ISO 23835:2022-04 (E)

Space Systems - Mechanism design and verification

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 Fundamental requirements 4
4.1 System performance 4
4.2 Mission 4
4.3 Function 4

5 Design requirements 4
5.1 Interfaces 4
5.2 Environmental design 5
5.2.1 General 5
5.2.2 Ground environment 5
5.2.3 Launch vehicle flight environment 5
5.2.4 Orbital environment 5
5.3 Parts and materials 5
5.3.1 General 5
5.3.2 Requirements for parts 6
5.3.3 Requirements for materials 6
5.4 Mechanism design 6
5.4.1 Accuracy control design 6
5.4.2 Driving capability design 7
5.4.3 Design life 7
5.4.4 Tribology 7
5.4.5 Major mechanical components 8
5.4.6 Other requirements 8
5.5 Structural design 9
5.5.1 General requirements related to structural design 9
5.5.2 Allowable mechanical properties of structural materials 9
5.5.3 Margin of safety 9
5.5.4 Stiffness design 9
5.6 Thermal design 9
5.7 Electrical design 9
5.7.1 Electrical design 9
5.7.2 Electrical wires 10
5.7.3 Electric connectors 10
5.7.4 Insulation 10
5.7.5 Grounding 10
5.7.6 Deformation of wiring 10
5.8 General requirements 10
5.8.1 Safety 10
5.8.2 Dependability 10
5.8.3 Quality assurance 11
5.8.4 Configuration 11
5.8.5 Redundancy 11

5.8.6 Operability 11
5.8.7 Maintainability 11
5.8.8 Interchangeability 11
5.8.9 Fool-proof design 11
5.8.10 Other requirements 12

6 Verification 12

ISO 23835:2022(E) 6.1 General 12
6.2 Verification by analysis 12
6.2.1 General 12
6.2.2 Identification of worst-case conditions 13
6.2.3 Thermal analysis 13
6.2.4 Structural analysis 13
6.2.5 Function and performance analysis 13
6.2.6 Analysis of torque/force margin 14
6.2.7 Shock generation and susceptibility 14
6.2.8 Generated disturbance 14
6.2.9 Lubrication analysis 14
6.2.10 Life analysis 14
6.2.11 Magnetic or electromagnetic analysis 14
6.2.12 Radiation analysis 14
6.2.13 Electrical parts stress analysis 14
6.3 Verification by test 15
6.3.1 General 15
6.3.2 Development tests 15
6.3.3 Qualification tests 15
6.3.4 Acceptance tests 16
6.3.5 Life test 17

Annex A (informative) Driving capability design (torque/force margin) 18

Annex B (informative) Life test duration factors 27

Annex C (informative) Recommended best practices for model and simulations (M&S) 31

Bibliography 32