SPACE TECHNOLOGIES RESEARCH INSTITUTE TESTING AND ANALYSIS CAPABILITIES

Satellite Assembly, Test and Integration Laboratories

- Class 10,000 Clean room
- 1 tones capacity crane
- Thermal Vacuum Test Chamber
- Satellite integration tools
- Modul level workshop
- Testing and measurement devices – Laminar Flow cabinet
- Prototype electronic card plotting and production device

Satellite Dynamic Environment Simulator (SDES)

Its main objective is to validate the ADCS flight software on Onboard Flight computer before launch.
- SDES simulates the satellite attitude by simulating the satellite dynamics as the telecommands sent by the flight computer and updates the telemetry data of sensors.
- It is a software runs on a regular PC.
- ADCS flight software can be tested by SDES by communicating with the flight computer via a USB-CAN bus adapter.

Satellite Design Office

- Mission Analysis and Design Office
- High Performance Computer Systems

Thermal Vacuum Test Chamber

Space simulator capable of performing tests compatible with ECSS standards.

Technical specifications of the chamber is listed below:
- Model: HVT2100 -70/125 MC
- Type and Dimensions: Horizontal cylinder, (Q x D) 1500 mm x 1200 mm
- Pumping System: Dry and Cryogenic Pumps (P<3x10⁻⁷ mbar in 8 hrs)
- Temperature Range: -70 °C / +125 °C
- Temperature Rate: ~2 °C / min

Laminar Flow Cabinet and Furnace

At assembly part of clean room; there is a Class100 Laminar flow cabinet and a furnace for drying and curing of some chemicals. Laminar Flow Cabinet is used for applications which needs accurate environmental conditions, especially assembling of optical application.

Vapor Phase Soldering System

Situated in Class 100,000 Final Airlock part of cleanroom. System is able to solder electronic cards up to 540 x340 x 80mm dimensions.

Controlled Environmental Conditioned Storage and Storage Management System

Storage; capable of storing materials, will use in satellite production and materials for special applications in controlled environmental conditions.

Thermal Cycling Chamber

Class 10,000 (ISO Class7) cleanroom constituted for satellite technologies is able to make production according to ESA standards (ECSS-Q-70-08, ECSS-Q-70-08, ECSS-Q-70-18, ECSS-Q-70-28, ECSS-Q-70-38, ECSS-Q-70-26 & 70-30).
TÜBİTAK UZAY S+X Band Ground Station
The new generation S+X Band Ground Station is used to control and acquire data from the remote sensing satellite.

The Ground Station has
• S-Band receiver/transmitter and X-Band receiver,
• 5.5 m dish antenna, antenna control unit,
• Telemetry/telecommand control system and data storage units.

Communication System Specifications
S BAND Rx: 2.2 – 2.3 GHz       X BAND: 8.025 – 8.375 GHz
Tx: 2.04-2.16GHz
VHF Rx: 145 MHz                UHF Tx: 433 MHz

Reliability Laboratory
• Space, military or commercial electronic products reliability evaluation in component, board or system level,
• Failure mechanism and root cause of failure detection, failure mode effect and criticality analysis, worst case analysis in reliability and life predictions,
• Determination of weak points of the product using accelerated life tests including temperature, humidity, pressure, vibration and power cycle stresses and the implementation of necessary design improvements. The tests are performed according to IPC, JEDEC, MIL, IEC and ESA standards.

SECURITY MEASURES
TÜBİTAK UZAY gives importance in information security regarding the projects carried out at the institute. Information security within its facilities is certified by Ministry of National Defence.

ISO 9001
TÜBİTAK UZAY activities meet the ISO 9001 quality standards.