

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 62668-1:2019 sisaldab Euroopa standardi EN IEC 62668-1:2019 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 62668-1:2019 consists of the English text of the European standard EN IEC 62668-1:2019.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 08.11.2019.	Date of Availability of the European standard is 08.11.2019.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 03.100.50, 31.020, 49.060

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Process management for avionics - Counterfeit prevention - Part
1: Avoiding the use of counterfeit, fraudulent and recycled
electronic components
(IEC 62668-1:2019)

Gestion des processus pour l'avionique - Prévention de la
contrefaçon - Partie 1: Prévention de l'utilisation de
composants électroniques contrefaits, frauduleux et
recyclés
(IEC 62668-1:2019)

Luftfahrtelektronik-Prozessmanagement - Verhinderung von
Produktfälschung - Teil 1: Vermeidung des Gebrauchs von
gefälschten, betrügerischen und wiederverwerteten
elektronischen Bauelementen
(IEC 62668-1:2019)

This European Standard was approved by CENELEC on 2019-10-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 107/335/CDV, future edition 1 of IEC 62668-1, prepared by IEC/TC 107 "Process management for avionics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62668-1:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-07-21
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-10-21

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62668-1:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

ISO 14001 NOTE Harmonized as EN ISO 14001

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62239-1	-	Process management for avionics Management plan - Part 1: Preparation and maintenance of an electronic components management plan	- EN IEC 62239-1	-
IEC 62668-2	-	Process management for avionics Counterfeit prevention - Part 2: Managing electronic components from non-franchised sources	- EN IEC 62668-2	-
ISO 9001	-	Quality management systems Requirements	- EN ISO 9001	-
-	-	Quality Management Systems Requirements for Aviation, Space and Defense Organizations	- AS/EN/JISQ 9100	-
-	-	Quality Maintenance Systems – Aerospace – Requirements for Maintenance Organizations	AS/EN/JISQ 9110	-

CONTENTS

FOREWORD	6
1 Scope	8
2 Normative references	8
3 Terms, definitions and abbreviated terms	8
3.1 Terms and definitions	8
3.2 Abbreviated terms	13
4 Technical requirements	15
4.1 General	15
4.2 Minimum avionics OEM requirements	16
4.3 Intellectual property	19
4.3.1 General	19
4.3.2 Definition of intellectual property	20
4.4 Counterfeit consideration	20
4.4.1 General	20
4.4.2 Legal definition of counterfeit	21
4.4.3 Fraudulent components	21
4.4.4 How to establish traceability	21
4.4.5 Reasons for the loss of component traceability	22
4.5 The counterfeit problem	22
4.5.1 General	22
4.5.2 General worldwide activities combating counterfeit issues	23
4.5.3 Cultural differences	23
4.5.4 Counterfeiting activities and avionics equipment	23
4.5.5 Electronic components direct action groups	26
4.6 Recycled components	26
4.6.1 General	26
4.6.2 Why the avionics industry does not use recycled components	27
4.6.3 How recycled components become suspect and potentially fraudulent	27
4.7 Original component manufacturer (OCM) anti-counterfeit guidelines	27
4.7.1 General	27
4.7.2 Chinese Reliable Electronic Component Supplier (RECS) audit scheme	28
4.7.3 Original component manufacturer (OCM) ISO 9001 and AS/EN/JISQ 9100 Third Party Certification	28
4.7.4 Original component manufacturer's (OCM) trademarks	28
4.7.5 Original component manufacturer's (OCM) IP control	28
4.7.6 Original component manufacturer's (OCM) physical part marking and packaging marking	28
4.7.7 The Semiconductor Industries Association Anti Counterfeit Task Force (ACTF)	29
4.7.8 USA Trusted Foundry Program	29
4.7.9 USA Trusted IC Supplier Accreditation Program	30
4.7.10 Physical unclonable function (PUF)	30
4.7.11 Original component manufacturer (OCM) best practice	30
4.8 Distributor minimum accreditations	30
4.9 Distributor AS/EN/JISQ 9120 Third Party Certification	31
4.10 Franchised distributor network	31
4.10.1 General	31

4.10.2	SAE AS6496.....	32
4.10.3	Control stock through tracking schemes	32
4.10.4	Control of scrap	33
4.10.5	RECS	33
4.11	Non-franchised distributor anti-counterfeit guidelines	33
4.11.1	General	33
4.11.2	CCAP-101 certified program for independent distributor	33
4.11.3	SAE AS6081.....	33
4.11.4	OEM managed non-franchised distributors	34
4.11.5	Brokers.....	34
4.12	Avionics OEM anti-counterfeit guidelines when procuring components.....	34
4.12.1	Anti-counterfeiting general approach	34
4.12.2	Buy from approved sources	34
4.12.3	Traceable components	34
4.12.4	Certificate of conformance and packing slip.....	35
4.12.5	Plan and buy sufficient quantities	36
4.12.6	Use of non- franchised distributors	36
4.12.7	Brokers.....	36
4.12.8	Contact the original manufacturer	37
4.12.9	Obsolete components and franchised aftermarket sources	37
4.12.10	IEC 62239-1 approved alternatives	37
4.12.11	Product redesign	37
4.12.12	Non traceable components	38
4.12.13	OEM anti-counterfeit plans including SAE AS5553 and SAE AS6174.....	38
4.13	OEM anti-counterfeit guidelines for their products	43
4.13.1	IP control.....	43
4.13.2	Tamper-proofing the OEM design	43
4.13.3	Tamper-proof labels.....	43
4.13.4	Use of ASICs and FPGAs with IP protection features.....	43
4.13.5	Control the final OEM product marking	44
4.13.6	Control OEM scrap	44
4.13.7	OEM trademarks and logos.....	44
4.13.8	Control delivery of OEM products and spares and their useful life.....	44
4.13.9	MRO activities	45
4.14	Counterfeit, fraud and component recycling reporting	46
4.14.1	General	46
4.14.2	USA FAA suspected unapproved parts (SUP) program	46
4.14.3	EASA.....	46
4.14.4	UK counterfeit reporting.....	46
4.14.5	EU counterfeit reporting.....	46
4.14.6	UKEA anti-counterfeiting forum.....	46
4.15	Anti-counterfeit awareness training	46
4.16	Information to support the management of the supply chain.....	47
Annex A	(informative) Useful contacts	48
A.1	World Intellectual Property Organization (WIPO).....	48
A.1.1	General	48
A.1.2	What is WIPO?	48
A.1.3	WIPO Intellectual Property Services	49
A.1.4	WIPO global network on Intellectual Property (IP) Academies.....	50

A.2	Anti-Counterfeiting Trade Agreement (ACTA).....	50
A.2.1	ACTA.....	50
A.2.2	Global Anti-Counterfeiting Network (GACG).....	51
A.3	World Semiconductor Council (WSC) and GAMS	51
A.4	SEMI.....	52
A.5	Electronics Authorized Directory	53
A.6	UK	53
A.6.1	The UK intellectual property office	53
A.6.2	Alliance for IP	54
A.6.3	UK Chartered Trading Standards Institute.....	54
A.6.4	UK HM Revenue and Customs.....	54
A.6.5	Anti-Counterfeiting Forum.....	54
A.6.6	Electronic Component Supplier Network (ESCN)	55
A.6.7	UK Ministry of Defence	55
A.7	Europe.....	55
A.7.1	Europa Summaries of EU Legislation.....	55
A.7.2	Europol, the European Law Enforcement Agency.....	55
A.7.3	European Patent Office	55
A.7.4	EUIPO	55
A.7.5	European Aviation Safety Agency (EASA)	56
A.7.6	IECQ audit schemes	57
A.7.7	BEAMA.....	57
A.8	USA.....	57
A.8.1	United States Patent and Trademark Office	57
A.8.2	The International Trade Administration, US Department of Commerce	58
A.8.3	International Intellectual Property Alliance	58
A.8.4	The Federal Aviation Administration (FAA)	58
A.8.5	Trusted Access Program Office (TAPO).....	59
A.8.6	Independent Distributors of Electronics Association (IDEA)	59
A.8.7	ECIA formerly National Electronic Distributors Association (NEDA)	60
A.8.8	Components Technology Institute Inc. (CTI)	61
A.8.9	Defense Logistics Agency (DLA).....	61
A.8.10	DFARS	61
A.8.11	IAQG	62
A.8.12	USA Homeland Security	62
A.9	China.....	62
A.9.1	CNIPA.	62
A.9.2	Chinese Patent and Trademark Office	62
A.9.3	China Electronics Associations:.....	62
A.9.4	China Quality Certification Centre (CQC).....	62
A.9.5	Civil Aviation Administration of China (CAAC).....	62
A.9.6	China lawinfo.Co Ltd., for Law info China	62
A.10	Japan – Japanese Patent Office (JPO)	63
A.11	Physical unclonable function	63
A.12	PUF and tags initiative and solutions	64
A.12.1	The Hardware Intrinsic Security (HIS) initiative	64
A.12.2	Examples of tag providers	64
A.13	Examples of tamper-proof design companies	65
A.14	Examples of FPGA die serialization	65

A.15	Examples of NVRAM manufacturers	65
A.16	SAE G-19	65
A.17	iNEMI.....	69
A.18	OECD	69
A.19	ICC	69
A.20	Applied DNA Sciences	70
A.21	Safety Directors' Forum	70
A.22	'Stop fake bearings' video	70
A.23	Industrial company's online anti-counterfeit awareness training	70
A.24	Subscription based anti-counterfeit awareness training.....	70
A.25	USA Government anti-counterfeit publications and awareness training	70
A.26	IECQ WG6.....	71
A.27	Anti-counterfeiting videos.....	71
Annex B	(informative) Examples of aftermarket sources	72
B.1	Examples of franchised aftermarket sources	72
B.2	Examples of sources of franchised die which can be packaged.....	72
B.3	Examples of third party custom packaging houses which provide aftermarket solutions	72
B.4	Examples of emulated aftermarket providers.....	72
Annex C	(informative) Typical example of a RECS certificate.....	74
Annex D	(informative) Flowchart of IEC 62668-1 requirements	75
Annex E	(Informative) Typical use of anti-counterfeit standards in supply chains	77
Bibliography	83
Figure 1	– Suspect components perimeter	21
Figure D.1	– Flowchart of IEC 62668-1 requirements and their relationship to external standards.....	76
Figure E.1	– Available anti-counterfeit standards for supply chains.....	77
Figure E.2	– Overview of typical relationships for anti-counterfeit standards in an avionics supply chain	79
Figure E.3	– Overview of typical anti-counterfeit standards in an avionics OEM supply chain.....	80
Figure E.4	– IECQ OD 3702 traceability audit	81
Figure E.5	– Typical IECQ OD 3702 coverage in any supply chain.....	82
Table 1	– Anti-counterfeit awareness training guidelines.....	18
Table.2	– IEC 62668-1 requirements satisfied or not if OEM has an approved SAE AS5553A plan.....	39
Table.3	– IEC 62668-1 requirements satisfied or not if OEM has an approved SAE AS5553B plan.....	41

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.

International Standard IEC 62668-1 has been prepared by IEC technical committee 107: Process management for avionics.

This first edition cancels and replaces the third edition of IEC TS 62668-1 published in 2016. This edition constitutes a technical revision.

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

- a) added a reference to AS/EN/JISQ 9100 and AS/EN/JISQ 9110 which contain anti-counterfeit requirements which may be used to satisfy the requirements of 4.2;
- b) added reference to USA DFAR rule 252.246.7008 and to UK Defence Standard 05-135;
- c) added reference to more GAO, OECD and ICC reports in 4.5.1;

- d) updated weblinks and other references;
- e) added new Annex E with figures describing how anti-counterfeit documents can be used in supply chains;
- f) added a reference to the new IECQ OD 3702 traceability audit;
- g) added new definition for re-manufactured components with a warning that these are not recommended.

The text of this International Standard is based on the following documents:

CDV	Report on voting
107/335/CDV	107/346A/RVC

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

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

A list of all 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 document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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.