Space Simulation Thermal Chamber

The ESS, Inc. Space Simulation Thermal Chamber or SSTC has been developed to allow simultaneous thermal vacuum testing of electronic components that may be heated and cooled by direct conduction. The SSTC is a fast, portable and cost effective solution for testing components that must be thermally screened and subjected to a high altitude or high vacuum environment.

The SSTC is a fully automatic thermal vacuum system that may be operated from the front panel or remotely via computer interface. A host of vacuum feed-throughs is available to satisfy almost any interconnect requirement.

The SSTC's compact, portable size allows it to be rolled right to the test site. It's affordable price enables higher product throughput within current test budgets. Redundant safety features and optional data acquisition/logging capability make the SSTC ideally suited to automated test applications.

An array of thermal platform and chamber sizes allows the ESS, Inc. SSTC to meet the vast majority of satellite component test requirements. Optional features such as dual high altitude/high vacuum operation, DUT (Device Under Test) Safety Systems, and custom fixturing for mounting are available.

Benefits:

- Much lower initial and operating cost than conventional Thermal Vacuum Chambers
- Portable
- Flexible

Features:

Simultaneous Thermal Vacuum Testing
Fast, Affordable and Portable
Automatic Operation
High Altitude or Space Simulation
ATM to 120,000' or ATM to 10^{-6} Torr
IEEE-488 (GPIB) and RS232 Interfaces
Redundant Thermal Safety Systems
-100° to +150° C Temperature Range
Standard and Custom Chamber Sizes

Specifications

Thermal platform

- **Sizes:** minimum 8" x 8" (203 x 203 mm); maximum 18" x 24" (457 x 610 mm)
- **Heating:** resistance electric elements
- **Cooling:** LN_2, LCO_2, or mechanically refrigerated
- **Typical ramp rates:** minimum 10°-15° Celsius per minute
- **Maximum temperature range:** +150°C to -100°C (narrower ranges available)

Temperature Control

- **Controller:** *µ*P based digital indication with PID output, ramp and soak profiling, and RS232 and IEEE-488 GPIB communications

Vacuum Chamber

- **High vacuum pump:** turbo molecular
- **Backing pump:** oil-free diaphragm or oil sealed
- **Vacuum control:** automatic one touch or remotely controlled
- **Chamber pressure gauges:** ion gauge for high vacuum; T/C gauge for roughing
- **Chamber pressure indication:** *u*P based digital instrument with computer interface
- **Baseplate:** 1" (25 mm) thick alloy in 13", 19" or 25" (330, 483, 635 mm) diameter (larger optional)
- **Bell Jar:** Stainless steel in 12", 18", or 24" (305, 457, 610mm) diameter x 10" (254mm) minimum to 30" (762mm) maximum tall. Larger sizes are optional
- **Feed throughs:** virtually any size or style of user specified types can be fitted
- **Vacuum ranges:** High Altitude - ATM to 130,000'; High Vacuum - ATM to 10^{-6} torr
- **Typical vacuum rates:** ATM to 10^{-4} in 15 minutes; ATM to 10^{-6} torr in under 2 hours
- **Typical system footprints:** 24" x 24" (610 x 610mm) or 32" x 32" (813 x 813mm)
- **Facility requirements:** small system 20 Amps @ 110/120 VAC 50/60Hz; Large system 30 Amps @ 220/240 VAC 50/60Hz