SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

GM GLOBAL BATTERY SYSTEMS LAB
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ELECTRICAL

Valid To: September 30, 2020 Certificate Number: 2954.01

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 battery storage sub-systems for automotive applications:

Test Technology	**Test Method(s)** [1,2]
DC Voltage – Generate & Measure:(0 to 420) V *DC Current – Generate & Measure: ± 1,000 A* *DC Current – Generate & Measure: ± 20,000 A* *Temperature – Generate & Measure: (-50 to 100) °C* *Humidity – Generate & Measure:* *25 °C at 30 to 95% RH* *Vibration: (10 to 1,000) Hz; up to 15g* *Air Flow – Generate & Measure 66 L/s* *Flow – Generate & Measure* *Range – (0 to 30) L/min* *Displacement – Generate & Measure* *Range – (0 to 200) mm* *Pressure (Force) – Generate & Measure* *Range – (0 to 200) kPa* *Load – Generate & Measure* *Range – (0 to 15) kN*	*Using customer specified methods relating to the tests listed below*

Battery Packs, Cells, Modules and Components

Static Capacity and Hybrid Pulse Power Characterization (HPPC) Test for Rechargeable Energy Storage Systems (RESS)	GMW16460
Static Capacity and HPPC with Long Duration Pulse for RESS	GMW16461
Self-Discharge Storage for RESS	GMW16463
Frost Dew	GMW16463
Cold Crank for RESS	GMW16464

Test Technology	**Test Method(s)** [1,2]
Battery Packs, Cells, Modules and Components (Cont'd)	
Transport of Dangerous Goods – UN Manual of Test and Criteria	ST/SG/AC.10/11/Rev.6
Idaho National Laboratory	DE-EE0002217
Cycle Life Reference Performance Test (RPT)	DOE/ID-11069; INL/EXT-07-12536; INEEL/EXT 0401986
Vibration	GMW16390 Random Vibration Fatigue and Durability "General Specification for Analysis/Development/Validation (A/D/V) of Rechargeable Energy Storage Systems (RESS)"; GMW16390 Mechanical Shock - Pothole "General Specification for Analysis/Development/Validation (A/D/V) of Rechargeable Energy Storage Systems (RESS)"; GMW16390 Random Vibration Fatigue to Failure "General Specification for Analysis/Development/Validation (A/D/V) of Rechargeable Energy Storage Systems (RESS)"; GMW16390 Mechanical Shock to Failure "General Specification for Analysis/Development/Validation (A/D/V) of Rechargeable Energy Storage Systems (RESS)"; GMW16390 Random Vibration and Pothole "General Specification for Analysis/Development/Validation (A/D/V) of Rechargeable Energy Storage Systems (RESS)"; GMW16390 Power Temperature Cycling (PTC) "General Specification for Analysis/Development/Validation (A/D/V) of Rechargeable Energy Storage Systems (RESS)"; GMW16390 Post Thermal Fatigue Vibration "General Specification for Analysis/Development/Validation (A/D/V) of Rechargeable Energy Storage Systems (RESS)"

Test Technology	Test Method(s) [1,2]
Battery Packs, Cells, Modules and Components (Cont'd)	
Reverse Grade	GMW16465
Calendar Life	GMW16478
Cell Hybrid Power Assist Cycle Life	GMW16935
Cell Fast Charge Cycle Life	GMW16936
Cell Charge Depleting Cycle Life	GMW16937
Safety and Abuse [2]	SAE J2464
Product Family	
Generic Rechargeable Energy Storage System (RESS) Standards	GMW16390; GMW16390-December 2016

[1] Also using customer specific test methods utilizing any combination of test equipment parameters and ranges listed above relating to batteries

[2] When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is expected to be competent in the use of the current version within one year of the date of publication, per part C., Section 1 of A2LA R101- General Requirements: Accreditation of ISO/IEC 17025 Laboratories.

Accredited Laboratory

A2LA has accredited

GM GLOBAL BATTERY SYSTEMS LAB

Warren, MI

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *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 21st day of May 2018.

President and CEO
For the Accreditation Council
Certificate Number 2954.01
Valid to September 30, 2020
Revised June 30, 2020

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