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Space product assurance - Worst case analysis

Assurance produit des projets spatiaux - Analyse pire cas

RaumfahrtProduktsicherung - Worst-Case-Analysis

This Technical Report was approved by CEN on 22 November 2021. It has been drawn up by the Technical Committee CEN/CLC/JTC 5.

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European Foreword

This document (CEN/TR 17602-30-01:2021) has been prepared by Technical Committee CEN/CLC/JTC 5 “Space”, the secretariat of which is held by DIN.

It is highlighted that this technical report does not contain any requirement but only collection of data or descriptions and guidelines about how to organize and perform the work in support of EN 16602-30.

This Technical report (CEN/TR 17602-30-01:2021) originates from ECSS-Q-HB-30-01A.

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.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any TR covering the same scope but with a wider domain of applicability (e.g.: aerospace).

1 Scope

This handbook provides guidelines to perform the worst case analysis. It applies to all electrical and electronic equipment. This worst case analysis (WCA) method can also be applied at subsystem level to justify electrical interface specifications and design margins for equipment. It applies to all project phases where electrical interface requirements are established and circuit design is carried out.

The worst case analysis is generally carried out when designing the circuit. For selected circuitry, worst case analysis (WCA) can be used to validate a conceptual design approach.

2 References

EN Reference	Reference in text	Title
EN 16601-00-01	ECSS-ST-00-01	ECSS system - Glossary of terms
EN 16603-10-02	ECSS-E-ST-10-02	Space engineering -Verification
EN 16602-30	ECSS-Q-ST-30	Space product assurance - Dependability
EN 16602-30-11	ECSS-Q-ST-30-11	Space product assurance - Derating - EEE components
-	ECSS-Q-TM-30-12	Space product assurance – End-of-life parameters drifts - EEE components
EN 16602-30-02	ECSS-Q-ST-30-02	Space product assurance - Failure modes, effects and criticality analysis
EN 16602-40-02	ECSS-Q-ST-40-02	Space product assurance - Hazard analysis
-	ECSS-Q-TM-40-04	Space product assurance - Sneak analysis
EN 16602-40-12	ECSS-Q-ST-40-12	Space product assurance - Fault tree analysis – Adoption notice ECSS / IEC61025
	CRTAWCCA	Worst Case Circuit Analysis Application Guidelines, 1993 Reliability Analysis Center, Rome NY, U.S.A
	JPL D-5703	Jet Propulsion Laboratory Reliability Analyses Handbook