



Organisation intergouvernementale pour les transports internationaux ferroviaires

Zwischenstaatliche Organisation für den internationalen Eisenbahnverkehr

Intergovernmental Organisation for International Carriage by Rail

# **Uniform Technical Prescription**

Subsystem: Operation and traffic management


**TRAIN COMPOSITION  
AND ROUTE  
COMPATIBILITY CHECKS**

**UTP TCRC**

Applicable from [Click here to enter a date.](#)

Amendments record

<u>Reference</u>	<u>Date</u>	<u>Description and comments</u>
<u>TECH-23022</u> <u>Version 1</u>	<u>17.5.2023</u>	<p><u>First draft for review by WG TECH 49.</u></p> <p><u>Changes compared to the version of UTP TCRC in force are indicated in track changes.</u></p> <p><u>The following EU documents have been used as input:</u></p> <ul style="list-style-type: none"> <li>- <u>Draft amendments to Implementing Regulation (EU) No 2019/773 of 16 May 2019 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise', as voted on by the EU's Railway Interoperability and Safety Committee.</u></li> <li>- <u>Draft amendments to Commission Implementing Regulation (EU) 2019/777 of 16 May 2019 on the common specifications for the register of railway infrastructure, as voted on by the EU's Railway Interoperability and Safety Committee.</u></li> </ul> <p><u>Main amendments include:</u></p> <ul style="list-style-type: none"> <li>- <u>Addition of requirements and explanations for the route compatibility checks in relation to Combined Transport (point 3 of the UTP Annex):</u></li> <li>- <u>Insertion of a new on specific checks for Combined Transport.</u></li> <li>- <u>Editorial corrections, improvements and substantial modifications throughout the text.</u></li> </ul>
<u>TECH-23022</u> <u>Version 2</u>	<u>9.8.2023</u>	<p><u>For review by WG TECH 50.</u></p> <p><u>Substantial changes compared to version 1 are marked green.</u></p>
<u>TECH-23022</u> <u>Version 3</u>	<u>16.10.2023</u>	<p><u>For review by WG TECH 51.</u></p> <p><u>Substantive changes compared to version 2 are marked grey.</u></p>

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## APTU Uniform Rules (Appendix F to COTIF 1999)

### **Uniform Technical Prescription applicable to: “TRAIN COMPOSITION AND ROUTE COMPATIBILITY CHECKS”**

#### **(UTP TCRC)**

This UTP has been developed in accordance with COTIF in the version of 1 March 2019 and in particular with Articles 3, 4, 6, 7, 7a and 8 of the APTU Uniform Rules (Appendix F to COTIF).


For definitions, see also Article 2 of the APTU Uniform Rules ([Appendix F to COTIF](#)) and Article 2 of the ATMF Uniform Rules (Appendix G to COTIF).

*Explanatory note:*

*The texts of this UTP which appear across two columns are identical in substance to corresponding texts of the European Union regulations. Texts which appear in two columns differ; the left-hand column contains the UTP text, the right-hand column shows the text in the corresponding EU regulations. The text in the right-hand column is for information only and is not part of the OTIF regulations.*

#### **0. EQUIVALENCE**

- (1) Owing to the complexity of interfaces between trains and the routes on which trains are intended to run, it is necessary that:
  - Trains are composed and checked before departure according to common rules and
  - The interfaces between trains, including all vehicles in the trains, and the routes on which the trains are intended to run, are checked according to common rules and
  - That procedures and responsibilities for performing these tasks are harmonised.
- (2) As required by Article 8 § 4 letter i) of [the APTU UR](#), this UTP indicates the parameters

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of the vehicles and fixed subsystems to be checked by the railway undertaking and the procedures to be applied to check those parameters to ensure compatibility between vehicles and the routes on which they are to be operated.

As this UTP is based on multiple texts from European Union law and as there is not just a single corresponding TSI, this UTP does not follow the standard structure for UTPs as referred to in ~~APTU~~ Article 8 § 4 [of the APTU UR](#).


- (3) Following their adoption by the Committee of Technical Experts, the provisions in this UTP are equivalent to the corresponding European Union regulations within the meaning of Article 13 § 4 letter b) of ~~APTU~~[the APTU UR](#).

References to the precise clauses of the corresponding European Union regulations are indicated between square brackets in the right-hand column.

The relevant parameters listed in this document are equivalent to the following provisions at European Union level:

- a) Chapters 1 to 4 are equivalent to the following provisions of the European Union ~~OPE TSI~~ ~~(Commission Implementing Regulation (EU) No 2019/773 of 16 May 2019)~~ [as last amended by Commission Implementing Regulation \(EU\) 2023/1693 of 10 August 2023 on the technical specification for interoperability relating to the operation and traffic management subsystem, further referred to as OPE TSI](#):
- 4.2.2.5 Route compatibility and train composition;
  - 4.2.2.6 Train braking;
  - 4.2.2.7 Ensuring that the train is in running order.
- b) The Annex to this UTP is equivalent to Appendix D1 of ~~OPE TSI~~.

The following European Union provisions were considered in preparing the Annex to this UTP, without this resulting in equivalence:

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c) Table 1 of the Annex to the European Union ~~common specifications for the register of railway infrastructure – RINF~~ (Commission Implementing Regulation (EU) 2019/777 of 16 May 2019,) as last amended by Commission Implementing Regulation (EU) 2023/1694 of 10 August 2023 on the common specifications for the register of railway infrastructure, further referred to as RINF ~~was considered in preparing the Annex to this UTP.~~


(4) The objectives and scope of COTIF and the EU law concerning railways are not identical and it has therefore been necessary to use different terminology for concepts that have a similar, but not identical meaning. The following table lists the terms used in this UTP and the corresponding terms used in the relevant TSI:

<u>This UTP</u>	<u>EU law</u>
Uniform Technical Prescription (UTP)	Technical Specification for Interoperability (TSI)

(5) In addition, for the purpose of this UTP TCRC, the following definitions shall apply:

- a) “Combined transport train” is a freight train composed completely or partly of freight wagons loaded with intermodal loading unit(s) (e.g. swap bodies, semi-trailers, containers, roller units).
- b) “Train composition” is the sequence of vehicles in the train. This means both the formation of vehicles within a train and their specific vehicle characteristics.
- c) The Combined Transport Profiles (CTP); represent a set of specified shape and dimensions which a given intermodal loading unit (ILU), in loaded position on a suitable codified wagon, shall not encroach upon at any time.
- d) The Combined Transport Code (CT code) identifies the CTP.

(6) Footnotes provide explanations and are not part of the rules.

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## 1. SCOPE AND PURPOSE

- (1) For the purpose of the composition of trains for use in international traffic and for the purpose of checking compatibility between trains and the routes on which they are intended to be used, this UTP lays down detailed provisions concerning the responsibilities of railway undertakings and infrastructure managers as defined in Article 6 § 2 and Article 15a of [the ATMF UR](#).
- (2) In particular, this UTP prescribes:
  - The responsibilities of infrastructure managers to provide information and facilitate the procedures applied by railway undertakings;
  - The procedures to be applied to check ~~these~~the parameters ~~that~~ ensure compatibility between vehicles and the routes on which they are to be operated;
  - The responsibilities of railway undertakings for the composition and preparation of trains and pre-departure checks of trains intended to be operated in international transport;
  - The parameters of the vehicles and fixed subsystems to be checked by the railway undertaking.
- (3) For any other matters, including, but not limited to, the operation of trains, safety certification and licencing, railway undertakings and infrastructure managers are subject to the law applicable in each Contracting State.

## 2. ROUTE COMPATIBILITY


### 2.1. Obligations of the Railway Undertaking

(+)

- (1) In accordance with Articles 6 § 2 and 15a of ~~ATMF~~the ATMF UR, it is the responsibility of the railway undertaking to ensure that trains are correctly prepared so that all

[European Union OPE TSI point 4.2.2.5.1, Route Compatibility, letter A:]

The railway undertaking is responsible for ensuring that all vehicles composing its train are compatible with the intended route(s).

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vehicles of which the train is composed are only operated on compatible infrastructure.

To this end, a railway undertaking shall apply a process to check that all vehicles it uses are admitted to international traffic,

registered and compatible with the intended route(s) including the requirements to be followed by its staff. The route compatibility process shall not duplicate

checks that have been performed as part of the vehicle admission process

to ensure technical compatibility between the vehicle and the network(s).

Parameters

set out in the Annex to this UTP which have already been verified and checked during vehicle admission according to ~~ATMF~~[the ATMF UR](#) or authorisation in accordance with EU law

or other similar processes shall not be reassessed in the framework of route compatibility check.

- (2) The relevant vehicle data related to the parameters listed in the Annex to this UTP shall be provided by the holder of the Certificate of Operation to the railway undertaking upon request, when such information is not already available to the railway undertaking through the

The railway undertaking shall have a process in its SMS to ensure that all vehicles it uses are authorised,

processes performed as part of the vehicle authorisation under Commission Implementing Regulation (EU) 2018/545

of Appendix D 1 already verified and checked during vehicle authorisation


For vehicle authorised under Directive (EU) 2016/797, the relevant vehicle data related to the parameters listed in Appendix D1, already checked during the authorisation process, being part of:

- the file referred to in Article 21 (3) of Directive (EU) 2016/797, and
- the vehicle authorisation as referred to in Article 21 (10) of Directive (EU) 2016/797,

shall be provided by the applicant referred to in Article 2 (22) of Directive (EU) 2016/797 or the keeper to the railway undertaking upon request, when such information is not available in ERATV or other registers for rail vehicles.

For vehicles authorised before Directive (EU) 2016/797, the relevant vehicle data related to the parameters listed in Appendix D1 shall be provided to the railway undertaking by the holder of the vehicle authorisation documentation or the keeper upon request, when such information is not available in ERATV or other

registers for rail vehicles.

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- (3) The process to be applied by the railway undertaking shall include the following checks, which may be performed in parallel at any appropriate time or in any appropriate sequence:
- a) each vehicle is
    - admitted according to ~~ATMF~~[the ATMF UR](#) or authorised in accordance with EU law and registered in the vehicle register which is used by the state(s) concerned;
    - authorised and registered;
  - b) each vehicle in the train is compatible with the route;
  - c) the composition of the train is compatible with the route and the path;
  - d) the preparation of the train ensuring that the train is correctly formed and complete.

## 2.2. Obligations of the Infrastructure Manager

~~(+)~~

**[European Union OPE TSI point 4.2.2.5.1, Route Compatibility, letter B:]**

(1)

The infrastructure manager shall provide the information for route compatibility as defined in the Annex to this UTP.

in Appendix D1 through RINF.

- (2) The Annex sets out all the parameters where the infrastructure manager must provide relevant data or information to the railway undertaking before a vehicle or train configuration is first used on a particular route, so as to enable the railway undertaking to check that all vehicles comprising a train, and the train as a whole, are compatible with the route(s) on which the train is intended to be operated.

Appendix D1 sets out all the parameters that shall be used in the process of the railway undertaking before the first use of a vehicle or train configuration in order to ensure all vehicles composing a train are compatible with the route(s) the train is planned to operate on including, where appropriate, deviation routes and routes to workshops. Modifications of the route and changes of infrastructure characteristics have to be taken into account. When a parameter of Appendix D1 is harmonised at network(s) level of an area of use, conformity with that parameter may be presumed for any vehicle authorised for that area of use. National rules or additional national requirements for network access in respect of route compatibility are in principle considered incompatible with Appendix D1. The infrastructure manager shall not require additional technical checks for the purpose of route compatibility beyond the list laid down in Appendix D1.

In most cases the parameters in the Annex should be sufficient to support the assessment of route compatibility. Any additional technical checks should only be required in exceptional circumstances where the party requiring the checks provides reasonable justification.

- (3) The infrastructure manager shall provide railway undertakings with all the relevant route information listed in the Annex to this UTP free of charge, as soon as possible and in an electronic format.

[At the latest by 15 December 2026, until RINF allows for hosting the following new parameters:](#)

[a\) Specific check for Combined Transport](#)





The information may be made available by providing access to an electronic register containing the information.

- (i) [1.1.1.1.3.4 - Standard combined transport profile number for swap bodies](#)
- (ii) [1.1.1.1.3.9 - Standard combined transport profile number for roller units](#)
- (iii) [1.1.1.1.3.8 - Standard combined transport profile number for container](#)
- (iv) [1.1.1.1.3.5 - Standard combined transport profile number for semi-trailers](#)
- (v) [\(CT Line code\)](#)


**b) [Train detection systems: influencing unit](#)**

- (i) [1.1.1.3.4 - Train detection systems defined based on frequency bands](#)
- (ii) [1.1.1.3.4.2 - Frequency bands for detection](#)
- (iii) [1.1.1.3.4.2.1 - Maximum interference current](#)
- (iv) [1.1.1.3.4.2.2 - Minimum Input impedance](#)
- (v) [1.1.1.3.4.2.3 - Maximum magnetic field](#)

**c) [1.1.1.3.2.11 Safe consist length information from on-board necessary for access to the line and Safety Integrity Level \(SIL\)](#)**

~~the infrastructure manager shall provide these information through other means free of charge as soon as possible and in electronic format to railway undertakings, authorized applicants for path requests and, where applicable, for the applicant referred to in Article 2(22) of Directive (EU) 2016/797. As required by Article 23 (1) (b) of Directive (EU) 2016/797, until RINF provides all necessary information in respect of the relevant parameters, the infrastructure manager shall provide this information through other means free of charge as soon as possible and in electronic format to railway undertakings, authorized applicants for path requests and, where applicable, for the applicant referred to in Article 2 (22) of Directive (EU) 2016/797.~~

~~The first submission of route compatibility information by the infrastructure manager through other mean than RINF shall be delivered at the request of the railway undertaking as soon as reasonably possible~~

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~~and in any event within 15 days unless the infrastructure manager and the railway undertaking agree a longer deadline.~~

~~The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate.~~

The infrastructure manager shall inform the railway undertaking of the changes on characteristics of the route

whenever such information becomes available. The information may be made available by providing access to an electronic register containing the information.

through RINF whenever such information becomes available and affects trains operation ~~or through other means until RINF allows for such functionality.~~

The infrastructure manager and the railway undertaking shall have technical and operational means in place to exchange operational information that may affect route compatibility.

~~For emergency situations or real time information, the infrastructure manager shall ensure immediate information is given to the railway undertaking through appropriate means of communication.~~

### 2.3. Additional elements for route compatibility

[European Union OPE TSI point 4.2.2.5.1, Route Compatibility, letter C:]

Additional elements for route compatibility shall be checked when relevant:

a) transport of dangerous goods;

as referred in point 4.2.3.4.3;

b) quieter route as referred in UTP Noise;

c) exceptional transport

i.e. a vehicle and/or the load carried which, because of construction/design, dimensions or weight does not meet the parameters of the route and requires special authority for the movement and may require special conditions over part of or all of its journey;


as referred in Appendix I;

d) access conditions to underground stations for diesel and other thermal traction systems as referred to in clause 4.2.8.3 of UTP LOC&PAS.

### 2.4. Specific elements for route compatibility of Combined Transport trains

[European Union OPE TSI point 4.2.2.5.1, Route Compatibility, letter D:]

(1) Specific elements for route compatibility of Combined Transport trains:

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- a combined transport train not exceeding the loading gauge of all tracks of the line, and for which the CT code does not exceed the codification of all tracks of the line, shall be considered as a normal transport;
- a combined transport train exceeding the loading gauge, and for which the CT code does not exceed the codification of the line, shall be considered as transport with specific national requirements. | requirements as referred to in Appendix I.  
Such requirements shall be universally applicable to all trains in this category and compliance with them shall not need to involve any further authorisation process between the railway undertaking and the infrastructure manager;
- if the CT code exceeds the codification of the line, or if the line is not codified, a specific authorisation (exceptional transport), based on an evaluation of the operational and technical feasibility, shall be issued by the infrastructure manager.

(2) The recommended practice for operational procedures applicable to | Operational procedures applicable to

combined transport is set out in point 3 of the ERA Technical Document on codification of combined transport (ERA/TD/2023-01/CCT version 1.1 dated 21.03.2023 published on ERA's website <http://www.era.europa.eu>).

### 3. TRAIN COMPOSITION


| [European Union OPE TSI point 4.2.2.5.2, Train composition:]

(1) Train composition requirements shall take into account the following elements according to the allocated path:

- a) all vehicles composing a train including their loads:
  - shall be compatible with all the requirements applicable on the routes over which the train shall run;
  - shall be fit to run at the maximum speed at which the train is scheduled to run;
- b) all vehicles ~~on-composing a~~ **the** train  
shall be in a good state of maintenance | shall remain within their specified maintenance interval  
for the duration (in terms of both time and distance) of the journey being undertaken;
- c) the train composed of vehicles including their loads, shall comply with the technical and operational constraints of the route concerned and be within the maximum length permissible for forwarding and receiving terminals;
- ~~d) the railway undertaking is responsible for ensuring that all vehicles composing the train including their load are technically fit for the journey to be undertaken and remains so throughout the journey.~~

The railway undertaking may need to consider additional constraints due to the type of braking regime or traction type on a particular train.

| ~~(see point 4.2.2.6).~~

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(2) [The railway undertaking is responsible for ensuring that all vehicles composing the train, including their load, are technically fit for the journey to be undertaken and remain so throughout the journey.](#)

#### 4. TRAIN BRAKING

[\[European Union OPE TSI point 4.2.2.6\), Train braking:\]](#)

[The railway undertaking shall set up and implement braking requirements in accordance with points](#)

[4.1 and 4.2.](#)

[4.2.2.6.1 and 4.2.2.6.2 and shall manage them within its safety management system.](#)

[The management of operational safety, including the control of risks associated with train braking, are subject to the provisions in force in the Contracting State concerned.](#)

##### 4.1. Minimum requirements of the braking system

[\[European Union OPE TSI point 4.2.2.6.1:\]](#)

All vehicles in a train shall be connected to the continuous automatic braking system as defined in the UTP LOC&PAS and UTP WAG. The first and last vehicles (including any traction units) in any train shall have the automatic brake operative. In the case of a train becoming accidentally divided into two parts, both sets of detached vehicles shall come automatically to a stand as a result of a maximum application of the brake.

##### 4.2. Braking performance and maximum speed allowed

[\[European Union OPE TSI point 4.2.2.6.2:\]](#)

(1) The infrastructure manager shall provide the railway undertaking with all relevant line characteristics

for each route:

for each route through RINF:

a) Signalling distances (warning, stopping) containing their inherent safety margins, [that are provided via the respective locations of “Stopping signal” and “Warning signal”.](#)

[requested in Appendix D2 via the parameter 1.1.1.3.14.3,](#)

b) gradients,


c) maximum permitted speeds, ~~and~~

d) conditions of use of braking systems possibly affecting the infrastructure such as magnetic, regenerative and eddy-current brake.

The infrastructure manager shall provide this information free of charge and as soon as reasonably possible.

[The information may be made available in digital form by providing access to a register containing the information.](#)

~~Until RINF provides the relevant parameters, the infrastructure manager shall provide this information through others means free of charge and as soon as reasonably possible and in any event within 15 days for the first~~

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~~submission unless the railway undertaking agrees a longer deadline.~~

~~The infrastructure manager shall inform the railway undertaking of the changes on the line characteristics~~

~~whenever such information becomes available. The information may be made available by providing access to an electronic register containing the information.~~

~~through RINF whenever such information becomes available or through other means until RINF allows for such functionality.~~

The infrastructure manager shall ensure that the information provided to the railway undertaking(s) is complete and accurate, and shall inform the railway undertaking of the changes ~~to~~ on the line characteristics

through RINF

whenever such information becomes available and affects train operations.

- (2) The infrastructure manager may provide the following information:
- For trains able to run at a maximum speed higher than 200 km/h, deceleration profile and equivalent response time on level track;
  - For trainsets or for fixed train compositions, unable to run at a maximum speed higher than 200 km/h, deceleration (as above in (1a)) or brake weight percentage;
  - For other trains (variable compositions of trains unable to run at a maximum speed higher than 200 km/h): brake weight percentage.

If the infrastructure manager provides the above mentioned information, it shall be made available to all railway undertakings who intend to operate trains on its network in a non-discriminatory way.

Other relevant information, such as braking charts, shall also be made available.

The braking tables already in use and accepted for the existing non TSI conform lines at the date of entry into force of the present Regulation shall also be made available.


- (3) The railway undertaking shall, in the planning stage, determine the braking regime, the braking capability ~~of the train~~ and corresponding maximum speed of the train, taking into account:
- the relevant line characteristics as expressed in point (1) ~~above~~ and, if available, the information provided by the infrastructure manager in accordance to point (2) ~~above~~; and
  - the rolling stock-related margins derived from reliability and availability of the braking system.

Furthermore, the railway undertaking shall ensure that during operation each train achieves at least the necessary braking performance.

Corresponding rules shall be set up in accordance with the provisions in force in the state concerned and shall be implemented by the railway undertaking.

~~In particular, the railway undertaking shall have to set up rules and implement corresponding rules and shall manage them within its safety management system. In particular the railway undertaking has to set up rules~~

In particular, there shall be rules

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to be used if a train does not reach the necessary braking performance during operation. In this case, the railway undertaking shall immediately inform the infrastructure manager. The infrastructure manager may take appropriate measures to reduce the impact on the overall traffic on its network.

## 5. ENSURING THAT THE TRAIN IS IN RUNNING ORDER

### 5.1. General requirement

The railway undertaking shall

[European Union OPE TSI point 4.2.2.7.1:]

The railway undertaking shall define the process to

ensure that all safety-related on-train equipment is in a fully functional state and that the train is safe to run.

The railway undertaking shall inform the infrastructure manager of any modification to the characteristics of the train affecting its performance or any modification that might affect the ability to accommodate the train in its allocated path.

Procedures to be applied to trains running in degraded mode, including the conditions under which these trains shall be operated, shall be established and kept up-to-date.

The infrastructure manager and the railway undertaking shall define and keep up to date conditions and procedures for train running temporarily in degraded mode.


### 5.2. Pre-departure data

[European Union OPE TSI point 4.2.2.7.2:]

The railway undertaking shall ensure that the following data required for safe and efficient operation is made available to the infrastructure manager(s) prior to the departure of the train:

- a) the train identification
- b) the identity of the railway undertaking responsible for the train
- c) the actual length of the train
- d) if a train carries passengers or animals when it is not scheduled to do so
- e) any operational restrictions with an indication of the vehicle(s) concerned (gauge, speed restrictions, etc.)
- f) information the infrastructure manager requires for the transport of dangerous goods.

The railway undertaking shall advise the infrastructure manager(s) if a train does not occupy its allocated path or is cancelled.

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**ANNEX: LIST OF PARAMETERS FOR VEHICLE AND TRAIN COMPATIBILITY OVER THE INTENDED ROUTE ~~INTENDED FOR OPERATION~~**

Explanation:

- The following tables are based on table D1 in Appendix D to the European Union OPE TSI (Commission Implementing Regulation (EU) No 2019/773 of 16 May 2019 [as last amended by Commission Implementing Regulation \(EU\) 2023/1693 of 10 August 2023](#)).
- In table D1 in Appendix D to the OPE TSI there are references to European Union RINF (Commission Implementing Regulation (EU) 2019/777 of 16 May 2019 [as last amended by Commission Implementing Regulation \(EU\) 2023/1694 of 10 August 2023](#) on the ~~(common specifications for the register of railway infrastructure)~~ ~~and repealing Implementing Decision 2014/880/EU~~). There are no COTIF provisions comparable with RINF and therefore the references to RINF in table D1 in Appendix D to the OPE TSI could not be taken over as references to COTIF texts. The relevant texts from RINF have therefore been included in the following tables (between brackets and in italic in the second column).
- The texts under some of the tables are explanatory and are based on ERA’s Guide on the application of the common specifications of the RINF version 1.5 of 29 July 2019.

Guiding notes for application:

1. Following the requirements of *route compatibility*, the railway undertaking may cover route compatibility checks of certain parameters during earlier stages (i.e. during the procedure for the admission to international traffic, or during the vehicle authorisation in accordance with European Union law).
2. All parameters must be checked at vehicle level: this is indicated by an “X” in the column “Vehicle level”. Some parameters need to be checked when the train composition changes, as defined in the section on train composition; these parameters are indicated by an “X” under the column “Train level”.
3. With a view to avoiding duplication of testing, in relation to the parameters for “Traffic loads and load carrying capacity of infrastructure” and “Train detection systems”, the infrastructure managers ~~shall~~ should provide the list of vehicle types or vehicles compatible with the route for which they have already verified route compatibility, where such information is available.


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## 1. TRAFFIC LOADS AND LOAD CARRYING CAPACITY OF INFRASTRUCTURE

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Static axle loads and design and operational masses in the following load cases: <ul style="list-style-type: none"> <li>- design mass as defined in UTP LOC&amp;PAS               <ul style="list-style-type: none"> <li>o in working order;</li> <li>o under normal payload;</li> <li>o under exceptional payload;</li> </ul> </li> <li>- Where relevant operational mass in accordance with EN 15663: 2017- A1 2018:               <ul style="list-style-type: none"> <li>o in working order;</li> <li>o under normal payload.</li> </ul> </li> </ul> Maximum design speed. Vehicle length. The position of the axles along the unit (axle spacing).- <a href="#">EN line category<sup>1</sup></a> . <a href="#">When calculating the payload capacity of standing areas in passenger vehicles, this shall be done according to point 6.4 of EN 15528:2021.</a> Static compatibility check for wagons:	Load capability. <i>(A combination of the line category and speed at the weakest point of the track).</i>	<b>X</b>	<b>X</b>	The static compatibility checks for vehicles <u>shall be performed according to Point 7 of EN 15528:2021 and additional procedure(s) or relevant information, –if provided by the infrastructure manager, in accordance with procedure(s) for static and dynamic route compatibility checks –and, when necessary in accordance with the information provided by the infrastructure manager, the dynamic compatibility checks for trains shall be performed according to the procedure(s) or relevant information provided by the infrastructure manager.</u>  <del>For freight wagons: The static compatibility check is performed according to the following sections of EN 15528:2015: 4 to 7, Annex A, Annex D or in accordance with applicable national technical requirements, provided these are notified in accordance with Article 12 of the APTU Uniform Rules.</del>  <u>For the United Kingdom in relation to Northern Ireland networks, the static compatibility checks for vehicles shall be performed according to relevant national rules in accordance with point 4.2.7.4 (4) of UTP INF.</u>  <u>Any requirement set out by the infrastructure manager which relates to the passenger payload, to be considered during route compatibility checks for vehicles capable of carrying a payload of passengers, shall be included in the procedure(s) or relevant information provided by the</u>
	National classification for load capability.	<b>X</b>	<b>X</b>	
	Compliance of structures with the High Speed Load Model (HSLM). <i>(For sections of line with a maximum permitted speed of 200 km/h or more. Information regarding the procedure to be used to perform the dynamic compatibility check.)</i>	<b>X</b>	<b>X</b>	
	Railway location of structures requiring specific checks. <i>(Localisation of structures requiring specific checks.)</i>	<b>X</b>	<b>X</b>	
	Document(s) with the procedure(s) for static and dynamic route compatibility checks. <i>(Electronic document available in two EU languages from the infrastructure manager and stored by the European Union Agency for Railways with:</i> <ul style="list-style-type: none"> <li>- <i>precise procedures for the static and dynamic route compatibility checks;</i></li> <li>or</li> <li>- <i>relevant information for carrying out the checks for specific structures.)</i></li> </ul>	<b>X</b>	<b>X</b>	

<sup>1</sup> The corresponding EU text reads: “For vehicles capable of carrying a payload of passengers: EN line category for the standard value of payload in standing areas and – in case of application – for any particular value of payload in standing areas, according to Point 6.4 of EN 15528:2021.”



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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
- Permissible payload for different line categories according to UTP WAG.				<a href="#">infrastructure manager in accordance with procedure(s) for static and dynamic route compatibility checks. Such procedures may take into account technical or operational measures which have an impact on the passenger payload on standing areas.</a> <a href="#">The dynamic compatibility checks for trains, when necessary in accordance with the information provided by the infrastructure manager, shall be performed according to the procedure(s) or relevant information provided by the infrastructure manager in accordance with procedure(s) for static and dynamic route compatibility checks.</a>

General explanation for load capability:


The load capability describes the weakest point of this track within this section of line (which is normally a bridge or other sub-track structure). It is expressed as a combination of the line category and speed permitted for trains exerting loads defined for this line category.

The result of the classification process for freight wagons is set out in EN 15528:2008 (Annex A) and referred to in that standard as “Line Category”.

It represents the ability of the infrastructure to withstand the vertical loads imposed by vehicles on the track for regular service as a combination of Line Category with a permitted speed according to EN 15528:2008.

## 2. GAUGING

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Vehicle gauge: - Reference profiles for which the vehicle was authorised;	Gauging. <i>(Gauges as defined in standards, or specific national gauges, including lower or upper part.)</i>	X	X	Comparison of the declared reference profiles between vehicle/train and the intended route. For the specific cases referred to in:

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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
- other gauges assessed.	Railway location of particular points requiring specific checks. <i>(Due to deviations from gauging referred to in previous (first) parameter.)</i>	X	X	<ul style="list-style-type: none"> <li>- UTP LOC&amp;PAS sections 7.3.2.1, 7.3.2.2 and 7.3.2.3.</li> <li>- European Union LOC&amp;PAS TSI 1302/2014 section 7.3.2.2 and</li> <li>- European Union INF TSI 1299/2014 sections 7.7.17.2 and 7.7.17.9 and, if available, the equivalent UTP.</li> </ul> And if national technical requirements apply, a specific procedure for route compatibility check can be applied. For such purpose, the infrastructure manager shall make available the relevant information.  The infrastructure manager shall identify particular points which deviate from the declared reference profile in parameter: gauging.  Note: Additional discussion between the infrastructure manager and railway undertaking might be required to check these specific points.
	Document with the transversal section of the particular points requiring specific checks. <i>(Information provided by the infrastructure manager with the transversal section of the particular points requiring specific checks due to deviations from gauging referred to in first parameter. Where relevant, guidance for the check with the particular point may be attached to the document with the transversal section.)</i>	X	X	


General explanation for vehicle gauge:

This parameter covers gauges mentioned in EN or gauges included in national regulations. The list of national gauges should express information about the gauge as precisely as possible.

Gauges from BE1 to W6 are mentioned in EN; all others are according to national rules. For example, S is for 1520 track gauge system, FS for Italy, IRL 1-3 for Ireland, etc.

### 3. SPECIFIC CHECK FOR COMBINED TRANSPORT

<u>Vehicle information</u> (either from ERATV, the technical file, or any other appropriate means of information)	<u>Route information</u> provided by the infrastructure manager	<u>Vehicle level</u>	<u>Train level</u>	<u>Procedure to check the vehicle and train compatibility over the intended route</u>
<u>Wagon Compatibility Code, Wagon</u>	<u>Standard combined transport profile number in accordance</u>		<u>X</u>	<u>Comparison in accordance with the specification defined</u>

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<u>Vehicle information</u> (either from ERATV, the technical file, or any other appropriate means of information)	<u>Route information</u> provided by the infrastructure manager	<u>Vehicle level</u>	<u>Train level</u>	<u>Procedure to check the vehicle and train compatibility over the intended route</u>
Correction Digit and ILU Technical Number. Note: (WCC + ILU Technical Number) combined with the freight Wagon Correction Digit = CT code.	with the specification referenced in ERA/TD/2023-01/CCT version 1.1 dated 21.3.2023) <sup>2</sup> for all freight and mixed-traffic lines: - for swap bodies (coding for combined transport with swap bodies); - for roller units (coding for combined transport for roller units); - for containers (coding for combined transport for containers); - for semi-trailers (coding for combined transport for semi-trailers); - CT Line code.			in point 3.1 of the ERA Technical Document on codification of combined transport (ERA/TD/2023-01/CCT) version 1.1 dated 21.3.2023, published on the ERA website <a href="http://www.era.europa.eu">http://www.era.europa.eu</a> .


### 3.4. VERTICAL RADIUS AT SIDINGS

<u>Vehicle information</u> (either from ERATV, the technical file, or any other appropriate means of information)	<u>Route information</u> provided by the Infrastructure manager	<u>Vehicle level</u>	<u>Train level</u>	<u>Procedure to check the vehicle and train compatibility over the intended route</u> <del>intended for operation</del>
Minimum vertical: - convex curve radius capability; - concave curve radius capability.	Minimum radius of vertical curve at siding. <i>(Radius of the smallest vertical curve expressed in metres.)</i>	<b>X</b>		Comparison of the declared minimum radius of vertical curve between vehicle and the intended route.

### 4.5. TRAIN DETECTION SYSTEMS

For compatibility between vehicles and train detection systems, the term “national specifications” in the table below means:

<sup>2</sup> The text in RINF refers to Appendix A-1, index [B], which refers to ERA Technical Document on codification of combined transport, ERA/TD/2023-01/CCT version 1.01 (released on 21.3.2023)


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– [For states that apply EU law: all requirements that are applicable in accordance with Article 13 of the CCS TSI Commission Implementing Regulation \(EU\) 2023/1695 of 10 August 2023](#)


– [For other states, any relevant requirement concerning train detection that is imposed by the Competent Authority.](#)

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route
<a href="#">Information as to whether the vehicle has electrical or electronic equipment on board that may create interference current in the rail, or that may create electromagnetic fields causing interference close to the axle counter.</a> <del>Type of train detection systems for which the vehicle has been designed and assessed</del>	Type of train detection system. (Indication of types of train detection systems installed.)	X		<a href="#">The required verification depends on the type of train detection system:</a> <ul style="list-style-type: none"> <li>- <a href="#">“track circuit”</a>: verification is only required for vehicles having electrical or electronic equipment on board creating interference current in the rail</li> <li>- <a href="#">“axle counter”</a>: verification is only required for vehicles having electrical or electronic equipment on board creating interference electromagnetic fields close to the axle counter</li> <li>- <a href="#">“loop”</a>: verification not needed.</li> </ul>
	Type of track circuits or axle counters for which specific checks are needed. (Reference to the technical specification of train detection system, in accordance with the specification referenced in <a href="#">ERA/ERTMS/033281 version 5.0<sup>3</sup> of 24.3.2023.</a> )	X		
	<del>Document with the procedure(s) related to the type of train detection systems declared in previous parameter. (Information from the infrastructure manager with precise procedures for the specific checks to be performed to ascertain compatibility of the vehicle with the train detection systems)</del> Section with train detection limitation (Specific route compatibility checks or requirements for particular sections of the network.)	X		<del>Comparison of the declared type of train detection system(s) between vehicle and the intended route.</del> Note: At vehicle admission, based on UTPs and national rules, the technical compatibility between the vehicle and all train detection system(s) of the network(s) in the area of use is verified. If required to ascertain detection (e.g. problems of non-detection of the vehicle occurring during operation), tests and/or checks could be carried out after vehicle admission, involving the railway undertaking and infrastructure manager.

<sup>3</sup> [The text in RINF refers to Appendix A-1, index \[D\], which refers to \(ERA/ERTMS/033281 - V 5.0 of 24.3.2023; Interfaces between Control-Command and Signalling Trackside and other Subsystems\)](#)

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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route
<a href="#">Type of train detection systems for which the vehicle has been designed and assessed by tests performed in accordance with ERA/ERTMS/033281 version 5.0 of 24.3.2023.</a>	<a href="#">Document with the procedure(s) related to the type of train detection systems.</a> <i>(Electronic document from the infrastructure manager with precise values in accordance with the specification referenced in ERA/ERTMS/033281 version 5.0 of 24.3.2023 and any national specification, for the specific check to be performed for train detection systems identified in previous parameter.)</i>  <a href="#">Specific to the French network: Section with train detection limitation.</a>	X		<a href="#">Comparison of the declared type of train detection system(s) between vehicle and the intended route.</a>  <u>Note:</u> <a href="#">Before a vehicle is admitted, technical compatibility is verified between the vehicle and all train detection system(s) of the network(s) in the area of use.</a> <a href="#">In duly justified cases (e.g. problems of non-detection of the vehicle occurring during operation), tests and/or checks could be performed after vehicle authorisation, involving the railway undertaking and infrastructure manager.</a>
<a href="#">Possibility of preventing use of the lubrication device.</a>	<a href="#">Use of flange lubrication.</a> <i>(Indication whether the use of an on-board device for flange lubrication is <b>prohibited</b> forbidden.)</i>	X		<a href="#">Verification of whether use of flange lubrication is allowed on the intended route.</a>  <u>Note:</u> <a href="#">The output of the check should be taken into account by the railway undertaking (e.g. preventing the use of flange lubrication on the section of line).</a>
<a href="#">Influencing unit.</a> From technical file of each vehicle of the train. For each band of the frequency management defined in ERA/ERTMS/033281 version 5.0 of 24.3.2023 and any national specifications: <ul style="list-style-type: none"> <li>- <a href="#">Maximum interference current (A) and applicable summation rule,</a></li> <li>- <a href="#">Maximum magnetic field (dBµA/m) both radiated field and field due to the return current and applicable summation rule,</a></li> </ul>	<del>Train detection systems defined based on frequency bands.</del>  <a href="#">Frequency bands for detection.</a> <i>(Bands of the frequency management of the train detection systems as defined in the specification referenced in ERA/ERTMS/033281 version 5.0 of 24.3.2023, and in national specifications, if these are available.)</i>  <a href="#">Maximum interference current.</a> <i>(Maximum interference current limits allowed for track circuits for a defined frequency band.)</i>		X    X	<a href="#">Route compatibility check applicable to:</a> <ul style="list-style-type: none"> <li>- <a href="#">passenger trains consisting of locomotive(s) and coaches</a></li> <li>- <a href="#">freight trains where one or several freight wagons have electrical or electronic equipment on board creating interference current in the rail or interference electromagnetic fields close to the axle counter.</a></li> </ul> <a href="#">Compliance of the resulting emissions at 'Influencing Unit' level (as defined in clause 3.2 of ERA/ERTMS/033281</a>

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<u>- Minimum Input Impedance (Ohm).</u> <u>Comparable parameters specified in national specifications, if these are available.</u>	<u>Minimum Input impedance.</u> <i>(Impedance as defined in the specification referenced in ERA/ERTMS/033281 version 5.0 of 24.3.2023.)</i>		<u>X</u>	<u>version 5.0 of 24.3.2023, with maximum interference values (current level and magnetic field limit) and minimum impedance allowed, shall be checked.</u> <u>For each frequency band, the procedure to define the resulting emissions at 'Influencing Unit' level shall be calculated based on summation rules specified in:</u>
	<u>Maximum magnetic field.</u> <i>(The maximum magnetic field limits allowed for axle counters (in dBuA/m) for a defined frequency band. It should be provided in 3 directions.)</i>		<u>X</u>	<u>- Clauses 3.2.1 and 3.2.2 of ERA/ERTMS/033281 version 5.0 of 24.3.2023 compliant train detection system;</u> <u>- national specifications.</u>

## 5.6. HOT AXLES BOX DETECTION

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <b>intended for operation</b>
Axle bearing condition monitoring.	Existence of trackside hot axle box detection (HABD).	<b>X</b>		<b>For existing non-UTP compliant vehicle:</b> Comparison of the declared compliance with trackside HABD between vehicle and the intended route, when the network(s) of the area of use are composed of more than one 'type' of trackside HABD. If the network(s) of the area of use are fitted with only one type of trackside hot axle box detector, no route compatibility check is required.  Note: For UTP compliant vehicle: compatibility with trackside for network(s) of an area of use is verified before admission to international traffic. Any specificity of the network has to be covered by a specific case.
	Information from the infrastructure manager on whether all the trackside hot axle box detection units are compatible with vehicles which have a detection area in compliance with the UTP. If part of the route is fitted with a trackside HADB system which is not compatible with vehicles which have a detection area in compliance with the UTP, the infrastructure manager must inform the railway undertakings of the interfaces of this HABD system with vehicles and the locations where these HABD units are fitted.	<b>X</b>		


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## 6.7. RUNNING CHARACTERISTICS

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Combination(s) of maximum speed and maximum cant deficiency of a vehicle (operational envelope that the vehicle has been assessed for). Rail inclination.	Cant deficiency. <i>(Maximum cant deficiency expressed in millimetres defined as difference between the applied cant and a higher equilibrium cant the line has been designed for.)</i>	X		Comparison of the combination of maximum speed, maximum cant deficiency and rail inclination(s), for which the vehicle is assessed, with the cant deficiency, speed and rail inclination(s) declared in information provided by the infrastructure manager.  If vehicle characteristics do not match infrastructure characteristics and compatibility between the vehicle and the route might be compromised, the infrastructure manager shall provide the exact combination of speed and cant deficiency for the specific points in which compatibility might be compromised, if possible within one month, free of charge and in an electronic format.  Note: The output of the check should be taken into account by the railway undertaking for the route book preparation. Operational conditions might be imposed as a result of this check (e.g. speed restriction for a section of line).
	Maximum permitted speed. <i>(Nominal maximum operational speed on the line as a result of infrastructure, energy and control, command and signalling subsystem characteristics expressed in kilometres/hour.)</i>	X		
	Rail inclination. <i>(An angle defining the inclination of the head of a rail relative to the running surface.)</i>	X		

General explanation for the rail inclination:

The rail inclination is in most cases expressed by one value for entire networks. However, to ascertain compatibility with specific sections it is required to check the compatibility of the vehicle with these sections of line in detail, including in the event that one section of line has several different values. Rail inclination is an angle defining the inclination of the head of a rail when installed in the track relative to the plane of the rails (running surface), equal to the angle between the axis of symmetry of the rail (or of an equivalent symmetrical rail having the same rail head profile) and the perpendicular to the plane of the rails.

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## 7.8. WHEELSET

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Wheel set gauge.	Nominal track gauge. <i>(A single value expressed in millimetres that identifies the track gauge.)</i>	X		Comparison of the wheelset gauge with track gauge of the intended route.
Minimum in-service wheel diameter.	Minimum wheel diameter for fixed obtuse crossings. <i>(Maximum unguided length of fixed obtuse crossings is based on a minimum wheel diameter in service expressed in millimetres.)</i>	X		Comparison of the minimum wheel diameter between vehicle and the intended route.
Type of changeover facilities which the vehicle is designed for.	Geographical location of Operational Point. <i>(Geographical coordinates in decimal degrees normally given for the centre of the Operational Point.)</i>	X		Comparison of the type(s) of changeover facilities for which the vehicle is designed with the type(s) of track gauge changeover facilities of the intended route.
	Type(s) of track gauge changeover facility-(ies). <i>(Type of track gauge changeover facility.)</i>	X		

General explanations for nominal track gauge:


In case of multi-rail track, a set of data is to be published separately for each pair of rails to be operated as separate track (it should be clear to which pair of rails the set of parameters refers).

The minimum wheel diameter value is 330 mm and this shall be used as a default value unless indicated otherwise.

## 8.9. MINIMUM CURVE

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Minimum horizontal curve radius capability.	Minimum radius of horizontal curve. <i>(Radius of the smallest horizontal curve, expressed in metres.)</i>	X	X	Comparison of the minimum horizontal curve radius between vehicle and the intended route.




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## 9.10. BRAKING

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended route</u> <del>intended for operation</del>
Emergency braking and maximum service brake: stopping distance, maximum deceleration, for the load condition 'design mass under normal payload' at the design maximum speed.  For general operation <sup>4</sup> , in addition to the above data: brake weight percentage ( $\lambda$ ).	Maximum braking distance requested.  <i>(The maximum value of the braking distance [in metres] of a train shall be given for the maximum line speed.)</i>	X	X	For pre-defined formation (as referred to in section 2.2.1 of UTP LOC&PAS): comparison of the declared stopping distance and maximum train deceleration between rolling stock and the intended route for each load condition per design maximum speed.  For general operation <sup>1</sup> : no specific suggested procedure, to be covered by railway undertaking safety management system.
	Gradient profile.  <i>(Sequence of gradient values and locations of change in gradient.)</i>	X	X	
	Maximum permitted speed.  <i>(Nominal maximum operational speed on the line as a result of infrastructure, energy and control, command and signalling subsystem characteristics expressed in kilometres/hour.)</i>	X	X	
	Maximum train deceleration.  <i>(Limit for longitudinal track resistance given as a maximum allowed train deceleration and expressed in metres per square second.)</i>	X	X	
	Additional information provided by the infrastructure manager.  <i>(Availability of additional information as defined in 4.2 (2) of this UTP: (Y/N)</i>  <i>If yes:</i>  <i>Reference to the information(s) relating to the braking performance provided by the infrastructure manager.)</i>	X	X	
Thermal capacity: - Reference case of UTP;	Gradient profile.	X		Comparison of the vehicle reference case with the intended route characteristics.

<sup>4</sup> General operation: a unit is designed for general operation when the unit is intended to be coupled with other unit(s) in a train formation which is not defined at design stage.

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- if no reference case is indicated, thermal capacity expressed in terms of: <ul style="list-style-type: none"> <li>o Speed;</li> <li>o Gradient;</li> <li>o Distance;</li> <li>o Time (if distance is not indicated).</li> </ul>	<i>(Sequence of gradient values and locations of change in gradient.)</i>			Note: Information provided by IM indicates location of change in km; gradient length can be calculated by extracting data.
	Maximum permitted speed. <i>(Nominal maximum operational speed on the line as a result of infrastructure, energy and control, command and signalling subsystem characteristics expressed in kilometres/hour.)</i>	<b>X</b>		
Maximum gradient on which the unit is kept stationary by the parking brake alone (if the vehicle is fitted with it).	Gradient profile. <i>(Sequence of gradient values and locations of change in gradient.)</i>	<b>X</b>	<b>X</b>	Comparison of the declared maximum gradient profile between vehicle and the intended route.  Note: The output of the comparison should be taken into account by the safety management system of the RU (e.g. use of additional means).
	Gradient for stabling tracks. <i>(Maximum value of the gradient expressed in millimetres per metre.)</i>	<b>X</b>	<b>X</b>	


General explanation of “gradient” (data on the values of gradient along a section of line is given as a chain of information):

Gradient (location). The first location corresponding to the start of the first value of the gradient is the centre point of the start operational point. If there are different values of the gradient, the parameter will be repeated. The last location will correspond to the point where the last value of the gradient starts. This value will be available until the centre point of the end operational point.

Gradient is expressed in mm/m; location is expressed in km of the line. Positive gradient (uphill) is marked with ‘+’ and negative gradient (downhill) is marked by ‘-’. The order in the sequence shall be determined by the normal running direction on the specific track. If it is both directions, then the sequence shall follow the increasing kilometres of the line.

Changes in gradient shall be registered only as far as necessary for train running calculations (minimum length of constant gradient shall be 500 m, the minimum change of gradient value shall be 0.5 mm/m).

The required precision for gradient value is 0.5 mm/m, the required precision of location of the points of change of gradient is 10 m. The points of change of gradient are the points of vertical intersection of each vertical curve.


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#### **10.11. MAGNETIC TRACK BRAKE**

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Possibility of preventing the use of the magnetic brake (only if fitted with magnetic brake).	Use of magnetic brakes. <i>(Indication of limitations on the use of magnetic brakes.)</i>	X		Verification if use of magnetic track brake is allowed on the intended route.  Notes: Where magnetic brake is allowed, the IM shall provide the conditions of its use.  The output of the check should be taken into account by the safety management system of the RU (e.g. preventing the use of magnetic track brake on the section of line).
	Document with the conditions of use of magnetic track brake. <i>(Information from the IM with conditions for the use of magnetic brakes identified in previous point.)</i>	X		

#### **11.12. EDDY CURRENT TRACK BRAKE**

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Possibility of preventing the use of the eddy current brake (only if fitted with eddy current brake).	Use of eddy current brakes. <i>(Indication of limitations on the use of eddy current brakes.)</i>	X		Verification if use of eddy current track brake is allowed on the intended route.  Notes: Where eddy current track brake is allowed, the IM shall provide the conditions of its use.  The output of the check should be taken into account by the safety management system of the RU (e.g. preventing the use of eddy current track brake on the section of line).
	Document with the conditions of use of eddy current brake. <i>(Information from the IM with conditions for the use of eddy current brakes identified in previous point.)</i>	X		


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### 12.13. WEATHER CONDITIONS

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Temperature range.	Temperature range. <i>(Temperature range for unrestricted access to the line according to UTP LOC&amp;PAS point 4.2.6.1.1.)</i>	X		Comparison of the declared temperature range between vehicle and the intended route.  Note: The safety management system of the RU shall consider any possible restrictions when the compared temperature ranges diverge.
Snow, ice and hail conditions.	Existence of severe climatic conditions. <i>(Climatic conditions on the line are severe according to UTP LOC&amp;PAS point 4.2.6.1.2.)</i>	X		Comparison of the declared vehicle “Snow, ice and hail condition” (e.g. S1) with, and the “Existence of severe climatic conditions” on the intended route.  Note: The safety management system of the RU shall consider any possible restrictions. Discussion between RU and IM to identify the possible restrictions.

### 13.14. VOLTAGES AND FREQUENCIES

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Energy supply system: - Nominal voltage and frequency; - Type of contact line system.	Type of contact line system. <i>(Indication of the type of the contact line system.)</i>	X		Comparison of the declared voltage between vehicle and the intended route of the traction supply system (nominal voltage and frequency) and type of contact line system.
	Energy supply system (Voltage and frequency). <i>(Indication of the traction supply system (nominal voltage and frequency).)</i>	X		
	<del>Energy supply system TSI compliant (yes/no)</del>	X		

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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
	<del>Concerns EU Member States only</del> Highest non-permanent voltage ( $U_{max2}$ ) for France. <i>(<math>U_{max2}</math> for France on lines not compliant with values defined in the specification referenced in table 1 of EN 50163:2004 Supply voltages of traction systems.)</i>			

#### 14.15. REGENERATIVE BRAKE

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Possibility of preventing use of the regenerative brake (only if fitted with regenerative brake).	Permission for regenerative braking. <i>(Indication whether regenerative braking is permitted, not permitted, or permitted under specific conditions.)</i>	X		Verification if use of the regenerative brake is allowed on the intended route or under specific conditions.  Note: The output of the check should be taken into account by the safety management system of the RU (e.g. preventing use of the regenerative brake on the section of line).

#### 15.16. CURRENT LIMITATION


Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Electric units equipped with power or current limitation function.	Current or power limitation on board. <i>(Indication of whether an on board current or power limitation function on vehicles is required.)</i>	X		Verification if the intended route requires the vehicle to be equipped with a current or power limitation.  Note: UTP-compliant rolling stock with a maximum power

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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
				higher than 2MW are equipped with current or power limitation.


### ~~16.~~17. PANTOGRAPH

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Maximum current at standstill per pantograph for each DC system the vehicle is equipped for.	Maximum current at standstill per pantograph. <i>(Indication of the maximum allowable train current at standstill for DC systems expressed in amperes.)</i>	<b>X</b>		Comparison of the declared maximum current at standstill per pantograph for each DC systems, between vehicle and the intended route.
Height of interaction of pantograph with contact wires (over top of rail) for each energy supply system the vehicle is equipped for.	Maximum contact wire height. <i>(Indication of the maximum contact wire height expressed in metres with precision of 0.01 m.)</i>	<b>X</b>		Comparison of the height of interaction of pantograph with contact wires, for each energy supply system, between the vehicle and the intended route.
	Minimum contact wire height. <i>(Indication of the minimum contact wire height expressed in metres with precision of 0.01 m.)</i>	<b>X</b>		
Pantograph head for each energy supply system the vehicle is equipped for.	Accepted UTP compliant pantograph heads. <i>(Indication of UTP compliant pantograph heads which are allowed to be used.)</i>	<b>X</b>		Comparison of the pantograph head geometry (including insulated or non-insulated horns for 1950 mm), for each energy supply system, between the vehicle and the intended route.
	Accepted other pantograph heads. <i>(Indication of pantograph heads which are allowed to be used.)</i>	<b>X</b>		
Material of pantograph contact strip the vehicle may be equipped with for each energy supply system the vehicle is equipped for.	Permitted contact strip material. <i>(Indication of which contact strip materials are permitted to be used.)</i>	<b>X</b>		Comparison of material of pantograph contact strip, for each energy supply system, between the vehicle and the intended route.

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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Mean contact force curve.	Contact force permitted. <i>(Indication of contact force allowed expressed in newton.)</i>	X		<p>Comparison of mean contact force between the vehicle and the intended route:</p> <p>For UTP-compliant vehicles intended to operate on non-UTP conform line(s): comparison of mean contact force between the vehicle and the intended route, for each voltage.</p> <p>For existing non UTP-compliant vehicles: comparison of the mean contact between vehicle and the intended route, for each voltage.</p> <p>Note: A UTP-compliant vehicle is authorised with a mean contact force within limits values defined in EN 50367:2012 Table 6.</p>
<p>Number of pantographs in contact with the overhead contact line (OCL) (for each energy supply system the vehicle is equipped for).</p> <p>Shortest distance between two pantographs in contact with the OCL (for each energy supply system the vehicle is equipped for; for single and, if applicable, multiple operation) (only if number of raised pantographs is more than 1).</p> <p>Type of OCL used for the test of current collection performance (for each energy supply system the vehicle is equipped for) (only if number of raised pantographs is more than 1).</p>	<p>Requirements for number of raised pantographs and spacing between them, at the given speed.</p> <p><i>(Indication of maximum number of raised pantographs per train allowed and minimum spacing centre line to centre line of adjacent pantograph heads, expressed in metres, at the given speed.)</i></p>	X	X	<p>For pre-defined formation (as referred in section 2.2.1 of UTP LOC&amp;PAS):</p> <p>For each energy supply system:</p> <ul style="list-style-type: none"> <li>- Comparison of number of vehicle pantographs in contact with the OCL and the intended route;</li> <li>- Comparison of the vehicle's shortest distance between two pantographs in contact with the OCL and the intended route.</li> </ul> <p>For general operation<sup>5</sup>:</p> <p>Covered by RU safety management system, considering the conditions imposed by the IM.</p> <p>Note: The output of the comparison concerning a minimum</p>

<sup>5</sup> General operation: a unit is designed for general operation when the unit is intended to be coupled with other unit(s) in a train formation which is not defined at design stage

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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
				distance between two raised pantographs might result in operational constraints on the vehicle to be considered by the safety management system of the RU (e.g. a two pantographs raised Electrical Multiple Unit is forced to lower one pantograph).
Automatic dropping device (ADD) fitted (for each energy supply system the vehicle is equipped for).	Automatic dropping device required. <i>(Indication of whether an automatic dropping device (ADD) required on the vehicle.)</i>	X		Verification if the intended route(s) require the vehicle to be equipped with an automatic dropping device.
Distance between cab and pantograph for reverse or multiple unit.	Distance between signboard and phase separation ending.		X	Compatibility to be checked only on routes where this parameter is relevant, e.g. on the basis of a specific case. Verification if the positioning of signboards identifying the place where driver is allowed to raise pantographs or close circuit breakers again on the intended route(s) is compatible with the distance between cab and pantograph for reverse or multiple unit.  Where there is incompatibility, the signboard is to be moved and settled far enough to ensure drivers do not raise pantographs too early.

Explanation on Definition of maximum current at standstill per pantograph: Parameter related to current taken by the vehicle when it is not in a traction or regenerative mode, e.g. preheating, air-conditioning, etc.

The parameter concerning a pantograph head can contain more than one pantograph defined in UTP LOC&PAS. Presentation of these pantographs is done by repetition of the parameter with a single selection. If declaring acceptance of pantograph heads 1950 (type 1), both insulated and conductive horns shall be accepted.

The parameter concerning a permitted contact force is either given as a value of the static force and of the maximum force expressed in Newton, or as a formula for function of the speed. The formula of the function shall represent the curve describing the value of the contact force in relation to the speed. Static and maximum forces are given only for the maximum permitted line speed.



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## 17.18. COMPATIBILITY WITH TUNNELS


Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Fire safety category.	Fire category of rolling stock required. <i>(Categorisation of how a passenger train with a fire on board will continue to operate for a defined time period.)</i>	X		Comparison between fire safety category of vehicle and intended route.
	National fire category of rolling stock required. <i>(Categorisation of how a passenger train with a fire on board will continue to operate for a defined time period - according to national rules if they exist.)</i>	X		

General explanation of “tunnel”:

“Tunnel” should be understood as a section of a line with special conditions. If there are several tracks in the same tunnel, data related to this tunnel will be repeated in the description of each track. On the other hand, if a track passes through several tunnels, in the description of the track each of the tunnels should be described separately.

## 18.19. TRAIN LENGTH

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Train length.	Usable length of siding. <i>(Total length of the siding/stabling track expressed in metres where trains can be parked safely.)</i>	X	X	For fixed and pre-defined formation (as referred to in section 2.2.1 of UTP LOC&PAS): Comparison of unit(s) length (single or multiple operation) with the “siding and platform” length(s) of the intended route.
	Usable length of platform. <i>(The maximum continuous length (expressed in metres) of that part of platform in front of which a train is intended to remain stationary in normal operating conditions for passengers to board and alight from the train, making appropriate allowance for stopping tolerances.)</i>	X	X	

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Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended route</u> <del>intended for operation</del>
				<p>For general operation<sup>6</sup>: Verification of the composed train length with the “siding and platform” length(s) of the intended route.</p> <p>Note: The output of the check should be taken into account by the RU in its safety management system. Operational conditions might be imposed as a result of this check.</p>

#### **19.20. PLATFORM HEIGHTS AND ACCESS AND EGRESS**

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended route</u> <del>intended for operation</del>
Platform heights for which the vehicle is designed.	Height of platform. <i>(Distance between the upper surface of platform and running surface of the neighbouring track. It is the nominal value expressed in millimetres.)</i>	<b>X</b>		<p>Comparison of platform heights between the vehicle and the intended route.</p> <p>Note: The output of the check should be taken into account by the RU in its safety management system. Operational conditions might be imposed as a result of this check.</p>

Platform dimensions are always related to one neighbouring track at a time. So, if two tracks are along a platform, this platform should be divided into two or more to have precise description of each.

<sup>6</sup> General operation: a unit is designed for general operation when the unit is intended to be coupled with other unit(s) in a train formation which is not defined at design stage

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## 20.21. ETCS

The following table is only relevant to compatibility checks for routes that are equipped with the European Train Control System - ETCS.

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
ETCS System Compatibility.	ETCS System Compatibility. <i>(ETCS requirements used for demonstrating technical compatibility.)</i>	X		Comparison of ETCS System Compatibility value provided by the IM is included in the vehicle admission or authorisation.
<a href="#">Managing information about the completeness of the train (not from driver).</a> <del>Train Integrity</del>	Train integrity confirmation from on-board <a href="#">(not from driver)</a> necessary for line access. <i>(Indication whether train confirmation from on-board <a href="#">(not from driver)</a> is required to access the line for safety reasons.)</i>	X	X	<del>Verification Comparison</del> that vehicle/train is able to confirm <a href="#">(not from driver)</a> the train integrity if required by trackside.
<a href="#">Envelope of legally operated ETCS system versions.</a>	<a href="#">ETCS M version.</a> <i>(ETCS M version according to the specification referenced in ERA Technical document: <a href="#">Subset 026 System requirements specifications, version 4.0.0<sup>7</sup> of 05.07.2023</a>.)</i>	X		<a href="#">Verification that the ETCS M version is in the range of the legally operated ETCS system versions supported by the vehicle.</a>
<a href="#">Safe consist length information from on-board necessary for access to the line and SIL level.</a>	<a href="#">Safe consist length information from on-board necessary for access to the line and Safety Integrity Level (SIL).</a> <i>(Indication whether <a href="#">safe consist train length information from on-board</a> is required to access the line for safety reasons and the required SIL)</i>	X	X	<a href="#">Verification that vehicle/train is able to provide the safe consist length information with the minimum required level.</a>

With regard to the ETCS System Compatibility value, the IM, with the support of their suppliers, shall make available to the RU(s) the definition of the set of checks to demonstrate technical compatibility and the corresponding value(s) of ETCS system compatibility requirements on its network.

<sup>7</sup> The text in RINF refers to Appendix A-1, index [C], which refers to: [Subset -026 System Requirements Specifications version 4.0.0 of 05.07.2023](#), which is published on ERA's website [www.era.europa.eu](http://www.era.europa.eu)

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## 21.22. GSM-R

The following table is only relevant to compatibility checks for routes that are equipped with GSM-R.

Vehicle information (either from ERATV, the technical file, or any other appropriate means of information)	Route information provided by the Infrastructure manager	Vehicle level	Train level	Procedure to check the vehicle and train compatibility over the <u>intended</u> route <del>intended for operation</del>
Radio System Compatibility Voice.	Radio System Compatibility Voice. <i>(Radio requirements used for demonstrating technical compatibility voice.)</i>	X		Comparison of Radio System Compatibility voice value provided by the IM is included in the vehicle admission or authorisation.
Radio System Compatibility Data.	Radio System Compatibility data. <i>(Radio requirements used for demonstrating technical compatibility data.)</i>	X		Comparison of Radio System Compatibility data value provided by the IM is included in the vehicle admission or authorisation.
<del>SIM Card GSM-R Home Network</del> <u>GSM-R Voice SIM Card Home Network.</u>	GSM-R networks covered by a roaming agreement. <i>(List of GSM-R networks which are covered by a roaming agreement.)</i>	X		<del>Comparison-Verification</del> that the <u>GSM-R SIM Card GSM-R Home Network</u> is in the list of GSM-R networks with roaming agreement for all <u>points sections of on</u> the route. This has to be performed for all SIM Cards in the vehicle <del>(Voice and Data)</del> .
<u>GSM-R Data SIM Card Home Network.</u>	<u>GSM-R networks covered by a roaming agreement.</u> <i>(List of GSM-R networks which are covered by a roaming agreement.)</i>	<u>X</u>		<u>Verification that the GSM-R SIM Card Home Network is in the list of GSM-R networks with roaming agreement for all points on the route. This has to be performed for all SIM cards in the vehicle.</u>
<u>GSM-R Voice SIM</u> <del>Sim</del> card support of group ID 555.	<u>GSM-R Use of Group 555.</u> <i>(Indication if group 555 is used.)</i>	X		<del>Check-Verification</del> that the Group ID 555 is used trackside. If this is not configured on-board, alternative operational procedures should be <u>prior</u> established <del>beforehand</del> with the <del>IM</del> <u>infrastructure manager</u> .

With regard to the Radio System Compatibility data and voice values, the IM, with the support of their suppliers, shall make available to the RU(s) the definition of the set of checks to demonstrate technical compatibility and the corresponding value(s) of radio system compatibility requirements for voice and/or data on its network.

With regard to the SIM card GSM-R Home Network, the IM shall make available to the RU(s) the list of GSM-R networks which are covered by a roaming agreement. For Route Compatibility purposes and simplicity, the IM must declare its own network in this list, so the RUs can systematically check the compatibility. For voice services, roaming for circuit switches is applicable. For ETCS, as long as roaming for circuit switches is ensured, interoperability will be guaranteed. There is a list of GSM-R networks which are covered by a roaming agreement managed by UIC. IM members of UIC should ensure the consistency of both lists.

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## 22-23. CLASS B

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Class B train protection legacy system.	Train protection legacy systems. <i>(Indication of which class B system is installed.)</i>	X		Comparison of name and version of the Class B train protection legacy system.
Class B radio legacy system.	Radio legacy system. <i>(Indication of radio legacy systems installed.)</i>	X		Comparison of name and version of the Class B radio legacy system.