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Space systems — Qualification assessment

Systèmes spatiaux — Évaluation de la qualification

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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.

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).

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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 second edition cancels and replaces the first edition (ISO 15865:2005), which has been technically revised.

The main changes are as follows:

— alignment of terms and definitions with ISO 10795;

— introduction of space system’s components;

— completion of criteria to be verified during qualification assessment;

— additional information on the recognized applicable methods;

— update of bibliography.

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Space systems — Qualification assessment

1 Scope

This document establishes general rules for qualification assessment of space systems and products used in space systems against their functional and technical specifications. It establishes general requirements for determining system or product readiness for any stage of the life cycle. This includes, for example, readiness for development, manufacture, test, operation, modification, or disposal.

This document is applicable to systems and products used in flight or ground support and to products at all levels in a product tree. It applies to systems and products consisting of hardware, software, facilities, materials, methods, processes, procedures or any combination of these.

It establishes common:

a) general requirements for qualification assessment of item readiness;

b) approaches to qualification.

This document is intended for use as the basis for a design justification plan. It is intended to be used either in establishing an agreement for such a plan between a customer and a supplier or as the basis for a supplier's internal qualification practices.

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)

ISO 10795, *Space systems — Programme management and quality — Vocabulary*

ISO 14300-1, *Space systems — Programme management — Part 1: Structuring of a project*

ISO 21349, *Space systems — Project reviews*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

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

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

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

3.1.1
qualification process
process that covers all the verification activities including all the items of the product (component, equipment, subsystem and system)

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3.1.2
review
documented process of the requirement conformity or nonconformity objective evaluation against the requirements specified by standards or specifications and their incomes on reaching any milestone

Note 1 to entry: Additional activities performed during the review include:

— analysis of the reasons of nonconformities;

— elaboration of recommendations on improving.

3.1.3
technical specification
TS
specification expressing technical requirements for designing and developing the solution to be implemented

Note 1 to entry: The technical specification evolves from the functional specification and defines the technical requirements for the selected solution as part of a business agreement.

[SOURCE: ISO 21351:2005, 3.1.11, modified — The abbreviated term "TS" has been added.]

3.2 Abbreviated terms

DJDF design justification data file

DJP design justification plan

EEE electrical, electronic, and electromechanical

GTP ground test plan

TS technical specification

4 Objectives and principles

4.1 Objectives

The qualification process should ensure that the following goal is achieved: confirmation of suitability of the space system and the space system's components.

Simultaneously the following objectives should be achieved:

a) ensuring that the product meets specified requirements;

b) ensuring that the product matches production drawings;

c) confirming product operability after tests, verifications, flight tests and landing;

d) ensuring the safety of the space system's products in accordance with ISO 14620-1;

e) ensuring that the quality level required by the space system's customers is reached;

f) assisting customers in the selection of proper products and services of the space system on a competitive basis;

g) providing objective evidences of the quality of the space system to make a positive decision on the insurance of the space system;

h) ensuring that the product meets the disposal requirements;

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