element
U.S. Space & Defense

FACILITY SPOTLIGHT

ORLANDO, FL

LEADING TEST LAB ON THE SPACE COAST

Located in the heart of Florida, close to the Space Coast, Element U.S. Space & Defense's two Orlando laboratories are key partners to our Space, Defense, Medical and Commercial customers. The EMI and Environmental labs allow us to provide one-stop-shop testing services that include dynamic, climatic, EMI/EMC, and hydraulic capabilities that are performed to the highest standards of quality and accuracy. You can be assured of our commitment to quality as evidenced by the A2LA ISO/IEC 17025 laboratory accreditations.

DYNAMIC TESTING

Element U.S. Space & Defense's Orlando facilities offer acceleration testing, mechanical shock testing (free-fall and shaker), transportation simulation, drop testing, and vibration testing. In addition, the lab maintains a U.S. Navy certified lightweight hammer shock machine capable of accommodating the associated MIL-S-901D testing requirements. We are also accredited by the International Safe Transit Association (ISTA) as a Certified Testing Laboratory for package testing procedures 1A, 1B, 1C, 1D, 2A and 2B.
With multiple high-force Electro-Dynamic Shakers (EDS), the lab can provide a variety of vibration environments applicable to the Aerospace, Transportation, Military, and Consumer Products fields.

ENVIRONMENTAL (CLIMATIC) TESTING

Element U.S. Space & Defense's first Orlando location is where all of the environmental tests are conducted. This lab offers a wide variety of environmental simulation tests, including temperature, humidity, altitude, rapid decompression, explosive decompression, overpressure, thermal vacuum, explosive atmosphere, solar heating effects, thermal shock, blowing sand, blowing dust, blowing rain, and salt fog. We can also operate controls such as buttons, switches and joysticks in harsh environmental conditions hostile to human presence and can offer more detailed manipulation via a Motoman SV3 Robot.

EMI TESTING

Element U.S. Space & Defense's second Orlando location focuses on our Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) test capabilities. It houses five shielded enclosures as well as a broad variety of test equipment to help achieve your EMI/EMC test objectives. We have a team of highly qualified engineers and technicians who are experienced in the performance of tests related to defense (MIL-STD-461) and aerospace (RTCA/DO 160) standards, as well as a variety of similar specifications. The facility is accredited by A2LA to the ISO/IEC 17025 Standard for Laboratory Accreditation.

HYDRAULIC TESTING

The lab also conducts many different hydraulics tests such as endurance, impulse, burst and proof pressure, cracking and reseat pressure, high and low temperature (fluid and/or environment), leakage, and cold start testing. Pressures of 7,500 psig, temperatures from minus 55 Degree C to 135 Degree C, and flows of 200 GPM can be achieved. Phosphate Ester (Skydrol) and Hydrocarbon (Red Oil) test stands are available. Common specifications we test to include SAE ARP 4378, SAE ARP4946, SAE ARP1383.

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HIGHLIGHTS AND PRIMARY TEST SPECIFICATIONS

EMI/EMC

- Radiated Susceptibility/Immunity Electric Fields to 40 GHz and 200 Volts/Meter
- Radiated Susceptibility/Immunity Magnetic Fields 30 Hz - 100kHz
- Radiated Emissions Electric Field 10kHz - 18 GHz
- Radiated Emissions Magnetic Field 30 Hz – 100 kHz
- Conducted Susceptibility 30 Hz through 400 MHz
- Conducted Emissions 30 Hz through 400 MHz
- Transient Pulse Generation up to 2,000 Volts
- Electro Static Discharge (ESD) up to 30,000 Volts
- Input Power Compliance

DYNAMICS AND ENVIRONMENTAL (CLIMATIC)

- Acceleration, 27-inch radius centrifuge,
- Max 400 rpm, 30 slip-ring electrical connections
- Electro-dynamic vibration to 23,000 lbf, up to 3.0 inch displacement
- Mechanical Shock, freefall and shaker – classical and SRS
- Altitude –rapid and explosive decompression
- Thermal Vacuum up to ultimate pressure of 1e^-7 Torr
- Combined Environments, Environmental Stress Screening (ESS)
- Thermal Shock
- Spray, Drip, and Rain (wind to 40 mph, 4-inches/hour typical rate)
- Salt Fog – 30 ft3 and 73 ft3 salt fog chambers
- Blowing Sand and Blowing Dust
- Temperature and Humidity – 10 x 12 x 8-foot walk-in chamber and smaller
- Explosive Atmosphere – 3 ft. DIA x 4 ft. chamber, to 71°C and 50,000 ft. altitude
- Immersion – vessels up to 48 x 60 x 60-inches
- Solar (heating effects)
- Icing

HYDRAULIC

- Burst and proof pressure to 60,000 psi
- Cracking and reseat pressure to 8,000 psi
- Leakage to 8,000 psi
- Endurance to 6,000 psi Hydrocarbon (red oil) and 7,500 psi Phosphate Ester (Skydrol)
- Impulse to 6,000 psi Hydrocarbon (red oil) and 7,500 psi Phosphate
- Ester (Skydrol)
- Cold Start to 3,000 psi at 5 gpm
- Combined Environments (pressure and flow with temperature, vibration)
- Vibration pressures to 4,000 psi at 8 gpm Hydrocarbon (red oil), or 3,000 at 12 gpm Phosphate Ester (Skydrol)
- Temperature to 4,000 psi at 8 gpm Hydrocarbon (red oil), or 5,500 psi at 20 gpm Phosphate Ester (Skydrol)
- Hydrostatic capability – Hydrocarbon (red oil)/water to 60,000 psig or Phosphate Ester (Skydrol)/water to 75,000 psig
- High speed data acquisition and control using Labview software and National Instruments hardware – record at 1,000 hertz, control at 2 hertz

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