



TECHNICAL SPECIFICATION



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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 03.100.50; 31.020; 49.060

ISBN 978-2-8322-3277-4

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

CONTENTS

FOREWORD.....	6
1 Scope.....	8
2 Normative references.....	8
3 Terms, definitions and abbreviations	8
3.1 Terms and definitions	8
3.2 Abbreviations	12
4 Technical requirements.....	14
4.1 General.....	14
4.2 Minimum avionics OEM requirements	15
4.3 Intellectual property.....	18
4.3.1 General	18
4.3.2 Definition of intellectual property	18
4.4 Counterfeit consideration.....	19
4.4.1 General	19
4.4.2 Legal definition of counterfeit	19
4.4.3 Fraudulent components	19
4.4.4 How to establish traceability	20
4.4.5 Reasons for the loss of component traceability	20
4.5 Why is counterfeit a problem?	20
4.5.1 General	20
4.5.2 General worldwide activities combating counterfeit issues.....	21
4.5.3 Cultural differences.....	21
4.5.4 Counterfeiting activities and avionics equipment.....	22
4.5.5 Electronic components direct action groups	24
4.6 Recycled components	25
4.6.1 General	25
4.6.2 Why does the avionics industry not use recycled components?	25
4.6.3 When do recycled components become suspect and potentially fraudulent?	25
4.7 Original component manufacturer (OCM) anti-counterfeit guidelines.....	26
4.7.1 General	26
4.7.2 Chinese Reliable Electronic Component Supplier (RECS) audit scheme.....	26
4.7.3 Original component manufacturer (OCM) ISO 9001 and AS/EN/JISQ 9100 Third Party Certification	26
4.7.4 Original component manufacturer (OCM) trademarks.....	26
4.7.5 Original component manufacturer (OCM) IP control	26
4.7.6 Original component manufacturer (OCM) physical part marking and packaging marking	27
4.7.7 The Semiconductor Industries Association Anti Counterfeit Task Force (ACTF)	27
4.7.8 USA Trusted Foundry Program.....	28
4.7.9 USA Trusted IC Supplier Accreditation Program	28
4.7.10 Physical unclonable function (PUF)	28
4.7.11 Original component manufacturer (OCM) best practice	28
4.8 Distributor minimum accreditations	28
4.9 Distributor AS/EN/JISQ 9120 Third Party Certification	29
4.10 Franchised distributor network.....	29

4.10.1	General	29
4.10.2	SAE AS6496	30
4.10.3	Control stock through tracking schemes	30
4.10.4	Control scrap	30
4.10.5	RECS	30
4.11	Non-franchised distributor anti-counterfeit guidelines	30
4.11.1	General	30
4.11.2	CCAP-101 certified program for independent distributor	31
4.11.3	SAE AS6081	31
4.11.4	OEM managed non-franchised distributors.....	31
4.11.5	Brokers.....	31
4.12	Avionics OEM anti-counterfeit guidelines when procuring components	31
4.12.1	General	31
4.12.2	Buy from approved sources	32
4.12.3	Traceable components	32
4.12.4	Certificate of conformance and packing slip	32
4.12.5	Plan and buy sufficient quantities	33
4.12.6	Use of non- franchised distributors	33
4.12.7	Brokers.....	34
4.12.8	Contact the original manufacturer.....	34
4.12.9	Obsolete components and franchised aftermarket sources	34
4.12.10	IEC TS 62239-1 approved alternatives	34
4.12.11	Product redesign.....	34
4.12.12	Non traceable components	35
4.12.13	OEM anti-counterfeit plans including SAE AS5553 and SAE AS6174.....	35
4.13	OEM anti-counterfeit guidelines for their products	37
4.13.1	IP control.....	37
4.13.2	Tamper-proofing the OEM design	37
4.13.3	Tamper-proof labels	38
4.13.4	Use of ASICS and FPGAs with IP protection features	38
4.13.5	Control the final OEM product marking	38
4.13.6	Control OEM scrap.....	39
4.13.7	OEM trademarks and logos	39
4.13.8	Control delivery of OEM products and spares and their useful life	39
4.13.9	Repairs to OEM products	39
4.14	Counterfeit, fraud and component recycling reporting.....	40
4.14.1	General	40
4.14.2	USA FAA suspected unapproved parts (SUP) program	40
4.14.3	EASA.....	40
4.14.4	UK counterfeit reporting	40
4.14.5	EU counterfeit reporting	40
4.14.6	UKEA anti-counterfeiting forum	40
Annex A (informative)	Useful contacts	41
A.1	World Intellectual Property Organization (WIPO).....	41
A.1.1	General	41
A.1.2	What is WIPO?	41
A.1.3	WIPO Intellectual Property Services	41
A.1.4	WIPO global network on Intellectual Property (IP) Academies	43
A.2	Anti-Counterfeiting Trade Agreement (ACTA).....	43

A.2.1	ACTA.....	43
A.2.2	Global Anti-Counterfeiting Network (GACG).....	44
A.3	World Semiconductor Council (WSC).....	44
A.4	SEMI	44
A.5	Electronics Authorized Directory	46
A.6	UK.....	46
A.6.1	The UK intellectual property office	46
A.6.2	Alliance for IP	46
A.6.3	UK Chartered Trading Standards Institute.....	47
A.6.4	UK HM Revenue and Customs	47
A.6.5	ESCO Anti-counterfeiting Forum (formerly UKEA Anti-Counterfeiting Forum).....	47
A.6.6	Electronic Component Supplier Network (ESCN).....	47
A.6.7	UK Ministry of Defence.....	48
A.7	Europe.....	48
A.7.1	Europa Summaries of EU Legislation.....	48
A.7.2	Europol, the European Law Enforcement Agency.....	48
A.7.3	European Patent Office	48
A.7.4	Europe at OHIM	48
A.7.5	European Aviation Safety Agency (EASA)	49
A.7.6	IECQ audit schemes	49
A.7.7	BEAMA.....	50
A.8	USA.....	50
A.8.1	United States Patent and Trademark Office	50
A.8.2	The International Trade Administration, US Department of Commerce.....	50
A.8.3	US Embassy in China information.....	51
A.8.4	International Intellectual Property Alliance	51
A.8.5	The Federal Aviation Administration (FAA)	52
A.8.6	Trusted Access Program Office (TAPO).....	52
A.8.7	Defense Microelectronics Activity (DMEA)	53
A.8.8	Independent Distributors of Electronics Association (IDEA).....	53
A.8.9	ECIA formerly National Electronic Distributors Association (NEDA)	54
A.8.10	Components Technology Institute Inc. (CTI)	55
A.8.11	Defense Logistics Agency (DLA)	55
A.8.12	DFARS	55
A.8.13	IAQG	55
A.9	China.....	56
A.9.1	State Intellectual Property office of the P.R.C.	56
A.9.2	Chinese Patent and Trademark Office	56
A.9.3	China Electronics Associations:.....	56
A.9.4	China Electronics Quality Management Association (CQAE)	56
A.9.5	Chinalawinfo.Co Ltd., for Law info China	56
A.10	Japan – Japanese Patent Office (JPO)	56
A.11	Physical unclonable function	56
A.12	The Hardware Intrinsic Security (HIS) initiative	57
A.13	Examples of tamper-proof design companies	58
A.14	Examples of FPGA die serialization	58
A.15	Examples of NVRAM manufacturers	58
A.16	SAE G-19	58

This is a preview of "IEC/TS 62668-1 Ed. 3...". Click here to purchase the full version from the ANSI store.

A.17	iNEMI	60
A.18	OECD	61
A.19	ICC	61
A.20	Applied DNA Sciences	61
Annex B (informative)	Examples of aftermarket sources.....	62
B.1	Examples of franchised aftermarket sources	62
B.2	Examples of sources of franchised die which can be packaged	62
B.3	Examples of third party custom packaging houses which provide aftermarket solutions	62
B.4	Examples of emulated aftermarket providers.....	63
Annex C (informative)	Typical example of a RECS certificate.....	64
Annex D (informative)	Flowchart of IEC TS 62668-1 requirements	65
Bibliography	67
Figure 1	– Suspect components perimeter.....	20
Table 1	– Anti-counterfeit awareness training guidelines.....	17
Table 2	– IEC TS 62668-1 requirements waived if OEM has an approved SAE AS5553A plan.....	36

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.

This is a preview of "IEC/TS 62668-1 Ed. 3...". [Click here to purchase the full version from the ANSI store.](#)

This third edition cancels and replaces the second edition, published in 2014. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) identified that the Chinese RECS scheme is no longer maintained (in 4.2 and where appropriate as agreed with CEPREI);
- b) added a reference to AS/EN/JISQ 9100 which at the next revision (revision D) will contain an anti-counterfeit requirement which may be used to satisfy the requirements of 4.2;
- c) added reference to the now published SAE AS6496 for franchised distributors, to USA DFARS rule 252.246.7007 and to UK Defence Standard 05-135;
- d) added reference to more GAO, OECD and ICC reports in 4.5.1;
- e) updated weblinks and other references.

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

Enquiry draft	Report on voting
107/267/DTS	107/277/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 website 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 part of IEC 62668, which is a 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 are considered in IEC TS 62668-2. 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 62239-1, *Process management for avionics – Management plan – Part 1: Preparation and maintenance of an electronic components management plan*

IEC TS 62668-2, *Process management for avionics – Counterfeit prevention – Part 2: Managing electronic components from non-franchised sources*

ISO 9001, *Quality management systems – Requirements*

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

AS/EN/JISQ 9110:2015 *Quality Maintenance Systems – Aerospace – Requirements for Maintenance Organizations*