

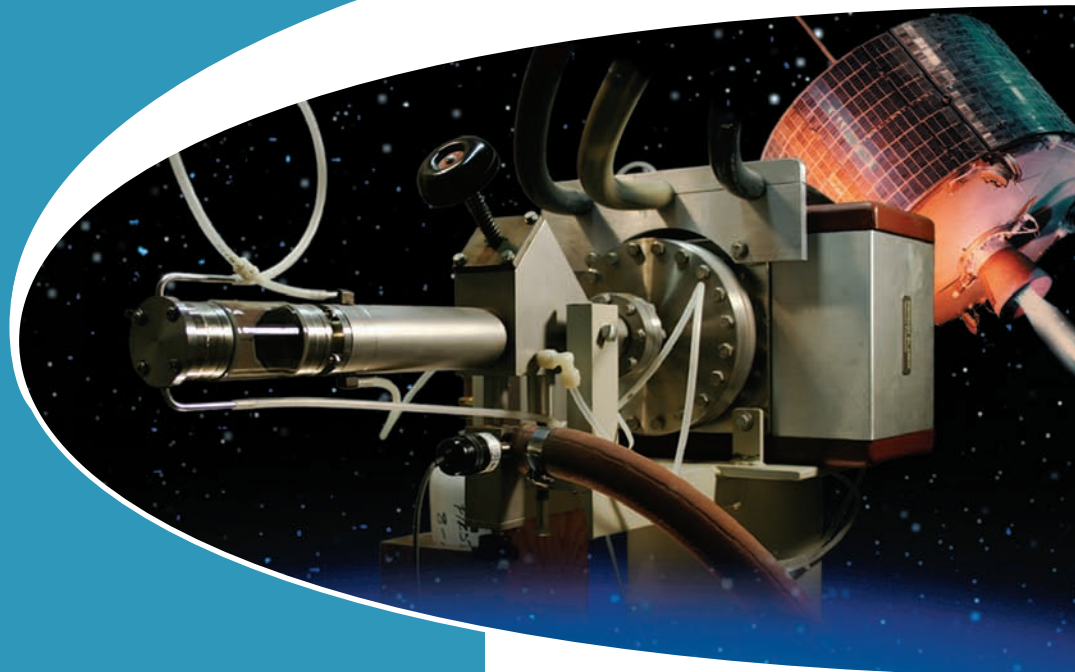


**MIL-STD Radiation  
Effects Test Services**

**Device Screening and  
Element Evaluation**

**Device Preparation for  
Single Event Effects  
Testing**

**Quick-Turn Prototype  
IC Assembly**



**Radiation Testing  
and Support**

# Comprehensive radiation effects test and support



Aeroflex RAD is certified by DLA for radiation testing to both MIL-STD-750 and MIL-STD-883 and own and operate a full suite of radiation and electrical test equipment. Aeroflex RAD operates as an independent division to maintain the integrity for customers that may have company sensitive products and information. By joining Aeroflex, the Aeroflex RAD Division now has the added advantage of Aeroflex's corporate infrastructure to further assist customers in meeting the demanding and increasing requirements of HiRel, Military, and Space Flight programs. – Joseph Bennedetto, VP, Radiation Technology

## MIL-STD Radiation Effects Test Services

- Total Ionizing Dose (TID) RLAT (50 to 300 rads/sec)
  - MIL-STD-883 TM 1019, Cond. A
- TID ELDRS (10 to 100 mrad/sec)
  - MIL-STD-883 TM 1019, Cond. D, ESA/SCC22900
- Prompt dose
  - MIL-STD-883 TM 1020 and 1021
- Neutron SEE
- Heavy ion SEE (SEL, SEU and SET)
  - EIA/JESD 57, ASTM F1192
- Proton: Heavy Ion SEE
- Cryogenic FPA testing (25 K)

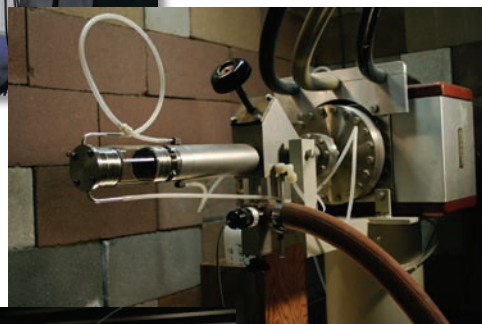
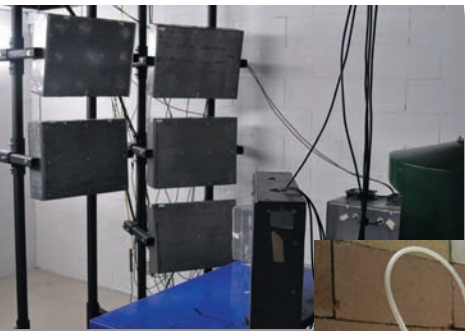
## Device Screening and Element Evaluation

Aeroflex RAD offers comprehensive screening services for your flight devices, lot conformance, and individual die element evaluation.



### Screening Test Method Capabilities

Test Description	MIL-STD Test Methods	
	883	750
Adhesion of Lead Finish	2025	n/a
Bond Strength	2011	2037
Burn-in	1015	1039
Constant Acceleration	2001	2006
Die Shear	2019	2017
External Visual	2009	2071
Hermeticity	1014	1071
Internal Visual	2010	2072
Internal Water Vapor	1018	1018
Lead Integrity	2004	2036
Lid Torque	2024	n/a
Mechanical Shock	2002	2016
Moisture Resistance	1004	1021
Physical Dimensions	2016	2066
PIND	2020	2052
Radiography X-ray	2012	2076
Resistance to Solvents	2015	1022
Salt Atmosphere	1009	1041
Solderability	2003	2026
Steady State Life	1005	1026
Temperature Cycling	1010	1051
Thermal Shock	1011	1056
Vibration Variable Frequency	2007	2056



## Device Preparation for Single Event Effects Testing

Preparation for Single Event Effects (SEE) Testing can be quite demanding. Aeroflex RAD can significantly lessen these demands by using Aeroflex RAD proprietary processes and techniques that simplify this task.

Backside thinning to 35 $\mu$ m allows for SEE testing at TAMU or Berkeley without repackaging of ICs.

### Finished Package Backside Thinning

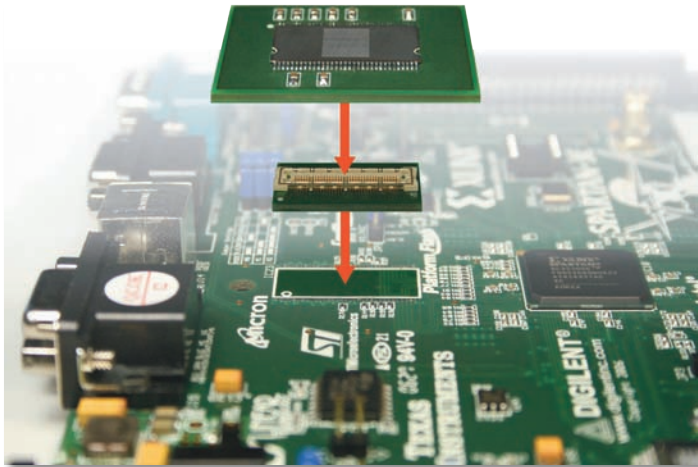
- Package backside thinning to 35 $\mu$ m  $\pm$ 5 $\mu$ m
- Custom PC board design in preparation for SEE Testing
- Custom DUT Socket Solutions for SEE Testing of multiple interchangeable ICs for at-speed testing on a test board

### Die Thinning

- Die thinning is available as required to any thickness ( $\pm$ 5 $\mu$ m)

### Die Extraction / Repackaging

- When package backside thinning is not a solution, we routinely perform die extraction and repackaging in preparation for SEE Testing
- Custom PC board design for SEE testing is available



## Quick-Turn Prototype IC Assembly

Aeroflex RAD offers the following services: Quick-Turn Prototype IC Assembly in ceramic, etched out plastic, COB and flip chip.

### Quick-Turn Prototype IC Assembly Capabilities

- Dicing, Die Visual and Die Attach
  - Wafer Dicing (up to 12inch wafers)
  - Visual Inspection (50-500X)
  - Conductive and non-conductive epoxy die attach
  - Silver Glass and Eutectic die attach
  - Flip Chip
- Wirebond, Encapsulation and Marking
  - Gold and Aluminum Wirebond (to 35 $\mu$ m pitch)
  - Epoxy, Solder, and Glass Frit Lid Seal
  - Dam and Fill (Plastic Encapsulation)
    - Plastic Equivalent Devices
    - COB Glob Top
  - Package Ink Marking or Laser Marking
- Package Options
  - Multi-chip / Stacked Modules, Chip-On-Board (COB), and Custom Substrates
  - Ceramic Packages Including: BGA, PGA, J-Lead, Flat Pack, QFP, Sidebrazed, Cerdip and others
  - Etched Cavity Plastic Packages Including: J-Lead, QFP, SOIC, TSSOP, QFN /MLF and others



Aeroflex RAD now offers radiation test services for customers and programs outside of the US using test methods compliant to either MIL-STD-883 or ESCC Basic Specification No. 22900. Our ELDRS cell can run any dose rate from 1 to 100mrad(Si)/s to match the mission requirement.

Key benefits:

- Typical four week cycle time for RLATS
- Full complement of test capabilities
  - Neutron
  - ELDRS
  - TID high dose
  - Electrical test
  - Legacy international mission support
  - Test hardware in place for most device types

## Quality

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- DSCC Certification for MIL-STD-883/750 testing
- ISO 9001:2008 Certification

## Roadmap

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- DSCC QML MIL-PRF-19500
- AS9100 Certification
- Expanded memory testing for DDR2 and DDR3
- High speed testing for RF components
- Third Cobalt-60 source



Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

WEB SITE [www.aeroflex.com/RAD](http://www.aeroflex.com/RAD)  
TELEPHONE 1-719-531-0800  
E-MAIL [info-ams@aeroflex.com](mailto:info-ams@aeroflex.com)