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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.

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Introduction

During the development of space products, it is important to identify critical and major characteristics, and to annotate them in drawings and technical specifications. In design, proper product characteristic classification helps to improve the design quality. In production, proper product characteristic classification helps manufacturing activities successfully implement design requirements, and also helps producers control the characteristics which are critical to keeping the stability and traceability of product quality. In inspection, characteristic classification facilitates effective allocation of inspection effort. Meanwhile, it ensures realization of critical and major characteristics, quality of end product and the preset mission by performing management requirements through all of the development stages.

This document mainly defines the critical, major and minor characteristics of space products, describes the whole management process of product characteristics and specifies related management requirements.

This document focuses on management requirements for identification and control of space product characteristics, especially for critical and major characteristics, which are closely connected with end product quality and mission success, and enhances cost-effective applications in the life cycle of a space product.

In addition, this document will help to clarify and enhance current practices to improve quality assurance, and promote international cooperation.

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Space systems — Programme management — Management of product characteristics

1 Scope

This document defines management requirements of product characteristics, including their classification, in order to highlight those areas of the product to which specific attention, control or inspections are applied.

This document is applicable to direct implementation of space product characteristic management, especially for mechanical parts and fluidic equipment.

2 Normative references

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.

ISO 27025, *Space systems — Programme management — Quality assurance requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9000 and ISO 10795 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
critical characteristic
kind of characteristic whose fault would cause failure of the whole system or major subsystem to perform a required mission or create serious harm to the safety of humans

3.2
end product
product in the assembled and completed state at which acceptance will take place

3.3
inspection unit
unit on which characteristic inspection is performed

3.4
major characteristic
kind of characteristic whose fault would cause the end product fails to perform a required mission

Note 1 to entry: It would not cause failure of the whole system or major subsystems which perform a required mission.

3.5
minor characteristic
kind of characteristic significant to product quality, but whose fault could not affect realization of mission performance of product

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3.6
product characteristic
distinguishing feature of a product

Note 1 to entry: Product characteristics can be classified variously, including physical, sensory, functional and so on. In this document, according to the severity of consequences caused by characteristic faults and non-conformance with design requirements, product characteristics are mainly divided into three categories: critical, major and minor.

4 General requirements

4.1 In support of product quality and mission functions, management of product characteristic shall be implemented. As part of management process of product characteristics, the suppliers shall identify and classify product characteristics which shall conform to the requirements submitted by their customer, and implement control measures according to classification in order to highlight those areas of the product to which specific attention, control or inspections shall be applied.

4.2 The suppliers shall especially identify critical and major product characteristics during design phase, focus on their control during the process generating critical and major characteristics, and inspect their conformance with the design requirements.

4.3 According to the severity of the consequences caused by failure and non-conformance with the design requirements, product characteristics are classified into critical characteristics, major characteristics and minor characteristics. The suppliers shall strengthen control of critical and major characteristics with proper measures during the production and inspection process.

4.4 Product designers are mainly responsible of product characteristic identification and classification, and product assurance and process personnel participate. Processes, manufacturing, inspection and other factors shall be taken into consideration during product characteristic identification and classification. The analysis procedure and results of identification and classification shall be documented and reviewed. If necessary, the customer shall take part in the review.

4.5 Identification and classification of product characteristics are implemented over the project phases. The suppliers shall begin to identify and classify product characteristics during the preliminary definition phase in which results of product characteristics analysis including product characteristic category and their control measures shall be preliminarily defined. The suppliers shall continue to make further identification of critical and major characteristics referring to product design and verification, and to update the results of classification during the detail definition phase in which characteristic categories are determined finally.

4.6 Product characteristic management should be supervised by the department with responsibility for quality assurance/configuration and data management.

5 Management process

Management of product characteristic generally includes product characteristic identification and classification, management implementation and management close-out. Figure 1 gives the management process of product characteristics.

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