



EMI/EMC, ENVIRONMENTAL, AND DYNAMICS TESTING

Element Chicago Mount Prospect is built for innovation with a 40,000 square foot world-class EMI/EMC testing facility, advanced environmental simulations, robust dynamics testing, and more. The lab offers best-in-class queue times and technical expertise for a wide range of industries, including automotive, medical device, aerospace, energy, industrial, consumer electronics, automotive, avionics, military, and more.

CHICAGO/MOUNT PROSPECT SPECIALTIES

- **Dynamics, Climatic, Electrical, Ingress Protection Testing:** In various applications, materials and products are expected to endure climatic, dynamic, electrical and ingress forces. Whether it is determining the resistance of a product to shock and drops or the ability of a seam to withstand ingress from water or dust, our engineers will run the precise test you need.
- **Mechanical Testing and Mechanical Shock:** The application of specific physical forces under strictly measured test conditions can reveal a great deal about a product's strengths and weaknesses. For companies that manufacture trusted goods, mechanical and shock testing are integral steps in the development of high-performance products.
- **HALT/HASS:** Accelerated life and stress testing help determine weak spots and defects across a product's lifecycle, but they do so at a highly accelerated rate. In this manner, changes and improvements can be made to avoid costly errors and failures, even during early design and manufacturing stages.
- **MIL STD UV and Blowing Sand/Dust:** Accelerated weather and blowing debris testing at the lab can quickly demonstrate the effects of long-term exposure to the elements, as well as sunlight and sand or dust.
- **Chemical Exposure Testing:** From determining everything from the porosity to the purity of materials, chemical testing provides you with the compositional information you need to ensure your products are compliant.
- **Environmental Stress Screening (ESS):** ESS uses thermal and vibration forces to identify failures and weaknesses in products so manufacturers can better avoid costly reworks and recalls.
- **Non-Standard Test Procedures:** We have the capability to engineer almost any non-standard test in order to deliver the results you need to make data-driven decisions regarding the development of your product.

EMI/EMC/ESD TESTING

We offer full EMC/EMI capabilities and blowing sand/blowing dust testing to complement our long-standing environmental capabilities such as vibration, thermal shock and cycling, temperature humidity, acceleration, corrosion, altitude and HALT/HASS. With the addition of these capabilities, we can now offer a one-stop-shop solution to partner companies who want to get their compliant products to market quickly and efficiently.

KEY TESTING CAPABILITIES/FACILITIES:

- Radiated Susceptibility ~ 200 V/m, Frequency Range 10 kHz to 40 GHz
- Radiated Emissions ~ 30 Hz to 40 GHz
- 5-meter Semi-Anechoic Chamber
 - » 10' Door, 12,000 Pound Capacity Turn Table
 - » High Temperature Vehicle Exhaust System
 - » Troubleshooting Projection Screen Inside the Chamber
- Two MIL/AERO EMI Semi-Anechoic Chamber
- Extended Ground Plane Test Beds
- Indirect Lightning-Single Stroke, Multiple Stroke, Multiple Burst, Level 5 DO-160
- AC & Telecom Port Surge, Electrical Fast Transients, Ring-Wave, and Bust Testing
- Electrostatic Discharge to 30 kV
- Full vehicle automotive testing
- Automotive Testing to ISO, load dumps, transients
- Commercial Product Testing - FCC, EMC Directive, CISPR, 61000-X-X
- Medical Directive Testing - 60601-1-2
- Military MIL-STD-461 (D,E,F)
- Avionics RTCA/DO-160 (D,E,F,G)
- Other customer standards as requested

DELIVERING INNOVATIVE PRODUCT TESTING AND CERTIFICATION SOLUTIONS

DYNAMICS TESTING

Element can simulate any condition on earth - and beyond. Our experts use state-of-the-art equipment to conduct environmental testing and to facilitate vibration profiles, including random, sinusoidal and mechanical shock. Working with systems capable of up to 25,000 force pounds, we can test products with heavy payloads and aggressive profiles; performing numerous tests to ASTM, GM, IEC, ISTA, MIL-STD-202, MIL-STD-810, RTCA-DO-160 and customized profiles to simulate and accelerate real-world conditions.

Our dynamics lab capabilities can conduct impact, free-fall drop and transit/ transportation testing. Testing can also be performed while controlling temperature, whether it is steady state or thermal cycling. In addition to testing, our team of engineers offers turnkey solutions, including field-data replication, fixture design, fixture characterization, resonance detection, transmissibility and dampening functions. And to be absolutely sure your every need is covered, Element offers quick, on-site modifications via our internal machine shop—staffed with experts who are familiar with Solidworks, ProE, and CAD software.

KEY DYNAMICS & ENVIRONMENTAL SIMULATION SERVICES INCLUDE:

DYNAMICS TESTING

- 20,000, 18,000 and 6,500 force pound electrodynamic shakers
- Vibration at Temperature
 - » Vibration Sine and Random 5 – 200 Hz
 - » Mechanical Shock
- Constant Acceleration/ Centrifuge
- Loose Cargo Vibration
- ISTA Package Testing
- HALT/HASS Chambers (30”x30”x30” and 48”x48”x48”)
- Package Drop

CHEMICAL TESTING

- Chemical Compatibility
- Chemical Resistance
- Contamination by Fluids
- Fluid Compatibility
- Fluid Immersion
- Fluid Resistance
- Fluid Susceptibility
- Porosity
- Salt Spray/Fog/Mist
- Solderability

ENVIRONMENTAL SIMULATION

- Temperature/Humidity Testing
 - » 12 standing chambers
 - » 2 walk-in chambers up to 11’x12’
 - » Temperature ranges -70 to 150°C
 - » Humidity control throughout condensing range of 5 to 90°C
- Altitude Chamber
 - » 70,000 ft. with temperature -55 to 150 degrees C
 - » Rapid Decompression
- Thermal Shock/Thermal Cycling
 - » 9 Single-Zone, 8 Dual-Zone and one Large Dual-Zone Thermal Cycling Chamber
- Blowing Sand
- Blowing Dust
- Settling Dust
- Ingress Protection IPXX, levels 1 through 9k
- Icing/Freezing Rain
- Explosive Atmosphere
- Salt Fog
- CASS Testing
- Solar Radiation
- Gravel Bombardment
- Advanced Cycling and Abrasion Testing
- Harsh Immersion

ELECTRICAL TESTING

- AC/DC High Voltage
- Capacitance
- Continuity Monitoring
- Current Measure
- Dielectric Strength
- Dissipation Factor (Tan Delta)
- Dielectric Withstand Voltage
- High Pot
- Inductance
- Insulation Resistance
- Leakage Current
- Low-level Contact Resistance
- Moisture Insulation Resistance
- Power & Current Cycling
- Q Factor
- Resistance
- Resistance Temp Coefficient
- Surface/Volume Resistivity
- UN/IATA Battery Testing
- Voltage Drop

MECHANICAL TESTING

- Abrasion
- Adhesion
- Bend
- Breaking Force/Strength
- Compression/Compression Set
- Durometer Hardness
- Fatigue Life
- Insertion/Engaging/ Withdrawl
- Mechanical Durability/Cycling
- Push/Pull/Deflection
- Resistance to Solder Heat
- Separating Force
- Shear/Lap Shear
- SolidWorks Fixture Design
- Torque/Torsional Strength