



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

NATIONAL TECHNICAL SYSTEMS (NTS) CHICAGO
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MECHANICAL

Valid to: May 31, 2020

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***

Cylinder Stroke:
Compression Load (200 to 20000) lbs
Tension Load (200 to 20000) lbs

ASTM D638; ASTM D790; ASTM E345;
MIL-STD-202, Method 211;
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;
USCAR 2, Sections 5.4.2 & 5.4.3

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;
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

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)

Test Technology/Description:

Temperature/Humidity

10 %RH at 23 °C

95 %RH at 85 °C

Temperature/Thermal Cycle/Thermal Shock

Temperature and Thermal Cycle:
(-50 to 150) °C

Thermal Shock:
(-55 to 150) °C

Altitude/Decompression

(Up to 70,000 feet)

Corrosion

Test Method:

SAE J1211, Section 4.2;
SAE J1455, Section 4.2;
ASTM D618;
GM 4465P;
GMW3172, Sections 8.5.1, 9.4.5, & 9.4.6;
Ford FLTM BQ 104-07;
MIL-STD-202, Methods 103 & 106;
MIL-STD-750, Method 1021;
MIL-STD-810, Method 507;
MIL-STD-883, Method 1004;
RTCA/DO-160, Section 6;
Chrysler PF 9688, Sections 2.3.5 & 2.3.6;
USCAR 2, Sections 5.6.2

MIL-STD-202, Methods 107 & 108;
MIL-STD-750, Methods 1026, 1027, 1031, 1032, 1036,
1037, 1038, & 1051;
MIL-STD-810, Methods 501, 502, & 503;
MIL-STD-883, Sections 1005, 1007, 1008, 1010, & 1011;
SAE J1455, Sections 4.1.3.1, 4.1.3.2, & 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;
GMW3172, 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;
USCAR 2, Sections 5.6.1 & 5.6.3

MIL-STD-202, Method 105;
MIL-STD-750, Method 1001;
MIL-STD-810, Method 500;
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

ASTM B117;
GM 4298P¹ (*superseded by GMW3286 dated 12/00/10*);
MIL-STD-202 Method 101;
MIL-STD-750, Method 1046;
MIL-STD-810, Method 509;
RTCA/DO-160, Section 14;
Ford FLTM BI 123-01;
Chrysler PF 9688, Sections 2.7 & 2.8;
GMW3172, Section 9.4.7;
NEMA 250, Sections 5.8, 5.9.1, & 5.10;
UL50, Procedures 38 & 39

Test Technology/Description:

Test Method:

Immersion

MIL-STD-202, Method 104;
MIL-STD-750, Method 1011;
MIL-STD-810, Method 512;
MIL-STD-883, Method 1002;
SAE J1455, Section 4.3.3.2;
GMW3172, Section 9.5.3;
USCAR 2, Section 5.6.5;
IEC 60529

Explosive Atmosphere

MIL-STD-810, Method 511;
RTCA/DO-160, Section 9

Solderability

MIL-STD-202, Method 208;
MIL-STD-883, Method 2003

Resistance to Solder Heat

MIL-STD-202, Method 210;
MIL-STD-883, Method 2036 (*Test Condition B Only*)

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;
GMW3172, Section 9.5.5;
NEMA 250, Section 5.6;
MIL-STD-810G;
UL 50, Procedure 34

Degree of Protection

IEC 60529 (*Foreign objects & water; Except IPX9*);
ISO 20653 (IP1X-6X);
ISO 20653 (IPX1-X9);
GMW3172, Sections 9.5.2 & 9.5.3;
NEMA 250, Sections 5.2, 5.3, 5.4, 5.11 & 5.12;
UL 50, Sections 36 & 40;
Chrysler PF 9688, Section 2.9.2 & 2.9.5;
RTCA/DO-160, Section 10;
RTCA/DO-160G, Section 12 (blowing sand/dust);
MIL-STD-810G, Method 510 (blowing sand/dust)

HALT Testing²

Up to 64 cubic Feet
(-100 to 175) °C
60° Temperature Change per Minute
60 Grms

Qualmark HALT Guidelines 933-0336;
GMW3172, Section 8.3.1

Test Technology/Description:

Vibration/Shock²

(5 to 2500) Hz
2 inch Peak to Peak Displacement
25,000 pounds Force
Up to 100 g Shock
Up to 18 milliseconds Duration

Combined Environment (-40 to 150) °C

Test Method:

Chrysler PF 9688, Sections 2.4, 2.5, & 2.6;
GMW3172, Sections 9.3.1, 9.3.2 & 10.3.1;
ISTA Procedure 1A;
MIL-STD-202, Methods 201, 204, 213, & 214;
MIL-STD-750, Methods 2016 & 2056;
MIL-STD-810, Methods 514 & 516;
MIL-STD-883, Methods 2002, 2005, 2007, & 2026;
SAE J1455, Sections 4.10 & 4.11;
SAE/AS23190, Section 4.6.4.1;
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;
ISTA 1A;
MIL-STD-810G, Method 516.7;
Chrysler PF-9688, Section 2.5

UV/Solar Radiation Test

MIL-STD-810, Method 505.5;
IEC 60068-2-5 (Ed. 2.0);
ASTM G155;
BS EN ISO 4892-2

¹This 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

²Also 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 April 2017).



Presented this 8th day of October 2018.

A handwritten signature in black ink, appearing to read "L. Sen", written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0214.38
Valid to May 31, 2020

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