

SEIBERSDORF  
LABORATORIES



FREQUENTLY ASKED SOLUTIONS



**RADIATION HARDNESS:  
ACCREDITED TESTING LABORATORY**



# Radiation Hardness Assurance: Accredited Testing Laboratory

Seibersdorf Laboratories is 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 like the European Space Agency (ESA), semiconductor manufacturers, and the aerospace industry.

## OUR EXPERIENCE - OUR SERVICE

Seibersdorf Laboratories develops 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:

- ESCC and MIL-STD Radiation Hardness Test Services
- 24/7 Total Ionizing Dose (TID) Testing
- Total Non-Ionizing-Dose (TNID) and Single Event Effects (SEE) Testing
- Development and Fabrication of Irradiation and Test-Boards

Seibersdorf Laboratories has currently 160 employees offering top-level laboratory services and analyses in the fields of ionizing and non-ionizing radiation, laser, LED and lamp safety, electromagnetic compatibility, high-frequency engineering as well as chemical and forensic analyses.

## WHY RADIATION HARDNESS ASSURANCE (RHA)

Electronic components and systems show degradation in their electrical performance when exposed to ionizing radiation. Due to the increasingly diminishing component structures radiation sensitivity is increasing. Effects caused by cosmic radiation on the earth's surface become more and more relevant. Radiation hardness assurance measures are needed to guarantee **proper functionality of devices** used in

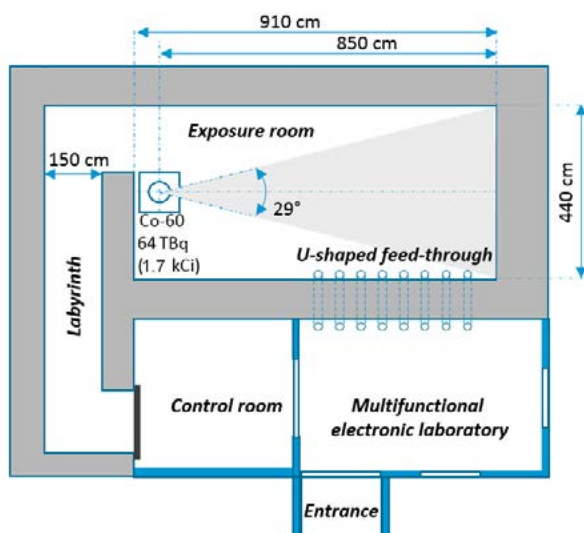
- Aviation & Space
- Nuclear Medicine
- Automotive and other terrestrial applications

Electronic components and systems that are to be used in sensitive areas need to be qualified with respect to their radiation resistance. The corresponding test procedures are defined by international organizations such as the European Cooperation on Space Standardization (ECSS).

## OUR MODERN EQUIPPED FACILITIES

Specifications of our accredited TEC-Laboratory:

- 24/7 Cobalt-60 gamma irradiation testing services
- ESA's standard and low dose rates: 36 rad/h - 3.6 krad/h
- Spacious exposure room
- Wide homogeneous field size
- Economic long-term low dose rate TID testing (ELDRS)
- Automatic data logging of all source conditions, temperature, humidity and air-pressure
- Traceable dosimeter system for each experiment
- Attached multifunctional electronic laboratory



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

Additional facilities and services:

- Cobalt-60 gamma irradiation facility (50 µGy/s - 5 mGy/s)
- Access to high dose rate exposure with Cobalt-60 (500 mGy/s)
- 320 kV X-ray unit with radiation qualities compliant with ISO and IEC standards (< 3 mGy/s)
- 160 kV X-ray unit as used for diagnostic radiology (< 3 mGy/s)
- 60 kV soft X-ray unit (<30 mGy/s)
- Access to 10 MeV electron exposure facility (10 Gy/s)
- Collaboration with proton and heavy ion testing facilities for TNID and SEE testing
- Multifunctional electronic laboratory with standard electronic devices and industrial component parameter analyzer
- Versatile electro-mechanical workshop for development and fabrication of printed circuit boards (PCB)
- 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
- ESD compliant with EN 61340-5-1
- 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:

- 24/7 service for total ionizing dose (TID) exposure compliant with EN ISO/IEC 17025, ESCC, and MIL-STD
- Silicon wafer radiation exposure testing
- X-Ray exposure testing
- Total non-ionizing-dose (TNID) and single event effects (SEE) testing compliant with ESCC and MIL-STD
- Industrial parameter analysis of your components and systems
- Irradiation and test boards manufactured in-house according to customer specifications
- Experimental and numerical investigations of radiation effects and shielding



## CONTACT

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