Aerospace series - Modular and Open Avionics Architectures - Part 004: Packaging

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 4660-004:2011 sisaldab Euroopa standardi EN 4660-004:2011 ingliskeelset teksti.	This Estonian standard EVS-EN 4660-004:2011 consists of the English text of the European standard EN 4660-004:2011.
Standard on kinnitatud Eesti Standardikeskuse 31.03.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.03.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 23.02.2011.	Date of Availability of the European standard text 23.02.2011.
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Aerospace series - Modular and Open Avionics Architectures - Part 004: Packaging

Série aérospatiale - Architectures Avioniques Modulaires et Ouvertes - Partie 004: Packaging

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This European Standard was approved by CEN on 26 June 2010.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 4660-004:2011) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 August 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

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.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

0.1 Purpose

This document is produced under contract ASAAC Phase II Contract n°97/86.028.

The purpose of the ASAAC Programme is to define and validate a set of open architecture standards, concepts and guidelines for Advanced Avionics Architectures (A3) in order to meet the three main ASAAC drivers. The standards, concepts and guidelines produced by the Programme are to be applicable to both new aircraft and update programmes from 2005.

The three main goals for the ASAAC Programme are:

1. Reduced life cycle costs.
2. Improved mission performance.
3. Improved operational performance.

The ASAAC standards are organised as a set of documents including:

A set of agreed standards that describe, using a top down approach, the Architecture overview to all interfaces required to implement the core within avionics system.

The guidelines for system implementation through application of the standards.

The document hierarchy is given hereafter: *(in this figure the document is highlighted)*

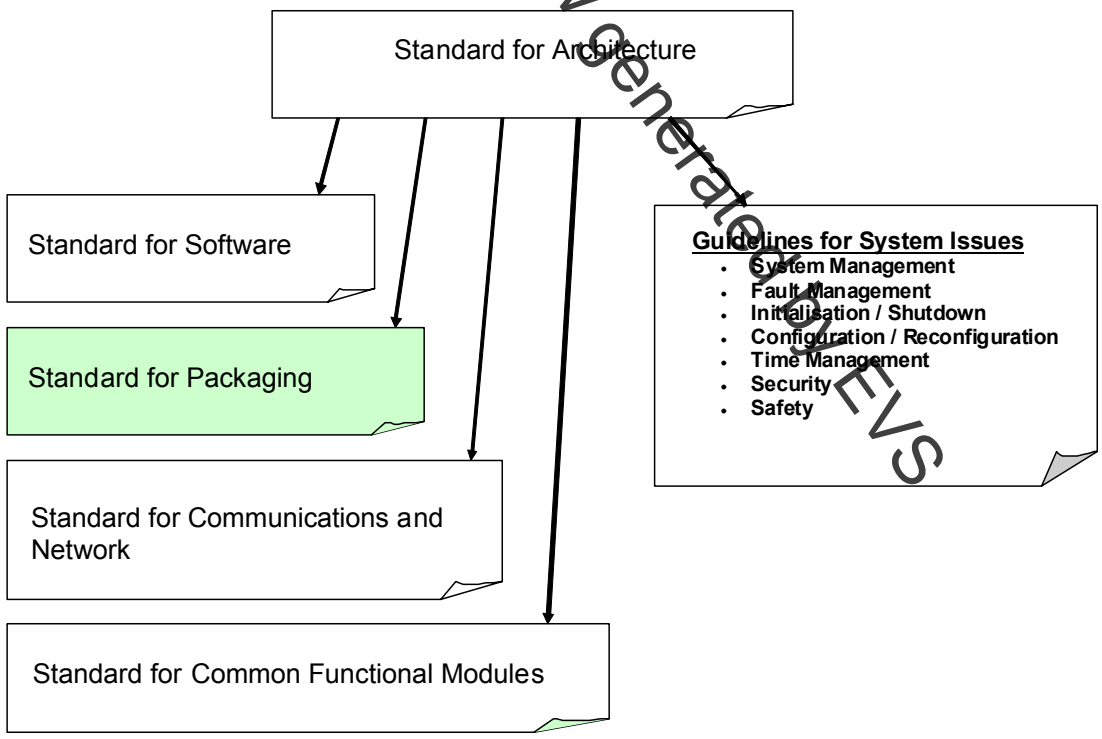

Figure 1 — ASAAC Standard Documentation Hierarchy

0.2 Document structure

The document contains the following clauses:

Clause 1, Scope.

Clause 2, Normative references.

Clause 3, Terms, definitions and abbreviation.

Clause 4, Generic module specification.

Clause 5, Module Mechanical Tests.

Clause 6, Guidelines for a rack slot.

Clause 7, Typical modular avionics environment.

1 Scope

The purpose of this standard is to establish uniform requirements for Packaging for the Common Functional Modules (CFM) within an Integrated Modular Avionic (IMA) system, as defined per ASAAC. It comprises the module physical properties and the Module Physical Interface (MPI) definitions together with guidelines for IMA rack and the operational environment.

The characteristics addressed by the Packaging Standard are:

Interchangeability:

— For a given cooling method all modules conforming to the packaging standard will function correctly when inserted into any rack slot conforming to the standard for the cooling method.

— All modules conforming to the Module Physical Interface (MPI) definitions for connector, IED and cooling interface will function correctly when inserted into any rack slot conforming to the same MPI definition.

Maintainability:

— All modules are easily removable at first line.

— No special tools required at first line.

— No manual adjustment is necessary when installing modules. No tool is required for installation or removal of the modules.

— Mechanical keying is provided that prevents insertion of a module into a rack slot that may cause an unsafe condition.

The Module Physical Interface definition, contained within this standard, does not include the properties of the signalling used in the optical interface (e.g. wavelength). These are covered in EN 4660-003.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 2101, *Aerospace series — Chromic acid anodizing of aluminium and wrought aluminium alloys*

EN 2284, *Aerospace series — Sulphuric acid anodizing of aluminium and wrought aluminium alloys*

EN 2437, *Aerospace series — Chromate conversion coatings (yellow) for aluminium and aluminium alloys*

EN 4660-001, *Aerospace series — Modular and Open Avionics Architectures — Part 001: Architecture*

EN 4660-002, *Aerospace series — Modular and Open Avionics Architectures — Part 002: Common Functional Modules*

EN 4660-003, *Aerospace series — Modular and Open Avionics Architectures — Part 003: Communications/Network*

EN 4660-005, *Aerospace series — Modular and Open Avionics Architectures — Part 005: Software*

ASAAC2-GUI-32450-001-CPG Issue 01, *Final Draft of Guidelines for System Issues* [1)]

- *— Volume 1 — System Management.*
- *— Volume 2 — Fault Management.*
- *— Volume 3 — Initialisation and Shutdown.*
- *— Volume 4 — Configuration / Reconfiguration.*
- *— Volume 5 — Time Management.*
- *— Volume 6 — Security.*
- *— Volume 7 — Safety.*

ARINC 600, *Air transport avionics — Equipment interfaces.*

Def Stan 03-18, *Chromate Conversion Coatings (Chromate Filming Treatments) Grades: Standard and Brushing for Aluminium and Aluminium Alloys.*

Def Stan 03-24, Chromic Acid Anodizing of Aluminium and Aluminium Alloys.

Def Stan 03-25, Sulphuric Acid Anodizing of Aluminium and Aluminium Alloys.

1) In preparation at the date of publication of this standard.

BS 5599, *Specification for hard anodic oxidation coatings on aluminium and its alloys for engineering purposes.* 2)

MIL-C-26074E, *Coatings, Electroless Nickel Requirements.*

MIL-A-8625E, *Anodic Coatings for Aluminium and Aluminium Alloys.*

MIL-C-81706, *Chemical Conversion Materials for Coating Aluminium and Aluminium Alloys.*

MIL-C-5541, *Chemical Conversion Coatings on Aluminium and Aluminium Alloys.*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

Use of “shall”, “should” and “may” within the standards observe the following rules:

— The word SHALL in the text expres a mandatory requirement of the standard.

— The word SHOULD in the text expresses a recommendation or advice on implementing such a requirement of the standard. It is expected that such recommendations or advice will be followed unless good reasons are stated for not doing so.

— The word MAY in the text expresses a permissible practice or action. It does not express a requirement of the standard.

3.2 Abbreviations

AFA	Air Flow Around
AFT	Air Flow Through
ARINC	Aeronautical Radio Inc
ASAAC	Allied Standard Avionics Architecture Council
CC	Conduction Cooled
CFM	Common Functional Module
DAF	Direct Air Flow
EMC	ElectroMagnetic Compatibility
IED	Insertion Extraction Device
IMA	Integrated Modular Avionics
MBU	Multiple Bit Upset

2) Replaces Def Stan 03-26.