Assembly and Screening Overview

Aeroflex RAD, Inc. dba Cobham Semiconductor Solutions

April 2015

Presenter:

Commercial in Confidence
Cobham RAD – New Location...

5030 Centennial Blvd., Colorado Springs, Colorado 80919
(719)531-0800, www.aeroflex.com/RAD
Overview

• Building Layout
• Assembly & Screening Services Highlights
• Screening Flow for Flight Component Application
• DLA Lab Suitability Test Methods
• Photos of Assembly & Screening Areas/Equipment
• Cycle Times
• Customer List
Facilities Overview
Facilities Overview – Assembly & Screening

Krypton-85
F/G Leak Detection

Assembly & Screening Area

Class 100 Clean Room Assembly & Screening

Aeroflex RAD, Inc.
Assembly/Screening Overview

• Cobham RAD has established a highly specialized manufacturing capability to support radiation testing, internal product line requirements and to offer screening and assembly services to our clients.
  – Quick turn assembly for prototypes
  – Die element evaluations/qualifications
  – Class 100 Clean room for flight units
  – Assembly, electrical test, screening for flight hardware application
  – Up-screening of devices for flight hardware applications
  – MIL-STD screening services
  – Quality Conformance Inspection (QCI) Testing
  – Device assembly, device thinning for radiation effects testing
• DLA suitability and compliance to MIL-PRF-38535, MIL-PRF-19500, MIL-STD-883, and MIL-STD-750
Example Class S Flow

1. **Wafer Lot Acceptance**
   Method 5007

2. **Electrical Test**

3. **Incoming Inspection**

4. **Assembly**

5. **Non-Destruct Bond Pull**
   Method 2023

6. **Internal Visual**
   Method 2010, Cond. A

7. **Seal**

8. **Seal Test**
   Method 1014

9. **Serialization**

10. **Temp Cycle**
    Method 1010, Cond. C

11. **Constant Acceleration**
    Method 2001, Cond. E

12. **PIND**
    Method 2020, Cond. A

13. **Radiography**
    Method 2012, Y1 View

14. **Lead Trim**

15. **Pre Burn In Electrical**

16. **Static Burn In**
    Method 1015

17. **Interim Post Burn In Electrical**

18. **Dynamic Burn In**
    Method 1015

19. **Post Burn In Electrical +25°C**

20. **Post Burn In Electrical Hot**

21. **Post Burn In Electrical Cold**

22. **PDA Calculation**

23. **Delta Calculation**

24. **Seal Test**
    Method 1014

25. **Groups A, B, D & E**

26. **QCI Testing**

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Cobham plc
# Assembly/Screening Test Method Status

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

* = other divisions/labs
Green background = DLA Lab Suitability

Lab Suitability - Certified
Wafer Dicing: Mount, Saw and Wash
Class 100 Assembly Clean Room

Assembly & Screening
Krypton 85 Fine & Gross Leak Detection
Digital Real Time X-Ray
Burn In and Life Test
Temperature Cycle and PIND
Mechanical Shock and Variable Frequency Vibration
Cycle Times

- Quick Turn Assembly Engineering Build
  - 5 day standard; 2-3 day expedite

- Radiography, Leak Test, PIND, etc
  - 5 day standard; 2-3 day expedite

- Device thinning
  - 5 day standard; 2-3 day expedite

- Device Upscreening
  - Based on SOW and required NRE

- Class S Assembly, Screening and QCI
  - Based on SOW and required NRE
Customer List

- Aeroflex Plainview
- Aeroflex Metelics
- Atmel Corporation
- Ball Aerospace
- BAE Systems
- Boeing
- Broadreach Engineering
- Data Device Corporation
- Exelis
- FLIR Systems

- Global Circuit Innovations
- Hittite Microwave Corporation
- Honeywell
- Micropac Industries
- Northrup Grummann Corporation
- Raytheon
- SEAKR Engineering
- TeleCommunication Systems, Inc
- Tesat-Spacecom
- VPT, Inc.
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