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Space product assurance - ASIC and FPGA development

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

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English version

Space product assurance - ASIC and FPGA development

Assurance produit des projets spatiaux - développement des ASIC et FPGA

Raumfahrtproduktsicherung - Entwicklung von ASIG und FPGA

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Foreword

This document (EN 16602-60-02:2014) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16602-60-02:2014) originates from ECSS-Q-ST-60-02C.

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of an identical text or by endorsement, at the latest by March 2015, and conflicting national standards shall be withdrawn at the latest by March 2015.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

Introduction

The added responsibilities of developing custom designed devices, as opposed to using off-the-shelf components, make certain management activities crucial to the success of the procurement programme. This was already considered by the applicable standard for “Space product assurance - EEE components”, ECSS-Q-ST-60 that classifies custom designed devices, such as ASIC components, under “Specific components”, for which particular requirements are applicable.

The supplier accepts requirements for the development of custom designed components within the boundaries of this standard based on the requirements of the system and its elements, and takes into consideration the operational and environmental requirements of the programme.

The supplier implements those requirements into a system which enables to control for instance the technology selection, design, synthesis and simulation, layout and design validation in a schedule compatible with his requirements, and in a cost-efficient way.

1
Scope

This Standard defines a comprehensive set of requirements for the user development of digital, analog and mixed analog-digital custom designed integrated circuits, such as application specific integrated circuits (ASICs) and field programmable gate arrays (FPGAs). The user development includes all activities beginning with setting initial requirements and ending with the validation and release of prototype devices.

This Standard is aimed at ensuring that the custom designed components used in space projects meet their requirements in terms of functionality, quality, reliability, schedule and cost. The support of appropriate planning and risk management is essential to ensure that each stage of the development activity is consolidated before starting the subsequent one and to minimize or avoid additional iterations. For the development of standard devices, such as application specific standard products (ASSPs) and IP cores, and devices which implement safety related applications, additional requirements can be included which are not in the scope of this document.

The principal clauses of this Standard correspond to the main concurrent activities of a circuit development programme. These include:

- ASIC and FPGA programme management,
- ASIC and FPGA engineering,
- ASIC and FPGA quality assurance.

The provisions of this document apply to all actors involved in all levels in the realization of space segment hardware and its interfaces.

This standard may be tailored for the specific characteristics and constraints of a space project, in accordance 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 revisions 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 most 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	ECSS-Q-ST-10	Space product assurance – Product assurance management
EN 16602-20	ECSS-Q-ST-20	Space product assurance – Quality assurance
EN 16602-30	ECSS-Q-ST-30	Space product assurance – Dependability
EN 16602-60	ECSS-Q-ST-60	Space product assurance – Electrical, electronic and electromechanical (EEE) components
EN 16603-10	ECSS-E-ST-10	Space engineering – System engineering general requirements
EN 16601-10	ECSS-M-ST-10	Space project management – Project planning and implementation
EN 16601-10-01	ECSS-M-ST-10-01	Space project management – Organization and conduct of reviews
EN 16601-40	ECSS-M-ST-40	Space project management – Configuration and information management

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