

SEIBERSDORF  
LABORATORIES



FREQUENTLY ASKED SOLUTIONS



**RADIATION HARDNESS:  
ACCREDITED TESTING LABORATORY**



# Radiation Hardness Assurance: Accredited Testing Laboratory

Seibersdorf Laboratories are operating an accredited laboratory for radiation hardness testing of electronic components (TEC-Laboratory) as well as a secondary standard dosimetry laboratory (SSDL) for tests employing ionizing radiation. Both laboratories are working in compliance with EN ISO/IEC 17025. Our customers are public organizations such as the European Space Agency (ESA), semiconductor manufacturers, and the aerospace industry.

## OUR EXPERIENCE - OUR SERVICE

Seibersdorf Laboratories are a test service provider for total ionizing dose (TID), displacement damage (DD) and single event effect (SEE) testing. Our experts develop experimental and numerical methods investigating all kinds of radiation effects in components and systems applied in various radiation fields. We offer expert services in radiation hardness assurance of components and systems compliant with EN ISO/IEC 17025 for the European industry, nuclear medicine and for academic research institutes:

- Radiation hardness assurance testing according to ECSS, ESCC and MIL-STD (TID, DD, SEE)
- Full service from test plan definition to final test report
- Access to all relevant radiation sources: Co-60 gamma photons, X-rays, protons, neutrons, heavy ions, lasers, etc.
- In-house accredited Co-60 TID test facility (TEC-Laboratory)
- In-house state-of-the-art laser testing laboratory for SEE testing and radiation analysis
- Radiation environment definition & simulation
- EMC Testing
- Consulting services

## WHY RADIATION HARDNESS ASSURANCE (RHA)

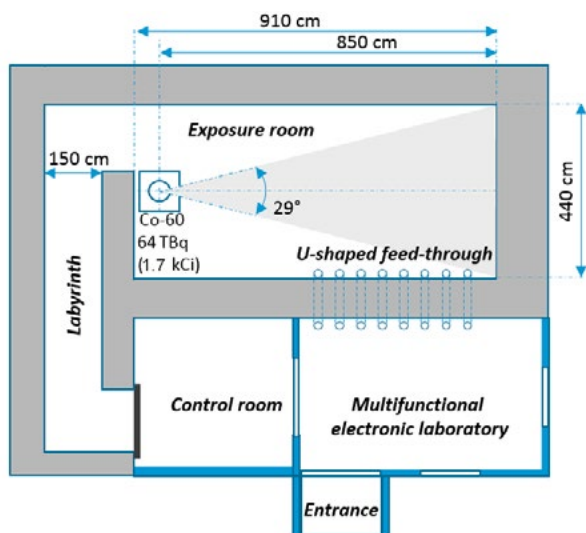
Radiation Hardness Assurance (RHA) is essential due to the susceptibility of electronic components and systems to degradation in electrical performance when exposed to ionizing radiation. As component structures continue to shrink, their susceptibility to radiation increases, underscoring the critical need to ensure uninterrupted functionality. In addition, the increasing relevance of cosmic radiation effects on the Earth's surface emphasizes the need for stringent RHA measures.

These measures play a critical role in ensuring the reliability of equipment used in a variety of industries, including aerospace, nuclear medicine, automotive and various terrestrial applications. To qualify components and systems for use in sensitive environments, they must pass specific test procedures defined by international bodies such as the European Cooperation on Space Standardization (ECSS).

## OUR MODERN EQUIPPED FACILITIES

Specifications of our accredited TEC-Laboratory:

- 24/7 Cobalt-60 TID Gamma Irradiation Testing Services
- Compliance with ESCC-22900, MIL-STD-750 and ECSS standards
- Support for ESA standard and low dose rates 50 Gy/h (5 krad/h) - 0.3 Gy/h (30 rad/h)
- Spacious exposure room
- Large homogeneous field size
- Economical long term low dose rate TID testing (ELDRS)
- Automatic data logging of dose, dose rate, temperature, humidity, and atmospheric pressure
- Traceable dosimetry for all setups
- Multifunctional electronic laboratory for remote or in-situ electronic measurements



Overview TEC-Laboratory: 24/7 testing service for total ionizing dose exposure

Additional facilities and services:

- SEE laser testing facility
- Cobalt-60 gamma irradiation facility (18 Gy/h - 0.2 Gy/h)
- Access to high dose rate Cobalt-60 exposure (ca. 1.5 kGy/h)
- 320 kV X-ray unit with radiation qualities compliant with ISO and IEC standards (<10 Gy/h)
- 160 kV X-ray unit as used for diagnostic radiology (<10 Gy/h)
- 60 kV soft X-ray unit (<100 Gy/h)
- Access to 10 MeV electron exposure facility (10 Gy/s)
- Access to protons and heavy ions for DD and SEE testing
- Multifunctional electronic laboratory with state-of-the-art equipment and industrial parameter analyzers
- Versatile mechanical workshop for 3D printing and for the development and population of irradiation and test boards
- High performance computing for rapid Monte Carlo simulations (FLUKA, Geant4, MCNPX, PHITS)

## ACCREDITATION & QUALITY STANDARDS

- EN ISO/IEC 17025 Accredited Testing Laboratories No. 312
- ESCC and MIL-STD radiation hardness testing
- ISO/IEC 27001 Security certified
- EN ISO 9001 Quality Management Certification
- Accredited Verification Laboratory No. 554
- Accredited Calibration Laboratory No. 612

## WHAT WE CAN DO FOR YOU

We are your partner in radiation exposure testing of your systems and components in various radiation fields:

- TID, DD and SEE radiation testing compliant with ECSS, ESCC and MIL-STD
- Accredited exposure for TID testing
- SEE laser testing
- Silicon wafer radiation exposure testing
- Characterization of your electronic components and systems
- Manufacturing of irradiation and test boards according to customer specifications
- Experimental and numerical investigations of radiation effects and shielding
- Consulting services



## CONTACT

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