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Space product assurance - Qualification of printed circuit boards

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 07/15

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English version

Space product assurance - Qualification of printed circuit boards

Assurance produit des projets spatiaux - Qualification des circuits imprimés

Raumfahrtproduktsicherung - Qualifizierung von Leiterplatten

This European Standard was approved by CEN on 11 October 2014.

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Foreword

This document (EN 16602-70-10:2015) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-70-10:2015) originates from ECSS-Q-ST-70-10C.

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of an identical text or by endorsement, at the latest by July 2015, and conflicting national standards shall be withdrawn at the latest by July 2015.

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 has been prepared under a mandate 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1
Scope

This Standard defines the requirements for evaluation, qualification and maintenance of qualification of PCB manufacturers for different types of PCBs.

This Standard is applicable to the following type of PCBs:

- Rigid PCBs (single-sided, double-sided, multilayer, sequential-laminated multilayer, metal core)
- Flexible PCB (single-sided and double-sided)
- Rigid-flex PCBs (multilayer and sequential-laminated multilayer)
- High frequency PCBs
- Special PCBs.

PCBs are used for the mounting of components in order to produce PCB assemblies performing complex electrical functions. The PCBs are subjected to thermal and mechanical shocks during their assembly such as mounting of components by soldering, rework and repair under normal terrestrial conditions, and in addition the complex PCB assembly are subjected to the environment imposed by launch and space flights.

This standard may be tailored for the specific characteristics and constraints 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 16602-20	ECSS-Q-ST-20	Space product assurance — Quality assurance
EN 16602-70	ECSS-Q-ST-70	Space product assurance — Material, mechanical parts and processes
EN 16602-70-02	ECSS-Q-ST-70-02	Space product assurance — Thermal vacuum outgassing test for the screening of space materials
EN 16602-70-08	ECSS-Q-ST-70-08	Space product assurance — Manual soldering of high-reliability electrical connections
EN 16602-70-11	ECSS-Q-ST-70-11	Space product assurance — Procurement of printed circuit boards
EN 16602-70-21	ECSS-Q-ST-70-21	Space product assurance — Flammability testing for the screening of space materials
EN 16602-70-22	ECSS-Q-ST-70-22	Space product assurance — Control of limited shelf-life materials
EN 16602-70-29	ECSS-Q-ST-70-29	Space product assurance — Determination of offgassing products from materials and assembled articles to be used in a manned space vehicle crew compartment
	IEC 60068-2-3 (1969-01)	Environmental testing. Part 2: Tests. Test Ca: Damp heat, steady state
	IEC 60068-2-14-am 1 (1986-01)	Environmental testing. Part 2: Tests. Test N: Change of temperature

	IEC 60068-2-20-am 2 (1987-01)	Environmental testing. Part 2: Tests. Test T: Soldering
	IEC 60249-1-am 4 (1993-05)	Base materials for printed circuits. Part 1: Test methods
	IEC 60326-2-am 1 (1992-06)	Printed boards. Part 2: Test methods
	IEC 60326-5-am 1 (1989-10)	Printed boards. Part 5: Specification for single and double sided printed boards with plated-through holes
	IEC 60326-8 (1981-01)	Printed boards. Part 8: Specification for single and double sided flexible printed boards with through connections
	IEC 60326-11 (1991-03)	Printed boards. Part 11: Specification for flex-rigid multilayer printed boards with through connections
	IEC 62326-4 (1996-12)	Printed boards. Part 4: Rigid multilayer printed boards with interlayer connections - Sectional specification
	IPC-4101	Specification for base materials for rigid and multilayer printed boards
	MIL-P-50884C	Printed wiring, flexible and rigid-flex