



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](mailto:nfleming@electric-applications.com)  
Donald Karner Phone: 602-697-4395  
E-mail: [dkarner@electric-applications.com](mailto: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**<sup>±</sup>

Rated Capacity Test TS-001  
Current, Voltage and Temperature Range  
of Equipment Utilized

**Test Method(s):**

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

**Test Technology/Test Capabilities 1:**

Constant Power Discharge Test TS-002  
Current, Voltage and Temperature Range  
of Equipment Utilized

HPPC Test TS-003  
Current, Voltage and Temperature Range  
of Equipment Utilized

Self-Discharge Test TS-004  
Current, Voltage and Temperature Range  
of Equipment Utilized

Cold Cranking Test TS-005  
Current, Voltage and Temperature Range  
of Equipment Utilized

Thermal Performance Test TS-006  
Current, Voltage and Temperature Range  
of Equipment Utilized

**Test Method(s):**

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

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

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

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

USDoE Vehicle Technologies Program Battery Test  
Manual For 12 Volt Start/Stop Vehicles,  
INL/EXT12-26503, 2015

**Test Technology/Test Capabilities 1:**

Cycle Life Test TS-007  
Current, Voltage and Temperature Range  
Of Equipment Utilized

Accelerated Float Life TS-008  
Current, Voltage and Temperature Range  
of Equipment Utilized

Ground Short Propensity Test TS-009  
Current, Voltage and Temperature Range  
of Equipment Utilized

Peak Power Test TS-010  
Current, Voltage and Temperature Range  
of Equipment Utilized

Fast Rate Charge Test TS-011  
Current, Voltage and Temperature Range  
of Equipment Utilized

Calendar Life Test TS-012  
Current, Voltage and Temperature Range  
of Equipment Utilized

Water Consumption Test TS-013  
Current, Voltage and Temperature Range  
of Equipment Utilized

Dynamic Charge Acceptance Test TS-014  
Current, Voltage and Temperature Range  
of Equipment Utilized

Short Circuit Test TS-015  
Current, Voltage and Temperature Range  
Of Equipment Utilized

**Test Method(s):**

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

IEC 60896-21 Stationary lead-acid batteries – Part 21:  
Valve regulated types – methods of test, 2004

IEC 60896-21 Stationary lead-acid batteries – Part 21:  
Valve regulated types – methods of test, 2004

USABC Battery Test Manual for Electric Vehicles,  
2015

USABC Battery Test Manual for Electric Vehicles,  
2015

USDoE Vehicle Technologies Program Battery Test  
Manual For 12 Volt Start/Stop Vehicles,  
INL/EXT-12-26503, 2015

EN50342-1 Lead-acid starter batteries Part 1:  
General Requirements and Methods of Test, 2015

EN50342-6 Lead-acid starter batteries Part 6:  
Batteries for Micro-Cycle Applications, 2015

UN Manual of Tests and Criteria – Section 38.3:  
Lithium Metal and Lithium Ion Batteries Test T.5  
External Short Circuit, 2019

<sup>1</sup>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

<u>Parameter</u>	<u>Range:</u>
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 18<sup>th</sup> day of June 2021.

A blue ink signature of the Vice President of Accreditation Services.

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.*