



Climatic Testing at White Sands Missile Range



White Sands Missile Range (WSMR) has multiple test facilities capable of replicating any storage and operational climatic conditions including: temperature extremes; large/small item temperature shock; solar radiation; salt fog; humidity; fungus; rain; icing; freezing rain/ice; snow; wind; sand/dust and altitude. Digital data acquisition systems are available to record and process data from more than 150 temperature channels and 20 transducer channels for parameters such as pressure and solar radiation intensity. Climatic Test Facilities are fully instrumented for system performance and diagnostics. Testing can be performed in accordance with MIL-STD-810, ASTM, and ISO standards.

TEMPERATURE TEST FACILITY (TTF)

TTF has three permanent temperature conditioning chambers: Large Test Chamber (LTC), Small Test Chamber (STC), and Salt Fog/Humidity Chamber. The LTC and STC exhaust and replenishing air capabilities allow for operation of equipment (gasoline engines and heaters) at temperature extremes. Chambers can be operated simultaneously. TTF is approved for testing of explosive test items up to 30,000 lbs of Class 1.1.



LARGE (LTC) AND SMALL TEST CHAMBER (STC)

- 40'W x 50'H x 105'L (LTC)/ 35'W x 30'H x 20'L (STC)
- -62°C to 93°C (-80°F to 200°F)
- Solar radiation (Heating Effects - 1120 W/m²)
- Freezing rain/ice



SALT FOG/HUMIDITY CHAMBER

- 20' W x 10' H x 15' L
- Ambient to 71°C (Ambient to 160°F)
- Humidity (95% Relative Humidity)
- Salt fog (5 to 20%)

ENVIRONMENTAL TEST AREA II (ETA-II)

ETA-II supports fungus, high/low temperature, sand/dust, humidity, rain, wind, solar (heating and actinic effects), altitude, and salt fog testing. The ETA-II is approved for testing of explosive test items up to 30,000 lbs of Class 1.1.

LARGE MICROBIOLOGICAL CHAMBER

- 22' W x 16' H x 30' L
- High temperature
- Fungus
- Solar Radiation (Heating Effects)
- Humidity



DUST CHAMBER

- 4' W x 4' H x 4' L
- Temperature: 16°C to 71°C (60°F to 160°F)
- Dust Concentration: up to 10.6 g/m³ (0.3 g/ft³)
- Humidity (5% to 30% Relative Humidity)



RAIN TEST AREA

- Rain: up to 610 mm/hr (24 in/hr)

FIELD SAND AND DUST TEST AREA

- Wind: up to 35 m/s (80 mph)
- Coverage: 16'W x 8'H



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Climatic effects testing can be implemented in isolation or in combination to produce effects such as sand/dust storms, snow loading, and fungal intrusion. Conditions can be further combined with mechanical effects such as shock and vibration. Additional available testing environments include: altitude environments; vacuum chamber internally equipped with lasers; mobile temperature conditioning; and immersion.

ALTITUDE TESTING

- Small (2' W x 2' H x 2' L) multipurpose chamber with altitude environments from 500 ft below to 100,000 ft above sea level
- Larger test items operationally tested at surrounding mountain top locations under natural altitude conditions of 10,000 ft
- Assorted rapid decompression chamber sizes available

SHOCK AND VIBRATION FACILITIES

- Electrodynamic shakers available to simulate transportation environments. Shakers provide up to 50Klbs of force and 2 inch displacement.
- Test equipment available for transportation and pyrotechnic shock simulation.
- Testing can be conducted simultaneously at high and low temperature extremes.



HOT CHAMBER

- 24' W x 22' H x 70' L
- Ambient to 71°C (Ambient to 160°F)
- Solar radiation (1120 W/m²)
- Humidity (95% Relative Humidity)
- Salt fog testing on non-hazardous test items
- Rain (Water Tightness)



LARGE VACUUM CHAMBER (LVC)

- 50 ft diameter sphere
- Vacuum equivalent to 600,000 ft altitude
- Only large chamber in the country capable of allowing entry of full-power, high-energy laser beams.



IMMERSION (LEAKAGE) TANK

- 4' W x 4' H x 4' L
- Immersion depths of one meter
- Transportable

MOBILE FIELD CONDITIONING EQUIPMENT

- Largest Conditioning Shroud 16' W x 16' H x 60' L
- -54°C to 71°C (-65°F to 160°F)
- Conditioning shrouds hold items ranging in size from computer chip to launcher with missile
- Refrigeration, heat, and power generators, shrouds, and conditioning equipment available for projects on and off the WSMR installation



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