Counterfeit Electronic Parts Mitigation for High Reliability Organizations

SYLLABUS

INSTRUCTOR INFORMATION

Instructor: Anthony J. Bryant

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Availability: Usually available between 12 p.m. and 4 p.m., Mountain Standard Time. You may leave a message anytime.

PROGRAM DESCRIPTION

Counterfeit components can lead to costly and even life-threatening damages in various sectors from healthcare to automotive or aerospace and beyond. It's crucial that any professional in these industries be able to detect, prevent, and mitigate these losses at every turn. This course's comprehensive training will teach you how to tackle the many risks associated with counterfeit electronic parts in mission-critical supply chains.

Led by an expert with over 35 years of experience in aerospace, defense, and semiconductors, this four-week course focuses on the scope of counterfeit electronic parts, how to spot them, and how electronics are safely made. The instructor's dedication to safety and national security comes from their service in the U.S. military, where they witnessed the catastrophic consequences of substandard equipment. Now, he focuses his passion on protecting lives and keeping supply chains strong.

LEARNING AND PERFORMANCE OBJECTIVES

Upon completion, participants will be able to:

- Identify the different types of counterfeit parts and their potential risks
- Develop strategies for mitigating the risks associated with counterfeit parts throughout the supply chain
- Implement best practices for component selection, procurement, and verification
- Understand relevant industry standards and regulations for counterfeit parts mitigation
- Develop a risk assessment and mitigation plan for your organization
- Explore various methods for detecting counterfeit parts, including visual inspection, physical analysis, and electrical testing
- Develop strategies for responding to incidents involving counterfeit parts

- Explore best practices and emerging technologies for secure and sustainable e-waste disposal, emphasizing data security and environmental integrity

COURSE STRUCTURE

The Counterfeit Electronic Parts Mitigation for High Reliability Organizations course provides engaging videos, handouts, and quizzes designed to help you learn, remember, and apply the knowledge and skills you will need to excel in electronic components procurement and authentication. Each module is composed of the components described in Table 1.

- Instructor and participants meet online twice per week from the comfort of their own home.
- Participants can view recorded online sessions to review course content and class discussions.
- Course materials are accessible 24/7 on the new IPC Edge learning management system.
- The course can be accessed on virtually any device with an Internet connection and major web browsers, including Chrome, Firefox, Safari, Edge, and Internet Explorer.

Table 1. Module Components and Description

Module Component	Description
Module Pre-Quiz	Short (3-5 questions) quiz designed to help you identify what you know and what you still need to learn
Module Sections	"Bite-sized" segments of text, videos, graphics, and activities that explain the key points of the Module content and provide opportunities for you to think about how you would apply electronics procurement and authenticity processes
Module Post-quiz	Five to 10-question quiz designed to help you confirm what you know and identify areas that still need work

IPC EDGE LEARNING MANAGEMENT SYSTEM

Take a moment to update your personal profile when accessing the course for the first time. IPC Edge supports the most recent versions of Google Chrome, Firefox, Safari, Internet Explorer, and Microsoft Edge. Courses can be accessed on desktops, laptops, tablets, and mobile phones. Please refer to **Browser Settings** under the **Start Here!** tab on your dashboard to make sure your browser functions seamlessly with the IPC Edge learning management system. If you need further technical assistance, please send an email to certification@ipc.org or call IPC Member Support at +1 847-597-2862.

IPC STANDARDS COVERED (PROVIDED WITH COURSE)

- IPC-610: *Acceptability of Electronic Assemblies*
- IPC-1782: *Standard for Manufacturing and Supply Chain Traceability of Electronic Products*
- IPC-1791: *Trusted Electronic Designer, Fabricator and Assembler Requirements*
- IPC/JEDEC J-STD-001: *Requirements for Soldered Electrical and Electronic Assemblies*
- IPC/JEDEC J-STD-020: *Moisture/Reflow Sensitivity Classification for Non-hermetic Surface Mount Devices (SMDs)*
- IPC/JEDEC J-STD-033: *Handling, Packing, Shipping and Use of Moisture, Reflow, and Process Sensitive Devices*

COURSE SCHEDULE

WEEK 1

Lecture #1: Deceptive Parts - Navigating the Shadowy World of Counterfeit Components

- China and the World Trade Organization
- Definition, types, and forms of counterfeit electronic parts
- High-reliability (hi-rel) electronic components supply chains
- Scope of the problem and impact on mission-critical and life-saving sectors
- Common sources and distribution channels of counterfeit electronic components
- Recognizing characteristics of nonconforming suspect, fraudulent, and counterfeit items

Lecture #2: Securing the Core - Supply Chain Vulnerabilities and Risk Assessment

- Understanding the supply chain
- Counterfeit prevention awareness
- Common entry points for counterfeits
- Supply chain infiltration & products at risk
- Impact of counterfeiting on businesses and consumers
- Potential consequences of using counterfeit parts in mission-critical applications

ASSIGNMENT:

- Week 1 Post-Quiz

WEEK 2

Lecture #3: Protecting Mission-Critical Systems - Procurement Strategies

- Mastering risk assessment & review
- Mastering technical and legal review
- Building strong quoting & contracting
- Identifying high-risk components and suppliers

- Building a counterfeit-resistant procurement strategy
- Warning signs and red flags in high-reliability counterfeit parts

Lecture #4: Safeguarding Mission-Critical Systems - Detection and Verification

- Implementing risk mitigation strategies
- Traceability and chain-of-custody procedures
- Traceability and record-keeping best practices
- Utilizing anti-counterfeiting technologies and markings
- Examining various test methods for part authentication and performance evaluation
- Utilizing databases and other resources for part verification during procurement and authentication
- Identifying potential indicators of counterfeit parts during procurement and performance evaluation

ASSIGNMENT:

- Week 2 Post-Quiz

WEEK 3

Lecture #5: Building Resilience: Proactive Supply Chain Mitigation Strategies

- Implementing best practices for supplier qualification, risk assessment, and chain-of-custody control
- Developing and implementing effective anti-counterfeiting policies
- Training and awareness programs for employees/consumers
- Establishing quality control and inspection procedures
- Using best traceability and record-keeping practices
- Selecting reputable suppliers and distributors
- Vendor audit and verification procedures

Lecture #6: Orchestrating Resilience - Supply Chain Collaboration and Communication

- Leveraging collaborative industry initiatives
- Continuous learning and knowledge sharing
- Communication strategies for counterfeit risk mitigation
- Building collaborative relationships with industry suppliers
- Counterfeit parts avoidance programs and industry standards
- Data sharing and information exchange: enabling transparency and visibility
- Staying up to date on emerging threats, trends, and technology-enabled risk mitigation

ASSIGNMENT:

- Week 3 Post-Quiz

WEEK 4

Lecture #7: Navigating the Threat - Regulatory Compliance and Legal Frameworks

- Managing supplier risk and performance
- Contractual clauses and due diligence procedures
- Regulations and reporting requirements for counterfeit components.
- Global reaction to nonconforming suspect, fraudulent, and counterfeit material
- Understanding relevant regulations and legal frameworks, including anti-counterfeiting laws and product liability concerns
- Leveraging industry expertise, government initiatives, and international standards to combat counterfeiting

Lecture #8: Safeguarding Integrity: Reporting, Quarantine and Disposal of Counterfeit Parts

- Secure quarantine fundamentals
- Effective reporting for mitigation and action
- Best practices for ongoing monitoring and vigilance
- Continuous improvement and incident response protocols
- Responsible e-waste management and regulatory compliance
- Building a culture of quality and integrity within your organization
- Establish a proactive approach to risk mitigation and implementing effective anti-counterfeiting programs

ASSIGNMENT:

- Final Exam

You must achieve a final exam score of 70% or higher to earn a certificate of completion. You are allowed two attempts, and the highest grade is recorded.