



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELEMENT MATERIALS TECHNOLOGY SEATTLE

2200 222nd St.

Bothell, WA 98021

Deborah Sykes Phone: 657-365-8647

Email: deborah.sykes@element.com

Kathleen Vasconcellos Email: kathleen.vasconcellos@element.com

MECHANICAL

Valid To: March 31, 2021

Certificate Number: 2582.03

In recognition of the successful completion of the A2LA evaluation process accreditation is granted to this laboratory to perform the following tests:

<u>Test Description/ Parameters</u>	<u>Test Method</u>
Corrosion Testing	ASTM G85
Corrosive Atmosphere/Mixed Flow Gases	ASTM B845; ASTM B827; JDQ 53.3; DS/EN 60068-2-60; IEC 60068-2-60; Ford ES-2L2T-14K147-AA
Salt Fog/Salt Spray	ASTM B117; ASTM D1735; ASTM D2247; DIN50021-SS; IEC 60945, Section 8.12; RTCA/DO-160, Section 14 (Category S & T); MIL-STD-202, Method 101E; MIL-STD-810, Method 509; MIL-DTL-5541F; SAE J1810, Section 5.7; GMW 3172, Section 9.4.8
Solar Radiation	JDQ 53.3 Section 8.1 Level 3; ISO 4892-2; ASTM G26-96; ASTM G155; ASTM D2565
Dust	IEC 60529, Section 13; MIL-STD-202, Method 110A; MIL-STD-810, Method 510, Procedure I; RTCA/DO-160, Section 12.4 (Category D); GMW 3172, Section 9.5.1

<u>Test Description/ Parameters</u>	<u>Test Method</u>
Blowing Sand	RTCA DO-160, Section 12.4; MIL-STD-810, Method 510, Procedure II
High and Low Temperature Range ¹ : (-77 to 177) °C	IEC 60945, Sections 8.2, 8.4; MIL-STD-202, Method 108A; MIL-STD-810, Methods 501, 502, 521; RTCA/DO-160, Sections 4.5.1, 4.5.2, 4.5.3, 4.5.4, 4.5.5, 5, 24 (Categories A & C); SAE J1810, Section 5.1; GMW 3172, Section 9.4.1
Humidity Range ¹ : (10 to 95) % RH	DIN 50017; IEC 60945, Sections 8.3; MIL-STD-202, Methods 103B, 106G; MIL-STD-810 Method 507; RTCA/DO-160, Section 6; GMW 3172, Sections 9.4.5, 9.4.6
Thermal Shock:	RTCA/DO-160, Section 6; IEC 60945, Sections 8.5; MIL-STD-202, Method 107G; MIL-STD-810, Method 503; GMW 3172, Section 9.42
Vibration: Range ¹ : Up to 12 000 lbf (3 to 4000) Hz, 4 Inch Stroke, with Combined Environments of (-77 to 177) °C and (10 to 95) % RH Acceleration up to 100 g	IEC 60945, Section 8.7; MIL-STD 202, Methods 106G, 201A, 204D, 214A; MIL-STD-810, Methods 514, 516, Procedures IV, VI; MIL-STD-167; RTCA/DO-160, Section 8; SAE J1810, Section 5.5; GMW 3172, Section 9.3.1
Shock Range ¹ : Force: Up to 210 g 1/2 Sine Period: < 1 ms to 35 ms at Terminal Peak	MIL-STD-202, Method 213B (higher levels need shock machine); MIL-STD-810, Method 514; MIL-STD-810, Method 516, Procedures I, II, III, and V; RTCA/DO-160, Sections 7.2, 7.3.1; SAE J1810, Section 5.4; GMW 3172, Sections 9.3.3, 9.3.4, 9.3.5
Altitude Range ¹ : Up to 95,000 feet	RTCA/DO-160, Section 4; MIL-STD-810, Method 500

<u>Test Description/ Parameters</u>	<u>Test Method</u>
HALT/HASS Range ¹ : Random Vibration (5 to 5000) Hz Level (0 to 85) g(pk) Temperature (-100 to 200) °C	GMW 8287; GMW 14906; Qualmark 933-0326, Section 10
Acceleration/Crash Safety Range ¹ : Up to 20 g	MIL-STD-810, Method 513; RCTA DO-160, Section 7
Fungus	MIL-STD-810, Method 508; RCTA/DO-160, Section 13
Immersion	MIL-STD-810, Method 512; IEC 60945, Section 8.9; SAE J1810, Section 5.8
Explosive Atmosphere	MIL-STD-810, Method 511; RTCA/DO-160
Icing/Freezing Rain Waterproofness/IP testing	MIL-STD-810, Method 521; RTCA/DO-160, Section 24 RTCA DO-160, Section 10; DIN 40050 (Cat 5, 6, 5K, 6K, 9K); ISO 20653 (Cat 5, 6, 5K, 6K, 9K); IEC 60529 (Cat 5, 6, 5K, 6K, 9K)
Contamination by Fluids/Fluid Susceptibility	MIL-STD-810, Method 504; RTCA/DO-160, Section 11
Drop Test	IEC 60945, Section 8.6.1
Pressure Range ¹ : Up to 3000 psi	RTCA/DO-160, Section 4.6; Element VC 202
Powered Temperature Cycling Test HAST/Accelerated Humidity	GMW 3172, Section 89.4.3 JESD22-A110B

¹ Also using customer-specified methods directly related to the types of tests and parameters listed above.



Accredited Laboratory

A2LA has accredited

ELEMENT MATERIALS TECHNOLOGY SEATTLE

Bothell, WA

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 5th day of June 2020.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2582.03
Valid to March 31, 2021
Revised February 16, 2021

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