

SAE INTERNATIONAL

COUNTERFEIT PARTS AVOIDANCE & DETECTION STANDARDS PANEL DISCUSSION

December 2013

Panel Moderator
Director, Washington Operations
SAE International
www.sae.org



Agenda

- **Understand the landscape of industry standards and documents that applies to counterfeit avoidance & detection**
- **SME's representing the various industry and government committees representing their committee will give a brief description of the scope, purpose, applicability, and which sector of the supply chain and commodities their standard applies**
- **The audience has an opportunity to ask the panelist questions through the question cards distributed in the room**
- **There will be a separate technical session with the panelists to answer the questions on ... in room **XXX**.**

Counterfeit Parts Avoidance & Detection Panellists

Panelist	Committee	Document/Standard
	SAE G-19CI	AS5553
	SAE G-19D	AS6081
	SAE G-19T	AIR6273
	SAE G-19A	AS6171
	SAE G-19AD	AS6496
	SAE G-21	AS6174
	SAE G-19DR	ARP6178
	SAE G-19C	AS6462 & AS6301
	IEC TC-107	IEC 62668-1 & IEC 62668-2
	SAE APMC	EIA-933
	ISO SSM/1/-/1	SemiT-20, ISO 16678
	IDEA	IDEA-STD-1010
	EPRI	EPRI TR-1019163
	iNEMI	Assessment Methodology and Metric Development of Counterfeit Components

SAE G-19 & G-21 Document Proposed Roadmap, October 2013

SAE Counterfeit Avoidance Steering Group

G-19 Counterfeit Electronic Components Committee Oversight

G-21 Counterfeit Materiel Committee Oversight

Auditor Competency (ASxxxx)

Proficiency Test Provider

Certification Body

Test Provider

Original Component Manufacturer

Distributor

Original Equipment Manufacturer/User/MRO

Test Provider

Operator(s) Certified to PT Scheme for Identified AS6171 Test Methods

Authorized/
Franchised

Broker/
Independent

AS6171, Test Methods Standard; Counterfeit Electronic Parts, SAE G-19A

ASxxxx, Compliance Standard or Guide (Includes Audit Checklist) SAE G-19C

ASxxxx, OCM Counterfeit Mitigation Subcommittee. SAE G-19O

ASxxxx, Compliance Standard or Guide (includes Audit Checklist) SAE G-19C

AS6496, Authorized Distributor Counterfeit Mitigation Sub-com. SAE G-19AD

ASxxxx, Compliance Standard or Guide (Includes Audit Checklist) SAE G-19C

AS6081, Counterfeit Electronic Parts Avoidance, ID's. SAE G-19D

AS6301, Compliance Standard or Guide (includes Audit Checklist) SAE G-19C

ARP6178, Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors. Worksheet and User Guide. SAE G-19DR

AS5553A, Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition. SAE G-19CI

AS6462, AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition Verification Criteria Includes Audit Checklist. SAE G-19C

AS6174, Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel SAE G-21

AS6174, Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel Commodity Slash Sheets in Rev. A document. SAE G-21

ASxxxx, Compliance Standard or Guide (Includes Audit Checklist) SAE G-21C

AIR6273, Terms and Definitions – Fraudulent/Counterfeit Electronic Parts SAE G-19T

ASxxxx, Anti-Tamper and Transportation Security G-19AT

Published

In Development

Gap

Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition (AS5553 Rev B)

Scope

- Standardizes requirements, practices, and methods related to: parts management, supplier management, procurement, inspection, test/evaluation, and response strategies when suspect or confirmed fraudulent/counterfeit EEE parts are discovered.

Purpose

- Standardizes practices to, maximize availability of authentic parts, procure parts from reliable sources, assure authenticity and conformance of procured parts, control suspect or confirmed fraudulent/counterfeit EEE parts and report suspect or confirmed fraudulent/counterfeit EEE parts to other potential users and Authority Having Jurisdiction and assess, mitigate, control, and report parts which have been used, refurbished, or reclaimed, but represented as new product.

Applicability

- All organizations that procure and/or integrate electronic parts and/or assemblies containing such items.

Supply Chain Sector

- Global multi-sector – electronic supply chain.

Commodity(s) Covered

- EEE parts

Overview

- Created in response to a significant and increasing volume of fraudulent/counterfeit electronic parts entering the aerospace supply chain, posing significant performance, reliability and safety risks. This document has subsequently been expanded to address fraudulent/counterfeit risk mitigation on a global scale across multi-sector electronic supply chain industries and to provide uniform requirements, practices and methods to mitigate the risks of receiving and installing fraudulent/counterfeit electronic parts.

Test Methods Standard; General Requirements, Suspect/Counterfeit Electrical, Electronic, and Electromechanical Parts (AS6171)

Scope

- Provide uniform requirements, practices and methods to mitigate the risks of receiving and installing SC EEE parts.

Purpose

- Standardize practices to detect suspect counterfeit electronic parts and to ensure consistency of test techniques and requirements across the supply chain

Applicability

- All contracting organizations that procure EEE parts and devices, whether such parts and devices are procured directly or integrated into electronic assemblies or equipment.

Supply Chain Sector

- Aviation, Space, Defense, Industrial, Medical, Automotive and Commercial

Commodity(s) Covered

- EEE parts

Overview

- This standard is being created in response to a significant and increasing volume of Suspect/Counterfeit (SC) Electrical, Electronic, and Electromechanical (EEE) parts entering the aerospace supply chain, posing significant performance, reliability, and safety risks.
- This standard is intended to provide uniform requirements, practices and methods to mitigate the risks of receiving and installing SC EEE parts

Current Test Methods Covered Under the First Release

- **External Visual Inspection**
 - Including Scanning Electron Microscopy (SEM)
- **Radiological**
- **X-Ray Fluorescence (XRF)**
- **Delid/Decapsulation Physical Analysis**
- **Electrical Test**
- **Acoustic Microscopy**
- **Fourier Transform Infrared Spectroscopy (FTIR)**
- **RAMAN Spectroscopy**
- **Thermo-gravimetric Analysis (TGA)**
- **Design Recovery**
- **Selected Environmental**
 - Seal
 - Temp Cycling
 - Thermal Shock
 - Latency Mitigation / Burn-in

Risk Criteria and sampling plans

Personnel Certification requirements

AS6496- Standard for Authorized Distribution Counterfeit Mitigation

Scope

- Defines requirements for mitigating counterfeit products in the authorized supply chain by the authorized distributor.

Purpose

- Delineates practices to procure, authenticate, trace and minimize risk of counterfeit parts in authorized supply chain

Applicability

- Applicable to authorized distributors acquiring parts directly from manufacturers for which they are authorized

Supply Chain Sector

- Customers procuring electronic parts from authorized distributors

Commodity(s) Covered

- Electronic parts—electronic components, assemblies, supplies and equipment

Overview

- Covers mitigation policy, control plan, customer processes, purchasing, traceability, returns, training, scrap control, inventory control and reporting.

AS6496- Standard for Authorized Distribution Counterfeit Mitigation

- **Requires development of control plan for:**
 - Risk mitigation
 - Disposition
 - Reporting
- **Requires disclosure of non-authorization**
- **Traceability--military parts accompanied by manufacturer's certification and C of C on packing slip**
- **New terms**

Verification of authorization—manufacturer's website or directly from manufacturer

EIA-933 - Standard for Preparing a COTS Assembly Management Plan

Scope

- Defines requirements for commercial off the shelf (COTS) assembly management plan

Purpose

- Mitigate risks posed from the integration of COTS electronic assemblies

Applicability

- Applicable to all Aerospace, Defense, high performance electronic equipment and systems

Supply Chain Sector

- All contractors integrating COTS for the Commercial, Military and space markets

Commodity(s) Covered

- Electronic COTS Assemblies

Overview

- COTS electronic assemblies spans the spectrum from assemblies designed and manufactured for the ADHP market to assemblies designed and manufactured for commercial applications and beyond the control of ADHP contractors
- Integration of COTS requires detailed analysis of the application to ensure successful integration

iNEMI Assessment Methodology and Metric Development of Counterfeit Components

Scope

- Identify and develop methodologies with associated metrics to assess the overall extent of the counterfeit problem in the electronics industry.

Purpose

- Enable organizations to assess the risk of counterfeit use in their respective industries, the risk of untrusted sources of supply in that industry and generate the total cost of ownership associated with those risks.

Applicability

- Any organizations that procure EEE parts and devices, whether such parts and devices are procured directly or integrated into electronic assemblies or equipment.

Supply Chain Sector

- Any part of the supply chain utilizing electronic products though development focus was from an Information Technology perspective

Commodity(s) Covered

- EEE parts

Overview

- This project was completed in October 2013 after 1.5 years of work by a collaborative industry group.
- 3 calculators we developed for use by industry: assessing risk of untrusted sources of supply, assessing risk of counterfeit use and a total cost of ownership
- Goal is to provide more visibility to the problems of counterfeit components and where to focus resources on minimizing risk

AS 6174 - Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel

Scope

- This document standardizes requirements, practices, and methods related to: (a) materiel management, parts management, supply chain management, procurement, inspection, test/evaluation to assure the authenticity and conformance of materiel being acquired, and (b) response strategies when suspect or confirmed counterfeit materiel is discovered.

Purpose

- This standard was created to provide uniform requirements, practices and methods to improve the likelihood of only acquiring authentic and conforming materiel of any type in any industry sector.

Applicability

- Suppliers, processors, and end product organizations.

Supply Chain Sector

- Any industry sector for non-electronics material and parts.

Commodity(s) Covered

- All materials and parts except electronics. Currently working specifics on refrigerants, packaging, and raw materials (metals, including castings and forgings) and components made from such materials (valves, fasteners, etc).

Overview

- This standard was created in response to a significant and increasing volume of counterfeit materiel (in violation of intellectual property laws) entering the supply chain, posing significant performance, reliability, and safety risks.
- This standard is a capstone standard. AS5553 pertains directly to electronic parts, and supplements the guidance of this standard.

Visual Inspection Standard – Acceptability of Electronic Components Distributed in the Open Market – IDEA-STD-1010B

Scope

- Sets forth practices and requirements for visual examination and acceptability criteria of electronic components purchased and sold in the open market through the use of text and extensive use of photo examples throughout the text.

Purpose

- Describes concepts, theory, materials, methods, and verification criteria that when applied as recommended or required, will produce a heightened confidence factor of quality of the subject product and indicate that similar conclusions may be determined upon the same examination of the parts by a different inspector.

Applicability

- Provides inspection processes and criteria that can be incorporated into the Quality Management System of any industry stakeholder, including Original Equipment Manufacturers (OEMs), Electronic Management Service (EMS) Providers, Authorized (Franchise) Distributors, and Independent Distributors, to assist each organization with the implementation and maintenance of counterfeit mitigation programs..

Supply Chain Sector

- International Aviation, Space, Defense, Industrial, Medical, Automotive, Commercial, Consumer.

Commodity(s) Covered

- EEE parts sourced from the excess/open market

Overview

- *IDEA-STD-1010: Acceptability of Electronic Components Distributed in the Open Market* is the first and leading quality standard for the visual inspection of electronic components and was designed as a technical resource to serve the electronic component industry regarding the detection of substandard and counterfeit components. This standard is now utilized worldwide as a first line of defense to prevent the purchase, acceptance, use, and sell of non-conforming and suspect counterfeit EEE parts in all sectors of the electronics industry.

Content Titles

- **PRODUCT HANDLING, PACKAGING, AND STORAGE**
- **INSPECTION WORKSTATION EQUIPMENT AND TOOLS**
- **TEST/TEST HOUSE RELATIONSHIP MANAGEMENT**
- **INSPECTOR PREPARATION**
- **THE INSPECTION**
- **ADVANCED INSPECTION TECHNIQUES**
- **CLAUSES: ACCEPTABLE VS. NONCONFORMING CHARACTERISTICS FOR ELECTRONIC COMPONENTS BY PHOTOS AND TEXT**
- **POST INSPECTION ACTIONS**
- **RELEVANT STANDARD GENERATING BODIES AND TRADE ASSOCIATIONS**
- **SUPPLEMENTARY FIGURE REFERENCE GALLERY**
- **IDEA INSPECTION PROCESS GUIDELINES CHECKLIST**

- **Next steps**
 - **Personnel Inspector Certification Exam – IDEA-ICE-3000**
 - **Independent Distributor Quality Management System Certification – IDEA-QMS-9090 (Consumer Products)**

AS 6174 - Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel

- April 20, 2010 – DoD PSMC (Part Standardization and Management Committee) requested SAE to address counterfeit NON-electronic parts
- October 4, 2010 – AS6174 based on major rewrite of AS5553 to address all materiel, nearly complete
- Jan-May 2011 – revised to consider Office of the Secretary of Defense (OSD) and White House Intellectual Property Enforcement Coordinator(IPEC) input
- Published May 2012 - Tracks closely with draft Office of the Secretary of Defense (OSD) and White House policy for avoiding counterfeits with all materiel, including medicine, tourniquets, etc.
- Working minor revisions to basic standard and commodity specific “slash sheets” (appendices).

Preference for purchase from original manufacturer or licensed/franchised distributor

Extra documentation/testing for other distributors/brokers

INEMI Assessment Methodology and Metric Development of Counterfeit Components

This Project <u>IS</u> :	This Project IS <u>NOT</u> :
Project 1: Counterfeit Components - Assessment Methodology and Metric Development	
Identify any related research or development within the industry and academic communities	Development of a specific standard(s)
Review and tabulate successes that have worked in the past (BKM/BKP)	Biased towards specific brokers, suppliers, geographies, or market segments
Develop a methodology to evaluate or assess the risk of counterfeit use	
Assess the aggregated risk of untrusted sources of supply	Repeat of prior or existing work
Develop an assessment / mitigation strategy Long term cost of ownership	Not focused on quality issues or standards
Define / develop a metric that can identify the scope of the problem	Missing piece is the history (e.g., storage conditions, ...)
Assess the effectiveness of the methodologies developed	
Review and finalize methodology	How to capture quality information / data
Focused on those attributes which are of most value to supply chain and the participating project members	
Applicable to multiple spaces across the supply chain	

<http://www.inemi.org/project-page/counterfeit-components-assessment-methodology-and-metric-development>

SAE G-19 & G-21 Document Proposed Roadmap, October 2013

SAE Counterfeit Avoidance Steering Group

G-19 Counterfeit Electronic Components Committee Oversight

Phil Zulueta, SAE G-19 Chairman

G-21 Counterfeit Materiel Committee Oversight

Wayne Moss, Bob Tipton, SAE G-21 Co-Chairman

Auditor Competency (Asxxxx)

Proficiency Test Provider
(ISO/IEC 17043 Accredited)

Certification Body
(IAF & ISO/IEC 17021 Accredited)

Test Provider
(Accredited to ISO/IEC 17025 & Certified to AS9100 and/or ISO 9001)

Original Component Manufacturer
(Certified to AS9100 and/or ISO 9001)

Distributor
(Certified to AS9120 and/or ISO 9001)

Original Equipment Manufacturer/User/MRO
(Certified to AS9100 and/or AS9110 and/or ISO 9001)

Test Provider
(Certified to AS9100 and/or ISO 9001)

Operator(s) Certified to PT Scheme for Identified AS6171 Test Methods

**Authorized/
Franchised**

**Broker/
Independent**

AS6171, Test Methods Standard; Counterfeit Electronic Parts Document in progress. Dan DiMase & Sultan Lilani, Subcommittee Co-Chairman, Mike Megrđichian, Document Coordinator, SAE **G-19A**

Asxxxx, Compliance Standard or Guide (Includes Audit Checklist) Bill Scofield, Brian Worden - Subcommittee Co-Chairmen, SAE **G-19C**

ASxxxx, OCM Counterfeit Mitigation Subcommittee. Subcommittee Proposed. SIA, SRC Proposed Co-Chairpeople, SAE **G-19O**

ASxxxx, Compliance Standard or Guide (includes Audit Checklist) Bill Scofield, Brian Worden - Subcommittee Co-Chairmen, SAE **G-19C**

AS6496, Authorized Distributor Counterfeit Mitigation Sub-com. Document in progress Kevin Sink & Robin Gray Co-Chairman, SAE **G-19AD**

ASxxxx, Compliance Standard or Guide (Includes Audit Checklist) Bill Scofield, Brian Worden, Sub-com. Chairmen, SAE **G-19C**

AS6081, Counterfeit Electronic Parts Avoidance, ID's. Published 2012-11-7. Rev. A in progress Phil Zulueta Chairman, SAE **G-19D**

AS6301, Compliance Standard or Guide (includes Audit Checklist) Bill Scofield, Brian Worden, Sub-com. Chairmen, SAE **G-19C**

ARP6178, Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors. Worksheet and User Guide Published 2011-12-19 Dan DiMase & Fred Schipp, Subcommittee Co-Chairmen, SAE **G-19DR**

AS553A, Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition. Issued 2009-04-02. Rev. A published 2013-01-21. Sarah Skinner, Subcommittee Chairperson, SAE **G-19CI**

AS6462, AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition Verification Criteria Includes Audit Checklist. Published 2012-11-01. Rev. A in progress. Bill Scofield, Brian Worden - Subcommittee Co-Chairmen, SAE **G-19C**

AS6174, Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel Published 2012-05-09. Rev. A in development. Wayne Moss, Bob Tipton - Subcommittee Co-Chairmen. Materiel Subcommittee, SAE **G-21**

AS6174, Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel Commodity Slash Sheets in Rev. A document. Wayne Moss, Bob Tipton - Subcommittee Co-Chairmen. Materiel Subcommittee, SAE **G-21**

Asxxxx, Compliance Standard or Guide (Includes Audit Checklist) Bill Scofield, Brian Worden - Subcommittee Co-Chairmen, SAE **G-21C**

AIR6273, Terms and Definitions – Fraudulent/Counterfeit Electronic Parts Document in progress. Kirsten Koepsel, Subcommittee Chairperson, SAE **G-19T**

ASxxxx, Anti-Tamper and Transportation Security Subcommittee Proposed. TAPA, CBP, Express Carrier Proposed Co-Chairpeople, **G-19AT**

Published

In Development

Gap