SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELECTRIC APPLICATIONS INCORPORATED
1337 East Washington Street
Phoenix, AZ 85034
Nick Fleming Phone: 417-496-8990
E-mail: nfleming@electric-applications.com
Donald Karner Phone: 602-697-4395
E-mail: dkarner@electric-applications.com

ELECTRICAL

Valid To: October 31, 2023 Certificate Number: 4365.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on the following types of products**:** Batteries, including but not limited to: lithium ion, lead-acid and NiMH at the cell, module, and pack levels. Energy storage devices of various capacities, configurations and chemistries, including batteries and capacitors.

Test Technology/Test Capabilities [1]:	**Test Method(s):**
Rated Capacity Test TS-001 Current, Voltage and Temperature Range of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT-12-26503, 2015; USABC Battery Test Manual for Electric Vehicles, 2015; RTCA DO 293 Minimum Operational Performance Standards (MOPS) for Nickle-Cadmium, Nickle Metal-Hydride and Lead-Acid Batteries; Section 2.2 Electrical Requirements and Test Procedures, Section 2.3 Rapid Discharge Capacity, 2009; GR-3150 General Requirements for Secondary Non-Aqueous Lithium Batteries, 2015; Society of Automotive Engineers Standard J537, Storage Batteries, 2016

5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

Test Technology/Test Capabilities [1]:	**Test Method(s):**
Constant Power Discharge Test TS-002 Current, Voltage and Temperature Range of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT-12-26503, 2015; USABC Battery Test Manual for Electric Vehicles, 2015
HPPC Test TS-003 Current, Voltage and Temperature Range of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT-12-26503, 2015; USABC Battery Test Manual for Electric Vehicles, 2015
Self-Discharge Test TS-004 Current, Voltage and Temperature Range of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT-12-26503, 2015; GR-3150 General Requirements for Secondary Non-Aqueous Lithium Batteries, 2015
Cold Cranking Test TS-005 Current, Voltage and Temperature Range of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT12-26503, 2015; USABC Battery Test Manual for Electric Vehicles, 2015; Society of Automotive Engineers Standard J537, Storage Batteries, 2016; BCIS-04 Storage Battery Specifications For Starting, Lighting And Ignition Types, 2016
Thermal Performance Test TS-006 Current, Voltage and Temperature Range of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT12-26503, 2015

Test Technology/Test Capabilities [1]:	**Test Method(s):**
Cycle Life Test TS-007 Current, Voltage and Temperature Range Of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT12-26503, 2015; USABC Battery Test Manual for Electric Vehicles, 2015; SAE J2185 Test of Heavy-Duty Storage Batteries (Lead-Acid Type Only), 2018; GR-3150 General Requirements for Secondary Non-Aqueous Lithium Batteries, 2015; SAE J240 Life Test for Automotive Storage Batteries, 2012
Accelerated Float Life TS-008 Current, Voltage and Temperature Range of Equipment Utilized	IEC 60896-21 Stationary lead-acid batteries – Part 21: Valve regulated types – methods of test, 2004
Ground Short Propensity Test TS-009 Current, Voltage and Temperature Range of Equipment Utilized	IEC 60896-21 Stationary lead-acid batteries – Part 21: Valve regulated types – methods of test, 2004
Peak Power Test TS-010 Current, Voltage and Temperature Range of Equipment Utilized	USABC Battery Test Manual for Electric Vehicles, 2015
Fast Rate Charge Test TS-011 Current, Voltage and Temperature Range of Equipment Utilized	USABC Battery Test Manual for Electric Vehicles, 2015
Calendar Life Test TS-012 Current, Voltage and Temperature Range of Equipment Utilized	USDoE Vehicle Technologies Program Battery Test Manual For 12 Volt Start/Stop Vehicles, INL/EXT-12-26503, 2015
Water Consumption Test TS-013 Current, Voltage and Temperature Range of Equipment Utilized	EN50342-1 Lead-acid starter batteries Part 1: General Requirements and Methods of Test, 2015
Dynamic Charge Acceptance Test TS-014 Current, Voltage and Temperature Range of Equipment Utilized	EN50342-6 Lead-acid starter batteries Part 6: Batteries for Micro-Cycle Applications, 2015
Short Circuit Test TS-015 Current, Voltage and Temperature Range Of Equipment Utilized	UN Manual of Tests and Criteria – Section 38.3: Lithium Metal and Lithium Ion Batteries Test T.5 External Short Circuit, 2019

[1]Also using customer specified test methods directly related to the types of testing above that fall within the following test parameters and ranges:

Current, Voltage, and Temperature Range of Equipment Utilized

Parameter	**Range:**
VDC – Measure	(0 to 750) V
VDC – Source	(0 to 750) V
ADC – Measure	(-1000 to 1000) A
ADC – Source	(-1000 to 1000) A
Power – Source	(-300 to 300) kW
Temperature	(-60 to 120) °C

Accredited Laboratory

A2LA has accredited

ELECTRIC APPLICATIONS INCORPORATED

Phoenix, AZ

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 18th day of June 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 4365.01
Valid to October 31, 2023

For the types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.