



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELEMENT MATERIALS TECHNOLOGY DENVER - LONGMONT

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MECHANICAL

Valid To: July 31, 2026

Certificate Number: 2582.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on aircraft components, automotive components, marine components, coatings, packaging and containers, electronics, and consumer goods:

| <u>Test:</u>          | <u>Parameters:</u> | <u>Test Method(s) <sup>1</sup>:</u>       |
|-----------------------|--------------------|-------------------------------------------|
| Mechanical Vibration: | (1 to 3,000) Hz    | ASTM D4169;                               |
| Includes: Sine        | 12" Stroke         | BellCore GR-63-CORE 5.4.2, 5.4.3;         |
| Random                | 18,000 lbs Force   | IEC 68-2-59, Test Fe;                     |
| Sine-on-Random        |                    | IEC 68-2-34, Test Fd;                     |
| Gunfire               |                    | IEC 68-2-35, Test Fda;                    |
| Random-on-Random      |                    | IEC 68-2-6, Test Fc;                      |
| Loose Cargo Vibration |                    | JESD22 B103B;                             |
|                       |                    | MIL-STD-810E, Method 514.4, 519.4;        |
|                       |                    | MIL-STD-810F, Method 514.5, 519.5;        |
|                       |                    | MIL-STD-810G, Method 514.6, 519.6;        |
|                       |                    | MIL STD-810H, Methods 514, 519;           |
|                       |                    | MIL-STD-167-1 (A SHIPS);                  |
|                       |                    | MIL-STD-202G,                             |
|                       |                    | Method 201A, 204D, 214A;                  |
|                       |                    | MIL-STD-883G,                             |
|                       |                    | Method 2005.2, 2007.3, 2026;              |
|                       |                    | MIL-STD-883H,                             |
|                       |                    | Method 2005.2, 2007.3, 2026;              |
|                       |                    | MIL-STD-1344A, Method 2005.1;             |
|                       |                    | RTCA DO-160D, E, F, G, Sec. 8.0;          |
|                       |                    | RTCA DO-227 6/23/1995, Sec. 2.3.1;        |
|                       |                    | SAE J1455, Sec. 4.10;                     |
|                       |                    | SAE J1211, Sec. 4.7;                      |
|                       |                    | UN ST/SG/AC.10/11 Rev. 5, Para. 38.3.4.3; |
|                       |                    | ASTM D4728;                               |
|                       |                    | ASTM D999                                 |
|                       |                    | MIL STD-810H, Methods 526                 |

| <b><u>Test:</u></b>                                                                                 | <b><u>Parameters:</u></b>                                                                                           | <b><u>Test Method(s) <sup>1</sup>:</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mechanical Shock                                                                                    | Drop Shock:<br>Force 600 G<br>Period (2 to 80) ms<br><br>Vibe Shock:<br>3" Stroke<br>30 000 lbs Force               | IEC 68-2-27, Test Ea;<br>IEC 68-2-29, Test Eb;<br>JESD22 B104C Conditions A, C, D, E;<br>MIL-STD-810E, Method 516.4;<br>MIL-STD-810F, Method 516.5;<br>MIL-STD-810G, Method 516.6;<br>MIL STD-810H, Method 516;<br>MIL-STD-202G, Method 213B;<br>MIL-STD-883G, Method 2002.4;<br>MIL-STD-883H, Method 2002.5;<br>MIL-STD-1344A, Method 2004.1;<br>RTCA DO-160D, E, F, G, Sec. 7.2;<br>RTCA DO-227 6/23/1995, Sec. 2.3.2;<br>SAE J1455, Sec. 4.11;<br>SAE J1211, Sec. 4.8;<br>UN ST/SG/AC.10/11 Rev. 5,<br>Para. 38.3.4.4                                                                                                                                                                                                                   |
| Acceleration                                                                                        | r=36"<br>250 RPM                                                                                                    | MIL-STD-810E, Method 513.4;<br>MIL-STD-810F, Method 513.5;<br>MIL-STD-810G, Method 513.6;<br>MIL STD-810H, Method 513;<br>MIL STD-202G, Method 212A;<br>MIL-STD-1344A, Method 2011.1;<br>RTCA DO-160D, E, F, G, Sec. 7.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Thermal (Temperature):<br>Includes:<br>High/Low Temperature<br>Thermal Shock<br>Temperature Cycling | High +300°C<br>Low -100 °C<br><br>Temperature Shock<br>(-70 to 150) °C<br><br>Temperature Cycle<br>(-100 to 150) °C | BellCore GR-63-CORE,<br>Sec. 5.1.1.1 and 5.1.1.2;<br>IEC 68-2-1 Test A;<br>IEC 68-2-2, Test B;<br>JESD 22, Sec. A104C;<br>MIL-STD-810E, Method 501.3, 502.3;<br>MIL-STD-810F, Method 501.4, 502.4;<br>MIL-STD-810G, Method 501.5, 502.5;<br>MIL-STD-810E, Method 503.3, 520.1;<br>MIL-STD-810F, Method 503.4, 520.2;<br>MIL-STD-810G, Method 503.5, 520.3;<br>MIL STD-810H, Methods 501; 502; 503;<br>MIL-STD-202G, Method 107G;<br>MIL STD-883G, H, Method 1010.8;<br>MIL-STD-1344A, Method 1003.1;<br>RTCA DO-160D, E, F, G, Sec. 5.0;<br>RTCA DO-227 6/23/1995, Sec. 2.3.3;<br>SAE J1455, Sec. 4.1;<br>SAE J1211, Sec. 4.1;<br>UN ST/SG/AC.10/11 Rev. 5,<br>Para. 38.3.4.2;<br>RTCA DO-160D, E, F, G, Sec. 4;<br>ASTM D4169; ASTM D4332 |

| <b><u>Test:</u></b>                                    | <b><u>Parameters:</u></b>                | <b><u>Test Method(s) <sup>1</sup>:</u></b>                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature / Humidity                                 | (5 to 95) % RH                           | BellCore GR-63-CORE 5.1.1.3 and 5.1.2;<br>IEC 68-2-30, Test Db;<br>MIL-STD-810E, Method 507.3;<br>MIL-STD-810F, Method 507.4;<br>MIL-STD-810G, Method 507.5;<br>MIL-STD-810H, Method 507;<br>MIL-STD-202G, Method 103B, 106G;<br>MIL-STD-883G, H, Method 1004.7;<br>MIL-STD-1344A, Method 1002.2;<br>RTCA DO-160D, E, F, G, Sec. 6.0;<br>RTCA DO-227 6/23/1995, Sec. 2.3.6;<br>SAE J1455, Sec. 4.2;<br>SAE J1211, Sec. 4.2                     |
| Salt Spray<br>Salt Fog, Corrosion                      |                                          | ASTM B117;<br>GM 9540P (2013);<br>IEC 68-2-52, Test Kb;<br>MIL-STD-810E, Method 509.3;<br>MIL-STD-810F, Method 509.4;<br>MIL-STD-810G, Method 509.5;<br>MIL-STD-810H, Method 509;<br>MIL-STD-202G, Method 101E;<br>MIL-STD-883G, H, Method 1009.8;<br>MIL-STD-1344A, Method 1001.1;<br>NEMA 250, Sec. 5.8 and 5.9;<br>RTCA DO-160D, E, F, G, Sec. 14.0;<br>SAE J1455, Sec. 4.3;<br>SAE J2334;<br>SAE J1211, Sec. 4.3                           |
| Evaluation: Corrosion Creep-back                       |                                          | ASTM D1654                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Evaluation: Tape Adhesion                              |                                          | ASTM D3359                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Altitude (Barometric Pressure)<br>Temperature Altitude | (-1,500 to 70,000) ft<br>(-70 to 140) °C | MIL-STD-810E, Method 500.3;<br>MIL-STD-810F, Method 500.4;<br>MIL-STD-810G, Method 500.5;<br>MIL-STD-810H, Method 500;<br>MIL-STD-202G, Method 105C;<br>MIL-STD-202 E, F, and G Method 213;<br>MIL-STD-883G, H, Method 1001.1;<br>MIL-STD-1344A, Method 1011;<br>SAE J1455, Sec. 4.9;<br>SAE J1211, Sec. 4.6;<br>UN ST/SG/AC 10/11 Rev. 5<br>Para. 38.3.4.1;<br>RTCA DO-160 D, E, F, G, Sec. 4.0;<br>RTCA/DO-160<br>EN 60601-1-11; ASTM D4169; |
|                                                        | (-50 to 80) °C<br>8,000 to 55,000 ft.    |                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| <b><u>Test:</u></b>                                            | <b><u>Parameters:</u></b>                                                                    | <b><u>Test Method(s) <sup>1</sup>:</u></b>                                                                                                                                                                                                                     |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Altitude (Barometric Pressure)<br>Temperature Altitude (cont.) | (-1,500 to 70,000) ft<br>(-70 to 140) °C                                                     | ASTM D6653                                                                                                                                                                                                                                                     |
| Thermal Vacuum                                                 | Pressure:<br>(10 <sup>-5</sup> ) Torr or Lower<br><br>Temperature:<br>(-100 to +190) °C      | SOP 011 Thermal Vacuum Test                                                                                                                                                                                                                                    |
| Altitude <sup>1</sup> :<br>Decompression / Overpressure        | Up to 100 psi                                                                                | MIL-STD-810E, Method 500.3;<br>MIL-STD-810F, Method 500.4;<br>MIL-STD-810G, Method 500.5;<br>MIL STD-810H, Method 500;<br>RTCA DO-160D, E, F, G, Sec. 4.6;<br>RTCA DO-227 6/23/1995, Sec. 2.3.4 and 2.3.5                                                      |
| Combined Environment<br>Temp at Vibe                           | (1 to 3,000) Hz<br>3" Stroke<br>40,000 lbs Force<br><br>Temperature Cycle<br>(-70 to 150) °C | MIL-STD-810E, Method 520.1;<br>MIL-STD-810F, Method 520.2;<br>MIL-STD-810G, Method 520.3;<br>MIL STD-810H, Method 520                                                                                                                                          |
| Drop Shock:<br>Corner, Edgewise, Flat                          |                                                                                              | ASTM D4169;<br>BellCore GR-63-CORE, Sec. 5.3;<br>ASTM D5276;<br>MIL-STD-810                                                                                                                                                                                    |
| Dust                                                           |                                                                                              | IEC 60529, Sec. IP5X, IP6X;<br>MIL-STD-810F, Sec. 510.4,<br>Procedure III only                                                                                                                                                                                 |
| Waterproofness / Drip                                          |                                                                                              | IEC 60529, Sec. IP X3, X4, X5, X6, X7, X8, IP-x1 and IP-x2<br>MIL-STD-810E, Method 512.3;<br>MIL-STD-810F, Method 512.4;<br>MIL-STD-810G, Method 512.5;<br>MIL-STD-810H, Method 512;<br>NEMA 250, Sec. 5.7;<br>RTCA DO-160F, Sec. 10.0;<br>SAE J1211, Sec. 4.4 |

**Test:****Parameters:****Test Method(s) <sup>1</sup>:**

Icing / Freezing Rain

MIL-STD-810E, Method 521.1;  
MIL-STD-810F, Method 521.2;  
MIL-STD-810G, Method 521.3;  
MIL-STD-810H, Method 521;  
NEMA 250, Sec. 5.6;  
RTCA DO-160D, E, F, G, Sec. 24,  
Cat. A & C

UV Fluorescent Light Exposure

ASTM G154

Protection Against Solid Foreign  
ObjectsIEC 60529, Sec. IPX5, IPX6, IP-1x, 2x,  
3x, 4x

HALT / HASS

Qualmark Guideline 9.0

High-pressure / Steam-jet Cleaning

ISO 20653 IP-x9K

Compression / Stacking

ASTM D4169;  
ASTM D642

Incline Impact

ASTM D4169;  
ASTM D880

Impact

ASTM D4169;  
ASTM D6344

Manual Handling

ASTM D4169;  
ASTM D6179

<sup>1</sup> When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA R101 - General Requirements- Accreditation of ISO-IEC 17025 Laboratories.



## Accredited Laboratory

A2LA has accredited

**ELEMENT MATERIALS TECHNOLOGY DENVER**

*Longmont, CO*

for technical competence in the field of

**Mechanical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *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 21<sup>st</sup> day of October 2024.

A blue ink signature of Mr. Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 2582.02  
Valid to July 31, 2026

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