

**1<sup>st</sup>** *IPC Certified  
QML Company*

Your Most  
Trusted EMS  
Provider

Aerospace  
Defense  
Medical  
Industrial

**IEC**   
electronics  
Absolutely. Positively. Perfect and On-Time™

***ERAI – Supply Chain Security***

2015

# Agenda

- ***Introduce the presenters for today***
- ***Mark Northrup IEC Electronics (EMS)***
- ***Lori Leroy Global IC Trading Group, Inc. ( PD)***
  
- ***EMS Supply Chain Security Timeline***
  - ***Past***
  - ***Present***
  - ***Future***

# IEC EMS at a glance...

## **“High Reliability”**

- *Where performance-on-demand is critical and downtime is not tolerated*

## **Specializing in**

- *High complexity custom electronics, often integrated into a vertical solution*
- *Specializing in low to moderate volumes, high mix*

## **Our customers**

- *Industry leaders in Medical, Industrial, Aerospace, Defense, & Space Flight*



# Advanced Aerospace, Defense & Space Flight Capabilities

## What does IEC bring?

- Experience with multiple DoD Primes
- Dedicated factories for Aero-Defense
- Clean Room Manufacturing
- NASA certified operators
- On-line customer portal
- Obsolescence mgt & RoHS conversion
- Testing Labs – Component Risk Mitigation
- Proactive, competitive cost model



# Aerospace, Defense & Space Flight

## Experience

- Secure communications
- Missile launch platforms
- Surveillance systems
- UAV's
- Handheld tactical radios
- Shuttle launch platforms
- Rocket guidance
- Wearable electronics
- Missile Firing Modules

49%

49%



communications



# Global IC Trading at a glance...

## ***Quality and Customer Service Driven***

- *Founded in 2000 based on commitment to quality and customer service*
- *Mature Quality System with Industry's most desired quality certifications*
- *Recognized early on the radical shift in the industry regarding the inspection of product*

## ***Specializing in***

- *Obsolescence and long lead time products*
- *Full inspection including X-ray, XRF, Solderability and Decap*

## ***Our customers***

- *Quality conscience OEMs and CEMs in a variety of industries including medical, industrial and aerospace*



# Your Independent Distribution Partner

## What does Global IC Trading bring?

- Superior supplier evaluation, selection and purchase processes
- Detailed incoming inspection process utilizing a very robust sampling plan
- Lab equipment / Highly trained inspectors incorporating the most current inspection methods
- Numerous quality certifications
- Commitment to customers and quality throughout the entire organization
- Custom integrated software system
- Over 20 years of industry experience



# The Past

## **+2007/2008**

- X-ray equipment
- Decapsulation equipment

## **+2009/2010**

- Intensive training
  - CTI Workshops
  - IDEA 1010
- XRF Equipment
- ANSI S20.20 ESD Certification
- AS9120 Certification
- Detailed Sampling Plan





# The Past

## **+2011/2012**

- Solderability Equipment / Training**
- CCAP Certification**

## **+Significant dollars and time invested in:**

- Equipment purchases**
- Certifications**
- Research / Training / Conferences**
- Memberships / Affiliations**
- Procedural changes - documentation**
- AS9120 Certification**

## **+Good return on investment**

- Increase in capabilities**
- Increase in revenue**



# The Present

## +Certifications

- ISO 9001
- AS9120-A
- ANSI ESD S20.20
- FAA AC-00-56
- CCAP

## +Equipment / Capabilities

- Multiple high powered microscopes
- X-Ray
- XRF
- Heated Solvents
- Decapsulation
- Solderability
- Sampling Plan
- Inspection time; Inspection time; Inspection time!



# The Present

## **+Partnered with DRTL**

- Equipment**
- Capabilities**
- Certifications**

**+Is it enough?**

**+What's Next?**

**+AS6081 when dealing with government primes?**



# EMS Counterfeit Parts Avoidance Policy



**MAT-084G**

## **IEC Counterfeit Parts Avoidance Policy**

### **1.0 Purpose**

**1.1** This policy document is intended to raise counterfeit component awareness and to prevent the potential of counterfeit components from entering into IEC supply chain. This policy includes the processes used for risk mitigation, disposition, and reporting of counterfeit parts.

### **2.0 Scope**

**2.1** Any electronic component whose material, performance, or characteristics are knowingly misrepresented by the vendor, supplier, distributor, or manufacturer is considered a counterfeit component. Examples of counterfeit components include:

- Parts which do not contain the proper internal construction (die, manufacturer, wire bonding, etc.) consistent with the ordered part
- Parts which have not successfully completed the Original Component Manufacturer's (OCM)'s full production and test flow, but are represented as completed product.
- Parts which have different package style or surface plating/finish than the ordered parts
- Parts sold as upscreened parts, which have not successfully completed upscreening.
- Used/salvaged parts represented as new product
- Parts sold with modified labeling or markings intended to misrepresent the part's form, fit, function, or grade.

### **3.0 Associate Material**

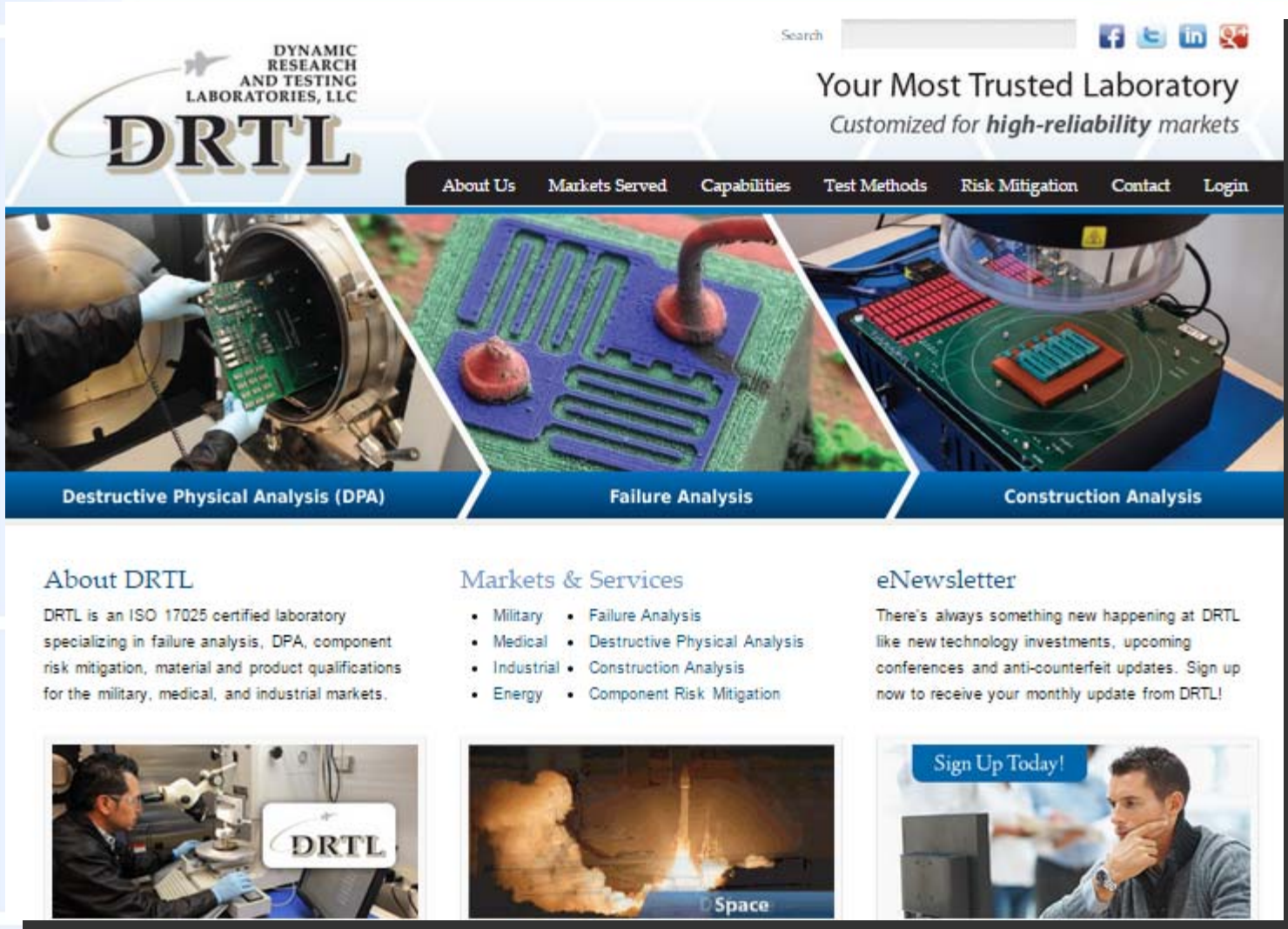
- 3.1** SAE/AS5553 Standard
- 3.2** IDEA1010 Standard (Independent Distributors of Electronics Association)
- 3.3** Mil-Std-1580 for DPA (Destructive Physical Analysis)
- 3.4** Mil-Std-883
- 3.5** Mil-Std-750
- 3.6** GIDEP- Government-Industry Data Exchange Program
- 3.7** AS-6081
- 3.8** AS-6171
- 3.9** DFAR 252.246-7007



# EMS Detection of Counterfeit Electronic Components

- + **Indents**
- + **Countries of Origin**
- + **Texture**
- + **Blacktopping**
- + **Marking Permanence**
- + **Imperfections**
- + **Sanding**
- + **Re-attached Leads**
- + **Incorrect Marking**
- + **Logos**

# EMS Testing Services Laboratory



The screenshot shows the homepage of the Dynamic Research and Testing Laboratories, LLC (DRTL) website. The header features the company logo, a search bar, and social media icons for Facebook, Twitter, LinkedIn, and YouTube. The main navigation menu includes links for About Us, Markets Served, Capabilities, Test Methods, Risk Mitigation, Contact, and Login. Below the navigation is a banner with three images: a technician working on a circuit board, a close-up of a circuit board with a red probe, and a circuit board on a test rig. The banner is divided into three sections: Destructive Physical Analysis (DPA), Failure Analysis, and Construction Analysis. The main content area is divided into three columns: About DRTL, Markets & Services, and eNewsletter. The About DRTL section describes the laboratory's ISO 17025 certification and specialization in failure analysis, DPA, and component risk mitigation. The Markets & Services section lists Military, Medical, Industrial, Energy, Failure Analysis, Destructive Physical Analysis, Construction Analysis, and Component Risk Mitigation. The eNewsletter section encourages visitors to sign up for a monthly update. The footer features three images: a technician at a microscope, a space launch, and a man thinking at a computer, with a 'Sign Up Today!' button.

**DYNAMIC RESEARCH AND TESTING LABORATORIES, LLC**  
**DRTL**

Search

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Your Most Trusted Laboratory  
Customized for *high-reliability* markets

About Us Markets Served Capabilities Test Methods Risk Mitigation Contact Login

**Destructive Physical Analysis (DPA)**

**Failure Analysis**

**Construction Analysis**

**About DRTL**

DRTL is an ISO 17025 certified laboratory specializing in failure analysis, DPA, component risk mitigation, material and product qualifications for the military, medical, and industrial markets.

**Markets & Services**

- Military
- Medical
- Industrial
- Energy
- Failure Analysis
- Destructive Physical Analysis
- Construction Analysis
- Component Risk Mitigation

**eNewsletter**

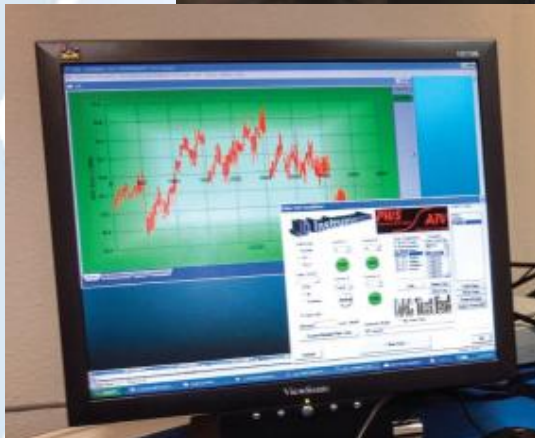
There's always something new happening at DRTL like new technology investments, upcoming conferences and anti-counterfeit updates. Sign up now to receive your monthly update from DRTL!

**Sign Up Today!**

**DRTL**

**Space**

# Failure Analysis(FA) Electrical Test



## Application:

- Gun-mounted lasers & night-vision optics for the Military

## Scope of work:

- Ecliptek Oscillator on PCBA failing intermittently, shutting down customer acceptance testing
- Complex electrical testing over temperature done by DRTL to investigate failures
- Expedited 1-week turnaround

## End Result:

- Failures found to be caused by substandard part
- Now receiving follow on orders as a result of successful 1<sup>st</sup> analysis

## Customer Testimonial

***“Although I hope I never have to use a lab again to investigate a serious issue here, I take comfort in knowing I can expect a solid performance by DRTL if necessary.”***

***- Senior Supplier Quality Engineer , DoD Prime***

# Destructive Physical Analysis (DPA)

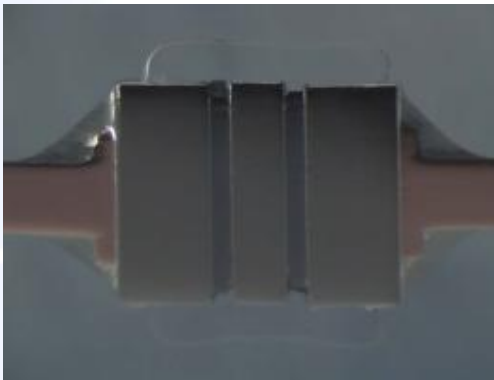
## Mil-std-1580

PASSED



External Visual Inspection

PASSED



Cross-section analysis

### Application:

- Space satellite system

### Scope of work:

- Analyze Microsemi Axial Lead Glass Body Diodes for conformity
- External & internal visual inspection, electrical testing, conformance, gross seal testing, cross - section analysis performed
- Expedited 4-day turnaround

### End Result:

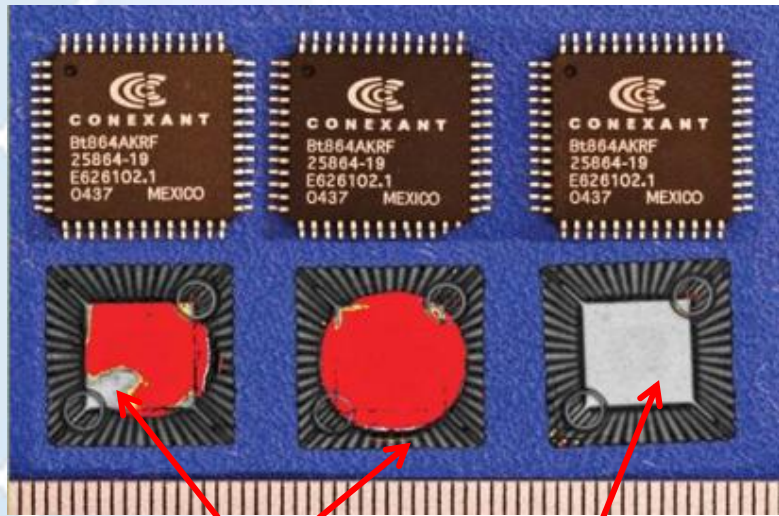
- These devices PASSED DPA requirements
- Customer used authentic PASSED devices to complete order
- Now receiving follow on orders as a result of successful 1<sup>st</sup> analysis

### Customer Testimonial

***“Thank you for completing this “Rush” job and facilitating our production schedule!”  
- Buyer, DoD Prime***



# Suspect Counterfeit (SC)



**Salvaged parts vs. Original**

**Customer Testimonial**  
***“DRTL’s ability to identify salvaged parts is impressive!”***  
***- Buyer, DoD Prime***

## Application

- Ground vehicle display box
- *Conexant Digital Video Encoder* designed for video systems

## Scope of Work

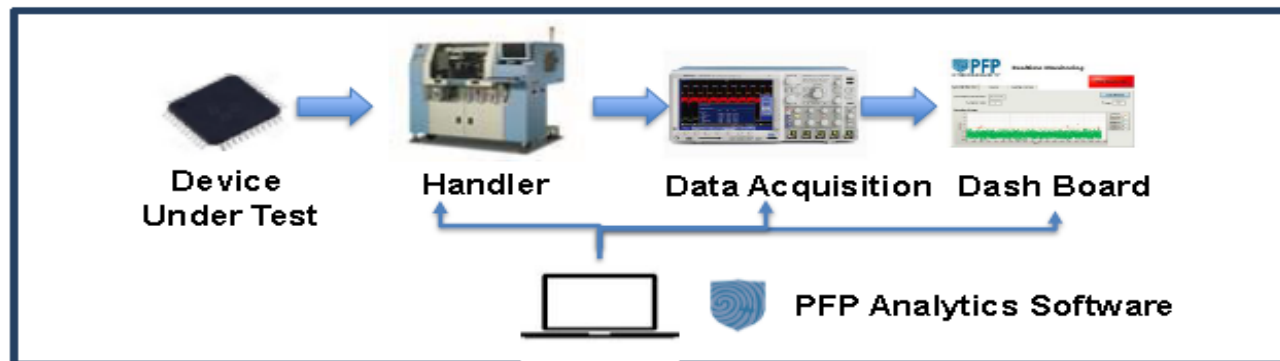
- CRMEDPA requested to mitigate customer assembly build
- Concern about authenticity (***PartFax***)

## End Result

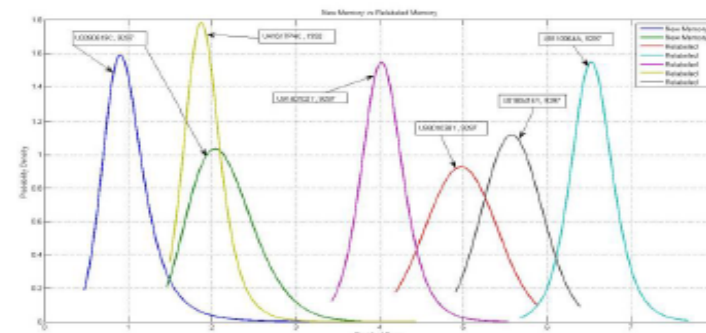
- CSAM testing revealed several of the parts were previously processed
- Temperature excursions resulted in delamination of the part
- Parts deemed as compromised
- Original manufacturer but parts apparently salvaged

# The Future

## How PFP Can Address the Supply Chain Problem - for Counterfeit and Trojan Chips



- **Benefits**
  - **Detect counterfeits**
  - **Detect Trojan chips**
  - **100%**
  - **Fast**



**PFP Identifies New and Used (counterfeit) Chips**

**PFP offers real-time, affordable, process friendly solution**

# Value + Return on Investment



**TBD**

**AS6171 , DLA, MIL-STDs, Certification**

**AS6081, QTSL, QSLD, JESD31D, 625B**

**AS9120, CCAP , DFARS , GIDEP, ERAI**

**X-Ray/Decapsulation/XRF/Electrical/SW**

**ISO 9001, ESD S20.20**

**Microscopes/Lighting  
Training (CTI Workshops; IDEA, Solderability)**



# Conclusion

- **More Equipment**
- **More Onsite Audits**
- **More Certifications**
  
- **What Point Do the Requirements Being Flowed Down No Longer Support a Viable Business Plan?**

