

Moving Europe towards a sustainable and
safe railway system without frontiers.

OPINION ERA/OPI/2026-5

of
THE EUROPEAN UNION AGENCY FOR RAILWAYS

for
THE EUROPEAN COMMISSION

regarding
train detection systems compatibility requirements for freight wagons
equipped with electronic/electrical equipment.

Disclaimer:

The present document is a non-legally binding report of the European Union Agency for Railways. It does not represent the view of other EU institutions and bodies and is without prejudice to the decision-making processes foreseen by the applicable EU legislation. Furthermore, a binding interpretation of EU law is the sole competence of the Court of Justice of the European Union.

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1. Introduction

On 03 November 2025, the European Commission (EC) requested a technical opinion (TO) from the European Union Agency for Railways (the Agency) pursuant to Article 6(2) Directive (EU) 2016/797 [4] and Art. 10 Regulation (EU) 2016/796 [5], concerning train detection systems. (ANNEX 2)

Article 19 (1) (d) Regulation (EU) 2016/796 [5], empowers the Agency to issue opinions which constitute acceptable means of compliance concerning deficiencies in TSIs, in accordance with Article 6(4) of Directive (EU) 2016/797 [4] and provide those opinions to the Commission.

2. Context

The WAG TSI [6] in Point 7.1.2 generally allows for the possibility for wagons to receive a unique authorisation based on the common set of rules defined in the TSI for that objective. However, for freight wagons with onboard electrical or electronic equipment, national rules specifying the compatibility requirements with non TSI compliant trackside train detection systems, remain applicable.

In the 2023 WAG TSI revision, EC added Points 7.1.2 (d1) and (d2), which lay down additional requirements intended to ensure the absence of harmful electromagnetic interference of the onboard equipment with various national train detection systems to make them part of the unique authorisation process based on national rules until the respective specific cases are defined (based on Art. 13 CCS TSI).

The authorisation process for those vehicles will therefore remain complex until train detection systems become more harmonised.

In April 2025, TSI LOC&PAS [7] was amended in point 7.1.1.6.1 (24) to allow for a Europe wide vehicle authorisation not limited to a particular area of use for so called personnel carriages, laying down requirements and specific conditions so that no national rules related to train detection are necessary to apply, facilitating the authorisation process greatly.

EC asked the Agency to investigate options and to issue a technical opinion for applying common EU requirements on train detection compatibility like those identified for personnel carriages, to facilitate the conformity assessment and authorisation of freight wagons equipped with electronic/electrical equipment.

3. Analysis

The Agency has provided the Clarification note ERA1209-322 about wagons with electrical equipment for Vehicle Authorisation [3]. In this Clarification note, for wagons with electrical or electronic equipment, the Agency found that the EC verification procedure performed (e.g. evaluation of the WAG TSI requirements with regards to the interface document) does not cover all aspects related to train detection systems compatibility (e.g., point 3.2 of ERA/ERTMS/033281 [1]). The fact that national rules may be applicable to ensure compatibility with legacy track-side train detection systems also raise concerns about the possibility to allow such wagons to receive an authorisation not limited to any particular national network on the base of the requirements in WAG TSI point 7.1.2, that can be delivered by the Agency without involvement of national safety authorities in the authorisation process.

To facilitate the authorisation process and possibly allow for an authorisation independent of involvement by national safety authorities an analysis is carried out to compare wagons with electrical and electronic equipment with the so-called personnel carriages introduced in the latest TSI LOC&PAS amendment. Personnel carriage includes vehicles without traction not accessible to the public, used primarily for the transport of personnel (e.g. military escort personnel, firefighters, personnel of the infrastructure manager or railway undertaking) and is intended to be integrated in trains in a particular configuration. The Agency prepared a technical document ERA/TD/2025-01/PECA [2] which sets out requirements for these units

ensuring compatibility with train detection systems in addition to requirements in LOC&PAS TSI point 7.1.1.6 [7].

3.1. Equivalence between freight wagons equipped with electronic / electrical equipment and personnel carriages

From a technical point of view, and regarding Train Detection Systems compatibility, the use of freight wagons equipped with electronic / electrical equipment (hereafter “the unit”) can be treated as similar to personnel carriages if the following points are considered:

- The unit shall correspond to a freight wagon subsystem without CCS subsystem installed on board.
- The unit is without traction.
- If there is electrical connection between the unit and the locomotive, a maximum of two of these units in a train composition and powered by maximum one locomotive is considered an assumption of compliance, while the rest of the train composition remains without electrical power.
- If there is an electrical connection between the unit and the locomotive, a “single pole” power supply line voltage (1,5kV DC, 3kV DC, 1kV AC 16,7 Hz / 22 Hz / 50 Hz and 1,5kV AC 50 Hz) shall be used.
- If the area of use of the unit includes The Netherlands, the unit needs to be equipped with Interference current monitoring system due to the installed national train detection systems. This requirement may get obsolete once migration to TSI compliant TDS is finalised.

3.2. Changes related to ERA/TD/2025-01/PECA for freight wagons equipped with electronic / electrical equipment

The analysis described in point 3.1 allows to extend the personnel carriage document ERA/TD/2025-01/PECA to include the case of freight wagons equipped with electronic / electrical equipment as follow:

- In section 1.1 add the following text: “This document applies to personnel carriage as defined in point 7.1.1.6 of the LOC&PAS TSI as well as for freight wagons equipped with electronic / electrical equipment as defined in point 7.1.2 of WAG TSI”.
- Change “personnel carriage” unit to “personnel carriage or freight wagon equipped with electronic / electrical equipment” unit in the whole document.
- In section 2 add the following text before point 2.1: “If the area of use of the unit includes The Netherlands, the unit needs to be equipped with Interference current monitoring system due to the installed national train detection systems. This requirement may get obsolete once migration to TSI compliant TDS is finalised.”

3.3. Changes in The WAG TSI

The use of this technical document ERA/TD/2025-01/PECA in the framework of the WAG TSI, requires an additional point (d3) in section 7.1.2 of the WAG TSI as following detailed (modification in *red*):

(...)

(d2) If the unit has electrical or electronic equipment on board emitting interference electromagnetic fields:

— *close to the wheel sensor of an axle counter, or*

— *induced by the return current via the rail if applicable.*

*The ‘influencing unit’ (as defined in the technical document referenced in Appendix D.2 Index [A]) of which the unit is planned to be part shall be compliant with specific cases for axle counters notified under Article 13 of CCS TSI. Compliance of the unit shall be demonstrated by applying the harmonised vehicle test methods referred in the technical document referenced in appendix D.2 index [A] or alternatively based on the technical document referred in Article 13 of CCS TSI. It is checked by the Notified Body as part of EC verification. **Pending***

the notification of specific cases referred to in Article 13 of CCS TSI, the notified national rules remain applicable.

(d3) If the unit fulfil the characteristics set out in the ERA/TD/2025-01/PECA and it is intended to be operated in the following train composition:

- *A maximum of one locomotive with activated electrical or electronic equipment on board, coupled with...*
- *...A maximum of two units under assessment with activated electrical or electronic equipment on board, coupled with...*
- *...Additional rolling stock without electrical or electronic equipment on board, or with such equipment deactivated.*

It is permitted to comply with points (d1) and (d2) by fulfilling the specification referenced in Appendix D.2 index [F].

(...)

Add in Appendix D.2 the additional document in an updated version (see section 3.1 of this technical opinion)

[F]	Requirements for Personnel Carriages ensuring compatibility with train detection systems ERA/TD/2025-01/PECA		
[F.1]	Train detection system	7.1.2 (d3)	All document

4. Conclusions

4.1. Main conclusions

The changes as described in chapter 3 allow to use the set of personnel carriages ERA/TD/2025-01/PECA for freight wagons equipped with electronic / electrical equipment. Taking into consideration some limitations such as the number of units connected to the locomotive (maximum two), and the unit characteristics. Consequently, facilitating the evaluation of the Train detection systems compatibility and reducing the complexity of the assessment at subsystem level.

The changes are not yet implemented in the WAG TSI nor in the ERA/TD/2025-01/PECA document. These will be implemented in the framework of the next major revision of the WAG TSI. The key findings following from the analysis provide the basis for this opinion.

4.2. Conclusions on the specific objectives

EC addressed the following objectives to the Agency in the context of the request for a TO:

The Commission asks the Agency to investigate options and issue a technical opinion for applying common EU requirements on train detection-related, electromagnetic compatibility requirements like those identified for personnel carriages, to facilitate the compliance certification and authorisation of freight wagons equipped with electronic/electrical equipment.

This objective is fully addressed in chapter 3 of this report showing the necessary changes in the document ERA/TD/2025-01/PECA as well as in the WAG TSI to evaluate freight wagons equipped with electronic/electrical equipment.

5. Opinion

The Agency is of the opinion that the personnel carriage document can be extended to be applied in the case of freight wagons equipped with electronic/electrical equipment. For this reason, the Agency confirms with this opinion the need of updating the WAG TSI and the ERA/TD/2025-01/PECA document.

Until the necessary amendment of the WAG TSI and the ERA/TD/2025-01/PECA document, this TO can be used as acceptable means of compliance for the vehicle certification and authorisation process.

Valenciennes,

Oana GHERGHINESCU
Executive Director

Annex 1 ReferencesReference documents

<i>Ref N°</i>	<i>Title</i>	<i>Reference</i>	<i>Version</i>
[1]	Interfaces between control-command and signalling trackside and other subsystems	ERA/ERTMS/033281	5.1
[2]	Requirements for Personnel Carriages ensuring compatibility with train detection systems	ERA/TD/2025-01/PECA	1.0
[3]	Clarification note Wagons with electrical and/or electronic equipment	ERA1209/322	1.1

Reference legislation

<i>Ref N°</i>	<i>Title</i>	<i>Reference</i>	<i>Version</i>
[4]	Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (recast)	OJ L 138 26.5.2016, p. 44	N.A.
[5]	Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004	OJ L 138, 26.5.2016, p. 1.	N.A.
[6]	Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem 'rolling stock — freight wagons' of the rail system in the European Union and repealing Decision 2006/861/EC	OJ L 104, 12.4.2013, pp. 1–56	N.A.
[7]	Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the 'rolling stock — locomotives and passenger rolling stock' subsystem of the rail system in the European Union	OJ L 356 12.12.2014, p. 228	N.A.

Annex 2 Request for a Technical Opinion

Request for a Technical Opinion according to Article 6 of Commission Decision (EU) 797/2016 – Train detection systems - ARES (2025) 9437704 – 3/11/2025

Ref. Ares(2025)9437704 - 03/11/2025



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR MOBILITY AND TRANSPORT
Directorate C – Land
The Director

Brussels
MOVE.DDG2.C.4/SZ

Subject: Request for technical opinion according to Article 6 of Commission Directive (EU) 797/2016 – Train detection systems

Dear [REDACTED]

According to paragraph 2 of Article 6 of Commission Directive (EU) 797/2016 ⁽¹⁾ together with Art. 10 of Commission Regulation (EU) 796/2016 ⁽²⁾, we would like to request a technical opinion with regard to train detection systems.

Our joint intention is to optimise, based on a single set of EU-level requirements, the compliance processes of certification and authorisation, to render them more foreseeable and cheaper. This can be achieved by identifying the common requirements for the entire EU network forming the unique basis for vehicle authorisations by the European Union Agency for Railways (ERA), without the need for National safety authorities to assess compliance with national rules, since these became redundant.

Freight Wagons

The WAG TSI ⁽³⁾ in Point 7.1.2 generally allows for the possibility for wagons to receive a unique authorisation based on the common set of rules defined in the TSI for that objective. However, for freight wagons with onboard electrical or electronic equipment, national rules specifying the compatibility requirements with not harmonised trackside train detection systems, remain applicable to fulfil the essential requirement “safety” for the authorisation of the vehicle.

In the 2023 WAG TSI revision, the Commission added Points 7.1.2 (d1) and (d2), which lay down additional requirements intended to ensure the absence of harmful electromagnetic interference of the onboard equipment with various national train detection systems to make them part of the unique authorisation process, however based on national rules once the specific cases are defined in the WAG TSI (at the latest by 2027).

- ⁽¹⁾ Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union, OJ L 138, 26.5.2016, pp. 44–101
- ⁽²⁾ Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004 OJ L 138, 26.5.2016, pp. 1–43
- ⁽³⁾ Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem ‘rolling stock — freight wagons’ of the rail system in the European Union and repealing Decision 2006/861/EC OJ L 104, 12.4.2013, pp. 1–56

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The authorisation process for those vehicles will therefore remain complex until train detection systems become more harmonised.

Passenger coaches

In April 2025 TSI Loc&Pas⁽⁴⁾ was amended in point 7.1.6.1 (24) to allow for a Europe wide vehicle authorisation not limited to a particular area of use for so called personnel carriages, laying down requirements and specific conditions so that no national rules related to train detection / electromagnetic field compatibility are necessary to apply, facilitating the authorisation process greatly.

Request

The Commission asks the Agency to investigate options and issue a technical opinion for applying common EU requirements on train detection-related, electromagnetic compatibility requirements like those identified for personnel carriages, to facilitate the compliance certification and authorisation of freight wagons equipped with electronic/electrical equipment.

Please provide us with the technical opinion in accordance with Article 10(2) of the ERA Regulation, by 30 April 2026 or propose a different timeline for delivery.

Yours sincerely

[Redacted signature]

[Redacted name]

[Redacted contact information]

⁽⁴⁾ Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the 'rolling stock — locomotives and passenger rolling stock' subsystem of the rail system in the European Union, OJ L 356, 12.12.2014, pp. 228–393