

Section 1: General Information

0. Identification of the type

0.1 0.2 0.4 Type ID: 13-028-0004-8-001-001

0.3 Date of record: 2021-12-03

1. General Information

1.1 Type name: ETR610 2S BL3

1.2 Alternative type name: RABe 503 BL3

1.3 Manufacturer:

1.3.1 Manufacturer identification data:

1.3.1.1 Name of organisation: ALSTOM FERROVIARIA S.P.A.

1.3.1.2 Registered business number: 02791070044

1.3.1.3 Organisation code:

1.3.2 Manufacturer contact data:

1.3.2.1 Address of organisation, street and number: VIA OTTAVIO MORENO 23

1.3.2.2 Town: SAVIGLIANO

1.3.2.3 Country code: I

1.3.2.4 Post code: 12038

1.3.2.5 E-mail address: alstomferroviaria.pec@actaliscertymail.it

Registration Method: New Type

Registered Vehicle Type:

1.4 Category: Traction vehicles

1.5 Subcategory: Self-propelled passenger trainset (incl. railbusses)

1.6 Platform: ETR 610

Section 2: Conformity with TSI

2.1 Conformity with TSI and Sections not complied with:

**LOC & PAS (Regulation (EU) No 1302/2014)
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2019/776 amended by Reg.(EU) 2020/387)**

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 - 4.2.4.4.3. Direct braking command
 - 4.2.4.4.4. Dynamic braking command
 - 4.2.4.4.5. Parking braking command
 - 4.2.4.5. Braking performance
 - 4.2.4.5.1. General requirements
 - 4.2.4.5.2. Emergency braking
 - 4.2.4.5.3. Service braking
 - 4.2.4.5.4. Calculations related to thermal capacity
 - 4.2.4.5.5. Parking brake
 - 4.2.4.6. Wheel rail adhesion profile — Wheel slide

**LOC & PAS (Regulation (EU) No 1302/2014)
amended by Reg.(EU)2016/919 amended by
Reg.(EU)2018/868 amended by Reg.(EU)
2019/776 amended by Reg.(EU) 2020/387)**

- 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
 - 4.2.2.2.1. General and definitions
 - 4.2.2.2.2. Inner coupling
 - 4.2.2.2.3. End coupling
 - 4.2.2.2.4. Rescue coupling
 - 4.2.2.2.5. Staff access for coupling and uncoupling
 - 4.2.2.3. Gangways
 - 4.2.2.5. Passive safety
 - 4.2.2.6. Lifting and jacking
 - 4.2.2.8. Staff and freight Access doors
 - 4.2.2.9. Mechanical characteristics of glass (other than windscreens)
 - 4.2.3. Track interaction and gauging
 - 4.2.3.3.1.3. Rolling stock characteristics for compatibility with loop equipment
 - 4.2.3.3.2. Axle bearing condition monitoring
 - 4.2.3.3.2.1. Requirements applicable to on board detection equipment
 - 4.2.3.3.2.2. Rolling stock requirements for compatibility with trackside equipment
 - 4.2.3.4.2.2. Track loading limit values
 - 4.2.3.4.3. Equivalent conicity
 - 4.2.3.4.3.1. Design values for new wheel profiles
 - 4.2.3.4.3.2. In-service values of wheelset equivalent conicity
 - 4.2.3.5.2.1. Mechanical and geometric characteristics of wheelsets
 - 4.2.3.5.2.2. Mechanical and geometrical characteristics of wheels
 - 4.2.3.5.2.3. Automatic Variable gauge wheelsets
 - 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
 - 4.2.4.2.1. Functional requirements
 - 4.2.4.2.2. Safety requirements
 - 4.2.4.3. Type of brake system
 - 4.2.4.4. Brake command
 - 4.2.4.4.1. Emergency braking command
 - 4.2.4.4.2. Service braking command
 - 4.2.4.4.3. Direct braking command
 - 4.2.4.4.4. Dynamic braking command
 - 4.2.4.4.5. Parking braking command
 - 4.2.4.5. Braking performance
 - 4.2.4.5.1. General requirements
 - 4.2.4.5.2. Emergency braking
 - 4.2.4.5.3. Service braking
 - 4.2.4.5.4. Calculations related to thermal capacity
 - 4.2.4.5.5. Parking brake
 - 4.2.4.6. Wheel rail adhesion profile — Wheel slide

**LOC & PAS (Regulation (EU) No 1302/2014)
amended by Reg.(EU)2016/919 amended by
Reg.(EU)2018/868 amended by Reg.(EU)
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- 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
 - 4.2.2.2.1. General and definitions
 - 4.2.2.2.2. Inner coupling
 - 4.2.2.2.3. End coupling
 - 4.2.2.2.4. Rescue coupling
 - 4.2.2.2.5. Staff access for coupling and uncoupling
 - 4.2.2.3. Gangways
 - 4.2.2.5. Passive safety
 - 4.2.2.6. Lifting and jacking
 - 4.2.2.8. Staff and freight Access doors
 - 4.2.2.9. Mechanical characteristics of glass (other than windscreens)
 - 4.2.3. Track interaction and gauging
 - 4.2.3.3.1.3. Rolling stock characteristics for compatibility with loop equipment
 - 4.2.3.3.2. Axle bearing condition monitoring
 - 4.2.3.3.2.1. Requirements applicable to on board detection equipment
 - 4.2.3.3.2.2. Rolling stock requirements for compatibility with trackside equipment
 - 4.2.3.4.2.2. Track loading limit values
 - 4.2.3.4.3. Equivalent conicity
 - 4.2.3.4.3.1. Design values for new wheel profiles
 - 4.2.3.4.3.2. In-service values of wheelset equivalent conicity
 - 4.2.3.5.2.1. Mechanical and geometric characteristics of wheelsets
 - 4.2.3.5.2.2. Mechanical and geometrical characteristics of wheels
 - 4.2.3.5.2.3. Automatic Variable gauge wheelsets
 - 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
 - 4.2.4.2.1. Functional requirements
 - 4.2.4.2.2. Safety requirements
 - 4.2.4.3. Type of brake system
 - 4.2.4.4. Brake command
 - 4.2.4.4.1. Emergency braking command
 - 4.2.4.4.2. Service braking command
 - 4.2.4.4.3. Direct braking command
 - 4.2.4.4.4. Dynamic braking command
 - 4.2.4.4.5. Parking braking command
 - 4.2.4.5. Braking performance
 - 4.2.4.5.1. General requirements
 - 4.2.4.5.2. Emergency braking
 - 4.2.4.5.3. Service braking
 - 4.2.4.5.4. Calculations related to thermal capacity
 - 4.2.4.5.5. Parking brake
 - 4.2.4.6. Wheel rail adhesion profile — Wheel slide

2.3 Applicable specific cases (specific cases conformity with which has been assessed)

2.2 Reference of 'EC type examination certificates'

Reference of 'EC type examination certificates' - if module SB applied - and/or 'design verification certificate' - if module SH1 applied	0474-2-SH2-11-RST-ITDE-2009DGPF1_B
Reference of 'EC type examination certificates' - if module SB applied - and/or 'design verification certificate' - if module SH1 applied	0474_2_SH2_14_RST_IT_2013QTL28a
Reference of 'EC type examination certificates' - if module SB applied - and/or 'design verification certificate' - if module SH1 applied	0474_2_SH1_2021_RST_ITEN_P0014438-TSI1_V02
Reference of 'EC type examination certificates' - if module SB applied - and/or 'design verification certificate' - if module SH1 applied	0474/2/SH1/2021/CCO/EN/P0014438/V01

Section 3: Authorisations

European Union

3.0 Area Of Use:	AT(Austria), DE(Germany), IT(Rete Ferroviaria Italiana (RFI))
3.1.1 Member state of authorisation:	Austria(AT), Germany(DE), Italy(IT)
3.1.2.1 Status:	Valid
3.1.2.2 Validity of Authorisation (until):	
3.1.2.3 Coded conditions for use and other restrictions:	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge) 1 Technical restriction related to construction 1.1 Minimum curve radius in meters: 100 1.3 Speed restrictions in Km/h: 160 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 2 2 Geographical restriction 2.1 Kinematic gauge (coding WAG TSI): G1/GC 2.2 Wheelset gauge: 2.2.4 Gauge 1435 2.4 ERTMS on board: 2.4.1 ETCS 2.4 ERTMS on board: 2.4.2 GSM-R voice 2.4 ERTMS on board: 2.4.3 GSM-R for ETCS 2.5 B System on board 2.5.1 Class B signalling system: 2.5.117 RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB
L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

**1435mm / AC 15kV-16.7Hz / LZB (LZB L72,
LZB L72 CE I and LZB L72 CE II)**

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 250

1.4 Use in multiple operation (maximum number of
trainsets authorised to be coupled together to
operate as a single train): 2

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1/GC

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.1 ETCS

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.4 ERTMS on board: 2.4.3 GSM-R for ETCS

2.5 B System on board

2.5.1 Class B signalling system: 2.5.117
RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB
L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

1435mm / AC 15kV-16.7Hz / PZB 90

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 160

1.4 Use in multiple operation (maximum number of
trainsets authorised to be coupled together to
operate as a single train): 2

- 2 Geographical restriction
 - 2.1 Kinematic gauge (coding WAG TSI): G1/GC
 - 2.2 Wheelset gauge: 2.2.4 Gauge 1435
 - 2.4 ERTMS on board: 2.4.1 ETCS
 - 2.4 ERTMS on board: 2.4.2 GSM-R voice
 - 2.4 ERTMS on board: 2.4.3 GSM-R for ETCS
 - 2.5 B System on board
 - 2.5.1 Class B signalling system: 2.5.117 RSDD/SCMT
 - 2.5.1 Class B signalling system: 2.5.152 GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)
 - 2.5.1 Class B signalling system: 2.5.154 LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)
 - 2.5.1 Class B signalling system: 2.5.156 PZB 90
- 3 Environmental restrictions
 - 3.1 Climatic zone: 3.1.3 T3
- 5 On-board equipment
 - 5.1 Recording device: 5.1.03 TELOC

1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2

- 1 Technical restriction related to construction
 - 1.1 Minimum curve radius in meters: 100
 - 1.3 Speed restrictions in Km/h: 250
 - 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 2
- 2 Geographical restriction
 - 2.1 Kinematic gauge (coding WAG TSI): G1/GC
 - 2.2 Wheelset gauge: 2.2.4 Gauge 1435
 - 2.4 ERTMS on board: 2.4.1 ETCS
 - 2.4 ERTMS on board: 2.4.2 GSM-R voice
 - 2.4 ERTMS on board: 2.4.3 GSM-R for ETCS
 - 2.5 B System on board
 - 2.5.1 Class B signalling system: 2.5.117 RSDD/SCMT
 - 2.5.1 Class B signalling system: 2.5.152 GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)
 - 2.5.1 Class B signalling system: 2.5.154 LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)
 - 2.5.1 Class B signalling system: 2.5.156 PZB 90
- 3 Environmental restrictions
 - 3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

1435mm / DC 1.5kV / RSDD/SCMT

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 160

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1/GC

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.1 ETCS

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.4 ERTMS on board: 2.4.3 GSM-R for ETCS

2.5 B System on board

2.5.1 Class B signalling system: 2.5.117
RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB
L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

1435mm / DC 3kV / RSDD/SCMT

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 160

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1/GC

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.1 ETCS

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.4 ERTMS on board: 2.4.3 GSM-R for ETCS

2.5 B System on board

2.5.1 Class B signalling system: 2.5.117
RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB
L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

3.1.2.4 Non-coded conditions for use and other restrictions:

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:
 - Radio Infill
 - G (Subset-100) and K (Subset-101) interfaces
 - Train Integrity on-board function for ERTMS level.
3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.
4. The following Subset 026 functions have not been validated in generic application:
 - Passive shunting;
 - Non Leading.
5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated. ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety.
7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid:
 - GSM-R network overload;
 - SoM delay when entering/exiting SL(sleeping).
8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system.
9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal."
10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026
11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured)
12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km
13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.
14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice).
15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919
16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area.
17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II)

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated. ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety.

7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid:

- GSM-R network overload;
- SoM delay when entering/exiting SL(sleeping).

8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system.

9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal."

10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026

11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured)

12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km

13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice).

15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919

16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area.

17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-

1435mm / AC 15kV-16.7Hz / PZB 90

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated. ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety.

7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid:

- GSM-R network overload;
- SoM delay when entering/exiting SL(sleeping).

8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system.

9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal."

10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026

11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured)

12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km

13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice).

15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919

16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area.

17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-

1. Das fahrzeugseitige ZZS-Subsystem "SBB ETR610 BL3" für das Fahrzeug der Baureihe 2 des ETR 610 ist in Österreich für den Betrieb im ETCS Level NTC PZB oder PZB im "Stand Alone"-Modus vorgesehen. Für Österreich ist kein ETCS Level 1, Level 1LS oder Level 2 geplant oder beantragt. 2. Der Halter / das EVU hat eine Betriebs- und Instandhaltungsdokumentation vorzuhalten, die es ihm ermöglicht, unter Berücksichtigung der den Nachweisen zugrundeliegenden Belastungen, der jeweiligen Betriebsbedingungen, der Wechselwirkung zwischen Fahrzeug und Fahrweg und der konkret benutzten Infrastruktur jederzeit den sicheren Betrieb für das in der Genehmigung aufgeführte Eisenbahnfahrzeug und die Einhaltung seiner Pflichten zu gewährleisten. Durch geeignete Instandhaltungsmaßnahmen ist die Betriebssicherheit der Radsätze über die gesamte Nutzungszeit zu gewährleisten (u.a. hinsichtlich der Pressverbindung Rad/Welle). Dabei müssen unter anderem die im Instandhaltungsprogramm für die Radsätze zu definierenden zerstörungsfreien Prüfungen, die den Nachweisen zugrundeliegenden Belastungen berücksichtigen und die Identifizierung einer Materialschädigung rechtzeitig vor einem Bauteilversagen sicherstellen. 3. Die Fahrzeuge dürfen ausschließlich folgende Strecke befahren • St. Margreten – Bregenz – Staatsgrenze nahe Lindau (Strecken Nr. 304), • Buchs – Feldkirch – Bregenz (Strecken Nr. 303 und Strecke 101 von Feldkirch bis Bregenz) 4. Der Betriebszustand 5 (3 TK inaktiv) darf nicht zur Anwendung gelangen und ist geeignet zu unterbinden.

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2

The Smart-RSDD of the STM SCMT is not able to cover: • more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081) • more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI. 2. The following UNISIG functions are not implemented: • Radio Infill • G (Subset-100) and K (Subset-101) interfaces • Train Integrity on-board function for ERTMS level. 3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h. 4. The following Subset 026 functions have not been validated in generic application: • Passive shunting; • Non Leading. 5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated.

ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety. 7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid: - GSM-R network overload; - SoM delay when entering/exiting SL(sleeping). 8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system. 9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal." 10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026 11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured) 12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km 13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h. 14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice). 15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919 16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area. 17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-System by authorised persons the Operator shall put in place "training procedures" for the Drivers and the Maintenance Operator; their knowledge shall be regularly re-evaluated by means of examinations 18. Procedure shall define driver reactions to manage the Passenger Alarm according to the train location (including in case of any Passenger Alarm status displayed): - warn the railway controller to confirm the alarm, - if necessary, the driver stops the train inside an authorized area (outside non stop area, e.g. tunnel). 19. In L0, UN mode is allowed following specific operational procedures. 20. Each project shall follow maintenance procedures provided in the SSB-AV B3 Maintenance Manual (SSB-AV-B3-SBB-MR-20A) 21. Railway Undertaking is responsible to train drivers & maintenance personnel by means of UM and MM provided by Alstom 22. Alstom has implemented an optimization in the computation of the emergency braking distances for Swiss L1LS lines, as

Proof of adequate protection against unauthorised access to be provided on the LZB-cubicle. Remark: since the position and the installation of Siemens cabinet is unchanged with reference to the previous authorized BL2, the scope of responsibility of SBB is limited exclusively to keep the LZB rack Locked and to manage the keys for the cubicle access 27. UNISIG SUBSET-026 Requirement (Refer to References Guides Column for more details) – ERTMS Specific Application Project to confirm the compliance with such requirement. The driver has the possibility to modify the value of the maximum SR speed and of the given distance through the DMI menu. It is then the responsibility of the ERTMS Application Projects to define by procedure the safe values to be entered by the driver. 28. The ERTMS/ETCS Application Project shall ensure that the following behaviors related to Non Stopping Areas (NSA) makes no impact on the safety: - if stopping or slowing in the non-stopping area is considered as a hazard by projects and assuming wrong informations displayed on DMI (see GATC_CRL_RAM_0156) or use of odometric variables in some contexts (see GATC_CRL_RAM_0073) can lead the train to stop in a non-stopping area, projects have the responsibility to consider the following recommendations to cover the hazard: operational procedure to forbid the driver to slows down or stops in a non stopping area, operational procedure to ensure the train leaves as soon as possible the non stopping area if possible after a stop whatever the reason, avoiding trackside design choices that can give chances of triggering service or emergency brakes (end of authority inside or in the vicinity of the end of the non-stopping area, static speed profiles announced too late), other operational procedures appropriate for covering the hazard; - for Non Stopping Areas (NSA), the Passenger Emergency Brake Inhibition remains applied after a train relocation or reverse movement which leads to consider the train outside of the Track Condition Section (Alstom Specific). 29. Before the beginning of the daily mission the driver shall perform the SER test or the continuity test from each cabin to verify the correct behavior of B046 valve. Then he shall apply the emergency brake through the pushbutton in the leading cab in order to verify the electric continuity of the loop that commands the B046 valves and check the result on the TCMS monitor. 30. The Maintainer shall correctly follow the procedure reported into the SBB ETR610 B3 Maintenance Manual (SSB-AV-B3-SBBMR-20A). 31. To guarantee that the reset of NOVRAM does not compromise the safety of the system by having more permissive values than the expected ones: 1) the body responsible of maintenance activities shall ensure that when leaving these locations, the EVC must receive applicable Customer specific data regarding National Values and Dynamic Retro compatibility either by Balise Groups at exit locations or through RBC; 2) in case of movement of the train with EVC

Compatibility with Area of Use Italy (national network managed by RFI Infrastructure Manager) has been proven for:

- Conventional lines equipped with national class B subsystem SCMT
- ESC-IT-04-RFI-1.0_L2_AVp_TOMI_01 (Line Torino – Milano)
- ESC-IT-05-RFI-1.0_L2_AVp_TRBR_01 (Line Treviglio-Brescia)

Transitions at boundary between Switzerland and Italy will be allowed only once related ESC checks will be completed (e.g.: ESC-IT-07-RFI-2.0_L1-Cs_ISDO_01).

2. Gli axle-counters delle linee italiane sulle quali circolerà il veicolo, devono essere conformi alla specifica RFI DTCDNSSSTB SR IS 11 005 C.

3. Nel caso in cui il macchinista, durante la data entry SCMT, debba rettificare l'orario impostato a causa di un disallineamento tra quello visualizzato e l'orario effettivo, il disallineamento deve essere annotato sul libro di bordo e l'Impresa Ferroviaria deve essere informata che sussiste un disallineamento tra l'orario visualizzato dal RCEC e quello di riferimento visualizzato da SCMT.

1435mm / DC 1.5kV / RSDD/SCMT

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT.

If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated.

ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety. 7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid: - GSM-R network overload; - SoM delay when entering/exiting SL(sleeping). 8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system. 9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal." 10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026 11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured) 12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km 13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h. 14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice). 15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919 16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area. 17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-System by authorised persons the Operator shall put in place "training procedures" for the Drivers and the Maintenance Operator; their knowledge shall be regularly re-evaluated by means of examinations 18. Procedure shall define driver reactions to manage the Passenger Alarm according to the train location (including in case of any Passenger Alarm status displayed): - warn the railway controller to confirm the alarm, - if necessary, the driver stops the train inside an authorized area (outside non stop area, e.g. tunnel). 19. In L0, UN mode is allowed following specific operational procedures. 20. Each project shall follow maintenance procedures provided in the SSB-AV B3 Maintenance Manual (SSB-AV-B3-SBB-MR-20A) 21. Railway Undertaking is responsible to train drivers & maintenance personnel by means of UM and MM provided by Alstom 22. Alstom has implemented an optimization in the computation of the emergency braking distances for Swiss L1LS lines, as

Proof of adequate protection against unauthorised access to be provided on the LZB-cubicle. Remark: since the position and the installation of Siemens cabinet is unchanged with reference to the previous authorized BL2, the scope of responsibility of SBB is limited exclusively to keep the LZB rack Locked and to manage the keys for the cubicle access 27. UNISIG SUBSET-026 Requirement (Refer to References Guides Column for more details) – ERTMS Specific Application Project to confirm the compliance with such requirement. The driver has the possibility to modify the value of the maximum SR speed and of the given distance through the DMI menu. It is then the responsibility of the ERTMS Application Projects to define by procedure the safe values to be entered by the driver. 28. The ERTMS/ETCS Application Project shall ensure that the following behaviors related to Non Stopping Areas (NSA) makes no impact on the safety: - if stopping or slowing in the non-stopping area is considered as a hazard by projects and assuming wrong informations displayed on DMI (see GATC_CRL_RAM_0156) or use of odometric variables in some contexts (see GATC_CRL_RAM_0073) can lead the train to stop in a non-stopping area, projects have the responsibility to consider the following recommendations to cover the hazard: operational procedure to forbid the driver to slows down or stops in a non stopping area, operational procedure to ensure the train leaves as soon as possible the non stopping area if possible after a stop whatever the reason, avoiding trackside design choices that can give chances of triggering service or emergency brakes (end of authority inside or in the vicinity of the end of the non-stopping area, static speed profiles announced too late), other operational procedures appropriate for covering the hazard; - for Non Stopping Areas (NSA), the Passenger Emergency Brake Inhibition remains applied after a train relocation or reverse movement which leads to consider the train outside of the Track Condition Section (Alstom Specific). 29. Before the beginning of the daily mission the driver shall perform the SER test or the continuity test from each cabin to verify the correct behavior of B046 valve. Then he shall apply the emergency brake through the pushbutton in the leading cab in order to verify the electric continuity of the loop that commands the B046 valves and check the result on the TCMS monitor. 30. The Maintainer shall correctly follow the procedure reported into the SBB ETR610 B3 Maintenance Manual (SSB-AV-B3-SBBMR-20A). 31. To guarantee that the reset of NOVRAM does not compromise the safety of the system by having more permissive values than the expected ones: 1) the body responsible of maintenance activities shall ensure that when leaving these locations, the EVC must receive applicable Customer specific data regarding National Values and Dynamic Retro compatibility either by Balise Groups at exit locations or through RBC; 2) in case of movement of the train with EVC

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Transitions at boundary between Switzerland and Italy will be allowed only once related ESC checks will be completed (e.g.: ESC-IT-07-RFI-2.0_L1-Cs_ISDO_01).

2. Gli axle-counters delle linee italiane sulle quali circolerà il veicolo, devono essere conformi alla specifica RFI DTCDNSSSTB SR IS 11 005 C.

3. Nel caso in cui il macchinista, durante la data entry SCMT, debba rettificare l'orario impostato a causa di un disallineamento tra quello visualizzato e l'orario effettivo, il disallineamento deve essere annotato sul libro di bordo e l'Impresa Ferroviaria deve essere informata che sussiste un disallineamento tra l'orario visualizzato dal RCEC e quello di riferimento visualizzato da SCMT.

1435mm / DC 3kV / RSDD/SCMT

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- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

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ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety. 7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid: - GSM-R network overload; - SoM delay when entering/exiting SL(sleeping). 8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system. 9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal." 10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026 11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured) 12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km 13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h. 14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice). 15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919 16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area. 17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-System by authorised persons the Operator shall put in place "training procedures" for the Drivers and the Maintenance Operator; their knowledge shall be regularly re-evaluated by means of examinations 18. Procedure shall define driver reactions to manage the Passenger Alarm according to the train location (including in case of any Passenger Alarm status displayed): - warn the railway controller to confirm the alarm, - if necessary, the driver stops the train inside an authorized area (outside non stop area, e.g. tunnel). 19. In L0, UN mode is allowed following specific operational procedures. 20. Each project shall follow maintenance procedures provided in the SSB-AV B3 Maintenance Manual (SSB-AV-B3-SBB-MR-20A) 21. Railway Undertaking is responsible to train drivers & maintenance personnel by means of UM and MM provided by Alstom 22. Alstom has implemented an optimization in the computation of the emergency braking distances for Swiss L1LS lines, as

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3.1.3.1.1 Date of the original authorisation: 2021-12-02

3.1.3.4.2 Date of the last modification: 2022-01-21

3.1.3.4.3 Authorisation holder:

3.1.3.4.3.1 Authorisation holder identification data:

3.1.3.4.3.1.1 Name of organisation: ALSTOM FERROVIARIA S.P.A.

3.1.3.4.3.1.2 Registered business number: 02791070044

3.1.3.4.3.1.3 Organisation code:

3.1.3.4.3.2 Authorisation holder contact data:

3.1.3.4.3.2.1 Address of organisation, street and number: VIA OTTAVIO MORENO 23

3.1.3.4.3.2.2 Town: SAVIGLIANO

3.1.3.4.3.2.3 Country code: ITALY

3.1.3.4.3.2.4 Post code: 12038

3.1.3.4.3.2.5 E-mail address: alstomferroviaria.pec@actaliscertymail.it

3.1.3.4.4 Authorisation document reference: EU8020210225

3.1.3.4.5 Certificate of verification : Reference of type examination or design examination type:

0474/2/SH1/2021/CCO/EN/P0014438_A/V01
Issued 28/10/2021

0474/2/SH1/2021/RST/ITEN/P0014438-TS11/V02
Issued 28/10/2021

3.1.3.4.6 Parameters for which conformity to applicable national rules has been assessed:

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II) / AT

0.0 None

1435mm / AC 15kV-16.7Hz / PZB 90 / AT

0.0 None

1435mm / AC 15kV-16.7Hz / Regulation 2016/919
Set_2 / AT

0.0 None

1435mm / AC 15kV-16.7Hz / RSDD/SCMT / AT

0.0 None

1435mm / AC 25kV-50Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72
CE I and LZB L72 CE II) / AT

0.0 None

1435mm / AC 25kV-50Hz / PZB 90 / AT

0.0 None

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2 / AT

0.0 None

1435mm / AC 25kV-50Hz / RSDD/SCMT / AT

0.0 None

1435mm / DC 1.5kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / AT

0.0 None

1435mm / DC 1.5kV / PZB 90 / AT

0.0 None

1435mm / DC 1.5kV / Regulation 2016/919 Set_2 /
AT

0.0 None

1435mm / DC 1.5kV / RSDD/SCMT / AT

0.0 None

1435mm / DC 3kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / AT

0.0 None

1435mm / DC 3kV / PZB 90 / AT

0.0 None

1435mm / DC 3kV / Regulation 2016/919 Set_2 /
AT

0.0 None

1435mm / DC 3kV / RSDD/SCMT / AT

0.0 None

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II) / DE

0.0 None

1435mm / AC 15kV-16.7Hz / PZB 90 / DE

0.0 None

1435mm / AC 15kV-16.7Hz / Regulation 2016/919
Set_2 / DE

0.0 None

1435mm / AC 15kV-16.7Hz / RSDD/SCMT / DE

0.0 None

1435mm / AC 25kV-50Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72
CE I and LZB L72 CE II) / DE

0.0 None

1435mm / AC 25kV-50Hz / PZB 90 / DE

0.0 None

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2 / DE

0.0 None

1435mm / AC 25kV-50Hz / RSDD/SCMT / DE

0.0 None

1435mm / DC 1.5kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / DE

0.0 None

1435mm / DC 1.5kV / PZB 90 / DE

0.0 None

1435mm / DC 1.5kV / Regulation 2016/919 Set_2 /
DE

0.0 None

1435mm / DC 1.5kV / RSDD/SCMT / DE

0.0 None

1435mm / DC 3kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / DE

0.0 None

1435mm / DC 3kV / PZB 90 / DE

0.0 None

1435mm / DC 3kV / Regulation 2016/919 Set_2 /
DE

0.0 None

1435mm / DC 3kV / RSDD/SCMT / DE

0.0 None

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II) / IT

0.0 None

1435mm / AC 15kV-16.7Hz / PZB 90 / IT

0.0 None

1435mm / AC 15kV-16.7Hz / Regulation 2016/919
Set_2 / IT

0.0 None

1435mm / AC 15kV-16.7Hz / RSDD/SCMT / IT

0.0 None

1435mm / AC 25kV-50Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72
CE I and LZB L72 CE II) / IT

0.0 None

1435mm / AC 25kV-50Hz / PZB 90 / IT

0.0 None

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2 / IT

0.0 None

1435mm / AC 25kV-50Hz / RSDD/SCMT / IT

0.0 None

1435mm / DC 1.5kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / IT

0.0 None

1435mm / DC 1.5kV / PZB 90 / IT

0.0 None

1435mm / DC 1.5kV / Regulation 2016/919 Set_2 /
IT

0.0 None

1435mm / DC 1.5kV / RSDD/SCMT / IT

0.0 None

1435mm / DC 3kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / IT

0.0 None

1435mm / DC 3kV / PZB 90 / IT

0.0 None

1435mm / DC 3kV / Regulation 2016/919 Set_2 /
IT

0.0 None

1435mm / DC 3kV / RSDD/SCMT / IT

0.0 None

3.1.3.4.7 Comments:

3.1.3.4.8 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013:

SBB-1000-T200-SAV-0060, signed 26.11.2021

3.1.3.1 Initial Registration

3.1.2.3 Coded conditions for use and other restrictions:

1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 160

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 2

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1/GC

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.1 ETCS

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.4 ERTMS on board: 2.4.3 GSM-R for ETCS

2.5 B System on board

2.5.1 Class B signalling system: 2.5.117
RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 250

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 2

2 Geographical restriction

- 2.1 Kinematic gauge (coding WAG TSI): G1/GC
- 2.2 Wheelset gauge: 2.2.4 Gauge 1435
- 2.4 ERTMS on board: 2.4.1 ETCS
- 2.4 ERTMS on board: 2.4.2 GSM-R voice
- 2.4 ERTMS on board: 2.4.3 GSM-R for ETCS
- 2.5 B System on board
- 2.5.1 Class B signalling system: 2.5.117 RSDD/SCMT
- 2.5.1 Class B signalling system: 2.5.152 GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)
- 2.5.1 Class B signalling system: 2.5.154 LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)
- 2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

- 3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

- 5.1 Recording device: 5.1.03 TELOC

1435mm / AC 15kV-16.7Hz / PZB 90

1 Technical restriction related to construction

- 1.1 Minimum curve radius in meters: 100
- 1.3 Speed restrictions in Km/h: 160
- 1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 2

2 Geographical restriction

- 2.1 Kinematic gauge (coding WAG TSI): G1/GC
- 2.2 Wheelset gauge: 2.2.4 Gauge 1435
- 2.4 ERTMS on board: 2.4.1 ETCS
- 2.4 ERTMS on board: 2.4.2 GSM-R voice
- 2.4 ERTMS on board: 2.4.3 GSM-R for ETCS
- 2.5 B System on board
- 2.5.1 Class B signalling system: 2.5.117 RSDD/SCMT
- 2.5.1 Class B signalling system: 2.5.152 GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)
- 2.5.1 Class B signalling system: 2.5.154 LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)
- 2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

- 3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

**1435mm / AC 25kV-50Hz / Regulation
2016/919 Set_2**

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 250

1.4 Use in multiple operation (maximum number of trainsets authorised to be coupled together to operate as a single train): 2

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1/GC

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.1 ETCS

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.4 ERTMS on board: 2.4.3 GSM-R for ETCS

2.5 B System on board

2.5.1 Class B signalling system: 2.5.117
RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB
L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

1435mm / DC 1.5kV / RSDD/SCMT

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 160

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1/GC

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.1 ETCS

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.4 ERTMS on board: 2.4.3 GSM-R for ETCS

2.5 B System on board

2.5.1 Class B signalling system: 2.5.117
RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB
L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

1435mm / DC 3kV / RSDD/SCMT

1 Technical restriction related to construction

1.1 Minimum curve radius in meters: 100

1.3 Speed restrictions in Km/h: 160

2 Geographical restriction

2.1 Kinematic gauge (coding WAG TSI): G1/GC

2.2 Wheelset gauge: 2.2.4 Gauge 1435

2.4 ERTMS on board: 2.4.1 ETCS

2.4 ERTMS on board: 2.4.2 GSM-R voice

2.4 ERTMS on board: 2.4.3 GSM-R for ETCS

2.5 B System on board

2.5.1 Class B signalling system: 2.5.117
RSDD/SCMT

2.5.1 Class B signalling system: 2.5.152 GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

2.5.1 Class B signalling system: 2.5.154 LZB (LZB
L72, LZB L72 CE I and LZB L72 CE II)

2.5.1 Class B signalling system: 2.5.156 PZB 90

3 Environmental restrictions

3.1 Climatic zone: 3.1.3 T3

5 On-board equipment

5.1 Recording device: 5.1.03 TELOC

3.1.2.4 Non-coded conditions for use and other
restrictions:

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge)

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:
 - Radio Infill
 - G (Subset-100) and K (Subset-101) interfaces
 - Train Integrity on-board function for ERTMS level.
3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.
4. The following Subset 026 functions have not been validated in generic application:
 - Passive shunting;
 - Non Leading.
5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated. ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety.
7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid:
 - GSM-R network overload;
 - SoM delay when entering/exiting SL(sleeping).
8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system.
9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal."
10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026
11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured)
12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km
13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.
14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice).
15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919
16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area.
17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II)

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated. ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety.

7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid:

- GSM-R network overload;
- SoM delay when entering/exiting SL(sleeping).

8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system.

9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal."

10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026

11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured)

12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km

13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice).

15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919

16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area.

17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-

1435mm / AC 15kV-16.7Hz / PZB 90

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated. ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety.

7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid:

- GSM-R network overload;
- SoM delay when entering/exiting SL(sleeping).

8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system.

9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal."

10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026

11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured)

12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km

13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice).

15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919

16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area.

17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated.

ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety. 7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid: - GSM-R network overload; - SoM delay when entering/exiting SL(sleeping). 8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system. 9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal." 10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026 11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured) 12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km 13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h. 14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice). 15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919 16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area. 17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-System by authorised persons the Operator shall put in place "training procedures" for the Drivers and the Maintenance Operator; their knowledge shall be regularly re-evaluated by means of examinations 18. Procedure shall define driver reactions to manage the Passenger Alarm according to the train location (including in case of any Passenger Alarm status displayed): - warn the railway controller to confirm the alarm, - if necessary, the driver stops the train inside an authorized area (outside non stop area, e.g. tunnel). 19. In L0, UN mode is allowed following specific operational procedures. 20. Each project shall follow maintenance procedures provided in the SSB-AV B3 Maintenance Manual (SSB-AV-B3-SBB-MR-20A) 21. Railway Undertaking is responsible to train drivers & maintenance personnel by means of UM and MM provided by Alstom 22. Alstom has implemented an optimization in the computation of the emergency braking distances for Swiss L1LS lines, as

Proof of adequate protection against unauthorised access to be provided on the LZB-cubicle. Remark: since the position and the installation of Siemens cabinet is unchanged with reference to the previous authorized BL2, the scope of responsibility of SBB is limited exclusively to keep the LZB rack Locked and to manage the keys for the cubicle access 27. UNISIG SUBSET-026 Requirement (Refer to References Guides Column for more details) – ERTMS Specific Application Project to confirm the compliance with such requirement. The driver has the possibility to modify the value of the maximum SR speed and of the given distance through the DMI menu. It is then the responsibility of the ERTMS Application Projects to define by procedure the safe values to be entered by the driver. 28. The ERTMS/ETCS Application Project shall ensure that the following behaviors related to Non Stopping Areas (NSA) makes no impact on the safety: - if stopping or slowing in the non-stopping area is considered as a hazard by projects and assuming wrong informations displayed on DMI (see GATC_CRL_RAM_0156) or use of odometric variables in some contexts (see GATC_CRL_RAM_0073) can lead the train to stop in a non-stopping area, projects have the responsibility to consider the following recommendations to cover the hazard: operational procedure to forbid the driver to slows down or stops in a non stopping area, operational procedure to ensure the train leaves as soon as possible the non stopping area if possible after a stop whatever the reason, avoiding trackside design choices that can give chances of triggering service or emergency brakes (end of authority inside or in the vicinity of the end of the non-stopping area, static speed profiles announced too late), other operational procedures appropriate for covering the hazard; - for Non Stopping Areas (NSA), the Passenger Emergency Brake Inhibition remains applied after a train relocation or reverse movement which leads to consider the train outside of the Track Condition Section (Alstom Specific). 29. Before the beginning of the daily mission the driver shall perform the SER test or the continuity test from each cabin to verify the correct behavior of B046 valve. Then he shall apply the emergency brake through the pushbutton in the leading cab in order to verify the electric continuity of the loop that commands the B046 valves and check the result on the TCMS monitor. 30. The Maintainer shall correctly follow the procedure reported into the SBB ETR610 B3 Maintenance Manual (SSB-AV-B3-SBBMR-20A). 31. To guarantee that the reset of NOVRAM does not compromise the safety of the system by having more permissive values than the expected ones: 1) the body responsible of maintenance activities shall ensure that when leaving these locations, the EVC must receive applicable Customer specific data regarding National Values and Dynamic Retro compatibility either by Balise Groups at exit locations or through RBC; 2) in case of movement of the train with EVC

Compatibility with Area of Use Italy (national network managed by RFI Infrastructure Manager) has been proven for:

- Conventional lines equipped with national class B subsystem SCMT
- ESC-IT-04-RFI-1.0_L2_AVp_TOMI_01 (Line Torino – Milano)
- ESC-IT-05-RFI-1.0_L2_AVp_TRBR_01 (Line Treviglio-Brescia)

Transitions at boundary between Switzerland and Italy will be allowed only once related ESC checks will be completed (e.g.: ESC-IT-07-RFI-2.0_L1-Cs_ISDO_01).

2. Gli axle-counters delle linee italiane sulle quali circolerà il veicolo, devono essere conformi alla specifica RFI DTCDNSSSTB SR IS 11 005 C.

3. Nel caso in cui il macchinista, durante la data entry SCMT, debba rettificare l'orario impostato a causa di un disallineamento tra quello visualizzato e l'orario effettivo, il disallineamento deve essere annotato sul libro di bordo e l'Impresa Ferroviaria deve essere informata che sussiste un disallineamento tra l'orario visualizzato dal RCEC e quello di riferimento visualizzato da SCMT.

1435mm / DC 3kV / RSDD/SCMT

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT.

If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated

ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety. 7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid: - GSM-R network overload; - SoM delay when entering/exiting SL(sleeping). 8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system. 9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal." 10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026 11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured) 12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km 13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h. 14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice). 15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919 16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area. 17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-System by authorised persons the Operator shall put in place "training procedures" for the Drivers and the Maintenance Operator; their knowledge shall be regularly re-evaluated by means of examinations 18. Procedure shall define driver reactions to manage the Passenger Alarm according to the train location (including in case of any Passenger Alarm status displayed): - warn the railway controller to confirm the alarm, - if necessary, the driver stops the train inside an authorized area (outside non stop area, e.g. tunnel). 19. In L0, UN mode is allowed following specific operational procedures. 20. Each project shall follow maintenance procedures provided in the SSB-AV B3 Maintenance Manual (SSB-AV-B3-SBB-MR-20A) 21. Railway Undertaking is responsible to train drivers & maintenance personnel by means of UM and MM provided by Alstom 22. Alstom has implemented an optimization in the computation of the emergency braking distances for Swiss L1LS lines, as

Proof of adequate protection against unauthorised access to be provided on the LZB-cubicle. Remark: since the position and the installation of Siemens cabinet is unchanged with reference to the previous authorized BL2, the scope of responsibility of SBB is limited exclusively to keep the LZB rack Locked and to manage the keys for the cubicle access 27. UNISIG SUBSET-026 Requirement (Refer to References Guides Column for more details) – ERTMS Specific Application Project to confirm the compliance with such requirement. The driver has the possibility to modify the value of the maximum SR speed and of the given distance through the DMI menu. It is then the responsibility of the ERTMS Application Projects to define by procedure the safe values to be entered by the driver. 28. The ERTMS/ETCS Application Project shall ensure that the following behaviors related to Non Stopping Areas (NSA) makes no impact on the safety: - if stopping or slowing in the non-stopping area is considered as a hazard by projects and assuming wrong informations displayed on DMI (see GATC_CRL_RAM_0156) or use of odometric variables in some contexts (see GATC_CRL_RAM_0073) can lead the train to stop in a non-stopping area, projects have the responsibility to consider the following recommendations to cover the hazard: operational procedure to forbid the driver to slows down or stops in a non stopping area, operational procedure to ensure the train leaves as soon as possible the non stopping area if possible after a stop whatever the reason, avoiding trackside design choices that can give chances of triggering service or emergency brakes (end of authority inside or in the vicinity of the end of the non-stopping area, static speed profiles announced too late), other operational procedures appropriate for covering the hazard; - for Non Stopping Areas (NSA), the Passenger Emergency Brake Inhibition remains applied after a train relocation or reverse movement which leads to consider the train outside of the Track Condition Section (Alstom Specific). 29. Before the beginning of the daily mission the driver shall perform the SER test or the continuity test from each cabin to verify the correct behavior of B046 valve. Then he shall apply the emergency brake through the pushbutton in the leading cab in order to verify the electric continuity of the loop that commands the B046 valves and check the result on the TCMS monitor. 30. The Maintainer shall correctly follow the procedure reported into the SBB ETR610 B3 Maintenance Manual (SSB-AV-B3-SBBMR-20A). 31. To guarantee that the reset of NOVRAM does not compromise the safety of the system by having more permissive values than the expected ones: 1) the body responsible of maintenance activities shall ensure that when leaving these locations, the EVC must receive applicable Customer specific data regarding National Values and Dynamic Retro compatibility either by Balise Groups at exit locations or through RBC; 2) in case of movement of the train with EVC

Compatibility with Area of Use Italy (national network managed by RFI Infrastructure Manager) has been proven for:

- Conventional lines equipped with national class B subsystem SCMT
- ESC-IT-04-RFI-1.0_L2_AVp_TOMI_01 (Line Torino – Milano)
- ESC-IT-05-RFI-1.0_L2_AVp_TRBR_01 (Line Treviglio-Brescia)

Transitions at boundary between Switzerland and Italy will be allowed only once related ESC checks will be completed (e.g.: ESC-IT-07-RFI-2.0_L1-Cs_ISDO_01).

2. Gli axle-counters delle linee italiane sulle quali circolerà il veicolo, devono essere conformi alla specifica RFI DTCDNSSSTB SR IS 11 005 C.

3. Nel caso in cui il macchinista, durante la data entry SCMT, debba rettificare l'orario impostato a causa di un disallineamento tra quello visualizzato e l'orario effettivo, il disallineamento deve essere annotato sul libro di bordo e l'Impresa Ferroviaria deve essere informata che sussiste un disallineamento tra l'orario visualizzato dal RCEC e quello di riferimento visualizzato da SCMT.

1435mm / DC 1.5kV / RSDD/SCMT

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT.

If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:

- Radio Infill
- G (Subset-100) and K (Subset-101) interfaces
- Train Integrity on-board function for ERTMS level.

3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.

4. The following Subset 026 functions have not been validated in generic application:

- Passive shunting;
- Non Leading.

5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated.

ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety. 7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid: - GSM-R network overload; - SoM delay when entering/exiting SL(sleeping). 8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system. 9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal." 10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026 11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured) 12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km 13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h. 14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice). 15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919 16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area. 17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-System by authorised persons the Operator shall put in place "training procedures" for the Drivers and the Maintenance Operator; their knowledge shall be regularly re-evaluated by means of examinations 18. Procedure shall define driver reactions to manage the Passenger Alarm according to the train location (including in case of any Passenger Alarm status displayed): - warn the railway controller to confirm the alarm, - if necessary, the driver stops the train inside an authorized area (outside non stop area, e.g. tunnel). 19. In L0, UN mode is allowed following specific operational procedures. 20. Each project shall follow maintenance procedures provided in the SSB-AV B3 Maintenance Manual (SSB-AV-B3-SBB-MR-20A) 21. Railway Undertaking is responsible to train drivers & maintenance personnel by means of UM and MM provided by Alstom 22. Alstom has implemented an optimization in the computation of the emergency braking distances for Swiss L1LS lines, as

Proof of adequate protection against unauthorised access to be provided on the LZB-cubicle. Remark: since the position and the installation of Siemens cabinet is unchanged with reference to the previous authorized BL2, the scope of responsibility of SBB is limited exclusively to keep the LZB rack Locked and to manage the keys for the cubicle access 27. UNISIG SUBSET-026 Requirement (Refer to References Guides Column for more details) – ERTMS Specific Application Project to confirm the compliance with such requirement. The driver has the possibility to modify the value of the maximum SR speed and of the given distance through the DMI menu. It is then the responsibility of the ERTMS Application Projects to define by procedure the safe values to be entered by the driver. 28. The ERTMS/ETCS Application Project shall ensure that the following behaviors related to Non Stopping Areas (NSA) makes no impact on the safety: - if stopping or slowing in the non-stopping area is considered as a hazard by projects and assuming wrong informations displayed on DMI (see GATC_CRL_RAM_0156) or use of odometric variables in some contexts (see GATC_CRL_RAM_0073) can lead the train to stop in a non-stopping area, projects have the responsibility to consider the following recommendations to cover the hazard: operational procedure to forbid the driver to slows down or stops in a non stopping area, operational procedure to ensure the train leaves as soon as possible the non stopping area if possible after a stop whatever the reason, avoiding trackside design choices that can give chances of triggering service or emergency brakes (end of authority inside or in the vicinity of the end of the non-stopping area, static speed profiles announced too late), other operational procedures appropriate for covering the hazard; - for Non Stopping Areas (NSA), the Passenger Emergency Brake Inhibition remains applied after a train relocation or reverse movement which leads to consider the train outside of the Track Condition Section (Alstom Specific). 29. Before the beginning of the daily mission the driver shall perform the SER test or the continuity test from each cabin to verify the correct behavior of B046 valve. Then he shall apply the emergency brake through the pushbutton in the leading cab in order to verify the electric continuity of the loop that commands the B046 valves and check the result on the TCMS monitor. 30. The Maintainer shall correctly follow the procedure reported into the SBB ETR610 B3 Maintenance Manual (SSB-AV-B3-SBBMR-20A). 31. To guarantee that the reset of NOVRAM does not compromise the safety of the system by having more permissive values than the expected ones: 1) the body responsible of maintenance activities shall ensure that when leaving these locations, the EVC must receive applicable Customer specific data regarding National Values and Dynamic Retro compatibility either by Balise Groups at exit locations or through RBC; 2) in case of movement of the train with EVC

Compatibility with Area of Use Italy (national network managed by RFI Infrastructure Manager) has been proven for: • Conventional lines equipped with national class B subsystem SCMT • ESC-IT-04-RFI-1.0_L2_AVp_TOMI_01 (Line Torino – Milano) • ESC-IT-05-RFI-1.0_L2_AVp_TRBR_01 (Line Treviglio-Brescia) Transitions at boundary between Switzerland and Italy will be allowed only once related ESC checks will be completed (e.g.: ESC-IT-07-RFI-2.0_L1-Cs_ISDO_01). 2. Gli axle-counters delle linee italiane sulle quali circolerà il veicolo, devono essere conformi alla specifica RFI DTCDNSSSTB SR IS 11 005 C. 3. Nel caso in cui il macchinista, durante la data entry SCMT, debba rettificare l’orario impostato a causa di un disallineamento tra quello visualizzato e l’orario effettivo, il disallineamento deve essere annotato sul libro di bordo e l’Impresa Ferroviaria deve essere informata che sussiste un disallineamento tra l’orario visualizzato dal RCEC e quello di riferimento visualizzato da SCMT.

3.1.3.1.1 Date of the original authorisation: 2021-12-02

3.1.3.1.2 Authorisation holder:

3.1.3.1.2.1 Authorisation holder identification data:

3.1.3.1.2.1.1 Name of organisation: ALSTOM FERROVIARIA S.P.A.

3.1.3.1.2.1.2 Registered business number: 02791070044

3.1.3.1.2.1.3 Organisation code:

3.1.3.1.2.2 Authorisation holder contact data:

3.1.3.1.2.2.1 Address of organisation, street and number: VIA OTTAVIO MORENO 23

3.1.3.1.2.2.2 Town: SAVIGLIANO

3.1.3.1.2.2.3 Country code: ITALY

3.1.3.1.2.2.4 Post code: 12038

3.1.3.1.2.2.5 E-mail address: alstomferroviaria.pec@actaliscertymail.it

3.1.3.1.3 Authorisation document reference: EU8020210225, EU8120212031

3.1.3.1.4 Certificate of verification : Reference of type examination or design examination type:

0474/2/SH1/2021/CCO/EN/P0014438_A/V01
Issued 28/10/2021

0474/2/SH1/2021/RST/ITEN/P0014438-TS11/V02
Issued 28/10/2021

3.1.3.1.5 Parameters for which conformity to applicable national rules has been assessed:

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II) / AT

0.0 None

1435mm / AC 15kV-16.7Hz / PZB 90 / AT

0.0 None

1435mm / AC 15kV-16.7Hz / Regulation 2016/919
Set_2 / AT

0.0 None

1435mm / AC 15kV-16.7Hz / RSDD/SCMT / AT

0.0 None

1435mm / AC 25kV-50Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72
CE I and LZB L72 CE II) / AT

0.0 None

1435mm / AC 25kV-50Hz / PZB 90 / AT

0.0 None

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2 / AT

0.0 None

1435mm / AC 25kV-50Hz / RSDD/SCMT / AT

0.0 None

1435mm / DC 1.5kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / AT

0.0 None

1435mm / DC 1.5kV / PZB 90 / AT

0.0 None

1435mm / DC 1.5kV / Regulation 2016/919 Set_2 /
AT

0.0 None

1435mm / DC 1.5kV / RSDD/SCMT / AT

0.0 None

1435mm / DC 3kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
AT

0.0 None

1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / AT

0.0 None

1435mm / DC 3kV / PZB 90 / AT

0.0 None

1435mm / DC 3kV / Regulation 2016/919 Set_2 /
AT

0.0 None

1435mm / DC 3kV / RSDD/SCMT / AT

0.0 None

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II) / DE

0.0 None

1435mm / AC 15kV-16.7Hz / PZB 90 / DE

0.0 None

1435mm / AC 15kV-16.7Hz / Regulation 2016/919
Set_2 / DE

0.0 None

1435mm / AC 15kV-16.7Hz / RSDD/SCMT / DE

0.0 None

1435mm / AC 25kV-50Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72
CE I and LZB L72 CE II) / DE

0.0 None

1435mm / AC 25kV-50Hz / PZB 90 / DE

0.0 None

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2 / DE

0.0 None

1435mm / AC 25kV-50Hz / RSDD/SCMT / DE

0.0 None

1435mm / DC 1.5kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / DE

0.0 None

1435mm / DC 1.5kV / PZB 90 / DE

0.0 None

1435mm / DC 1.5kV / Regulation 2016/919 Set_2 /
DE

0.0 None

1435mm / DC 1.5kV / RSDD/SCMT / DE

0.0 None

1435mm / DC 3kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
DE

0.0 None

1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / DE

0.0 None

1435mm / DC 3kV / PZB 90 / DE

0.0 None

1435mm / DC 3kV / Regulation 2016/919 Set_2 /
DE

0.0 None

1435mm / DC 3kV / RSDD/SCMT / DE

0.0 None

1435mm / AC 15kV-16.7Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB
L72 CE I and LZB L72 CE II) / IT

0.0 None

1435mm / AC 15kV-16.7Hz / PZB 90 / IT

0.0 None

1435mm / AC 15kV-16.7Hz / Regulation 2016/919
Set_2 / IT

0.0 None

1435mm / AC 15kV-16.7Hz / RSDD/SCMT / IT

0.0 None

1435mm / AC 25kV-50Hz / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72
CE I and LZB L72 CE II) / IT

0.0 None

1435mm / AC 25kV-50Hz / PZB 90 / IT

0.0 None

1435mm / AC 25kV-50Hz / Regulation 2016/919
Set_2 / IT

0.0 None

1435mm / AC 25kV-50Hz / RSDD/SCMT / IT

0.0 None

1435mm / DC 1.5kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / IT

0.0 None

1435mm / DC 1.5kV / PZB 90 / IT

0.0 None

1435mm / DC 1.5kV / Regulation 2016/919 Set_2 /
IT

0.0 None

1435mm / DC 1.5kV / RSDD/SCMT / IT

0.0 None

1435mm / DC 3kV / GNT
(Geschwindigkeitsüberwachung für NeiTech-Züge) /
IT

0.0 None

1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I
and LZB L72 CE II) / IT

0.0 None

1435mm / DC 3kV / PZB 90 / IT

0.0 None

1435mm / DC 3kV / Regulation 2016/919 Set_2 /
IT

0.0 None

1435mm / DC 3kV / RSDD/SCMT / IT

0.0 None

3.1.3.1.7 Reference to the written declaration by the proposer referred to in Article 3(11) of Regulation (EU) 402/2013:

SBB-1000-T200-SAV-0060, signed 26.11.2021

3.1.3.2 Correction

3.1.3.2.2 Date of the last modification:

2021-12-09

3.1.3.2.4 Authorisation document reference:

EU8020210225

3.1.3.2.6 Parameters for which conformity to applicable national rules has been assessed:

3.1.3.3 Correction

3.1.3.3.2 Date of the last modification:

2021-12-09

3.1.2.4 Non-coded conditions for use and other restrictions:

1435mm / AC 15kV-16.7Hz / PZB 90

The Smart-RSDD of the STM SCMT is not able to cover:

- more than 2 147 km 483 m 647 mm in a ERTMS level (see atvcm00207081)
- more than 2 136 km 683 m 647 mm in level STM SCMT. If it is the case, the STM EB shall be applied permanently and the error ERR_TEST_INTERNI.ERR_SPAZIO_MAX_PERCORSO shall be displayed on the SCMT MMI.

2. The following UNISIG functions are not implemented:
 - Radio Infill
 - G (Subset-100) and K (Subset-101) interfaces
 - Train Integrity on-board function for ERTMS level.
3. GEOS (odometry): speed measure range is bounded to 0-350km/h, No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.
4. The following Subset 026 functions have not been validated in generic application:
 - Passive shunting;
 - Non Leading.
5. The dynamic transitions shall be not performed between the ETCS L-NTC associated to the STM SCMT and the STM LZB/PZB, because, in the frame of SBB ETR610 B3 project, such a transition has not been validated. ERA CR 0595: safety for braking curves Alstom choice is more conservative against safety.
7. Communication session establishment when entering/exiting SL mode Alstom solution implementation aims to avoid:
 - GSM-R network overload;
 - SoM delay when entering/exiting SL(sleeping).
8. The DMI Deuta 2x8" supports only customizable DMI for LZB/PZB according to subset 035-v3.1.0 §13.1.1.3 DMI Deuta 2x8" does not display planning area information. This is applicable to national system.
9. A balise telegram decoding error at Eurobalise protocol level is equivalent to a missed balise. In Alstom implementation, a telegram decoding error at Eurobalise protocol level (as required by Subset-036 §4.3.4) is equivalent to a missed balise, as it is not possible to discriminate if the signal comes from an Eurobalise or from a spurious signal in the same bandwidth as the Eurobalise uplink signal."
10. No text message displayed on DMI with Packet 254 on duplicated balise, as defined in subset- 026
11. Opening a cabin takes more than 3 seconds as expected by subset-041 (3,4 s were measured)
12. DMI Sense 1.3.0: DMI is not able to display the track description on the planning area if the current MA is longer than 32 km
13. ARBE- C4: speed: up to 300 km/h No impact on CCS On-board performances, the maximum speed of the train is set to 250 km/h.
14. Guidance Curve (GUI) indication for normal Service Brake CCS On-board subsystem doesn't implement the function, at data preparation level the parameter is not used (configuration choice).
15. SIM card GSM-R, CCS On-Board is intended to be used with SIM card GSM-R compliant with the requirements of TSI (EU) 2016/919
16. In case of EB due to a failure of antenna in level 0/STM, the operator is responsible to define the operational rules that the driver shall follow when the train is braked in a non stopping area.
17. With respect to the access levels defined in the safety case, and in order to prevent accidental access to the ERTMS Trainborne Sub-

1. Das fahrzeugseitige ZZS-Subsystem "SBB ETR610 BL3" für das Fahrzeug der Baureihe 2 des ETR 610 ist in Österreich für den Betrieb im ETCS Level NTC PZB oder PZB im "Stand Alone"-Modus vorgesehen. Für Österreich ist kein ETCS Level 1, Level 1LS oder Level 2 geplant oder beantragt. 2. Der Halter / das EVU hat eine Betriebs- und Instandhaltungsdokumentation vorzuhalten, die es ihm ermöglicht, unter Berücksichtigung der den Nachweisen zugrundeliegenden Belastungen, der jeweiligen Betriebsbedingungen, der Wechselwirkung zwischen Fahrzeug und Fahrweg und der konkret benutzten Infrastruktur jederzeit den sicheren Betrieb für das in der Genehmigung aufgeführte Eisenbahnfahrzeug und die Einhaltung seiner Pflichten zu gewährleisten. Durch geeignete Instandhaltungsmaßnahmen ist die Betriebssicherheit der Radsätze über die gesamte Nutzungszeit zu gewährleisten (u.a. hinsichtlich der Pressverbindung Rad/Welle). Dabei müssen unter anderem die im Instandhaltungsprogramm für die Radsätze zu definierenden zerstörungsfreien Prüfungen, die den Nachweisen zugrundeliegenden Belastungen berücksichtigen und die Identifizierung einer Materialschädigung rechtzeitig vor einem Bauteilversagen sicherstellen. 3. Die Fahrzeuge dürfen ausschließlich folgende Strecke befahren • St. Margreten – Bregenz – Staatsgrenze nahe Lindau (Strecken Nr. 304), • Buchs – Feldkirch – Bregenz (Strecken Nr. 303 und Strecke 101 von Feldkirch bis Bregenz) 4. Der Betriebszustand 5 (3 TK inaktiv) darf nicht zur Anwendung gelangen und ist geeignet zu unterbinden.

3.1.3.3.6 Parameters for which conformity to applicable national rules has been assessed:

3.1.3.4 Correction

3.1.3.4.2 Date of the last modification: 2022-01-21

3.1.3.4.6 Parameters for which conformity to applicable national rules has been assessed:

Section 4: Technical Characteristics

4.1.3 Wheel set gauge RC	1435	mm
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4.1.12 Number of vehicles composing the fixed formation (for fixed formation only)	7	
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4.13.1 Signalling

4.13.1.1 ETCS equipment on-board and the set of specifications from CCS TSI Annex A RC	Regulation 2016/919 Set_2
4.13.1.5 Class B or other train protection control and warning systems installed (system and if applicable version) RC	RSDD/SCMT (STM-SCMT 7.00) GNT (Geschwindigkeitsüberwachung für NeiTech-Züge) (ZUB-GNT V03.01_070220) LZB (LZB L72, LZB L72 CE I and LZB L72 CE II) (LZB80E 06.00.14) PZB 90 (LZB80E 06.00.14)
4.13.1.7 ETCS on-board implementation RC	SSB AV 7.0.1 (EVC V 6.9.0)
4.13.1.8 ETCS System Compatibility	ESC-IT-04-RF I-1.0_L2_AVp _TOMI_01 ESC-IT-05-RF I-1.0_L2_AVp _TRBR_01
4.13.1.9 Managing information about the completeness of the train RC	False
4.13.2 Radio	
4.13.2.1 GSM-R Radio voice on board and its Baseline RC	Decision 2006/860/EC Set 1
4.13.2.3 Class B or other radio systems installed (system and if applicable version) RC	None
4.13.2.5 Radio Voice System Compatibility	Not applicable
4.13.2.6 Voice and operational communication implementation RC	ARB 13.0.4

4.13.2.7 GSM-R Radio Data communication on board and its Baseline RC		Regulation 2016/919 Set_2				
4.13.2.8 Radio Data System Compatibility		RSC-EU-0				
4.13.2.9 Data communication application for ETCS implementation RC		ARBE-C4 BL1.0				
4.13.2.10 Voice SIM Card GSM-R Home Network		GSM-R CH (Switzerland)				
4.13.2.11 Data SIM Card GSM-R Home Network		GSM-R CH (Switzerland)				
4.13.2.12 Voice SIM Card support of Group ID 555		False				
4.10.1 Energy supply system (voltage and frequency) RC		AC 25kV-50Hz AC 15kV-16.7Hz DC 3kV DC 1.5kV				
4.10.4 Maximum current at standstill per pantograph (to be indicated for each DC systems the vehicle is equipped for)	DC 1.5kV	380		A		
	DC 3kV	190		A		
4.10.5 Height of interaction of pantograph with contact wires (over top of rail) (to be indicated for each energy supply system the vehicle is equipped for) RC	AC 15kV-16.7Hz	0004.95	m		0006.50	m
	AC 25kV-50Hz	0005.00	m		0005.75	m
	DC 1.5kV	0004.50	m		0006.20	m
	DC 3kV	0004.50	m		0006.20	m
4.10.6 Pantograph head geometry (to be indicated for each energy supply system the vehicle is equipped for) RC	AC 15kV-16.7Hz	1450 mm	CH	mm		
		1950		mm		
	AC 25kV-50Hz	1450 (sc IT)		mm		
	DC 1.5kV	1450 (sc IT)		mm		
4.10.7 Number of pantographs in contact with the overhead contact line (OCL) (to be indicated for each energy supply system the vehicle is equipped for) RC	DC 3kV	1450 (sc IT)		mm		
	AC 15kV-16.7Hz	1				
	AC 25kV-50Hz	1				
	DC 1.5kV	1				
	DC 3kV	1				

4.10.10 Material of pantograph contact strip the vehicle may be equipped with (to be indicated for each energy supply system the vehicle is equipped for) RC	AC 15kV-16.7Hz	Plain carbon
	AC 25kV-50Hz	Plain carbon
	DC 1.5kV	If permitted by RINF: impregnated carbon with cladded copper are allowed
	DC 3kV	If permitted by RINF: impregnated carbon with cladded copper are allowed
4.10.11 Automatic dropping device (ADD) fitted (to be indicated for each energy supply system the vehicle is equipped for) RC	AC 15kV-16.7Hz	True
	AC 25kV-50Hz	True
	DC 1.5kV	True
	DC 3kV	True

4.10.14 Electric units equipped with power or current limitation function RC	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	True
	1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	True
	1435mm / AC 15kV-16.7Hz / PZB 90	True
	1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	True
	1435mm / AC 15kV-16.7Hz / RSDD/SCMT	False
	1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	False
	1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	False
	1435mm / AC 25kV-50Hz / PZB 90	False
	1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	True
	1435mm / AC 25kV-50Hz / RSDD/SCMT	False
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	False
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	False
	1435mm / DC 1.5kV / PZB 90	False
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	False
	1435mm / DC 1.5kV / RSDD/SCMT	True
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	False
1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	False	
1435mm / DC 3kV / PZB 90	False	
1435mm / DC 3kV / Regulation 2016/919 Set_2	False	
1435mm / DC 3kV / RSDD/SCMT	True	

4.10.15 Mean contact force RC	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0	N
	1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	N
	1435mm / AC 15kV-16.7Hz / PZB 90	0	N
	1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	0	N
	1435mm / AC 15kV-16.7Hz / RSDD/SCMT	0	N
	1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0	N
	1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	N
	1435mm / AC 25kV-50Hz / PZB 90	0	N
	1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	88	N
	1435mm / AC 25kV-50Hz / RSDD/SCMT	88	N
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0	N
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	N
	1435mm / DC 1.5kV / PZB 90	0	N
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	0	N
	1435mm / DC 1.5kV / RSDD/SCMT	103	N
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0	N
	1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	N
	1435mm / DC 3kV / PZB 90	0	N
	1435mm / DC 3kV / Regulation 2016/919 Set_2	103	N

4.1.2 Speed

4.1.2.1 Maximum design speed	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	160	km/h
	1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	250	km/h
	1435mm / AC 15kV-16.7Hz / PZB 90	160	km/h
	1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	250	km/h
	1435mm / AC 15kV-16.7Hz / RSDD/SCMT	250	km/h
	1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0	km/h
	1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	km/h
	1435mm / AC 25kV-50Hz / PZB 90	0	km/h
	1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	250	km/h
	1435mm / AC 25kV-50Hz / RSDD/SCMT	250	km/h
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0	km/h
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	km/h
	1435mm / DC 1.5kV / PZB 90	0	km/h
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	0	km/h
	1435mm / DC 1.5kV / RSDD/SCMT	250	km/h
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0	km/h
1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	km/h	
1435mm / DC 3kV / PZB 90	0	km/h	
1435mm / DC 3kV / Regulation 2016/919 Set_2	250	km/h	

4.1.5 Maximum number of trainsets or locomotives coupled together in multiple operation.	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	2
	1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	2
	1435mm / AC 15kV-16.7Hz / PZB 90	2
	1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	2
	1435mm / AC 15kV-16.7Hz / RSDD/SCMT	2
	1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0
	1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0
	1435mm / AC 25kV-50Hz / PZB 90	0
	1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	2
	1435mm / AC 25kV-50Hz / RSDD/SCMT	2
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0
	1435mm / DC 1.5kV / PZB 90	0
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	2
	1435mm / DC 1.5kV / RSDD/SCMT	2
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0
1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0	
1435mm / DC 3kV / PZB 90	0	
1435mm / DC 3kV / Regulation 2016/919 Set_2	2	

4.2.1 Reference profile RC	G1 GC
4.3.1 Temperature range	T3 (-25 to +45)
4.3.3 Snow, ice and hail conditions	Nominal
4.4.1 Fire safety category RC	B

4.5.2 Design mass

4.5.2.1 Design mass in working order	417862	kg
4.5.2.2 Design mass under normal payload	450138	kg
4.5.2.3 Design mass under exceptional payload RC	464661	kg

4.5.3 Static axle load

4.5.3.1 Static axle load in working order	16000	kg
4.5.3.2 Static axle load under normal payload	16800	kg
4.5.3.3 Static axle load under exceptional payload RC	17400	kg

4.5.3.4 Position of the axles along the unit (axle spacing) : a: Distance between axles b: Distance from end axle to the end of the nearest coupling plane c: distance between two inside axles	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 15kV-16.7Hz / PZB 90	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 15kV-16.7Hz / RSDD/SCMT	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 25kV-50Hz / PZB 90	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: AAs per EN15528 Fig.J1
	1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / AC 25kV-50Hz / RSDD/SCMT	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	a: 0002.70 m b: 0004.50 m c: 0016.30 m	Explanations: As per EN15528 Fig.J1
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	a: 0002.70 m b: 0004.50 m c: 0016.30 m	

4.5.5 Total vehicle mass (for each vehicle of the unit)	1435mm / AC 15kV- 16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	417862	kg
	1435mm / AC 15kV- 16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	417862	kg
	1435mm / AC 15kV- 16.7Hz / PZB 90	417862	kg
	1435mm / AC 15kV- 16.7Hz / Regulation 2016/919 Set_2	417862	kg
	1435mm / AC 15kV- 16.7Hz / RSDD/SCMT	417862	kg
	1435mm / AC 25kV- 50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	417862	kg
	1435mm / AC 25kV- 50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	417862	kg
	1435mm / AC 25kV- 50Hz / PZB 90	417862	kg
	1435mm / AC 25kV- 50Hz / Regulation 2016/919 Set_2	417862	kg
	1435mm / AC 25kV- 50Hz / RSDD/SCMT	417862	kg
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	417862	kg
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	417862	kg
	1435mm / DC 1.5kV / PZB 90	417862	kg
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	417862	kg
	1435mm / DC 1.5kV / RSDD/SCMT	417862	kg
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	417862	kg
	1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	417862	kg
1435mm / DC 3kV / PZB 90	417862	kg	
1435mm / DC 3kV / Regulation 2016/919 Set_2	417862	kg	

4.5.6 Mass per wheel	1435mm / AC 15kV- 16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	8043	kg
	1435mm / AC 15kV- 16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	8043	kg
	1435mm / AC 15kV- 16.7Hz / PZB 90	8043	kg
	1435mm / AC 15kV- 16.7Hz / Regulation 2016/919 Set_2	8043	kg
	1435mm / AC 15kV- 16.7Hz / RSDD/SCMT	8043	kg
	1435mm / AC 25kV- 50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	8043	kg
	1435mm / AC 25kV- 50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	8043	kg
	1435mm / AC 25kV- 50Hz / PZB 90	8043	kg
	1435mm / AC 25kV- 50Hz / Regulation 2016/919 Set_2	8043	kg
	1435mm / AC 25kV- 50Hz / RSDD/SCMT	8043	kg
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	8043	kg
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	8043	kg
	1435mm / DC 1.5kV / PZB 90	8043	kg
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	8043	kg
	1435mm / DC 1.5kV / RSDD/SCMT	8043	kg
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	8043	kg
	1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	8043	kg
	1435mm / DC 3kV / PZB 90	8043	kg
	1435mm / DC 3kV / Regulation 2016/919 Set_2	8043	kg

4.6.4 Combination of maximum speed and maximum cant deficiency for which the vehicle was assessed RC

1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0160.00	km/h	0300.00	mm
1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0250.00	km/h	0150.00	mm
1435mm / AC 15kV-16.7Hz / PZB 90	0160.00	km/h	0150.00	mm
1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	0250.00	km/h	0245.00	mm
1435mm / AC 15kV-16.7Hz / RSDD/SCMT	0250.00	km/h	0275.00	mm
1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0160.00	km/h	0300.00	mm
1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0250.00	km/h	0150.00	mm
1435mm / AC 25kV-50Hz / PZB 90	0160.00	km/h	0150.00	mm
1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	0250.00	km/h	0275.00	mm
1435mm / AC 25kV-50Hz / RSDD/SCMT	0250.00	km/h	0275.00	mm
1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0160.00	km/h	0300.00	mm
1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0250.00	km/h	0150.00	mm
1435mm / DC 1.5kV / PZB 90	0160.00	km/h	0150.00	mm
1435mm / DC 1.5kV / Regulation 2016/919 Set_2	0250.00	km/h	0150.00	mm
1435mm / DC 1.5kV / RSDD/SCMT	0250.00	km/h	0150.00	mm
1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0160.00	km/h	0275.00	mm
1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	0250.00	km/h	0150.00	mm
1435mm / DC 3kV / PZB 90	0160.00	km/h	0150.00	mm
1435mm / DC 3kV / Regulation 2016/919 Set_2	0250.00	km/h	0275.00	mm

4.6.5 Rail inclination RC	1435mm / AC 15kV- 16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	1/40
	1435mm / AC 15kV- 16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	1/40
	1435mm / AC 15kV- 16.7Hz / PZB 90	1/40
	1435mm / AC 15kV- 16.7Hz / Regulation 2016/919 Set_2	1/40
	1435mm / AC 15kV- 16.7Hz / RSDD/SCMT	1/20
	1435mm / AC 25kV- 50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	1/20
	1435mm / AC 25kV- 50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	1/20
	1435mm / AC 25kV- 50Hz / PZB 90	1/20
	1435mm / AC 25kV- 50Hz / Regulation 2016/919 Set_2	1/20
	1435mm / AC 25kV- 50Hz / RSDD/SCMT	1/20
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	1/20
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	1/20
	1435mm / DC 1.5kV / PZB 90	1/20
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	1/20
	1435mm / DC 1.5kV / RSDD/SCMT	1/20
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	1/20
	1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	1/20
	1435mm / DC 3kV / PZB 90	1/20
	1435mm / DC 3kV / Regulation 2016/919 Set_2	1/20

4.7.1 Maximum average deceleration

1.43

m/s²

4.7.2.1 Brake performance on steep gradients with normal payload

4.7.2.1.1 Reference case of TSI

Reference case of (80 km/h, 21‰ (mm/m), 46 km)

4.7.2.1.6 Maximum brake thermal energy capacity	1435mm / AC 15kV- 16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	48500000	kJ
	1435mm / AC 15kV- 16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	48500000	kJ
	1435mm / AC 15kV- 16.7Hz / PZB 90	48500000	kJ
	1435mm / AC 15kV- 16.7Hz / Regulation 2016/919 Set_2	48500000	kJ
	1435mm / AC 15kV- 16.7Hz / RSDD/SCMT	48500000	kJ
	1435mm / AC 25kV- 50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	48500000	kJ
	1435mm / AC 25kV- 50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	48500000	kJ
	1435mm / AC 25kV- 50Hz / PZB 90	48500000	kJ
	1435mm / AC 25kV- 50Hz / Regulation 2016/919 Set_2	48500000	kJ
	1435mm / AC 25kV- 50Hz / RSDD/SCMT	48500000	kJ
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	48500000	kJ
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	48500000	kJ
	1435mm / DC 1.5kV / PZB 90	48500000	kJ
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	48500000	kJ
	1435mm / DC 1.5kV / RSDD/SCMT	48500000	kJ
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	48500000	kJ
	1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	48500000	kJ
1435mm / DC 3kV / PZB 90	48500000	kJ	
1435mm / DC 3kV / Regulation 2016/919 Set_2	48500000	kJ	

4.7.3 Parking brake

4.7.3.3 Maximum gradient on which the unit is kept immobilized by the parking brake alone (if the vehicle is fitted with it)	40	‰ (mm/m)
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4.7.4.1 Eddy current brake

4.7.4.1.1 Eddy current track brake fitted RC	False
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4.7.4.2 Magnetic brake

4.7.4.2.1 Magnetic track brake fitted RC	True
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4.7.4.2.2 Possibility of preventing the use of the magnetic track brake (only if fitted with magnetic brake) RC	True
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4.7.4.3 Regenerative brake (only for vehicles with electrical traction)

4.7.4.3.1 Regenerative brake fitted RC	True
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4.7.4.3.2 Possibility of preventing the use of the regenerative brake (only if fitted with regenerative brake) RC	True
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4.7.5 Emergency brake : Stopping distance and deceleration profile for each load condition per design maximum speed	1435mm / AC 15kV- 16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	a: 0711.00	m	0001.72	m/s ²
		b: 0759.00	m	0001.59	m/s ²
		c: 0770.00	m	0001.56	m/s ²
a: Load condition: working order	1435mm / AC 15kV- 16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	a: 1776.00	m	0001.32	m/s ²
b: Load condition: normal payload		b: 1904.00	m	0001.22	m/s ²
c: Load condition: exceptional payload		c: 1936.00	m	0001.20	m/s ²
	1435mm / AC 15kV- 16.7Hz / PZB 90	a: 0711.00	m	0001.72	m/s ²
		b: 0759.00	m	0001.56	m/s ²
		c: 0770.00	m	0001.56	m/s ²
	1435mm / AC 15kV- 16.7Hz / Regulation 2016/919 Set_2	a: 1776.00	m	0001.32	m/s ²
		b: 1904.00	m	0001.22	m/s ²
		c: 1936.00	m	0001.20	m/s ²
	1435mm / AC 15kV- 16.7Hz / RSDD/SCMT	a: 1982.00	m	0001.03	m/s ²
		b: 2128.00	m	0001.09	m/s ²
		c: 2164.00	m	0001.07	m/s ²
	1435mm / AC 25kV- 50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	a: 0711.00	m	0001.72	m/s ²
		b: 0759.00	m	0001.59	m/s ²
		c: 0770.00	m	0001.56	m/s ²
	1435mm / AC 25kV- 50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	a: 1776.00	m	0001.32	m/s ²
		b: 1904.00	m	0001.22	m/s ²
		c: 1936.00	m	0001.20	m/s ²
	1435mm / AC 25kV- 50Hz / PZB 90	a: 0711.00	m	0001.72	m/s ²
		b: 0759.00	m	0001.59	m/s ²
		c: 0770.00	m	0001.56	m/s ²
	1435mm / AC 25kV- 50Hz / Regulation 2016/919 Set_2	a: 1982.00	m	0001.31	m/s ²
		b: 2128.00	m	0001.09	m/s ²
		c: 2164.00	m	0001.07	m/s ²
	1435mm / AC 25kV- 50Hz / RSDD/SCMT	a: 1982.00	m	0001.31	m/s ²
		b: 2128.00	m	0001.09	m/s ²

4.7.6 For general operation : Brake weight percentage (lambda) or Braked mass	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	211.70	(%)
	1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	255.60	(%)
	1435mm / AC 15kV-16.7Hz / PZB 90	211.70	(%)
	1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	211.70	(%)
	1435mm / AC 15kV-16.7Hz / RSDD/SCMT	210.00	(%)
	1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	192.90	(%)
	1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	210.00	(%)
	1435mm / AC 25kV-50Hz / PZB 90	192.90	(%)
	1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	210.00	(%)
	1435mm / AC 25kV-50Hz / RSDD/SCMT	210.00	(%)
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	192.90	(%)
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	210.00	(%)
	1435mm / DC 1.5kV / PZB 90	192.90	(%)
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	210.00	(%)
	1435mm / DC 1.5kV / RSDD/SCMT	210.00	(%)
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	192.90	(%)
1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	210.00	(%)	
1435mm / DC 3kV / PZB 90	192.90	(%)	
1435mm / DC 3kV / Regulation 2016/919 Set_2	210.00	(%)	

4.7.7 Service brake: At maximum service brake: Stopping distance, Maximum deceleration, for the load condition 'design mass under normal payload' at the design maximum speed.	1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0909.00	m	0001.27	m/s ²
	1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	2354.00	m	0000.95	m/s ²
	1435mm / AC 15kV-16.7Hz / PZB 90	0909.00	m	0001.27	m/s ²
	1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	2354.00	m	0000.95	m/s ²
	1435mm / AC 15kV-16.7Hz / RSDD/SCMT	2354.00	m	0000.95	m/s ²
	1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0909.00	m	0001.27	m/s ²
	1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	2354.00	m	0000.95	m/s ²
	1435mm / AC 25kV-50Hz / PZB 90	0909.00	m	0001.27	m/s ²
	1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	2354.00	m	0000.95	m/s ²
	1435mm / AC 25kV-50Hz / RSDD/SCMT	2354.00	m	0000.95	m/s ²
	1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0909.00	m	0001.27	m/s ²
	1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	2354.00	m	0000.95	m/s ²
	1435mm / DC 1.5kV / PZB 90	0909.00	m	0001.27	m/s ²
	1435mm / DC 1.5kV / Regulation 2016/919 Set_2	2354.00	m	0000.95	m/s ²
	1435mm / DC 1.5kV / RSDD/SCMT	2354.00	m	0000.95	m/s ²
	1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	0909.00	m	0001.27	m/s ²
	1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	2354.00	m	0000.95	m/s ²
	1435mm / DC 3kV / PZB 90	0909.00	m	0001.27	m/s ²
	1435mm / DC 3kV / Regulation 2016/919 Set_2	2354.00	m	0000.95	m/s ²

4.7.8 Wheel slide protection system

1435mm / AC 15kV-16.7Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	True
1435mm / AC 15kV-16.7Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	True
1435mm / AC 15kV-16.7Hz / PZB 90	True
1435mm / AC 15kV-16.7Hz / Regulation 2016/919 Set_2	True
1435mm / AC 15kV-16.7Hz / RSDD/SCMT	True
1435mm / AC 25kV-50Hz / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	True
1435mm / AC 25kV-50Hz / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	True
1435mm / AC 25kV-50Hz / PZB 90	True
1435mm / AC 25kV-50Hz / Regulation 2016/919 Set_2	True
1435mm / AC 25kV-50Hz / RSDD/SCMT	True
1435mm / DC 1.5kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	True
1435mm / DC 1.5kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	True
1435mm / DC 1.5kV / PZB 90	True
1435mm / DC 1.5kV / Regulation 2016/919 Set_2	True
1435mm / DC 1.5kV / RSDD/SCMT	True
1435mm / DC 3kV / GNT (Geschwindigkeitsüberwachung für NeiTech-Züge)	True
1435mm / DC 3kV / LZB (LZB L72, LZB L72 CE I and LZB L72 CE II)	True
1435mm / DC 3kV / PZB 90	True
1435mm / DC 3kV / Regulation 2016/919 Set_2	True
1435mm / DC 3kV / RSDD/SCMT	True

4.8.1 Vehicle length	187.4	m
4.8.2 Minimum in-service wheel diameter RC	830	mm
4.8.4 Minimum horizontal curve radius capability RC	100	m
4.8.5 Minimum vertical convex curve radius capability	500	m
4.8.6 Minimum vertical concave curve radius capability	500	m
4.9.1 Type of end coupling	Automatic Type 10 / Scharfenberg	
4.9.2 Axle bearing condition monitoring (hot axles box detection) RC	Onboard equipped (OP)	Detectable by line side
4.12.3.1 Platform heights for which the vehicle is designed. RC	550	mm
	760	mm
	250 - 350	mm
4.14.1 Type of train detection systems for which the vehicle has been designed and assessed RC	Track circuits	Axle counters
	Loops	