



The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

ENVIRON LABORATORIES LLC

Minneapolis, MN

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 19th day of August 2009.

A handwritten signature in black ink, appearing to read "Peter M. Meyer".

President & CEO
For the Accreditation Council
Certificate Number 1719.01
Valid to August 31, 2011

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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MECHANICAL

Valid to: August 31, 2011

Certificate Number: 1719.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory for the following environmental simulation and mechanical tests:

Tests	Test Methods
Explosion	MIL-STD-810, Method 511 RTCA/DO-160, Section 9
Earthquake / Seismic Frequency (1 to 500) Hz Velocity 40 Inches per Second Displacement 10.5 Inches	GR-63-CORE, Para. 5.4.1
Firearms Resistance	GR-487-CORE, Para. 3.32
Fire Test	DOT/FAA AC 20-135; ISO 2685; RTCA/DO-160, Section 26; SAE AS4273; SAE AS1055; SAE AIR1377A
Flammability	UL 94, Para. 7, 8, 9
Fire Resistance	GR-13-CORE, Para. 3.21; GR-487-CORE, Para. 3.33
NEBS Fire Spread	ANSI T1-319; GR-63-CORE, Para. 5.2.3
Fungus	ASTM D3273; G21; C1338; GR-13-CORE, Para. R3-17; GR-487-CORE, Para. 3.5, R3-21; MIL-STD-810, Method 508; RTCA/DO-160, Section 13; SAE J1455, Para. 4.6

Tests	Test Methods
Hosedown; Water Resistance; Waterproofness; Enclosure Protection	IEC 60529, IPX3, Section 14.2.3; IEC 60529, IPX4, Section 14.2.4; IEC 60529, IPX5, Section 14.2.5; IEC 60529, IPX6, Section 14.2.6; NEMA 250, Para. 5.7; RTCA/DO-160, Section 10; UL 50, Para. 35
Humidity Up to 98% with Temperatures (40 to 200) °F	GR-487-CORE, Para. 3.34.2; GR-63-CORE, Para. 5.1.1.3; MIL-STD- 810, Method 507; RTCA/DO-160, Section 6; SAE J1455, Para. 4.2; IEC 60945, Section 8.3, Damp Heat; IEC 60068-2-3, IEC 60068-2-28, IEC 60068-2-30, IEC 60068-2-38, IEC 60068-2-56, IEC 60068-2-61, IEC 60068-2-78
Impact Resistance	GR-487-CORE, Para. 3.6.4; GR-487-CORE, Para. 3.31
Salt Spray and Corrosion Resistance 8'H x 8'W x 12'L	ASTM B117; ASTM G85.A5; GR-487-CORE, Para. 3.34.1; MIL-STD-810, Method 509; NEMA 250, Para. 5.8 and 5.9; RTCA/DO-160, Section 14; SAE J1455, Para. 4.3; UL 50, Para. 38; IEC 60068-2-11
Cyclic Corrosion Testing	CCT-1; CCT-4; GM 9540P; IEC 60945, Section 8.12 Corrosion/Salt Mist; IEC 60068-2-52
Rain; Blowing Rain; Wind Driven Rain Velocities to 90 Miles per Hour Rainfall Rates to 6 Inches per Hour	GR-487-CORE, Para. 3.28.1; GR-487-CORE, Para. 3.28.2; MIL-STD-810, Method 506; NEMA 250, Para. 5.4; UL 497, Para. 34; UL 50, Para. 30



Tests	Test Methods
Temperature Exposure, High or Low, Thermal Shock (-100 to 2,000) °F	GR-487-CORE, Para. 3.26 and R3.187; GR-487-CORE, Para. 3.27 and R3.191; GR-63-CORE, Para. 5.1.1.1; GR-63-CORE, Para. 5.1.1.2; GR-63-CORE, Para. 5.1.2; MIL-STD-810, Method 501 and 502; NEMA 250, Para. 5.14; RTCA/DO-160, Section 4 and 5; SAE J1455, Para. 4.1.3.1; IEC 60945, Sections 8.2, Dry Heat and 8.4 Low Temp., 8.5 Thermal Shock; IEC 60068-2-1; IEC 60068-2-2; IEC 60068-2-14; IEC 60068-2-33; IEC 60068-2-48; IEC 60068-2-61; IEC 60068-2-53; IEC 60068-2-51; IEC 60068-2-50
Temperature Shock (-150 to 350) °F	SAE J1455, Para. 4.1.3.2
Ultraviolet Resistance	ASTM G53-1996; G154; GR-487-CORE, Para. 3.5, and R3-22; GR-487-CORE, Para. 3.6.6; IEC 60945, Section 8.10, Solar Radiation; IEC 60068-2-5
Altitude / Pressure (-2000 to 120,000) Feet	GR-63-CORE, Para. 5.1.3; MIL-STD-810, Method 500, Procedures I, II, III, IV; RTCA/DO-160, Section 4; SAE J1455, Para. 4.8; IEC 60068-2-12, IEC 60068-2-40, IEC 60068-2-41
Sand and Dust	GR 487-CORE, Para. 3.28.4; IEC 60529, IP5X, Section 13.4 and 13.5; IEC 60529, IP6X, Section 13.4; and 13.6; RTCA / DO-160, Section 12; MIL-STD-810, Method 510; MIL-STD-202, Method 110; IEC 60068-2-68



<p>Highly Accelerated Life Testing (HALT)</p> <p>Highly Accelerated Stress Screening (HASS)</p>	<p>HALT and HASS (Section 3), Gregg K. Hobbs, Ph.D., PE; Hobbs Engineering; 1992. <i>Accelerated Reliability Engineering: HALT and HASS (pp. 31-75)</i>;</p> <p>HALT, HASS & HASA Explained: Accelerated Reliability Techniques (pp. 2-25) Harry W. McLean, ASQ Quarterly Press, 2000;</p> <p>(-100 to 200) °C; 70°C / minute Ramp Rate;</p> <p>50 Grms Repetitive Shock with Six Degrees of Freedom</p>
<p>Shock / Drop</p>	<p>GR-487-CORE, Para. 3.35.1 and R3-205;</p> <p>GR-487-CORE, Para. 3.35.4 and R3-208;</p> <p>GR-63-CORE, Para. 5.3.1; GR-63-CORE, Para. 5.3.2;</p> <p>MIL-STD-810, Method 516;</p> <p>RTCA/DO-160, Section 7;</p> <p>SAE J1455, Para. 4.10; IEC 60945, Section 8.6, Drop;</p> <p>IEC 60068-2-27; IEC 60068-2-29; IEC 60068-2-31</p>
<p>Vibration, Standard/Transportation (1 to 3000) Hz @ 18,000 Force Pounds Sine or 15,000 Force Pounds Random</p>	<p>GR-487-CORE, Para. 3.35.3, R3-207;</p> <p>GR-487-CORE, Para. 3.35.5, CR3-209;</p> <p>GR-63-CORE, Para. 5.4.2; GR-63-CORE, Para. 5.4.3;</p> <p>MIL-STD-810, Method 514;</p> <p>RTCA/DO-160, Section 8;</p> <p>SAE J1455, Para. 4.9;</p> <p>IEC 60945, Section 8.7, Vibration;</p> <p>IEC 60068-2-6; IEC 60068-2-55; IEC 60068-2-64;</p> <p>IEC 60068-2-53; IEC 60068-2-51; IEC 60068-2-50</p>
<p>Acceleration</p> <p>Range (0 to 110) Gs</p>	<p>MIL-STD-810, Method 513, Procedure I and II;</p> <p>RTCA/DO-160, Section 7, Sustained;</p> <p>IEC 60068-2-7</p>
<p>Icing / Freezing Rain</p>	<p>MIL-STD-810, Method 521;</p> <p>NEMA 250, Para. 5.6;</p> <p>RTCA/DO-160, Section 24; UL 50, Para. 34</p>
<p>Fluid Susceptibility, Immersion and Splash, Contamination by Fluids</p>	<p>MIL-STD-810, Method 504;</p> <p>RTCA/DO-160, Section 11;</p> <p>SAE J1455, Para. 4.4;</p> <p>IEC 60945, Section 8.9, Immersion, 8.8 Rain and Spray, 8.11 Oil Resistance; IEC 60068-2-18</p>



Acoustic Noise	GR-63-CORE, Para. 5.6; GR-487-CORE, Para. 3.29
Steam Cleaning; Pressure Washing	SAE J1455, Para. 4.5
UV / Weathering	IEC 68-2-9; ISO 4892-1; ASTM G151, G155
Telecommunications	ANSI/SCTE 09 2005 Test Method for Cold Bend; ANSI/SCTE 10 2008 Test Method for Flexible Coaxial Cable Impact; ANSI/SCTE 31 2007 Test Method for Measuring Diameter Over Core; ANSI/SCTE 33 2001 Test Method for Diameter of Drop Cable; ANSI/SCTE 51 2007 Test Method for Determining Drop Cable Braid Coverage; ANSI/SCTE 59 2007 Test Method for Drop Cable Center Conductor Bond to Dielectric; ANSI/SCTE 60 2004 Test Method for Interface Moisture Migration Double Ended; ANSI/SCTE 61 2007 Test Method for Jacket Web Separation; ANSI/SCTE 69 2007 Test Method for Moisture Inhibitor Corrosion Resistance; ANSI/SCTE 73 2007 Test Method for Insertion Force of Connector to Drop Cable Interface; ANSI/SCTE 98 2004 Test Method for Withstand Tightening Torque – ‘F’ Male; ANSI/SCTE 99 2004 Test Method for Axial Pull Connector / Drop Cable; ANSI/SCTE 143 2007 Test Method for Salt Spray; ANSI/SCTE 149 2008 Test Method for Withstanding Tightening Torque – ‘F’ Female

On the following products and materials: aircraft components, automotive components, gaskets, seals and packings, packaging and containers, pipes, hoses, valves and fittings, rubber and rubber products, tools, windows and doors, wiring harnesses, sub-assemblies, telecommunication cabinets and components in the Telecommunications, Aircraft, Automotive, Medical, Defense, Electronics and Agriculture industries.

Note: This lab is capable of performing current and older versions of MIL-STD-810 for the methods listed above.

