

[TD-GZ.44.0151]
[Rev. 00]

Gaziray Commuter Train Project **STANDARD LIST**

Issued Date : 11/06/2021

Revision Date : ../../.....

	Name	Signature
Approved by	M. Gorlani	
Checked by	P. Gugliermetti	
Created by	M. Soccini	

Form No: TAGF-10	Issued Date: 11.06.2021	Rev. No: 01	Form Name: TECHNICAL DOCUMENT
---------------------	----------------------------	----------------	----------------------------------

Revision History

Rev. No	Revision Info	Date
00	First Issue	11/06/2021

INDEX

1	SUBJECT	4
1.1	LIST OF ACRONYMS & ABBREVIATIONS	4
1.2	REFERENCE DOCUMENTS	4
2	EMU BASIC REQUIREMENTS	5
2.1	MISSION PROFILE	5
3	STANDARDS	6
	ANNEX 1 - OTHER NORMS	20
	ANNEX 2 – NORMS MODIFIED IN REV.01	21

I. LIST OF FIGURES

N/A

II. LIST OF TABLES

Table 2-1 – EMU mission profile	5
Table 3-1 - Applicable Norms	7

1 SUBJECT

The scope of this document is to provide the main design standards used for the design, development and production of Gaziray Commuter Train (EMU) produced by TÜRASAS in urban passenger management.

1.1 LIST OF ACRONYMS & ABBREVIATIONS

AC	Alternating Current
EB	Emergency Brake
EBO	Emergency Brake Override
ED	Electro Dynamic
EMC	Electro Magnetic Compatibility
EMU	Electric Multiple Unit
EN	European Norm
ENV	European Norm Voluntary
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
GBB	Gaziantep Büyükşehir Belediyesi (Gaziantep Metropolitan Municipality)
HV	High Voltage
HVAC	Heating, Ventilation, & Air Conditioning
IEC	International Electro-technical Commission
ISO	International Organization of Standardization
JRU	Juridical Recording Unit
LV	Low Voltage
PAS	Passenger alarm signal
PRM	Person with Reduced Mobility
RAMS	Reliability, Availability, Maintainability and Safety
SIL	Safety Integrity Levels
ST	Standard
TBC	To be confirmed
TBD	To be defined
TCMS	Train Control & Monitoring System
TSI	Technical Specification for Interoperability
TÜRASAS	Turkish Railway Vehicle Industry Inc.
UIC	Union International Chemin de Fer

1.2 REFERENCE DOCUMENTS

The reference documents are the following.

- [R1] TECHNICAL SPECIFICATIONS FOR PROCUREMENT AND COMMISSIONING OF 8 ELECTRICAL MULTIPLE UNITS (32 CARS) FOR GAZIRAY COMMUTER OPERATIONS – 22.06.2020
- [R2] TŞ-01.139 - Gaziray Commuter Train Project - General Technical specification
- [R3] GZ90.00.00.00101 - General layout

2 EMU BASIC REQUIREMENTS

2.1 MISSION PROFILE

In the following table is reported the EMU foreseen mission for the Gaziantep Commuter service.

Table 2-1 – EMU mission profile

EMU Mission Profile		
Yearly mileage	240.000	km/years
Operating days per year (90%)	330	day/year
Daily average time under power	19,0	hrs/day
Daily average running time	18,0	hrs/day
Daily average mileage	730	km/day
Average speed (powered -up time)	38,30	kph
Average speed (running time)	40,40	kph
Yearly time under power	6.270	h/year
Yearly running time	5.940	h/year
Operating days per month	29	day/month
Carbody and Main Equipments life	30	years
Interior trims and equipment life	15	years
Maximum Service Speed	120	Kph

The main features of Gaziray Commuter train is shown in the document [R2].

The general layout of Gaziray Commuter train is shown in the drawing [R3].

3 STANDARDS

In accordance to GBB Specification (ref. [R1]), the EMU shall be designed, assembled and tested according to more recently published versions of EN, UIC, IEC, ISO as other international standards required by [R1], respected in the order of priority.

To correctly address the design, punctual reference to applicable standards and regulations is done in all the Technical Specifications of systems/equipment.

Refer to following table 3-1 for the list of main applicable norms with the applicable relevant version, which is the more updated version until the start date of the project (September 2020).

About the TSI standard, only TSI required by GBB Specification must be applied (TSI NOI and TSI PRM).

In addition:

Annex 1 lists norms, referenced in GBB technical requirements, but only informative because withdrawn or replaced by other norms in table 3-1.

Annex 2 lists modifications improved in revision 01 of this document.

Some norms have been deleted from the standard list, since there were considered not applicable to Gaziray EMU project and replaced by other norms present in table 3.1 and required by GBB specification, ref. [1].

The last column of the table explains why these norms have been deleted and what are the relative applicable norms.

Table 3-1 - Applicable Norms

Com,	STD No	Year	Other info	Complete name	TITLE
EN	2	1992		EN 2:1992	Classification of fire
EN	3-7	2004	+A1:2007	EN 3-7:2004 +A1:2007	Portable fire extinguishers. Characteristics, performance requirements and test methods
EN	3-8	2006		EN 3-8:2006/AC:2007	Portable fire extinguishers. Characteristics, performance requirements and test methods
EN	3-9	2006		EN 3-9:2006/AC:2007	Portable fire extinguishers. Characteristics, performance requirements and test methods
EN	3-10	2009		EN 3-10:2009	Portable fire extinguishers. Evaluation of conformity
EN	81-70	2018		EN 81-70:2018	Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lift
EN	115-1	2017		EN 115-1:2017	Design of escalators and moving walks
EN ISO	286-1	2010	/AC:2013	EN ISO 286-1:2010 /AC:2013	Geometrical product specifications (GPS) - ISO code system for tolerances on linear sizes - Part 1: Basis of tolerances, deviations and fits - Technical Corrigendum 1 (ISO 286-1:2010/Cor 1:2013)
EN	286-3	1994		EN 286-3:1994	Simple unfired pressure vessels designed to contain air or nitrogen - Part 3: Steel pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock
EN ISO	16890 (series)	2016		EN ISO 16890-1/2/3/4:2017 (series)	Air filters for general ventilation – Part 1 to 4
EN	1363-1	2012		EN 1363-1:2012	Fire resistance tests - Part 1. General requirements
EN ISO	2409	2020		EN ISO 2409:2020	Paints and varnishes - Cross-cut test (ISO 2409:2013)
EN ISO	2808	2019		EN ISO 2808:2019	Paints and varnishes. Determination of film thickness (ISO 2808:2007)
EN ISO	3095	2013		EN ISO 3095:2013	Acoustics - Railway applications - Measurement of noise emitted by railbound vehicles (ISO 3095:2013)
EN ISO	3381	2011		EN ISO 3381:2011	Railway applications - Acoustics - Measurement of noise inside railbound vehicles (ISO 3381:2005)
EN ISO	4624	2016		EN ISO 4624:2016	Paints and varnishes. Pull-off test for adhesion
EN ISO	8501-1	2007		EN ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings (ISO 8501-1:2007)

Com,	STD No	Year	Other info	Complete name	TITLE
EN	12080	2017		EN 12080:2017	<i>Railway applications - Axleboxes - Rolling bearings</i>
EN	12081	2017		EN 12081:2017	<i>Railway applications - Axleboxes - Lubricating greases</i>
EN	12082	2017		EN 12082:2017	<i>Railway applications - Axleboxes - Performance testing</i>
EN	12127	1997		DIN EN 12127:1997	<i>Textiles - Fabrics - Determination of mass per unit area using small samples</i>
TSE – TS (EN)	12460	2015	Turkish Standard Institute	EN 12460	<i>Rail rapid transit system in urban part 5 - design criteria of facilities for handicap and elderly people.</i>
EN	12464-1	2011		EN 12464-1:2011	<i>Lighting on platforms – main characteristics</i>
EN	12464-2	2014		EN 12464-2:2014	<i>Lighting on platforms - tests</i>
EN	12663 (series)	2010	+A1:2014	EN 12663 (series):2010	<i>Railway applications - Structural requirements of railway vehicle</i>
EN ISO	12944 (series)	2017 to 2019		EN ISO 12944 (series):2017 to 2019	<i>Paints and varnishes - Corrosion protection of steel structures by protective paint systems</i>
EN	13103-1	2017		EN 13103-1:2017	<i>Railway applications - Wheelsets and bogies - Part 1: Design method for axles with external journals</i>
CEN/TS	13103-2	2020		CEN/TS 13103-2:2020	<i>Railway applications - Wheelsets and bogies - Part 2: Design method for axles with internal journals</i>
EN	13260	2020		EN 13260:2020	<i>Railway applications. Wheelsets and bogies. Wheelsets. Products requirements</i>
EN	13261	2020		EN 13261:2020	<i>Railway applications. Wheelsets and bogies. Axles. Product requirements</i>
EN	13262	2020		EN 13262:2020	<i>Railway applications. Wheelsets and bogies. Wheels. Product requirement</i>
EN	13272-1	2019		EN 13272-1:2019	<i>Railway applications - Electrical lighting for rolling stock in public transport systems – Part 1: Heavy rail</i>
EN	13272-2	2019		EN 13272-2:2019	<i>Railway applications - Electrical lighting for rolling stock in public transport systems – Part 2: Urban rail</i>
EN	13298	2003		EN 13298:2003	<i>Railway applications - Rubber suspension components - Rubber diaphragms for pneumatic suspension spring</i>
EN	13452-1	2003		EN 13452-1:2003	<i>Railway applications — Braking — Mass transit brake systems — Part 1: Performance requirements</i>
EN	13452-2	2003		EN 13452-2:2003	<i>Railway applications — Braking — Mass transit brake systems — Part 1: Test methods</i>
EN	13597	2003		EN 13597:2003	<i>Railway applications. Rubber suspension components. Rubber diaphragms for pneumatic suspension springs.</i>

Com,	STD No	Year	Other info	Complete name	TITLE
EN	13749	2011		EN 13749:2011	<i>Railway applications - Wheelsets and bogies - Methods of specifying structural requirements of bogie frames</i>
EN	13913	2003		EN 13913:2003	<i>Railway applications - Rubber suspension components - Elastomer-based mechanical parts</i>
EN	13979-1	2020		EN 13979-1:2020	<i>Railway applications - Wheelsets and bogies - Monobloc wheels - Technical approval procedure - Part 1: Forged and rolled wheels</i>
EN	14363	2016	+A1:2018	EN 14363:2016 + A1:2018	<i>Railway applications - Testing for the acceptance of running characteristics of railway vehicles - Testing of running behavior and stationary tests</i>
EN	14478	2017		EN 14478:2017	<i>Railway applications - Braking - Generic vocabulary</i>
EN	14531-1	2015	+A1:2018	EN 14531-1:2015+A1:2018	<i>Railway applications - Methods for calculation of stopping distances, slowing distances and immobilization braking - Part 1: General algorithms</i>
EN	14535-1	2019		EN 14535-1:2019	<i>Railway applications - Brake discs for railway rolling stock - Part 1: Brake discs pressed or shrunk onto the axle or drive shaft, dimensions and quality requirements</i>
EN	14535-2	2019		EN 14535-2:2019	<i>Railway applications - Brake discs for railway rolling stock - Part 2: Brake discs mounted onto the wheel, dimensions and quality requirements</i>
EN	14750-1	2006		EN 14750-1:2006	<i>Railway applications - Air conditioning for urban and suburban rolling stock - Part 1: Comfort parameters</i>
EN	14750-2	2006		EN 14750-2:2006	<i>Railway applications - Air conditioning for urban and suburban rolling stock - Part 1: Comfort parameters</i>
EN	14752	2019		EN 14752:2019	<i>Railway applications - Body side entrance systems for rolling stock</i>
EN	14813-1	2006	+A1:2010	EN 14813-1:2006 +A1:2010	<i>Railway applications - Air conditioning for driving cabs. Part 1: Comfort parameters.</i>
EN	14813-2	2006	+A1:2010	EN 14813-2:2006 +A1:2010	<i>Railway applications - Air conditioning for driving cabs - Part 2: Type tests</i>
EN	15016-1	2004		EN 15016-1:2004	<i>Technical drawings - Railway applications - Part 1: General Principles</i>
EN	15020	2006	+A1:2010	EN 15020:2006 +A1:2010	<i>Railway applications - Rescue coupler - Performance requirements, specific interface geometry and test methods</i>
EN	15085-1	2007	+A1:2013	EN 15085-1:2007 +A1:2013	<i>Railway applications - Welding of railway vehicles and components - Part 1: General</i>

Com,	STD No	Year	Other info	Complete name	TITLE
EN	15085-2	2020		EN 15085-2:2020	<i>Railway applications - Welding of railway vehicles and components - Part 2: Quality requirements and certification of welding manufacturer</i>
EN	15085-3	2007	/AC:2009	EN 15085-3:2007 /AC:2009	<i>Railway applications - Welding of railway vehicles and components - Part 3: Design requirements</i>
EN	15085-4	2007		EN 15085-4:2007	<i>Railway applications - Welding of railway vehicles and components - Part 4: Production requirements</i>
EN	15085-5	2007		EN 15085-5:2007	<i>Railway applications - Welding of railway vehicles and components - Part 5: Inspection, testing and documentation</i>
EN	15152	2019		EN 15152:2019	<i>Railway applications - Front windscreens for train cabs</i>
EN	15153-1	2020		EN 15153-1:2020	<i>Railway applications - External visible and audible warning devices for trains - Part 1: Head, marker and tail lamps</i>
EN	15227	2020		EN 15227:2020	<i>Railway applications - Crashworthiness requirements for railway vehicle bodies</i>
EN	15427	2008	+A1:2010	EN 15427:2008 +A1:2010	<i>Railway applications - Wheel/rail friction management - Flange lubrication</i>
EN	15437-1	2009		EN 15437-1:2009	<i>Railway applications - Axlebox condition monitoring - Interface and design requirements - Part 1: Track side equipment and rolling stock axlebox</i>
EN	15437-2	2012		EN 15437-2:2012	<i>Railway applications - Axlebox condition monitoring - Interface and design requirements - Part 2: Performance and design requirements of on-board systems for temperature monitoring</i>
EN	15595	2019		EN 15595:2019	<i>Railway applications - Braking - Wheel slide protection</i>
EN	15663	2017	+A1:2018	EN 15663:2017+A1:2018	<i>Railway applications - Definition of vehicle reference masses</i>
EN	15827	2011		BS EN 15827:2011	<i>Railway applications. Requirements for bogies and running gears</i>
EN	15892	2011		EN 15892:2011	<i>Railway applications - Noise Emission - Measurement of noise inside driver's cabs</i>
EN	16019	2014		EN 16019:2014	<i>Railway applications. Automatic coupler. Performance requirements, specific interface geometry and test method</i>
EN	16334	2014		EN 16334:2014	<i>Railway applications. Passenger alarm system</i>
EN	16286-1	2013		EN 16286-1:2013	<i>Railway applications. Gangway systems between vehicles. Part 1: Main applications</i>

Com,	STD No	Year	Other info	Complete name	TITLE
EN ISO/IEC	17050-1	2010		EN ISO/IEC 17050-1:2010	Conformity assessment - Supplier's declaration of conformity (ISO/IEC 17050-1:2004)
EN	45545-1	2013		EN 45545-1:2013	Railway applications - Fire protection on railway vehicles - Part 1: General
EN	45545-2	2020		EN 45545-2:2020	Railway applications - Fire protection on railway vehicles - Part 2: Requirements for fire behavior of materials and components
EN	45545-3	2013		EN 45545-3:2013	Railway applications. Fire protection on railway vehicles. Fire resistance requirements for fire barriers
EN	45545-4	2013		EN 45545-4:2013	Railway applications. Fire protection on railway vehicles. Fire safety requirements for electrical equipment including that of trolley buses, track guided buses and magnetic levitation vehicles
EN	45545-5	2013	+A1:2015	EN 45545-5:2013+A1:2015	Railway applications. Fire protection on railway vehicles. Fire safety requirements for electrical equipment including that of trolley buses, track guided buses and magnetic levitation vehicles
EN	45545-6	2013		EN 45545-6:2013	Railway applications. Fire protection on railway vehicles. Fire control and management systems
EN	50121-1	2017		EN 50121-1:2017	Railway applications - Electromagnetic compatibility. Part 1: General
EN	50121-2	2017		EN 50121-2:2017	Railway applications - Electromagnetic compatibility. Part 2: Emission of the whole railway system to the outside world
EN	50121-3-1	2017	+A1:2019	EN 50121-3-1:2017	Railway applications - Electromagnetic compatibility railway applications - Electromagnetic compatibility. Part 3-1: Rolling stock - Train and complete vehicle
EN	50121-3-2	2016	+A1:2019	EN 50121-3-2:2016	Railway applications - Electromagnetic compatibility railway applications - Electromagnetic compatibility. Part 3-2: Rolling stock - Apparatus
EN	50121-4	2016	+A1:2019	EN 50121-4:2016	Railway applications - Electromagnetic compatibility. Part 4: Emission and immunity of the signaling and telecommunications Apparatus
EN	50121-5	2017	+A1:2019	EN 50121-5:2017	Railway applications - Electromagnetic compatibility - Part 5: Emission and immunity of fixed power supply installations and apparatus

Com,	STD No	Year	Other info	Complete name	TITLE
EN	50122-1	2011		EN 50122-1:2011	<i>Railway applications. Fixed installations - Part 1: Electrical safety, earthing and the return circuit. Protective provisions against electric shock</i>
EN	50124-1	2017		EN 50124-1:2017	<i>Railway applications. Insulation coordination - Part1: Basic requirements. Clearances and creepage distances for all electrical and electronic equipment</i>
EN	50124-2	2017		EN 50124-2:2017	<i>Railway applications - Insulation coordination - Part 2: Overvoltage's and related protection</i>
EN	50125-1	2014		EN 50125-1:2014	<i>Railway applications - Environmental conditions for equipment - Part 1: Rolling stock and on-board equipment</i>
EN	50126 (series)	2017		EN 50126-1/2:2017 (series)	<i>Railway applications - The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS)</i>
EN	50128	2011	/A1: 2020 /A2:2020	EN 50128:2011/A1-2:2020	<i>Railway applications - Communications, signaling and processing systems - Software for railway control and protection systems</i>
EN	50129	2018	/AC:2019-04	EN 50129:2018/AC:2019-04	<i>Railway applications - Communication, signaling and processing systems - Safety related electronic systems for signaling</i>
EN	50153	2014	/A1: 2017 /A2:2020	EN 50153:2014 /A1: 2017 /A2:2020	<i>Railway applications - Rolling stock - Protective provisions relating to electrical hazards</i>
EN	50155	2017		EN 50155:2017	<i>Railway applications - Electronic equipment used on rolling stock</i>
EN	50159-1	2001		EN 50159-1:2001	<i>Railway applications - Communication, signaling and processing systems - Part1: Safety related communication in closed transmission systems</i>
EN	50159-2	2001		EN 50159-2:2001	<i>Railway applications - Communication, signaling and processing systems - Part 2: Safety related communication in open transmission systems</i>
EN	50163	2004	/A1: 2007 /AC:2013 /A2:2020	EN 50163:2004	<i>Railway applications - Supply voltages of traction systems</i>
EN	50206-1	2010		EN 50206-1:2010	<i>Railway applications. Rolling stock. Pantographs. Characteristics and tests. Pantographs for main line vehicles</i>
EN	50207	2001		EN 50207:2001	<i>Railway applications. Electronic power convertors for rolling stock.</i>
EN	50215	2009		EN 50215:2009	<i>Railway applications - Testing of rolling stock after completion of construction and before entry into service</i>

Com,	STD No	Year	Other info	Complete name	TITLE
EN	50238-1	2019		EN 50238-1:2019	<i>Railway applications - Compatibility between rolling stock and train detection systems</i>
EN	50264 (series)	2008		EN 50264:2008 (series)	<i>Railway applications - Railway rolling stock power and control cables having special fire performance</i>
EN	50305	2020		EN 50305:2020	<i>Railway applications - Railway rolling stock cables having special fire performance - Test methods</i>
EN	50306 (series)	2020		EN 50306:2020 (series)	<i>Railway applications - Fire Cables - Thin wall</i>
EN	50317	2012		EN 50317:2012	<i>Railway applications. Current collection systems. Requirements for and validation of measurements of the dynamic interaction between pantograph and overhead contact line</i>
EN	50343	2014	/A1: 2007	EN 50343:2014/A1: 2007	<i>Railway applications. Rolling stock. Rules for installation of cabling</i>
EN	50355	2013		EN 50355:2013	<i>Railway applications. Railway rolling stock cables having special fire performance. Guide to use</i>
EN	50367	2020		EN 50367:2020	<i>Railway applications. Current collection systems. Technical criteria for the interaction between pantograph and overhead line (to achieve free access)</i>
EN	50382	2008	/A1: 2013	EN 50382:2008/A1: 2013	<i>Railway applications. Railway rolling stock high temperature power cables having special fire performance</i>
EN	50388	2012	/AC: 2013	EN 50388:2012/AC: 2013	<i>Railway Applications. Power supply and rolling stock. Technical criteria for the coordination between power supply (substation) and rolling stock to achieve interoperability</i>
EN	50463	2017	/AC: 2018	EN 50463:2017	<i>Railway applications. Energy measurement on board trains</i>
EN	50500	2008	/A1: 2015	EN 50500:2008/A1: 2015	<i>Measurement procedures of magnetic field levels generated by electronic and electrical apparatus in the railway environment with respect to human exposure</i>
EN	50553	2012	/AC:2013	EN 50553:2012 and EN 50553:2012/AC:2013	<i>Railway applications. Requirements for running capability in case of fire on board of rolling stock</i>
EN	60268-16	2020		EN 60268-16:2020	<i>Sound system equipment - Part 16: Objective rating of speech intelligibility by speech transmission index</i>
EN	60310	2016	/AC: 2018	EN 60310:2016/AC:2018	<i>Railway applications - Traction transformers and inductors on board rolling stock (IEC 60310:2004)</i>

Com,	STD No	Year	Other info	Complete name	TITLE
EN	60332-1-2	2004		EN 60332-1-2:2004	Tests on electric and optical fiber cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame
EN	60349-2	2010		EN 60349-2:2010	Electric traction - Rotating electrical machines for rail and road vehicles - Part 2: Electronic converter-fed alternating current motors (IEC 60349-2:2010)
EN	60947-2	2017	/A1: 2020	EN 60947-2:2017/A1:2020	Low-voltage switchgear and controlgear. Circuit-breakers
EN	61287-1	2014	/AC: 2014	EN 61287-1:2014/AC:2014	Railway applications. Power convertors installed on board rolling stock. Part 1: Characteristics and test methods
EN	61310-1	2008		EN 61310-1:2008	Safety of machinery. Indication, marking and actuation. Part:1 Requirements for visual, acoustic and tactile signals
IEC	60060	2010		IEC 60060:2010	High voltage testing techniques
IEC	60068 (series)	-		IEC 60068 (series):-	Environmental testing
IEC	60068-2-78	2013		IEC 60068-2-78:2013	Basic environmental testing procedures - Part 2-3: Tests - Test Ca: Damp heat, steady state
IEC	60068-2-11	2013		IEC 60068-2-11:2013	Basic environmental testing procedures - Part 2-11: Tests - Test Ka: Salt mist
IEC	60076-1	2011		IEC 60076:2011	Power transformers – technical requirements
IEC	60077 (series)	-		IEC 60077 (series):-	Railway applications. Electric equipment for rolling stock.
IEC	60077-1	2017		IEC 60077-1:2017	Railway applications - Electric equipment for rolling stock - Part 1: General service conditions and general rules
IEC	60077-2	2017		IEC 60077-2:2017	Railway applications - Electric equipment for rolling stock - Part 2: Electrotechnical components - General rules
IEC	60077-3	2002		IEC 60077-3:2002	Railway applications - Electric equipment for rolling stock - Part 3: Electrotechnical components - Rules for d.c. circuit-breakers
IEC	60137	2017	/A1: 2018	IEC 60137:2017/AC:2018	Insulated bushings for alternating voltages above 1000 V
IEC	60168	1994	/A1: 1997 /A2: 2000	IEC 60168:1994/A1-A2	Tests on indoor and outdoor post insulators of ceramic material or glass for systems with nominal voltages greater than 1000 V
IEC	60216-1	2013		IEC 60216-1:2013	Electrical insulating materials - Thermal endurance properties - Part 1: Ageing procedures and evaluation of test results

Com,	STD No	Year	Other info	Complete name	TITLE
IEC	60310	2016	/AC: 2018	IEC 60310:2016/AC:2018	<i>Railway applications - Traction transformers and inductors on board rolling stock</i>
IEC	60529	1991	+A1:2000 +A2:2013 +AC:2016 +AC:2019	IEC 60529:1991 +A1:2000, +A2:2013, +AC:2016, +AC:2019	<i>Degrees of protection provided by enclosures (IP Code)</i>
IEC	60623	2017		IEC 60623:2017	<i>Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells</i>
IEC	61133	2016		IEC 61133:2016	<i>Railway applications - Rolling stock - Testing of rolling stock on completion of construction and before entry into service</i>
IEC	61373	2010	/AC:2017	IEC 61373:2010/AC:2017	<i>Railway applications – Rolling stock equipment – Shock and vibration tests</i>
IEC	61375-1	2012		IEC 61375-1:2012	<i>Electronic railway equipment - Train communication network (TCN) - Part 1: General architecture</i>
IEC	61508 (series)	2010		IEC 61508 (series):2010	<i>Functional safety of electrical/electronic/programmable electronic safety related systems.</i>
ISO	281	2007		ISO 281:2007	<i>Rolling bearings - Dynamic load ratings and rating life</i>
ISO	2631 (Series)	2014		ISO 2631 (Series)	<i>Journey quality and running comfort</i>
ISO	3864-1	2011		ISO 3864-1:2011	<i>Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings</i>
ISO	5084	1996		DIN ISO 5084:1996	<i>Textiles -- Determination of thickness of textiles and textile products</i>
ISO	5659-2	2017		BS EN ISO 5659-2:2017	<i>Plastics. Smoke generation. Determination of optical density by a single-chamber test</i>
ISO	7000	2019		ISO 7000:2019	<i>Graphical symbols for use on equipment -- Registered symbols</i>
ISO	7001	2007	/AMD4:2017	ISO 7001:2007/AMD4:2017	<i>Public information symbols</i>
ISO	8573-1	2010		ISO 8573-1:2010	<i>Compressed air quality requirements</i>
ISO	9000 (series)	2015		ISO 9000 (series):2015	<i>Quality management systems - Fundamentals and vocabulary</i>
ISO	9001	2015		ISO 9001:2015	<i>Quality management systems - Requirements</i>
ISO	9002	2016		EN ISO 9002:2016	<i>Quality Systems – Quality Assurance Model in Manufacturing, Facility and Service</i>
ISO	12945-1/2/3/4	2020		EN ISO 12945-1/2/3/4:2020	<i>Textiles -- Determination of fabric propensity to surface pilling, fuzzing or matting</i>
ISO	12947	2016		EN ISO 12947-2:2016	<i>Railways applicaioons: wear resistance for passenger seats</i>

Com,	STD No	Year	Other info	Complete name	TITLE
ISO	13934-1	2013		DIN EN ISO 13934-1:2013	<i>Railways applicaioons: tensile strength for passenger seats</i>
ISO	13936-2	2004		DIN EN ISO 13936-2:2004	<i>Railways applicaioons: seam Resistance for passenger seats</i>
TS	22163	2017		TS 22163:2017	<i>International Railway Industry Standard</i>
TSE - TS	12694	2011		TSE TS 12694:2011	<i>Railway vehicles- Passenger coaches- Indications for the layout of coaches suitable for conveying disabled passengers in their wheelchairs</i>
UIC	176	2001	Ed. 1	UIC 176:2001 Ed. 1	<i>Specifications for passenger information displayed electronically in trains</i>
UIC	345	2006	Ed. 1	UIC 345:2006 Ed. 1	<i>Environmental specifications for new rolling stock</i>
UIC	505-1	2006	UIC 50505-1 – Ed. 10	UIC 505-1:2006 Ed. 10	<i>Railway transport stock - Rolling stock construction gauge</i>
UIC	505-4	2007	Ed. 4	UIC 505-4:2007 Ed. 4	<i>Effects of the application of the kinematic gauges</i>
UIC	508-1	1994	UIC 55081 – Ed. 1 - 2016	UIC 508:1994	<i>Interaction between passenger rolling stock and fixed installations</i>
UIC	508-2	1994		UIC 508-2:1994	<i>Installations for servicing and stabling passenger rolling stock ready for operation</i>
UIC	510-2	2004	Ed. 4	UIC 510-2:2004 Ed. 4	<i>Trailing stock: wheels and wheelsets. Conditions concerning the use of wheels of various diameters</i>
UIC	510-5	2007	Ed. 2	UIC 510-5:2007 Ed. 2	<i>Technical approval of monobloc wheels - Application document for standard EN 13979-1</i>
UIC	511	1987	Ed. 7	UIC 511:1987	<i>Trailing stock - Wheelbase</i>
UIC	512	1979	Ed. 8	UIC 512:1979	<i>Rolling stock - Conditions to be fulfilled in order to avoid difficulties in the operation of track circuits and treadles</i>
UIC	513	1994	Ed. 1	UIC 513:1994	<i>Guidelines for evaluating passenger comfort in relation to vibration in railway vehicles</i>
UIC	515-0	2001	Ed. 2	UIC 515-0:2001 Ed. 2	<i>Passenger rolling stock - Trailer bogies - Running gear</i>
UIC	515-1	2003	Ed. 2	UIC 515-1:2003 Ed. 2	<i>Passenger rolling stock - Trailer bogies - Running gear - General provisions applicable to the components of trailers bogies</i>
UIC	515-4	1993	Ed. 1	UIC 515-4:1993 Ed. 1	<i>Passenger rolling stock - Trailer bogies - Running gear – Bogie frame structure strength tests</i>
UIC	515-5	1994	Ed. 1	UIC 515-5:1994 Ed. 1	<i>Powered and trailing stock - Bodies - Running gear - Tests for axles-boxes</i>
UIC	518	2009	Ed. 4	UIC 518:2009 Ed. 4	<i>Testing and approval of railway vehicles from the point of view of their dynamic behavior - Safety – Track fatigue - Ride quality</i>

Com,	STD No	Year	Other info	Complete name	TITLE
UIC	533	2011	Ed. 3	UIC 533:2011	<i>Vehicles, protection by earthing of metal parts</i>
UIC	534	2002	Ed. 4	UIC 534:2002 Ed. 4	<i>Signal lamps and signal-lamp brackets for locomotives, railcars and all tractive and self-propelled stock</i>
UIC	540	2016	Ed. 7	UIC 540:2016 Ed. 7	<i>Brakes - Air brakes for freight trains and passenger trains</i>
UIC	541-01	2017	Ed. 1	UIC 541-01:2017 Ed. 1	<i>Brakes - Brake cylinders/units for air brakes - General conditions for certification and use</i>
UIC	541-03	2015	Ed. 2	UIC 541-03:2015 Ed. 2	<i>Brakes - Specifications for the construction of various brake parts - Driver's brake valve / Driver's brake controller</i>
UIC	541-05	2016	Ed. 3	UIC 541-05:2016 Ed. 3	<i>Brakes - Manufacturing specifications for various brake parts - Wheel Slide Protection device (WSP)</i>
UIC	541-07	1992	Ed. 1	UIC 541-07:1992	<i>Brakes - Regulations governing the construction of different types of braking gear - Simple pressure receptacles of steel, not fired, for air braking equipment and auxiliary pneumatic equipment for railway rolling stock</i>
UIC	542	2015	Ed. 7	UIC 542:2015	<i>Brake parts - Interchangeability</i>
UIC	543	2018	Ed. 15	UIC 543:2018	<i>Brakes - Regulations governing the equipment of trailing stock</i>
UIC	544-1	2014	Ed. 6	UIC 544-1:2014 Ed. 6	<i>Brakes - Braking performance</i>
UIC	545	2014	Ed. 10	UIC 545:2014 Ed. 10	<i>Brakes - Inscriptions, marks and signs</i>
UIC	546	2014	Ed. 6	UIC 546:2014 Ed. 6	<i>Brakes - Specifications for the construction of various brake parts - High power brakes for passenger trains</i>
UIC	547	1989	Ed. 4	UIC 547:1989	<i>Brakes - air brake; standard program of tests.</i>
UIC	552	2005	Ed. 10	UIC 552:2005	<i>Electrical power supply for trains - standard technical characteristics of the train line</i>
UIC	556	2009	Ed. 5	UIC 556:2009 Ed. 5	<i>Information transmission in the train (train bus)</i>
UIC	560	2002	Ed. 12	UIC 560:2002 Ed. 12	<i>Doors, footboards, windows, steps, handles and handrails of coaches and luggage vans</i>
UIC	561	1991	UIC 50561-06 – Ed. 1 - 2016	UIC 561:1991 Ed. 8	<i>Interconnecting gangways for coaches</i>
UIC	562	1991	Ed. 5	UIC 562:1991 Ed. 5	<i>Space for baggage racks, coat-hooks and lockers; measures to prevent baggage theft</i>
UIC	564-1	1979 (reprint 1990)	Ed. 6	UIC 564-1:1979 (reprint 1990) Ed. 6	<i>Coaches; windows made from safety glass</i>

Com,	STD No	Year	Other info	Complete name	TITLE
UIC	564-2	1991	Ed. 3	UIC 564-2:1991 Ed. 3	<i>Regulations relating to fire protection and firefighting measures in passenger carrying railway vehicles or assimilated vehicles used on international services</i>
UIC	566	1990	Ed. 3	UIC 566:1990 Ed. 3	<i>Loadings of coach bodies and their components</i>
UIC	600	2003	Ed. 4	UIC 600:2003	<i>Electric traction with aerial contact line</i>
UIC	606-2	1986	Ed. 4	UIC 606-2:1986	<i>Installation of 25 kV and 50 or 60 Hz overhead contact lines</i>
UIC	608	2003	UIC 60608 – Ed. 1 - 2019	UIC 60608:2019 Ed. 1	<i>Conditions to be complied with for the pantographs of tractive units used in international services</i>
UIC	612-0	2009	Ed. 1	UIC 612-0:2009 Ed. 1	<i>Driver Machines Interfaces for EMU/DMU, Locomotives and driving coaches - Functional and system requirements associated with harmonized Driver Machine Interfaces</i>
UIC	612-01	2011	Ed, 1	UIC 612-01:2011 Ed, 1	<i>Display System in driver cabs (DDS) - General requirements, set up and technical specifications</i>
UIC	612-03	2011	Ed, 1	UIC 612-03:2011 Ed, 1	<i>Display System in Driver's Cab (DDS) Technical and Diagnostic Display (TDD)</i>
UIC	614	1990	Ed. 3	UIC 614:1990 Ed. 3	<i>Definition of the rated output of electric locomotives and motive power units</i>
UIC	615-0	2003	Ed. 2	UIC 615-0:2003 Ed. 2	<i>Tractive units - Bogies and running gear - General provisions</i>
UIC	615-1	2003	Ed. 2	UIC 615-1:2003 Ed. 2	<i>Tractive units - Bogies and running gear - General conditions applicable to component parts</i>
UIC	615-4	2003	Ed. 2	UIC 615-4:2003 Ed. 2	<i>Motive power units - Bogies and running gear - Bogie frame structure strength tests</i>
UIC	617-4	1963		UIC 617-4:1983	<i>Design of the windows in the driver's cab</i>
UIC	641	2001	UIC 50641 – Ed. 1 - 2016	UIC 641:2001 Ed. 4	<i>Conditions to be fulfilled by automatic vigilance devices used in international traffic</i>
UIC	642	2001	Ed. 2	UIC 642:2001 Ed. 2	<i>Special provisions concerning fire precautions and fire-fighting measures on motive power units and driving trailers in international traffic</i>
UIC	644	1980	Ed. 2	UIC 644:1980 Ed. 2	<i>Warning devices used on tractive units employed on international services</i>
UIC	648	2001	Ed. 4	UIC 648:2001 Ed. 4	<i>Connections for electric cables and air pipes on headstocks of locomotives and driving trailers</i>
UIC	650	1983	UIC 60650 – Ed. 1 - 2016	UIC 650:1983 Ed. 5	<i>Standard designation of axle arrangement on locomotives and multiple-unit sets</i>

Com,	STD No	Year	Other info	Complete name	TITLE
UIC	651	2002	Ed. 4	UIC 651:2002 Ed. 4	<i>Layout of driver's cabs in locomotives, railcars, multiple-unit trains and driving trailers</i>
UIC	751-2	2002	Ed. 4	UIC 751-2:2002	<i>Using Railway radio equipment in the vehicles</i>
UIC	792	1983	Ed. 1	UIC 792:1983	<i>Earthing rod main characteristics</i>
UIC	813	2003	Ed. 2	UIC 813:2003 Ed. 2	<i>Technical specification for the supply of wheelsets for tractive and trailing stock - Tolerances and assembly</i>
UIC	960	2001	Ed. 2	UIC 960:2001	<i>Qualification and certification of personnel responsible for the non-destructive testing of rolling-stock components and assemblies in the rolling stock</i>
VDV	111	2006		VDV 111	<i>Requirements to the Monitoring of Power-Operated Doors and Steps in Line-Service Bus- es and Trams</i>
TSI NOI	1304	2014	+ Amending Regulation No. 2019/774	TSI NOI 1304:2014	<i>TSI NOI concerning the technical specifications of interoperability relating to the subsystem 'rolling stock – noise'</i>
TSI PRM	1300	2014	+ Amending Regulation No. 2019/772	TSI PRM 1300:2014	<i>TSI PRM concerning the technical specification of interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility</i>

ANNEX 1 - OTHER NORMS

Com,	STD No	Year	Complete name	TITLE	Other info
EN	779	2012	EN 779:2012	<i>Particulate air filters for general ventilation - Determination of the filtration performance</i>	Replaced by EN 16890 (series)
EN	13104	2009	EN 13104:2009 +A2:2012	<i>Railway applications - Wheelsets and bogies - Powered axles; Design method</i>	Replaced by EN 13103-1:2017
EN	50265-2-1	1998	EN 50265-2-1:1998	<i>Common test methods for cables under fire conditions. Test for resistance to vertical flame propagation for a single insulated conductor or cable. Part 2-1: Procedures. 1 kW pre-mixed flame. 1 kW pre-mixed flame</i>	Replaced by EN 60332-1-2:2004
ISO	3309	1993	ISO 3309:1993	<i>TCMS requirements and safety level</i>	Standard Withdrawn
ISO	4335	1993	ISO 4335:1993	<i>TCMS requirements and safety level</i>	Standard Withdrawn
ISO	7193	1985	ISO 7193:1985	<i>Wheelchairs - Maximum overall dimensions</i>	Standard Withdrawn
ISO	9003	1994	EN ISO 9003:1994	<i>Modeli Quality Systems – Quality Assurance in Final Examination and Tests</i>	Standard Withdrawn
UIC	610	2002	UIC 610:2002	<i>Rules for testing of electric rolling stock on completion of construction and before entry into service</i>	Standard Withdrawn
UIC	613	1983	UIC 613:1983	<i>Graphical symbols for electric traction</i>	Standard Withdrawn
EN	60038	2011	EN 60038:2011	<i>Railways applications: Comfort requirements for air conditioning equipments</i>	Not in EN Catalogue

ANNEX 2 – NORMS MODIFIED IN REV.01

Norms present in rev.00 and erased in rev.01					Norms present in rev.01
Com.	Nr.	Year	Complete name	TITLE	
EN	286-4	1994	EN 286-4:1994	Simple unfired pressure vessels designed to contain air or nitrogen - Part 4: Aluminum pressure vessels designed for air braking equipment and auxiliary pneumatic equipment for railway rolling stock	EN 286-4 replaced by applicable standards EN286-3 and UIC 541-07, since the tanks are made by carbon steel, not by aluminum
EN	1363-1	2020	EN 1363-1:2020	Fire resistance tests - Part 1. General requirements	EN 1363-1:2020 replaced by EN1363-1:2012, since it is required by EN 45545-3:2013, present in GBB specification
EN	12299	2009	EN 12299:2009	Railway applications - Ride comfort for passengers - Measurement and evaluation	EN 12299 replaced by UIC 518, present in GBB Specification
EN	13715	2020	EN 13715:20020	Railway applications - Wheelsets and bogies - Wheels - Tread profile	EN 13715 replaced by UIC 510-2, in accordance to drawing TCDD 02.029_A3
EN	13848-1	2019	EN 13848-1:2019	Railway applications - Track - Track geometry quality - Part 1: Characterization of track geometry	This standard is not applicable to urban railways and is regarding the infrastructure
EN	14067-1	2003	EN 14067-1 :2003	Railway applications - Aerodynamics - Part 1: Symbols and units	Not applicable to trainsets with speed < 140 km/h
EN	14067-4	2013	EN 14067-4:2013 +A1:2018	Railway applications - Aerodynamics - Part 4: Requirements and test procedures for aerodynamics on open track	Not applicable to trainsets with speed < 140 km/h
EN	14067-5	2006	EN 14067-5:2006 +A1:2010	Railway applications - Aerodynamics - Part 5: Requirements and test procedures for aerodynamics in tunnels	Not applicable to trainsets with speed < 140 km/h
EN	14067-6	2018	EN 14067-6:2018	Railway applications - Aerodynamics - Part 6: Requirements and test procedures for cross wind assessment	Not applicable to trainsets with speed < 140 km/h
EN	15153-2	2020	EN 15153-1:2020	Railway applications - External visible and audible warning devices for trains - Part 2: Warning horns	EN 15153-1 replaced by UIC 644, applicable for warnign horn requirements and present in GBB specification
EN	15877-2	2013	EN 15877-2:2013	Railway applications. Markings of railway vehicles. External markings on coaches, motive power units, locomotives and on track machines	EN 15877-2 replaced by EN 61310-1, applicable for vehicle markings, present in GBB specification
EN	50119	2009	EN 50119:2009/A1:2013	Railway applications. Fixed installations. Electric traction overhead contact lines	Not applicable; it is regarding the infrastructure
EN	50274	2002	EN 50274:2002	Low-voltage switchgear and control gear assemblies. Protection against electric shock. Protection against unintentional direct contact with hazardous live parts	EN 50274 replaced by EN 50153, applicable for this topic and present in GBB specification
EN	50405	2015	EN 50405:2015	Railway applications - Current collection systems - Pantographs, testing methods for contact strips	EN 50405 replaced by EN 50206-1, applicable for this topic and present in GBB specification

Norms present in rev.00 and erased in rev.01					Norms present in rev.01
Com.	Nr.	Year	Complete name	TITLE	
IEC	60494-1	2013	IEC 60494-1:2013	Railway applications - Rolling stock - Pantographs - Characteristics and tests-Part 1: Pantographs for main line vehicles	IEC 60494-1 replaced by EN 50206-1, applicable for this topic and present in GBB specification
IEC	60494-2	2013	IEC 60494-2:2013	Railway applications - Rolling stock - Pantographs - Characteristics and tests Part 2: Pantographs for metros and light rail vehicles	IEC 60494-2 replaced by EN 50206-1, applicable for this topic and present in GBB specification
IEC	60571	2012	IEC 60571:2012	Railway applications - Electronic equipment used on rolling stock	IEC 60571 replaced by EN 50155, applicable for this topic and present in GBB specification
IEC	61000-4-4	2012	IEC 61000-4-4:2012	Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test	IEC 61000-4-4 replaced by EN 50121 1÷5, that are applicable for this topic and present in GBB specification
IEC	61000-4-5	2014	IEC 61000-4-5:2014/A1:2017	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	IEC 61000-4-5 replaced by EN 50121 1÷5, that are applicable for this topic and present in GBB specification
IEEE	519	2014	IEEE 519:2014	IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems	Not applicable for Turkish railways
UIC	438-1	2004	UIC 438-1:2004 Ed. 3	Identification marking for passenger rolling stock	UIC 438-1 replaced by EN 61310-1, applicable for vehicle markings and present in GBB specification
UIC	522-2	2002	UIC 522-2:2002 Ed. 2	Conditions for the acceptance of draw-only automatic couplers	UIC-522-2, required by GBB, is regarding only-drawn coupler type, not installed on GBB EMU. For this project EN 16019 must be applied, because it is regarding automatic couplers requirements. In addition, EN 15020 must be applied for rescue coupler
UIC	541-06	2010	UIC 50541-06: 2021	Brakes - Regulations concerning the construction of the various brake components: Magnetic brakes	Not applicable because magnetic brakes are not installed
UIC	541-1	2016	UIC 541-1:2016 Ed. 9	Brakes - Regulations concerning the design of brake components	UIC 541-1 replaced by EN 14535, applicable for brake discs and present in GBB specification
UIC	541-3	2017	UIC 541-3:2017 Ed. 8	Brakes - Disc brakes and their application - General conditions for the approval of brake pads	UIC 541-3 replaced by EN 14535, applicable for brake discs and present in GBB specification
UIC	541-4	2017	UIC 541-4:2020 Ed. 6	Brakes - Brakes with composition brake blocks	Not applicable, since no brake blocks are installed on the EMU
UIC	541-5	2006	UIC 541-5:2006 Ed. 4	Brakes - Electropneumatic brake (ep brake) - Electropneumatic emergency brake override (EBO)	UIC 541-5 replaced by EN 16334, applicable for this topic
UIC	541-6	2010	UIC 541-6:2010 Ed. 1	Brakes - Electropneumatic brake (ep brake) and Passenger alarm signal (PAS) for vehicles used in hauled consists	UIC 541-6 replaced by EN 16334, applicable for this topic

END of DOCUMENT