



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Innovative Testing Solutions, Inc.

**32680 Townley Street
Madison Heights, MI 48071**

Fulfills the requirements of

ISO/IEC 17025:2017

In the field of

TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 25 February 2023

Certificate Number: AT-1528



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
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).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Innovative Testing Solutions, Inc.

32680 Townley Street, Madison Heights, MI 48071
Rhonda Collins Phone: 248 589 4997

TESTING

Valid to: **February 25, 2023**

Certificate Number: **AT-1528**

Electrical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
<p>Amps</p> <p>DC Electrical¹</p> <p>DC Current Measure: 1 micro-amperes up to 1000 amperes</p> <p>DC Current Source: 10 milli-amperes up to 1000 amperes</p>	<p>USCAR-2 USCAR-15 USCAR-20 USCAR-21 USCAR-30 USCAR-38 USCAR-45</p> <p>GMW3191 FCA PF.90012 Nissan 24352NDS00[3] Nissan 24014-NDS01[7] MES PA 67001 SAE J2863</p>	<p>Electrical Components</p>	<p>Agilent 34401A DC Shunts Keysight 34465A Fluke 325 Ammeter</p>
<p>Voltage DC Electrical¹</p> <p>DC Voltage Measure: 10 micro-volts to 1000 volts</p> <p>DC Voltage Source: 10 milli-volts to 1000 volts</p>	<p>USCAR-2 USCAR-15 USCAR-20 USCAR-21 USCAR-30 USCAR 38 USCAR-45</p> <p>Nissan 24012 NDS05 [1] Nissan 24352NDS00 [3] GMW3191 FCA PF.90012 SAE J2863 Nissan 24014-NDS01[7] MES PA 67001 Takata 1102706-AB Nissan 24012 NDS05 [1]</p>	<p>Electrical Components</p>	<p>Agilent 34401A Agilent 34420A Keysight 34465A</p>

Electrical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or	Key Equipment or Technology
<p>Resistance 1 milli-ohms to 120 Mega-ohms</p> <p>LLCR Resistance DC Electrical 100 micro-ohms to 10 ohms</p>	<p>GMW3191 MES PA 67001 Toyota TSC1000G Mil Std 202 Method 303 Nissan 24012 NDS05 [1]</p> <p>USCAR-21 USCAR-45 Takata QES-001 FCA</p>	<p>Electrical Components</p>	<p>Keysight 34401A Keysight 34465A</p> <p>Keysight 34420A</p>
<p>Insulation Resistance DC Electrical 50 volts to 1000 volts; 1 Mega-ohm to 200 Giga-ohms</p>	<p>USCAR-2 USCAR-15 Toyota TSC1000G GMW3191 FCA PF.90012 FCA PF.90051 MES PA 67001 Mil Std 202 Method 302 Nissan 24014-NDS01[7] Nissan 24012 NDS05 [1]</p>	<p>Electrical Components</p>	<p>Megger MIT 420</p>
<p>Dielectric Strength (0.1 to 5) kVAC (0.1 to 6) kVDC</p>	<p>MES PA 67001 Toyota TSC1000G GMW3191 Mil Std 202 Method 303</p>	<p>Electrical Components</p>	<p>Quadtech Guardian 1030S Hipot</p>

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Force (-2000 to +2000) lbsf	EIA 364-29B EIA 364-35B EIA 364-37B FCA PF.90012 GMW3191 MES PA 67001 Honda 3210Z-TGVA-A010-M1 USCAR-2 USCAR-15 USCAR-21 USCAR-30 USCAR-38 USCAR-45 Nissan 24352NDS00 [3] Nissan 24014-NDS01[7] Takata 1102706-AB FCA PF.90154 FCA .90051	Electrical & Mechanical Components	United FM10E Mark-10 ESM 301 Mark-10 Force Gauges Mark-10 ESM Mark-10 ESMH
Torque (0.5 to 250) in-lbs.	USCAR-15 Honda 3210Z-TGVA-A010-M1	Electrical & Mechanical Components	Proto Torque Wrenches
Free Fall (Drop Test)	GMW3172 USCAR-2 FCA .90051 FCA CS.00056 Honda 3210Z-TGVA-A010-M1	Electrical & Mechanical Components	Lufkin Tape Measure 25'
Seal Integrity	USCAR-15 USCAR-2 FCA PF.90012 FCA PF.90051 GMW3191 MES PA 67001 GMW17136 Nissan 24014-NDS01[7] Renault 36-05-019/-F	Electrical & Mechanical Components	Gast Vac / Pressure Pump Pressure / Vac Gauges Hairuisi Digital Leak Tester
Durability Cycling	Various tests listed above	Electrical & Mechanical Components	Various fixtures
Water Spray	USCAR-15 USCAR-2 GMW3191 FCA PF.90012 Honda 3210Z-TGVA-A010-M1	Electrical & Mechanical Components	HP Sprayers OTS IPX-9 Pressure Gauges
Terminal Cross-Sectioning	USCAR-21 USCAR-45	Electrical Terminals	C&S Technologies Cross-Section Stand



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Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Environmental Exposure -70°C to 155°C; 10% RH to 95% RH	USCAR-2 USCAR-15 USCAR-20 USCAR-21 USCAR-30 USCAR-38 FCA PF.90012 GMW3172 GMW3191 MES PA 67001 Mil Std 1344A Method 1003.1 Nissan 24014-NDS01[7] Nissan 24352NDS00 [3] Takata 1102706-AB FCA PF.90051 FCA PF-10099	Electrical & Mechanical Components	Environmental Chambers Circulating Ovens
High Temperature Exposure and Temperature Rise 25°C to 350°C	USCAR-15	Electrical & Mechanical Components	Environmental Chambers Circulating Ovens
Vibration – Sine, Random and Sine on Random and Combined Conditions Up to 8400 force pounds; 4 inch stroke Combined Conditions: (5 to 6500) Hz; Up to 8400 force pounds; 4 inch stroke	EIA 364-28D USCAR-2 USCAR-20 USCAR-15 USCAR-30 USCAR-38 FCA PF.90012 FCA PF.90051 GMW 3172 GMW3191 Nissan 24014-NDS01 Honda 3210Z-TGVA-A010-M1	Electrical & Mechanical Components	Spectral GT 700M MB C-40HP LDS V-830-185 LDS V-830-335 LDS V-730-335 Labworks DB-127-500 CSZ AGREE Chambers
Shock Half Sine and SRS, 100 Gs	USCAR-2 USCAR-15 USCAR-30 USCAR-38 GMW3191 IEC 68-2-27 FCA PF.90012	Electrical & Mechanical Components	LDS V-830-185 Labworks DB-127-500
Thermal Shock -70°C to 150°C	EIA 364-32C USCAR-2 Honda 3210Z-TGVA-A010-M1 USCAR-15 USCAR-20 USCAR-21 USCAR-30 USCAR-38 USCAR-45 GMW3191 Takata QES-001 FCA PF.90012	Electrical & Mechanical Components	ESPEC TSE-11-A OTS XB-OTS-80
Chemical Resistance / Exposure	USCAR-2 USCAR-15 GMW3191 FCA PF.90012 Honda 3210Z-TGVA-A010-M1 MES PA 67001 Nissan 24014-NDS01[7]	Electrical & Mechanical Components	Jamestown Fume Hood Circulating Ovens

Also using the following portions of test methods or customer supplied specifications and test procedures within the parameters listed above:

Autoliv E138992 Chrysler: PF-9600 EIA: 364-23B, 364-28D, 364-29B, 364-32C, 364-35B, and 364-37B FCA: CS.11982, PF.90063, PF.90303, PF.90100, PF.90122, PF.9590, Ford: ES-F8DB-14A464-AA GM: GMW3191 Honda: HES D3217-15, 3241Z-TGVF-A010-M1, Mazda: MES PA 67001 Military Standard: 1344A Nissan: 24014-NDS01 SAE: J2863, USCAR-2, USCAR-15, USCAR-20, USCAR-21, USCAR-30, USCAR-37 Toyota TSC1224G, TSC1229G

Note:

1. On-site testing services are available for this parameter.
2. This scope is formatted as part of a single document including Certificate of Accreditation No. AT-1528.



R. Douglas Leonard Jr., VP, PILR SBU

