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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 62396-4, which is a technical specification, has been prepared by IEC technical committee 107: Process management for avionics.

This standard cancels and replaces IEC/PAS 62396-4 published in 2007. This first edition constitutes a technical revision. It is to be read in conjunction with IEC/TS 62396-1.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
107/81/DTS	107/88/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62396 series, under the general title *Process management for avionics – Atmospheric radiation effects*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended

A bilingual edition of this document may be issued at a later date.

INTRODUCTION

This industry-wide technical specification provides additional guidance to avionics systems designers, electronic equipment, component manufacturers and their customers about the single event effects produced in semiconductor devices operating at high voltage (nominally above 200 V) by atmospheric radiation. It expands on the information and guidance provided in IEC/TS 62396-1.

The internal elements of semiconductor devices operating at high applied voltage will be subject to high voltage stress. The incident radiation causes ionisation charge within the device, and the high voltage stress may cause a large increase (avalanche) in this charge, which may be destructive. Within this technical specification two effects are considered: single event burn-out, SEB, and single event gate rupture, SEGR.

PROCESS MANAGEMENT FOR AVIONICS – ATMOSPHERIC RADIATION EFFECTS –

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1 Scope

This technical specification is intended to provide guidance on atmospheric radiation effects on high voltage (nominally above 200 V) avionics electronics used in aircraft operating at altitudes up to 60 000 ft (18,3 km). It is intended to be used in conjunction with IEC/TS 62396-1. This specification defines the effects of that environment on high voltage electronics and provides design considerations for the accommodation of those effects within avionics systems.

This technical specification is intended to help aerospace equipment manufacturers and designers to standardise their approach to single event effects on high voltage avionics by providing guidance, leading to a standard methodology.

Details are given of the types of single event effects relevant to the operation of high voltage avionics electronics, methods of quantifying those effects, appropriate methods to assist design and methods to demonstrate the suitability of the electronics for the application.

2 Normative references

The following referenced documents are indispensable for the application of this document, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC/TS 62396-1, *Process management for avionics – Atmospheric radiation effects – Part 1: Accommodation of atmospheric radiation effects via single event effects within avionics electronic equipment*