



THE ENVIRONMENTS THAT QUALIFY HARDWARE FOR THE MOST CRITICAL MISSIONS.

Element U.S. Space & Defense's Santa Clarita facility is one of the largest test facilities in the U.S., covering over 60 acres. From our 25-foot diameter centrifuge with over 100 slip ring channels and 5000 cubic foot acoustic chamber to our 10-foot diameter space simulation chamber, Element U.S. Space & Defense is prepared to meet your most extreme testing challenges.

From launch-level acoustics, to climatic, environmental, and space simulation to hazardous vibration and acceleration, Element U.S. Space & Defense has the proven track record and expertise to accurately monitor equipment response and performance during the most extreme test environments.

DYNAMICS/ACOUSTICS

Vibration test facilities feature more than a dozen electrodynamic shaker systems with ratings of up to 80,000 force pounds. Digital control systems and multiple channel instrumentation simulate random, sinusoidal, SOR and other vibration environments to meet your needs. In addition, we can support your test programs for combined temperature, vibration and humidity environments. Acoustics facilities include 3 reverberation chambers and 3 progressive wave tubes.

ENVIRONMENTAL/SPACE SIMULATION

Climatic and Space Simulation provides for demanding test requirements with combined environments of temperature, altitude and humidity from -70°F to +350°F in chambers up to 28' x 16' x 15'. Our sand and dust chamber provides wind velocities to 4400 FPM for sand/dust erosion testing. Thermal vacuum chambers up to 10 feet in diameter and 12 feet long, provide temperature extremes from -265°F to +293°F with combined

ambient pressures of 1×10^{-7} TORR. Salt fog, Sulfur Dioxide (SO₂) and Copper Chloride chambers are sized up to 6' by 10' by 8'. Explosive atmosphere chambers simulate 100,000 feet and temperatures to -320° F.

EMI

The facility is also equipped to conduct remote field EMI/EMC testing while in full compliance of MIL-STD-461G & RTCA DO-160G.

MECHANICAL, GAS SYSTEMS

Our facilities provide pressure, temperature and flow capabilities to meet extreme testing environments with gas. Test media can be air, cryogenic liquids and others as needed to meet your test requirements. Air flow capability is provided up to 1,200°F, 300 lbs. min at 300 PSIG. The Santa Clarita laboratory has multiple processed air facilities including bleed/ram air, blow down and thermal endurance cycling.

HIGHLIGHTS AND PRIMARY TEST SPECIFICATIONS

DYNAMICS, ACCELERATION AND ACOUSTICS

- More than one dozen vibration exciters from 6,000 to 45,000 force-pounds
- Vibration - random, swept sine, sine on-random, random on random
- Three separate dual shaker systems up to 80,000 force lb, 4 to 3,000 hertz
- Combined thermal and vibration testing including cryogenic
- Shock - classical half-sine, trapezoidal, haversine, T.P. Sawtooth
- Centrifuge load up to 5,000 lbs.
- Pyroshock - Shaker simulated, metal to metal impact, true ordnance
- Acceleration up to 250 g's, from 10 and 25 foot radius
- Progressive waves and reverberant chambers: emission measurements or high-level noise
- Reverberant sound levels to 167 dB | greater than 174 dB using progressive wave tube
- 3 Reverberation chambers: 90, 126 and 5000 cubic feet

ENVIRONMENTAL AND SPACE SIMULATION

- 8' x 8' x 10' salt fog chamber
- 1500 cubic foot thermal vacuum chamber 10' diameter by 12' long
- Multiple temperature/humidity chambers, some with drive-in capacity
- Combined environmental temperature vibration facilities
- Temperature/altitude chamber up to 900 cubic feet 80,000' altitude
- Temperature chambers up to 40' x 60' x 15' H
- Explosive atmosphere chamber 6' diameter by 20' long
- Rapid and explosive decompression 10 to .01 mil/sec
- Sand and dust facility, salt-fog and So2 chambers up to 10' x 10' x 8'
- Thermal vacuum chambers from 3.3 feet in diameter up to 10 feet in diameter, with maximum length of 12 feet.

REMOTE FIELD EMI/EMC

- 18' x 25' x 10' portable EMI chamber.
- Remote field EMC/EMI: CE101, CE102, CE106, CS101, CS114, CS115, CS116, CS117, CS118, RE102, RS101, RS103 and ESD

PNEUMATIC, HYDRAULIC, MECHANICAL AND CRYOGENICS

- Proof and Burst testing - up to 20,000 psi pneumatically and/or hydrostatically.
- Ability to design complex multi-system tests including flow and/or pressure testing at temperature to include ramp rates of 5°C/min, while unit is undergoing vibration or environmental testing
- State of the art DAC system with ability to record up to 100 channels
- High flow water testing up to 3,000gpm at ambient conditions
- Air slab with multiple test bays across the facility, up to 350lbs/min at 300psi flow
- Three, 3.9 million BTU heaters that can heat air up to 1500°F at heater outlet and 1200°F at UUT
- 6,000 psig gaseous nitrogen & helium at high flows with helium recovery system to reduce costs

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