



Environmental Test Facility

Purpose:

To provide a wide range of simulated environments for development, qualification, and acceptance testing of space flight hardware.

The Environmental Test Facility (ETF) in Building 4619 provides the capability for thermal vacuum bake-out, optical cleanliness bake-out, thermal humidity and thermal altitude testing. Possible simulated environments range from ambient pressure to 5×10^{-8} torr with temperatures from 185°C to 200°C. Within these ranges, it is possible to simulate conditions related to ascent, descent, and on-orbit environments as well as conditions related to shipping and ground storage environments.

The facility consists of sixteen thermal vacuum chambers, nine thermal humidity chambers, one thermal altitude chamber and two Class 10K clean rooms. Chambers range in size from a 2 ft bell jar to a 20 ft diameter x 28 ft long thermal vacuum chamber that can accommodate a 15-ton flight article. The chambers are operated 24 hours a day, 250+ days a year, by a team of engineers and technicians that have more than 150 years combined vacuum testing experience. The large number of chambers housed in close proximity, along with the expertise and experience of the ETF team, allows for support of multiple tests during each shift which results in very reasonable pricing for ETF customer.

Environmental simulation is necessary to verify flight article design, manufacturing processes, and workmanship through functional testing at extreme conditions. In addition, thermal cycling can be used to simulate aging, and thermal balance tests can be used to correlate thermal modeling predictions.

The ETF supports all flight programs. Some of the programs recently supported include the International Space Station, Chandra X-ray Observatory, Propulsive Small Expendable Deployer System and various Microgravity research experiments. All of the Ku-band antennas utilized by the shuttle fleet also are qualified and re-qualified for flight in the ETF. The ETF Team stands



ready to provide environmental simulation testing support to insure the safe, reliable operation of all space flight hardware.

POINT-OF-CONTACT:

Freida S. Lowery / ED26
(256) 544-2507
freida.lowery@msfc.nasa.gov or

Debra Terrell / ED26
(256) 544-6857
debra.terrell@msfc.nasa.gov