

Federal Office of Transport FOT Infrastructure Division

LOC&PAS NNTRs as at: June 2021

| NNTV CH-TSI LOC&PAS | Title | Version ¹ | Date ² |
|---------------------|--|----------------------|-------------------|
| CH-TSI LOC&PAS-001 | Pantograph head width | - | - |
| CH-TSI LOC&PAS-002 | Narrow switches/Test of passage through switches | 2.0 | June 2021 |
| CH-TSI LOC&PAS-003 | Tight curves r < 250 m | 2.0 | June 2021 |
| CH-TSI LOC&PAS-006 | Authorisation of rolling stock with N- series tilting system | 2.0 | June 2021 |
| CH-TSI LOC&PAS-007 | Flange lubrication | 2.0 | June 2021 |
| CH-TSI LOC&PAS-009 | Exhaust emissions from thermal vehicles | - | - |
| CH-TSI LOC&PAS-010 | Optical warning signal at front of train: 3 x red | - | - |
| CH-TSI LOC&PAS-011 | Traction limitation | 2.0 | June 2021 |
| CH-TSI LOC&PAS-012 | Admittance | - | - |
| CH-TSI LOC&PAS 013 | Pantograph/Contact line interaction | - | - |
| CH-TSI LOC&PAS-014a | Compatibility with track-free announcing devices: interference currents | 2.0 | June 2021 |
| CH-TSI LOC&PAS-014b | Compatibility with track-free announcing devices: magnetic interference fields (compatibility with axle counters) | 2.0 | June 2021 |
| CH-TSI LOC&PAS-019 | The "Non-leading input signal" | 2.1 | June 2021 |
| CH-TSI LOC&PAS-020 | The "Sleeping input signal" in multiple operation | 2.1 | June 2021 |
| CH-TSI LOC&PAS-022 | Resetting the emergency brake | 2.1 | June 2021 |
| CH-TSI LOC&PAS-025 | Inhibited operability to disconnect a ETCS on-board unit | 2.1 | June 2021 |
| CH-TSI LOC&PAS-027 | Manual radio remote control for shunting operations ('Shunting' mode) | 2.1 | June 2021 |
| CH-TSI LOC&PAS-030 | Use of braking systems without static friction | 2.0 | June 2021 |
| CH-TSI LOC&PAS-031 | Safe traction cut-off | 2.1 | June 2021 |
| CH-TSI LOC&PAS-035 | Sufficient braking performance during emergency braking | 2.1 | June 2021 |

| CH-TSI LOC&PAS-036 | Vehicles with a control panel for both directions of travel | 2.1 | June 2021 |
|--------------------|---|-----|-----------|
| CH-TSI LOC&PAS-037 | ETCS service brake | 1.0 | June 2019 |

¹ The version indication consists of two figures separated by a point: x.y; x indicates the current version; y indicates corrections and editorial changes.

 $^{\rm 2}$ The date is updated when changes are made to either x or y.

Version history

| Date | Change |
|-----------|---|
| June 2021 | General improvements, updates and clarifications made. |
| | CH-TSI LOC&PAS-004 can be repealed as it is now regulated as a specific case. |
| | CH-TSI LOC&PAS-005 can be repealed as it is now regulated as a specific case. |
| | CH-TSI LOC&PAS-014a and -14b split up thematically for reasons of form. |
| | CH-TSI LOC&PAS-017 can be repealed as it is now regulated as a specific case. |
| | CH-TSI LOC&PAS-018 can be repealed as the minimum radius refers to service installations; these specifications do not apply to track use and thus do not affect interoperability. |
| | It is the responsibility of an RU to ensure that vehicles can safely negotiate the necessary minimum radii in their service facilities. |
| | CH-TSI LOC&PAS-026 can be repealed as the prohibition of SIGNUM/ZUB on vehicles with ERTMS/ETCS Baseline 3 is now regulated in the ERA document 'List of CCS Class B systems' (ERA/TD/2011-11). |
| | CH-TSI LOC&PAS-028 can be repealed as it is now regulated as a specific case. |
| | CH-TSI LOC&PAS-029 can be repealed as the European specifications sufficiently cover derailment safety. |

| ID | CH-TS | LOC&PAS | 5-001 | State: | Switzerland | Status | Applicable | from: | June 2015 | |
|---------------------------|--|-------------------------|--|------------------------|---------------------------------|--------------|------------|-------|-------------|--|
| Title: | | Pantograp | h head width | | | | | | | |
| Office respo | e onsible: | Federal Of Approvals | ffice of Transport FOT Address: 3003 Bern and Rules Section SWITZERLA | | | | | | rn RLAND | |
| E-mai | -mail:BAV-WeiterentwicklungRegelwerke@bav.admin.ch | | | | | | | | | |
| Refer | enced T | SI article: | LOC Claus | & PAS TS ses 4.2.8. | SI (1302/2014 2.9.2 and 7.3. | /EU) 2.16 | | | | |
| Refer regula | ence in ation: | Swiss | RailO Art. 18 and IP 18 Sheet 16 N | | | | | | | |
| Curre class | nt NNTI | R : | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | |
| Full d | lescripti | on: | The pantograph head width on most lines in Switzerland is restricted to 1450 mm. On some lines, in particular border traffic lines, wider heads up to 1950 mm are possible. Details can be found in the line database or in the infrastructure manager's network statement. | | | | | | | |
| Curre norm | ent appli s in Swi | cable tzerland: | See national reference/RailO Art. 18 and IP 18 Sheet 16 N. | | | | | | | |
| Test s certif confo | specificate of ormity: | ation for | The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB R I 50127). | | | | | | | |

| ID | CH-T | SI LOC&P | AS-002 | State: | Switzerland | Version: | 2.0 | Date: | June 2021 | |
|--|-------------------------|-------------------------|---|---|---|--|--|---|-------------------------------|--|
| Title: | | Narrow sw | /itches/Te | st of pas | sage through s | witches | | | | |
| Office respon | sible: | Federal Of Approvals | ffice of Tra and Rule | ansport F s Section | ОТ | | Address: | 3003 B SWITZ | 3003 Bern SWITZERLAND | |
| E-mail: | | _BAV-We | iterentwicklungRegelwerke@bav.admin.ch | | | | | | | |
| Referer | Referenced TSI article: | | | PAS TSI (1.2.3.4.1 \$ 3.2.3.3 Sa SSION IM | 1302/2014/EU Safety against ifety against de IPLEMENTING |): derailment erailment ru G REGULA | running on tw unning on twis \TION (EU) 20 | risted track ted track 019/776 of | f 16 May 2019 | |
| | | | amendin (various | ig Commi amendm | ssion Regulati ents of referen | ons (EU ces from E |) No 1302/201 N 14363:2005 | 4: 5 to EN 14 | 363:2016) | |
| Referer regulat | nce in ion: | Swiss | RailO Ar IP-RailO Regulati | t. 47 Sec on Art. 3 on SBB F | tion 1, status a 1, Section 2.1 R I 50007, Vers | s of 1 July (standard sion 2.0 of | 2020 gauge), status 15 March 2020 | as of 1 No | ovember 2020 | |
| Current classifi | t NNTI cation | २ : | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | |
| Full des | scripti | on: | In comparison with other European countries, the line layout in some station areas in Switzerland is technically difficult to exploit due to the presence of deflection curves down to 160m (EU at least 250 m) and short intermediate sections of track with correspondingly small distance between track centres. | | | | | | | |
| | | | In addition, the switches are used at up to 40km/h (EU at most 30km/h). Loc&Pas TSI and EN 14363 do not specify any requirements for the assessment of vehicle behaviour at switches and crossings (EN 14363, Section 6.5). This regulatory gap is filled by regulation SBB R I 50007, Chapter 3. | | | | | | | |
| | | | Operationally, it cannot be ruled out that railway vehicles will run over such narrow switches; for timetabling reasons, the use of the switches at slower speeds is out of the question. | | | | | | | |
| Therefore, test runs on typical switches in Switzerland are required demonstrate compliance with the limit values for running safety This requirement goes beyond the requirements of Loc&Pas TS | | | | | | | | e required safety and Pas TSI. | in order to track loading. | |
| Current norms | t appli in Swi | cable tzerland: | EN 14363 and other norms set out in Annex 3, IP-RailO in the referenced version. | | | | | | | |
| Test sp certifica conforr | ecificate of nity: | ation for | The con sections | iformity a in the Sv | issessment is /iss regulation: | based on s reference | the requiren d above (esp. | nents and SBB R I 5 | norms in the 50007). | |

| ID | СН-Т | SI LOC&P | AS-003 | State: | Switzerland | Versior | n: | 2.0 | Date | e: | June 2021 |
|---------------------|------------------|------------------------|--|--|--|--|---|---|--|--|---|
| Title: | | Tight curve | es r < 250 |) m | | | | | | | |
| Office respon | sible: | Federal O Approvals | ffice of Tra and Rule | ansport F s Section | ОТ | | Ado | dress: | 3003 Bern SWITZERLAND | | |
| E-mail: | | _BAV-Wei | terentwicklungRegelwerke@bav.admin.ch | | | | | | | | |
| Referer | nced T | SI article: | LOC & F Clause 4 Clause 6 COMMIS amendin (various | LOC & PAS TSI (1302/2014/EU): Clause 4.2.3.4.2 Running dynamic behaviour Clause 6.2.3.4 Running dynamic behaviour – technical requirements COMMISSION IMPLEMENTING REGULATION (EU) 2019/776 of 16 May 2019 amending Commission Regulations (EU) No 1302/2014: (various amendments of references from EN 14363:2005 to EN 14363:2016) | | | | | | | |
| Referer regulat | nce in ion: | Swiss | RailO Ar IP-RailO ("special Regulation | t. 47 Sect IP 31, S case-by- on SBB R | tion 1, status a Section 2.1 (st case examina R I 51027, Vers | s of 1 Jul andard g tions") tion 2.00 | ly 2 jauç of 1 | 020 ge), status a 19 March 20 ⁻ | ns of 18 | 1 Nov | vember 2020 |
| Current classifi | t NNTI cation | R :: | | on an 'open due to differ due to addit | point' in the TSI ence between Sw tional requirement | iss regulatio s in Swiss r | on a regu | nd correspondir lation without e | ng requ quivale | uiremer ent in th | nts in the TSI ie TSI |
| Full des | scripti | on: | The Swis number of regulatio Loc&Pas railway v on lines curves o This reg conducte accordin were sur If standa with a la that this track loa If compl speeds o If it cann less than operate of speeds of availabili It is poss network the R-se If compli extended | ss rail net of tight cu on SBB R s TSI refe rehicles. V with curve f less that gulatory g ed jointly b gly goes mmarised rd gauge rge numb is possib ding laid iance car on lines w ot be sho n 250 m f at the low n the A-s e RUs in o ity of suita sible to op within the ries. | work has a rel inves of less th 1 50127. It so EN 1436 While EN 1436 es of $R \ge 250$ in 250 m is not gap was close by the FOT and beyond the rel and published railway vehicle ber of tight curvic le while completed down in the ab- mot be shown it ha large num- with a large num- with a large num- it of speeds in the eries on the li- question must able train paths berate vehicles a scope of authors of SBB R I 5012 previously excli- | atively lar an 250 m 3 for the 3 sets out m, the co defined. sed in 2 4 the Swiss equirement in regula es are to r ves of les ying with ove-ment h | rge | number of li full list of the ting of the ru e testing and oliance proce 8 following tandard gaus of Loc&Pas n SBB R I 50 on the Swiss nan 250 m, if e limit values ned regulation nicles may r curves of les operate on , but it can I the vehicles national restri- er lines of the der Loc&Pas | nes w ese lir unning asse edure funda ge rai TSI. 0127 of a netw t mus s for r on. not op ss tha lines w be sh may less th ictions e Swis s TSI i | vith a nes is g chai ssme for lin lamen lways The s Chap vork, in t be o runnir perate in 250 with ti be op han 2 s as a s sta in acc e, ope f less | large included in racteristics of nt of vehicles nes with tight ital research Switzerland specifications ter 3. ncluding lines demonstrated ng safety and e at R-series m. ight curves of that they can berated at the 250 m. In this a result of the andard gauge cordance with eration can be than 250 m. |

| | While this procedure is available in principle, it involves a great deal of effort, in part because of the need to use measuring wheelsets. |
|---|--|
| Current applicable norms in Switzerland: | EN 14363 and other norms set out in Annex 3, IP-RailO in the referenced version. |
| Test specification for certificate of conformity: | The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB R I 50127). |

| ID | СН-Т | SI LOC&P | AS-006 | State: | Switzerland | Version: | 2.0 | Date: | June 2021 |
|--------------------------------|----------------------------|------------------------|--|---|--|--|---|---|---|
| Title: | • | Authorisa | tion of rol | ling stock | with N-series | tilting sys | tem | | |
| Office respon | sible: | Federal C Approvals | office of Ti and Rule | ransport I es Sectio | FOT n | A | ddress: | 3003 E SWITZ | ern ERLAND |
| E-mail: | | _BAV-We | iterentwic | klungRe | gelwerke@ba | /.admin.ch | 1 | | |
| Referen article: | nced T | SI | LOC&PA Clause 4 Clause 6 COMMIS amendin (various | AS TSI (1 .2.3.4.2 F 5.2.3.4 Ru SSION IM g Commi amendm | 302/2014/EU) Running dynani Inning dynami IPLEMENTING Ission Regulat ents of referer | : nic behavion c behavion G REGUL ions (El ioces from l | our ur – technical r ATION (EU) 20 J) No 1302/201 EN 14363:2005 | equirement 019/776 of 14: 5 to EN 143 | :s 16 May 2019 363:2016) |
| Referen regulati | nce in S ion: | wiss | RailO Ar IP-RailO Regulatio | t. 17, stat on Art. 1 on SBB F | tus as of 1 Jul 7, Section 8 (8 I 20019, Ver | y 2020 standard g sion 2.0 of | auge), status a 1 June 2013 | s of 1 Nov | ember 2020 |
| Current classifie | NNTR | | | on an 'open due to diffe lue to additi | point' in the TSI rence between Si onal requirement | viss regulatio s in Swiss re | on and correspondi gulation without eq | ng requireme uivalent in the | nts in the TSI e TSI |
| Full des | scriptio | n: | In Switz deficience cant defi safety ar The required vehicle t EN 1436 to the N demonst series. In reason fe due to the introduci Because proof of by the R A reduct accordin timetabli Switzerla permissi reduce s Currently achieve | terland ti ciencies ind track lo uired auth ype for N 3 and EN I-series, rated in this stee or this is to this is to to polo ng the N- of the a complian U. ion in the g to TSI ng reaso and. Redu ble speed peed speed y, in Switt high cant uins'. Whe ing train s | ilting trains r e R-series. Even must be tester bading and au horisation prod l-series speed I 15686. Seco compliance v the running te p, Switzerland that, firstly, Si gy and, secor series of train associated test ce cannot be e running spe for limit value ons. There is ucing the perm d for all other N ecifications for zerland only to t deficiency ar ere necessary specifications. | un on tra very vehicl d for comp thorised for cess includes, as requi- ndly, for ea- vith the a est on eace d goes bey witzerland ndly, Switz s in the 19 ting effort carried out eds of the infringem only one nissible sp I-series very specific very rains conse e regulate other sys | acks designed e type designed obliance with the or the specific to des, firstly, gen ired by Loc&P ach vehicle type bove-mentione h individual lin yond the requi has lines with terland did not 80s. (including me t as part of a r vehicle type of ents, is not po N-series for t eed for one typ hicles. It is not ehicles in Switz structed with ar d by law and p tems can be sir | for spee ed for these e limit value rack. eric author as TSI with e that is to d limit val e determin rements in very dema retrofit the asuring wh oute comp concerned, ssible in S he standar be would al operationa erland. n active tilt permitted u milarly defir | ds and cant speeds and s for running risation of the reference to run according ues must be ed for the N- the TSI. The inding routing tracks when heelsets), this atibility check as proposed witzerland for rd network in so reduce the illy possible to ing system to nder the term hed according |
| norms i | in Swit | zerland: | reference | ed versio | n. | iei norms | sel out in Af | illex 3, IP | -rtaiio in the |
| Test sp certific confori | ecifica ate of mity: | ation for | The con sections (Rolling s | formity a in the S stock hon | ssessment is wiss regulatio nologation on | based or ns referen specific lir | n the requirem ced above (SE les)). | ents and 3B R I 200 | norms in the 19 Chapter 5 |

| ID | CH-T | SI LOC&P | AS-007 | State: | Switzerland | Version: | 2.0 | Date: | June 2021 | |
|---------------------------------|--------------------|-------------------------|--|--|----------------------------|-------------------------|------------------|--------------------------|----------------|--|
| Title: | | Flange lub | rication | | | | | | | |
| Office respon | sible: | Federal Of Approvals | ffice of T and Rul | ransport es Sectio | FOT n | | Address: | 3003 Bern SWITZERLAND | | |
| E-mail: | | _BAV-We | eiterentv | vicklungl | Regelwerke(| @bav.adm | nin.ch | | | |
| Referer | nced T | SI article: | LOC&P Flange | AS TSI (or track l | 1302/2014/EL ubrication | I), Clause [·] | 7.5.3.1 Track in | teraction (c | lause 4.2.3) – | |
| Referer regulat | nce in ion: | Swiss | RailO A R RTE | RailO Art. 47 Section 1 R RTE 49410 – 2nd edition, 23.10.2017 | | | | | | |
| Current classifi | t NNTI cation | R :: | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | |
| Full des | scripti | on: | Requirements for construction of rolling stock with flange lubrication system to protect track in tight bends. | | | | | | | |
| Current norms | t appli in Swi | cable tzerland: | RailO A superst | Art. 47 Se ructure. | ection 1 is ap | plicable, i.e | e. rolling stock | must be a | djusted to the | |
| | | | R RTE 49410 defines the specific construction and maintenance requirements for rolling stock with flange lubrication. | | | | | | | |
| Test sp certifica conform | ecificate of nity: | ation for | The conformity assessment is based on the referenced Swiss regulation R RTE 49410. | | | | | | | |

| ID | СН-Т | SI LOC&P | AS-009 | State: | Switzerland | Status | Applicable | from: | June 2015 | | |
|----------------------------------|---------------------------|-------------------------|---|--|----------------|----------|------------|-----------------|-----------------|--|--|
| Title: | | Exhaust e | missions | from the | ermal vehicles | | | | | | |
| Office respons | ible: | Federal Of Approvals | ffice of Ti and Rule | ransport es Sectio | FOT on | | Address: | 3003 E SWITZ | Bern ZERLAND | | |
| E-mail: | | _BAV-We | eiterentw | vicklung | Regelwerke@ |)bav.adr | min.ch | | | | |
| Referen | ced T | SI article: | LOC&P Clause | AS TSI (4.2.8.3 | 1302/2014/EU |) | | | | | |
| Referen regulatio | ce in S on: | Swiss | RailO A Based o | RailO Art. 4/IP-RailO IP 4 6 Limiting exhaust emission Based on Air Pollution Control Ordinance | | | | | | | |
| Current classific | NNTR ation: | | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | |
| Full des | criptio | on: | In Switzerland the requirements for the use of diesel engines (compression- ignition) are stricter than those applicable to locomotives with diesel engines in Europe. These are based on the Air Pollution Control Ordinance and thus on FOEN specifications. | | | | | | | | |
| Current norms in | applic n Swit | able zerland: | IP-RailO IP 4 6 FOT Reference to FOEN filter list for compression-ignition engines. | | | | | | | | |
| Test spe certifica conform | ecifica te of nity: | tion for | Manufacturer's proof of conformity that the engines meet the current applicable FOEN specifications. | | | | | | | | |

| ID | СН-Т | SI LOC&P | AS-010 | State: | Switzerland | Status | Applicable | from: | June 2015 | | |
|----------------------------------|---|-------------------------|--|-----------------------|-----------------|-----------|------------|--------------------|-------------|--|--|
| Title: | | Optical wa | arning s | ignal at | front of train: | 3 x red | | | | | |
| Office respons | ible: | Federal Of Approvals | ffice of T and Rul | ransport es Sectic | FOT | | Address: | 3003 Bei SWITZE | 'n RLAND | | |
| E-mail: | _BAV-WeiterentwicklungRegelwerke@bav.admin.ch | | | | | | | | | | |
| Referen | ced TS | SI article: | LOC&P | AS TSI (| 1302/2014/EU |), Clause | 4.2.7.1.2 | | | | |
| Reference regulation | ce in S on: | Swiss | Swiss Rail Service Regulations (RSR) | | | | | | | | |
| Current classific | NNTR ation: | | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | |
| Full des | criptic | on: | Vehicles must be able to display 3x red at the front. This warns the oncoming train in case of danger. Requirement goes beyond TSI specifications. | | | | | | | | |
| Current norms ir | applic 1 Swit | able zerland: | RSR R 300.2 Section 8.1.2 | | | | | | | | |
| Test spe certifica conform | ecifica te of hity: | tion for | The conformity assessment is based on the requirements in the sections in the Swiss regulation referenced above. | | | | | | | | |

| ID | CH-T | SI LOC&P | AS-011 | State: | Switzerland | Version: | 2.0 | Date: | June 2021 | | |
|----------------------------------|---------------------------|------------------------|---|---|---|---|---|-------------------------------|---|--|--|
| Title: | | Traction lin | nitation | | | | | | | | |
| Office respons | ible: | Federal O Approvals | ffice of T and Rul | ice of Transport FOT Address: 3003 Bern SWITZERLAND | | | | | | | |
| E-mail: | | _BAV-We | iterentwicklungRegelwerke@bav.admin.ch | | | | | | | | |
| Referen | ced TS | SI article: | LOC&F 6.2.2.2. EN 503 | LOC&PAS TSI (1302/2014/EU), Clauses 4.2.8.2.3 / 4.2.8.2.4 / 4.2.8.2.7/ 6.2.2.2.13 / 6.2.2.2.14 / Appendix J-2 43 EN 50388: 2012 | | | | | | | |
| Reference regulation | ce in S on: | Swiss | RailO Art. 44a IP-RailO IP Art. 44.a Section 3.2 Regulation SBB R I-50069, Version 1.0 of 15 December 2013 | | | | | | | | |
| Current classific | NNTR ation: | | | t on an 'ope due to diff due to ad | en point' in the TS erence between S ditional requireme | l wiss regulation nts in Swiss re | n and corresponding gulation without equ | requirement ivalent in the | s in the TSI TSI | | |
| Full des | criptio | on: | Freque | ncy-depe | ndent traction | limitation | | | | | |
| | | | Frequency-dependent traction limitation R I – 50069 supplements EN 50388 currently in force. Compliance exceeds EN 50388 currently in force. In the new version of EN 50388 (now EN 50388-1), the following point is covered: Traction/regenerative braking force [kN] speed [km/h] U >= 14.25 kV U = 14 kV U = 13 kV U = 12 kV U <= 17.5 kV U = 17.625 kV U = 17.75 kV U = 17.875 kV. The EN 50388 norm does not specify any limitation of the recuperation power at high voltage. Analogous application of the limitation as set out in Figure 1, i.e. regulation SBB I-50069. The goal, however, should be reduction of power at the wheel or of the primary current during recovery between 17.5 kV (full recovery) and 18.0 kV (no recovery). Reduction of traction at high voltage (between 18.0 and 18.5 kV) and of recuperation power at low voltage (between 12.0 and 11.0 kV), as illustrated in R I – 50069 Figure 1, also makes sense, as it prevents an abrupt loss of power (jerk) when the main switch is triggered. It should be borne in mind that over- or undervoltage may also have causes other than (excessively) high momentary | | | | | | xceeds EN nt is 7 U = 14 kV 17.875 kV. on power at ure 1, i.e. he primary (no nd of llustrated in ss of power that over- or nomentary | | |
| Current norms ir | applic n Swit | able zerland: | Currently R I -50069 supplementing EN 50388: 2012 This specification is included in the revised EN 50388-1 (2021 edition?); as soon as the EN 50388-1 (2021 edition?), which is currently being voted on, is in force and this EN 50388-1 is referenced in the TSI, this supplementary requirement can be completely dropped as an NNTR CH. | | | | | | | | |
| Test spe certifica conform | ecifica te of hity: | tion for | R I -500 |)69, espe | cially Figure 1 | | | | | | |

| ID | СН-Т | SI LOC&P | AS-012 | State: | Switzerland | Status | Applicable | from: | July 2016 | | | |
|--|----------------------------|-------------------------|---|--|--|--|---|--|--|--|--|--|
| Title: | | Admittance | 9 | | | | | | | | | |
| Office respons | ible: | Federal Of Approvals | fice of T and Rul | ransport l es Sectio | FOT n | | Address: | 3003 E SWITZ | Bern ZERLAND | | | |
| E-mail: | | _BAV-We | iterentv | vicklung | Regelwerke@ |)bav.adı | min.ch | | | | | |
| Referen | ced T | SI article: | LOC&P Clauses EN 503 | ∟OC&PAS TSI (1302/2014/EU) Clauses 4.2.8.2.3 / 4.2.8.2.4 / 4.2.8.2.7/ 6.2.2.2.13 / 6.2.2.2.14 EN 50388 | | | | | | | | |
| Reference in Swiss RailO Art. 47 Section 1 regulation: IP-RailO IP 47.1 Section 4 RailO Art. 83g Section 2 | | | | | | | | | | | | |
| Current classific | NNTR ation: | | | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | |
| Full des | criptio | on: | In orde (includii resonar frequen frequen | er to reliang corres nce and cy respo cy. | ably prevent sponding grid so causing in nse of the inp | the grid convert nstability out admit | converter of con er control system in the railway po ttance must be pa | verter-driv) from in ower supp ssive abo | ven vehicles nducing grid oly grid, the ove a cut-off | | | |
| Current applicable norms in Switzerland:SBB R I – 20005 | | | | | | | | | | | | |
| Test spe certifica conform | ecifica ite of nity: | tion for | The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above (esp. SBB R I – 20005). | | | | | | | | | |

| ID | СН-Т | SI LOC&P | AS-013 | State: | Switzerland | Status | Applicable | from: | July 2016 | | | |
|--|---------------------------|-------------------------|--|--|---|-------------------------|--|--------------------------|--------------------------------|--|--|--|
| Title: | | Pantograp | h/Contac | ct line inte | eraction | | | | | | | |
| Office respons | ible: | Federal Of Approvals | ffice of T and Rule | ransport es Sectio | FOT n | | Address: | 3003 E SWITZ | Bern ZERLAND | | | |
| E-mail: | | _BAV-We | eiterentv | iterentwicklungRegelwerke@bav.admin.ch | | | | | | | | |
| Referen | ced TS | SI article: | LOC&P ENE TS EN 503 | LOC&PAS TSI (1302/2014/EU) ENE TSI Clauses 4.215/4.2.16 EN 50367, EN 50119 | | | | | | | | |
| Referen regulatio | ce in S on: | Swiss | RailO Art. 44 c, IP-RailO DE 44.c Section3.1 | | | | | | | | | |
| Current classific | NNTR ation: | | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | | |
| Full des | criptic | on: | Proof th the max single a | at maxim timum pe nd multip | num permissibl rmissible cont ole traction. | e contact act line u | pressure is respect plift under defined | cted and tl operating | herefore also conditions in | | | |
| Current applicable norms in Switzerland:SBB R-I-50088 EN 50367 Appendix B Tables B1 and B3 column CH | | | | | | | | | | | | |
| Test spe certifica conform | ecifica te of hity: | tion for | The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above (esp. SBB R-I-50088 and EN 50367 Appendix B Tables B1 and B3 column CH). | | | | | | | | | |

| ID | CH-TS | LOC&PAS | S-014a | State: | Switzerland | Version: | 2.0 | Date: | June 2021 | | | | |
|--|-------------------------------|-------------------------|---|--|--------------|-----------|----------------|-----------------|-----------------|--|--|--|--|
| Title: | | Compatib | ility with | track-fr | ee announcin | g devices | : interference | currents | | | | | |
| Office respo | nsible: | Federal Of Approvals | fice of Ti and Rule | ransport F es Sectior | FOT า | | Address: | 3003 E SWITZ | }ern ∕ERLAND | | | | |
| E-mail | | _BAV-Wei | terentwic | klungRe | gelwerke@bav | .admin.ch | | · | | | | | |
| Refere | enced T | SI article: | LOC&P | LOC&PAS TSI (1302/2014/EU), Clause 4.2.3.3.1.2. | | | | | | | | | |
| Reference in Swiss regulation:RailO (status as of 01.07.2020) Art. 47 para. 1 IP-RailO (status as of 01.11.2020) IP 47.1, Section 3.1 Regulation SBB R I-50097, Version 2.0 of 09.09.2019 | | | | | | | | | | | | | |
| Currei classi | nt NNTR fication: | | □ NNTR ☑ NNTR □ NNTR | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | | |
| Full de | escriptio | on: | Compliance with the relevant limit values for interference currents is an important criterion for the network access of vehicles on the interoperable railway network in Switzerland. These interference current values of the vehicles must comply with the Switzerland-specific limit values so that the existing track circuits are no disturbed. The limit values can be found in document SBB R I-50097: Appendix A | | | | | | | | | | |
| Current applicable norms in Switzerland:The norms set out in the implementing provisions of the Railway Ordina (version 01.11.2020) apply. EN 502383; SBB R I-50097 | | | | | | | | | vay Ordinance | | | | |
| Test s certific confo | pecifica cate of rmity: | tion for | The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above. | | | | | | | | | | |

| ID | CH-TS | LOC&PA | S-014b | State: | Switzerland | Version: | 2.0 | Date: | June 2 | 2021 | | |
|-----------------------------|-------------------------------|--|--|---|---|---|--|---|---|---|--|--|
| Title: | | Compatib (compatib | ility wit | track- naxle co | free announ unters) | cing devi | ces: magne | tic interf | erence | fields | | |
| Office respo | nsible: | Federal Of Approvals | ffice of T and Rule | ransport f es Sectior | FOT า | | Address: | 3003 E SWITZ | Bern ZERLAN | D | | |
| E-mail | : | _BAV-Wei | terentwid | klungRe | gelwerke@bav | .admin.ch | | | | | | |
| Refere | enced T | SI article: | LOC&P | AS TSI (1 | 302/2014/EU) | , Clause 4. | 2.3.3.1.1 | | | | | |
| Refere regula | ence in S ation: | Swiss | RailO (s IP-RailO Regulat KPZ059 Chapter | status as o 0 (status a ion SBB I 000 / Vers ⁻ 2 Supple | of 01.07.2020) as of 01.11.20 R I-50098, Ver ion 1-0 of 22.0 ementary meas | Art. 47 par 20) IP 47.1 sion 2.0 of 02.2021, su suring regu | ra. 1 , Section 3.1 09.09.2019 at pplementing S lation for vehic | nd SBB R I-50 cle testing | 0098 | | | |
| Currei classi | nt NNTR fication: | | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI For some time now interference effects from unknown magnetic fields from | | | | | | | | | |
| Full de | escriptio | on: | For sor bogies, the stan be ident 500 Hz, the art, negative counting unachie leading network accepte KPZ059 the TSI. So far, f of GFM procedu | ne time i or rail cui idard gau iified at lo 1 kHz ar i.e. the interfere g error i vable by to releval access o d under 900 / Vers here are products irres on th | now, interfere rents, have be ge rail network w speeds with ad 2 kHz etc. H standards cur ences appear rates of 10 ⁻⁷ / several powe nt operational of the SBB infra these circums ion 1-0 of 22.0 neither standa (in-band interference) | nce effects een recorde in Switzer vehicles the lowever, the rently in for to be limit wheelset in rs of ten in malfunction astructure, stances if 2.2021 sup rdised spece ference im e bogie or v | s from unknow ed in the axle of land. These no nat use PWM of nese vehicles orce in Switze ed to the who required by n the station a ns. From the v new rolling sto it meets the plementing R cifications for to wheel area. | wn magne counting sy egative int converter t meet the o erland and eel and bo the stand area, i.e. a viewpoint o ock can the requireme I-50098, w | etic field ystems u erference technolo current s d Europhogie are ardisatic at low s of the tech erefore c ents set hich diffe | s from used in es can gies at state of e. The a. The on are peeds, chnical only be out in er from munity rement | | |
| Curren | nt applic s in Swit | applicable n Switzerland:The norms set out in the implementing provisions of the Railway Ordir (version 01.11.2020) apply.EN 50238-1; CLCMS 50238-2/50238-3; SBB R I-50098 supplemente KPZ05900 / Version 1-0 of 22.02.2021, Chapter 2 Supplementary meas regulation for vehicle testing | | | | | | | | linance ted by asuring | | |
| Test s certific confo | pecifica cate of rmity: | tion for | The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above. | | | | | | | | | |

| ID | CH-TS | I LOC&PAS-019 State: Switzerland Version: 2.1 Date: June 2021 | | | | | | | | | | | |
|---------------------|-------------------|---|---|--|--|---|--|--|--|--|--|--|--|
| Title: | | The "N | lon-leading | g input s | ignal" | | | | | | | | |
| Office respon | sible: | Federa Approv | al Office of 1 /als and Ru | Transport les Sectio | t FOT on | | Address | : 3003 Ber Switzerla | า nd | | | | |
| E-mail: | | _BAV- | Weiterentwi | icklungR | egelwerke(| @bav.admin.ch | | | | | | | |
| Referer article: | nced TS | 51 | There are (Interface CCS TSI, Basic para | no corre with the SUBSET ameter (2 | sponding ir Control, co -034, Clau 2015/2299/I | nterface provisi mmand and sig se 2.2.3.3.1 EU), Clauses 4 | ons in LOC gnalling sub .6.2 and 9.3 | &PAS TSI, C osystem). 3.3 | lause 4.3.4 | | | | |
| Referer regulat | nce in S ion: | wiss | IP-RailO II IP-RailO II | P 38.3, S P 47.1, S | Section 1.1; Section 3.2 | | | | | | | | |
| Current classifi | t NNTR cation: | | □ NNTR of ⊠ NNTR du ⊠ NNTR du | n an 'open ue to differe ue to additio | point' in the T ence between onal requirem | SI Swiss regulation a ents in Swiss regul | nd correspond ation without e | ding requirement equivalent in the | s in the TSI TSI | | | | |
| Full des | scriptio | n: | Title | | The "Non- | leading input s | ignal" | | | | | | |
| | | | Type of Requirem | ent | Safety | Reliability/ availability | Health | Environment | Technical compatibil ity | | | | |
| | | | | | Х | - | - | - | - | | | | |
| | | | on-board uni | t. | | | | | | | | | |
| | | | Requirem | ent | The vehicle must give the non-leading input signal to the ETCS on-board unit via the train interface (TI). | | | | | | | | |
| | | | | | 2) The non-leading input signal many display the value 'non- leading permitted' at the train interface only when it is ensured that the driver's brake valve or brake valve system is closed off. | | | | | | | | |
| | | | | | 3) The no position | on-leading inpu on of the direction | it signal be on selector. | independent | of the | | | | |
| | | | Reasons/e ation | explan | Requirem with main brake valv is avoided | ent 2) relates to brake pipe). By /e system, dela I. | o the autom / closing of yed or obst | natic brake (in f the driver's l ructed brakin | direct brake - orake valve or g of the train | | | | |
| | | | | The requirement in 3) for the non-leading input signal to be independent of the position of the direction selector corrects requirement 2.2.3.3.1 b) in SUBSET-034, Version 3.1.0, which is not suitable for operation. | | | | | | | | | |
| | | | | | Requirem 034. | ent relates to C | H-TSI CCS | 6-006 and CH | -TSI CCS- | | | | |
| | | | | | Note: See | CR 1374, CR | 1383 and C | CR TSI_C000 | 00220 | | | | |
| | | | Applicable | e to | 2.2.2 + | 2.3.0d | 3.4.0 | 3.6.0 | | | | | |
| | | | SRS versi | on | Х | X | X | X | | | | | |
| | | Validity period unlimited | | | | | | | | | | | |

| ID: | СН-Т | SI LOC8 | SI LOC&PAS-020 State | | | land | Versio | n: 2 | .1 | Date: | June 2021 | | |
|-------------------------------|-------------------------------|------------------------|---|---|--|--------------------------------------|--|---|---|---|---|--|--|
| Title: | | The "SI | eeping inp | ut signa | l" in mul | tiple (| operatio | n | | | | | |
| Office respon | sible: | Federal Approva | Office of Trails and Rule | ansport s Sectio | FOT n | | | A | ddress: | 3003 B Switzer | ern land | | |
| E-mail: | | _BAV-V | Veiterentwic | klungRe | gelwerke | @bav | .admin.c | h | | | | | |
| Referei article: | nced T | SI | No corres as part of CCS TSI, Basic para | ponding ETCS Ti SUBSE ⁻ ameter (2 | requireme ain Interf -026, Cla 2015/2299 | ents ir ace U ause 4 9/EU), | n LOC&P nit Speci 4.4.6.1.8 Clause | PAS TS ificatior 9.3.3 | I. Require I. | ement for I | _OC&PAS TSI | | |
| Referer regulat | nce in ion: | Swiss | IP-RailO I IP-RailO I | P 38.3, S P 47.1, S | Section 1. Section 3. | 1; 2 | | | | | | | |
| Curren classifi | t NNTF | R : | NNTR on NNTR du NNTR du NNTR du | an 'open le to differe ue to additi | point' in the nce betwee onal require | TSI en Swis ements | s regulatior in Swiss re | n and co egulation | responding without equ | requiremen uivalent in the | ts in the TSI TSI | | |
| Full de | scripti | on: | Title | | The "Sle | eping | input sig | gnal" in | multiple | operation | | | |
| | | | Type of Requirem | ent | Safety | Relia avail | ability/ ability | Healt | n Envir | Environment Technical compatibili | | | |
| | | | | | Х | | Х | - | | - | Х | | |
| | | | Scope of applicatio | n | All vehicles equipped with an ETCS on-board unit. | | | | | | | | |
| | | | Requirem | ent | A vehicle running as a multiple unit (further locomotive) or as a vehicle with driving cab must make the sleeping input signal available to the ETCS on-board unit via train interface (TI). | | | | | | | | |
| | | | Reasons/e ation | explan | An ETCS informati has the i number, | S on-b on. If nform ETCS | oard uni this vehi ation neo S level, e | t in 'Sle cle bec cessary tc.) for | eping' m omes the (e.g. na the start | ode proce leading v tional valu of mission | sses lineside ehicle, it then es, RBC | | |
| | | | | | Note: Se | e CR | TSI_CO | 000022 | 1 | | | | |
| | | | Applicabl | e to | 2.2.2 + | | 2.3.0d | 3 | 3.4.0 | 3.6.0 | | | |
| | | | SRS versi | on | Х | | Х | | Х | Х | | | |
| | | | Validity pe | eriod | unlimited | ł | | | | | | | |
| Curren norms Switzer | t appli in rland: | cable | | | | | | | | | | | |
| Test sp for cert confor | becifica tificate mity: | ication ite of : | | | | | | | | | | | |

| ID: | CH-TS | I LOC&P | AS-022 | State: | Switzerl | and | Version: | 2.1 | Date | : | June 2021 | |
|---------------------------------|-----------------------------|--------------------|----------------------------------|--|---|------------------------------------|--|---|---------------------------------------|---|--|--|
| Title: | | Resettin | g the eme | ergency | brake | | | | | | | |
| Office respon | sible: | Federal Approva | Office of Ti ls and Rule | ransport es Sectio | FOT on | | | Addres | s: | 3003 Be Switzerla | rn and | |
| E-mail: | | _BAV-W | eiterentwic | klungRe | egelwerke | @ba | v.admin.ch | | | | | |
| Referer | nced TS | article: | LOC&PA Basic pa | S TSI, C rameter | Clause 4.2 (2015/229 | .4.4. 9/EU | 1 (4) J), Clause 4 | .4.1 | | | | |
| Referer regulat | nce in S ion: | Swiss | IP-RailO IP-RailO IP-RailO | IP 38.3, IP 47.1, IP 50.2, | Section 1 Section 3 Sections 2 | .1 .2 2.2.3 | .3 and 2.2.3 | 3.4 | | | | |
| Current classifi | t NNTR cation: | | | n an 'opei lue to diffe due to add | n point' in the rence betwee litional require | e TSI en Sw emen | viss regulation ts in Swiss reg | and corres julation wit | spondin hout eq | g requiremer uivalent in th | nts in the TSI e TSI | |
| Full des | scriptio | n: | Title | | Resetting | the | emergency | brake | | | | |
| | | | Type of Requiren | nent | Safety | Rel ava | iability/ ailability | Health | Envir | ronment | Technical compatibility | |
| | | | | | Х | | Х | - | | - | - | |
| | | | Scope of application | on | All vehicles equipped with an ETCS on-board unit. | | | | | | | |
| | | | Requiren | nent | It must or the ETCS It must or | nly be 5 on-l nly be | e possible to board unit ir e possible to | o reset a n stands o reset th | n eme till moo ne bral | ergency bra de. ke intentio | ake applied by nally. | |
| | | | Reasons nation | /expla | In Switzer event of a standstill the train o | rland a thre as qu drivei | , the emerg eat to safety uickly as po r to reset the | ency bra . The ve ssible. If e brake | ake ma hicle r t must when t | ay only be nust be br be a cons the train is | applied in the ought to a cious act for stationary. | |
| | | | Applicab | le to | 2.2.2 + | | 2.3.0d | 3.4. | 0 | 3.6.0 | | |
| | | | SRS vers | sion | Х | | Х | X | | Х | | |
| | | | Validity p | period | unlimited | | | | | | | |
| Current norms | t applic in Switz | able zerland: | | | | | | | | | | |
| Test sp certifica conforr | ecificat ate of mity: | tion for | | | | | | | | | | |

| ID: | CH-T | SI LOC& | PAS-025 | State: | Switzerla | nd Versio | n: 2. | 1 | Date: | June 2021 | | |
|---|-------------------------|--------------------|---|--|--|---|---------------------------------|-----------------------------------|--|------------------------------------|--|--|
| Title: | | Inhibite | d operability | y to disc | onnect a l | ETCS on-be | oard un | it | | | | |
| Office respons : | sible | Federal Approva | Office of Tra als and Rules | nsport F Section | ОТ | | Ade | lress: | 3003 Be Switzerla | rn and | | |
| E-mail: | | _BAV-W | /eiterentwick | lungReg | elwerke@t | pav.admin.c | h | | 1 | | | |
| Referer article: | nced T | SI | No corresp Basic parar | onding re neter (20 | equirement)15/2299/E | s in LOC&P U), Clause | AS TSI. 9.3.3 | | | | | |
| Referer regulat | nce in ion: | Swiss | IP-RailO IP IP-RailO IP | 38.3, Se 47.1, Se | ection 1.1 ection 3.2 | | | | | | | |
| Current classifi | t NNTF cation | R : | □ NNTR on a □ NNTR due ☑ NNTR due | an 'open po to different to additior | int' in the TSI ce between S nal requireme | wiss regulation nts in Swiss re | n and corr gulation w | esponding ithout equ | g requiremen uivalent in the | ts in the TSI e TSI | | |
| Full des | scripti | on: | Title | | Inhibited or | perability to | disconn | ect a E | TCS on-bo | ard unit | | |
| | | | Type of Requireme | nt | Safety | Reliability/ availabilit y | Health | Envii | ronment | Technical compatibility | | |
| | | | | | X | - | - | | - | - | | |
| | | | Scope of application | | All vehicles | s equipped \ | with an E | ETCS of | n-board ur | iit. | | |
| | | | Requireme | nt | The means of disconnecting the ETCS on-board unit must be configured in such a way that the unit cannot be disconnected unintentionally (e.g. by operating a switch by mistake). | | | | | | | |
| | | | Reasons/ex ation | kplan | Disconnect hazard. Dis monitored ineffectual. | ting the ETC sconnection by the ETC | CS on-bo results S on-boa | pard uni in the tr ard unit | t poses a c ain no lonç and brakir | considerable ger being ıg is | | |
| | | | | | Note: See | CR TSI_C0 | 0000222 | 2 | | | | |
| | | | Applicable | to | 2.2.2 + | 2.3.0d | 3 | 4.0 | 3.6.0 | | | |
| | | | SRS version X X X X | | | | | | | | | |
| | | | Validity per | riod | unlimited | | | | | | | |
| Current norms Switzer | t appli in 'land: | cable | | | | | | | | | | |
| Test specification for certificate of conformity: | | | | | | | | | | | | |

| ID: | CH-T | SI LOC& | PAS-027 | State: | Switzerlan | d Version | 2.1 | Date: | June 2021 | | | | |
|--------------------------------|-----------------------------|--------------------|---|---|--|---|---------------------------------------|-------------------------------------|--------------------------------|--|--|--|--|
| Title: | | Manual | radio remot | e contr | ol for shunt | ing operatio | ns ('Shuntin | g' mode) | | | | | |
| Office respon | sible: | Federal Approva | Office of Tra als and Rules | nsport F Sectior | FOT เ | | Address | 3003 Ber Switzerla | n nd | | | | |
| E-mail: | | _BAV-V | Veiterentwick | lungReg | gelwerke@ba | av.admin.ch | | | | | | | |
| Referer article: | nced T | SI | No correspo Basic parar | onding r neter (20 | equirements 015/2299/EL | in LOC&PAS J), Clause 9.7 | S TSI. | | | | | | |
| Referer regulat | nce in ion: | Swiss | IP-RailO IP IP-RailO IP | 38.3, So 47.1, So | ection 1.1 ection 3.2 | | | | | | | | |
| Current classifi | t NNTF cation | R : | □ NNTR on a □ NNTR due ⊠ NNTR due | n 'open po to differer to additio | oint' in the TSI nce between Sw nal requirement | riss regulation ar is in Swiss regul | nd corresponding ation without equ | requirements i vivalent in the T | n the TSI SI | | | | |
| Full des | scripti | on: | Title | | Manual radi ('Shunting' r | o remote con node) | trol for shunt | ng operatior | IS | | | | |
| | | | Type of Requireme | nt | Safety | Reliability/ availability | Health | Environm ent | Technical compatibil ity | | | | |
| | | | | X | | | | | | | | | |
| | | | Scope of application | | All vehicles equipped with an ETCS on-board unit. | | | | | | | | |
| | | | Requireme | nt | If a vehicle is equipped with radio remote control that permits operation of the vehicle from outside the driver's cab, the following requirement applies: | | | | | | | | |
| | | | | | Operating o shall only be in shunting i | r moving the e possible wh mode (SH). | vehicle via th en the ETCS | e radio remo on-board eo | ote control quipment is | | | | |
| | | | Reasons/ex tion | plana | A range of r routes can c be in shuntii | isks relating t only be overc ng mode (SH | to shunting m ome by requi). | ovements or ring the ETC | n ETCS-L2 S-OBU to | | | | |
| | | | | | Note: See C | R 1346 and | TSI_C00000 | 223 | | | | | |
| | | | Applicable | to | 2.2.2 + | 2.3.0d | 3.4.0 | 3.6.0 | | | | | |
| | | | SRS version X X X X | | | | | | | | | | |
| | | | Validity per | iod | unlimited | | | | | | | | |
| Current norms Switzer | t appli in 'land: | cable | | | | | | | | | | | |
| Test sp for cert conforr | ecifica ificate nity: | ation of | | | | | | | | | | | |

| ID | СН-Т | SI LOC&P | AS-030 | S-030 State: Switzerland Version: 2.0 Date: June 2021 | | | | | | | | |
|---|----------------------------|--|---|--|--|---|--|--|---|--|--|--|
| Title: | | Use of bra | king syst | tems with | out static fricti | on | | | | | | |
| Office respons | ible: | Federal O Approvals | ffice of T and Rule | ransport l es Sectio | FOT n | | Address: | 3003 Be SWITZE | rn RLAND | | | |
| E-mail: | | _BAV-We | eiterentwicklungRegelwerke@bav.admin.ch | | | | | | | | | |
| Referen | ced T | SI article: | LOC&PAS TSI, Clause 4.2.4.8.3 Eddy current track brake | | | | | | | | | |
| Referen regulatio | ce in \$ on: | Swiss | IP-Rail(RailO (s R RTE 2 | IP-RailO (status as of 01.11.2020) IP 31, Section 2.1 RailO (status as of 01.07.2020) Art. 47 para. 1 R RTE 22041 (issue date: 07.05.2019) | | | | | | | | |
| Current classific | NNTR ation: | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | | | |
| Full des | criptic | on: | The use Switzerl calculat addition The we (IP-Rail account systems | e of eddy and. The ed accord al forces dability li O on Art. c of the ac s. | current track b superstructur ding to IP-Rail and temperatu mits of long we 31, Section 5) ditional forces | orakes for s al construc O on Art. 3 ures genera elded rails (set for Sv and temp | ervice braking is tions used in Sw 1, Section 2.1 ard ated by these bra set according to witzerland in R R eratures generate | not permi itzerland a e not desig aking syste the stabilit TE 22041 ed by thes | issible in and gned for the ems. y calculation) do not take se braking | | | |
| Current applicable norms in Switzerland: The norms set out in the implementing provisions of the Railway Ordinand (version 01.11.2016) apply. Please also refer to R RTE 22041. | | | | | | | | | | | | |
| Test spe certifica conform | ecifica ite of hity: | tion for | The consections | nformity s in the S | ormity assessment is based on the requirements and norms in the n the Swiss regulation referenced above. | | | | | | | |

| ID CH | I-TSI LO | C&P/ | AS-031 | State | : | Switzerland | Version: | 2.1 | | Date: | June 2021 |
|----------------------------|------------------|-----------------|--------------------------------------|--------------------------------------|---|--|--|---|--|---|--|
| Title: | Safe | tract | ion cut-of | f | | | | | | | |
| Office responsible | Fede e: Appro | ral Ot ovals | ffice of Trai and Rules | nsport Sectio | FC n | DT | | Address: | | 3003 Ber Switzerla | n nd |
| E-mail: | _BA\ | /-Wei | terentwickl | lungRe | ge | lwerke@bav.a | idmin.ch | | | | |
| Referenced | I TSI artio | cle: | There is traction ve Basic par | curren ehicles ameter | tly , d (2 | no correspor ouble-headed 2015/2299/EU | nding requin trains or tra), Clause 4.2 | rement in LC action vehicles 2.2 | C& s at | PAS TSI the rear of | for multi-unit the train. |
| Reference regulation: | in Swiss | | IP-RailO IP-RailO IP-RailO | 38.3, S 47.1, S 50.1, S | ec ec ec | tion 1.1 tion 3.2 tion 13.2 | | | | | |
| Current NN classificati | ITR on: | | □ NNTR or □ NNTR du ☑ NNTR d | n an 'ope ue to diff lue to ad | en p ere ditio | point' in the TSI nce between Swis onal requirements | ss regulation a in Swiss regu | nd corresponding ation without equ | g req uival | uirements in ent in the TS | the TSI |
| Full descri | otion: | | Title | | Sa | afe traction cu | t-off | | _ | | |
| | | | Type of Requirem | nent | Sa | afety | Reliabili ty/availa bility | Health | Er nt | vironme | Technical compatibilit y |
| | | | | | Х | | | | | | |
| | | | Applicabi | ility | Al | I vehicles equ | ipped with E | TCS in Switz | erla | and. | |
| | | | Requirem | ient | It E Ve Th Ve Of no tra m Tr ur | shall be ensur TCS on-board whicle and the the tolerated ur whicle and for r n manned nor pon-leading mo- action is cut of ain brake pipe raction cut-off nit which perfo | ed that whe unit (OBU), non-leading navailability nulti-unit tra de), it shall l f if the leadi f if the leadi . The tolera comprises t rms the trac | n emergency traction is cu vehicles. for traction cu iction vehicles ction vehicles be ensured by ng vehicle red ted unavailab he whole cha | ut-of ut-of s is (E ⁻ y teo bility in, f n the | f on both th f on the lease at 1*10 TCS on-bo chnical me es the presents is set at 1 from the Ol e vehicle. | luired by the ne leading ading) ⁻⁷ . Pard unit in ans that the soure in the *10 ⁻⁵ . BU to the |
| | | | Reasons/ anation | /expl | In tra Pu Tr ch loo se As Ts ha A be ar po | the case of the ut-off must also action vehicles ush-locomotive raction is norm nannel may be comotive, Q-lo econd channel s result of a ris SI) a value of r as been deterr deviation from e shown that o re in place and bint of danger. | e emergend be ensure or a tractio e or Tail-loc hally cut off ' the train dr be the train dr the train dr th | cy brake being d when trains n vehicle is a omotive. safely' via two iver (in the ca r double-head ent (Clause 6. 1*10-5 for th nannel system res with an eo nat the train w | g ac are t the o ch ase o ded .2.3 e to quiv vill s | ctivated, sa e running a e rear of th nannels, wh of a booste train) may .5 in the L0 plerated un only permit alent degre stop safely | Ife traction s multi-unit e train as a hereby one act as the DC&PAS availability tted if it can ee of safety before the |

| | | Note: The nominal values for the traction cut-off set out in SUBSE -026-3 should be considered separately from this NNTR. | | | | | |
|---|---------------------------|---|--------|-------|-------|--|--|
| | Applicable to SRS version | 2.2.2 + | 2.3.0d | 3.4.0 | 3.6.0 | | |
| | | Х | Х | Х | Х | | |
| | Validity period | unlimited | | | | | |
| Current applicable norms in Switzerland: | | · | | | | | |
| Test specification for certificate of conformity: | | | | | | | |

| ID | СН-Т | SI LOC&P | AS-035 | State: | Switzerland | Version: | 2.1 | Date: | November 2020 | |
|---|-------------------|---|---|---|------------------------------|-----------------|---------------------|--------------------------|------------------|--|
| Title: | | Sufficient braking performance during emergency braking | | | | | | | | |
| Office responsible:Federal Office Approvals and | | | | ice of Transport FOT and Rules Section | | | | 3003 Bern Switzerland | | |
| E-mail: | | _BAV-We | iterentwick | lungRe | gelwerke@ba | v.admin.ch | | | | |
| Referer | nced T | SI article: | Currently | no corr | esponding rec | quirements in L | OC&PAS TS | 51 | | |
| Reference in Swiss regulation: | | | IP-RailO 38.3, Section 1.1 IP-RailO 47.1, Section 3.2 Basic parameter (2015/2299/EU), Clause 4.5.1 | | | | | | | |
| Current classifi | t NNTF cation | R :: | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | |
| Full des | scripti | on: | Title | | Sufficient bra | iking performar | nce during er | mergency | braking | |
| | | Type of Requirement | | Safety | Reliability/a vailability | Health | Envir onme nt | Technical compatibility | | |
| | | | | | Х | - | - | - | - | |
| | | | Scope of application | on | All vehicles in | n Switzerland e | equipped with | n an ETCS | S on-board unit. | |
| | | Requirem | equirement The entire pathway of emergency braking from the output by the ETCS on-board unit to the lowering of the air pressure in the main brake pipe on the vehicle equipped with the ETCS on-board unit shall meet the following value: Tolerated unavailability: 1*10-7 | | | | | | | |
| | | Reasons/ nation Applicabl SRS vers Validity p | expla le to ion eriod | If the braking distance is increased in case of emergency braking, this may lead to a hazardous situation. It must be ensured that, in case of emergency braking, with the effectively available braking means the stopping distance considered by ETCS in its braking curve is not exceeded (see also Clause 6.2.3.5 of LOC&PAS TSI). As result of a risk assessment (Clause 6.2.3.5 of LOC&PAS TSI) a value of 1*10-7 for the tolerated unavailability has been determined. If there is a switch of braking means, the changeover times must be taken into account. Requirement relates to CH-TSI CCS-007. 2.2.2 + 2.3.0d 3.4.0 3.6.0 X X X X | | | | | | |
| Current norms i | t appli in Swi | cable tzerland: | | I | | | | | | |

| Test specification for | |
|------------------------|--|
| certificate of | |
| conformity: | |

| ID: | CH-T | TSI LOC&PAS-036 | | State: | Switzerlar | d Version: | 2.1 | Date: | June 2021 | | |
|-------------------------------------|-----------------------------|--|--|---|------------------------------|----------------|-----------------|--------------------------------|-----------|--|--|
| Title: | | Vehicles with a control panel for both directions of travel | | | | | | | | | |
| OfficeFederal 0responsible:Approval | | | Office of Transport FOT als and Rules Section | | | | Address: | 3003 Ber Switzerla | n nd | | |
| E-mail: | | _BAV-V | Veiterentwick | /eiterentwicklungRegelwerke@bav.admin.ch | | | | | | | |
| Referenced TSI article: | | | No corresponding requirements in LOC&PAS TSI. | | | | | | | | |
| Reference in Swiss regulation: | | IP-RailO IP 38.3, Section 1.1 IP-RailO IP 47.1, Section 3.2 | | | | | | | | | |
| Current classifi | t NNTF cation | R :: | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | |
| Full des | scripti | on: | Title | | Vehicles wit | h a control pa | anel for both | directions o | of travel | | |
| | | Type of Requirement | | Safety | Reliability/ availability | Health | Environm ent | Technical compatibil ity | | | |
| | | | | | Х | - | - | - | - | | |
| | | | Scope of application | | ETCS on-board unit | | | | | | |
| | | Requireme | nt | In vehicles with a control panel for both directions of travel, it must be technically ensured that the orientation with respect to the ETCS operating mode and the driving direction can be clearly and easily defined. | | | | | | | |
| | | Reasons/ex ation | kplan | Note: See CR TSI_C00000224 | | | | | | | |
| | | | Applicable | to | 2.2.2 + | 2.3.0d | 3.4.0 | 3.6.0 | | | |
| | | | SRS version | n | Х | Х | - | - | | | |
| | | | Validity per | riod | unlimited | | | | | | |
| Current norms Switzer | t appli in 'land: | cable | | I | | | | | | | |
| Test sp for cert conforr | ecifica ificate nity: | ation of | | | | | | | | | |

| ID: | CH-T | SI LOC&PAS-037 Sta | | State: | Switzerlan | d Version: | 1.0 | Date: | June 2019 | |
|---|----------------------------|--|--|---|------------------------------|------------|-----------------------|----------------------------------|-----------|--|
| Title: | | ETCS ser | vice brake |) | | | | | | |
| OfficeFederal Oresponsible:Approvals | | office of Transport FOT and Rules Section | | | | Address: | 3003 Ber Switzerla | 3003 Bern Switzerland | | |
| E-mail: | | _BAV-We | iterentwicklungRegelwerke@bav.admin.ch | | | | | | | |
| Referenced TSI article: | | | LOC&PAS TSI, Clause 4.2.4.2.1 | | | | | | | |
| Reference in Swiss regulation: | | IP-RailO IP 38.3, Section 1.1 IP-RailO IP 47.1, Section 3.2 | | | | | | | | |
| Current NNTR classification: | | NNTR on an 'open point' in the TSI NNTR due to difference between Swiss regulation and corresponding requirements in the TSI NNTR due to additional requirements in Swiss regulation without equivalent in the TSI | | | | | | | | |
| Full des | scripti | on: | Title | | ETCS servic | e brake | | | | |
| | | Type of Requirement | | Safety | Reliability/ availability | Health | Environme nt | e Technical compatibili ty | | |
| | | | | | Х | - | - | - | - | |
| | | Scope of application All vehicles equipped with an ETCS on-board unit. | | | | | | | | |
| | | Requirem | nent | New vehicles (newly built by the manufacturer) must be equipped with an ETCS service brake. | | | | | | |
| | | Reasons/ nation | /expla | The use of the ETCS service brake is proposed on ETCS Level 2 lines. | | | | | | |
| | | | Applicab | le to | 2.2.2 + | 2.3.0d | 3.4.0 | 3.6.0 | | |
| | | SRS version | | Х | Х | Х | Х | | | |
| | | Validity period unlimited | | | | | | | | |
| Current applicable norms in Switzerland: | | | | | | | | | | |
| Test sp certifica conforr | ecifica ate of nity: | ation for | | | | | | | | |