

TECHNICAL SPECIFICATION



**Process management for avionics – Counterfeit prevention –
Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic
components**

IEC/TS 62668-1:2012

<https://standards.iteh.ai/catalog/standards/sis/7e18-4c57-bbae-610bbf947154/iec-ts-62668-1-2012>



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2012 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.
If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,...).

It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

[https://standards.iteh.ai/catalog/standards/sis/7e9347e1-7e18-4c57-bbae-610bbf947154/iec-ts-](https://standards.iteh.ai/catalog/standards/sis/7e9347e1-7e18-4c57-bbae-610bbf947154/iec-ts-62668-1-2012)

62668-1-2012

TECHNICAL SPECIFICATION



**Process management for avionics – Counterfeit prevention –
Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic
components**

<https://standards.iteh.ai/catalog/standards/sis/7-7e18-4c57-bbae-610bbf947154/iec-ts-62668-1-2012>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE **XA**

ICS 03.100.50; 31.020; 49.060

ISBN 978-2-88912-064-2

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

| | |
|--|----|
| FOREWORD..... | 4 |
| 1 Scope..... | 6 |
| 2 Normative references | 6 |
| 3 Terms, definitions and abbreviations | 7 |
| 3.1 Terms and definitions | 7 |
| 3.2 Abbreviations | 10 |
| 4 Technical requirements | 12 |
| 4.1 General..... | 12 |
| 4.2 Minimum avionics OEM requirements | 13 |
| 4.3 Intellectual property..... | 14 |
| 4.3.1 General | 14 |
| 4.3.2 Definition of intellectual property | 15 |
| 4.4 Counterfeit definition | 15 |
| 4.4.1 General | 15 |
| 4.4.2 Legal definition of counterfeit..... | 16 |
| 4.4.3 Definition of fraudulent components..... | 16 |
| 4.4.4 Traceable components | 16 |
| 4.4.5 Untraceable components | 16 |
| 4.5 Why is counterfeit a problem?..... | 16 |
| 4.5.1 General | 16 |
| 4.5.2 General worldwide activities combating counterfeit issues | 17 |
| 4.5.3 Cultural differences | 17 |
| 4.5.4 Counterfeiting activities and avionics equipment..... | 18 |
| 4.5.5 Reliability impact and danger to general public | 19 |
| 4.6 Recycled components..... | 19 |
| 4.6.1 General..... | 19 |
| 4.6.2 Why does the avionics industry not use recycled components? | 19 |
| 4.6.3 When do recycled components become counterfeit?..... | 19 |
| 4.7 Original Component Manufacturer (OCM) anti-counterfeit guidelines | 20 |
| 4.7.1 General | 20 |
| 4.7.2 Chinese Reliable Electronic Component Supplier (RECS) audit scheme..... | 20 |
| 4.7.3 Original Component manufacturer (OCM) ISO 9001 and AS/EN/JISQ 9100 Third Party Certification | 20 |
| 4.7.4 Original component manufacturer (OCM) trademarks | 20 |
| 4.7.5 Original Component manufacturer (OCM) IP control | 20 |
| 4.7.6 Original Component manufacturer (OCM) physical part marking and packaging marking | 21 |
| 4.7.7 The Semiconductor Industries Association Anti Counterfeit Task Force (ACTF) | 21 |
| 4.7.8 USA Trusted Foundry Program | 21 |
| 4.7.9 USA Trusted IC Supplier Accreditation Program | 22 |
| 4.7.10 Physical unclonable function (PUF) | 22 |
| 4.7.11 Original Component Manufacturer (OCM) best practice | 22 |
| 4.8 Distributor minimum accreditations | 23 |
| 4.9 Distributor AS/EN/JISQ 9120 Third Party Certification | 23 |

| | | |
|--------------|--|----|
| 4.10 | Franchised distributor network..... | 23 |
| 4.10.1 | General | 23 |
| 4.10.2 | Control stock through tracking schemes | 24 |
| 4.10.3 | Control scrap..... | 24 |
| 4.10.4 | RECS | 24 |
| 4.10.5 | SAE AS6081..... | 24 |
| 4.11 | Non- franchised distributor anti-counterfeit guidelines | 24 |
| 4.11.1 | General | 24 |
| 4.11.2 | OEM managed non-franchised distributors | 25 |
| 4.11.3 | Brokers..... | 25 |
| 4.12 | Avionics OEM anti-counterfeit guidelines when procuring components | 25 |
| 4.12.1 | General..... | 25 |
| 4.12.2 | Buy from approved sources | 25 |
| 4.12.3 | Traceable components | 26 |
| 4.12.4 | Certificates of conformance..... | 26 |
| 4.12.5 | Plan and buy sufficient quantities | 26 |
| 4.12.6 | Use of non- franchised distributors | 27 |
| 4.12.7 | Brokers | 27 |
| 4.12.8 | Contact the original manufacturer..... | 27 |
| 4.12.9 | Obsolete components and Franchised Aftermarket sources..... | 27 |
| 4.12.10 | IEC TS 62239 approved alternatives | 27 |
| 4.12.11 | Product redesign | 28 |
| 4.12.12 | Non traceable components..... | 28 |
| 4.12.13 | OEM anti-counterfeit plans including SAE AS5553 and SAE AS6174 | 28 |
| 4.13 | OEM anti-counterfeit guidelines for their products | 28 |
| 4.13.1 | IP control..... | 28 |
| 4.13.2 | Tamper-proofing the OEM Design..... | 29 |
| 4.13.3 | Tamper Proof Labels | 29 |
| 4.13.4 | Use of ASICs and FRGAs with IP protection features | 29 |
| 4.13.5 | Control the final OEM product marking | 29 |
| 4.13.6 | Control OEM scrap | 30 |
| 4.13.7 | OEM Trademarks and logos | 30 |
| 4.13.8 | Control delivery of OEM products and spares and their useful life | 30 |
| 4.13.9 | Repairs to OEM products..... | 30 |
| 4.14 | Counterfeit, fraud and component recycling reporting..... | 31 |
| 4.14.1 | General | 31 |
| 4.14.2 | USA FAA suspected unapproved parts (SUP) program..... | 31 |
| 4.14.3 | UK counterfeit reporting..... | 31 |
| 4.14.4 | EU counterfeit reporting..... | 31 |
| 4.14.5 | UKEA anti-counterfeiting forum..... | 31 |
| Annex A | (informative) Useful contacts | 32 |
| Annex B | (informative) Examples of aftermarket sources | 55 |
| Annex C | (informative) Typical example of a RECS certificate..... | 56 |
| Annex D | (informative) Flowchart of IEC/TS 62668-1 requirements | 57 |
| Bibliography | | 59 |

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PROCESS MANAGEMENT FOR AVIONICS –
COUNTERFEIT PREVENTION –****Part 1: Avoiding the use of counterfeit, fraudulent
and recycled electronic components**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical specification when

- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC/TS 62668-1, which is a technical specification, has been prepared by IEC technical committee 107: Process management for avionics.

The text of this technical specification is based on the following documents:

| | |
|---------------|------------------|
| Enquiry draft | Report on voting |
| 107/165/DTS | 107/177/RVC |

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 62668 series, published under the general title *Process management for avionics – Counterfeit prevention*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

PROCESS MANAGEMENT FOR AVIONICS – COUNTERFEIT PREVENTION –

Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic components

1 Scope

This Technical Specification defines requirements for avoiding the use of counterfeit, recycled and fraudulent components used in the aerospace, defence and high performance (ADHP) industries. It also defines requirements for ADHP industries to maintain their intellectual property (IP) for all of their products and services. The risks associated with purchasing components outside of franchised distributor networks will be considered in IEC/TS 62668-2¹ which is to be published in the near future. Although developed for the avionics industry, this specification may be applied by other high performance and high reliability industries at their discretion.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC/TS 62239, *Process management for avionics – Preparation of an electronic components management plan*²

IEC/PAS 62435, *Electronic components – Long-duration storage of electronic components – Guidance for implementation*

ISO 9001, *Quality management systems – Requirements*

AS/EN/JISQ 9100, *Quality Management Systems – Requirements for Aviation, Space and Defense Organizations*

AS/EN/JISQ 9110, *Quality Maintenance Systems – Aerospace- Requirements for Maintenance Organizations*

AS/EN/JISQ 9120, *Quality Management Systems – Requirements for Aviation, Space and Defense Distributors*

GEIA-STD-0016, *Standard for Preparing a DMSMS Management Plan*

IDEA-STD-1010B, *Acceptability of electronic components distributed in the open market*

¹ Under consideration.

² This Technical Specification will be superseded by IEC/TS 62239-1, *Process management for avionics – Management plan – Part 1: Preparation and maintenance of an electronic components management plan*, which is currently under study.

SAE AS5553³, *Counterfeit Electronic Parts; Avoidance, Detection, Mitigation and Disposition*

SEMI T20, *Specification for authentication of semiconductors and related products*

SEMI T20.1, *Specification for object labelling to authenticate semiconductors and related Products in an open market*

SEMI T20.2, *Guide for qualifications of authentication service bodies for detecting and preventing counterfeiting of semiconductors and related products*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

after-market source

reseller who may or may not be under contract with the original component manufacturer (OCM), or is sometimes a component “re-manufacturer”, under contract with the OCM

Note 1 to entry: The reseller accumulates inventories of encapsulated or non-encapsulated (wafer) components whose end of life date has been published by the OCM. These components are then resold at a profit to fill a need within the market for components that have become obsolete.

3.1.2

counterfeit

action to simulate, reproduce or modify a material good or its packaging without authorization

Note 1 to entry: It is the practice of producing products which are imitations or are fake goods or services. This activity infringes the Intellectual Property rights of the original manufacturer and is an illegal act. Counterfeiting generally relates to wilful trade mark infringement.

3.1.3

counterfeited component

material good imitating or copying an authentic material good which may be covered by the protection of one or more registered or confidential intellectual property rights

Note 1 to entry: It is one whose identity or pedigree has been altered or misrepresented by its supplier

Identity = Original manufacturer, part number, date code, lot number, testing, inspection, documentation or warranty etc.

Pedigree = Origin, ownership history, storage, handling, physical condition, previous use etc.

3.1.4

COTS

commercial off-the-shelf products

one or more pieces, mechanical or electrical, developed for multiple commercial consumers, whose design and/or configuration is controlled by the supplier's specification or industry standard

Note 1 to entry: They can include electronic components, subassemblies, or top level assemblies. COTS subassemblies include circuit card assemblies, power supplies, hard drives, and memory modules. Top-level COTS assemblies includes a fully integrated rack of equipment such as raid arrays, file servers to individual switches, routers, personal computers, or similar equipment.

³ This standard will be superseded by SAE AS5553A, *Counterfeit Electronic Parts; Avoidance, Detection, Mitigation and Disposition*, which is currently under study.

3.1.5**customer, user**

original equipment manufacturer (OEM) who purchases electronic components, including integrated circuits and/or semiconductor devices compliant to this technical specification, and uses them to design, produce, and maintain systems

3.1.6**data sheet**

document prepared by the manufacturer that describes the electrical, mechanical, and environmental characteristics of the component

3.1.7**broker**

individual or corporate organization that serves as an intermediary between buyer and seller.

Note 1 to entry: In the electronic component sector a broker specifically seeks to supply obsolete or hard to find components in order to turn a profit. To do so it may accumulate an inventory of components considered to be of strategic value or may rely on inventories accumulated by another. The broker operates within a worldwide component exchange network.

3.1.8**customer device specification**

device specification written by a user and agreed by the supplier

3.1.9**fraudulent component**

electronic component produced or distributed in violation of the law

Note 1 to entry: This includes stolen component, component scrapped by the original component manufacturer (OCM) or by any user, disassembled component salvaged and resold as new component, counterfeit component, copy, imitation, full or partial substitute of brands, designs, models, patents, software or copyright, for example: component whose production and distribution are not controlled by the original manufacturer, unlicensed copies of a design, disguised component (re-marking of original manufacturer name, reference date/code or other identifiers etc.), component without internal silicon die or with substituted silicon die which are not the original manufacturer's silicon die.

3.1.10**franchised distributor or agent**

individual or corporate organisation that is legally independent from the franchiser (in this case the electronic component manufacturer or OCM) and who agrees under contract to distribute products using the franchiser's name and sales network

Note 1 to entry: Distribution activities are carried out in accordance with standards set and controlled by the franchiser. Shipments against orders placed can be despatched either direct from the OCM or the franchised distributor or agent. In other words, the franchised distributor enters into contractual agreements with one or more electronic component manufacturers to distribute and sell said components. Distribution agreements may be stipulated according to the following criteria: geographical area, type of clientele (avionics for example), maximum manufacturing lot size. Components sourced through this route are protected by the OCM's warranty and supplied with full traceability

3.1.11**non-franchised distributor**

non-franchised or independent electronic component distributors are companies who do not fall under one of the above mentioned categories (i.e. franchised distributor)

Note 1 to entry: These distributors may purchase components from component manufacturers, franchised distributors, or through other supply channels (open markets). These distributors cannot always provide the guarantees and support provided by the franchised distributor network; components sourced through this source are usually protected by the source's warranty only. However, some of them are able to purchase traceable components and/or to provide traceability paperwork and/or are able to return stock for investigation to the OCM.

3.1.12**purchasing agency**

organization who groups the quantities of electronic components required by a series of companies in order to constitute significant buying power and thereby obtain the best possible supplier conditions for purchasing (especially as regards pricing and purchasing conditions) as well as for assistance with management, documentation , financing etc.

3.1.13**reseller**

general supplier who offers a selection of electronic components to order from a catalog

3.1.14**microcircuit, component, device**

electrical or electronic device that is not subject to disassembly without destruction or impairment of design use and is a small circuit having a high equivalent circuit element density which is considered as a single part composed of interconnected elements on or within a single substrate to perform an electronic circuit function

Note 1 to entry: This excludes printed wiring boards / printed circuit boards, circuit card assemblies and modules composed exclusively of discrete electronic components.

3.1.15**original equipment manufacturer (OEM)**

manufacturer who defines the electronic sub assembly that includes the electronic components or defines the components used in an assembly and/or test specification

3.1.16**original component manufacturer (OCM)**

company specifying and manufacturing the electronic component

3.1.17**piracy**

willful copyright infringement

3.1.18**sourcing channel**

various sourcing system available to the electronic equipment manufacturer and its subcontractors for example: purchase of electronic components directly from the original manufacturer or its representative, purchase through a franchised or non-franchised distributor, broker or other source

3.1.19**semiconductor**

electronic component in which the characteristic distinguishing electronic conduction takes place within a semiconductor

Note 1 to entry: This includes:

- (1) semiconductor diodes which are semiconductor devices having two terminals and exhibiting a nonlinear voltage-current characteristic and
- (2) transistors which are active semiconductor devices capable of providing power amplification and having three or more terminals.

3.1.20**subcontractor for manufacturing electronic subassemblies**

supplier manufacturing items in compliance with customer design data pack and drawings and under the authority of the OEM

Note 1 to entry: This supplier can potentially procure all or part of the electronic components required to produce a sub assembly and is often referred to as the contract electronic manufacturer (CEM) or electronics manufacturing services (EMS).

**3.1.21
supplier**

company which provides to another an electronic component which is identified by the logo or name marked on the device

Note 1 to entry: A supplier can be an OCM, franchised distributor or agent, non-franchised distributor, broker, reseller, OEM, CEM, and EMS etc.

**3.1.22
traceability**

ability to have for an electronic component its full trace back to the original component manufacturer

Note 1 to entry: This traceability means that every supplier in the supply chain is prepared to legally declare in writing that they know and can identify their source of supply, which goes back to the original manufacturer and can confirm that the electronic components are brand new and were handled with appropriate ESD and MSL handling precautions. This authenticates that the electronic components being supplied are unused, brand new components with no ESD, MSL or other damage. This ensures that the electronic components are protected by any manufacturer's warranties, have all of their useful life remaining and function according to the manufacturer's published datasheet, exhibiting the expected component life in the application for the OEM's reliability predictions and product warranty.

**3.1.23
untraceable**

property of electronic components which have lost their traceability (see definition in 3.1.22)

3.2 Abbreviations

| | |
|-------|--|
| AAIPT | Alliance Against IP Theft |
| ACTA | Anti-Counterfeit Trade Agreement |
| ACTF | Semiconductor Industries Association Anti Counterfeit Task Force |
| ADHP | aerospace, defence and high performance |
| ASIC | application specific integrated circuit |
| ATP | acceptance test procedure |
| CATA | China Anti-counterfeit Technology Association |
| CB | Certifying Bodies (Third Party) |
| COTS | Commercial off-the-shelf |
| CEM | contract electronic manufacturer |
| CEPA | Chinese Electronic Purchasing Association |
| CQAE | China Quality Management Association for Electronics Industry |
| CMOS | complementary metal oxide semiconductor |
| DOD | Department of Defence (US) |
| DMEA | Defense MicroElectronics Activity |
| DMSMS | diminishing manufacturing sources and material shortages |
| DSCC | Defence Supply Centre Columbus |
| DLA | Defense Logistics Agency (former DSCC) |
| EASA | European Aviation Safety Agency |
| ECIA | Electronic Components Industry Association |
| ECMP | electronic component management plan |
| ECSN | electronic component supplier network |
| EMS | electronic manufacturing service |
| ERAI | Electronic Reseller Association International (see http://www.era.com) |
| ESD | electrostatic discharge |

| | |
|--------|--|
| EOS | electrical overstress |
| EU | European Union |
| FAA | Federal Aviation Administration |
| FAR | Federal Avionic Regulations |
| FFF | form, fit and function |
| FIT | failures in time |
| FPGA | field-programmable gate array |
| G-19 | SAE Counterfeit Electronic Parts Committee |
| GAMS | Government/Authorities meeting on Semiconductors |
| GIFAS | French Aerospace Association |
| HAST | highly accelerated stress test |
| HIS | Hardware Intrinsic Security |
| HTOL | high temperature operating life |
| ID | independent distributors |
| IDEA | Independent Distributors of Electronics Association |
| ISP | internet service provider |
| ITAR | International Traffic in Arms Regulations |
| JIT | just in time |
| JPO | Japanese Patent Office |
| LTB | last time buy |
| LDC | lot date code |
| MBTF | mean time between failures |
| MTTF | mean time to failure |
| MSL | moisture sensitivity level |
| NEDA | National Electronics Distributors Association |
| NOVRAM | non-volatile random access memory |
| OCM | original component manufacturer |
| OEM | original equipment manufacturer |
| OHIM | Office for Harmonisation in the Internal Market (EU) |
| PCB | printed circuit board |
| PCN | product change notice |
| PRC | People's Republic of China |
| RECS | Reliable Electronic Component Supplier |
| PUF | physical unclonable function |
| RFID | radio frequency identity detection |
| RAM | random access memory |
| ROM | read only memory |
| SEE | single event effect |
| SEU | single event upset |
| SER | soft error rate |
| SIA | Semiconductor Industry Association |
| SRAM | static random access memory |
| TAPO | Trusted Access Program Office |

| | |
|------|--|
| TSO | Trading Standards Officers |
| UK | United Kingdom |
| UKEA | UK Electronics Alliance |
| UNG | unique number generator |
| USA | United States of America |
| WIPO | World Intellectual Property Organization |
| WSC | World Semiconductor Council |

4 Technical requirements

4.1 General

This Technical Specification minimises counterfeiting, recycling and fraudulent activities by maintaining intellectual property and purchasing traceable components.

Minimum avionics OEM requirements are defined in 4.2.

Subclauses 4.3 to 4.14.5 provide supporting information to 4.2.

Informative annexes are provided at the end of this specification and their content is subject to change. Users of this specification are encouraged to review the latest data available whenever referencing the content of these annexes.

- Annex A provides further cross-reference information for all the institutions and organisations discussed in Clause 4;
- Annex B provides examples of after-market sources which shall be considered in obsolescence situations (see 4.12.9);
- Annex C provides an example of a typical Chinese RECS certificate (see 4.7.2 and A.9.3);
- Annex D provides a flowchart of IEC/TS 62668-1 requirements and their relationship to external standards.

The key elements to control and understand are:

- a) the definition of intellectual property (see 4.3);
- b) the limitations of the term counterfeit (see 4.4);
- c) the better term fraudulent (see 4.4.3);
- d) what recycling is and why the avionics industry minimises recycling to in-house activities only (see 4.6);
- e) the use of original component manufacturers (OCMs) who protect their intellectual property (see 4.7);
- f) the use of approved franchised distributors or sources (see 4.10);
- g) the use of risk management and component test processes when buying suspect untraceable components from non-franchised distributors in accordance with IEC/TS 62668-2⁴ (see 4.12.12);
- h) the protection of OEM intellectual property, throughout their product lifecycles including management of all spares;
- i) the reporting of violations of intellectual property through local law enforcement (see 4.14, A.7.2, A.8 for useful contacts).

⁴ Under consideration.

4.2 Minimum avionics OEM requirements

The avionics OEM shall:

- a) Protect their intellectual property rights (see 4.3, 4.4, 4.5, 4.12 and 4.13);
- b) Select components from original component manufacturers (OCMs) who control their intellectual property rights (see 4.3, 4.7) and which includes unique configuration controlled part numbers and physical part markings (see 4.7.6);
- c) Have an anti-counterfeit, fraudulent and recycled component process, in compliance with the requirements herein, which may include an anti-counterfeit management plan in accordance with this specification or specifications such as SAE-AS5553A⁵ or others similar (see 4.12.13) and shall flow this requirement down to lower level suppliers (see 4.12.13.3);
- d) Have an AS/EN/JISQ 9100 process (see 4.12) to audit all sources of supply of components, which shall have an anti-counterfeit, fraudulent and recycled component process in compliance with this specification;
- e) Have a process only allowing the purchase of traceable components (see 4.12.3) using the AS/EN/JISQ 9100 procedures, from:
 - 1) Reliable Electronic Component Supplier (RECS) approved original component manufacturers (OCM) (see 4.7.2) and franchised distributors (see 4.10) where the RECS scheme operates, e.g. China and the Far East (see 4.6.2). See Annex C for a typical RECS certificate.
 - 2) Where the RECS scheme does not operate, purchase traceable components:
 - i) Direct from the original component manufacturer (OCM) (see 4.7) with any appropriate traceability measures such as the use of Semiconductor Industries Association Anti Counterfeit Task Force (ACTF) measures (see 4.7.7) or physical unclonable function (PUF) features (see 4.7.10), as considered necessary;
 - ii) Direct from USA Trusted Foundry Program (see 4.7.8) and/or from the USA Trusted IC Supplier Accreditation Program (see 4.7.9) where required by customer contract or considered appropriate;
 - iii) In situations where the component is obsolete, purchase direct from the franchised aftermarket manufacturer (see 4.12.9 and Annex B);
 - iv) From franchised distributors (see 4.10)
 - 1) Who are preferably AS/EN/JISQ 9120 approved (see 4.9);
 - 2) Who are also ISO9001 approved as a minimum requirement (see 4.8);
 - v) From non-franchised distributors (see 4.11 and IEC/TS 62668-2⁶ which will be published at a later date)
 - 1) Who are preferably AS/EN/JISQ 9120 approved (see 4.9);
 - 2) Who are also ISO 9001 approved as a minimum requirement (see 4.8);
 - 3) Have additional procedures to ensure counterfeit, recycled or fraudulent components do not enter the supply chain, e.g. use IDEA-STD-1010B (see 4.11).
- f) Have an AS/EN/JISQ 9100 process which avoids the use of unapproved brokers (see 4.11.3);
- g) In the rare event an avionics OEM considers it is necessary to purchase untraceable components, the avionics OEM shall:

⁵ Under consideration.

⁶ Under consideration.