



NSAI
Standards

Irish Standard
I.S. EN 13848-6:2014+A1:2020

Railway applications - Track - Track geometry quality - Part 6: Characterisation of track geometry quality

I.S. EN 13848-6:2014+A1:2020

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:

EN 13848-6:2014+A1:2020

Published:

2020-11-25

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

2020-12-14

ICS number:

93.100

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

I.S. EN 13848-6:2014+A1:2020 is the adopted Irish version of the European Document EN 13848-6:2014+A1:2020, Railway applications - Track - Track geometry quality - Part 6: Characterisation of track geometry quality

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

EUROPEAN STANDARD

EN 13848-6:2014+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2020

ICS 93.100

English Version

Railway applications - Track - Track geometry quality - Part 6: Characterisation of track geometry quality

Applications ferroviaires - Voie - Qualité géométrique
de la voie - Partie 6: Caractérisation de la qualité
géométrique de la voie

Bahnwendungen - Oberbau - Qualität der
Gleisgeometrie - Teil 6: Charakterisierung der
geometrischen Gleislagequalität

This European Standard was approved by CEN on 3 February 2014 and includes Amendment 1 approved by CEN on 24 August 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Contents	Page
European foreword	4
1 Scope.....	5
2 Normative references.....	5
3 Terms, definitions, symbols and abbreviations.....	5
3.1 Terms and definitions	5
3.2 Symbols and abbreviations	6
4 Basic principles	7
4.1 Introduction.....	7
4.2 Basic parameters for track geometry quality assessment.....	7
4.3 Transparency	7
4.4 Complexity.....	7
4.5 Track-vehicle interaction	7
5 Assessment of track geometry quality: state-of-the-art	7
5.1 General.....	7
5.2 Standard deviation (<i>SD</i>)	7
5.3 Isolated defects.....	8
5.4 Combination of various parameters.....	9
5.4.1 Combined standard deviation (<i>CoSD</i>)	9
5.4.2 Standard deviation of the combinations of parameters	9
5.4.3 Point mass acceleration method (<i>PMA</i>)	10
5.5 Methods based on vehicle response.....	11
5.5.1 Use of theoretical model.....	11
5.5.2 Use of direct measurement	11
5.6 Power Spectral Density (<i>PSD</i>)	11
6 Levels of aggregation and calculation methods.....	12
7 Classes of track geometry quality	13
7.1 General.....	13
7.2 Description of track quality classes (<i>TQC</i>).....	13
7.3 Values of track quality classes	15
7.4 Assignment of <i>TQCs</i>	16
7.5 Possible application of <i>TQCs</i>	16
Annex A (informative) Point mass acceleration method (<i>PMA</i>)	18
A.1 Introduction.....	18
A.2 Description of the <i>PMA</i> model.....	18
A.3 Calculation of the <i>PMA</i> -assessment figure.....	18
A.4 Features of the <i>PMA</i> method.....	19
Annex B (informative) Vehicle Response Analysis methods (<i>VRA</i>).....	21
B.1 Introduction.....	21
B.2 Determination of the assessment functions.....	21
B.3 Application of the assessment functions.....	23
B.4 Features of <i>VRA</i> methods.....	25

Annex C (normative) Method for calculating reference $TQIs$ (TQI_{ref})	26
C.1 Introduction	26
C.2 Description of the reference method	26
Annex D (informative) Method of classification of alternative TQI using the $TQCs$	28
D.1 Introduction	28
D.2 Description of the conversion method	28
Bibliography	30

EN 13848-6:2014+A1:2020 (E)**European foreword**

This document (EN 13848-6:2014+A1:2020) has been prepared by Technical Committee CEN/TC 256 "Railway applications", the secretariat of which is held by DIN.

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 May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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 includes Amendment 1 approved by CEN on 2020-07-24.

This document supersedes A1 EN 13848-6:2014 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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

This European Standard is one of the series EN 13848 "Railway applications – Track – Track geometry quality" as listed below:

- *Part 1: Characterisation of track geometry*
- *Part 2: Measuring systems – Track recording vehicles*
- *Part 3: Measuring systems – Track construction and maintenance machines*
- *Part 4: Measuring systems – Manual and lightweight devices*
- *Part 5: Geometric quality levels – Plain line*
- *Part 6: Characterisation of track geometry quality*

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

1 Scope

This European Standard characterizes the quality of track geometry based on parameters defined in EN 13848-1 and specifies the different track geometry classes which should be considered.

This European Standard covers the following topics:

- description of track geometry quality;
- classification of track quality according to track geometry parameters;
- considerations on how this classification can be used;
- this European Standard applies to high-speed and conventional lines of 1 435 mm and wider gauge;
- this European Standard forms an integral part of EN 13848 series.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13848-1, *Railway applications - Track - Track geometry quality - Part 1: Characterization of track geometry*

[A1] EN 13848-5, *Railway applications - Track - Track geometry quality - Part 5: Geometric quality levels - Plain line, switches and crossings*

EN 14363, *Railway applications - Testing and simulation for the acceptance of running characteristics of railway vehicles - Running behaviour and stationary tests* **[A1]**

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

re-colouring

algorithm which modifies the spectral content of a signal aimed to compensate or apply the characteristics of a specific measuring system

Note 1 to entry: The re-colouring is used in EN 13848 series to convert a chord measurement signal into a *D1* or *D2* measurement signal.

3.1.2

track quality class (TQC)

characterization of track geometry quality as a function of speed and expressed as a range of TQIs

3.1.3

track quality index (TQI)

value that characterises track geometry quality of a track section based on parameters and measuring methods compliant with EN 13848 series

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](#)
-