
**Space systems — Electrical, electronic
and electromechanical (EEE) parts —**

**Part 1:
Parts management**

*Systèmes spatiaux — Composants électriques, électroniques et
électromécaniques (EEE) —*

Partie 1: Gestion des composants

(<https://standards.iteh.ai>)
Document Preview

ISO 14621-1:2019

<https://standards.iteh.ai/catalog/standards/iso/1ae22b5f-e2c0-4d50-a006-45cea71169c4/iso-14621-1-2019>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO 14621-1:2019

<https://standards.iteh.ai/catalog/standards/iso/1ae22b5f-e2c0-4d50-a006-45cea71169c4/iso-14621-1-2019>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions, and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	3
4 EEE parts management programme	4
4.1 EEE parts management process.....	4
4.1.1 General.....	4
4.1.2 Design process.....	4
4.1.3 Design margin.....	5
4.1.4 Life cycle cost.....	7
4.1.5 Technology insertion strategy.....	8
4.1.6 Technical support.....	8
4.1.7 System engineering support.....	10
4.1.8 Parts selection.....	11
4.1.9 Obsolescence management.....	12
4.2 Supplier management.....	12
4.2.1 General.....	12
4.2.2 Management processes.....	12
4.2.3 Information management.....	14
4.2.4 Internal controls.....	15
4.3 Shared data guidance.....	15
Annex A (informative) Radiation effects	17
Annex B (informative) Parts selection checklist	20
Annex C (informative) Subcontractor/supplier management checklist	21
Annex D (informative) Shared database	35
Bibliography	40

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

This edition cancels and replaces the first edition (ISO 14621-1:2003), which has been technically revised. The main changes compared to the previous edition are as follows:

- Introduction and definitions have been revised,
- consistency has been checked with ISO 14621-2, and
- the document has been aligned with the ISO/IEC Directives Part 2, 2018 edition.

A list of all parts in the ISO 14621 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

ISO 14621-1 and ISO 14621-2 are designed to jointly assist the user and supplier communities in developing and executing an effective process for the design, selection and application of electrical, electronic, and electromechanical (EEE) space parts throughout the life cycle of the programme.

NOTE In both ISO 14621-1 and ISO 14621-2, the family of EEE parts includes electro-optical parts.

The strategy represented in the ISO 14621 series is:

- for ISO 14621-1 a system approach to managing risk throughout the life cycle of the programme, by developing, selecting and properly applying the right EEE part for its intended application;
- for ISO 14621-2 a framework for developing and documenting an EEE parts control programme to assure that the parts used in space flight hardware have acceptable risk, i.e. possess adequate functional, radiation and reliability characteristics to meet the system requirements.

Both ISO 14621-1 and ISO 14621-2 should be tailored to meet the specific needs of each individual programme, i.e. to address the applicable system performance requirements, risk tolerance, budget, mission duration, operating environment, and schedule. Tailoring should result in a set of planned activities that are not only capable of achieving all contractual EEE parts related requirements, but also commensurate with the space system's unit-value/mission-criticality and life cycle technical data product requirements.

NOTE This type of planning is sometimes referred to as capability-based Safety, Dependability, and Quality Assurance (SD&QA) programme tailoring; and the guidance for performing it is provided in ISO/TS 18667.

ISO 14621-1 and ISO 14621-2 are relevant to all users and customers of space systems, and the suppliers and vendors that furnish space flight hardware. However, to utilize these documents to their fullest potential, it is necessary to understand the commercial space business environment which has unique cost and schedule constraint challenges.

This document discusses the following key elements that support an effective EEE parts management programme:

- Part obsolescence management — perform early assessment of part availability risk for the entire space system, develop and implement risk mitigation activities that will prevent or minimize programme disruption due to part shortages, and ensure long-term supportability throughout the programme life cycle.
- Supplier management — plan and execute techniques for verifying that the practices and products of suppliers and vendors comply with:
 - contractual requirements;
 - their documented internal business practices (also known as command media), which should be consistent with the commercial consensus on technical best practices.
- Cost management — minimize the costs, including verifying parts suppliers and vendors can provide the rationale why they set different costs for parts that are functionally identical, e.g. identify the cost of special processing applied to parts that are designed for a specific space environment or mission.
- Technology insertion — focus on creating a technology road map, which minimizes risk of obsolescence and develops a strategy for technology insertion during the entire system life cycle.
- Space parts community alert exchange — have a forum focused on managing peer to peer communication among space industry participants seeking to reduce or eliminate expenditures of resources on common problems, by sharing EEE parts related problem information collected during research, design, development, production, and operational phases of the programme.

- Process control — ensure the user's and supplier's approaches for controlling EEE parts risks, and risks of other critical items and processes, are documented, formally approved, and validated.
- Systems engineering — encourage parts engineering participation in all phases of the product life cycle.
- Training — provide effectively trained resources on the various processes required to develop, select, and properly apply the right EEE part for the its intended application, as well as to establish awareness of the parts management programme throughout all levels of the user and supplier communities.

Those specific elements or opportunities are presented in descriptive terms and illustrated in graphic flow charts. There is no intent to provide detailed descriptions of "how to" in this document. It may be cited as a basic guideline within a statement of work and/or for assessing proposals and contractor performance. All levels of contractual relationships (acquiring activities, primes, subcontractors and suppliers) may use this document. It is the responsibility of the user community to establish, define, and administer those tasks based on the programme goals and objectives and thus provide the "what" elements envisioned and establish their appropriate criteria for their programme.

Although this document was written with the intent of covering EEE parts, the concept established is a system approach for developing an EEE parts programme with reference to specific material and mechanical processes that make up EEE parts.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[ISO 14621-1:2019](https://standards.iteh.ai/catalog/standards/iso/1ae22b5f-e2c0-4d50-a006-45cea71169c4/iso-14621-1-2019)

<https://standards.iteh.ai/catalog/standards/iso/1ae22b5f-e2c0-4d50-a006-45cea71169c4/iso-14621-1-2019>