SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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MECHANICAL

Valid to: May 31, 2018 Certificate Number: 0214.38

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on industrial drives, tractor components, automotive system and subsystems, consumer electronics, and electrical power/distribution equipment:

Test Technology/Description:	**Test Method:**
Tensile/Compression/Flex/Pull/Deflection/ Elongation/Torque	ASTM D638; ASTM E345; ASTM D790; MIL-STD-202, Method 211; NEMA 250, Section 5.14; UL 50, Procedures 28, 29, 41.2, 41.3, 41.4, 41.5, 43, 45, 46.2 & 46.3; IPC TM-650, Section 2.4, Methods 2.4.8 & 2.4.18; Delphi/Delco Q1000, Methods 205 & 206; USCAR 2, Sections 5.4.2 & 5.4.3
Plating/Coatings/Adhesion	ASTM B735; IPC TM-650, Section 2.4, Methods 2.4.1, 2.4.1.1, 2.4.1.3, 2.4.1.4, 2.4.1.6, 2.4.10, 2.4.28, 2.4.28.1, & 2.4.29; SAE J400, SAE 1455, Section 4.8; Ford FLTM BI 157-06, Ford BI 106-01; Delph/Delco Q1000, Method 116
Hardness-Durometer (A & D)	ASTM D2240-2005 (*superseded*)
Hardness-Pencil	ASTM D3363-2005
Fluid/Solvent/Chemical Resistance	MIL-STD-202, Method 215; MIL-STD-750, Method 1022; MIL-STD-810G, Method 504.2; MIL-STD-883, Method 2015; RTCA/DO-160, Section 11; Delphi/Delco Q1000, Method 214; NEMA 250, Section 5.14.3; Chrysler PF-9688, Sections 2.9.1, 2.9.3, & 2.9.4; USCAR 2, Section 5.6.4

Test Technology/Description:	**Test Method:**
Flammability	IPC TM-650, Section 2.3, Methods 2.3.8.1, 2.3.9, 2.3.10, & 2.3.10.1; SAE J369; UL 94; GMW3232; FMVSS 302 (49 CFR 571.302); Delphi/Delco Q1000, Method 120
Temperature/Humidity	SAE J1211, Section 4.2; SAE J1455, Section 4.2; ASTM D618; GM 4465P; GMW 3172, Sections 8.5.1, 9.4.5, & 9.4.6; Ford FLTM BQ 104-07; MIL-STD-810, Method 507; MIL-STD-202 Methods 103 & 106; MIL-STD-750, Method 1021; MIL-STD-883, Method 1004; RTCA/DO-160, Section 6; Chrysler PF 9688, Sections 2.3.5 & 2.3.6; Delphi/Delco Q1000, Methods 105, 106, & 115; USCAR 2, Sections 5.6.2
Temperature/Thermal Cycle/Thermal Shock	MIL-STD-810, Methods 501, 502, & 503; MIL-STD-202, Methods 107 & 108; MIL-STD-750, Methods 1026, 1027, 1031, 1032, 1036, 1037, 1038, & 1051; MIL-STD-883, Sections 1005, 1007, 1008, 1010, & 1011; SAE J1455, Sections 4.1.3.1, 4.13.2, & 4.1.3.3; RTCA/DO-160, Sections 4 & 5; Ford ES-8A5A-12A. 145AA, Section 3.5; Chrysler PF 9688, Sections 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.12, & 2.13; GMW 3172, Sections 8.4, 9.4.1, 9.4.2, & 9.4.3; UN/ST/SG/AC.10/11/Rev.6, Section 38.3.4.2; DELPH/DELCO Q1000, Methods 100, 101, 102, & 103; USCAR 2, Sections 5.6.1 & 5.6.3
Altitude/Decompression (Up to 70,000 feet)	MIL-STD-810, Method 500; MIL-STD-202, Method 105; MIL-STD-750, Method 1001; MIL-STD-883, Method 1001; RTCA/DO-160, Section 4; UN/ST/SG/AC.10/11/Rev.6, Section 38.3.4.1; SAE J1455, Section 4.9

Test Technology/Description:	**Test Method:**
Corrosion	ASTM B117; GM 4298P[1] *(superseded by GMW 3286 dated 12/00/10);* MIL-STD-810, Method 509; MIL-STD-202 Method 101; MIL-STD-750, Method 1046; RTCA/DO-160, Section 14; Ford FLTM BI 123-01; Chrysler, PF 9688, Sections 2.7 & 2.8; GMW 3172, Section 9.4.7; NEMA 250, Sections 5.8, 5.9.1, & 5.10; UL50, Procedures 38 & 39
Immersion	MIL-STD-810, Method 512; MIL-STD-202, Method 104; MIL-STD-750, Method 1011; MIL-STD-883, Method 1002; SAE J1455, Section 4.3.3.2; GMW 3172, Section 9.5.3; USCAR 2, Section 5.6.5
Explosive Atmosphere	MIL-STD-810, Method 511; RTCA/DO-160, Section 9
Solderability	MIL-STD-202, Method 208
Resistance to Solder Heat	MIL-STD-202, Method 210
Rain Testing	USCAR 2, Method 5.6.7.2; SAE J1455, Sections 4.4.3.1 & 4.5; NEMA 250, Sections 5.5.1.3, 5.5.2.1.3, 5.5.2.2.3, & 5.7; UL 50, Procedures 30, 33, 35, & 37
Icing Test	RTCA/DO-160, Section 24; GMW 3172, Section 9.5.5; NEMA 250, Section 5.6; UL 50, Procedure 34
HALT Testing[2] Up to 64 cubic Feet (-100 to 200) °C 60° Temperature Change per Minute (5 to 5000) Hz Vibration 60 Grms	Qualmark HALT Guidelines 933-0336; GMW3172, Section 8.3.1

Test Technology/Description:	**Test Method:**
Vibration/Shock[2] (5 to 25000) Hz 2 inch Peak to Peak Displacement 25,000 pounds Force Up to 150 g Shock Up 18 milliseconds Duration	Chrysler PF-9688, Sections 2.4, 2.5, & 2.6; GMW 3172, Sections 9.3.1 & 10.3.1; ISTA Procedure 1A; MIL-STD-810, Methods 514 & 516; MIL-STD-202, Methods 201, 204, 213, & 214; MIL-STD-750, Methods 2016 & 2056; MIL-STD-883, Methods 2002, 2005, 2007, & 2026; SAE J1455, Sections 4.10 & 4.11; SAE/AS23190, Section 4.6.4.1; Delphi/Delco Q1000, Method 2117-212; UN/ST/SG/AC.10/11/Rev.6, Sections 38.3.4.3 & 38.3.4.4; RTCA/DO 160, Sections 7 & 8; USCAR 2, Section 5.4.6
Drop/Impact	UN/ST/SG/AC.10/11/Rev.6, Section 38.3.4.6; USCAR 2, Section 5.4.8; Chrysler PF-9688, Section 2.5
Acceleration[2] 30 inch Radius Up to 275 rpm (18g's) Slip Ring monitoring	MIL-STD-810, Method 513; RTCA/DO-160, Table 7-1
Mechanical Durability	Chrysler PF 9688, Section 2.19; USCAR 2, Section 5.1.7
UV/Solar Radiation Test	MIL-STD-810, Method 505.5; IEC 60068-2-5 (Ed. 2.0); ASTM G155; BS EN ISO 4892-2

[1]This laboratory's scope contains withdrawn or superseded methods. As a clarifier, this indicates that the applicable method itself has been withdrawn or is now considered "historical" and not that the laboratory's accreditation for the method has been withdrawn

[2]Also using customer specifications based on the above standards and within the listed parameters.

Accredited Laboratory

A2LA has accredited

NATIONAL TECHNICAL SYSTEMS (NTS) CHICAGO

Mount Prospect, IL

for technical competence in the field of

Mechanical 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 8 January 2009*).

Presented this 5th day of October 2016.

Senior Director of Quality and Communications
For the Accreditation Council
Certificate Number 0214.38
Valid to May 31, 2018

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