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Federal Department of the Environment
Transport, Energy and Communications DETEC

Federal Office of Transport FOT
Infrastructure Division

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-001**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Requirements for the use of rolling stock on ETCS routes**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern Switzerland	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CCS TSI						
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 description:	The requirements in the document "Voraussetzungen für den Einsatz von Fahrzeugen auf ETCS-Strecken" (Requirements for the use of rolling stock on ETCS routes) apply.						
Current applicable norms in Switzerland:							
Test specification for certificate of conformity:							

Notified National Technical Rules (NNTRs)

<table>
<tr><td>ID:</td><td>CH-TSI CCS-003</td><td>State:</td><td>Switzerland</td><td>Version:</td><td>2.0</td><td>Status:</td><td>June 2019</td></tr>
<tr><td>Title:</td><td colspan="7">Activation / Deactivation of transfer of Packet 44 to SIGNUM/ZUB</td></tr>
<tr><td>Office responsible:</td><td colspan="4">Federal Office of Transport FOT
Approvals and Rules Section</td><td>Address:</td><td colspan="2">3003 Bern
Switzerland</td></tr>
<tr><td>E-mail:</td><td colspan="7">_BAV-WeiterentwicklungRegelwerke@bav.admin.ch</td></tr>
<tr><td colspan="2">Referenced TSI article:</td><td colspan="6">No corresponding requirements in CCS TSI.
Basic parameter (2015/2299/EU), Clause 12.2.3</td></tr>
<tr><td colspan="2">Reference in Swiss regulation:</td><td colspan="6">IP-RailO IP 38.3, Section 1.1
IP-RailO IP 47.1, Section 3.2</td></tr>
<tr><td colspan="2">Current NNTR classification:</td><td colspan="6">☐ 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</td></tr>
<tr><td colspan="2" rowspan="4">Full description:</td><td>Title</td><td colspan="5">Activation / Deactivation of transfer of Packet 44 to SIGNUM/ZUB</td></tr>
<tr><td>Type of Requirement</td><td>Safety</td><td>Reliability/ availability</td><td>Health</td><td>Environment</td><td>Technical compatibility</td></tr>
<tr><td></td><td>X</td><td>-</td><td>-</td><td>-</td><td>X</td></tr>
<tr><td>Scope of application</td><td colspan="5">ETCS on-board unit</td></tr>
<tr><td>Requirement</td><td colspan="5">When the ETCS on-board unit is switched to another ETCS level or mode, transmission to the Integra SIGNUM and/or ZUB systems of packets 44 with NID_XUSER=2 read from the ETCS balise by means of the ETM must be activated or deactivated according to the following table.

Transmission must be activated or deactivated within 1,700 milliseconds.

Tolerated unavailability: 10^{-4}/h

When the interface between the ETCS on-board unit and ETM or ZUB 262 is interrupted (e.g. in the event of an error), transmission must be activated.

<u>Abbreviations in the table</u>
J: Transmission activated
N: Transmission deactivated
N/A: Not applicable
Other abbreviations according to SRS (SUBSET-026)

<table>
<tr><td>Mode</td><td>Level 0</td><td>Level 1</td><td>Level 2</td></tr>
<tr><td>UN</td><td>J</td><td>N/A</td><td>N/A</td></tr>
<tr><td>SR</td><td>N/A</td><td>N</td><td>N</td></tr>
<tr><td>FS</td><td>N/A</td><td>N</td><td>N</td></tr>
<tr><td>OS</td><td>N/A</td><td>N</td><td>N</td></tr>
</table></td></tr>
</table>

SH	J	J	J
SL	J	J	J
NL	J	J	J
NP	J	J	J
IS	J	J	J
SF	J	J	J
SE	N/A	N/A	N/A
SN	N/A	N/A	N/A
SB	J	J	J
TR	N/A	N	N
PT	N/A	N	N
RV	N/A	N	N

Reasons/ explanation	For safety reasons, leading vehicles not equipped with ETCS may not enter ETCS level 2 track. For this reason a balise group sends packet 44 stop information beyond the level 0 → level 2 limit. In order to prevent leading vehicles that have switched to ETCS level 2 from being automatically stopped by the national train control system, the ETCS on-board equipment must prevent transmission of packets 44 (NID_XUSER=2) read from the ETCS balises to the ZUB and SIGNUM systems (ETM or ZUB 262). When a vehicle switches from ETCS level 2 to level 0, transmission of packet 44 information must be reactivated.

Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
	X	X	-	-	

Validity period	This requirement applies for as long as the vehicle is equipped with the SIGNUM / ZUB / ETM or SIGNUM / ZUB 262 train control systems and ETCS.
Current applicable norms in Switzerland: diesbezüglich geltende Normen:	
Test specification for certificate of conformity:	

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-005**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Proof of Quality of Service for GSM-R radio transmission**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.1.2.2					
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 description:	**Title**	GSM-R Proof of Quality of Service for GSM-R radio transmission				
	Type of requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		-	X	-	-	X
	Scope of application	ERTMS/ETCS on-board unit				
	Requirement	The ETCS data channel must meet the QoS parameters in SUBSET-093 V2.3.0 "GSM-R Interfaces Class 1 Requirements". Version 3.0 is to be used for document O-2475 "ERTMS/GSM-R Quality of Service Test Specification" referenced in SUBSET-093. As proof of compliance, test results obtained with a GSM-R network in operation in Europe or in a laboratory which reproduces such a network are required.				
	Reasons/ explanation	Compliance with required QoS parameters for GSM-R (EDOR) in order to ensure reliable operation on ETCS L2 track.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	X	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-006**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Loss of "Non leading permitted" in "Non leading" mode**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CCS TSI, SUBSET-026, Clause 4.4.15 CCS TSI, SUBSET-034, Versions 3.1.0 and 3.2.0, Clause 2.2.3.3.1 b) Basic parameter (2015/2299/EU), Clauses 12.2.5.4 and 12.2.5.6
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 description:

Title	Loss of "Non leading permitted" in "Non leading" mode					
Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility	
	X	-	-	-	-	
Scope of application	ETCS on-board unit					
Requirement	When the ETCS on-board unit is in non-leading mode and the non leading input signal does not display "non leading permitted" at the TI, the ETCS on-board unit must display the message "NL not permitted" in the language selected on the DMI.					
Reasons/explanation	This message allows the driver to react immediately when the "non-leading permitted" signal is lost. Requirement relates to CH-TSI LOC&PAS-019.					
Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0		
	X	X	X	X		
Validity period	unlimited					

Current applicable norms in Switzerland:	
Test specification for certificate of conformity:	

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-007**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019

Title:	**Braking curve requirement for ERTMS/ETCS Baseline 2**		
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section	**Address:**	3003 Bern Switzerland
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch		

Referenced TSI article:	Open point for Baseline 2 in CCS TSI Basic parameter (2015/2299/EU), Clause 12.2.5.2
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 description:

Title	Braking curve requirement for ERTMS/ETCS Baseline 2					
Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility	
	X	-	-	-	-	
Scope of application	ETCS on-board unit					
Requirement	See document "Anforderungen an die Parametrisierung und Validierung der Bremskurven für ETCS Level 2" (Requirements for parameterisation and validation of braking curves for ETCS level 2) Version 1.1 (ETCS system manager baseline configuration).					
Reasons/explanation	In the case of concrete projects, it is recommended to provide the Swiss ETCS system manager with any new information. Requirement relates to CH-TSI LOC&PAS-035.					
Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0		
	X	X	-	-		
Validity period	unlimited					

Current applicable norms in Switzerland:	
Test specification for certificate of conformity:	

Notified National Technical Rules (NNTRs)

ID:	CH-TSI CCS-008	State:	Switzerland	Version:	2.0	Status:	June 2019
Title:	**Minimally implemented change requests**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.2.5.7						
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 description:

Title: Minimally implemented change requests

Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
	X	X	-	-	X

Scope of application: ETCS on-board unit

Requirement:

An 'X' in the following table indicates which change requests (CRs) must be implemented in addition to the ETCS on-board unit's SRS version. Please pay attention to the footnotes.

CR	SRS 2.2.2+	SRS 2.3.0d	SRS 3.4.0	SRS 3.6.0
16, 34, 35, 46, 50, 55, 63, 88, 91, 94, 95, 102, 115, 138[1], 143, 144, 154[2], 155, 197, 209, 218, 223, 226, 231, 248, 252, 253, 268, 375, 379, 387, 389, 396, 398, 417, 419, 421, 436, 441, 445, 449, 454, 458[3], 460, 470, 476, 477, 499, 500[4], 512, 525, 532, 556, 600[5], 616, 620, 645, 688, 744, 781, 787, 788, 796	X			
336, 907, 917, 1019	X	X		
1091[6]			X	
1312 item 3b[7]			X	X

[1] CR 138 must be implemented at least as follows:

It must be possible to reset braking in reversing mode when the vehicle is stationary.

When the vehicle is in reversing mode and stationary, monitoring of the resetting distance may never lead to use of the brake, even

<table>
<tr><td></td><td></td><td colspan="5">when the remaining resetting distance is 0m or the permitted resetting distance has been exceeded.

NB: The amendment to SRS section 4.4.18.1.3 by CR 138 should be ignored, as CR 907 must be fully implemented.

[2] CR 154: Only the part relevant to reversing mode must be implemented.

[3] CR 458 must only be implemented if conditions are possible (e.g. owing to odometry problems) under which the ETCS on-board unit sends Packet 1, even though no single balise groups are located on the track.

[4] CR 500: Only the amendment to SRS section 3.18.3.4 must be implemented.

[5] CR 600: Only the part regarding the sending of position reports according to position report parameters in operating mode UN must be implemented.

[6] CR 1091 may be implemented, but this is not a requirement. NB: It has been decided (DAT 329) that when CR 1091 is implemented, CR 1326 should also be implemented.

[7] CR 1312: The CR must be implemented at least to the extent that an operating mode must be confirmed before a message is sent.

NB: CR 782 has been adopted for SRS versions 3.4.0 and 3.6.0. It has been shown that the adopted functionality leads to restrictions and risks (DAT 358). The SF ETCS should be contacted for further information.</td></tr>
<tr><td></td><td>Reasons/explanation</td><td colspan="5">See description of problem in the relevant CRs.</td></tr>
<tr><td></td><td rowspan="2">Applicable to SRS version</td><td>2.2.2 +</td><td>2.3.0d</td><td>3.4.0</td><td>3.6.0</td><td></td></tr>
<tr><td>X</td><td>X</td><td>X</td><td>X</td><td></td></tr>
<tr><td></td><td>Validity period</td><td colspan="5">unlimited</td></tr>
<tr><td>Current applicable norms in Switzerland:</td><td colspan="6"></td></tr>
<tr><td>Test specification for certificate of conformity:</td><td colspan="6"></td></tr>
</table>

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-011**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Euroloop functionality**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						
Referenced TSI article:	CCS TSI, Clause 4.2.2 (1) (b) "Euroloop-data transmission" Basic parameter (2015/2299/EU), Clause 12.2.5.7						
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 description:

Title	Euroloop functionality					
Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility	
	X	X	-	-	X	
Scope of application	ETCS on-board unit					
Requirement	The ETCS on-board unit must be able to read and process telegrams sent by Euroloop.					
Reasons/ explanation	In many stations the overlap at departure signals is very short or entirely absent. If a train departs despite the departure signal indicating stop, a hazard situation may ensue. In such situations Euroloop is activated at a departure signal indicating stop in order to transmit infill movement authority with release speed = 0km/h. The transmitted Euroloop telegram thus prevents a train crossing a signal indicating stop. It should be noted that Euroloop transmits restrictive monitoring data when it registers an error. If the departure signal sends movement authority, the Euroloop telegram permits the signal to be passed. Euroloop is also applied on routes with critical capacity. In order to ensure the efficient and safe operation of the railway network, ETCS on-board unit must therefore be able to read and process telegrams sent by Euroloop in both of the above cases.					
Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0		
	-	-	X	X		
Validity period	unlimited					

Current applicable norms in Switzerland:	

Test specification for certificate of conformity:	

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-015**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Simultaneous control of two GSM-R data channels**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI.					
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 description:	**Title**	Simultaneous control of two GSM-R data channels				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		-	X	-	-	-
	Scope of application	ETCS on-board unit				
	Requirement	For RBC handover, the ETCS on-board unit must be capable of handling two communication sessions at the same time.				
	Reasons/ explanation	For capacity reasons, an ETCS on-board unit needs to be able to establish a data connection with both RBCs during an RBC handover.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	-	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-016**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Application of country-specific project planning and functions**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.2.4.5					
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 description:	**Title**	Application of country-specific project planning and functions				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		X	X	-	-	X
	Scope of application	ETCS on-board unit				
	Requirement	When an ETCS on-board unit is used in Switzerland and has non-Swiss ETCS parameter values and non-TSI compliant functions in addition to the ETCS parameter values and functions necessary for Switzerland, it must be assured by technical means that only the ETCS parameter values and functions valid in Switzerland are used on Swiss ETCS routes. Non-Swiss ETCS parameter values and functions must be declared.				
	Reasons/explanation	This requirement only applies to parameters that cannot be transmitted by lineside ECTS equipment. The application of the correct parameter values is either important from a safety aspect (e.g. braking curve parameters) or necessary for technical compatibility (e.g. use of correct pantograph). This has an indirect impact on track availability.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	X	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-018**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Level STM/NTC prohibited for SIGNUM/ZUB**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.2.1					
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 description:	**Title**	Level STM/NTC prohibited for SIGNUM/ZUB				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		X	X	-	-	X
	Scope of application	ETCS on-board unit				
	Requirement	ETCS on-board unit may not offer STM level SIGNUM/ZUB (Baseline 2) or NTC level SIGNUM/ZUB (Baseline 3).				
	Reasons/ explanation	The Swiss standard gauge network is designed so that ETCS vehicles outside the ETCS level 2 routes must be driven in level 0 (Baseline 2 vehicles) or level 1 (Baseline 3 vehicles). STM and NTC levels are not supported.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	X	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-019**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Acceptance and display of train data**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CCS TSI, SUBSET-026, Clause 3.18.3.2.1 and Clause 5.17; CCS TSI, SUBSET-034, Clause 2.6 Basic parameter (2015/2299/EU), Clause 12.2.5.4					
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 description:	**Title**	Acceptance and display of train data				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		X	-	-	-	-
	Scope of application	ETCS on-board units on multiple units				
	Requirement	An implementation is permitted such that ETCS on-board units use train data from a source other than the train driver in order to display them as default values instead of the previously stored values if the train driver initiates a change in the train data.				
	Reasons/explanation	For new train data to become valid, the train driver must carry out an intentional action. Implementations are permitted that neither lead to an automatic change in ETCS train data nor automatically launch a process requiring the train driver to confirm changed ETCS train data. However, the train data from an external source should be displayed as default values when the train driver initiates a change in the train data.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	X	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

<table>
<tr><td>ID:</td><td>CH-TSI CCS-022</td><td>State:</td><td>Switzerland</td><td>Version:</td><td>2.0</td><td>Status:</td><td>June 2019</td></tr>
<tr><td>Title:</td><td colspan="7">Reversing in ‘Unfitted’ mode</td></tr>
<tr><td>Office responsible:</td><td colspan="3">Federal Office of Transport FOT
Approvals and Rules Section</td><td>Address:</td><td colspan="3">3003 Bern
Switzerland</td></tr>
<tr><td>E-mail:</td><td colspan="7">_BAV-WeiterentwicklungRegelwerke@bav.admin.ch</td></tr>
<tr><td colspan="2">Referenced TSI article:</td><td colspan="6">CCS TSI, SUBSET-026, Clause 4.5.2 ‘Reverse Movement Protection’
Basic parameter (2015/2299/EU), Clause 12.2.5.8</td></tr>
<tr><td colspan="2">Reference in Swiss regulation:</td><td colspan="6">IP-RailO IP 38.3, Section 1.1
IP-RailO IP 47.1, Section 3.2</td></tr>
<tr><td colspan="2">Current NNTR classification:</td><td colspan="6">☐ 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</td></tr>
<tr><td colspan="2" rowspan="8">Full description:</td><td>Title</td><td colspan="5">Reversing in ‘Unfitted’ mode</td></tr>
<tr><td>Type of Requirement</td><td>Safety</td><td>Reliability/ availability</td><td>Health</td><td>Environment</td><td>Technical compatibility</td></tr>
<tr><td></td><td>X</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Scope of application</td><td colspan="5">ETCS on-board unit</td></tr>
<tr><td>Requirement</td><td colspan="5">The ‘Reverse movement protection’ function in ‘Unfitted’ mode must be activated on vehicles that are equipped with ETCS.</td></tr>
<tr><td>Reasons/explanation</td><td colspan="5">A vehicle must be prevented from driving backwards over a level crossing in ‘Unfitted mode’ without switching level.
Requirement relates to CH-TSI LOC&PAS-036.</td></tr>
<tr><td rowspan="2">Applicable to SRS version</td><td>2.2.2 +</td><td>2.3.0d</td><td>3.4.0</td><td>3.6.0</td><td></td></tr>
<tr><td>X</td><td>X</td><td>-</td><td>-</td><td></td></tr>
<tr><td>Validity period</td><td colspan="5">unlimited</td></tr>
<tr><td colspan="2">Current applicable norms in Switzerland:</td><td colspan="6"></td></tr>
<tr><td colspan="2">Test specification for certificate of conformity:</td><td colspan="6"></td></tr>
</table>

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-023**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Text message display**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.2.5.5					
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 description:	**Title**	Text message display				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		X	X	-	-	X
	Scope of application	ETCS on-board unit				
	Requirement	It must be possible to display on the DMI text messages of up to 40 characters sent from the route without scrolling.				
	Reasons/explanation	The driver must be able to see, identify and read text messages quickly and easily.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	-	-	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-024**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Train data: NC_TRAIN, M_AXLELOAD, V_MAXTRAIN.**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern Switzerland	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.2.3
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 description:

Title	Train data: NC_TRAIN, M_AXLELOAD, V_MAXTRAIN.

Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
	X	X	-	-	X

Scope of application	ETCS on-board unit
Requirement	For ETCS on-board units in accordance with Baseline 2 the requirements in Points 1 to 4 apply. For ETCS on-board units in accordance with Baseline 3 the requirements in Points 5 to 7 apply. The following requirements apply independently of whether the values are fixed specified values (projection), are transmitted automatically by another system or are entered manually by the train driver. **1. Flexibility of train data input (Baseline 2)** **1.1 Optimum Swiss vehicle type** Train data input must permit the ETCS train data NC_TRAIN, M_AXLELOAD and V_MAXTRAIN to be set to values that allow the most suitable Swiss vehicle type to be driven. Table 1 prescribes the values to which the ETCS train data must be set so that the correct Swiss vehicle type can be driven. The additions to Table 1 given under Point 4 should be noted. Example: On a locomotive that can run with Swiss vehicle type R, A or D depending on the composition of the train, it must be possible to enter ETCS train data which correspond to line R, A or D in Table 1. **1.2 Swiss vehicle type $R_{\leq 18t}$ for tilting trains** On tilting trains, train data input must permit the ETCS train data NC_TRAIN, M_AXLELOAD and V_MAXTRAIN to be set to values that also allow the train to be driven with Swiss vehicle type $R_{\leq 18t}$.

		Line $R_{\leq 18t}$ in Table 1 shows the values to which ETCS train data must be set. The additions to Table 1 given under Point 4 should be noted. **2. Type of train data input (Baseline 2)** **2.1 Internationally operated trains** 2.1.1 NC_TRAIN input On internationally operated trains, NC_TRAIN must be set by selecting the 'label' according to Baseline 3 (see ERA_ERTMS_ 015560 v340 or v360, Table 41) or by selecting the train type/brake position according to Table 2. Data input that conforms to Baseline 3 is preferred. 2.1.2 M_AXLELOAD input On internationally operated trains, M_AXLELOAD must be set by selecting the axle load category according to Baseline 3 (see Diagram 121 in ERA_ERTMS_015560 v340 or v360) or by entering the value in tonnes. Data input that conforms to Baseline 3 is preferred. **2.2 Trains operated in Switzerland only** On trains operating exclusively in Switzerland, NC_TRAIN and M_AXLELOAD must be entered in the same way as on internationally operated trains (see 2.1) or by selecting the Swiss vehicle type e.g. R, A or D. **3. Further requirements (Baseline 2)** **3.1 Correct train data** NC_TRAIN, M_AXLELOAD and V_MAXTRAIN may not be set to values that permit operation of a Swiss vehicle type or at a top speed for which the train is not authorised. The values must correspond to the features of the train permitted in Switzerland. **3.2 Proof of compliance** When showing that this requirement has been met, it must be demonstrated to which values the ETCS train data NC_TRAIN, M_AXLELOAD, V_MAXTRAIN and L_TRAIN are set depending on the input on the DMI. **4. Additions to Table 1 (Baseline 2)** **4.1 NC_TRAIN** 4.1.1 Meaning of 'x' The 'x' in NC_TRAIN indicates that this bit may be set to 1 or 0. 4.1.2 Value 000 0000 0000 0000 The value 000 0000 0000 0000 for NC_TRAIN (in accordance with Baseline 2) is only permissible for ETCS on-board units in accordance with SRS 2.2.2+. 4.1.3 Freight trains in brake position G Because Swiss Rail Service Regulations calculate brake-weights in brake position P, 'FP 3' or 'FP 4' (see column headed 'Label') must also be selected on freight trains in brake position G.

NC_TRAIN values in accordance with Label ‘FG 3’ or ‘FG 4’ should therefore not be used under normal circumstances.

4.1.4 Use of values not listed in Table 1

If NC_TRAIN values not listed in this table are used, the ETCS system manager for Switzerland should be consulted over the monitoring that results and if this is acceptable.

4.2 M_AXLELOAD for tilting trains (N and $N_{\leq 17t}$)

Based on the certification test drives, it must be decided with the ETCS system manager for Switzerland which M_AXLELOAD value is to be used on a tilting train.

4.3 V_MAXTRAIN

V_MAXTRAIN must only be entered according to Table 1 for operation on the Mattstetten-Rothrist and Solothurn-Wanzwil routes.

4.4 Special train data combinations

4.4.1 Train data combinations not permitted in normal operation

The combination NC_TRAIN = 000 x00x 0000 0000 with at least one bit ‘x’ set to 1 and M_AXLELOAD ≤ 16 t may not be used in normal operation.

4.4.2 NC_TRAIN and M_AXLELOAD for test drives at overspeed

For test drives at overspeed on some Level 2 routes, the combination NC_TRAIN = 000 x001 0000 0000 und M_AXLELOAD ≤ 16 t must be used.

Table 1 (Baseline 2):

Swiss vehicle type	NC_TRAIN according to SRS 2.3.0d	Label according to Baseline 3	M_AXLELOAD according to SRS 2.3.0d [t]	Axle load category according to Baseline 3	V_MAXTRAIN [km/h]
N	000 x001 0000 0000 000 x000 0000 0001	TILT 7 TILT 6	17.5, 18	B1, B2	≤ 250
$N_{\leq 17t}$	000 x001 0000 0000 000 x000 0000 0001	TILT 7 TILT 6	≤ 17	A, HS17	≤ 250
W	001 x000 0000 0000 000 x000 1000 0000 010 x000 0000 0000	TILT 5 TILT 4 TILT 3	≤ 20	≤ C4	≤ 200
R	000 x000 0100 0000 000 x000 0010 0000 000 x000 0001 0000 000 0x00 0001 0000 000 00x0 0001 0000	TILT 2 TILT 1 PASS 3 FG 4 FP 4	≤ 20	≤ C4	≤ 200
$R_{\leq 18t}$	000 x000 0100 0000 000 x000 0010 0000 000 x000 0001 0000	TILT 2 TILT 1 PASS 3	≤ 18	≤ B2	≤ 250
A	000 0x00 0000 1000 000 00x0 0000 1000 000 0000 0000 0000	FG 3 FP 3 n/a	≤ 20	≤ C4	≤ 140

D	000 0x00 0001 0000 000 00x0 0001 0000 000 0x00 0000 1000 000 00x0 0000 1000 000 0000 0000 0000	FG 4 FP 4 FG 3 FP 3 n/a	20 < x ≤ 22.5	D2, D3, D4, D4xL	≤ 100
E	000 0x00 0001 0000 000 00x0 0001 0000 000 0x00 0000 1000 000 00x0 0000 1000 000 0000 0000 0000	FG 4 FP 4 FG 3 FP 3 n/a	> 22.5	E4, E5	≤ 60

Table 2 (Baseline 2):

Selected train type/brake position	NC_TRAIN according to SRS 2.3.0d
Passenger train (PASS 3)	000 1000 0001 0000
Freight train in brake position P (FP 3)	000 0010 0000 1000
Freight train in brake position G (FG 3)	000 0100 0000 1000

5. Flexibility of train data input (Baseline 3)

5.1 Optimum Swiss vehicle type

Train data input must permit the ETCS train data NC_TRAIN, NC_CDTRAIN, M_AXLELOADCAT and V_MAXTRAIN to be set to values that allow the most suitable Swiss vehicle type to be driven.

Table 3 prescribes the values to which the ETCS train data must be set so that the correct Swiss vehicle type can be driven. The additions to Table 3 listed under Point 7 should be noted.

5.2 Swiss vehicle type $R_{\leq 18t}$ for tilting trains

On tilting trains train data input must permit the ETCS train data NC_TRAIN, NC_CDTRAIN, M_AXLELOADCAT and V_MAXTRAIN to be set to values that also allow the train to be driven with Swiss vehicle type $R_{\leq 18t}$.

Line $R_{\leq 18t}$ in Table 3 shows the values to which ETCS train data must be set. The additions to Table 3 listed under Point 7 should be noted.

6. Further requirements (Baseline 3)

6.1 Correct train data

NC_TRAIN, NC_CDTRAIN, M_AXLELOADCAT and V_MAXTRAIN may not be set to values that permit operation of a Swiss vehicle type or at a top speed for which the train is not authorised. The values must correspond to the features of the train permitted in Switzerland.

6.2 Proof of compliance

If fixed train data entry (in accordance with ERA_ERTMS_015560 v340 or v360, 11.3.9.6) is possible, when showing that this requirement has been met, it must be demonstrated to which

values the ETCS train data NC_TRAIN, NC_CDTRAIN, M_AXLELOADCAT, V_MAXTRAIN and L_TRAIN are set depending on the input on the DMI.

7. Additions to Table 3 (Baseline 3)

7.1 NC_TRAIN and NC_CDTRAIN

7.1.1 Freight trains in brake position G

Because Swiss Rail Service Regulations calculate brake-weights in brake position P, ‘FP 3’ or ‘FP 4’ (see column headed ‘Label') must also be selected on freight trains in brake position G. NC_TRAIN value 000 0000 0000 0010 in accordance with Label ‘FG 3’ or ‘FG 4’ should therefore not be used under normal circumstances.

7.1.2 Use of values not listed in Table 3

If NC_TRAIN or NC_CDTRAIN values not listed in this table are used, the ETCS system manager for Switzerland should be consulted over the monitoring that results and if this is acceptable.

7.2 M_AXLELOAD for tilting trains (N and $N_{\leq 17t}$)

Based on the certification test drives, it must be decided with the ETCS system manager for Switzerland which M_AXLELOAD value is to be used on a tilting train.

7.3 V_MAXTRAIN

V_MAXTRAIN must only be entered according to Table 3 for operation on the Mattstetten-Rothrist and Solothurn-Wanzwil routes.

7.4 Special train data combinations

7.4.1 Train data combinations not permitted in normal operation

The combination NC_TRAIN = 000 0000 0000 0x00, NC_CDTRAIN = 10 and M_AXLELOADCAT = 0 (axle load category A) may not be used in normal operation.

7.4.2 NC_TRAIN, NC_CDTRAIN and M_AXLELOADCAT for test drives at overspeed

For test drives at overspeed on some line sections, the combination NC_TRAIN = 000 0000 0000 0100, NC_CDTRAIN = 10 and M_AXLELOADCAT = 0 (axle last category A) must be used. NB: This means that in accordance with SRS requirement 6.6.3.4.5 [3b] the values NC_TRAIN = 000 1001 0000 0000 and M_AXLELOAD = 16 t are sent to an RBC with system version X = 1. However, in compliance with 4.4.2, NC_TRAIN = 000 0001 0000 0000 and M_AXLELOAD = 16 t may also be sent.

Table 3 (Baseline 3):

Swiss vehicle type	NC_TRAIN according to Baseline 3	NC_CDTRAIN according to Baseline 3	Label according to Baseline 3	Axle load category according to Baseline 3	V_MAXTRAIN [km/h]

N	000 0000 0000 0100 000 0000 0000 0100	10 9	TILT 7 TILT 6	B1, B2	≤ 250
$N_{\leq 17t}$	000 0000 0000 0100 000 0000 0000 0100	10 9	TILT 7 TILT 6	A, HS17	≤ 250
W	000 0000 0000 0100 000 0000 0000 0100 000 0000 0000 0100	8 7 6	TILT 5 TILT 4 TILT 3	≤ C4	≤ 200
R	000 0000 0000 0100 000 0000 0000 0100 000 0000 0000 0100 000 0000 0000 0010 000 0000 0000 0001	5 4 3 3 3	TILT 2 TILT 1 PASS 3 FG 4 FP 4	≤ C4	≤ 200
$R_{\leq 18t}$	000 0000 0000 0100 000 0000 0000 0100 000 0000 0000 0100	5 4 3	TILT 2 TILT 1 PASS 3	≤ B2	≤ 250
A	000 0000 0000 0010 000 0000 0000 0001	2 2	FG 3 FP 3	≤ C4	≤ 140
D	000 0000 0000 0010 000 0000 0000 0001 000 0000 0000 0010 000 0000 0000 0001	3 3 2 2	FG 4 FP 4 FG 3 FP 3	D2, D3, D4, D4xL	≤ 100
E	000 0000 0000 0010 000 0000 0000 0001 000 0000 0000 0010 000 0000 0000 0001	3 3 2 2	FG 4 FP 4 FG 3 FP 3	E4, E5	≤ 60

Reasons/ explanation

In relation to the various sections of the requirement:

1.1, 5.1: Trains should not have to travel more slowly simply because ETCS train data input is not flexible enough.

1.2, 5.2: Tilting trains must be able to travel in accordance with vehicle type $R_{\leq 18t}$ depending on the route or when their tilting mechanism is inactive.

2: For obvious reasons, the harmonised train data input in Baseline 3 is preferred.

2.1.1 Example: It should not be necessary to enter or select a cant deficiency (e.g. ‘150mm’) when entering train data.

3.1, 6.1: Safety compliance assumes that train data are safe under normal circumstances.

3.2, 6.2: This makes it easier to demonstrate safety compliance.

4.1.1 NB: In accordance with TSI, trains conforming to Baseline 3 set this bit to 1.

4, 7, Tables 1 to 3: Planning of the ETCS speed profiles is based on this.

4.4, 7.4: There is no train category for overspeed test drives in the TSI.

5.1 Example 1: On a multiple unit with fixed train data entry (train types as in ERA_ERTMS_015560 v340 or v360, 11.3.9.6 and Table 39), which can operate with Swiss vehicle type W or R, the

<table>
<tr><td></td><td></td><td colspan="5">selectable train types must allow ETCS train data corresponding to line W or R in Table 3 to be entered.

Example 2: On a locomotive with fixed train data entry (input fields as in ERA_ERTMS_015560 v340 or v360, 11.3.9.6 and Table 40), which can operate with Swiss vehicle type R, A or D depending on the composition of the train, the input fields must allow ETCS train data corresponding to line R, A or D in Table 3 to be entered.</td></tr>
<tr><td rowspan="3"></td><td rowspan="2">Applicable to SRS version</td><td>2.2.2 +</td><td>2.3.0d</td><td>3.4.0</td><td>3.6.0</td><td></td></tr>
<tr><td>X</td><td>X</td><td>X</td><td>X</td><td></td></tr>
<tr><td>Validity period</td><td colspan="5">unlimited</td></tr>
<tr><td>Current applicable norms in Switzerland:</td><td colspan="6"></td></tr>
<tr><td>Test specification for certificate of conformity:</td><td colspan="6"></td></tr>
</table>

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-026**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019

Title:	**Online on-board monitoring of line equipment**		
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section	**Address:**	3003 Bern Switzerland
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch		

Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.2.5.8
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 description:

Title	Online on-board monitoring of line equipment					
Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility	
	X	X	-	-	X	
Scope of application	ETCS on-board unit					
Requirement	The ETCS on-board equipment must be able to register and transmit information for online monitoring. The requirements set out in the document 'Generisches Lastenheft Online Monitoring auf ETCS Fahrzeugen' (generic specification catalogue on online monitoring on ETCS vehicles) Version 1.3.1 (ETCS system manager baseline configuration) must be met.					
Reasons/explanation	This meets and ensure high availability on track. Greater availability reduces safety risks resulting from the failure of lineside components. In the case of concrete projects, it is recommended to provide the Swiss ETCS system manager with any new information.					
Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0		
	-	-	X	X		
Validity period	unlimited					

Current applicable norms in Switzerland: diesbezüglich geltende Normen:	
Test specification for certificate of conformity:	

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-032**	**State:**	Switzerland	**Version:**	2.0	**Status:**	June 2019
Title:	**Unique number for ETCS on-board equipment and GSM-R cab radio**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern Switzerland	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI. GSM-R Functional Requirements Specification (FRS, Version 7.4.0), 5.2.3.28i. GSM-R System Requirements Specification (SRS), 5.8.1 and 12.2.5.5.
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 description:

Title	Unique number for ETCS on-board equipment and GSM-R cab radio					
Type of Requirement	Safety	Reliability/availability	Health	Environment	Technical compatibility	
	X	X	-	-	-	
Scope of application	ETCS on-board unit					
Requirement	If the train number is entered at the ETCS-DMI, it must be ensured by technical means that the unique number is available to both the ETCS on-board equipment and the CabRadio (GSM-R Voice). If the train number is adopted from a subsystem outside of CCS, it must be ensured that this train number is available to both the ETCS on-board equipment and the CabRadio (GSM-R Voice). ETCS on-board unit (OBU) and GSM-R cab radio must share an interface and have the necessary functional components.					
Reasons/explanation	The train driver can be reached by train radio using the train number (functional addressing). In particular in long tunnels it must be ensured that the train driver can be reached immediately (e.g. in the event of an incident). This is possible when the same train number is used.					
Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0		
	X	X	X	X		
Validity period	unlimited					

Current applicable norms in Switzerland:	
Test specification for certificate of conformity:	

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-033**	**State:**	Switzerland	**Version:**	1.0	**Status:**	June 2019
Title:	**GSM-R Voice Functionalities**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	No corresponding requirements in CCS TSI. Basic parameter (2015/2299/EU), Clause 12.1.2.2
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 description:

Title	GSM-R Voice Functionalities					
Type of requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility	
	-	X	-	-	X	
Scope of application	ERTMS/GSM-R for speech applications (CabRadio)					
Requirement	The test specification O-3001-1 reference in SUBSET-093 V2.3.0 "Test specifications for GSM-R MI related requirements. Part 1: CabRadio" should be used. GSM-R terminals on shunting vehicles must meet the following requirements: 1. Support cell change in group calls (as talker and listener) with SI10bis/ter implementation and processing at terminals with resulting cell change times of less than 500 ms. 2. Support PtP calls in ER-GSM bands. 3. Support shunting group call (VGCS) incl. shunting emergency call (SEC) in ER-GSM bands. 4. Support additional SBB Enhanced Automatic Conferencing (eAC) service in SBB's Swisscom Public and GSM-R network. Proof of compliance must be provided by a recognised or certified laboratory that maps the Swiss GSM-R network.					
Reasons/ explanation	A short cell change time of 500 ms guarantees an uninterrupted voice connection incl. transmission of the connection monitoring tone thereby avoiding an unintentional stop during shunting. Shunting vehicles are termed 'shunters' in the LOC&PAS TSI. These may include maintenance vehicles, depending on their use.					
Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0		
	X	X	X	X		

	Validity period	unlimited
Current applicable norms in Switzerland:		
Test specification for certificate of conformity:		

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-034**	**State:**	Switzerland	**Version:**	1.0	**Status:**	June 2019
Title:	**'Non-leading' mode**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern Switzerland	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	For Baseline 2: CCS TSI, SUBSET-026, Clause 4.6.3, Condition [46] and no corresponding requirements in the CCS TSI, SUBSET-034.					
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 description:	**Title**	'Non-leading' mode				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		X	-	-	-	-
	Scope of application	ETCS on-board unit				
	Requirement	The ETCS on-board unit may only switch to 'non-leading' mode when • the train driver selects 'Non-leading' AND • the vehicle is stationary AND • the non-leading input signal displays the status 'Non-leading permitted'.				
	Reasons/explanation	The requirements corresponds to Condition [46] in Baseline-3-SRS, which is also required herewith for ETCS on-board units with Baseline 2. Requirement relates to CH-TSI LOC&PAS-019.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	-	-	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-035**	**State:**	Switzerland	**Version:**	1.0	**Status:**	June 2019
Title:	**Text to be displayed at the DMI**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section				**Address:**	3003 Bern Switzerland	
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CCS TSI, ERA_ERTMS_015560 (Index 6)					
Reference in Swiss regulation:	IP-RailO IP 1.3, Section 3 IP-RailO IP 38.1, Section 4					
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 description:	**Title**	Text to be displayed at the DMI				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		X	-	-	-	-
	Scope of application	ETCS on-board unit				
	Requirement	Text and terms displayed at the DMI must correspond to Annex A of the technical specification for interoperability of the 'operation and traffic management' subsystem (Annex A of the OPE TSI) and with the ETCS Driver Machine interface Specification (Index 6 in Annex A of the CCS TSI).				
	Reasons/explanation	This prevents misleading terms resulting from different translations that are not in use in Switzerland from being displayed on the DMI. In principle, the English texts in Annex A to the OPE TSI and the ETCS Driver Machine Interface specification (CCS TSI) are considered suitable for this purpose, including the DMI languages commonly used in Switzerland, namely German, French and Italian. These are texts which are displayed in the ETCS on-board equipment, not texts which are transmitted from the track side.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	X	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-036**	**State:**	Switzerland	**Version:**	1.0	**Status:**	June 2019
Title:	**GSM-R interference resistance**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CCS TSI, EIRENE SRS (Index 33)					
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 description:	**Title**	GSM-R interference resistance				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		-	-	-	-	X
	Scope of application	ERTMS/GSM-R voice communication (CabRadio) and data communication (EDOR).				
	Requirement	GSM-R terminals are not required to be equipped with the interference filters required by TSI.				
	Reasons/explanation	The CCS TSI 2016/919 contains clauses requiring GSM-R modules with interference filters. These interference filters prevent problems that do not exist in Switzerland. It is therefore not necessary to apply the requirements in Switzerland, and so unnecessary costs (e.g. upgrades) can be avoided.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	X	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-037**	**State:**	Switzerland	**Version:**	1.0	**Status:**	June 2019

Title:	**SIL2 DMI**		
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section	**Address:**	3003 Bern Switzerland
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch		

Referenced TSI article:	CCS TSI, SUBSET-091
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 description:

Title	SIL2 DMI					
Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility	
	X	-	-	-	X	
Scope of application	ETCS on-board unit					
Requirement	The safety requirements for DMI functions do not necessarily have to be met using a DMI with a proven safety integrity level (SIL), but can also be met with process assurance.					
Reasons/explanation	CCS TSI 2016/919 contains requirements from which it can be concluded that the DMI must have a SIL 2. Implementation via a SIL 2 DMI is not necessary in Switzerland.					
Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0		
	-	-	X	X		
Validity period	unlimited					

Current applicable norms in Switzerland:	
Test specification for certificate of conformity:	

Notified National Technical Rules (NNTRs)

ID:	**CH-TSI CCS-038**	**State:**	Switzerland	**Version:**	1.0	**Status:**	June 2019
Title:	**Disclosure of large odometry confidence interval**						
Office responsible:	Federal Office of Transport FOT Approvals and Rules Section			**Address:**	3003 Bern Switzerland		
E-mail:	_BAV-WeiterentwicklungRegelwerke@bav.admin.ch						

Referenced TSI article:	CCS TSI, SUBSET-041 (Index 14)					
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 description:	**Title**	Disclosure of large odometry confidence interval				
	Type of Requirement	Safety	Reliability/ availability	Health	Environment	Technical compatibility
		X	-	-	-	-
	Scope of application	ETCS on-board unit				
	Requirement	NB: The implementation of this requirement is described in more detail in the letter from the FOT to the sector (September 2019).. If there are deviations from the specifications in SUBSET-041 (CCS TSI) clause 5.3.1.1, the train driver must be fully informed. The resulting action to be taken by the train driver is determined by the on-board integrator.				
	Reasons/explanation	It must be clear to the train driver that the path measurement deviates from the odometric accuracy required in the specification.				
	Applicable to SRS version	2.2.2 +	2.3.0d	3.4.0	3.6.0	
		X	X	X	X	
	Validity period	unlimited				
Current applicable norms in Switzerland:						
Test specification for certificate of conformity:						