devices and Applications. Buckley A (ed), Woodhead Publishing, 2013.
www.woodheadpublishing.com/9780857094254

D'Andrade B. Lighting: Molecules that convert heat into light. Nature 2012: 492.

D'Andrade B. Errors in organic light emitting diode measurements. IEEE: Reliability Society 2011 Annual Technical Report, 2011.

D'Andrade B, Turner G, Kattamis A, Saleh M. Reliability of switches that generate current in the grounding conductor. IEEE: Reliability Society 2011 Annual Technical Report, 2011.

D'Andrade B, Kattamis AZ, Murphy PF, McNulty J, Souri S. Arcing enabled by tin whiskers. IEEE: Reliability Society 2010 Annual Technical Report, 2010.

Pinato A, Meneghini M, Cester A, Wrachien N, Tazzoli A, Zanoni E, Meneghesso G, D'Andrade B, Esler J, Xia S, Brown J. Improved reliability of organic light-emitting diodes with indium-zinc-oxide anode contact. IEEE International Reliability Physics Symposium, IRPS 2009, pp. 105-108, Montreal Canada, April 26-30, 2009.

D'Andrade B, Kattamis AZ. Flexible active-matrix organic light emitting displays. Silicon Valley Engineering Council Journal 2009; 1:18-21.

D'Andrade BW, Esler J, Lin C, Adamovich V, Xia S, Weaver MS, Kwong R, Brown J. White phosphorescent OLEDs. Maximizing the power efficacy lifetime product. Digest of Technical Papers of IMID/IDMC/Asia Display 2008.

D'Andrade BW, Weaver MS, Brown J. The great white organic hope. Photonics Spectra 2008; 42.

Giebink NC, D'Andrade BW, Weaver MS, Mackenzie PB, Brown JJ, Thompson ME, Forrest SR. Intrinsic luminance loss in phosphorescent small-molecule organic light emitting devices due to bimolecular annihilation reactions. Journal of Applied Physics 2008; 103(4):044509-044501.

D'Andrade BW, Weaver MS, Mackenzie PB, Yamamoto H, Brown JJ, Giebink NC, Forrest SR, Thompson ME. Blue phosphorescent organic light emitting device stability analysis. Proceedings, Society for Information Display 2008; 39.

D'Andrade BW, Esler J, Lin C, Weaver MS, Brown J. Extremely long lived white phosphorescent organic light emitting device with minimum organic materials. Society for Information Display 2008; 39.

D'Andrade BW, Esler J, Lin C, Adamovich V, Xia S, Weaver MS, Kwong R, Brown JJ. Realizing white phosphorescent 100 lm/W OLED efficacy. Proceedings, International Society for Optics and Photonics (SPIE) 2008; 7051.

D'Andrade B, Adamovich V, Weaver M, Lin C, Ma B, Mackenzie PB, Kwong R, Brown JJ. Phosphorescent OLEDs with saturated colors. Proceedings, International Society for Optics and Photonics (SPIE), 2007; 6655:645-647.

D'Andrade B, Canzler TW, Hack M. PIN OLEDs—Enhanced performance and lifetime by improved structures and materials. Proceedings, IMDC 2007.

D'Andrade B. White phosphorescent LEDs offer efficient answer. Nature Photonics 2007; 1(1):33-34.

D'Andrade BW, Tsai J-Y, Lin C, Weaver MS, Mackenzie PB, Brown JJ. Efficient white phosphorescent organic light-emitting devices. Proceedings, Society for Information Display 2007; 38:1026-1029.

D'Andrade B, Weaver MS, Brown JJ. White phosphorescent organic light emitting devices. Proceedings, International Society for Optics and Photonics (SPIE) 2007; 6655:6332-6334.

Weaver MS, Adamovich VI, D'Andrade B, Ma B, Kwong RC, Brown JJ. Phosphorescent OLEDs for displays and lighting. Proceedings, IMDC 2007.

Weaver MS, Tung YJ, D'Andrade B, Esler J, Brown JJ, Lin C, Mackenzie PB, Walters RW, Tsai JY, Brown CS, Forrest SR, Thompson ME. Invited paper, Advances in blue phosphorescent organic light-emitting devices. Proceedings, Society for Information Display 2006; 37:127-130.

Canzler TW, Burghart M, Murano S, Blochwitz-Nimoth J, D'Andrade B, Hack M, Brown JJ. Highly power efficient organic light-emitting devices enabled by phosphorescent and p-i-n technologies. Proceedings, International Society for Optics and Photonics (SPIE) 2006; 6333:633311, 2006.

D'Andrade BW, Brown JJ. Organic light-emitting device luminaire for illumination applications. Applied Physics Letters 2006; 88(19):192908.

D'Andrade B, Alleyne B, Hack M, Hewitt R, Brown JJ. White phosphorescent organic light emitting devices for lighting applications. Proceedings, International Society for Optics and Photonics (SPIE) 2006; 6333:63330.

D'Andrade B, Brown JJ. White phosphorescent organic light emitting devices for display applications. Proceedings, International Society for Optics and Photonics (SPIE) 2006; 6225:622514, 2006.

D'Andrade BW, Esler J, Brown JJ. Organic light-emitting device operational stability at cryogenic temperatures. Synthetic Metals 2006; 156(5-6):405-408.

D'Andrade BW, Datta S, Forrest SR, Djurovich P, Polikarpov E, Thompson ME. Relationship between the ionization and oxidation potentials of molecular organic semiconductors. Organic Electronic 2005; 6(1):11-20.

Holmes RJ, Forrest SR, Sajoto T, Tamayo A, Djurovich PI, Thompson ME, Brooks J, Tung YJ, D'Andrade BW, Weaver MS, Kwong RC, Brown JJ. Saturated deep blue organic electrophosphorescence using a fluorine-free emitter. Applied Physics Letters 2005; 87(24):243507.

D'Andrade B, Adamovich V, Hewitt R, Hack M, Brown JJ. Phosphorescent organic light-emitting devices for solid-state lighting. Proceedings, International Society for Optics and Photonics (SPIE) 2005; 5937:1-

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D'Andrade B, Holmes R, Forrest S, Li J, Thompson M. Triple-doped white organic light-emitting devices grown in vacuum. Proceedings, International Society for Optics and Photonics (SPIE) 2004; 5530:17-25.

D'Andrade BW, Forrest SR. White organic light-emitting devices for solid-state lighting. Advanced Materials 2004; 16(18):1585-1595.

D'Andrade BW, Holmes RJ, Forrest SR. Efficient organic electrophosphorescent white-light-emitting device with a triple doped emissive layer. Advanced Materials 2004; 16(7):624-628, 2004.

Brooks JJ, Kwong RC, Tung Y-J, Weaver MS, D'Andrade B, Adamovich V, Thompson ME, Forrest SR, Brown JJ. Comparison of blue-emitting phosphorescent dopants: Effect of molecular energy levels on device efficiency. Proceedings, International Society For Optics And Photonics (SPIE) 2004; 5519:35-41.

D'Andrade B, Forrest SR. Effects of exciton and charge confinement on the performance of white organic p-i-n electrophosphorescent emissive excimer devices. Journal of Applied Physics 2003; 94(5):3101-3109.

D'Andrade BW, Forrest SR, Chwang AB. Operational stability of electrophosphorescent devices containing p and n doped transport layers. Applied Physics Letters 2003; 83(19):3858-3860.

D'Andrade B, Forrest SR. Formation of triplet excimers and dimers in amorphous organic thin films and light emitting devices. Chemical Physics 2003; 286(2-3):321-335.

Adamovich VI, Cordero SR, Djurovich PI, Tamayo A, Thompson ME, D'Andrade BW, Forrest SR. New charge-carrier blocking materials for high efficiency OLEDs. Organic Electronics 2003; 4(2-3):77-87.

Holmes RJ, D'Andrade BW, Forrest SR, Ren X, Li J, Thompson ME. Efficient, deep-blue organic electrophosphorescence by guest charge trapping. Applied Physics Letters 2003; 83(18):3818-3820.

D'Andrade BW, Thompson ME, Forrest SR. Controlling exciton diffusion in multilayer white phosphorescent organic light emitting devices. Advanced Materials 2002; 14(2):147-151.

D'Andrade BW, Brooks J, Adamovich V, Thompson ME, Forrest SR. White light emission using triplet excimers in electrophosphorescent organic light-emitting devices. Advanced Materials 2002; 14(15):1032-1036.

Adamovich V, Brooks J, Tamayo A, Alexander AM, Djurovich PI, D'Andrade BW, Adachi C, Forrest SR, Thompson ME. High efficiency single dopant white electrophosphorescent light emitting diodes. New Journal of Chemistry 2002; 26(9):1171-1178.

D'Andrade BW, Baldo MA, Adachi C, Brooks J, Thompson ME, Forrest SR. High-efficiency yellow double-doped organic light-emitting devices based on phosphor-sensitized fluorescence. Applied Physics Letters 2001; 79(7):1045-1047.

Klauk H, D'Andrade B, Jackson TN. All-organic integrated emissive pixels. Annual Device Research Conference Digest 1999; 162-163.

Project Experience

- Analyzing software and hardware involved in cyber-security insurance claims.
- Engineer in responsible charge for various electro-magnetic field studies for public power utilities.

- Failure investigation at solar power farms.
- Investigating alleged ITAR violations in software products for a military contractor.
- Cause and origin fire investigations for consumer product retailers.
- Cause and origin fire investigations involving utility equipment.
- Cause and origin for investigations of computer, network and research equipment related to flooding.
- Performing risk assessment of PCB design issues

Communication Networks

- Failure analysis of residential cable modems, Intellectual property/patent investigations of networks including Zigbee, Extranet, Internet, Intranet, VPN, WAN and LAN.
- Investigate physical damage to hardware by malware
- Networking load balancing.
- Patent portfolio review.
- Patent re-examinations.
- Domain Name System (DNS)
- Programmed routers and switches for small to medium sized enterprises
- Satellite communications.
- Communication apparatus including webcams, VoIP, smartphones
- Unified Communications
- Videoconference systems and components

Electrical Power

- Arc-flash, electrocution, shock
- Electrical safety and personal injury investigations.
- Bonding and insulation piercing connectors.
- Installation and Megger testing of power cables.
- Installation of multi-cell conduit.
- Power utility meters.
- Inverter failure analysis.
- Root-cause analysis of power outages in large data center facilities.
- Switch gear failures.
- Solar generation system operational analysis
- Testing of circuit breakers.
- Transmission lines.

Semiconductors

- Intellectual property analysis

- Memory technology analysis.
- Production materials utilization and sourcing.
- Semiconductor packaging design, processing, and failure analysis.
- MOCVD recipe analysis.
- Solar PV module reliability.

Software

- Aviation maintenance, repair, and operations software installation
- Domain Name System.
- Project management good practices.
- Push Notification.
- Enterprise resource planning.
- Copyright infringement analysis of source code.
- Algorithm review.
- Smartphone forensics.

Standards and Regulations

47 CFR Part 15 – Radio Frequency Devices

ANSI/UL 2900-1 – Software Cybersecurity for Network-Connectable Products

ANSI C12.1 - Electric Meters Code for Electricity Metering

ANSI C12.10 - Physical Aspects of Watthour Meters - Safety Standard

ANSI C63.4 - Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI/PMI 99-001-2017 - A Guide to the Project Management Body of Knowledge

ASTM B117-11 - Standard Practice for Operating Salt Spray (Fog) Apparatus

ASTM E860-07 - Standard Practice for Examining And Preparing Items That Are Or May Become Involved In Criminal or Civil Litigation

ASTM E1188-11 - Standard Practice for Collection and Preservation of Information and Physical Items by a Technical Investigator

ASTM E1459-92 - Standard Guide for Physical Evidence Labeling and Related Documentation

BS 7671 - Requirements for Electrical Installations. IET Wiring Regulations

IEC 60320 – Appliance Couplers for Household and Similar General Purposes

IEC 60227 - Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V

IEC 60228 - Conductors of Insulated Cables

EN 50525 - Electric cables. Low voltage energy cables of rated voltages up to and including 450/750 V

IEEE Std 828 – IEEE Standard for Configuration Management in Systems and Software Engineering

IEEE Std 829 – IEEE Standard for Software and System Test Documentation

IEEE Std 830 – IEEE Recommended Practice for Software Requirements Specifications

IEEE Std 1016 – IEEE Standard for Information Technology – Systems Design

IEEE Std 1228 – IEEE Standard for Software Safety Plans

IEEE Std 1633 – IEEE Recommended Practice on Software Reliability

IEEE C37.90.1 - IEEE Standard for Surge Withstand Capability (SWC) Tests For Relays And Relay Systems Associated With Electric Power Apparatus

IEEE C62.11 - IEEE Standard for Metal-Oxide Surge Arresters For AC Power Circuits (>1 KV)

IEEE Std 1 - General Principles for Temperature Limits in the Rating of Electrical Equipment and for the Evaluation of Electrical Insulation

IEEE Std 1028 – IEEE Standard for Software Reviews and Audits

IEEE Std C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits

IEEE Std 1547 - IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEC 61000-4-2 - Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test

IEC 61000-4-3 - Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radiofrequency, electromagnetic field immunity test

IEC 61000-4-4 - Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test

ISO 27037 - Information Technology - Security Techniques - Guidelines for Identification, Collection, Acquisition and Preservation of Digital Evidence

ISO 17025 - General Requirements for The Competence of Testing and Calibration Laboratories

ISO 27000 series - IT - Security Techniques - Information Security Management Systems

ISO/IEC 33000 series – Information technology – Process assessment

ISO 15801 - Document Management - Electronically Stored Information - Recommendations for Trustworthiness and Reliability

ISO TR 19759 - Software Engineering Guide to the software engineering body of knowledge (SWEBOK)

ISO 33000 series - Process Assessment

NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum)

NESC – The National Electric Safety Code

NFPA 70 – National Electric Code

NFPA 70B – Recommended Practice for Electrical Equipment Maintenance

NFPA 70E – Standard for Electrical Safety in the Workplace

NFPA 921 – Guide for Fire and Explosion Investigations

TCVN 7189 - Radio disturbance characteristics – Limits and methods of measurement

UL 1097 – Double Insulation Systems

UL 1310 – Class 2 Power Units

UL 1449 - Standard for Surge Protective Devices

UL 1703 - Standard for Flat-Plate Photovoltaic Modules and Panels

UL 1741 - Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

UL 2735 -Standard for Electric Utility Meters

UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures

UL 50 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures

UL 508 - Standard for Industrial Control Equipment

UL 60950-1 - Information Technology Equipment - Safety

UL 61010-1 - Safety Requirements for Electrical Equipment for Measurement, Control, and Lab. Use

UL 746C - Standard for Polymeric Materials - Use in Electrical Equipment Evaluations

UL 817 - Standard for Cord Sets and Power-Supply Cords

UL 962 – Standard for Safety – Household and Commercial Furnishings