

Counterfeit Avoidance: SAE International Standards- Current Status and Under Development

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Washington, DC

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www.sae.org



About SAE ...

- Non-profit membership society
- 131,000 mobility engineering members in 97 countries
- 250 professional staff
- Global Offices:
 - World Headquarters – Warrendale PA, USA
 - Automotive Headquarters – Troy MI, USA
 - Aerospace Standards – Washington DC
 - Aerospace Standards Europe – London
 - Shanghai



1916



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US National Bureau of Standards and Industrial Preparedness Committee of the Naval Consulting Board

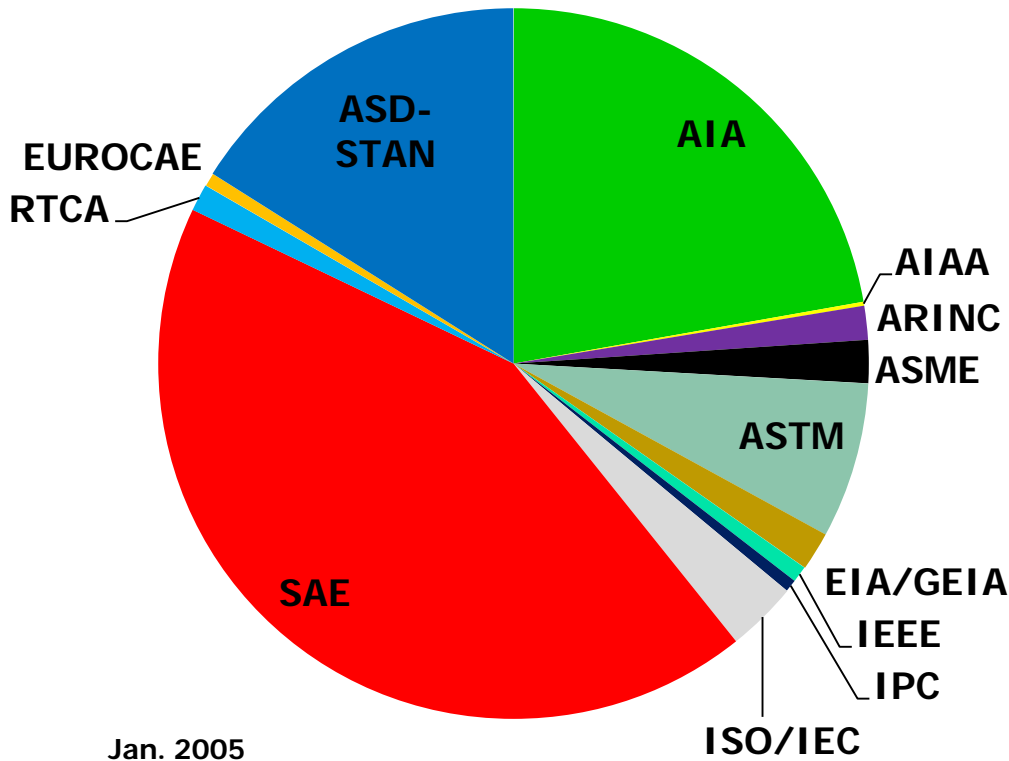
Agreed to address aeronautical standards & technology within SAE

SAE's charter expanded to address aerospace in September 1916. American Society of Aeronautical Engineers merged into SAE

2012



Total Aerospace Standards



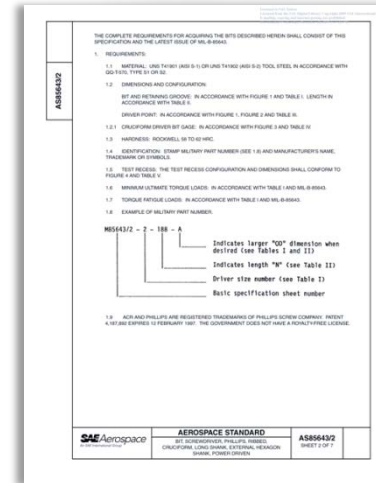
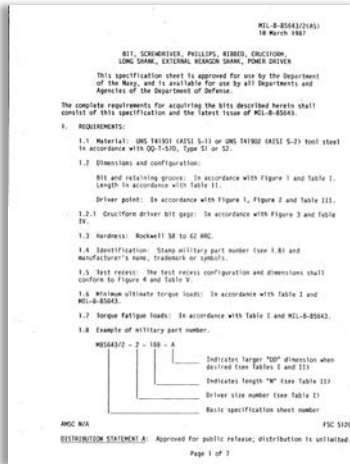
6800+ standards

150+ committees,
subcommittees, and task
groups

8000+ global participants

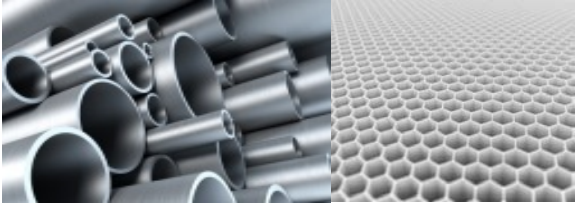
Civil and Military
applications addressed

Partnering: SAE and DoD



- Over 1500 Mil-Specs have been converted to SAE standards
- The US DoD has adopted more documents SAE from than any other SDO
- <http://www.sae.org/standardsdev/military/>

Key SAE Standards Activities



Materials

Environmental Standards



**Counterfeit Parts
Avoidance**

Standard Parts



Deicing

Human Factors



Military Avionics

**Integrated Vehicle
Health Management &
Reliability**





SAE Aerospace G-19 Counterfeit Electronic Parts Committee

- Chartered in 2007 to address aspects of preventing, detecting, responding to and counteracting the threat of counterfeit electronic components. Participants included:
 - Government
 - Defense/Aerospace manufacturers
 - Industry Groups
 - Testing Laboratories
- April 2009 - SAE International released aerospace standard AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
- August 2009 – United States DoD adopted AS5553



SAE G-19 Members

from Government, Defense and Industry Sectors

Government Members

- Defense Logistics Agency (DLA)
- Defense Contract Management Agency (DCMA)
- DOE - National Nuclear Security Administration (NNSA)
- Federal Aviation Administration (FAA)
- Intelligence Advanced Research Projects Activity (IARPA)
- Ministry of Defence, UK
- National Aeronautics and Space Administration (NASA)
- USAF/NRO (The Aerospace Corporation)
- USAF Wright Patterson AFB
- US Army - AMCCC Business Operations HQAMC
- US Army Aviation & Missile Command
- US Army Redstone Arsenal
- US Missile Defense Agency (MDA)
- US Navy - Naval Air Warfare Center
- US Navy - Naval Surface Warfare Center (NSWC)Crane
- US Navy - NAVSEA Crane
- US Navy, Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP) Activity
- US Department of Transportation

Note: Members function as individuals intending to represent the best interests of the industry, and not as agents or representatives of any organization with which they may be associated



SAE G-19 Members From Industry Sectors

Participating Industry Associations ...

- ACLASS Accreditation Services
- Aerospace Industries Association (AIA)
- ANSI-ASQ Accreditation Board (ANAB)
- Component Obsolescence Group (COG)
- The Electronic Components Supply Network
- EIA Standards and Technology Electronic Components
- ERAI, Inc.
- IEC/IECQ
- Independent Distributors of Electronics Association (IDEA)
- Performance Review Institute (PRI)
- UK Electronics Alliance (UKEA)



SAE G-19 Industry Members

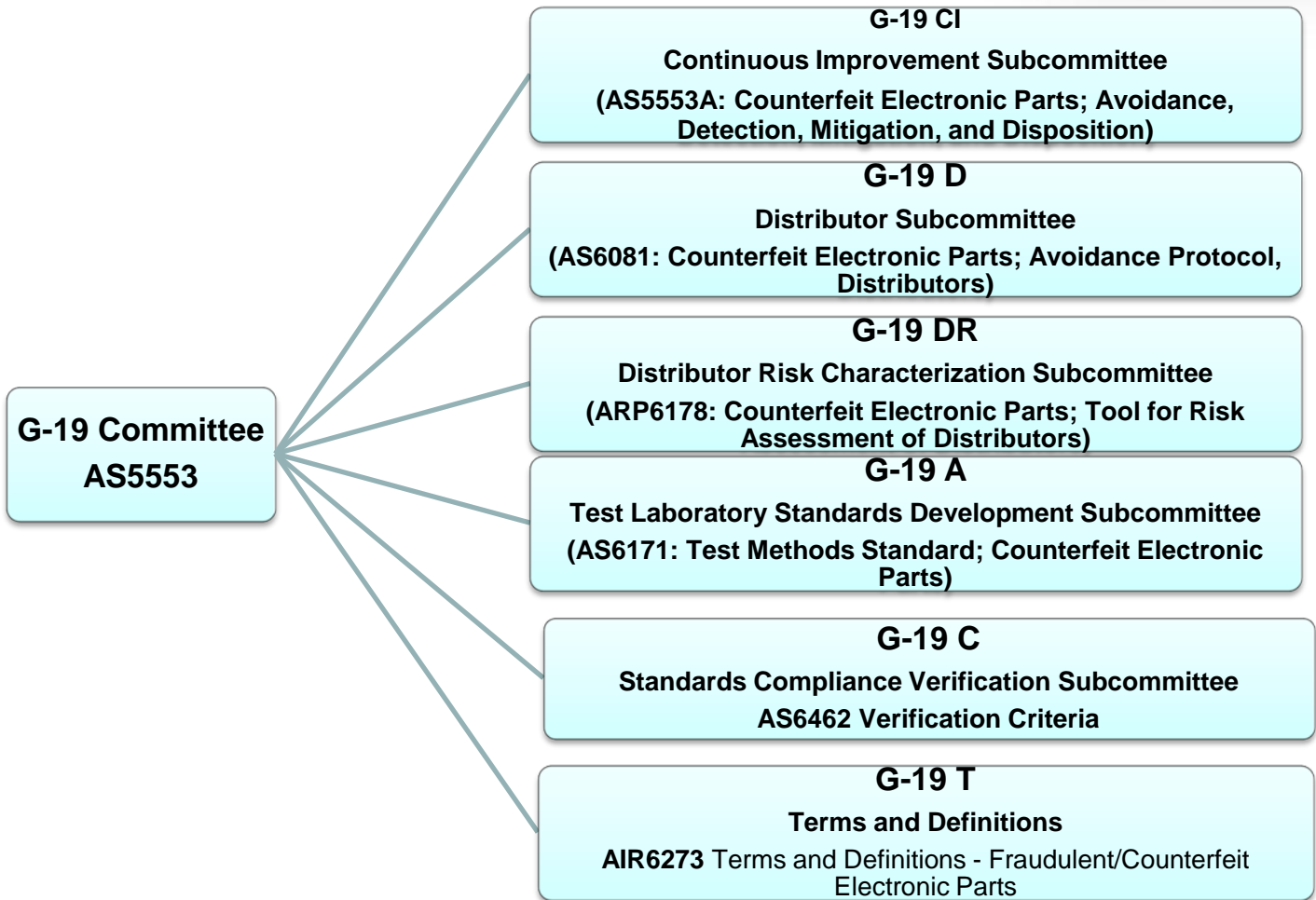
Adaptive Management Solutions
Aero Engine Controls
American Electronic Resource
Analytical Alternatives
Analytical Solutions
Applied DNA Sciences
Arcadia Components
Ares Corp
Arrow Electronics
Astute Electronics
BAE Systems (Operations)
BAE Systems
Ball Aerospace & Technologies
Boeing
Boeing Advanced Systems
Business Quality Process Management
Bechtel Plant Machinery
CALCE University Of Maryland
Celestica Corp. Technology & Engineering
China Aero-Polytechnology Establishment
Crestwood Technology Group
DA-Tech
Derf Electronics
Det NortskeVeritas (DNV)
DPA Components International
Electronic Supply Chain Solutions
Eltek Semiconductors
General Dynamics
General Dynamics UK

GE Aviation
Goodrich Control Systems
Greenberg & Bass
Harris
Hi-Reliability Microelectronics
Hi-Rel Laboratories
Honeywell Aerospace Electronic Systems
Honeywell Int'l
Honeywell Technology Solutions
Infineon Technologies AG
Integra Technologies
Jabil Circuits
Jacobs Engineering
Jet Propulsion Laboratory
L-3 Communications - CSW
Left Coast Technical Solutions
Lockheed Martin Aeronautics
Lockheed Martin Missiles & Fire Control
3M
Microram Electronics
Motronics Circuits International
Mouser Electronics
Nisene Technology Group
Northrop Grumman Electronic Systems
N.F.Smith & Associates
NQA
Northrop Grumman
Orbital Sciences
Plexus

Premier Semiconductor Services
Process Sciences
Raytheon
Rochester Electronics
Sandia National Laboratories
Schlumberger HPS
Selex Galileo
Silicon Cert Laboratories
SMT Corp
SolTec Electronics
Sonix
Sonoscan
Star Associates International
Trace Laboratories
TTI
Underwriters Laboratories, UL DQS
Westland Helicopters
White Horse Laboratories
World Data Products
World Micro
Wyle Laboratories



G-19 Subcommittees



G-19 Committee Oversight

Accreditation Body (ASxxxx Based in ISO 17021)

Accreditation Body (ASxxxx Based in ISO 17025)

Auditor Competency (ASxxxx)

Certification Bodies

DISTRIBUTOR

USER

TEST PROVIDER

ARP6178, Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors
(Worksheet and User Guide in progress)

AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

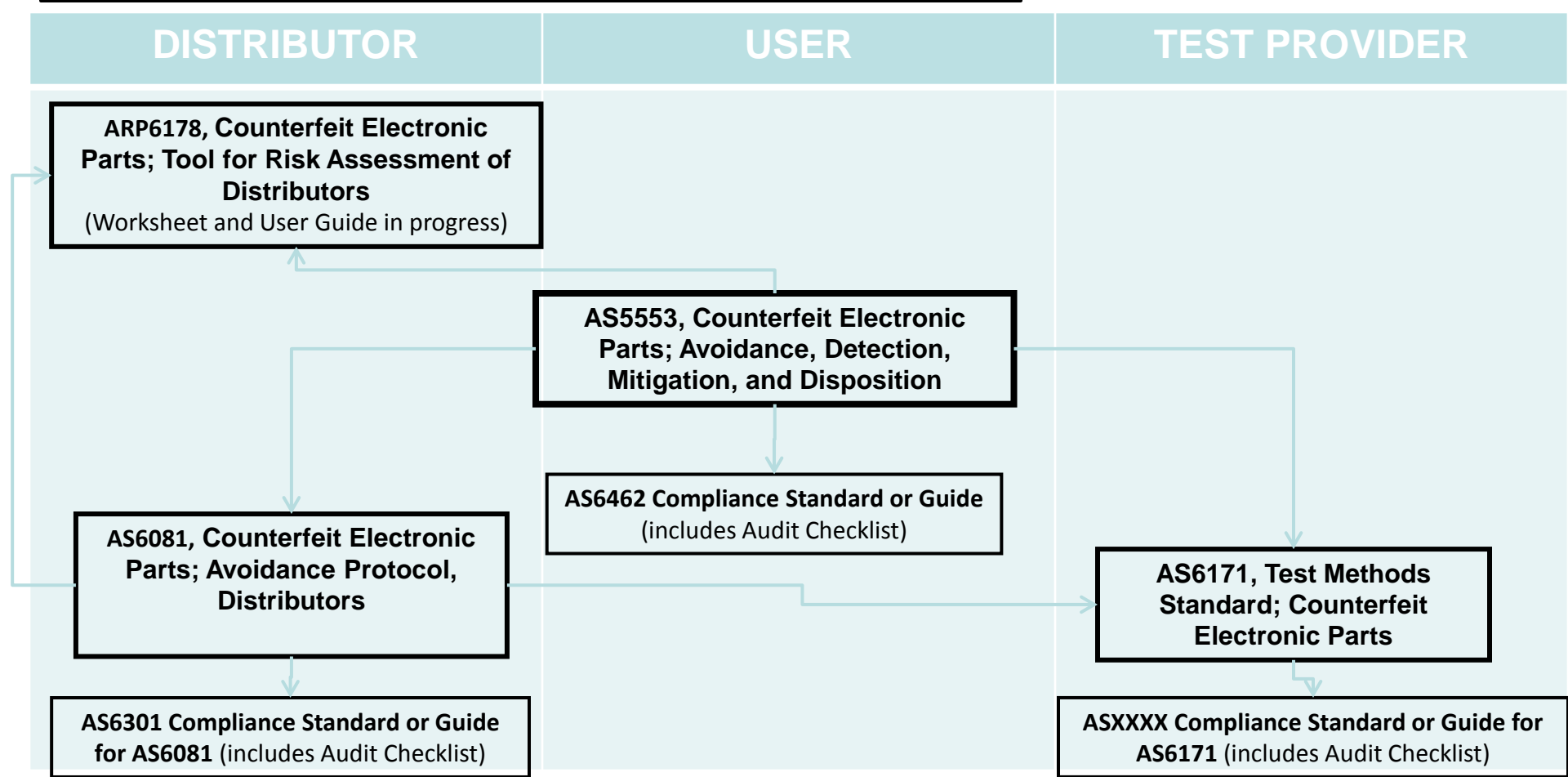
AS6462 Compliance Standard or Guide
(includes Audit Checklist)

AS6081, Counterfeit Electronic Parts; Avoidance Protocol, Distributors

AS6171, Test Methods Standard; Counterfeit Electronic Parts

AS6301 Compliance Standard or Guide for AS6081 (includes Audit Checklist)

ASXXXX Compliance Standard or Guide for AS6171 (includes Audit Checklist)





SAE AS5553 – Aerospace Standard

Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

Purpose	Provide uniform requirements, practices and methods to mitigate the risks of purchasing and supplying counterfeit electronic parts
Target Audience	Organization that purchase and/or manufacture products with electrical components
Uses	<ul style="list-style-type: none">• Requirements for developing a Counterfeit Parts Control Plan• Guidelines in the appendices for Counterfeit Mitigation industry best-practices• Certification standard under development
Status	<ul style="list-style-type: none">• Issued April-2009• Adopted by NASA in November, 2008• Adopted by DoD in August, 2009• Under revision by G-19CI Committee<ul style="list-style-type: none">• Modify language to be more ‘international’• Align with AS 6081 (for distributors)



AS5553 - Counterfeit Electronic Parts; Avoidance, Detection, Mitigation and Disposition

SAE Aerospace <small>An SAE International Group</small>	AEROSPACE STANDARD	SAE AS5553
		Issued 2009-04
Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition		

RATIONALE

This standard was created in response to a significant and increasing volume of counterfeit electronic parts entering the aerospace supply chain, posing significant performance, reliability, and safety risks.

This standard was created to establish uniform requirements, practices and methods to mitigate the risks of receiving and installing counterfeit parts.

FOREWORD

“... created in response to a significant and increasing volume of counterfeit electronic parts entering the aerospace supply chain, posing significant performance, reliability, and safety risks.”

and continually improve, safe, reliable globalization of the aerospace industry complicated this objective. End-product purchasers from suppliers throughout the world face the challenge of delivering

This document standardizes requirements, practices, and methods related to: parts management, supplier management, procurement, inspection, test/evaluation, and response strategies when suspect or confirmed counterfeit parts are discovered.



SAE AS5553 – Aerospace Standard

Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

- Counterfeit Electronics Parts Control Plan
- Purchasing
 - Assessment of Suppliers
 - Supply Chain Traceability
- Verification of Purchased Product
- In-process Investigation
- Material Control
- Reporting



SAE AS6081 – Aerospace Standard

Counterfeit Electronic Parts Avoidance – Distributors

Purpose	standardizes practices to: <ul style="list-style-type: none">a. procure parts from reliable sources,b. assess and mitigate risk of distributing counterfeit parts,c. control suspect or confirmed counterfeit parts,d. report suspect and confirmed counterfeit parts to other potential users and Authority Having Jurisdiction,e. and assess, mitigate, control, and report parts which have been used, refurbished, or reclaimed, but represented as new product.
Target Audience	Distributors of Electronic Components
Uses	<ul style="list-style-type: none">• Requirements for a Counterfeit Mitigation program• Intended to be used for certification of Distributors
Status	<ul style="list-style-type: none">• Balloted –Disposition of comments underway



SAE AS6081 – Aerospace Standard

Counterfeit Electronic Parts;

Avoidance Protocol, Distributors

– Quality Management System

- Counterfeit Mitigation Policy

– Counterfeit Electronics Parts Control Plan

- Customer Related Contract Review, Agreement, & Execution
- Purchasing
- Purchase Order Requirements
- Supply Chain Traceability
- Verification of Purchased Product
- Material Control
- Reporting
- Personnel Training and Certification



AS6081 - Counterfeit Electronic Parts; Avoidance Protocol, Distributors



- OEMs can specify their suppliers comply with AS6081 to meet selected flow-down requirements of AS5553
- AS6081 requirements are intended to be applied/flowed down to distributor's suppliers
- Independent, third-party certification bodies (CBs) verify of compliance to AS6081
- Accreditation of CBs will be through ANAB, a recognized and respected accreditation body (AB) to ensure the impartiality and competence of each Certification Body



ARP6178 – (Aerospace Recommended Practice)

Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors

Purpose	Tool for the evaluation of a distributor's processes for the prevention, detection, containment, and reporting of counterfeit electronic components
Target Audience	Distributors of Electronic Components (self assessment) Customers of Distributors (for assessment and the calculation of a risk score)
Uses	<ul style="list-style-type: none">• Develop Risk Assessment score for the Counterfeit Mitigation program
Status	<ul style="list-style-type: none">• Published December 2011



SAE ARP6178

Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors

- Justification for Assessment
- Pre-visit Assessment Survey
- Site Assessment Survey
- Supplier Selection
- Assessment Spreadsheet
 - Survey
 - Tabulates score



SAE ARP6178

Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors -

– Survey

- General Company Information
- Pre-Assessment Information
- Industry Membership and Reporting
- Quality System and Processes
- Warranty and Insurance
- Supplier Qualification and Purchasing Process
- Handling and Facilities
- Training and Certification
- Inspection and Test
- Non-Conforming Material Control
- Additional Test and Inspection (In-house or Third-Party)



ARP6178 – Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors

- Intended for use by organizations that procure electronic components from suppliers other than the original component manufacturer (OCM)
- Provides organizations with a tool to assess a supplier's capability to prevent, detect, contain and report suspect or confirmed counterfeit electronic components
- Not intended to replace certification compliance criteria



AS 6171

– Test Methods Standard; Counterfeit Electronic Parts

Test Methods Standard; Counterfeit Electronic Parts

Purpose	<ul style="list-style-type: none">• Standardize practices to detect suspect counterfeit electronic parts and to ensure consistency of test techniques and requirements across the supply-chain
Target Audience	<ul style="list-style-type: none">• Independent Testing Facilities• Distributors (in-house testing capability)
Uses	<ul style="list-style-type: none">• Definition of Test Methods for counterfeit detection• Accreditation• Intended to be used for accreditation of Independent Test Laboratories or Distributors (ILAC, through ACLASS, A2LA, etc.)
Status	<ul style="list-style-type: none">• In Draft



AS 6171-

Test Methods Standard; Counterfeit Electronic Parts

- Test Methods
 - External visual inspection
 - Radiological inspection,
 - X-ray fluorescence,
 - Remarking and resurfacing,
 - De-lid/ Decapsulation or destructive physical analysis,
 - Electrical tests,
 - Acoustic microscopy,
 - Optical/SEM inspection,
 - FTIR/DSC/TMA testing and miscellaneous testing
- Risk Criteria and sampling plans
- Personnel Certification requirements



AS6171 – Test Methods Standard; Counterfeit Electronic Parts

Each Test Method section will include:

- Processes and a description of procedures
- Apparatus needed for the test technique
- Required qualification and certification of processes and personnel
- Guidelines and requirements for reporting



AS6171 – Test Methods Standard; Counterfeit Electronic Parts

- Standardize practices to detect suspect counterfeit electronic parts and to ensure consistency of test techniques and requirements across the supply-chain
- Level of testing is risk-based and includes sampling plans
- Accreditation of the Test Laboratory will be through ILAC (ACLASS, A2LA or other laboratory accreditation bodies) to ensure the impartiality and competence of the Test Lab



AS6171 - Test Methods Standard; Counterfeit Electronic Parts

- AS6171 will include guidance for:
 - Evaluating risk and recommended tier level of testing based on:
 - Risk of the supplier,
 - Risk of the part,
 - Risk of application, and
 - Other risk factors.
 - Recommended sampling plans for the tests based on tier level of accepted risk, level of confidence required, and acceptable reject criteria.



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

Counterfeit Materiel Other than Electronic Parts

Purpose and Uses	<ul style="list-style-type: none">• This SAE Standard standardizes practices to: a. maximize availability of authentic materiel (made from the proper materials using the proper processes with required testing,) b. procure materiel from reliable sources, c. assure authenticity and conformance of procured materiel d. control materiel identified as counterfeit, and e. report counterfeit materiel to other potential users and government investigative authorities
Target Audience	<ul style="list-style-type: none">• Organization that purchase and/or manufacture products other than electrical components
Rationale	<ul style="list-style-type: none">• Created in response to a significant and increasing volume of counterfeit material entering the supply chain
Status	<ul style="list-style-type: none">• Published May 2012



Committee G-21

Counterfeit Materiel

- April 20, 2010 – DoD PSMC (Part Standardization and Management Committee) requested SAE to address counterfeit NON-electronic parts
- May 14, 2010 – First telecon of new group
- 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 WH Intellectual Property Enforcement Coordinator(IPEC) PEC input
- Published May 2012



AS6174 - Counterfeit Materiel

- For all applications
 - Preference for purchase from original manufacturer or licensed/franchised dist.
 - Extra documentation/testing for other distributors/brokers
- Tracks closely with draft OSD and White House policy for avoiding counterfeits with all materiel, including medicine, tourniquets, etc.



Summary of SAE G-19 Aerospace Standards

Standard	Title	Status
SAE AS5553 (G19)	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition	Issued and available at www.sae.org
SAE AS5553A (G19-CI)	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition	Under revision publication expected 4Q 2012. Incorporates non-US requirements into the standard
SAE AS6171 (G19-A)	Test Methods Standard; Counterfeit Electronic Parts	In draft; balloting expected in 3Q- 2012
SAE AS6462 (G19-C)	Verification Criteria for Certification against AS5553	Ballot 4Q-2011; publication likely 4Q- 2012. Negotiations underway with ANAB for certification programs
AIR6273 (G19-T)	Terms and Definitions:	In draft expected late 2012



Summary of SAE G-19/G-21 Aerospace Standards continued

Standard	Title	Status
SAE AS6081 (G19-D)	Counterfeit Electronic Parts Avoidance – Distributors	Publication expected 4Q 2012
SAE AS6301 (G19D)	Fraudulent/Counterfeit Electronic Parts: Avoidance, Detection, Mitigation, and Disposition – Distributors Verification Criteria	
SAE ARP6178 (G19-DR)	Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors	Ballots complete; released for publication in Dec 2011
SAE AS6174 (G-21)	Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel	Published May 2012



Thank you for your time and attention!

Are there any questions?

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