



## LOC&PAS NNTRs as at: June 2021

NNTV CH-TSI LOC&PAS	Title	Version <sup>1</sup>	Date <sup>2</sup>
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

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

<sup>2</sup> The date is updated when changes are made to either x or y.

## Version history

Date	Change
June 2021	<p>General improvements, updates and clarifications made.</p> <p>CH-TSI LOC&amp;PAS-004 can be repealed as it is now regulated as a specific case.</p> <p>CH-TSI LOC&amp;PAS-005 can be repealed as it is now regulated as a specific case.</p> <p>CH-TSI LOC&amp;PAS-014a and -14b split up thematically for reasons of form.</p> <p>CH-TSI LOC&amp;PAS-017 can be repealed as it is now regulated as a specific case.</p> <p>CH-TSI LOC&amp;PAS-018 can be repealed as the minimum radius refers to service installations; these specifications do not apply to track use and thus do not affect interoperability.</p> <p>It is the responsibility of an RU to ensure that vehicles can safely negotiate the necessary minimum radii in their service facilities.</p> <p>CH-TSI LOC&amp;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).</p> <p>CH-TSI LOC&amp;PAS-028 can be repealed as it is now regulated as a specific case.</p> <p>CH-TSI LOC&amp;PAS-029 can be repealed as the European specifications sufficiently cover derailment safety.</p>

## Notified National Technical Rules (NNTR)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-001</b>	<b>State:</b>	Switzerland	<b>Status</b>	<b>Applicable</b>	<b>from:</b>	June 2015
<b>Title:</b>	Pantograph head width						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC & PAS TSI (1302/2014/EU) Clauses 4.2.8.2.9.2 and 7.3.2.16						
<b>Reference in Swiss regulation:</b>	RailO Art. 18 and IP 18 Sheet 16 N						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>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.</p>						
<b>Current applicable norms in Switzerland:</b>	See national reference/RailO Art. 18 and IP 18 Sheet 16 N.						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB R I 50127).						

## Notified National Technical Rules (NNTR)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-002</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	Narrow switches/Test of passage through switches						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	<p>LOC &amp; PAS TSI (1302/2014/EU):            Clause 4.2.3.4.1 Safety against derailment running on twisted track            Clause 6.2.3.3 Safety against derailment running on twisted track</p> <p>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)</p>						
<b>Reference in Swiss regulation:</b>	<p>RailO Art. 47 Section 1, status as of 1 July 2020            IP-RailO on Art. 31, Section 2.1 (standard gauge), status as of 1 November 2020            Regulation SBB R I 50007, Version 2.0 of 15 March 2020</p>						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>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.</p> <p>In addition, the switches are used at up to 40km/h (EU at most 30km/h). Loc&amp;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.</p> <p>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.</p> <p>Therefore, test runs on typical switches in Switzerland are required in order to demonstrate compliance with the limit values for running safety and track loading. This requirement goes beyond the requirements of Loc&amp;Pas TSI.</p>						
<b>Current applicable norms in Switzerland:</b>	EN 14363 and other norms set out in Annex 3, IP-RailO in the referenced version.						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (esp. SBB R I 50007).						

## Notified National Technical Rules (NNTR)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-003</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	Tight curves $r < 250$ m						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	<p>LOC &amp; PAS TSI (1302/2014/EU):            Clause 4.2.3.4.2 Running dynamic behaviour            Clause 6.2.3.4 Running dynamic behaviour – technical requirements</p> <p>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)</p>						
<b>Reference in Swiss regulation:</b>	<p>RailO Art. 47 Section 1, status as of 1 July 2020            IP-RailO IP 31, Section 2.1 (standard gauge), status as of 1 November 2020 ("special case-by-case examinations")            Regulation SBB R I 51027, Version 2.00 of 19 March 2018</p>						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>The Swiss rail network has a relatively large number of lines with a large number of tight curves of less than 250 m. A full list of these lines is included in regulation SBB R I 50127.</p> <p>Loc&amp;Pas TSI refers to EN 14363 for the testing of the running characteristics of railway vehicles. While EN 14363 sets out the testing and assessment of vehicles on lines with curves of <math>R \geq 250</math> m, the compliance procedure for lines with tight curves of less than 250 m is not defined.</p> <p>This regulatory gap was closed in 2018 following fundamental research conducted jointly by the FOT and the Swiss standard gauge railways. Switzerland accordingly goes beyond the requirements of Loc&amp;Pas TSI. The specifications were summarised and published in regulation SBB R I 50127 Chapter 3.</p> <p>If standard gauge railway vehicles are to run on the Swiss network, including lines with a large number of tight curves of less than 250 m, it must be demonstrated that this is possible while complying with the limit values for running safety and track loading laid down in the above-mentioned regulation.</p> <p>If compliance cannot be shown, these vehicles may not operate at R-series speeds on lines with a large number of tight curves of less than 250 m.</p> <p>If it cannot be shown that these vehicles can operate on lines with tight curves of less than 250 m for speeds in the R-series, but it can be shown that they can operate at the lower speeds in the A-series, the vehicles may be operated at the speeds in the A-series on the lines with tight curves of less than 250 m. In this case, the RUs in question must expect operational restrictions as a result of the availability of suitable train paths.</p> <p>It is possible to operate vehicles on the other lines of the Swiss standard gauge network within the scope of authorisation under Loc&amp;Pas TSI in accordance with the R-series.</p> <p>If compliance with SBB R I 50127 can be shown at a later date, operation can be extended to the previously excluded lines with tight curves of less than 250 m.</p>						

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

## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-006</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	Authorisation of rolling stock with N-series tilting system						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	<p>LOC&amp;PAS TSI (1302/2014/EU):            Clause 4.2.3.4.2 Running dynamic behaviour            Clause 6.2.3.4 Running dynamic behaviour – technical requirements</p> <p>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)</p>						
<b>Reference in Swiss regulation:</b>	<p>RailO Art. 17, status as of 1 July 2020            IP-RailO on Art. 17, Section 8 (standard gauge), status as of 1 November 2020            Regulation SBB R I 20019, Version 2.0 of 1 June 2013</p>						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>In Switzerland tilting trains run on tracks designed for speeds and cant deficiencies in the R-series. Every vehicle type designed for these speeds and cant deficiencies must be tested for compliance with the limit values for running safety and track loading and authorised for the specific track.</p> <p>The required authorisation process includes, firstly, generic authorisation of the vehicle type for N-series speeds, as required by Loc&amp;Pas TSI with reference to EN 14363 and EN 15686. Secondly, for each vehicle type that is to run according to the N-series, compliance with the above-mentioned limit values must be demonstrated in the running test on each individual line determined for the N-series. In this step, Switzerland goes beyond the requirements in the TSI. The reason for this is that, firstly, Switzerland has lines with very demanding routing due to the topology and, secondly, Switzerland did not retrofit the tracks when introducing the N-series of trains in the 1980s.</p> <p>Because of the associated testing effort (including measuring wheelsets), this proof of compliance cannot be carried out as part of a route compatibility check by the RU.</p> <p>A reduction in the running speeds of the vehicle type concerned, as proposed according to TSI for limit value infringements, is not possible in Switzerland for timetabling reasons. There is only one N-series for the standard network in Switzerland. Reducing the permissible speed for one type would also reduce the permissible speed for all other N-series vehicles. It is not operationally possible to reduce speed specifications for specific vehicles in Switzerland.</p> <p>Currently, in Switzerland only trains constructed with an active tilting system to achieve high cant deficiency are regulated by law and permitted under the term 'tilting trains'. Where necessary, other systems can be similarly defined according to the tilting train specifications.</p>						
<b>Current applicable norms in Switzerland:</b>	EN 14363, EN 15686 and other norms set out in Annex 3, IP-RailO in the referenced version.						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulations referenced above (SBB R I 20019 Chapter 5 (Rolling stock homologation on specific lines)).						



## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-007</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	Flange lubrication						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI (1302/2014/EU), Clause 7.5.3.1 Track interaction (clause 4.2.3) – Flange or track lubrication						
<b>Reference in Swiss regulation:</b>	RailO Art. 47 Section 1 R RTE 49410 – 2nd edition, 23.10.2017						
<b>Current NNTR classification:</b>	<input checked="" type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	Requirements for construction of rolling stock with flange lubrication system to protect track in tight bends.						
<b>Current applicable norms in Switzerland:</b>	RailO Art. 47 Section 1 is applicable, i.e. rolling stock must be adjusted to the superstructure.  R RTE 49410 defines the specific construction and maintenance requirements for rolling stock with flange lubrication.						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the referenced Swiss regulation R RTE 49410.						

## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-009</b>	<b>State:</b>	Switzerland	<b>Status</b>	<b>Applicable</b>	<b>from:</b>	June 2015
<b>Title:</b>	Exhaust emissions from thermal vehicles						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI (1302/2014/EU) Clause 4.2.8.3						
<b>Reference in Swiss regulation:</b>	RailO Art. 4/IP-RailO IP 4 6 Limiting exhaust emission Based on Air Pollution Control Ordinance						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	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.						
<b>Current applicable norms in Switzerland:</b>	IP-RailO IP 4 6 FOT Reference to FOEN filter list for compression-ignition engines.						
<b>Test specification for certificate of conformity:</b>	Manufacturer's proof of conformity that the engines meet the current applicable FOEN specifications.						

## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-010</b>	<b>State:</b>	Switzerland	<b>Status</b>	<b>Applicable</b>	<b>from:</b>	June 2015
<b>Title:</b>	<b>Optical warning signal at front of train: 3 x red</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI (1302/2014/EU), Clause 4.2.7.1.2						
<b>Reference in Swiss regulation:</b>	Swiss Rail Service Regulations (RSR)						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	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.						
<b>Current applicable norms in Switzerland:</b>	RSR R 300.2 Section 8.1.2						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the requirements in the sections in the Swiss regulation referenced above.						

## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-011</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	Traction limitation						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	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						
<b>Reference in Swiss regulation:</b>	RailO Art. 44a IP-RailO IP Art. 44.a Section 3.2 Regulation SBB R I-50069, Version 1.0 of 15 December 2013						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>Frequency-dependent traction limitation</p> <p>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:</p> <p>Traction/regenerative braking force [kN] speed [km/h] U &gt;= 14.25 kV U = 14 kV U = 13 kV U = 12 kV U &lt;= 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.</p> <p>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).</p> <p>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 traction or regenerative braking power of the traction unit itself.</p>						
<b>Current applicable norms in Switzerland:</b>	<p>Currently R I -50069 supplementing EN 50388: 2012</p> <p>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.</p>						
<b>Test specification for certificate of conformity:</b>	R I -50069, especially Figure 1						

## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-012</b>	<b>State:</b>	Switzerland	<b>Status</b>	<b>Applicable</b>	<b>from:</b>	July 2016
<b>Title:</b>	Admittance						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	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 EN 50388						
<b>Reference in Swiss regulation:</b>	RailO Art. 47 Section 1 IP-RailO IP 47.1 Section 4 RailO Art. 83g Section 2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	In order to reliably prevent the grid converter of converter-driven vehicles (including corresponding grid converter control system) from inducing grid resonance and so causing instability in the railway power supply grid, the frequency response of the input admittance must be passive above a cut-off frequency.						
<b>Current applicable norms in Switzerland:</b>	SBB R I – 20005						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above (esp. SBB R I – 20005).						

## Notified National Technical Rules (NNTR)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-013</b>	<b>State:</b>	Switzerland	<b>Status</b>	<b>Applicable</b>	<b>from:</b>	July 2016
<b>Title:</b>	Pantograph/Contact line interaction						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI (1302/2014/EU) ENE TSI Clauses 4.215/4.2.16 EN 50367, EN 50119						
<b>Reference in Swiss regulation:</b>	RailO Art. 44 c, IP-RailO DE 44.c Section3.1						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	Proof that maximum permissible contact pressure is respected and therefore also the maximum permissible contact line uplift under defined operating conditions in single and multiple traction.						
<b>Current applicable norms in Switzerland:</b>	SBB R-I-50088 EN 50367 Appendix B Tables B1 and B3 column CH						
<b>Test specification for certificate of conformity:</b>	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).						

## Notified National Technical Rules (NNTR)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-014a</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	<b>Compatibility with track-free announcing devices: interference currents</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI (1302/2014/EU), Clause 4.2.3.3.1.2.						
<b>Reference in Swiss regulation:</b>	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						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>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 not disturbed.</p> <p>The limit values can be found in document SBB R I-50097: Appendix A</p>						
<b>Current applicable norms in Switzerland:</b>	<p>The norms set out in the implementing provisions of the Railway Ordinance (version 01.11.2020) apply.            EN 502383; SBB R I-50097</p>						
<b>Test specification for certificate of conformity:</b>	<p>The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.</p>						

## Notified National Technical Rules (NNTR)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-014b</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	<b>Compatibility with track-free announcing devices: magnetic interference fields (compatibility with axle counters)</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI (1302/2014/EU), Clause 4.2.3.3.1.1						
<b>Reference in Swiss regulation:</b>	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-50098, Version 2.0 of 09.09.2019 and KPZ05900 / Version 1-0 of 22.02.2021, supplementing SBB R I-50098 Chapter 2 Supplementary measuring regulation for vehicle testing						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>For some time now, interference effects from unknown magnetic fields from bogies, or rail currents, have been recorded in the axle counting systems used in the standard gauge rail network in Switzerland. These negative interferences can be identified at low speeds with vehicles that use PWM converter technologies at 500 Hz, 1 kHz and 2 kHz etc. However, these vehicles meet the current state of the art, i.e. the standards currently in force in Switzerland and Europe. The negative interferences appear to be limited to the wheel and bogie area. The counting error rates of <math>10^{-7}</math>/wheelset required by the standardisation are unachievable by several powers of ten in the station area, i.e. at low speeds, leading to relevant operational malfunctions. From the viewpoint of the technical network access of the SBB infrastructure, new rolling stock can therefore only be accepted under these circumstances if it meets the requirements set out in KPZ05900 / Version 1-0 of 22.02.2021 supplementing R I-50098, which differ from the TSI.</p> <p>So far, there are neither standardised specifications for the interference immunity of GFM products (in-band interference immunity) nor for relevant measurement procedures on the vehicle in the bogie or wheel area.</p>						
<b>Current applicable norms in Switzerland:</b>	<p>The norms set out in the implementing provisions of the Railway Ordinance (version 01.11.2020) apply.</p> <p>EN 50238-1; CLCMS 50238-2/50238-3; SBB R I-50098 supplemented by KPZ05900 / Version 1-0 of 22.02.2021, Chapter 2 Supplementary measuring regulation for vehicle testing</p>						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.						



## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-019</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.1	<b>Date:</b>	June 2021
<b>Title:</b>	<b>The "Non-leading input signal"</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section				<b>Address:</b>	3003 Bern Switzerland	
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	There are no corresponding interface provisions in LOC&PAS TSI, Clause 4.3.4 (Interface with the Control, command and signalling subsystem). CCS TSI, SUBSET-034, Clause 2.2.3.3.1 Basic parameter (2015/2299/EU), Clauses 4.6.2 and 9.3.3						
<b>Reference in Swiss regulation:</b>	IP-RailO IP 38.3, Section 1.1; IP-RailO IP 47.1, Section 3.2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	The "Non-leading input signal"					
	<b>Type of Requirement</b>	Safety	Reliability/availability	Health	Environment	Technical compatibility	
		X	-	-	-	-	
	<b>Scope of application</b>	All vehicles equipped with an ETCS on-board unit.					
	<b>Requirement</b>	1) 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 may 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 non-leading input signal be independent of the position of the direction selector.					
	<b>Reasons/explanation</b>	Requirement 2) relates to the automatic brake (indirect brake - with main brake pipe). By closing off the driver's brake valve or brake valve system, delayed or obstructed braking of the train is avoided.  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.  Requirement relates to CH-TSI CCS-006 and CH-TSI CCS-034.  Note: See CR 1374, CR 1383 and CR TSI_C00000220					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	X	X		
<b>Validity period</b>	unlimited						

<b>Current applicable norms in Switzerland:</b>	
<b>Test specification for certificate of conformity:</b>	

## Notified National Technical Rules (NNTRs)

<b>ID:</b>	<b>CH-TSI LOC&amp;PAS-020</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.1	<b>Date:</b>	June 2021
<b>Title:</b>	<b>The "Sleeping input signal" in multiple operation</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern Switzerland		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	No corresponding requirements in LOC&PAS TSI. Requirement for LOC&PAS TSI as part of ETCS Train Interface Unit Specification. CCS TSI, SUBSET-026, Clause 4.4.6.1.8 Basic parameter (2015/2299/EU), Clause 9.3.3						
<b>Reference in Swiss regulation:</b>	IP-RailO IP 38.3, Section 1.1; IP-RailO IP 47.1, Section 3.2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	The "Sleeping input signal" in multiple operation					
	<b>Type of Requirement</b>	Safety	Reliability/availability	Health	Environment	Technical compatibility	
		X	X	-	-	X	
	<b>Scope of application</b>	All vehicles equipped with an ETCS on-board unit.					
	<b>Requirement</b>	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).					
	<b>Reasons/explanation</b>	An ETCS on-board unit in 'Sleeping' mode processes lineside information. If this vehicle becomes the leading vehicle, it then has the information necessary (e.g. national values, RBC number, ETCS level, etc.) for the start of mission.  Note: See CR TSI_C00000221					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	X	X		
<b>Validity period</b>	unlimited						
<b>Current applicable norms in Switzerland:</b>							
<b>Test specification for certificate of conformity:</b>							

## Notified National Technical Rules (NNTRs)

<b>ID:</b>	<b>CH-TSI LOC&amp;PAS-022</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.1	<b>Date:</b>	June 2021
<b>Title:</b>	<b>Resetting the emergency brake</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section				<b>Address:</b>	3003 Bern Switzerland	
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI, Clause 4.2.4.4.1 (4) Basic parameter (2015/2299/EU), Clause 4.4.1						
<b>Reference in Swiss regulation:</b>	IP-RailO IP 38.3, Section 1.1 IP-RailO IP 47.1, Section 3.2 IP-RailO IP 50.2, Sections 2.2.3.3 and 2.2.3.4						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	Resetting the emergency brake					
	<b>Type of Requirement</b>	Safety	Reliability/ availability	Health	Environment	Technical compatibility	
		X	X	-	-	-	
	<b>Scope of application</b>	All vehicles equipped with an ETCS on-board unit.					
	<b>Requirement</b>	It must only be possible to reset an emergency brake applied by the ETCS on-board unit in standstill mode.  It must only be possible to reset the brake intentionally.					
	<b>Reasons/explanation</b>	In Switzerland, the emergency brake may only be applied in the event of a threat to safety. The vehicle must be brought to a standstill as quickly as possible. It must be a conscious act for the train driver to reset the brake when the train is stationary.					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	X	X		
<b>Validity period</b>	unlimited						
<b>Current applicable norms in Switzerland:</b>							
<b>Test specification for certificate of conformity:</b>							

## Notified National Technical Rules (NNTRs)

<b>ID:</b>	<b>CH-TSI LOC&amp;PAS-025</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.1	<b>Date:</b>	June 2021
<b>Title:</b>	<b>Inhibited operability to disconnect a ETCS on-board unit</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section				<b>Address:</b>	3003 Bern Switzerland	
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	No corresponding requirements in LOC&PAS TSI. Basic parameter (2015/2299/EU), Clause 9.3.3						
<b>Reference in Swiss regulation:</b>	IP-RailO IP 38.3, Section 1.1 IP-RailO IP 47.1, Section 3.2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	Inhibited operability to disconnect a ETCS on-board unit					
	<b>Type of Requirement</b>	Safety	Reliability/availability	Health	Environment	Technical compatibility	
		X	-	-	-	-	
	<b>Scope of application</b>	All vehicles equipped with an ETCS on-board unit.					
	<b>Requirement</b>	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).					
	<b>Reasons/explanation</b>	Disconnecting the ETCS on-board unit poses a considerable hazard. Disconnection results in the train no longer being monitored by the ETCS on-board unit and braking is ineffectual.  Note: See CR TSI_C00000222					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	X	X		
<b>Validity period</b>	unlimited						
<b>Current applicable norms in Switzerland:</b>							
<b>Test specification for certificate of conformity:</b>							

## Notified National Technical Rules (NNTRs)

<b>ID:</b>	<b>CH-TSI LOC&amp;PAS-027</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.1	<b>Date:</b>	June 2021
<b>Title:</b>	<b>Manual radio remote control for shunting operations ('Shunting' mode)</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern Switzerland		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	No corresponding requirements in LOC&PAS TSI. Basic parameter (2015/2299/EU), Clause 9.7						
<b>Reference in Swiss regulation:</b>	IP-RailO IP 38.3, Section 1.1 IP-RailO IP 47.1, Section 3.2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	Manual radio remote control for shunting operations ('Shunting' mode)					
	<b>Type of Requirement</b>	Safety	Reliability/availability	Health	Environment	Technical compatibility	
		X	-	-	-	-	
	<b>Scope of application</b>	All vehicles equipped with an ETCS on-board unit.					
	<b>Requirement</b>	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 or moving the vehicle via the radio remote control shall only be possible when the ETCS on-board equipment is in shunting mode (SH).					
	<b>Reasons/explanation</b>	A range of risks relating to shunting movements on ETCS-L2 routes can only be overcome by requiring the ETCS-OBU to be in shunting mode (SH).  Note: See CR 1346 and TSI_C00000223					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	X	X		
<b>Validity period</b>	unlimited						
<b>Current applicable norms in Switzerland:</b>							
<b>Test specification for certificate of conformity:</b>							

## Notified National Technical Rules (NNTR)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-030</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.0	<b>Date:</b>	June 2021
<b>Title:</b>	Use of braking systems without static friction						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section			<b>Address:</b>	3003 Bern SWITZERLAND		
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI, Clause 4.2.4.8.3 Eddy current track brake						
<b>Reference in Swiss regulation:</b>	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)						
<b>Current NNTR classification:</b>	<input checked="" type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<p>The use of eddy current track brakes for service braking is not permissible in Switzerland. The superstructural constructions used in Switzerland and calculated according to IP-RailO on Art. 31, Section 2.1 are not designed for the additional forces and temperatures generated by these braking systems.</p> <p>The weldability limits of long welded rails set according to the stability calculation (IP-RailO on Art. 31, Section 5) (set for Switzerland in R RTE 22041) do not take account of the additional forces and temperatures generated by these braking systems.</p>						
<b>Current applicable norms in Switzerland:</b>	<p>The norms set out in the implementing provisions of the Railway Ordinance (version 01.11.2016) apply.</p> <p>Please also refer to R RTE 22041.</p>						
<b>Test specification for certificate of conformity:</b>	The conformity assessment is based on the requirements and norms in the sections in the Swiss regulation referenced above.						

## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-031</b>	<b>State:</b>	Switzerland	<b>Version:</b>	<b>2.1</b>	<b>Date:</b>	June 2021
<b>Title:</b>	<b>Safe traction cut-off</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section				<b>Address:</b>	3003 Bern Switzerland	
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	There is currently no corresponding requirement in LOC&PAS TSI for multi-unit traction vehicles, double-headed trains or traction vehicles at the rear of the train. Basic parameter (2015/2299/EU), Clause 4.2.2						
<b>Reference in Swiss regulation:</b>	IP-RailO 38.3, Section 1.1 IP-RailO 47.1, Section 3.2 IP-RailO 50.1, Section 13.2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	Safe traction cut-off					
	<b>Type of Requirement</b>	Safety	Reliability/availability	Health	Environment	Technical compatibility	
		X	-	-	-	-	
	<b>Applicability</b>	All vehicles equipped with ETCS in Switzerland.					
	<b>Requirement</b>	<p>It shall be ensured that when emergency braking is required by the ETCS on-board unit (OBU), traction is cut off on both the leading vehicle and the non-leading vehicles.</p> <p>The tolerated unavailability for traction cut-off on the leading vehicle and for multi-unit traction vehicles is set at <math>1 \cdot 10^{-7}</math>.</p> <p>On manned non-leading traction vehicles (ETCS on-board unit in non-leading mode), it shall be ensured by technical means that the traction is cut off if the leading vehicle reduces the pressure in the main brake pipe. The tolerated unavailability is set at <math>1 \cdot 10^{-5}</math>.</p> <p>Traction cut-off comprises the whole chain, from the OBU to the unit which performs the traction cut-off on the vehicle.</p>					
<b>Reasons/explanation</b>	<p>In the case of the emergency brake being activated, safe traction cut-off must also be ensured when trains are running as multi-unit traction vehicles or a traction vehicle is at the rear of the train as a Push-locomotive or Tail-locomotive.</p> <p>Traction is normally cut off 'safely' via two channels, whereby one channel may be the train driver (in the case of a booster locomotive, Q-locomotive or double-headed train) may act as the second channel.</p> <p>As result of a risk assessment (Clause 6.2.3.5 in the LOC&amp;PAS TSI) a value of <math>1 \cdot 10^{-7}</math> resp. <math>1 \cdot 10^{-5}</math> for the tolerated unavailability has been determined.</p> <p>A deviation from this two-channel system is only permitted if it can be shown that other measures with an equivalent degree of safety are in place and therefore that the train will stop safely before the point of danger.</p>						



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

## Notified National Technical Rules (NNTRs)

<b>ID</b>	<b>CH-TSI LOC&amp;PAS-035</b>	<b>State:</b>	Switzerland	<b>Version:</b>	<b>2.1</b>	<b>Date:</b>	November 2020
<b>Title:</b>	<b>Sufficient braking performance during emergency braking</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section				<b>Address</b>	3003 Bern Switzerland	
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	Currently no corresponding requirements in LOC&PAS TSI						
<b>Reference in Swiss regulation:</b>	IP-RailO 38.3, Section 1.1 IP-RailO 47.1, Section 3.2 Basic parameter (2015/2299/EU), Clause 4.5.1						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	Sufficient braking performance during emergency braking					
	<b>Type of Requirement</b>	Safety	Reliability/a availability	Health	Environment	Technical compatibility	
		X	-	-	-	-	
	<b>Scope of application</b>	All vehicles in Switzerland equipped with an ETCS on-board unit.					
	<b>Requirement</b>	<p>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:</p> <p>Tolerated unavailability: <math>1 \cdot 10^{-7}</math></p>					
	<b>Reasons/explanation</b>	<p>If the braking distance is increased in case of emergency braking, this may lead to a hazardous situation.</p> <p>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&amp;PAS TSI).</p> <p>As result of a risk assessment (Clause 6.2.3.5 of LOC&amp;PAS TSI) a value of <math>1 \cdot 10^{-7}</math> for the tolerated unavailability has been determined.</p> <p>If there is a switch of braking means, the changeover times must be taken into account.</p> <p>Requirement relates to CH-TSI CCS-007.</p>					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	X	X		
<b>Validity period</b>	unlimited						
<b>Current applicable norms in Switzerland:</b>							

<b>Test specification for certificate of conformity:</b>	
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## Notified National Technical Rules (NNTRs)

<b>ID:</b>	<b>CH-TSI LOC&amp;PAS-036</b>	<b>State:</b>	Switzerland	<b>Version:</b>	2.1	<b>Date:</b>	June 2021
<b>Title:</b>	<b>Vehicles with a control panel for both directions of travel</b>						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section				<b>Address:</b>	3003 Bern Switzerland	
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	No corresponding requirements in LOC&PAS TSI.						
<b>Reference in Swiss regulation:</b>	IP-RailO IP 38.3, Section 1.1 IP-RailO IP 47.1, Section 3.2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input checked="" type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	Vehicles with a control panel for both directions of travel					
	<b>Type of Requirement</b>	Safety	Reliability/availability	Health	Environment	Technical compatibility	
		X	-	-	-	-	
	<b>Scope of application</b>	ETCS on-board unit					
	<b>Requirement</b>	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.					
	<b>Reasons/explanation</b>	Note: See CR TSI_C00000224					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	-	-		
<b>Validity period</b>	unlimited						
<b>Current applicable norms in Switzerland:</b>							
<b>Test specification for certificate of conformity:</b>							

## Notified National Technical Rules (NNTRs)

<b>ID:</b>	<b>CH-TSI LOC&amp;PAS-037</b>	<b>State:</b>	Switzerland	<b>Version:</b>	1.0	<b>Date:</b>	June 2019
<b>Title:</b>	ETCS service brake						
<b>Office responsible:</b>	Federal Office of Transport FOT Approvals and Rules Section				<b>Address:</b>	3003 Bern Switzerland	
<b>E-mail:</b>	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
<b>Referenced TSI article:</b>	LOC&PAS TSI, Clause 4.2.4.2.1						
<b>Reference in Swiss regulation:</b>	IP-RailO IP 38.3, Section 1.1 IP-RailO IP 47.1, Section 3.2						
<b>Current NNTR classification:</b>	<input type="checkbox"/> NNTR on an 'open point' in the TSI <input checked="" type="checkbox"/> NNTR due to difference between Swiss regulation and corresponding requirements in the TSI <input type="checkbox"/> NNTR due to additional requirements in Swiss regulation without equivalent in the TSI						
<b>Full description:</b>	<b>Title</b>	ETCS service brake					
	<b>Type of Requirement</b>	Safety	Reliability/availability	Health	Environment	Technical compatibility	
		X	-	-	-	-	
	<b>Scope of application</b>	All vehicles equipped with an ETCS on-board unit.					
	<b>Requirement</b>	New vehicles (newly built by the manufacturer) must be equipped with an ETCS service brake.					
	<b>Reasons/explanation</b>	The use of the ETCS service brake is proposed on ETCS Level 2 lines.					
	<b>Applicable to SRS version</b>	2.2.2 +	2.3.0d	3.4.0	3.6.0		
		X	X	X	X		
<b>Validity period</b>	unlimited						
<b>Current applicable norms in Switzerland:</b>							
<b>Test specification for certificate of conformity:</b>							