SLOVENSKI STANDARD
SIST EN 16602-60-14:2020

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Nadomešča:
SIST EN 16602-60-14:2015

Zagotavljanje varnih proizvodov v vesoljski tehniki - Postopek obnovitve uporabnosti - Komponente EEE

Space product assurance - Relifing procedure - EEE components

Raumfahrtproduktsicherung - Wiederbelebungsprozeduren für EEE-Komponenten

Assurance produit des projets spatiaux - Procédure de déstockage - Composants EEE

Ta slovenski standard je istoveten z: **EN 16602-60-14:2020**

ICS:

49.140	Vesoljski sistemi in operacije	Space systems and operations

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English version

Space product assurance - Relifing procedure - EEE components

Assurance produit des projets spatiaux - Procédure de remise en état - Composants EEE

Raumfahrtproduktsicherung - Wiederbelebungsprozeduren für EEE-Komponenten

This European Standard was approved by CEN on 19 July 2020.

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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 CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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European Foreword

This document (EN 16602-60-14:2020) has been prepared by Technical Committee CEN-CENELEC/TC 5 “Space”, the secretariat of which is held by DIN.

This document (EN 16602-60-14:2020) originates from ECSS-Q-ST-60-14C Rev.1 Corrigendum 1.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

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

This document supersedes EN 16602-60-14:2014.

The main changes with respect to EN 16602-60-14:2014 are:

- Creation of two relifing flows: one covering Class 1 and Class 2 components and the other covering Class 3 components
- Harmonization with EN 16602-60:2015 (based on ECSS-Q-ST-60C Rev.2)
- Introduction of the applicability of the relifing requirements to commercial components
- Change of timing requirements for relifing (from 7+3 to 7+4+4 years) increasing the maximum elapsed time between date code and time of mounting from 10 to 15 years
- Transformation of normative Annex A "Relifing report - DRD" by into informative Annex C "Guidelines for a Relifing report"
- Deletion of informative Annex B "ESD".

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any EN covering the same scope but with a wider domain of applicability (e.g. : aerospace).

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1
Scope

This standard specifies the requirements, also known as “relifing requirements”, for the planned, intentional storage, control, and removal from storage of electronic, electrical and electromechanical parts which are intended to be used for space applications.

This standard covers the relifing of all components as defined by ECSS-Q-ST-60 and ECSS-Q-ST-60-13.

The relifing process is a lot quality control activity. The inspections and tests defined do not constitute an up-screening or up-grading of components to a higher level of quality than procured to.

In line with ECSS-Q-ST-60, this standard differentiates between classes of components through different sets of standardization requirements.

The classes provide levels of trade-off between assurance and risk. The highest assurance and lowest risk is provided by Class 1 and the lowest assurance and highest risk by Class 3. Procurement costs are typically highest for Class 1 and lowest for Class 3. Mitigation and other engineering measures can decrease the total cost of ownership differences between the three classes. The project objectives, definition and constraints determine which class or classes of components are appropriate to be utilised within the system and subsystems.

- Class 1 components are described in Clause 4, 5 and 6
- Class 2 components are described in Clause 4, 5 and 6
- Class 3 components are described in Clause 4, 5 and 7

The requirements of this document apply to all parties involved at all levels in the integration of EEE components into space segment hardware and launchers.

This standard is applicable to all EEE parts covered by ECSS-Q-ST-60 and used in space programmes.

This standard is not applicable to dice.

This standard may be tailored for the specific characteristic and constrains of a space project in conformance with ECSS-S-ST-00.

2
Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this ECSS Standard. For dated references, subsequent amendments to, or revision of any of these publications do not apply, However, parties to agreements based on this ECSS Standard are encouraged to investigate the possibility of applying the more recent editions of the normative documents indicated below. For undated references, the latest edition of the publication referred to applies.

EN reference	Reference in text	Title
EN 16601-00-01	ECSS-S-ST-00-01	ECSS system – Glossary of terms
EN 16602-10-09	ECSS-Q-ST-10-09	Space product assurance – Nonconformance control system
EN 16602-60	ECSS-Q-ST-60	Space product assurance – Electrical, electronic and electromechanical (EEE) components
EN 16602-60-13	ECSS-Q-ST-60-13	Space product assurance – Requirements for the use of COTS components
EN 16602-70-01	ECSS-Q-ST-70-01	Space product assurance – Cleanliness and contamination control
	ESCC 24900	Minimum Requirements for Controlling Environmental Contamination of Components
	IPC/JEDEC J-STD-033D April 2018	Handling, Packing, Shipping and Use of Moisture, Reflow, and Process Sensitive Devices
	ESCC 20600	Preservation, Packaging and dispatch of ESCC Electronic Components
	ANSI ASQ Z1.4-2003 Revision 2008	Sampling procedures and tables for inspection by attributes

3
Terms, definitions and abbreviated terms

3.1 Terms from other standards

a. For the purpose of this Standard, the terms and definitions from ECSS-S-ST-00-01 apply, in particular for the following terms:

1. clean area
2. cleanliness
3. cleanroom
4. component
5. conformance
6. contamination
7. dependability
8. environment
9. inspection
10. performance
11. relifing
12. traceability

3.2 Terms specific to the present standard

3.2.1 antistatic material

material that minimizes the generation of static charges

NOTE 1 This term refers to the reduction of triboelectric charge generation.

NOTE 2 This property is not dependent upon material resistivity.

3.2.2 conductive material

<CONTEXT: ESD protection> material with the following characteristics:

— surface conductive type: materials with a surface resistivity less than 10^5 Ω/☐.

— volume conductive type: materials with a volume resistivity less than 10^4 Ω-cm.

3.2.3 container

receptacle which holds, restrains or encloses an item for the purpose of storage or transportation

3.2.4 (original) date code

code used by the EEE part manufacturer at assembly step that indicates the production date

NOTE 1 Generally four-figure codes; two for the year and two for the week.

NOTE 2 Special lot number can also identify the date code.

3.2.5 (relifing) date code:

code indicating the date an item is submitted to the last step of the relifing sequence

NOTE Four-figure code, two for the year and two for the week.

3.2.6 dissipative material

<CONTEXT: ESD protection> material with the following characteristics:

— surface conductive type: materials with a surface resistivity equal to or greater than 10^5 Ω/□ but less than 10^{12} Ω/□.

— volume conductive type: materials with a volume resistivity equal to or greater than 10^4 Ω-cm but less than 10^{11} Ω-cm.

3.2.7 electrostatic charge

negative or positive electrical charge present on the material or item surface, at rest

3.2.8 electrostatic discharge (ESD)

transfer of electrostatic charge between objects at different potentials caused by direct contact or induced by an electrostatic field

3.2.9 electrostatic discharge sensitive (ESDS)

tendency of the performance of EEE parts to be affected or damaged by an ESD event

3.2.10 ESD protected area

area which is constructed and equipped with the necessary ESD protective materials, equipment, and procedures, to limit ESD voltages below the sensitivity level of ESDS items handled therein

3.2.11 ESD protective material

material with one or more of the following properties: limits the generation of electrostatic charge, dissipates electrostatic charge, and provides shielding from electric fields

3.2.12 ESD protective packaging

packaging with ESD protective materials to prevent ESD damage to ESDS items

3.2.13 electrostatic shield

barrier or enclosure that prevents or attenuates the penetration of an electric field

3.2.14 handled or handling

actions during which items are hand manipulated or machine processed

3.2.15 identification

application of appropriate markings to ensure that the identity of an item is unfailingly indicated after preservation and each stage of packing

3.2.16 isolating material

<CONTEXT: ESD protection> material not defined as conductive or dissipative are considered to be isolating

3.2.17 package

support used for enveloping, protecting or containing materials

NOTE Different types of packages are normally used: Primary, intermediate and final packages

3.2.18 (primary) package

container, envelope or wrap holding an individual item

3.2.19 (intermediate) package

container holding two or more primary packages

3.2.20 (final) package

container holding one or more intermediate packages, used for transportation of supplies to the orderer

3.2.21 packaging

operations consisting in the preparation of supplies for transit and delivery.

NOTE The term includes preservation, identification and packing

3.2.22 packing

operation by which supplies are placed in container or wrapped and placed in containers

3.2.23 particle

unit of matter with observable length, width and thickness

NOTE A particle can be object of solid or liquid composition, or both, and generally between 0,001 μm and 1000 μm in size

3.2.24 preservation

cleaning of an item and the application of a suitable temporary protective, where necessary, to maintain the item in prime condition

3.2.25 relifing procedures

set of tests performed on an item previously stored to verify that its initial quality and reliability have not been affected by time

3.2.26 storage area

area in the storage site where EEE parts are stored and which contains one or more storage zones.

3.2.27 storage long duration

storage for which duration exceeds 3 years

3.2.28 storage site

geographical location where EEE parts are stored for a short, medium or long term period

NOTE For this site the requirements given in this standard apply: EEE parts manufacturer's premises, procurement Agency, EEE part user.

3.2.29 storage zone

defined space in which EEE parts are stored and which is equipped for the monitoring and the control of storage conditions.

3.2.30 triboelectric effect

generation of electrostatic charge on an object by rubbing or other type of contact.

3.3 Abbreviated terms

For the purpose of this Standard, the abbreviated terms from ECSS-S-ST-00-01 and the following apply:

Abbreviation	Meaning
AQL	acceptance quality limit
ASIC	application specific integrated circuit
CCD	charge coupled device
CDM	charge device model
DPA	destructive physical analysis