



NSAI
Standards

Irish Standard Recommendation
S.R. CEN/CLC/TR 17603-10-02:2021

Space engineering - Verification guidelines

S.R. CEN/CLC/TR 17603-10-02:2021

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:

CEN/CLC/TR 17603-10-02:2021

Published:

2021-09-29

This document was published under the authority of the NSAI and comes into effect on:

2021-10-18

ICS number:

49.140

NOTE: If blank see CEN/CENELEC cover page

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

S.R. CEN/CLC/TR 17603-10-02:2021 is the adopted Irish version of the European Document CEN/CLC/TR 17603-10-02:2021, Space engineering - Verification guidelines

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

This page is intentionally left blank

TECHNICAL REPORT
RAPPORT TECHNIQUE
TECHNISCHER BERICHT

**CEN/CLC/TR 17603-10-
02**

September 2021

ICS 49.140

English version

Space engineering - Verification guidelines

Ingénierie spatiale - Lignes directrices pour la
vérification

Raumfahrttechnik - Leitfaden zur Verifikation

This Technical Report was approved by CEN on 19 March 2021. It has been drawn up by the Technical Committee CEN/CLC/JTC 5.

CEN and CENELEC members are the national standards bodies and national electrotechnical committees 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



**CEN-CENELEC Management Centre:
Rue de la Science 23, B-1040 Brussels**

Table of contents

European Foreword	5
1 Scope	6
2 References	7
3 Terms, definitions and abbreviated terms	8
3.1 Terms from other documents.....	8
3.2 Terms specific to the present handbook	8
3.3 Abbreviated terms.....	9
4 Verification principles	12
4.1 Introduction.....	12
4.2 Verification versus Validation.....	12
4.3 Applicability to all engineering domains	13
4.4 Development	13
5 Verification guidelines	14
5.1 Verification process	14
5.2 Verification planning	14
5.2.1 Verification approach	14
5.2.2 Verification methods.....	19
5.2.3 Verification levels	23
5.2.4 Verification stages.....	24
5.2.5 Models and Models Description	27
5.2.6 Verification tools.....	42
5.2.7 Verification process phasing	44
5.3 Verification execution and reporting.....	51
5.3.1 General.....	51
5.3.2 Example of verification team responsibility and interfaces.....	51
5.4 Verification control and close-out.....	53
5.4.1 General.....	53
5.4.2 Verification control board (VCB).....	54
5.4.3 Re-verification	54

6 Verification documentation	55
6.1 Introduction.....	55
6.2 Verification planning documents	57
6.2.1 Verification plan (VP)	57
6.2.2 Verification control document (VCD)	64
6.2.3 Other verification planning Documents.....	67
6.3 Verification execution and reporting documentation.....	68
6.3.1 Test report (TRPT).....	68
6.3.2 Analysis report (ARPT)	70
6.3.3 Review-of-design report (RRPT)	71
6.3.4 Inspection report (IRPT).....	73
6.3.5 Verification report (VRPT)	75
6.3.6 VRPT DRD explanation	76
6.3.7 Other verification execution and reporting Document.....	77
6.3.8 Other close-out documents	79
Annex A Verification documents delivery per review	80
Annex B Verification Standard Tailoring	81

Figures

Figure 5-1: Basic verification approach.....	16
Figure 5-2: Parameters for Model Philosophy definition.....	34
Figure 5-3: Example of Unmanned project model philosophy	36
Figure 5-4: Example of Manned project model philosophy	37
Figure 5-5: Example of Protoflight model philosophy	38
Figure 5-6: Example of Hybrid model philosophy.....	40
Figure 5-7: Example of verification process phasing with the project life cycle	45
Figure 5-8: Verification activities flow (Phases A/B).....	48
Figure 5-9: Verification activities flow (Phases C/D)	49
Figure 5-10: Verification activities flow (Phases E/F)	50
Figure 6-1: Verification documentation	56
Figure 6-2: Example of Verification Strategies per Group/level.....	59
Figure 6-3: Example of verification strategy for a single Requirement Group.....	60
Figure 6-4: Example of verification planning	61
Figure 6-5: Example of activity sheet for analysis programme	62
Figure 6-6: Example of Activity Sheet for Integration and Test Programme	63
Figure 6-7: Example of the close-out status table	66

CEN/CLC/TR 17603-10-02:2021 (E)

Figure 6-8: Example of VCD sheet67
Figure 6-9: Example of test report sheet.....70
Figure 6-10: Example of an analysis report sheet.....71
Figure 6-11: Example of review-of-design report sheet.....73
Figure 6-12: Example of an inspection report sheet.....75
Figure 6-13: Example of verification report sheet.....77

Tables

Table 5-1: Product categories according to heritage.....25
Table 5-2 : Summary model definitions32
Table 5-3 : Example of a product matrix as viewed with a satellite perspective41

Table B-1 : Tailoring guidelines and some examples per product type82

European Foreword

This document (CEN/CLC/TR 17603-10-02:2021) 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 16603-10-02.

This Technical report CEN/CLC/(TR 17603-10-02:2021) originates from ECSS-E-HB-10-02A.

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 additional information for the application of the verification standard EN 16603-10-02 to a space system product.

This handbook does not contain requirements and therefore cannot be made applicable. In case of conflict between the standard and this handbook, the standard prevails.

This handbook is relevant for both the customer and the supplier of the product during all project phases.

To facilitate the cross-reference, this handbook follows as much as is practical, the structure of the standard and quotes the requirements, to make it self standing and easier to read (*the text from the standard is in italic*).

As the Standard applies to different products at different product levels from single equipment to the overall system (including space segment hardware and software, launchers and Transportation Systems, ground segment, Verification tools, and GSE) several examples of tailoring, to match the specificity of each application, are proposed in Annex B.

Specific discipline related verification aspects are covered in other dedicated standards and handbooks. In particular the detailed aspects for Testing are covered in the EN 16603-10-03 and in its corresponding handbook TR 17603-10-03.

The application of the requirements of the standard to a particular project is intended to result in effective product verification and consequently to a high confidence in achieving successful product operations for the intended use, in this respect this handbook has the goal to help reaching these objectives.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-