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 (Text with EEA relevance) (revoked)

Article 1	The technical specification for interoperability (TSI) relating to the 'rolling
Article 2	(1) The TSI shall apply to the 'rolling stock' subsystem
Article 3	(1) Without prejudice to Articles 8 and 9, and point
Article 4	(1) With regard to the aspects listed as 'open
Article 5	(1) With regard to specific cases listed in Section 7.3
Article 6	(1) Without prejudice to the agreements which have already been
Article 7	In accordance with Article 9(3) of Directive 2008/57/EC, each Member
Article 8	(1) An 'EC' certificate of verification for a subsystem that
Article 9	The declaration of verification of a subsystem referred to in
Article 10	(1) In order to keep pace with technological progress, innovative
Article 11	(1) Decisions 2008/232/EC and 2011/291/EU are repealed with effect from
Article 12	This Regulation shall enter into force on the twentieth day
	Signature
	<del></del>

#### **ANNEX**

## 1. INTRODUCTION

- 1.1. Technical Scope
- 1.2. Geographical Scope
- 1.3. Content of this TSI

## 2. ROLLING STOCK SUBSYSTEM AND FUNCTIONS

- 2.1. The rolling stock subsystem as part of the Union's rail...
- 2.2. Definitions related to rolling stock
  - 2.2.1. Train formation:
  - 2.2.2. Rolling stock
- 2.3. Rolling stock in the scope of this TSI
  - 2.3.1. Types of rolling stock
  - 2.3.2. Track gauge
  - 2.3.3. Maximum speed

## 3. ESSENTIAL REQUIREMENTS

- 3.1. Elements of the rolling stock subsystem corresponding to the essential... Rolling stock elements corresponding to essential requirements
- 3.2. Essential requirements not covered by this TSI

- 3.2.1. General requirements, requirements related to maintenance and operation
  - 1.4. Environmental protection
    - 1.4.1. 'The environmental impact of establishment and operation of the rail...
    - 1.4.3. 'The rolling stock and energy-supply systems must be designed and...
    - 1.4.4. 'Operation of the rail system must respect existing regulations on...
    - 1.4.5. 'Operation of the rail system must not give rise to...
  - 2.5 Maintenance
  - 2.6 Operation
- 3.2.2. Requirements specific to other subsystems
- 4. CHARACTERISATION OF THE ROLLING STOCK SUBSYSTEM
  - 4.1. Introduction
    - 4.1.1. General
    - 4.1.2. Description of the Rolling stock subject to the application of...
    - 4.1.3. Main categorisation of the rolling stock for application of TSI...
    - 4.1.4. Categorisation of the rolling stock for fire safety
  - 4.2. Functional and technical specification of the sub-system
    - 4.2.1. General
      - 4.2.1.1. Breakdown
      - 4.2.1.2. Open points
      - 4.2.1.3. Safety aspects
    - 4.2.2. Structure and mechanical parts
      - 4.2.2.1. General
      - 4.2.2.2. Mechanical interfaces
        - 4.2.2.2.1General and definitions
        - 4.2.2.2.2Inner coupling
        - 4.2.2.2. End coupling
        - 4.2.2.4Rescue coupling
        - 4.2.2.2. Staff access for coupling and uncoupling
      - 4.2.2.3. Gangways
      - 4.2.2.4. Strength of vehicle structure
      - 4.2.2.5. Passive safety
      - 4.2.2.6. Lifting and jacking
      - 4.2.2.7. Fixing of devices to carbody structure
      - 4.2.2.8. Staff and freight Access doors
      - 4.2.2.9. Mechanical characteristics of glass (other than windscreens)
      - 4.2.2.10Load conditions and weighed mass
    - 4.2.3. Track interaction and gauging
      - 4.2.3.1. Gauging
      - 4.2.3.2. Axle load and wheel load
        - 4.2.3.2.1Axle load parameter
        - 4.2.3.2.2Wheel load
      - 4.2.3.3. Rolling Stock parameters which influence ground based systems
        - 4.2.3.3. Rolling Stock characteristics for the compatibility with train detection systems...
          - 4.2.3.3. IRblling stock characteristics for compatibility with train detection system based...

- 4.2.3.3. IRalling stock characteristics for compatibility with train detection system based...
- 4.2.3.3. Rolling stock characteristics for compatibility with loop equipment
- 4.2.3.3.2Axle bearing condition monitoring
  - 4.2.3.3.2 Requirements applicable to on board detection equipment
  - 4.2.3.3.2 Calling stock requirements for compatibility with trackside equipment
- 4.2.3.4. Rolling stock dynamic behaviour
  - 4.2.3.4. Safety against derailment running on twisted track
  - 4.2.3.4.2 Running dynamic behaviour
    - (a) Technical requirements
    - (b) Additional requirements when an active system is used
    - (c) Additional requirements when an instability detection system is installed (option)...
    - 4.2.3.4.2.1mit values for running safety
    - 4.2.3.4.212 ack loading limit values
  - 4.2.3.4.3 Equivalent conicity
    - 4.2.3.4.3Design values for new wheel profiles
    - 4.2.3.4.312-service values of wheelset equivalent conicity
- 4.2.3.5. Running gear
  - 4.2.3.5. Structural design of bogie frame
  - 4.2.3.5.2Wheelsets
    - 4.2.3.5.2 Mechanical and geometric characteristics of wheelsets

Mechanical behaviour of wheelsets Mechanical behaviour of axles Case of units equipped with independently rotating wheels Mechanical behaviour of the axle

Mechanical behaviour of the ax poxes

Geometrical dimensions of wheelsets

4.2.3.5.2 Mechanical and geometrical characteristics of wheels

Mechanical behaviour of wheels Geometrical dimensions of wheels

- 4.2.3.5.2Variable gauge wheelsets
- 4.2.3.5.3Automatic variable gauge systems
  - (1) This requirement is applicable to units equipped with an automatic...
  - (2) The changeover mechanism shall ensure the locking in the correct...
  - (3) After passage through the track gauge changeover facility, the verification...
  - (4) If a running gear is equipped with brake equipment subject...
  - (5) The failure of the locking of the position of the...
  - (6) The automatic variable gauge system is defined as an interoperable...

- (7) The track gauges the unit is compatible with shall be...
- (8) The requirements and conformity assessments required in other sections of
- 4.2.3.6. Minimum curve radius
- 4.2.3.7. Life guards
- 4.2.4. Braking
  - 4.2.4.1. General
  - 4.2.4.2. Main functional and safety requirements
    - 4.2.4.2. Functional requirements
    - 4.2.4.2.2Safety requirements
  - 4.2.4.3. Type of brake system
  - 4.2.4.4. Brake command
    - 4.2.4.4. Emergency braking command
    - 4.2.4.4.2Service braking command

#### Notes:

- 4.2.4.4.3Direct braking command
- 4.2.4.4. Dynamic braking command
- 4.2.4.4. Parking braking command
- 4.2.4.5. Braking performance
  - 4.2.4.5. General requirements
  - 4.2.4.5. Emergency braking
  - 4.2.4.5. Service braking
  - 4.2.4.5.4 Calculations related to thermal capacity
  - 4.2.4.5. Parking brake
- 4.2.4.6. Wheel rail adhesion profile Wheel slide protection system
  - 4.2.4.6. Limit of wheel rail adhesion profile
  - 4.2.4.6.2Wheel slide protection system
- 4.2.4.7. Dynamic brake Braking system linked to traction system
- 4.2.4.8. Braking system independent of adhesion conditions
  - 4.2.4.8. 1General
  - 4.2.4.8.2 Magnetic track brake
    - (1) Requirements on magnetic brakes specified for compatibility with train detection...
    - (2) A magnetic track brake is allowed to be used as...
    - (3) The geometrical characteristics of the end elements of the magnet...
    - (4) Magnetic track brake shall not be used at speed higher...
    - (5) The braking performance of the unit specified in clauses 4.2.4.5.2...
  - 4.2.4.8. Eddy current track brake
    - (1) This clause covers only eddy current track brake developing a...
    - (2) Requirements on eddy current track brakes specified for compatibility with...
    - (3) If the eddy current track brake requires a displacement of...
    - (4) The maximum distance between the eddy current track brake and...

- (5) The eddy current track brake shall not operate below a...
- (6) The conditions for use of eddy current track brake for...
- (7) The Register of Infrastructure indicates per track section if their...
- (8) The braking performance of the unit specified in clauses 4.2.4.5.2...
- 4.2.4.9. Brake state and fault indication
- 4.2.4.10Brake requirements for rescue purposes
- 4.2.5. Passenger-related items
  - 4.2.5.1. Sanitary systems
  - 4.2.5.2. Audible communication system
  - 4.2.5.3. Passenger alarm
    - 4.2.5.3. IGeneral
    - 4.2.5.3. Requirements for information interfaces
    - 4.2.5.3. Requirements for activation of the brake by the passenger alarm...
    - 4.2.5.3.4Criteria for a train departing from a platform
    - 4.2.5.3. Safety requirements
    - 4.2.5.3. Degraded mode
    - 4.2.5.3.7 Applicability to units intended for general operation
  - 4.2.5.4. Communication devices for passengers
  - 4.2.5.5. Exterior doors: passenger access to and egress from Rolling Stock...
    - 4.2.5.5.1General
    - 4.2.5.5.2Terminology used
    - 4.2.5.5.3Door closing and locking
    - 4.2.5.5.4Locking a door out of service
    - 4.2.5.5. Information available to the train crew
    - 4.2.5.5. Door opening
    - 4.2.5.5. Door-traction interlock
    - 4.2.5.5. Safety requirements for clauses 4.2.5.5.2 to 4.2.5.5.7
    - 4.2.5.5. Door emergency opening
    - 4.2.5.5.1 Applicability to units intended for general operation
  - 4.2.5.6. Exterior door system construction
  - 4.2.5.7. Inter-unit doors
  - 4.2.5.8. Internal air quality
  - 4.2.5.9. Body side windows
- 4.2.6. Environmental conditions and aerodynamic effects
  - 4.2.6.1. Environmental conditions general
    - 4.2.6.1. Temperature
    - 4.2.6.1.25now, ice and hail
  - 4.2.6.2. Aerodynamic effects
    - 4.2.6.2. Slipstream effects on passengers on platform and on workers trackside...
      - (1) Units of maximum design speed vtr, max > 160 km/h, running...
      - (2) For units intended to be operated on the networks with...
      - (3) The train formation to be tested is specified for fixed/predefined...

- (4) The conformity assessment procedure is described in clause 6.2.3.13 of...
- 4.2.6.2.2Head pressure pulse
- 4.2.6.2.3 Maximum pressure variations in tunnels
- 4.2.6.2.4Cross wind
- 4.2.6.2.5Aerodynamic effect on ballasted tracks
  - (1) This requirement applies to units of maximum design speed higher...
  - (2) The requirement on the aerodynamic effect of trains on ballasted...
- 4.2.7. External lights & visible and audible warning devices
  - 4.2.7.1. External lights
    - 4.2.7.1. Head lights
    - 4.2.7.1.2 Marker lights
    - 4.2.7.1.3Tail lights
    - 4.2.7.1.4Lamp controls
  - 4.2.7.2. Horn (audible warning device)
    - 4.2.7.2. 1General
    - 4.2.7.2.2Warning horn sound pressure levels
    - 4.2.7.2.3Protection
    - 4.2.7.2.4Horn control
- 4.2.8. Traction and electrical equipment
  - 4.2.8.1. Traction performance
    - 4.2.8.1.1General
    - 4.2.8.1.2 Requirements on performance
  - 4.2.8.2. Power supply
    - 4.2.8.2.1General
    - 4.2.8.2.20 peration within range of voltages and frequencies
    - 4.2.8.2. Regenerative brake with energy to the overhead contact line
    - 4.2.8.2.4Maximum power and current from the overhead contact line
    - 4.2.8.2.5 Maximum current at standstill for DC systems
    - 4.2.8.2. Power factor
    - 4.2.8.2. The system energy disturbances for ac systems
    - 4.2.8.2.80n-board energy measurement system
      - 4.2.8.2.8Gleneral
        - (1) The on-board energy measurement system (EMS) is the system for...
        - (2) The EMS shall include at least the following functions: Energy...
        - (3) A suitable communication system will send the compiled energy billing...
        - (4) This system is suitable for billing purposes; the data sets...
        - (5) The EMS rated current and voltage shall be matched to...
        - (6) Data stored in the EMS shall be protected against loss...
        - (7) An on-board location function providing location data originated from an...

- (8) The fitment of an EMS, its on-board location function, the...
- (9) The maintenance documentation described in clause 4.2.12.3 of this TSL...
- 4.2.8.2.8 Daergy measurement function (EMF)
  - (1) The EMF shall ensure the measurement of the voltage and...
  - (2) The energy data produced by EMF shall have a time...
  - (3) The accuracy of EMF for active energy measurement shall comply...
  - (4) Each device containing one or more functions of EMF shall...
  - (5) The conformity assessment of the accuracy is set out in...
- 4.2.8.2.8Data handling system (DHS)
  - (1) The DHS shall ensure the production of compiled energy billing...
  - (2) The DHS shall compile the data without corrupting them and...
  - (3) The DHS shall have a capability to be interrogated locally...
  - (4) The DHS shall produce compiled energy billing data sets, (CEBD),...
  - (5) The conformity assessment of compilation and handling of data produced...
- 4.2.8.2.8.14terface protocols and transferred data format between EMS and DCS...
- 4.2.8.2. Requirements linked to pantograph
  - 4.2.8.2.9Working range in height of pantograph
    - 4.2.8.2. Leight of interaction with contact wires (RST level)
    - 4.2.8.2.9Wo2king range in height of pantograph (IC level)
  - 4.2.8.2.9.2 Antograph head geometry (IC level)
    - 4.2.8.2.9.2 antograph head geometry type 1 600 mm
    - 4.2.8.2. **Pant**ograph head geometry type 1 950 mm
    - 4.2.8.2. Pantograph head geometry type 2 000/2 260 mm
    - 4.2.8.2. **Pa**ntograph head geometry type 1 800 mm
      - (1) The profile of the pantograph head shall be as depicted...
  - 4.2.8.2. **Pan**tograph current capacity (IC level)
  - 4.2.8.2.9Contact strip (IC level)
    - 4.2.8.2.924 Antact strip geometry
    - 4.2.8.2.92462 tact strip material
  - 4.2.8.2. **Land of the example of the**

- 4.2.8.2.**\Pa**ntograph contact force and dynamic behaviour
- 4.2.8.2.9A7rangement of pantographs (RST level)
- 4.2.8.2. Rainning through phase or system separation sections (RST level)
- 4.2.8.2.9. Sulation of pantograph from the vehicle (RST level)
- 4.2.8.2.9.20 tograph lowering (RST level)
- 4.2.8.2. Dectrical protection of the train
- 4.2.8.3. Diesel and other thermal traction system
- 4.2.8.4. Protection against electrical hazards
- 4.2.9. Driver's Cab and driver-machine interface
  - 4.2.9.1. Driver's Cab
    - 4.2.9.1.1General
    - 4.2.9.1.2Access and egress
      - 4.2.9.1.2Alccess and egress in operating conditions
      - 4.2.9.1.202river's cab emergency exit
    - 4.2.9.1.3External visibility
      - 4.2.9.1.3Etont visibility
      - 4.2.9.1.3R2ear and side view
    - 4.2.9.1.4Interior layout
    - 4.2.9.1. **Driver's** seat
    - 4.2.9.1. Driver's desk Ergonomics
    - 4.2.9.1. Climate control and air quality
    - 4.2.9.1.\(\text{Anternal lighting}\)
  - 4.2.9.2. Windscreen
    - 4.2.9.2. Mechanical characteristics
    - 4.2.9.2.20ptical characteristics
    - 4.2.9.2.3Equipment
  - 4.2.9.3. Driver machine interface
    - 4.2.9.3. IDriver's activity control function
    - 4.2.9.3.2Speed indication
    - 4.2.9.3.3Driver display unit and screens
    - 4.2.9.3.4Controls and indicators
    - 4.2.9.3.5Labelling
    - 4.2.9.3. Radio Remote control function by staff for shunting operation
  - 4.2.9.4. On-board tools and portable equipment
  - 4.2.9.5. Storage facility for staff personal effects
  - 4.2.9.6. Recording device
- 4.2.10. Fire safety and evacuation
  - 4.2.10.1General and Categorisation
  - 4.2.10.2Measures to prevent fire
    - 4.2.10.2 Material requirements
    - 4.2.10.2 Specific measures for flammable liquids
    - 4.2.10.2Hot axle box detection
  - 4.2.10.3 Measures to detect/control fire
    - 4.2.10.3 Plortable Fire extinguishers
    - 4.2.10.3 Paire detection systems
    - 4.2.10.3 Bire automatic fighting system for freight diesel units
    - 4.2.10.3 Pire containment and control systems for passenger rolling stock

Changes to legislation: There are currently no known outstanding effects for the Commission Regulation (EU) No 1302/2014. (See end of Document for details)

- 4.2.10.3 Fire spreading protection measures for freight locomotives and freight self-propelling...
- 4.2.10.4Requirements related to emergencies
  - 4.2.10.4Hmergency lighting
  - 4.2.10.4Smoke Control
  - 4.2.10.4 Passenger alarm and communication means
  - 4.2.10.4 Running capability
- 4.2.10.5Requirements related to evacuation
  - 4.2.10.5 Plassenger emergency exits

Definitions and clarifications

Requirements

4.2.10.5 Driver's cab emergency exits

- 4.2.11. Servicing
  - 4.2.11.1General
  - 4.2.11.2.Train exterior cleaning
    - 4.2.11.2 Cleaning of driver's cab windscreen
    - 4.2.11.2 Exterior cleaning through a washing plant
  - 4.2.11.3 Connection to Toilet discharge system
  - 4.2.11.4.Water refilling equipment
  - 4.2.11.5Interface for water refilling
  - 4.2.11.6Special requirements for stabling of trains
  - 4.2.11.7Refuelling equipment
  - 4.2.11.8Train interior cleaning power supply
- 4.2.12. Documentation for operation and maintenance
  - 4.2.12.1General
  - 4.2.12.2General documentation
  - 4.2.12.3Documentation related to Maintenance
    - 4.2.12.3. The maintenance design justification file
    - 4.2.12.3 The Maintenance description file
  - 4.2.12.4Operating documentation
  - 4.2.12.5Lifting diagram and instructions
  - 4.2.12.6Rescue related descriptions
- 4.3. Functional and technical specification of the interfaces
  - 4.3.1. Interface with Energy subsystem
  - 4.3.2. Interface with Infrastructure subsystem
  - 4.3.3. Interface with Operation subsystem
  - 4.3.4. Interface with the Control, command and signalling subsystem
  - 4.3.5. Interface with the Telematic application for passengers subsystem
- 4.4. Operating rules
- 4.5. Maintenance rules
  - (1) In light of the essential requirements mentioned in Section 3,...
  - (2) Other provisions in the section 4.2 (clauses 4.2.3.4 and 4.2.3.5)...
  - (2a) The safety critical components and their specific servicing, maintenance and...
  - (3) From the information mentioned above and provided in the clause...
  - (4) On the basis of the information mentioned above in this...
  - (5) For on-board software, the designer/manufacturer shall specify, for any on-board...
- 4.6. Professional competencies
- 4.7. Health and safety conditions
- 4.8. European register of authorised types of vehicles
- 4.9. Route compatibility checks before the use of authorised vehicles

#### 5. INTEROPERABILITY CONSTITUENTS

- 5.1. Definition
- 5.2. Innovative solution
- 5.3. Interoperability constituent specification
  - 5.3.1. Automatic centre buffer coupler
  - 5.3.2. Manual end coupling
  - 5.3.3. Rescue couplers
  - 5.3.4. Wheels
  - 5.3.4a Automatic variable gauge systems
    - (1) An IC 'automatic variable gauge system' shall be designed and...
    - (2) An automatic variable gauge system shall comply with the requirements...
  - 5.3.5. WSP (wheel slide protection system)
  - 5.3.6. Head lamps
  - 5.3.7. Marker lamps
  - 5.3.8. Tail lamps
  - 5.3.9. Horns
  - 5.3.10. Pantograph
  - 5.3.11. Contact strips
  - 5.3.12. Main circuit breaker
  - 5.3.13. Driver's seat
  - 5.3.14. Toilet discharge connection
  - 5.3.15. Inlet connection for water tanks

# 6. ASSESSMENT OF CONFORMITY OR SUITABILITY FOR USE AND 'EC' VERIFICATION...

- 6.1. Interoperability constituents
  - 6.1.1. Conformity assessment
  - 6.1.2. Application of modules
  - 6.1.3. Particular assessment procedures for interoperability constituents 6.1.3.1. Wheels (clause 5.3.4)
    - 6.1.3.1a Automatic variable gauge system (clause 5.3.4a)
      - (1) The assessment procedure shall be based on a validation plan...
      - (2) The validation plan shall be consistent with the safety analysis...
      - (3) Regarding the demonstration of compliance to points (5) of clause...
      - (4) The automatic variable gauge system may be subject to an...
      - (5) The certificate delivered by the Notified Body in charge of...
    - 6.1.3.2. Wheel slide protection system (clause 5.3.5)
    - 6.1.3.3. Headlamps (clause 5.3.6)
    - 6.1.3.4. Marker lamps (clause 5.3.7)
    - 6.1.3.5. Tail lamps (clause 5.3.8)
    - 6.1.3.6. Horn (clause 5.3.9)
    - 6.1.3.7. Pantograph (clause 5.3.10)
    - 6.1.3.8. Contact strips (clause 5.3.11)
  - 6.1.4. Project phases where assessment is required
  - 6.1.5. Innovative solutions
  - 6.1.6. Assessment of suitability for use

- 6.2. Rolling stock subsystem
  - 6.2.1. EC verification (general)
  - 6.2.2. Application of modules
  - 6.2.3. Particular assessment procedures for subsystems
    - 6.2.3.1. Load conditions and weighed mass (clause 4.2.2.10)
    - 6.2.3.2. Wheel load (clause 4.2.3.2.2)
    - 6.2.3.3. Safety against derailment running on twisted track (Clause 4.2.3.4.1)
    - 6.2.3.4. Running dynamic behaviour technical requirements (Clause 4.2.3.4.2 a)
      - (1) For units designed to be operated on 1 435 mm...
    - 6.2.3.5. Conformity assessment for safety requirements
    - 6.2.3.6. Design values for new wheel profiles (Clause 4.2.3.4.3.1)
    - 6.2.3.7. Mechanical and geometric characteristics of wheelsets (clause 4.2.3.5.2.1)
    - 6.2.3.7a Automatic variable gauge system
      - (1) The safety analysis required in clause 4.2.3.5.3 point (5), and...
      - (2) The assessment of the integration of the IC within the...
    - 6.2.3.8. Emergency braking (clause 4.2.4.5.2)
    - 6.2.3.9. Service braking (clause 4.2.4.5.3)
    - 6.2.3.10. Wheel slide protection system (clause 4.2.4.6.2)
    - 6.2.3.11 Sanitary systems (clause 4.2.5.1)
    - 6.2.3.12Internal air quality (clause 4.2.5.8 and clause 4.2.9.1.7)
    - 6.2.3.13 Slipstream effects on passengers on platform and on workers trackside...
      - (1) Demonstration of conformity with the limit value of trackside maximum...
      - (2) Instead of the full assessment described above, it is permitted...
    - 6.2.3.14Head pressure pulse (clause 4.2.6.2.2)
      - (1) Conformity shall be assessed on the basis of full-scale tests
      - (2) Instead of the full assessment described above, it is permitted...
    - 6.2.3.15Maximum pressure variations in tunnels (clause 4.2.6.2.3)
    - 6.2.3.16Cross wind (clause 4.2.6.2.4)
    - 6.2.3.17.Warning Horn sound pressure levels (clause 4.2.7.2.2)
    - 6.2.3.18Maximum power and current from the overhead contact line (clause...
    - 6.2.3.19Power factor (clause 4.2.8.2.6)
    - 6.2.3.19@n-board energy measurement system (clause 4.2.8.2.8)
      - (1) Energy measurement function (EMF)
      - (2) Data handling system (DHS)
      - (3) On-board energy measurement system (EMS)
    - 6.2.3.20 Current collection dynamic behaviour (clause 4.2.8.2.9.6)
    - 6.2.3.21 Arrangement of pantographs (clause 4.2.8.2.9.7)
    - 6.2.3.22.Windscreen (clause 4.2.9.2)
    - 6.2.3.23Fire detection systems (clause 4.2.10.3.2)
  - 6.2.4. Project phases where assessment is required
  - 6.2.5. Innovative solutions
  - 6.2.6. Assessment of documentation requested for operation and maintenance

- 6.2.7. Assessment of units intended to be used in general operation...
- 6.2.7a. Additional optional requirements for units intended to be used in...
  - (1) The compliance with the following set of conditions (2) to...
  - (2) The unit shall be fitted with a manual coupling system...
  - (3) The unit shall be fitted with an EN-UIC braking system...
  - (4) The unit shall meet the requirements of this TSI at...
  - (5) The tail lights requested in clause 4.2.7.1 shall be provided...
  - (6) If the unit is fitted with a gangway, the gangway...
  - (7) Power supply shall be compliant to point 4 of clause...
  - (8) The physical interface between units for the signal transmission shall...
  - (9) The unit shall be marked at least with the following...
- 6.2.8. Assessment of units intended to be used in predefined formation(s)...
- 6.2.9. Particular case: Assessment of units intended to be included in...
  - 6.2.9.1. Context
  - 6.2.9.2. Case of a TSI compliant fixed formation
  - 6.2.9.3. Case of a non-TSI compliant fixed formation
- 6.3. Subsystem containing Interoperability constituents not holding an EC declaration
  - 6.3.1. Conditions
  - 6.3.2. Documentation
  - 6.3.3. Maintenance of the subsystems certified according to clause 6.3.1

## 7. IMPLEMENTATION

- 7.1. General rules for implementation
  - 7.1.1. Application to newly built rolling stock
    - 7.1.1.1. General
    - 7.1.1.2. Transition phase
      - 7.1.1.2. Application of the TSI during transition phase
      - 7.1.1.2.2Definition of Projects at advanced stage of development
      - 7.1.1.2.3Definition of Contracts in course of performance
      - 7.1.1.2.4Definition of Rolling Stock of an existing design
    - 7.1.1.3. Application to special vehicles, such as on-track machines
    - 7.1.1.4. Application to vehicles designed to be operated solely on the...
    - 7.1.1.4a.Transitional measure for on-board energy measurement system requirement
    - 7.1.1.5. Transitional measure for fire safety requirement
    - 7.1.1.6. Transitional measure for noise requirements specified in the HS RST...
    - 7.1.1.7. Transitional measure for crosswind requirements specified in the HS RST...
    - 7.1.1.8. Transitional measure for passive safety requirement
  - 7.1.2. Changes to an existing rolling stock or rolling stock type...
    - 7.1.2.1. Introduction
      - (1) This clause 7.1.2 defines the principles to be applied by...
      - (2) This clause 7.1.2 applies in case of any change(s) to...
    - 7.1.2.2. Rules to manage changes in both rolling stock and rolling...
      - (1) Parts and basic parameters of the rolling stock that
      - (2) Without prejudice to clause 7.1.2.2a, compliance with the requirements of...

- (3) In accordance with Articles 15 and 16 of Commission Implementing...
- (4) Without prejudice of the general safety judgement mandated in article...
- (4a) Without prejudice of the general safety judgement mandated in Article...
- (5) National migration strategies related to the implementation of other TSIs...
- (6) The basic design characteristics of the rolling stock are defined...
- (7) Changes not covered by point 7.1.2.2(6) above are deemed not...
- (8) The safety judgement mandated in Article 21(12)(b) of Directive (EU)...
- (9) Without prejudice to clause 7.1.2.2a, all changes shall remain compliant...
- (10) The replacement of one or more vehicle(s) within a fixed...
- (11) In order to establish the EC type or design examination...
- (12) In any case, the entity managing the change shall ensure...
- (13) The updated technical documentation, related to the EC type or...
- 7.1.2.2aParticular rules for existing rolling stock not covered by an...
  - (1) The following rules apply, in addition to clause 7.1.2.2, to...
  - (2) The compliance with technical requirements of this TSI is deemed...
  - (3) The particular rule set out in paragraph (2) above is...
- 7.1.2.2bParticular rules for vehicles modified to test performance or reliability...
  - (1) The following rules apply, in addition to clause 7.1.2.2, in...
  - (2) The compliance with technical requirements of this TSI is deemed...
- 7.1.3. Rules related to the EC type or design examination certificates...
  - 7.1.3.1. Rolling stock subsystem
    - (1) This clause concerns a rolling stock type (unit type in
    - (2) The TSI assessment basis for a 'EC type or... Phase A
      - (3) Phase A starts once a notified body, which is responsible...
      - (4) The TSI assessment basis for a type is defined for
      - (5) When a revision of this TSI or of the TSI... Phase B
      - (6) The phase B period defines the period of validity of...
      - (7) The EC type or design examination certificate of EC verification...
  - 7.1.3.2. Interoperability constituents

7.2.

7.3.

Changes to legislation: There are currently no known outstanding effects for the Commission Regulation (EU) No 1302/2014. (See end of Document for details)

```
7.1.4. Rules for the extension of the area of use for...
Compatibility with other subsystems
Specific cases
7.3.1. General
       List of specific cases
7.3.2.
        7.3.2.1. Mechanical interfaces (4.2.2.2)
                        Specific case Ireland and UK for Northern Ireland
                        ('P')
                        A.1
                                Buffers
                        A.2
                                Screw coupling
                        Specific case United Kingdom (Great Britain) ('P')
        7.3.2.2. Gauging (4.2.3.1)
                        Specific case Ireland and UK for Northern Ireland
                        Specific case the United Kingdom (Great Britain)
                        ('P')
        7.3.2.3. Rolling stock requirements for compatibility with trackside
                equipment (4.2.3.3.2.2)
                        Specific case Finland ('P')
                        Specific case Ireland and UK for Northern Ireland
                        Specific case Portugal ('P')
                        Specific case Spain ('P')
                        Specific case Sweden ( 'T1')
                        Specific case the United Kingdom (Great Britain)
                        ('P')
        7.3.2.4. Safety against derailment running on twisted track (4.2.3.4.1)
                        Specific case United Kingdom (Great Britain) ( 'P'...
        7.3.2.5. Running dynamic behaviour (4.2.3.4.2, 6.2.3.4)
                        Specific case Finland ( 'P')
                        Specific case Ireland and UK for Northern Ireland ( '...
                        Specific case Spain ( 'P')
                        Specific case the United Kingdom (Great Britain) ( '
                        P....
        7.3.2.6. Mechanical and geometric characteristics of wheelset and
                wheel (4.2.3.5.2.1 and...
                        Specific case Estonia, Latvia, Lithuania and Poland
                        for 1 520...
                        Specific case Finland ('P')
                        Specific case Ireland ('P')
                        Specific case UK for Northern Ireland ('P')
                        Specific case Spain for 1 668 mm track gauge (...
                        Specific case United Kingdom (Great Britain) ('P')
        7.3.2.6aMinimum curve radius (4.2.3.6)
                        Specific case Ireland ( 'P')
        7.3.2.7. Emergency braking (4.2.4.5.2)
                        Specific case United Kingdom (Great Britain) ('P')
        7.3.2.8. Aerodynamic effects (4.2.6.2)
                        Specific case United Kingdom (Great Britain) ('P')
                        Specific case Italy ('P')
        7.3.2.9. Warning horn sound pressure levels (4.2.7.2.2)
```

Specific case United Kingdom (Great Britain) ('P')

7.3.2.10Power supply — general (4.2.8.2)

```
Specific case United Kingdom (Great Britain) ('P')
7.3.2.11 Operation within range of voltages and frequencies (4.2.8.2.2)
                Specific case Estonia ( 'T1 ')
                Specific case France ( 'T2')
                Specific case Latvia ( 'T1 ')
                Specific case United Kingdom (Great Britain) ('P')
7.3.2.12Use of regenerative brakes (4.2.8.2.3)
                Specific case Belgium ('T1')
                Specific case Czech Republic ('T')
                Specific case Sweden ('T')
7.3.2.13Height of interaction with contact wires (RST level)
        (4.2.8.2.9.1.1)
                Specific case United Kingdom (Great Britain) ('P')
7.3.2.14Pantograph head geometry (4.2.8.2.9.2)
                Specific case Croatia ( 'T1')
Specific case Finland ( 'T1')
Specific case France ( 'T2')
                Specific case Italy ('T0')
                Specific case Portugal ( 'T0 ')
                Specific case Slovenia ( 'T0 ')
                Specific case Sweden ( 'T1')
                Specific case United Kingdom (Great Britain) ('P')
7.3.2.15Contact strip material (4.2.8.2.9.4.2)
                Specific case France ('P')
7.3.2.16Pantograph contact force and dynamic behaviour (4.2.8.2.9.6)
                Specific case France ( 'T2')
                Specific case Sweden ( 'T1 ')
                Specific case United Kingdom (Great Britain) ('P')
                Specific case Channel tunnel ('P')
7.3.2.17Driver's cab emergency exit (4.2.9.1.2.2)
                Specific case United Kingdom (Great Britain) ('P')
7.3.2.18Front visibility (4.2.9.1.3.1)
                Specific case United Kingdom (Great Britain) ('P')
7.3.2.19Driver's desk — Ergonomics (4.2.9.1.6)
                Specific case United Kingdom (Great Britain) ('P')
7.3.2.20 Fire safety and evacuation (4.2.10)
                Specific case Italy ( 'T0')
                        Fire detection systems (clauses 4.2.10.3.2 and
                        6.2.3.23)
                        Fire containment and control systems for
                        passenger rolling stock (clause...
                        Freight locomotives and freight self-
                        propelling units: fire spreading protection
                        measures...
                        Review clause:
7.3.2.21Running capability (4.2.10.4.4) and fire containment and
        control system (4.2.10.3.4)...
                Specific case Channel Tunnel ( 'P')
7.3.2.22Interface for toilet discharge (4.2.11.3)
                Specific case Finland ('P')
7.3.2.23Interface for water refilling (4.2.11.5)
                Specific case Finland ('P')
```

Changes to legislation: There are currently no known outstanding effects for the Commission Regulation (EU) No 1302/2014. (See end of Document for details)

Specific case Ireland and UK for Northern Ireland

7.3.2.24 Special requirements for stabling of trains (4.2.11.6)

Specific case Ireland and UK for Northern Ireland

Specific case the United Kingdom (Great Britain) ('P')

7.3.2.25Refuelling equipment (4.2.11.7)

Specific case Finland ('P')

Specific case Ireland and UK for Northern Ireland

7.3.2.26Rolling stock originated from third country (general)

Specific case Finland

7.3.2.27Rules to manage changes in both rolling stock and rolling... Specific case the United Kingdom (Great Britain) ( '

7.4. Specific environmental conditions

Specific conditions Austria

P...

Specific conditions Estonia

Specific conditions Finland

Specific conditions France

Specific conditions Greece

Specific conditions Germany

Specific conditions Portugal

Specific conditions Spain

Specific conditions Sweden

- 7.5. Aspects that have to be considered in the revision process...
  - Aspects related to a basic parameter in this TSI
    - 7.5.1.1. Axle load parameter (clause 4.2.3.2.1)
    - 7.5.1.2. Aerodynamic effects Cross wind (clause 4.2.6.2.4)
    - 7.5.1.3. Aerodynamic effects on ballasted tracks (clause 4.2.6.2.5)
  - 7.5.2. Aspects not related to a basic parameter in this TSI...
    - 7.5.2.1. Additional requirements for security reasons
    - 7.5.2.2. Conditions for having an authorization for placing on the market...
    - 7.5.2.3. Rules for implementation
  - 7.5.3. Aspects relevant for the EU railway system but out of...
    - 7.5.3.1. Track interaction (clause 4.2.3) Flange or track lubrication

#### **APPENDICES**

Appendix A

Intentionally deleted

Changes to legislation: There are currently no known outstanding effects for the Commission Regulation (EU) No 1302/2014. (See end of Document for details)

## Appendix B

1 520 mm system gauge 'T'

Reference profile for the track gauge 1 520'T' of the... Reference profile for the lower parts: Reference profile for the lower parts:

## Appendix C

Special provisions for on track machines (OTM)

- C.1 Strength of vehicle structure
- C.2 Lifting and jacking
- C.3 Running dynamic behaviour

## Appendix D

Reference wagon for locomotives fitted with automatic end centre buffer couplers and capable of a traction effort at coupling higher than 300 kN

For collisions between a train unit and a wagon fitted... The coupler head geometry and height above top of rail...

#### Appendix E

Anthropometric measurements of the driver

The following data represents the 'state of the art' and...

Principal anthropometric measurements of the shortest and tallest driving staff:...

## Appendix F

## Front visibility

The following data represents the 'state of the art' and...

F.1. General

Notes:

F.2. Reference position of vehicle in relation to track:

Changes to legislation: There are currently no known outstanding effects for the Commission Regulation (EU) No 1302/2014. (See end of Document for details)

- F.3. Reference position for the eyes of crew members
- F.4. Conditions of visibility

## Appendix G

## Servicing

Connections for the toilet discharge system on rolling stock:

Figure G1 Evacuation nozzle (Inner part)

General tolerances +/- 0,1

Material: stainless steel

Figure G2 Optional flushing connection for the toilet tank

(Inner...

General tolerances +/- 0,1 Material: stainless steel

## Appendix H

Assessment of the rolling stock subsystem

H.1 Scope

H.2 Characteristics and modules

## Appendix I

Aspects (for exhibits): technical specification is not available

## Appendix J

Technical specifications referred to in this TSI

- J.1 Standards or normative documents
- J.2 Technical documents (available on ERA website)

## **Changes to legislation:**

There are currently no known outstanding effects for the Commission Regulation (EU) No 1302/2014.