

RADIATION HARDNESS ASSURANCE

WHY RADIATION HARDNESS ASSURANCE?

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).

MAKE US YOUR PARTNER!

Seibersdorf Laboratories provide testing services for Total Ionizing Dose (TID), Displacement Damage (DD) and Single Event Effects (SEE). Our team of experts is dedicated to developing both experimental and numerical methods to thoroughly investigate radiation effects on components and systems in various radiation fields.

Our mission is to provide expert radiation hardness assurance services for components and systems, fully compliant with all relevant test standards such as ECSS, ESCC and MIL-STD and accredited to EN ISO/IEC 17025. We serve various sectors including the European (space) industry, nuclear medicine and academic research institutes.

Our vision is to become your primary partner for radiation hardness testing of your systems and components and to support you with advanced numerical investigations tailored to your specific radiation-related challenges.



CONTACT

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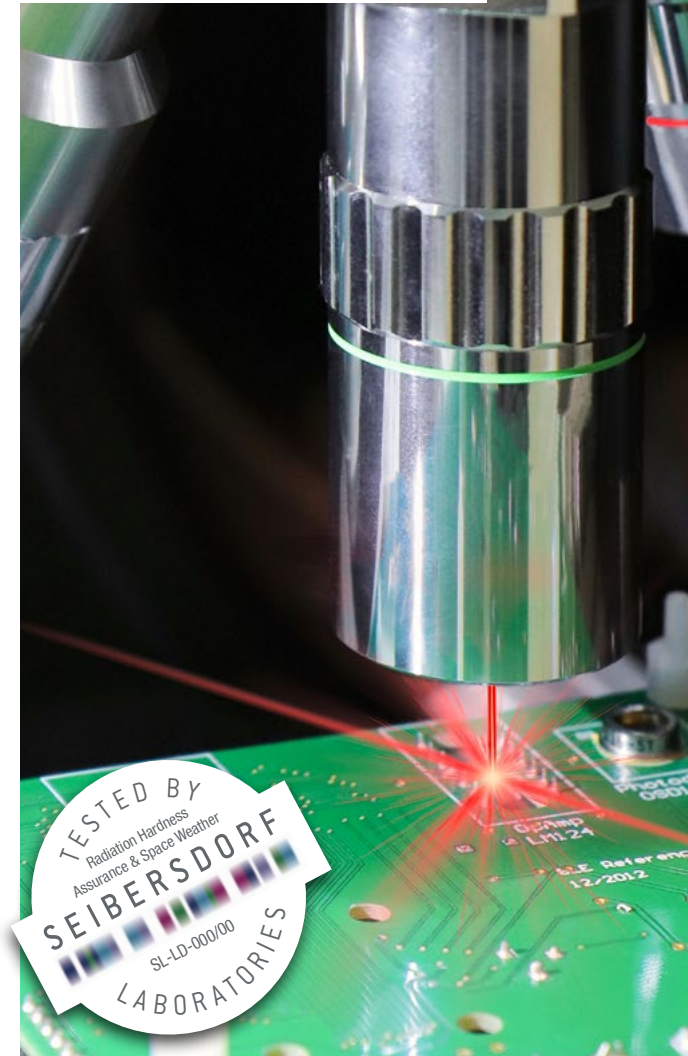
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Studies supported by:



SEIBERSDORF LABORATORIES

FREQUENTLY ASKED SOLUTIONS



RADIATION HARDNESS ASSURANCE

SEE LASER TESTING

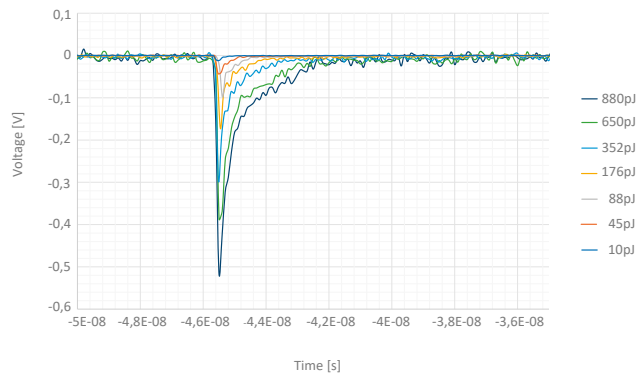
SEE LASER TESTING

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Laser testing involves the use of high-energy laser pulses to replicate the effects of ionizing radiation on electronic devices. These laser pulses generate localized charge carriers within semiconductor materials, simulating the ionization events caused by energetic particles in space or other radiation-rich environments.

Improve your Single Event Effect (SEE) testing:

- Create SEE with a pulsed laser source
- Gain access to spatial resolution and SEE mapping not available with traditional heavy ion testing
- Monitor destructive and non-destructive events such as SEL, SET, SEU, etc.
- High accessibility & immediate results allows faster development cycles
- Precise analysis of the most vulnerable regions within your circuits
- Validate the effectiveness of radiation-hardness designs



Single Event Transient (SET) waveforms of an electronic device encountered at different LETs realized by varying laser energies. Our SEE laser testing methodology provides invaluable insight into single event effects (SEE) and ensures robust system integrity for mission-critical applications.

LASER TESTING FACILITY SEIBERSDORF

Your Solution for SEE Testing:

- 1064nm, 30ps, 1.2 μ m size laser pulses for SEE generation
- 2.5 - 8 GHz, 4-channel oscilloscope for data acquisition
- Selectable energy options and LET calculation
- Live imaging of the Device Under Test (DUT)
- Motorized XY translation stage for effortless automatic screening
- Lateral resolution of 100 nm
- Numerous scanning modes for versatile testing
- Live visualization of data acquisition and scanning progress
- Comprehensive data visualization options including heat maps, waveforms, and cross-section curves
- Seamless integration of user test set-ups via TCP/IP interface



QUALITY STANDARDS

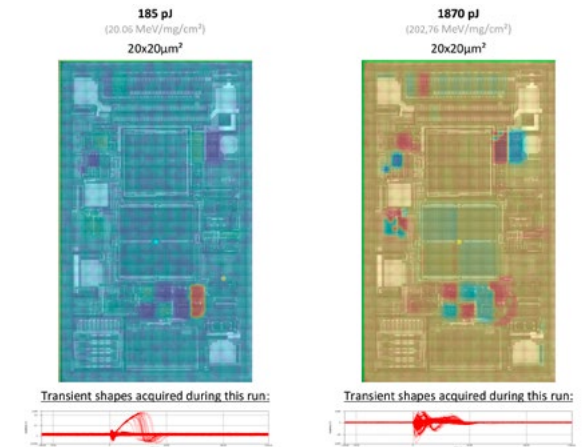
- ISO/IEC 27001
Information Security Certification
- EN ISO 9001
Quality Management Certification

EXPLORE LASER TESTING APPLICATIONS

SEE laser testing is an excellent tool for assessing the radiation tolerance of electronic components and systems across diverse applications. Its unique features seamlessly complement traditional heavy ion testing methods, offering crucial spatial information, real-time feedback, and unparalleled accessibility - all in a swift and effortless manner.

Typical applications include:

- Part screening for both radiation-hard and COTS components
- Accurate event localization
- Identification of sensitive nodes
- Screening for reliability
- Verification of radiation-hardened circuits
- Designing radiation-hardened electronics
- Conducting mechanism studies
- Validating and calibrating models
- Testing for lot-to-lot variations
- Mapping memories
- Fault injection tests



Single Event Effect Transient (SET) scan of an operational amplifier's full die, displaying transient amplitudes via a color map. Conducted with varied laser energies for low and high Linear Energy Transfer (LET), the assessment provides crucial insights into the device's radiation tolerance for enhanced system design.