

EMC/EMI Testing Services

Elite provides Automotive Electronics Validation Testing services for Electric, Hybrid, High Voltage, Internal Combustion Engine components & whole vehicles. We have the most recognized test setups and the largest scope of recognized testing of any independent lab. Including dozens of RF Chambers, several CISPR, and Whole Vehicle and Small Vehicle Chambers.



EMC/Electrical Testing

- ▶ Radiated & Conducted Emissions & Immunity
- ▶ ESD, Transients
- ▶ Vehicle and Component Government Regulations for FCC, Canada, CE, E-mark
- ▶ Configurable 2-axle Dynamometer
- ▶ Domestic and International Vehicles, Motorcycles, Skid Steers, Farm/Agriculture Equipment, Lawn Tractors, ATVs, Boats, Railcar Movers, Buses, Engines
- ▶ Electric/Hybrid Vehicle OEMs

OEM Recognition Around the World

- ▶ Ford FMC 1278 / FMC 1280
- ▶ General Motors GMW 3097
- ▶ Stellantis CS.00054 & CS.00244 / 245 / 246
- ▶ Hyundai-Kia
- ▶ Mazda
- ▶ Jaguar Land Rover
- ▶ Harley Davidson

International Test Methods

- ▶ ISO 11452 ISO 16750
- ▶ CISPR 25
- ▶ Passenger and Commercial Vehicle OEM Specifications

70+ Years Strong

In 1954, James Klouda founded Elite Electronic Engineering, Inc. Today, Elite is an industry leader in EMC, Environmental Stress, Vibration, Photometric, and Wireless Testing Services.



Photometric Testing

A2LA ISO 17025 Accredited Testing
FAA Third Party Certification Body for Airport Lighting

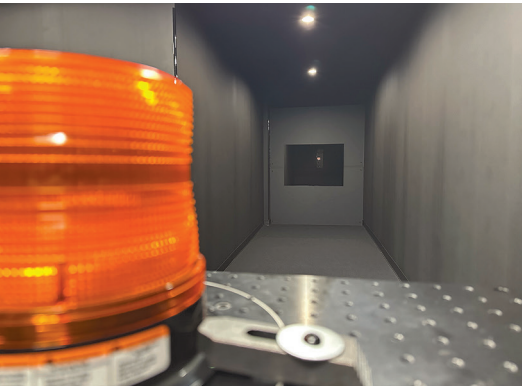
Type A Goniophotometer

- ▶ 100ft Test Distance and 60-inch-wide test items
- ▶ Luminous and Radiant Intensity
- ▶ Steady, Flashing, Visible, and IR Sources
- ▶ SAE, FAA, ICAO, FMVSS 108, Type A IES Files



NVIS Spectroradiometer

- ▶ High precision for extreme low light levels
- ▶ Luminance, Radiance, and NVIS Radiance
- ▶ Chromaticity and Spectrum
- ▶ MIL-STD-3009, MIL-L-85762A, Class A/B



2-meter Integrating Sphere

- ▶ 4pi and 2pi Geometry
- ▶ Total Luminous and Radiant Flux
- ▶ Chromaticity, CCT, CRI, and Spectrum
- ▶ IES LM-79, TM-30, ANSI/PLATO FL 1

Automotive | Aircraft | Airport | Marine | Flashlights

Environmental Stress

Elite has a full Environmental Test Lab that is ISO 17025 Accredited by A2LA. All testing is performed in one location on our campus.

Climatic Testing

- ▶ Temperature including extreme cold and heat, Humidity, Thermal Shock, Altitude, Rapid Decompression, and Explosive Atmosphere

Exposure Testing

- ▶ Water, Dust, Corrosion, Chemical Exposure/Fluids, Solar Radiation, Flammability, and Gravel Bombardment

Electrical Connector, Cable, and System Testing

- ▶ Force, Compression, Tensile, Flexure, Pull, Insertion & Extraction
- ▶ Electrical: Voltage Drop, Temperature Rise with High Current

Life Cycle and Automotive / Durability Testing Services

Standard Examples

- ▶ ISO 16750, ISO 20653, IEC 60529, MIL-STD-810, MIL-STD-202, RTCA DO-160, SAEJ1455, ASTM B117, FMVSS, USCAR 2 / 21, OEM and Supplier Specific.

Industries

- ▶ Industry wide capabilities including Automotive, Aerospace, Space, Defense, Heavy Equipment, Agriculture, Marine, and Rail

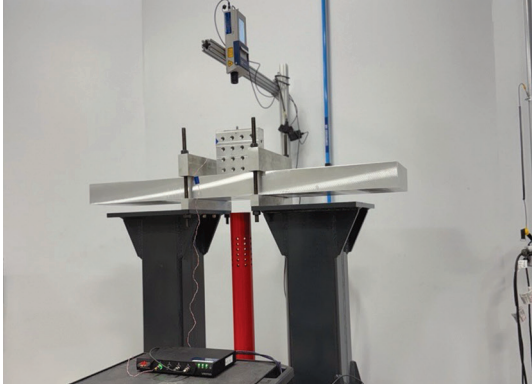
Vibration & Shock

Elite's Vibration and Shock Testing Lab is one of the largest and most capable in North America. We perform testing to OEM and Supplier Standards for Automotive, Aerospace, Defense, Heavy Equipment, Marine, Railway, and Telecommunications Industries. We are an A2LA ISO 17025 Accredited Lab.



State of the Art Vibration Lab | All-in-One Location

- ▶ Vibration Shakers up to a 8X8 ft table, 78K force lbs., 4in stroke, and 6,600 lb. total payload
- ▶ Vibration Shakers with Capabilities up to 220 G Sine and 180 G_{rms} Random
- ▶ High SRS Capabilities / Pyroshock
- ▶ Mechanical Shock up to 30,000 G's
- ▶ Combined Environment (temp/humidity/vibe)
- ▶ Field Data Replication / Simulation
- ▶ Handling and Free Fall Drop
- ▶ Loose Cargo
- ▶ Custom Test Fixtures in On-Site Machine Shop



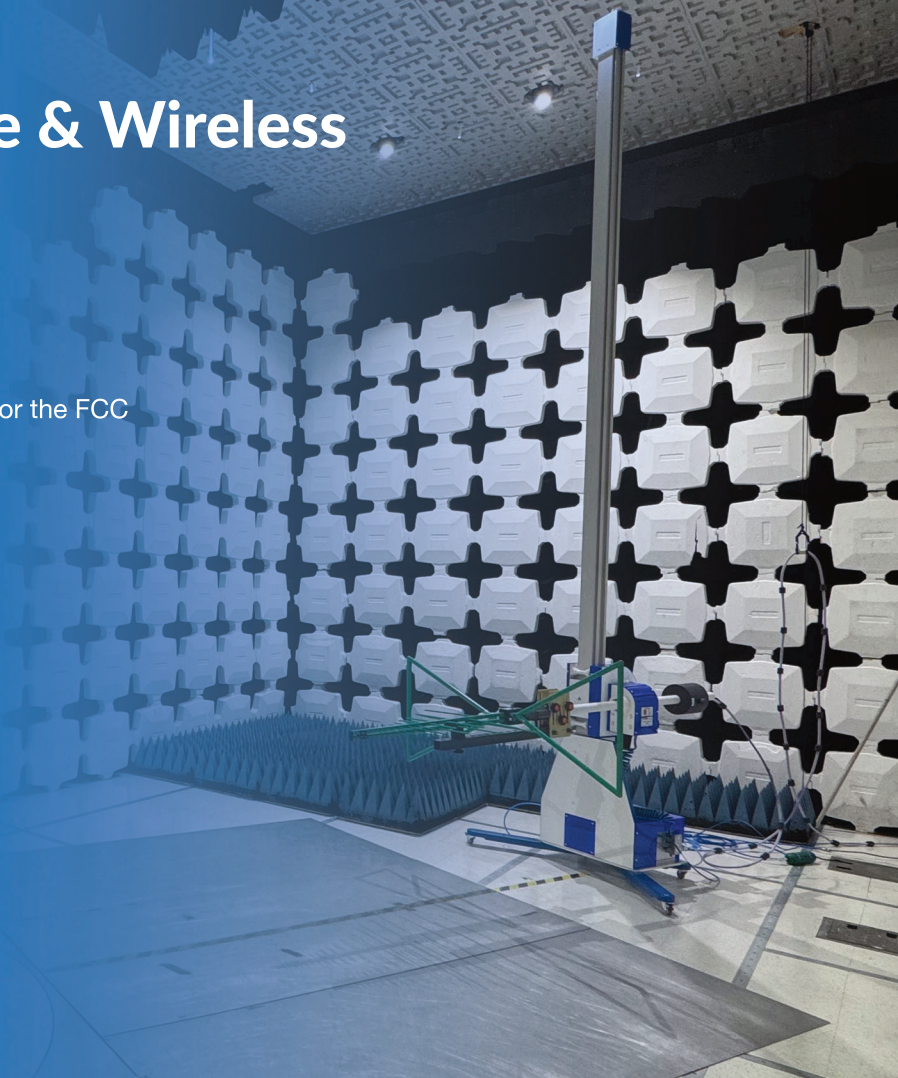
Regulatory Compliance & Wireless

Accredited Expertise

- ▶ ISO 17025 Testing and 17065 Certification
- ▶ INARTE Certified Engineers & Test Lab
- ▶ Specialists in Testing IOT/Wireless Devices
- ▶ FCC & ISCED Canada Testing & Certification
 - ▶ Telecommunication Certification Body (TCB) for the FCC
 - ▶ Certification Body (CB) for ISCED
- ▶ CE Mark Testing & Notified Body
 - ▶ EMC Directive
 - ▶ Radio Equipment Directive (RED)

State-of-the-Art Facility and Equipment

- ▶ Two 3-meter Chambers
- ▶ Receivers/Equipment Specified in Standards
- ▶ Automation Software that speeds testing
- ▶ CMW 500 for 4G / LTE and CMX 500 for 5G
- ▶ Over-the-Air (OTA) Testing
- ▶ CTIA Authorized Test Lab
- ▶ Made for Google Test Lab



High Voltage EV Module Testing

Elite is one of the only independent labs in North America to test High Voltage EV Modules for compliance to all OEM & industry standards.

High Voltage EV Modules

- ▶ Motors/E-Axles
- ▶ Inverters/Chargers
- ▶ Battery Systems
- ▶ Auxillary Modules

HV Electrical Stress Test

- ▶ Conducted Immunity
- ▶ Conducted Emissions
- ▶ Dips/Interruptions
- ▶ Transients
- ▶ Voltage Ripple

OEM and Industry Standards

- ▶ ISO 21498-1 & -2
- ▶ ISO 7636-4
- ▶ Stellantis CS.00245
- ▶ BMW GS 95023
- ▶ Mercedes MBN 11123
- ▶ Nissan 28400 NDS 91
- ▶ PSA B21 7110/12
- ▶ Renault 36-00-811
- ▶ VW 80303/80300
- ▶ ECE Regulation 10

Elite has two (2) AMETEK PowerWave 250 test systems that can be operated together (500 kW) or individually (250 kW). The test system is rated to supply 1,500 VDC / 1,000 A / 500 kW / bidirectional. We also have an AMETEK Ripple NX Generator capable of 1,000 A (1,000 Vmax).



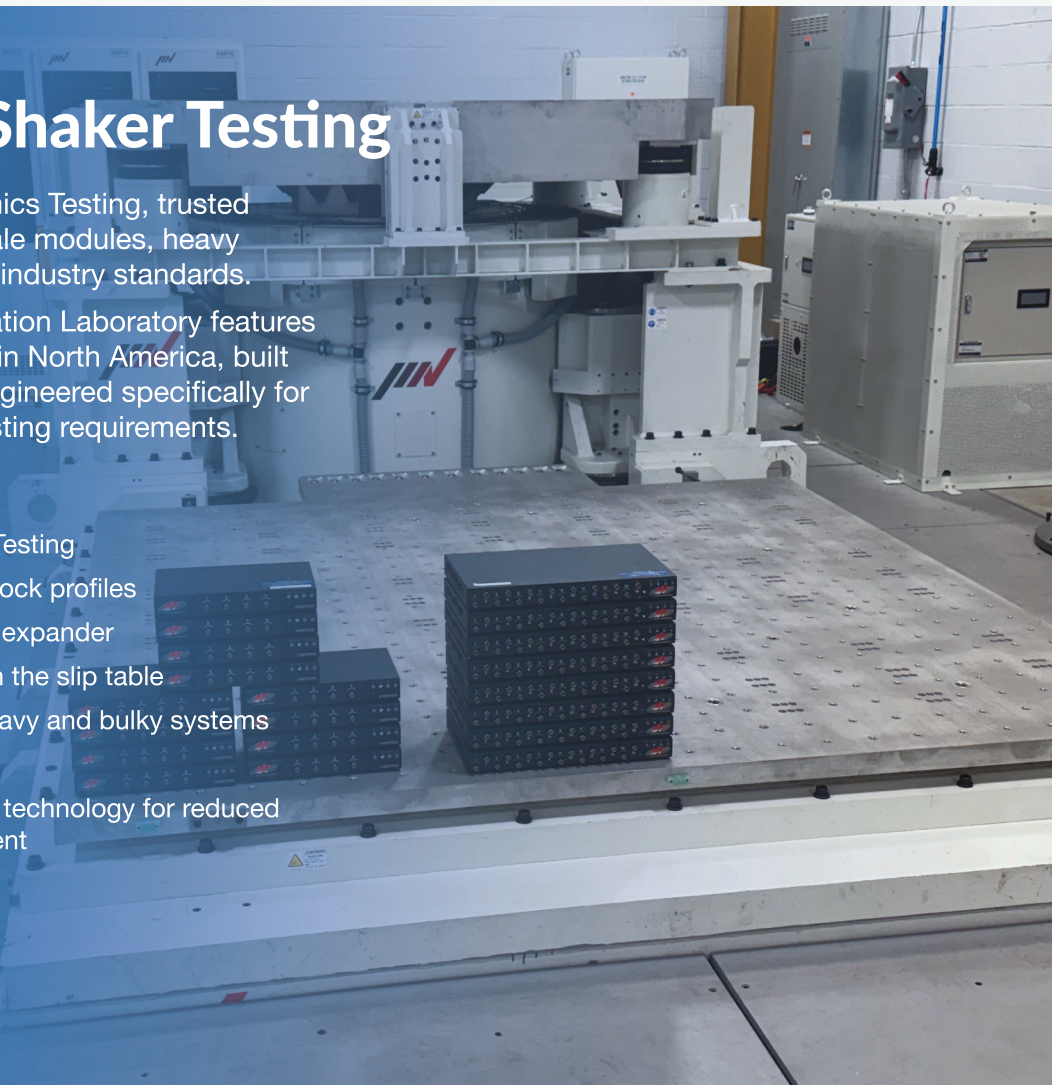
Large Vibration Shaker Testing

Elite is a recognized leader in Dynamics Testing, trusted by global OEMs to validate large-scale modules, heavy machinery, and complex systems to industry standards.

Our state-of-the-art Shock and Vibration Laboratory features one of the largest Vibration Shakers in North America, built for big and complex systems and engineered specifically for massive payloads and high-force testing requirements.

Services

- ▶ 78,000 lbf force rating for Vibration Testing
- ▶ Up to 202,000 lbf for Mechanical Shock profiles
- ▶ 8 x 8 ft. slip table and 8 x 6 ft. head expander
- ▶ Payload capacity up to 6,600 lbs. on the slip table
- ▶ 5-ton Overhead Bridge Crane for heavy and bulky systems
- ▶ Direct loading dock ramp access
- ▶ Advanced water-cooled eco-shaker technology for reduced noise and a better testing environment



American Owned & Operated

Elite is a full-service Electromagnetic Compatibility/Interference (EMC/EMI), Environmental Stress, and Photometric Testing Laboratory. We are the premier test provider for the Automotive, Aerospace, Space, Military, Heavy Equipment, Electronics, and Telecommunications industries.

Our 100,000+ square-foot Downers Grove, IL campus is located in the heart of the I-88 R&D corridor, offering convenient access to major transportation, hotels, and restaurants. We are approximately 30 minutes from both O'Hare International Airport and Midway International Airport. Plan your visit today.

Our Experts

- ▶ iNARTE Certified Test Engineers and Organization
- ▶ Decades of testing experience and standards development
- ▶ Recognized by U.S. and Global Automotive OEMs

Your Schedule

- ▶ 100,000+ ft² Laboratory in one campus
- ▶ 100 Technical and Support Staff
- ▶ Faster testing with multiple test setups and qualified personnel

Trusted Results

- ▶ ISO 17025 Accredited Testing by A2LA and NVLAP
- ▶ ISO 17065 Accredited Certification by A2LA
- ▶ Test Reports accepted around the world

ELITETEST.COM

630-495-9770

EMC/EMI Testing Lab & Headquarters

1516 Centre Circle
Downers Grove, IL 60515

Environmental Lab

1430 Centre Circle
Downers Grove, IL 60515



Automotive | Aerospace | Military | Regulatory Compliance | Certification



EMC | Environmental Stress | Vibration | Photometric | Wireless



Elite Electronic Engineering, Inc.

COMPANY OVERVIEW

OUR EXPERTS. YOUR SCHEDULE. TRUSTED RESULTS SINCE 1954.