



OTIF

Guide for the application of the UTP NOI

OTIF



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**ZWISCHENSTAATLICHE ORGANISATION FÜR
DEN INTERNATIONALEN EISENBAHNVERKEHR**

**INTERGOVERNMENTAL ORGANISATION FOR
INTERNATIONAL CARRIAGE BY RAIL**



0. DOCUMENT INFORMATION

0.1. Amendment record

The basis of this document is the ERA Guide for the application of the CR NOI TSI with reference ERA/GUI/07-2011/INT.

The blue rectangles such as this one in this document contain information relevant to the application of the OTIF UTP relating to the subsystem rolling stock - noise, reference A 94-04/2.2012, version 3 which is in force as of 1.12.2012 and further referred to as UTP NOI. Because the NOI TSI and UTP NOI are fully equivalent, much of the information in the TSI application guide is also relevant to application of the UTP.

All text edited by OTIF is in blue rectangles, which means that without the blue rectangles the content of this document corresponds exactly to the ERA application guide.

As a general principle, where the guide refers to “TSI”, this can also be taken to cover the ‘UTP’. Where this is not the case, this is pointed out specifically.

The OTIF reference for this document is: **A 92-01/3.2014 v0.2**

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1. SCOPE OF THIS GUIDE

1.1. Scope

- 1.1.1. This document is an annex to the 'Guide for the application of TSIs'. It provides information on the application of the Technical Specifications for Interoperability for the 'Conventional Rolling Stock – Noise' subsystem adopted by Commission Decision 2011/229/EU of 4 April 2011 ('CR NOI TSI').
- 1.1.2. The guide should be read and used only in conjunction with the CR NOI TSI. It is intended to facilitate its application, but does not replace it. The general part of the 'Guide for the application of TSIs' should also be considered.

The information in this guide relates equally to the application of the UTP NOI. The NOI TSI application guide is published on the website of the European Railway Agency:

<http://www.era.europa.eu/Document-Register/Pages/TSI-Application-Guide-CR-Noise-TSI.aspx>

At time of writing no OTIF equivalent to the "Guide for the Application of TSIs" exists. The application of UTPs is set out in ATMF. Explanations to ATMF are contained in the Explanatory report to COTIF, which is available from the OTIF website:

http://www.otif.org/fileadmin/user_upload/otif_verlinkte_files/07_veroeff/03_erlaeut/COTIF_Rapport_explicatif_01_01_2011_e.pdf

1.2. Content of the guide

- 1.2.1. In section 2 of this document, extracts of the original text of the CR NOI TSI are provided, in a shaded text box and followed by a text that gives guidance.
- 1.2.2. Guidance is not provided for clauses where the original CR NOI TSI requires no further explanation.
- 1.2.3. Guidance is of voluntary application. It does not mandate any requirement in addition to those set out in the CR NOI TSI.
- 1.2.4. Guidance is given by means of further explanatory text and, where relevant, by reference to standards that demonstrate compliance with the CR NOI TSI; relevant standards are listed in annex 1 of this document, and their purpose is indicated in the column 'purpose' of the table.

1.3. Reference documents

Reference documents are listed in the general part of the 'Guide for the application of TSIs'.

1.4. Definitions and abbreviations

Definitions and abbreviations are given in section 2.1 of the CR NOI TSI and in the general part of the 'Guide for the application of TSIs'.



2. GUIDANCE ON THE APPLICATION OF THE CR NOI TSI

UTP Section 0: Equivalence and transitional provisions

The UTP NOI is equivalent to the EU regulations NOI TSI.

General information regarding the use of UTPs in the scope of COTIF Appendix F (ATMF):

- The admission of vehicles to international traffic in the scope of COTIF should be done in accordance with ATMF (Art.3 §1). This means that the Contracting States should organise its procedures and discharge of responsibilities in accordance with ATMF. As a result, only Contracting States that have properly implemented procedures and responsibilities in accordance with ATMF can grant admission to international operation of vehicles in the meaning of COTIF.
- Article 7 makes mandatory for admission to international traffic, the application of UTPs (where available) and RID (where applicable). Freight wagons should not only comply with the UTP NOI but e.g. also with the provisions of the UTP WAG. The same principle applies for other types of vehicles, such as passenger vehicles or locomotives, however for these types of vehicles a full set of UTPs exists only as of 1.1.2015.
- Article 7a, which is implemented in ATMF Annex B, sets out the conditions and procedures to be followed for not applying UTPs as a result of derogations. In case a vehicle is subject to derogation, its admission to operation is not automatically valid in other Contracting States.
- Article 6 sets out the conditions for the validity of admissions in international traffic. It sets out in particular two situations:
 - o Vehicles meeting all essential requirements through full compliance with the UTPs, as set out in Article 6 §3: the UTPs cover all essential requirements and there are no open points related to network compatibility. If in such case the UTPs are applied without specific cases or derogations, the admission in one CS gives admission in all other CSs. As a result a RU may operate the vehicle on compatible infrastructure. (These conditions are met only for vehicles in compliance with a strict subset of requirements; at time of writing this concerns only freight wagons meeting the UTP NOI and the conditions set out in section 7.1.2 of UTP WAG:2014.)
 - o Vehicles not meeting the conditions of Article 6 § 3, become subject of Article 6 §4. I.e. the vehicle is not compliant with the UTPs, or a specific case related to compatibility applies, or a derogation applies; the vehicle must receive individual admission in each CS where it is intended to be operated. However, each CS's competent authority should accept the verifications based of UTPs that have been made by other competent authorities.
- Article 3a sets out the interaction between EU law and ATMF. In particular it sets out the provisions for recognition of EU authorisations in non-EU Contracting States (in § 1) and the recognition of non-EU admissions by Member States of the EU (in § 2). It also clarifies that for the authorisation of vehicles intended to be operated only in the EU, EU law applies.



Guide for the application of the UTP NOI

2.1. Foreword

The structure of this section of the application guide contains the following subsections:

- Scope of the TSI
- Characteristics of the rolling stock subsystem
- Assessment of conformity
- Implementation
- Some practical cases

2.2. Scope of the TSI

NOI TSI, section 1.2 – Geographical scope

‘The geographical scope of this TSI is the trans-European conventional rail system as described in Annex I to Directive 2008/57/EC.’

Any rolling stock running on the CR TEN lines fall within the geographical scope of this TSI. This also applies for high-speed RST, which by default should comply with the requirements of the CR NOI TSI. Nevertheless, if an HS train is compliant with the provisions of the HS RST TSI:2008, it is deemed to comply with the CR NOI TSI requirements without further testing. See section 6.2.4 of the CR NOI TSI.

COTIF applies to international rail traffic only. Therefore any rolling stock which is intended to circulate on railway lines over the territory of at least two OTIF Contracting states fall within the scope of this UTP. The scope is not limited to freight wagons, although at time of entry into force of the UTP NOI, the only type of vehicles fully covered by UTPs was freight wagons.

NOI TSI, section 2.1 – Definition of subsystem/scope

‘The rolling stock that is the subject of this TSI comprises the units defined in this clause which are likely to travel on all or part of the trans-European conventional rail network. The present TSI includes limits for stationary noise, starting noise, pass-by noise and driver’s cab interior noise.’

Unlike the HS RST TSI, there is no definition of speed limits in the CR NOI TSI. Where an RST has a maximum speed higher than or equal to 190 km/h and is intended to operate on the CR TEN lines, it falls within the scope of the CR NOI TSI.

The text of section 2.1. of the NOI TSI is not applicable in the UTP NOI. The scope of the UTP is not defined by (types of) lines, but by the use of vehicles in international traffic. Therefore any rolling stock which circulates on railway lines over the territory of at least two OTIF Contracting states fall within the scope of this UTP.

Notwithstanding the differences in definition of scope, the principle of the explanation regarding the speed limits is also valid for the UTP NOI. Where an RST has a maximum speed higher than or equal to 190 km/h and is intended to be operated internationally, it falls within the scope of the UTP NOI.



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2.3 Characteristics of the rolling stock subsystem

NOI TSI, section 4.2.3 – Interior noise of locomotives, multiple units and coaches fitted with a cab

‘Measurements shall be made in accordance with Appendix F.’

Even though there was an EN standard available to cover the measurement of cabin noise, it was decided to retain the CR NOI TSI requirements relating to this parameter as before the revision. This was decided in order not to change the legal aspects relating to working conditions. It is therefore compulsory to use Appendix F instead of EN 15892 which is also related to this parameter.

The main differences between the EN standard and the CR NOI TSI are:

- the minimum measurement time at maximum speed of 20s (EN) and 60s (TSI) respectively.
- the microphone position relating to the external acoustic warning (horn) emission for testing, when the external acoustic warning is used (EN 15892 refers to standard EN 15153-2).

The sections of EN 15892 that do not contradict the TSI may be used as a voluntary standard.

2.4 Assessment of conformity

NOI TSI, section 6.2.3 – Verification methods specific to noise aspects of rolling stock

NOI TSI, section 6.2.3.1 – Introduction

‘The simplified evaluation method consists of acoustically comparing the type under assessment to an existing type with documented noise characteristics compliant with the noise TSI, the latter is further referred to as the reference type.’

It is permitted to substitute noise testing by a simplified evaluation, if the type under assessment is comparable to a reference type which has been tested in compliance with one of the following:

- (a) Section 4 of this TSI and for which the pass-by noise results are marked ‘comparable’, or*
- (b) in compliance with section 4 of the TSI CR ‘rolling stock– noise’ adopted by Commission Decision 2006/66/EC.’*

In order for an RST type under assessment to be considered ‘comparable’ to a reference type, the type under assessment should share significant noise sources with the reference type, and in such a way that it is possible to predict compliance with the noise values for at least one parameter specified in the TSI. This may be fulfilled when the acoustically relevant characteristics of the RST type under assessment are to a large extent identical to those of the reference type.

It may or may not be possible to base the full TSI noise conformity assessment on a simplified evaluation. For example, it may be clear for a NoBo that a unit under assessment will have a lower pass-by noise than the reference type, but that for the stationary noise and start-up noise it is not possible to rely on simplified evaluation. In such case, the stationary noise and the start-up noise must be measured in accordance with the relevant clauses in section 4 of the TSI.



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The units for which the noise values are not marked 'comparable' (because of the track conditions on which they were tested) are not allowed to be used as reference units.

'The following units are eligible for a simplified evaluation:

- (a) Different formations of multiple units,*
- (b) Renewed or upgraded units in accordance with point 7.6 of this TSI,*
- (c) New units which are largely based on an existing design (same vehicle family).'*

Point (a) is intended to allow for testing of the worst-case configuration of multiple units, which prevents the testing of all possible formations.

Point (c): 'vehicle family' is intended to cover units which share properties insofar as they are 'comparable' for noise-related characteristics. For wagons, this comparability is set out in Table 7. For passenger rolling stock and locomotives, it was impossible to draw up a similar table within the framework of the limited revision.

NOI TSI, section 6.2.3.2 – Simplified evaluation for locomotives, multiple units, coaches and OTMs

'The simplified evaluation on a unit shall consist of providing evidence to show that the acoustically relevant systems and characteristics are either identical to those of the reference type, or such that they will not result in higher noise emission of the unit under assessment. The simplified evaluation can either be a calculation, or simplified measurement (e.g. sound power of noise sources), or a combination of both. Noise relevant systems which differ from the reference type shall be identified in the technical file.'

Evidence should be robust and verifiable. The analysis should be repeatable with equal results. Calculations should be described in detail to enable the NoBo to assess the quality of the calculation process. Assumptions should be made conservatively.

The TSI does not allow the simplified evaluation to be used when the noise level of the type under assessment is higher than the noise level of the reference type, even if the higher noise level of the type under assessment is expected to remain within the TSI limits. In such case, a full TSI assessment in accordance with section 4 of the TSI has to be carried out.

NOI TSI, section 6.2.3.3 – Simplified evaluation for freight wagons

'Number of axles per unit length (related to either the length of the wagon or the number of wheel sets'

The simplified evaluation may be applied on wagons of which both the number of axles and the length are changed, when compared to the reference type; however this is unlikely to stay within the permitted 5% weight variation, and therefore probably only a theoretical case.



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2.5 Implementation

NOI TSI, section 7.6 – Application of the TSI to existing rolling stock

'If a wagon during renewal or upgrading is being equipped (or is already equipped) with composite blocks and without adding additional noise sources to the wagon, it shall be assumed without testing that the values of point 4.2.1.1 are fulfilled.'

Please refer to the CR WAG TSI for further details relating to composite brake blocks. ERA keeps a list of approved composite brake blocks (k-blocks) which is published on its website. The pass-by noise level of wagons which have been retrofitted with k-blocks does not have to be tested to prove TSI compliance. The pass-by noise level of these wagons is assumed to be within the TSI limit.

OTIF provision equivalent to CR WAG TSI is the UTP WAG.

'An upgrading for noise emission reduction only is not mandatory, but if upgrading is done for another reason it shall be demonstrated that renewal or upgrading does either not increase pass-by noise levels, or when increased remain within the limits which are specified in this TSI.'

'For stationary noise, it shall be demonstrated that the stationary noise levels do either not increase, or when increased remain within the limits which are specified in this TSI.'

When noise levels before upgrade/renewal exceed the TSI limits, these noise levels may not be increased. When the noise levels before upgrade are below the TSI limits, they may be increased to the level defined in the TSI. The reason for allowing this increase is to enable the retrofitting of additional equipment such as air-conditioning systems and to allow for an equal treatment of existing vehicles.

NOI TSI, section 7.7 – Specific cases

'Specific cases belong to two categories: the provisions apply either permanently (case P), or temporarily (case T). In temporary cases, it is recommended that the Member States concerned should conform with the relevant subsystem either by 2010 (case T1), an objective set out in Decision 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network, or by 2020 (case T2).'

The revised noise TSI is adopted after the expiry of period T1. For this reason, Member States are advised to no longer use the specific cases marked T1.

The specific cases for EU Member States and States applying EU law (Contracting states which apply relevant European Community legislation as a result of international agreements with the European Community) are set out on the right-hand side; however they will also apply for admission to international traffic according to ATMF, if the vehicle is intended to be used in one or more of the



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States where a specific case applies.

2.6 Some practical cases

[to be completed after return of experience]



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3. APPLICABLE SPECIFICATIONS AND STANDARDS

3.1. Explanation of the use of the specifications and standards

Standards of voluntary use which have been identified during the drafting process of the TSI are listed in Annex 1, column 'Voluntary ref to clause(s) of Standard No'; as far as possible, the clause of the standard which is relevant for the conformity assessment of the TSI requirement should be identified. In addition, the column 'Voluntary ref – Purpose' should give a written explanation regarding the purpose of the reference to the standard.

Where relevant, an additional explanation is given in section 2 above.

The list in Annex 1 does not contain any reference to mandatory standards, since these are referred to in the TSI. If the TSI refers to a specific clause in the mandatory standards, additional clauses to those identified as mandatory in the TSI may in general be used on a voluntary basis, except where this would entail a contradiction with the TSI.

Annex 1 should be completed after a review with the Standardisation Bodies, and on a regular basis, in order to take into account new or revised harmonised standards.



Annex 1: List of standards

TSI		Standard		To be drafted
Characteristics to be assessed		Voluntary ref to clause(s) of Standard N°	Purpose of the Voluntary ref	
Pass-by noise	4.2.1.1, 4.2.2.4	EN 61260(*)	<i>Electroacoustics — Octave-band and fractional-octave-band filters (IEC 61260:1995)</i>	
Starting noise, Stationary noise, Pass-by noise, Interior noise	4.2.1.1, 4.2.2.4, 4.2.1.2, 4.2.2.2, 4.2.2.3, 4.2.3	EN 61672-1(*)	<i>Electroacoustics — Sound level meters — Part 1: Specifications (IEC 61672-1:2002)</i>	
Starting noise, Stationary noise, Pass-by noise, Interior noise	4.2.1.1, 4.2.2.4, 4.2.1.2, 4.2.2.2, 4.2.2.3, 4.2.3	EN 61672-2(*)	<i>Electroacoustics — Sound level meters — Part 2: Pattern evaluation tests (IEC 61672-2:2003)</i>	
Pass-by noise	4.2.1.1, 4.2.2.4	EN 15461(*)	<i>Railway applications — Noise emission — Characterisation of the dynamic properties of track sections for pass by noise measurements</i>	
Pass-by noise	4.2.1.1, 4.2.2.4	EN 15610(*)	<i>Railway applications — Noise emission — Rail roughness measurement related to noise generation</i>	
Interior noise	4.2.3	EN 15892 for the clauses that do not contradict the TSI.	<i>Railway applications. Noise emission. Measurement of noise inside driver's cabs</i>	
Starting noise, Stationary noise, Pass-by noise	4.2.1.1, 4.2.2.4, 4.2.1.2, 4.2.2.2, 4.2.2.3	EN ISO 3095 for the clauses that do not contradict the TSI.	<i>Railway applications -- Acoustics -- Measurement of noise emitted by railbound vehicles</i>	

(*) These Standards are mentioned in the appendixes of the TSI: they are mandatory for the purpose described in the appendixes.