Your Partner Throughout the Product Life Cycle

March 7, 2013
No Escort Area and Emergency exits

- Emergency Exits
  - Follow DfR Employee

- No Escort Area

- We are Here
Who is DfR Solutions?
The Industry Leader in Quality-Reliability-Durability of Electronics

Fastest Growing Companies in the Electronics Industry
- Inc Magazine

Best Design Verification Tool
- Printed Circuit Design

2012 Global Technology Award Winner
Working with Customers Throughout the Product Life Cycle

- Applied Research
- Simulation and Modeling
- ‘ilities’ (DfR, DfM, DfT, … DfX)
- Supplier Audits
- Qualification
- Test Plan Development
- Root-Cause Analysis
Expertise and Experience in All Technologies

- LCDs
- Power Supplies
- Chassis
- Capacitors
- Connectors
- Software/Firmware
- Batteries
- GPUs
- PCBs
- Microprocessors
- Fans
- Hard Drives
- LEDs
Unique and Powerful Combination

Reliability Physics + Commercial Experience + Onsite Laboratory = Unparalleled Results
Engaged with All Levels of the Supply Chain
Subject Matter Experts in Many Areas…

- DfR / DfM / DfT / DfS..... DfX
- Finite Element / Fluid Dynamics
- Physics of Failure Modeling
- FMEA / FTA
- Failure Analysis and Root Cause (8D, 5 Why, Red X)
- Circuit Analysis
- High Speed Digital, Analog and Power Supply Design
- Material Characterization
- PCB / PCBA Onsite Audits
- Pottings and Coatings
- Software Risk Mitigation
- ...and much more!
Lab and Test Capability

Over 25 environmental chambers
- Temp Cycling, Temp/Humidity
- Walk In
- -200°C to 1500°C
- Vibration + Temperature
- Mech Shock / Drop
- Bend Testing (Cyclic & Overstress)

Component Testing
- Capacitors (Electrolytic, Ceramic, Tantalum)
- Optocouplers
- Fan
- Power Supplies
- CPU
- Memory
- Drives (Disk and Solid State)

Material and Failure Analysis
- Microscopy (Stereo, Optical, Electron)
- NDE (X-ray, Acoustic, Infrared)
- Surface Analysis (XRF, EDS, FTIR)
- Ion Chromatography
- Mechanical Testing (Tension, Compression, Shear, etc.)
- Cross-Sectioning
- Delidding
- Decapsulation
- SQUID Microscopy
Results = 600 Satisfied Customers Over Eight Years
# Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>8:30 AM</td>
<td>Registration/Breakfast</td>
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<tr>
<td>9:00 AM</td>
<td>Introduction to DfR Solutions</td>
<td>Craig Hillman</td>
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<tr>
<td>9:15 AM</td>
<td>Part Quality: How to Test, When to Test, and What Does It All Mean?</td>
<td>Greg Caswell / Ed Wyrwas</td>
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<td>10:00 AM</td>
<td>Break/Facility Tours</td>
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<tr>
<td>10:30 AM</td>
<td>How to Develop an Accelerated Life Test: Using Physics of Failure</td>
<td>Cheryl Tulkoff / Randy Schueller</td>
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<tr>
<td>11:15 AM</td>
<td>Break/Facility Tours</td>
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<tr>
<td>11:45</td>
<td>Lunch</td>
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<tr>
<td>12:30 PM</td>
<td>Sherlock Automated Design Analysis: How It Fits Into Your Design Process</td>
<td>Tom O'Connor / Ed Dodd</td>
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<td>1:30-3:30 PM</td>
<td>Breakout Sessions with DfR Senior Staff to Demonstrate Sherlock</td>
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Who Knows What

- **Nathan Blattau**: Mechanical and Thermal Design, Stress Analysis, and Testing
- **Greg Caswell**: LED Packaging, Potting and Conformal Coating Selection, PCB and PCBA manufacturing, MEMS Packaging
- **Craig Hillman**: Passive Component Technology, Tin Whiskers, Contamination, Nanocoatings, Design for Reliability, Physics of Failure
- **Jim McLeish**: Automotive and Severe Environment Electronic Lifecycle (Design, Test, Use), PCB and PCBA manufacturing, Physics of Failure, Root-Cause Analysis, DFMEA
- **Petri Savolainen**: Mobile Electronic Lifecycle (Design, Test, Use), Display Technology, Solder and Adhesive Technology, Electronics Manufacturing
- **Randy Schueller**: Consumer Electronic Lifecycle (Design, Test, Use), Electronic Materials, PCB Manufacturing, Connectors, Corrosion, Environmental Legislation, MEMS Fabrication
- **Gil Sharon**: Semiconductor Packaging, Mechanical and Thermal Design, Stress Analysis, and Testing
- **Walt Tomczykowski**: Reliability at System Level, Reliability Management, Avionics Lifecycle (Design, Test, Use), Government Requirements and Specifications
- **Cheryl Tulkoff**: Design for Manufacturability, PCB and PCBA manufacturing, Root-Cause Analysis, Semiconductor Manufacturing
- **Ron Wunderlich**: Power and Analog Designs, Power Components, EMI/EMC
- **Ed Wyrwas**: Software Security, Complex Integrated Circuits, Solid State Drives