U-N-I-S-I-G

ERTMS/ETCS

FFFIS STM Test Specification
Traceability of test cases with Specific Transmission Module FFFIS

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Company	Technical Approval	Management approval
ALSTOM		
ANSALDO		
AZD		
BOMBARDIER		
CAF		
SIEMENS		
THALES		

1. MODIFICATION HISTORY

Issue Number Date	Section Number	Modification / Description	Author
0.0.1 2005-01-17	All	Creation of the document.	2. Schoevaerts Alstom
0.0.2 2005-01-24	5	New export from Doors.	2. Schoevaerts Alstom
0.0.3 2005-01-27	4	Clarifications in Chapter 4.	2. Schoevaerts Alstom
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2.9.1 2013-01-30	All	Updated to be in line with Subset 35 issue 3.0.0 date 2010-02-29, SRS issue 3.3.0 date 2012-03-07 and ETCS DMI specification issue 3.3.0 date 2012-03-01	F. Dönges (Thales)
2.9.2 2013-08-30	All	Updated according to comments from 2nd internal review and from ERA traceability review	F. Dönges (Thales)
2.9.3 2013-10-31	5	Update according to impact from CR 1173 and CR 1148	F. Dönges (Thales)
2.9.4 2014-02-28	5	Updates according to the changes in FID1 and FID5	F. Dönges (Thales)
2.9.5 2014-04-24	Front page	Baseline 3 1st Maintenance pre-release version	Thomas Mandry (Alstom)
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3. REFERENCES

Ref. N°	Document Reference	Title
[1]	SUBSET-035	Specific Transmission Module FFFIS

4. SCOPE

This document is part of the FFFIS STM Test Specification (SUBSET-074).

The scope of this document is to provide the traceability between the testable requirements, which are not related to degraded situations, specified in the Specific Transmission Module FFFIS [1] and the FFFIS STM Test Specification.

Chapter 1 of this document includes the traceability table. The traceability table includes the following columns:

- Paragraph number : This includes the requirement number which is assigned by DOORS based on [1] numbering.
- FFFIS STM Requirements : This includes the requirements extracted from [1].
- Equipment : This includes the equipment (ETCS, STM) which needs to fulfil the associated requirements.
- Requirement : This includes the information whether the statement in [1] is a requirement or not.
- Testable : This includes the information whether a requirement in [1] is testable at the standard interfaces or not.
- Functional Identity : This includes the assignment of a requirement to functional identities specified in the FFFIS STM test specification.
- Tested in Test Cases : This includes the information in which test case(s) the requirement is tested.
- Comment : This includes a comment when necessary.

5. TRACEABILITY TABLE

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1	Modification History		False	False			
2	Table of contents		False	False			
3	General		False	False			
3.1	References		False	False			
3.1.0-1.0-1.0-1	Ref. N°		False	False			table title
3.1.0-1.0-1.0-2	Document Reference		False	False			table title
3.1.0-1.0-1.0-3	Title		False	False			table title
3.1.0-1.0-2.0-1	[1]		False	False			
3.1.0-1.0-2.0-2	SUBSET-026		False	False			
3.1.0-1.0-2.0-3	System Requirements Specification		False	False			
3.1.0-1.0-3.0-1	[2]		False	False			
3.1.0-1.0-3.0-2	SUBSET-056		False	False			
3.1.0-1.0-3.0-3	STM FFFIS Safe Time Layer		False	False			
3.1.0-1.0-4.0-1	[3]		False	False			
3.1.0-1.0-4.0-2	SUBSET-057		False	False			
3.1.0-1.0-4.0-3	STM FFFIS Safe Link Layer		False	False			
3.1.0-1.0-5.0-1	[4]		False	False			
3.1.0-1.0-5.0-2	SUBSET-058		False	False			
3.1.0-1.0-5.0-3	FFFIS STM Application Layer		False	False			
3.1.0-1.0-6.0-1	[5]		False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
3.1.0-1.0-6.0-2	CENELEC 50170-2 (1996)		False	False			
3.1.0-1.0-6.0-3	PROFIBUS		False	False			
3.1.0-1.0-7.0-1	[6]		False	False			
3.1.0-1.0-7.0-2	SUBSET-034		False	False			
3.1.0-1.0-7.0-3	FIS for the Train Interface		False	False			
3.1.0-1.0-8.0-1	[7]		False	False			
3.1.0-1.0-8.0-2	SUBSET-041		False	False			
3.1.0-1.0-8.0-3	Performance Requirements for Interoperability		False	False			
3.1.0-1.0-9.0-1	[8]		False	False			
3.1.0-1.0-9.0-2	CENELEC EN 50159 (2010)		False	False			
3.1.0-1.0-9.0-3	Safety related communication in transmission systems		False	False			
3.1.0-1.0-10.0-1	[9]		False	False			
3.1.0-1.0-10.0-2	ERA_ERTMS_015560		False	False			
3.1.0-1.0-10.0-3	ETCS Driver Machine Interface		False	False			
3.1.0-1.0-11.0-1	[10]		False	False			
3.1.0-1.0-11.0-2	SUBSET-101		False	False			
3.1.0-1.0-11.0-3	Interface “K” specification		False	False			
3.1.0-1.0-12.0-1	[11]		False	False			
3.1.0-1.0-12.0-2	ERA_ERTMS_040001		False	False			
3.1.0-1.0-12.0-3	Assignment Of Values To ETCS Variables		False	False			
3.2	Scope and purpose		False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
3.2.1			False	False			
3.2.1.1	The acronym FFFIS stands for “Form Fit Functional Interface Specification”. This means an interface specification covering all protocol levels of communication, and including connector and physical level.		False	False			
3.2.1.2	The lowest level boundary of this specification is the “Field Data Link” layer of the PROFIBUS. The term “bus” used afterwards in the document corresponds to this FDL layer. The referenced PROFIBUS standards cover the lowest communication layers, physical layer including connector, see [5].		False	False			
3.2.1.3	The upper boundary of the specification describes the functions linked to the interface between an ERTMS/ETCS on-board equipment and an STM.		False	False			
3.2.1.4	The FFFIS STM specifies the set of requirements enabling the ERTMS/ETCS on-board equipment to be connected to any STM (i.e. the ERTMS/ETCS on-board and the STMs are interchangeable), so that:		False	False			
3.2.1.4.0-1	The functionality of the assembly ERTMS/ETCS on-board equipment / STM operating in level NTC / mode SN is equivalent to the one of the legacy National Train Control system,		False	False			
3.2.1.4.0-2	The transitions between ERTMS/ETCS and a National System and the transitions between National Systems are seamlessly performed, with no additional constraint exported on the trackside other than the installation of Eurobalises for the level transitions.		False	False			
3.2.1.5	Within the set of requirements allocated to the ERTMS/ETCS on-board in this FFFIS STM, the access to some of the ERTMS/ETCS on-board standardised interfaces (DMI, Train Interface, Juridical Recording interface) or functions (e.g. odometer) allows minimising the number of interfaces/components needed for the installation of several National Systems on-board.		False	False			
3.2.1.6	However, the use of specific interfaces or functions by National Systems, instead of these ERTMS/ETCS on-board interfaces/functions offered through this FFFIS STM, is permitted as long as it does not export any requirement on the ERTMS/ETCS on-board in addition to the ones specified in this FFFIS STM. Their choice and their definition are outside the scope of this specification.		False	False			
3.2.1.7	Any implementation that does not comply with the clause		False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	3.2.1.6 is considered as not compliant with the FFFIS STM and is outside the scope of this specification.						
3.2.1.8	The use of the Interface “K” (see document ref [10]), which offers access to the KER balise interface, also allows minimising the number of antennas installed on-board, but is not considered as part of this FFFIS STM as the data is not transmitted over the PROFIBUS.		False	False			
4	Introduction		False	False			
4.1	General requirements		False	False			
4.1.1			False	False			
4.1.1.1	The STM shall be identified by a unique number NID_STM. The NID_STM value used by the STM shall be equal to one of the NID_NTC values as specified in the list referenced in document [11].	STM	True	False			
4.1.1.2	STM shall use the common Time information from ERTMS/ETCS on-board distributed through the STM interface.	STM	True	False			
4.1.1.3	Only one STM shall be active (supervising) at a time (see chapter 10.3.3.2 for definition of active STM).	ETCS	True	False			
4.1.1.4	The ERTMS/ETCS on-board shall be responsible for monitoring the STM interface safety integrity of connected STMs and for applying the emergency brake in case of failure of the active STM.	ETCS	True	True	FA	3a.6, 3a.8, 9c.2, 9e.1	
4.1.1.4.1	Justification: The failure of a non active STM is not critical to train safety.		False	False			Justification
4.2	STM Isolation		False	False			
4.2.1			False	False			
4.2.1.1	It shall be possible to isolate an STM from its interface to the ERTMS/ETCS on-board equipment. The isolation shall ensure that the function of the bus is not disturbed by the isolated STM.	STM	True	False			
5	ERTMS/ETCS on-board Functions		False	False			
5.1	Functional architecture		False	False			
5.1.1			False	False			
5.1.1.1	The ERTMS/ETCS on-board equipment shall allow the STM to communicate with the following functions:	ETCS	True	False			
5.1.1.1.0-1	DMI	ETCS	True	False			
5.1.1.1.0-2	STM Control	ETCS	True	False			
5.1.1.1.0-3	Reference Time	ETCS	True	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.1.1.1.0-4	BIU	ETCS	True	False			
5.1.1.1.0-5	TIU	ETCS	True	False			
5.1.1.1.0-6	Juridical Data	ETCS	True	False			
5.1.1.1.0-7	Odometer	ETCS	True	False			
5.1.1.1.0-8			False	False			
5.1.1.1.0-9	Figure 1 - General configuration of STM and ERTMS/ETCS on-board		False	False			
5.2	Data and ERTMS/ETCS on-board functions		False	False			
5.2.1			False	False			
5.2.1.1	The following paragraphs describe the ERTMS/ETCS on-board functions that are available for STM and the data that shall be transmitted over the interface.		False	False			
5.2.1.2	The data is transmitted over the STM bus using Multicast or Point-to-Point Connections, see chapter 6.5.		False	False			
5.2.2	Reference time		False	False			
5.2.2.1	ERTMS/ETCS on-board is responsible for providing common reference time to all connected STMs. This is defined in [2].		False	False			
5.2.3	Odometer		False	False			
5.2.3.1	Odometry data & parameters shall be sent by the ERTMS/ETCS on-board to all STMs using multicast messages.	ETCS	True	False			
5.2.4	Train Interface (TIU)		False	False			
5.2.4.1	A subset of the train interface signals specified in [6], command and status / availability are transmitted via the FFFIS STM. These train interface signals transmitted via the FFFIS STM are called Train Interface FFFIS STM signals.		False	False			
5.2.4.2	The TIU Function is described as the exchange of information between the train interface and the STM, in this case:		False	False			
5.2.4.2.0-1	Status: is functional information coming from the train interface to the STM,		False	False			
5.2.4.2.0-2	Command: is functional information coming from the STM to the train interface.		False	False			
5.2.4.3	Train Interface FFFIS STM command signals shall be:	ETCS	True	False			Tests are linked to the entries in the table below
5.2.4.3.0-1.0-1.0-1	Command signal		False	False			table title
5.2.4.3.0-	Description		False	False			table title

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1.0-1.0-2							
5.2.4.3.0-1.0-2.0-1	Regenerative Brake	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6a.1	
5.2.4.3.0-1.0-2.0-2	To allow or to suppress the use of the Regenerative Brake.		False	False			
5.2.4.3.0-1.0-3.0-1	Magnetic Shoe Brake	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6a.1	
5.2.4.3.0-1.0-3.0-2	To allow or to suppress the use of the Magnetic Shoes Brake.		False	False			
5.2.4.3.0-1.0-4.0-1	Eddy Current Brake for Service Brake	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6a.1	
5.2.4.3.0-1.0-4.0-2	To allow or to suppress the use of the Eddy Current Brake for Service Brake.		False	False			
5.2.4.3.0-1.0-5.0-1	Eddy Current Brake for Emergency Brake	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6a.1	
5.2.4.3.0-1.0-5.0-2	To allow or to suppress the use of the Eddy Current Brake for Emergency Brake.		False	False			
5.2.4.3.0-1.0-6.0-1	Pantograph	ETCS	True	True	ASU DA OT SOM ETCS->STM	6b.1	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					STM->ETCS STM->STM		
5.2.4.3.0-1.0-6.0-2	Lower or raise the Pantograph		False	False			
5.2.4.3.0-1.0-7.0-1	Air Tightness	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6b.1	
5.2.4.3.0-1.0-7.0-2	Open or close air flaps		False	False			
5.2.4.3.0-1.0-8.0-1	Main Switch / Circuit Breaker	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6b.1	
5.2.4.3.0-1.0-8.0-2	Open or close the Main Switch / Circuit Breaker. This is considered as only one command.		False	False			
5.2.4.3.0-1.0-9.0-1	Traction Cut Off	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6b.1	
5.2.4.3.0-1.0-9.0-2	Cut off or not the traction		False	False			
5.2.4.3.1	Note: Service and Emergency Brake commands are handled in the BIU interface see chapter 5.2.5.		False	False			Note
5.2.4.4	Train Interface FFFIS STM status signals shall be:	ETCS STM	True	False			Tests are linked to the entries in the table below
5.2.4.4.0-1.0-1.0-1	Status signal		False	False			table title
5.2.4.4.0-1.0-1.0-2	Description		False	False			table title
5.2.4.4.0-1.0-2.0-1	Traction status	ETCS	True	True	ASU DA OT	6b.1, 6c.1	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					SOM ETCS->STM STM->ETCS STM->STM		
5.2.4.4.0-1.0-2.0-2	Specifies the status of the traction power		False	False			
5.2.4.4.0-1.0-3.0-1	Direction Controller information	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6c.1	
5.2.4.4.0-1.0-3.0-2	Specifies the position of the direction controller		False	False			
5.2.4.4.0-1.0-4.0-1	Cab Status	ETCS	True	True	ASU DA OT SOM ETCS->STM STM->ETCS STM->STM	6c.1	
5.2.4.4.0-1.0-4.0-2	Specifies the active cab		False	False			
5.2.4.4.1	Note: Service and Emergency Brake status are handled in the BIU interface see chapter 5.2.5.		False	False			Note
5.2.5	Brake Interface (BIU)		False	False			
5.2.5.1	The Brake Interface via ETCS is formally a part of the Train Interface. It shall include the brake interface parameters, command and status / availability of the Emergency Brake access and the Service Brake access.	ETCS	True	False			
5.2.5.2	Note: The BIU Function is separated from the TIU Function to allow physical separation and different safety and performance levels between brake commands/status and other commands/status on the Train Interface.		False	False			Note
5.2.5.3	The brake status gives the availability of the brake command.		False	False			Definition
5.2.6	Juridical data		False	False			
5.2.6.1	The FFFIS STM shall offer the possibility to the STM to transmit the national juridical data to be forwarded (together with the ETCS data) to the On-Board Recording Device.	ETCS	True	True	DA	6d.1	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.2.7	STM Control Function		False	False			
5.2.7.1	The STM Control Function shall control the STM state and the compatibility of the ERTMS/ETCS on-board and STM versions.	ETCS	True	False			
5.2.7.2	The STM Control Function shall handle the transmission of the ETCS data for STM and of the Specific NTC Data Entry/Data View for STM.	ETCS	True	False			
5.2.7.3	The STM Control Function shall handle the transmission of the ETCS status data for STM.	ETCS	True	False			
5.2.7.4	The STM Control Function shall handle the transmission of the language used to display information to the driver.	ETCS	True	False			
5.2.7.5	The STM Control Function shall handle the test procedure for STMs.	ETCS	True	False			
5.2.7.6	The STM Control Function shall handle the Override procedure for STMs.	ETCS	True	False			
5.2.7.7	The STM Control Function shall handle the airgap data to be transmitted to an NTC.	ETCS	True	False			
5.2.7.8	The STM Control Function shall handle STM max speed and STM system speed/distance.	ETCS	True	False			
5.2.7.9	The STM Control Function shall handle the transmission of the bus address, safety level and availability of the ERTMS/ETCS on-board functions.	ETCS	True	False			
5.2.7.10	The STM Control Function shall handle the display of STM failure status.	ETCS	True	False			
5.2.7.11	The STM Control Function shall handle the transmission of the active Interface 'K' Antenna/BTM.	ETCS	True	False			
5.2.7.12	The STM control function shall handle the transmission of the BTM alarm data.	ETCS	True	False			
5.2.8	DMI		False	False			
5.2.8.1	The DMI Function shall allow an active STM to dialogue with the driver for what regards its default window (see [9] chapter 9). This includes:	ETCS	True	False			
5.2.8.1.0-1	Management of buttons,	STM	True	False			
5.2.8.1.0-2	Management of indicators,	STM	True	False			
5.2.8.1.0-3	Management of sounds,	STM	True	False			
5.2.8.1.0-4	Management of text messages,	STM	True	False			
5.2.8.1.0-5	Management of supervision information	STM	True	False			
5.3	ERTMS/ETCS on-board functions and resources available for STMs		False	False			
5.3.1			False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.3.1.1	The ERTMS/ETCS on-board shall allow the STM to access its functions and resources according to the following table:	ETCS	True	False			Tests are linked to the entries in the table below
5.3.1.1.0-1	x = access is allowed in all Levels		False	False			definition
5.3.1.1.0-2	(x) = access is allowed in all Levels if possible		False	False			definition
5.3.1.1.0-3	s = access is only allowed for an active STM (see chapter 4.1.1.3)		False	False			definition
5.3.1.1.0-4	h = access is allowed for an STM in HS for preliminary request for DMI objects (see 13.2.1.5)		False	False			definition
5.3.1.1.0-4.0-1.0-1.0-1	ERTMS/ETCS ON-BOARD functions and resources available for STMs		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-2	N P		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-3	S B		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-4	P S		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-5	S H		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-6	F S		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-7	L S		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-8	S R		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-9	OS		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-10	S L		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-11	N L		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-12	U N		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-13	T R		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-14	P T		False	False			table title

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.3.1.1.0-4.0-1.0-1.0-15	S F		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-16	I S		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-17	S N		False	False			table title
5.3.1.1.0-4.0-1.0-1.0-18	R V		False	False			table title
5.3.1.1.0-4.0-1.0-2.0-1	STM Control Function		False	False			table title
5.3.1.1.0-4.0-1.0-2.0-2			False	False			STM Control Function - NP
5.3.1.1.0-4.0-1.0-2.0-3	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.16, 2a.24	STM Control Function - SB
5.3.1.1.0-4.0-1.0-2.0-4	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.13	STM Control Function - PS
5.3.1.1.0-4.0-1.0-2.0-5	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS	2a.17	STM Control Function - SH

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					STM->STM		
5.3.1.1.0-4.0-1.0-2.0-6	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.2, 2a.4, 2a.18	STM Control Function - FS
5.3.1.1.0-4.0-1.0-2.0-7	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.5, 2a.12	STM Control Function - LS
5.3.1.1.0-4.0-1.0-2.0-8	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.6, 2a.19	STM Control Function - SR
5.3.1.1.0-4.0-1.0-2.0-9	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.10	STM Control Function - OS
5.3.1.1.0-4.0-1.0-2.0-10	x	ETCS	True	True	ASU DA DE OT OVR	2a.7, 2a.23	STM Control Function - SL

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-2.0-11	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.8, 2a.20	STM Control Function - NL
5.3.1.1.0-4.0-1.0-2.0-12	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.1, 2a.21	STM Control Function - UN
5.3.1.1.0-4.0-1.0-2.0-13	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.9, 2a.22	STM Control Function - TR
5.3.1.1.0-4.0-1.0-2.0-14	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.11	STM Control Function - PT
5.3.1.1.0-4.0-1.0-2.0-			False	False			STM Control Function - SF

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
15							
5.3.1.1.0-4.0-1.0-2.0-16			False	False			STM Control Function - IS
5.3.1.1.0-4.0-1.0-2.0-17	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.14	STM Control Function - SN
5.3.1.1.0-4.0-1.0-2.0-18	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.15	STM Control Function - RV
5.3.1.1.0-4.0-1.0-3.0-1	Reference Time		False	False			table title
5.3.1.1.0-4.0-1.0-3.0-2			False	False			Reference Time - NP
5.3.1.1.0-4.0-1.0-3.0-3	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.16, 2a.24	Reference Time - SB
5.3.1.1.0-4.0-1.0-3.0-4	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM	2a.13	Reference Time - PS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-3.0-5	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.17	Reference Time - SH
5.3.1.1.0-4.0-1.0-3.0-6	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.18	Reference Time - FS
5.3.1.1.0-4.0-1.0-3.0-7	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.12	Reference Time - LS
5.3.1.1.0-4.0-1.0-3.0-8	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.19	Reference Time - SR
5.3.1.1.0-4.0-1.0-3.0-9	x	ETCS	True	True	ASU DA DE OT	2a.10	Reference Time - OS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					OVR SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-3.0-10	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.7, 2a.23	Reference Time - SL
5.3.1.1.0-4.0-1.0-3.0-11	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.8, 2a.20	Reference Time - NL
5.3.1.1.0-4.0-1.0-3.0-12	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.1, 2a.21	Reference Time - UN
5.3.1.1.0-4.0-1.0-3.0-13	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.9, 2a.22	Reference Time - TR
5.3.1.1.0-	x	ETCS	True	True	ASU	2a.11	Reference Time - PT

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
4.0-1.0-3.0-14					DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-3.0-15			False	False			Reference Time - SF
5.3.1.1.0-4.0-1.0-3.0-16			False	False			Reference Time - IS
5.3.1.1.0-4.0-1.0-3.0-17	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.14	Reference Time - SN
5.3.1.1.0-4.0-1.0-3.0-18	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.15	Reference Time - RV
5.3.1.1.0-4.0-1.0-4.0-1	DMI Function		False	False			table title
5.3.1.1.0-4.0-1.0-4.0-2			False	False			DMI Function - NP
5.3.1.1.0-4.0-1.0-4.0-3	h	ETCS	True	True	ASU DA DE DMI OT OVR	7h.6	DMI Function - SB

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-4.0-4			False	False			DMI Function - PS
5.3.1.1.0-4.0-1.0-4.0-5			False	False			DMI Function - SH
5.3.1.1.0-4.0-1.0-4.0-6	h	ETCS	True	True	ASU DA DE DMI OT OVR SOM ETCS->STM STM->ETCS STM->STM	7h.2, 7h.3, 7h.4, 7h.8, 7h.9	DMI Function - FS
5.3.1.1.0-4.0-1.0-4.0-7	h	ETCS	True	True	ASU DA DE DMI OT OVR SOM ETCS->STM STM->ETCS STM->STM	7h.2, 7h.3, 7h.4, 7h.8, 7h.9	DMI Function - LS
5.3.1.1.0-4.0-1.0-4.0-8	h	ETCS	True	True	ASU DA DE DMI OT OVR SOM ETCS->STM STM->ETCS STM->STM	7h.2, 7h.3, 7h.4, 7h.8, 7h.9	DMI Function - SR
5.3.1.1.0-4.0-1.0-4.0-9	h	ETCS	True	True	ASU DA DE DMI	7h.2, 7h.3, 7h.4, 7h.8, 7h.9	DMI Function - OS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					OT OVR SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-4.0-10			False	False			DMI Function - SL
5.3.1.1.0-4.0-1.0-4.0-11	s, h	ETCS	True	True	ASU DA DE DMI OT OVR SOM ETCS->STM STM->ETCS STM->STM	7h.7	DMI Function - NL
5.3.1.1.0-4.0-1.0-4.0-12	h	ETCS	True	True	ASU DA DE DMI OT OVR SOM ETCS->STM STM->ETCS STM->STM	7h.2, 7h.3, 7h.4, 7h.8, 7h.9	DMI Function - UN
5.3.1.1.0-4.0-1.0-4.0-13	h	ETCS	True	True	ASU DA DE DMI OT OVR SOM ETCS->STM STM->ETCS STM->STM	7h.5	DMI Function - TR
5.3.1.1.0-4.0-1.0-4.0-14	h	ETCS	True	False			DMI Function - PT

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.3.1.1.0-4.0-1.0-4.0-15			False	False			DMI Function - SF
5.3.1.1.0-4.0-1.0-4.0-16			False	False			DMI Function - IS
5.3.1.1.0-4.0-1.0-4.0-17	s, h	ETCS	True	True	ASU DA DE DMI OT OVR SOM ETCS->STM STM->ETCS STM->STM	7h.1	DMI Function - SN
5.3.1.1.0-4.0-1.0-4.0-18			False	False			DMI Function - RV
5.3.1.1.0-4.0-1.0-5.0-1	Juridical Data		False	False			table title
5.3.1.1.0-4.0-1.0-5.0-2			False	False			Juridical Data - NP
5.3.1.1.0-4.0-1.0-5.0-3	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.16, 2a.24	Juridical Data - SB
5.3.1.1.0-4.0-1.0-5.0-4	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.13	Juridical Data - PS
5.3.1.1.0-	x	ETCS	True	True	ASU	2a.17	Juridical Data - SH

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
4.0-1.0-5.0-5					DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-5.0-6	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.18	Juridical Data - FS
5.3.1.1.0-4.0-1.0-5.0-7	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.5, 2a.12	Juridical Data - LS
5.3.1.1.0-4.0-1.0-5.0-8	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.6, 2a.19	Juridical Data - SR
5.3.1.1.0-4.0-1.0-5.0-9	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM	2a.10	Juridical Data - OS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-5.0-10	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.7, 2a.23	Juridical Data - SL
5.3.1.1.0-4.0-1.0-5.0-11	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.8, 2a.20	Juridical Data - NL
5.3.1.1.0-4.0-1.0-5.0-12	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.21	Juridical Data - UN
5.3.1.1.0-4.0-1.0-5.0-13	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.9, 2a.22	Juridical Data - TR
5.3.1.1.0-4.0-1.0-5.0-14	x	ETCS	True	True	ASU DA DE OT	2a.11	Juridical Data - PT

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					OVR SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-5.0-15	(x)	ETCS	True	False	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM		Juridical Data - SF
5.3.1.1.0-4.0-1.0-5.0-16			False	False			Juridical Data - IS
5.3.1.1.0-4.0-1.0-5.0-17	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.14	Juridical Data - SN
5.3.1.1.0-4.0-1.0-5.0-18	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.15	Juridical Data - RV
5.3.1.1.0-4.0-1.0-6.0-1	Odometer Function		False	False			table title
5.3.1.1.0-4.0-1.0-6.0-2			False	False			Odometer Function - NP
5.3.1.1.0-4.0-1.0-6.0-3	x	ETCS	True	True	ASU DA DE	2a.16, 2a.24	Odometer Function - SB

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					OT OVR SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-6.0-4	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.13	Odometer Function - PS
5.3.1.1.0-4.0-1.0-6.0-5	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.17	Odometer Function - SH
5.3.1.1.0-4.0-1.0-6.0-6	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.18	Odometer Function - FS
5.3.1.1.0-4.0-1.0-6.0-7	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.12	Odometer Function - LS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.3.1.1.0-4.0-1.0-6.0-8	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.19	Odometer Function - SR
5.3.1.1.0-4.0-1.0-6.0-9	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.10	Odometer Function - OS
5.3.1.1.0-4.0-1.0-6.0-10	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.7, 2a.23	Odometer Function - SL
5.3.1.1.0-4.0-1.0-6.0-11	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.8, 2a.20	Odometer Function - NL
5.3.1.1.0-4.0-1.0-6.0-12	x	ETCS	True	True	ASU DA DE OT OVR SOM	2a.21	Odometer Function - UN

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-6.0-13	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.9, 2a.22	Odometer Function - TR
5.3.1.1.0-4.0-1.0-6.0-14	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.11	Odometer Function - PT
5.3.1.1.0-4.0-1.0-6.0-15			False	False			Odometer Function - SF
5.3.1.1.0-4.0-1.0-6.0-16			False	False			Odometer Function - IS
5.3.1.1.0-4.0-1.0-6.0-17	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.14	Odometer Function - SN
5.3.1.1.0-4.0-1.0-6.0-18	x	ETCS	True	True	ASU DA DE OT OVR SOM	2a.15	Odometer Function - RV

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-7.0-1	TIU command (Train Interface FFFIS STM signals)		False	False			table title
5.3.1.1.0-4.0-1.0-7.0-2			False	False			TIU command - NP
5.3.1.1.0-4.0-1.0-7.0-3			False	False			TIU command - SB
5.3.1.1.0-4.0-1.0-7.0-4			False	False			TIU command - PS
5.3.1.1.0-4.0-1.0-7.0-5			False	False			TIU command - SH
5.3.1.1.0-4.0-1.0-7.0-6			False	False			TIU command - FS
5.3.1.1.0-4.0-1.0-7.0-7			False	False			TIU command - LS
5.3.1.1.0-4.0-1.0-7.0-8			False	False			TIU command - SR
5.3.1.1.0-4.0-1.0-7.0-9			False	False			TIU command - OS
5.3.1.1.0-4.0-1.0-7.0-10	s	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6a.1 6b.1	TIU command - SL
5.3.1.1.0-4.0-1.0-7.0-11	s	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6a.1, 6b.1	TIU command - NL
5.3.1.1.0-4.0-1.0-7.0-12			False	False			TIU command - UN

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.3.1.1.0-4.0-1.0-7.0-13			False	False			TIU command - TR
5.3.1.1.0-4.0-1.0-7.0-14			False	False			TIU command - PT
5.3.1.1.0-4.0-1.0-7.0-15			False	False			TIU command - SF
5.3.1.1.0-4.0-1.0-7.0-16			False	False			TIU command - IS
5.3.1.1.0-4.0-1.0-7.0-17	s	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6a.1 6b.1	TIU command - SN
5.3.1.1.0-4.0-1.0-7.0-18			False	False			TIU command - RV
5.3.1.1.0-4.0-1.0-8.0-1	TIU status (Train Interface FFFIS STM signals)		False	False			table title
5.3.1.1.0-4.0-1.0-8.0-2			False	False			TIU status - NP
5.3.1.1.0-4.0-1.0-8.0-3	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.16	TIU status - SB
5.3.1.1.0-4.0-1.0-8.0-4	x	ETCS	True	True	ASU DA DE OT OVR	2a.13	TIU status - PS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-8.0-5	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.17	TIU status - SH
5.3.1.1.0-4.0-1.0-8.0-6	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.18	TIU status - FS
5.3.1.1.0-4.0-1.0-8.0-7	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.12	TIU status - LS
5.3.1.1.0-4.0-1.0-8.0-8	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.6, 2a.19	TIU status - SR
5.3.1.1.0-4.0-1.0-8.0-9	x	ETCS	True	True	ASU DA	2a.10	TIU status - OS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					DE OT OVR SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-8.0-10	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.7, 2a.23	TIU status - SL
5.3.1.1.0-4.0-1.0-8.0-11	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.8, 2a.20	TIU status - NL
5.3.1.1.0-4.0-1.0-8.0-12	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.21	TIU status - UN
5.3.1.1.0-4.0-1.0-8.0-13	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS	2a.9, 2a.22	TIU status - TR

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					STM->STM		
5.3.1.1.0-4.0-1.0-8.0-14	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.11	TIU status - PT
5.3.1.1.0-4.0-1.0-8.0-15			False	False			TIU status - SF
5.3.1.1.0-4.0-1.0-8.0-16			False	False			TIU status - IS
5.3.1.1.0-4.0-1.0-8.0-17	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.14	TIU status - SN
5.3.1.1.0-4.0-1.0-8.0-18	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.15	TIU status - RV
5.3.1.1.0-4.0-1.0-9.0-1	BIU command		False	False			table title
5.3.1.1.0-4.0-1.0-9.0-2			False	False			BIU command - NP
5.3.1.1.0-4.0-1.0-9.0-3			False	False			BIU command - SB
5.3.1.1.0-4.0-1.0-9.0-4			False	False			BIU command - PS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
5.3.1.1.0-4.0-1.0-9.0-5			False	False			BIU command - SH
5.3.1.1.0-4.0-1.0-9.0-6			False	False			BIU command - FS
5.3.1.1.0-4.0-1.0-9.0-7			False	False			BIU command - LS
5.3.1.1.0-4.0-1.0-9.0-8			False	False			BIU command - SR
5.3.1.1.0-4.0-1.0-9.0-9			False	False			BIU command - OS
5.3.1.1.0-4.0-1.0-9.0-10			False	False			BIU command - SL
5.3.1.1.0-4.0-1.0-9.0-11			False	False			BIU command - NL
5.3.1.1.0-4.0-1.0-9.0-12			False	False			BIU command - UN
5.3.1.1.0-4.0-1.0-9.0-13			False	False			BIU command - TR
5.3.1.1.0-4.0-1.0-9.0-14			False	False			BIU command - PT
5.3.1.1.0-4.0-1.0-9.0-15			False	False			BIU command - SF
5.3.1.1.0-4.0-1.0-9.0-16			False	False			BIU command - IS
5.3.1.1.0-4.0-1.0-9.0-17	s	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6e.1 6e.2	BIU command - SN
5.3.1.1.0-4.0-1.0-9.0-			False	False			BIU command - RV

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
18							
5.3.1.1.0-4.0-1.0-10.0-1	BIU status		False	False			table title
5.3.1.1.0-4.0-1.0-10.0-2			False	False			BIU status - NP
5.3.1.1.0-4.0-1.0-10.0-3	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.16, 2a.24	BIU status - SB
5.3.1.1.0-4.0-1.0-10.0-4	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.13	BIU status - PS
5.3.1.1.0-4.0-1.0-10.0-5	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.17	BIU status - SH
5.3.1.1.0-4.0-1.0-10.0-6	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS	2a.18	BIU status - FS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					STM->STM		
5.3.1.1.0-4.0-1.0-10.0-7	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.5, 2a.12	BIU status - LS
5.3.1.1.0-4.0-1.0-10.0-8	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.6, 2a.19	BIU status - SR
5.3.1.1.0-4.0-1.0-10.0-9	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.10	BIU status - OS
5.3.1.1.0-4.0-1.0-10.0-10	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.7, 2a.23	BIU status - SL
5.3.1.1.0-4.0-1.0-10.0-11	x	ETCS	True	True	ASU DA DE OT OVR	2a.8, 2a.20	BIU status - NL

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-10.0-12	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.21	BIU status - UN
5.3.1.1.0-4.0-1.0-10.0-13	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.9, 2a.22	BIU status - TR
5.3.1.1.0-4.0-1.0-10.0-14	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.11	BIU status - PT
5.3.1.1.0-4.0-1.0-10.0-15			False	False			BIU status - SF
5.3.1.1.0-4.0-1.0-10.0-16			False	False			BIU status - IS
5.3.1.1.0-4.0-1.0-10.0-17	x	ETCS	True	True	ASU DA DE OT OVR	2a.14	BIU status - SN

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
					SOM ETCS->STM STM->ETCS STM->STM		
5.3.1.1.0-4.0-1.0-10.0-18	x	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.15	BIU status - RV
5.3.1.2	When an ERTMS/ETCS on-board function fails, it shall isolate itself from the bus and shall try to close the connection with the STM.	ETCS	True	False			
6	Bus		False	False			
6.1	The PROFIBUS		False	False			
6.1.1			False	False			
6.1.1.1	The bus used for the interface between STM and ERTMS/ETCS on-board functions shall be the PROFIBUS, defined by [5].	ETCS STM	True	False			
6.1.1.2	The PROFIBUS protocol is used up to the FDL layer.		False	False			
6.1.1.2.1	Note: The use of the FDL layer is specified in [3], chapter 4.		False	False			Note
6.1.1.3	The bus configuration parameters for the PROFIBUS shall be:	ETCS STM	True	False			
6.1.1.3.0-1	Baud Rate: 1500 Kbps	ETCS STM	True	False			
6.1.1.3.0-2	Minimum Station Delay of Responders (min TSDR): 11 tBit	ETCS STM	True	False			
6.1.1.3.0-3	Maximum Station Delay of Responders (max TSDR): 150 tBit	ETCS STM	True	False			
6.1.1.3.0-4	Slot Time (TSL): 300 tBit	ETCS STM	True	False			
6.1.1.3.0-5	Quiet Time (TQUI): 0 tBit	ETCS STM	True	False			
6.1.1.3.0-6	Setup Time (TSET): 1 tBit	ETCS STM	True	False			
6.1.1.3.0-7	Time Target Rotation (TTR): 30000 tBit (20 ms)	ETCS STM	True	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
6.1.1.3.0-8	GAP Actualisation Factor (G): 10	ETCS STM	True	False			
6.1.1.3.0-9	Highest Station Address (HSA): 126	ETCS STM	True	False			
6.1.1.3.0-10	Max Retry Limit (max_retry_limit): 1	ETCS STM	True	False			
6.1.1.3.1	Note: This allows for a maximum permissible line length (PROFIBUS length) of 200 m per segment and a maximum number of 32 stations when using cable type A. In case a greater length or more stations are required, repeaters can be used without changing the configuration.		False	False			Note
6.1.1.3.2	Note: PROFIBUS may also be used for other communications than the one between STM and ERTMS/ETCS on-board specified in this FFFIS STM.		False	False			Note
6.1.2	Physical connection		False	False			
6.1.2.1	The default physical medium shall be RS-485 twisted pair shielded copper cable.	ETCS STM	True	False			
6.1.2.2	The default connectors of the different equipments (ERTMS/ETCS on-board functions and STMs) shall be 9-pin female D-SUB and cabling according to PROFIBUS specifications.	ETCS STM	True	False			
6.1.3	Bus redundancy and retransmission		False	False			
6.1.3.1	Retransmission is specified in [3]		False	False			
6.1.3.2	Regarding bus redundancy, the STM and ERTMS/ETCS on-board shall have at least one bus interface each, and may have two interfaces.	ETCS STM	True	False			
6.1.3.3	In case STM and ERTMS/ETCS on-board do not have the same number of buses, only one bus shall be connected.	ETCS STM	True	False			
6.1.3.4	The dual bus configuration shall be managed by the “Redundancy Supervisor” see Ref.: [3].	ETCS STM	True	False			
6.2	Safety		False	False			
6.2.1			False	False			
6.2.1.1	To allow communication between different equipment with different Safety Integrity Levels (SIL), the FFFIS STM shall provide communication with three levels of safety protocol (SL):	ETCS	True	True	ASU	2a.3, 2a.4, 2a.7, 2a.8, 2a.9, 2a.10, 2a.12, 2a.13, 2a.14, 2a.15, 2a.16, 2a.17, 2a.18, 2a.19, 2a.20, 2a.21, 2a.22, 2a.23	
6.2.1.1.0-1	Safety Level 4 (SL 4)	ETCS	True	True	ASU	2a.1, 2a.2, 2a.4, 2a.5, 2a.6, 2a.7, 2a.8, 2a.9, 2a.10, 2a.11, 2a.12, 2a.13, 2a.14, 2a.15, 2a.16, 2a.17, 2a.18, 2a.19,	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
						2a.20, 2a.21, 2a.22, 2a.23, 2a.24	
6.2.1.1.0-2	Safety Level 2 (SL 2)	ETCS	True	True	ASU	2a.1, 2a.2, 2a.5, 2a.9, 2a.10, 2a.11	
6.2.1.1.0-3	Safety Level 0 (SL 0)	ETCS	True	True	ASU	2a.1, 2a.2, 2a.5, 2a.9, 2a.10, 2a.11	
6.2.1.1.1	Justification: According to the requirements for Safety-related communication in transmission systems (see [8]), an equipment with no or a low Safety Integrity Level shall not masquerade as an equipment with a higher Safety Integrity Level. This requirement shall be fulfilled by using the defined Safety Levels.		False	False			Justification
6.2.1.1.2	Note: The three levels of safety are specified in [3] and [2].		False	False			Note
6.2.1.2	No equipment shall implement any Safety Level corresponding to a higher Safety Integrity Level (SIL).	STM	True	False			
6.2.1.3	ERTMS/ETCS on-board functions shall implement all the safety protocols up to the Safety Level (SL) corresponding to the SIL of the function.	ETCS	True	False			
6.3	On-board Architecture		False	False			
6.3.1			False	False			
6.3.1.1	Each STM shall only have one physical bus address (Station/Node address) towards the ERTMS/ETCS on-board.	STM	True	False			
6.3.1.2	The ERTMS/ETCS on-board may use one or several physical bus addresses depending on its architecture.		False	False			
6.3.1.3	An STM shall be able to handle one different physical address for each ERTMS/ETCS on-board function.	STM	True	True	ASU	2a.1, 2a.2, 2a.3, 2a.7-2a.23	
6.3.1.4	In case several STMs share the same physical address, each of them shall establish its own connection at Application Layer using different NID_STMs.	STM	True	False			
6.4	Physical Addressing (Station/Nodes addresses)		False	False			
6.4.1			False	False			
6.4.1.1	The physical addresses shall be allocated according to the following table.	ETCS STM	True	False			
6.4.1.1.0-1.0-1.0-1	Physical Address		False	False			table title
6.4.1.1.0-1.0-1.0-2	Device		False	False			table title
6.4.1.1.0-1.0-2.0-1	2	ETCS STM	True	True	ASU SOM	2a.1 - 2a.24	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
6.4.1.1.0-1.0-2.0-2	STM Control Function		False	False			
6.4.1.1.0-1.0-3.0-1	0, 1, 2, 3 . . 19	ETCS STM	True	True	ASU	2a.7, 2a.8, 2a.10, 2a.12-23	
6.4.1.1.0-1.0-3.0-2	Other ERTMS/ETCS on-board functions		False	False			
6.4.1.1.0-1.0-4.0-1	20 . . 49	ETCS STM	True	False			
6.4.1.1.0-1.0-4.0-2	Unused by FFFIS STM		False	False			
6.4.1.1.0-1.0-5.0-1	50 . . 69	ETCS	True	True	ASU	2a.7, 2a.8, 2a.10, 2a.12-23	
6.4.1.1.0-1.0-5.0-2	STM configurable addresses range		False	False			
6.4.1.1.0-1.0-6.0-1	70 . . 126	ETCS	True	True	ASU	2a.7, 2a.8, 2a.10, 2a.12-23	
6.4.1.1.0-1.0-6.0-2	STMs (NID_NTC+70)		False	False			
6.4.1.1.0-1.0-7.0-1	127	ETCS STM	True	False			
6.4.1.1.0-1.0-7.0-2	Reserved for Broadcast and Multicast		False	False			
6.4.1.2	By default the Physical address of an STM shall be the NID_NTC value + 70.	STM	True	False			
6.4.1.3	STM configurable addresses range shall be used for STMs for which the sum of NID_STM value +70 goes out of the Profibus physical address range	STM	True	False			
6.4.1.4	In case several STMs share the same physical address, the address value shall be the one of any of the supported STMs or a configurable physical address.	STM	True	False			
6.4.1.5	When a physical address in the STM configurable addresses range is to be used, it shall be possible to configure the value of this physical address in order to solve any potential address conflicts.	STM	True	False			
6.5	Function Addressing		False	False			
6.5.1			False	False			
6.5.1.1	The FFFIS STM requires communication with different functions of the ERTMS/ETCS on-board as e. g. Odometer, DMI and Juridical Data.		False	False			
6.5.1.2	The FFFIS STM shall use Service Access Points (SAPs) to support communication between STMs and the different	ETCS STM	True	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	ERTMS/ETCS on-board functions.						
6.5.1.3	All ERTMS/ETCS on-board functions shall have a defined fixed SAP.	ETCS	True	False			
6.5.1.3.1	Note: The SAP is fixed regardless of the chosen physical address.		False	False			Note
6.5.1.4	For transmitting data between ERTMS/ETCS on-board and the STMs, the local (Source) Service Access Point (SSAP) and partner (Destination) Service Access Point (DSAP) shall have the same value.	ETCS STM	True	False			
6.5.1.5	The SAP number shall be defined according to the following table:	ETCS STM	True	False			
6.5.1.5.0-1.0-1.0-1	Logical connections		False	False			table title
6.5.1.5.0-1.0-1.0-2	SAP# (binary)		False	False			table title
6.5.1.5.0-1.0-1.0-3	# of SAP		False	False			table title
6.5.1.5.0-1.0-1.0-4	Comment		False	False			table title
6.5.1.5.0-1.0-2.0-1	DMI channel 3	ETCS STM	True	False			Logical connections (1)
6.5.1.5.0-1.0-2.0-2	0	ETCS STM	True	False			SAP# (1)
6.5.1.5.0-1.0-2.0-3	1	ETCS STM	True	False			# of SAP (1)
6.5.1.5.0-1.0-2.0-4	Point-to-point		False	False			Comment (1)
6.5.1.5.0-1.0-3.0-1	DMI channel 4	ETCS STM	True	False			Logical connections (2)
6.5.1.5.0-1.0-3.0-2	1	ETCS STM	True	False			SAP# (2)
6.5.1.5.0-1.0-3.0-3	1	ETCS STM	True	False			# of SAP (2)
6.5.1.5.0-1.0-3.0-4	Point-to-point		False	False			Comment (2)
6.5.1.5.0-1.0-4.0-1	Juridical Data	ETCS STM	True	False			Logical connections (3)
6.5.1.5.0-1.0-4.0-2	10	ETCS STM	True	False			SAP# (3)
6.5.1.5.0-1.0-4.0-3	1	ETCS STM	True	False			# of SAP (3)

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
6.5.1.5.0-1.0-4.0-4	Point-to-point		False	False			Comment (3)
6.5.1.5.0-1.0-5.0-1	Reserved for FFFIS STM	ETCS STM	True	False			Logical connections (4)
6.5.1.5.0-1.0-5.0-2	11	ETCS STM	True	False			SAP# (4)
6.5.1.5.0-1.0-5.0-3	1	ETCS STM	True	False			# of SAP (4)
6.5.1.5.0-1.0-5.0-4	Not used (reserved for backward compatibility).		False	False			Comment (4)
6.5.1.5.0-1.0-6.0-1	DMI channel 1	ETCS STM	True	False			Logical connections (5)
6.5.1.5.0-1.0-6.0-2	100	ETCS STM	True	False			SAP# (5)
6.5.1.5.0-1.0-6.0-3	1	ETCS STM	True	False			# of SAP (5)
6.5.1.5.0-1.0-6.0-4	Point-to-point		False	False			Comment (5)
6.5.1.5.0-1.0-7.0-1	DMI channel 2	ETCS STM	True	False			Logical connections (6)
6.5.1.5.0-1.0-7.0-2	101	ETCS STM	True	False			SAP# (6)
6.5.1.5.0-1.0-7.0-3	1	ETCS STM	True	False			# of SAP (6)
6.5.1.5.0-1.0-7.0-4	Point-to-point		False	False			Comment (6)
6.5.1.5.0-1.0-8.0-1	Reserved for FFFIS STM	ETCS STM	True	False			Logical connections (7)
6.5.1.5.0-1.0-8.0-2	110	ETCS STM	True	False			SAP# (7)
6.5.1.5.0-1.0-8.0-3	1	ETCS STM	True	False			# of SAP (7)
6.5.1.5.0-1.0-8.0-4	Not used (reserved for backward compatibility).		False	False			Comment (7)
6.5.1.5.0-1.0-9.0-1	Reserved for FFFIS STM	ETCS STM	True	False			Logical connections (8)
6.5.1.5.0-1.0-9.0-2	111	ETCS STM	True	False			SAP# (8)
6.5.1.5.0-1.0-9.0-3	1	ETCS STM	True	False			# of SAP (8)
6.5.1.5.0-	Reserved for future extension of the specification		False	False			Comment (8)

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1.0-9.0-4							
6.5.1.5.0-1.0-10.0-1	Unused by FFFIS STM	ETCS STM	True	False			Logical connections (9)
6.5.1.5.0-1.0-10.0-2	001XXX	ETCS STM	True	False			SAP# (9)
6.5.1.5.0-1.0-10.0-3	8	ETCS STM	True	False			# of SAP (9)
6.5.1.5.0-1.0-10.0-4	To be defined by on-board implementers		False	False			Comment (9)
6.5.1.5.0-1.0-11.0-1	Unused by FFFIS STM	ETCS STM	True	False			Logical connections (10)
6.5.1.5.0-1.0-11.0-2	01XXXX	ETCS STM	True	False			SAP# (10)
6.5.1.5.0-1.0-11.0-3	16	ETCS STM	True	False			# of SAP (10)
6.5.1.5.0-1.0-11.0-4	To be defined by on-board implementers		False	False			Comment (10)
6.5.1.5.0-1.0-12.0-1	Reference Time	ETCS STM	True	False			Logical connections (11)
6.5.1.5.0-1.0-12.0-2	100000	ETCS STM	True	False			SAP# (11)
6.5.1.5.0-1.0-12.0-3	1	ETCS STM	True	False			# of SAP (11)
6.5.1.5.0-1.0-12.0-4	Multicast		False	False			Comment (11)
6.5.1.5.0-1.0-13.0-1	STM Control	ETCS STM	True	False			Logical connections (12)
6.5.1.5.0-1.0-13.0-2	100001	ETCS STM	True	False			SAP# (12)
6.5.1.5.0-1.0-13.0-3	1	ETCS STM	True	False			# of SAP (12)
6.5.1.5.0-1.0-13.0-4	Point-to-point		False	False			Comment (12)
6.5.1.5.0-1.0-14.0-1	Reserved for FFFIS STM	ETCS STM	True	False			Logical connections (13)
6.5.1.5.0-1.0-14.0-2	100010	ETCS STM	True	False			SAP# (13)
6.5.1.5.0-1.0-14.0-3	1	ETCS STM	True	False			# of SAP (13)
6.5.1.5.0-1.0-14.0-4	Not used (reserved for backward compatibility).		False	False			Comment (13)

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
6.5.1.5.0-1.0-15.0-1	Reserved for FFFIS STM	ETCS STM	True	False			Logical connections (14)
6.5.1.5.0-1.0-15.0-2	100011	ETCS STM	True	False			SAP# (14)
6.5.1.5.0-1.0-15.0-3	1	ETCS STM	True	False			# of SAP (14)
6.5.1.5.0-1.0-15.0-4	Not used (reserved for backward compatibility).		False	False			Comment (14)
6.5.1.5.0-1.0-16.0-1	Reserved for FFFIS STM	ETCS STM	True	False			Logical connections (15)
6.5.1.5.0-1.0-16.0-2	100100	ETCS STM	True	False			SAP# (15)
6.5.1.5.0-1.0-16.0-3	1	ETCS STM	True	False			# of SAP (15)
6.5.1.5.0-1.0-16.0-4	Not used (reserved for backward compatibility).		False	False			Comment (15)
6.5.1.5.0-1.0-17.0-1	Train Interface	ETCS STM	True	False			Logical connections (16)
6.5.1.5.0-1.0-17.0-2	100101	ETCS STM	True	False			SAP# (16)
6.5.1.5.0-1.0-17.0-3	1	ETCS STM	True	False			# of SAP (16)
6.5.1.5.0-1.0-17.0-4	Point-to-point		False	False			Comment (16)
6.5.1.5.0-1.0-18.0-1	Brake Interface	ETCS STM	True	False			Logical connections (17)
6.5.1.5.0-1.0-18.0-2	100110	ETCS STM	True	False			SAP# (17)
6.5.1.5.0-1.0-18.0-3	1	ETCS STM	True	False			# of SAP (17)
6.5.1.5.0-1.0-18.0-4	Point-to-point		False	False			Comment (17)
6.5.1.5.0-1.0-19.0-1	Odometer	ETCS STM	True	False			Logical connections (18)
6.5.1.5.0-1.0-19.0-2	100111	ETCS STM	True	False			SAP# (18)
6.5.1.5.0-1.0-19.0-3	1	ETCS STM	True	False			# of SAP (18)
6.5.1.5.0-1.0-19.0-4	Multicast for FFFIS STM version number X=4		False	False			Comment (18)
6.5.1.5.0-	Unused by FFFIS STM	ETCS	True	False			Logical connections (19)

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1.0-20.0-1		STM					
6.5.1.5.0-1.0-20.0-2	101XXX	ETCS STM	True	False			SAP# (19)
6.5.1.5.0-1.0-20.0-3	8	ETCS STM	True	False			# of SAP (19)
6.5.1.5.0-1.0-20.0-4	Defined by each implementer.		False	False			Comment (19)
6.5.1.5.0-1.0-21.0-1	Reserved for FFFIS STM	ETCS STM	True	False			Logical connections (20)
6.5.1.5.0-1.0-21.0-2	11XXXX Except 111111 reserved for broadcast	ETCS STM	True	False			SAP# (20)
6.5.1.5.0-1.0-21.0-3	15	ETCS STM	True	False			# of SAP (20)
6.5.1.5.0-1.0-21.0-4	Reserved for future extension of the specification		False	False			Comment (20)
6.5.1.5.0-1.0-22.0-1	Broadcast	ETCS STM	True	False			Logical connections (21)
6.5.1.5.0-1.0-22.0-2	111111	ETCS STM	True	False			SAP# (21)
6.5.1.5.0-1.0-22.0-3	1	ETCS STM	True	False			# of SAP (21)
6.5.1.5.0-1.0-22.0-4	Reserved due to PROFIBUS specification		False	False			Comment (21)
6.5.1.6	There shall be only one source (one station/node address) which shall transmit messages using the SAP reserved for the Reference Clock Function.	ETCS	True	False			
6.5.1.7	There shall be only one source (one station/node address) which shall transmit messages using the SAP reserved for the Odometer Function.	ETCS	True	False			
6.6	Protocol Layers		False	False			
6.6.1			False	False			
6.6.1.1	The protocol layers are Application Layer (see [4]), Safe Time Layer (see [2]), Safe Link Layer (see [3]) and PROFIBUS FDL layer (see [5]).		False	False			
6.6.1.2	The Safe Time Layer and Safe Link Layer together shall be considered as the Safety Layers.		False	False			
6.6.1.2.0-1			False	False			
6.6.1.2.0-2	Figure 2 - Application Data encapsulation by the layers in PROFIBUS telegram		False	False			
6.6.1.2.0-3			False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
6.6.1.2.0-4	Figure 3 - FFFIS STM Protocol Layers		False	False			
7	Connection Management and Version Check		False	False			
7.1	General requirements linked to the opening of point-to-point connection between STM and ERTMS/ETCS on-board		False	False			
7.1.1	Opening of the connection		False	False			
7.1.1.1	A connection shall be considered as established when the version check is considered as completed and successful (see chapter 7.1.2).	ETCS STM	True	False			
7.1.1.2	The STM shall take the initiative to establish the connection.	STM	True	False			
7.1.1.3	When a STM has to establish a connection with an ERTMS/ETCS on-board function, and fails to establish the connection 2 times, it shall be allowed to retry the establishment of connection after 10 seconds.	STM	True	True	ASU	2a.4	
7.1.2	Check of version		False	False			
7.1.2.1	Each time the STM opens a connection with any ERTMS/ETCS on-board function, the STM shall send its “FFFIS STM version number” to this ERTMS/ETCS on-board function, followed by the STM state report information in the same application message.	STM	True	True	ASU	2a.3, 2a.9	
7.1.2.2	When receiving the “FFFIS STM version number” from the STM, the concerned ERTMS/ETCS on-board function shall check the version compatibility as follows:	ETCS	True	False			
7.1.2.2.0-1	if the “FFFIS STM version number X” from the STM is lower than the lowest “FFFIS STM version number X” supported by the ERTMS/ETCS on-board equipment, the ERTMS/ETCS on-board function shall close the connection (final disconnection on Safety Layers).	ETCS	True	True	ASU	2a.1	
7.1.2.2.0-2	if the “FFFIS STM version number X” from the STM is amongst the ones supported by the ERTMS/ETCS on-board equipment, the ERTMS/ETCS on-board function shall send to the STM the highest supported FFFIS STM version number of which the version number X is equal to the one received from the STM. The ERTMS/ETCS on-board function shall be allowed to transmit application data to the STM.	ETCS	True	True	ASU	2a.2, 2a.4, 2a.5, 2a.6, 2a.7, 2a.8-24	
7.1.2.2.0-3	if the “FFFIS STM version number X” from the STM is greater than the highest version number X supported by the ERTMS/ETCS on-board equipment, the ERTMS/ETCS on-board function shall close the connection (final disconnection).	ETCS	True	True	ASU	2a.1	
7.1.2.3	When receiving “FFFIS STM version number” from	ETCS	True	True	ASU	2a.3, 2a.4, 2a.5, 2a.6, 2a.7,	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	ERTMS/ETCS on-board, the STM shall check the version compatibility. If it is compatible with the “FFFIS STM version number” of the STM, then the version check is considered as terminated and successful. The STM shall be allowed to transmit further application data to the ERTMS/ETCS on-board function.	STM				2a.8, 2a.9, 2a.10, 2a.12-23	
7.1.2.4	If the “FFFIS STM version number” of the ERTMS/ETCS on-board is not compatible with the “FFFIS STM version number” of the STM, then the STM shall close the connection (final disconnection) to the concerned ERTMS/ETCS on-board function.	STM	True	True	ASU	2a.3	
7.1.3	Closing of the connection		False	False			
7.1.3.1	Closing a connection on application layer shall be done by requesting the Safety Layers (see 6.6.1.2) to close the connection.	ETCS STM	True	False			
7.1.4	Connection Sequence Charts.		False	False			
7.1.4.0-1			False	False			
7.1.4.0-2	Figure 4 Nominal connection establishment sequence chart		False	False			
7.1.4.0-3			False	False			
7.1.4.0-4	Figure 5 Bad version number disconnection sequence chart		False	False			
7.2	General requirements linked to handling multicast connection		False	False			
7.2.1			False	False			
7.2.1.1	The multicast sender shall open a separate connection for all “FFFIS STM version numbers” defined in the Legal backward compatibility envelope (see table 16.3.1.1).	ETCS	True	False			
7.2.1.2	Note: For each multicast application connection (currently limited to Odometer Function), the table 6.5.1.5 contains one SAP for each “FFFIS STM version number”. This allows opening separate connections.		False	False			Note
7.2.1.3	On each connection, the multicast sender shall transmit the corresponding “FFFIS STM version number” over the FFFIS STM. The transmission shall be repeated to support restarting STMs.	ETCS	True	False			
7.2.1.4	When receiving “FFFIS STM version number” from ERTMS/ETCS on-board, the STM shall check the version compatibility.	STM	True	False			
7.2.1.5	If the “FFFIS STM version number” of the ERTMS/ETCS on-board is not compatible with the “FFFIS STM version number” of the STM, then the STM shall ignore any	STM	True	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	information received from this multicast connection.						
8	STM states		False	False			
8.1	No Power (NP)		False	False			
8.1.1			False	False			
8.1.1.1	The NP state means that the STM is unpowered.		False	False			
8.2	Power On (PO)		False	False			
8.2.1			False	False			
8.2.1.1	This state is the default state entered by the STM after the STM is switched on.		False	False			
8.2.1.2	Once in PO state, the STM shall perform the synchronisation of the Safe Time Layer.	STM	True	False			
8.2.1.3	Once in PO state, the STM shall establish a connection with the ERTMS/ETCS on-board STM Control Function.	STM	True	True	ASU	2a.3, 2a.4, 2a.7, 2a.8, 2a.9, 2a.10, 2a.12-24	
8.2.1.4	When the STM has established the connection to the STM Control Function, the STM shall send a “Specific NTC Data Need” information to the STM Control Function indicating whether it needs or not Specific NTC Data.	STM	True	True	ASU	2a.4, 2a.5, 2a.6, 2a.7, 2a.8, 2a.9, 2a.10, 2a.12-24	
8.2.1.5	Once the ERTMS/ETCS on-board has sent the bus addresses and safety levels of all available ERTMS/ETCS on-board functions (see 10.1.1.4), it shall allow STM to establish connections with any of these functions.	ETCS	True	True	ASU	2a.4, 2a.5, 2a.6, 2a.7, 2a.8, 2a.9, 2a.10, 2a.11, 2a.12-24	
8.2.1.6	Once the STM Control Function has sent the ETCS status data to an STM in PO state (see chapter 10.5.1.1), it shall allow this STM to request CO state.	ETCS	True	True	ASU	2a.5. 2a.6, 2a.7, 2a.8, 2a.9, 2a.10, 2a.11, 2a.12-24	
8.3	Configuration (CO)		False	False			
8.3.1			False	False			
8.3.1.1	The STM CO state is used to wait until all configuration data between STM and ERTMS/ETCS on-board have been exchanged. “Configuration data” means data that is necessary for the national operation, except Specific NTC Data.		False	False			
8.3.1.2	Configuration data from ERTMS/ETCS on-board to STMs consists of:	ETCS	True	False			
8.3.1.2.0-1	ETCS data (see chapter 10.4)	ETCS	True	True	ASU SOM	2a.9, 2a.10, 2A.11, 2a.12-23	
8.3.1.2.0-2	Status / availability of the train interface FFFIS STM signals (TIU)	ETCS	True	True	ASU SOM	2a.9, 2a.10, 2A.11, 2a.12-23	
8.3.1.2.0-3	Status / availability of the brake interface FFFIS STM signals (BIU)	ETCS	True	True	ASU SOM	2a.9, 2a.10, 2A.11, 2a.12-23	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
8.3.1.2.0-4	Odometer performance parameters (see chapter 12.4)	ETCS	True	True	ASU SOM	2a.9, 2a.10, 2A.11, 2a.12-23	
8.3.1.2.0-5	Brake performance parameters: Maximum time delay for the ERTMS/ETCS on-board to process the STM Emergency and the STM Service Brake commands. This is the time from receiving the brake command from the STM until the ETCS commands the brake.	ETCS	True	True	ASU SOM	2a.9, 2a.10, 2A.11, 2a.12-23	
8.3.1.2.1	Note: Configuration data has not necessarily to be sent in CO state. Some data could be sent in PO state.		False	False			Note
8.3.1.2.2	Note: The brake performance parameter can be used by the STM in braking curves calculation.		False	False			Note
8.3.1.3	Once the transmission of configuration data is finished and the Specific NTC Data Entry procedure is started, if the STM does not require any Specific NTC Data, then the STM shall request Cold Standby state to the STM Control Function.	STM	True	True	ASU SOM	2a.9, 2a.10, 2a.12-23	
8.3.1.4	If an STM in Configuration State detects that the ERTMS/ETCS on-board is in the mode Non-Leading or Sleeping and has received all the configuration data except for the ETCS data, the STM shall request to go to Cold Standby state.	STM	True	True	ASU SOM	1a.7, 2a.7, 2a.8	
8.3.1.4.1	Justification: This allows STM operation in Non-Leading or Sleeping in which ETCS Train Data is not available.		False	False			Justification
8.3.1.5	Once the transmission of configuration data is finished and the Specific NTC Data Entry procedure is started, if the STM does require any Specific NTC Data, then the STM shall request Data Entry state to the STM Control Function.	STM	True	True	ASU SOM	2a.9	
8.3.1.6	When an STM exits CO state, it shall have the possibility to close any connection except with STM Control Function.	ETCS	True	True	ASU SOM	2a.7, 2a.8	
8.4	Data Entry (DE)		False	False			
8.4.1			False	False			
8.4.1.1	The state DE is used by any STM that requires Specific NTC Data in order to have all the required national information for operating the train with the STM.		False	False			
8.4.1.1.1	Note: This state is only entered once at the start up process of the STM.		False	False			Note
8.4.1.2	In the state DE, the Specific NTC Data Entry procedure (see chapter 10.7) shall be performed.	ETCS STM	True	False			
8.4.1.3	Once the Specific NTC Data Entry procedure is terminated, the STM shall request Cold Standby state to the STM Control Function.	STM	True	True	ASU DE SOM	10a.1/6	
8.4.1.4	Note: The Specific NTC Data Entry procedure can be		False	False			Note

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	terminated without having received the Specific NTC Data (e.g. when the Specific NTC Data Entry procedure is skipped). However, the Cold Standby state is still requested in order to have the same system behaviour when the Specific NTC Data is invalid.						
8.5	Cold Standby (CS)		False	False			
8.5.1			False	False			
8.5.1.1	Being in the state CS, the STM has been initialised, tested (if required), configured and is in possession of all required information for operating, but is not able to receive a message from the trackside, because the reception is turned off.		False	False			
8.5.1.1.1	Exception: Specific NTC Data could be invalid, see 10.7.3.3.		False	False			Exception
8.6	Hot Standby (HS)		False	False			
8.6.1			False	False			
8.6.1.1	Being in the state HS, the STM shall be able to process the information from or to the national trackside.	STM	True	False			
8.6.1.1.1	Note: In HS state, when receiving national trackside information, the STM treats this information to be prepared to take charge of the train movement supervision once it switches to Data Available state.		False	False			Note
8.6.1.2	The STM in HS state shall have the possibility to send an “STM max speed” (V_STMMAX) to the ERTMS/ETCS on-board through the STM Control Function.	ETCS	True	True	ETCS->STM STM->STM	3b.1, 5b.1, 5b.2, 5b.3, 5b.4	
8.6.1.2.1	Note: This “STM max speed” is to allow the STM, for national reasons unknown to the ERTMS/ETCS on-board or ETCS Trackside, to request a given train speed at the level transition border in order to have a smooth transition.		False	False			Note
8.6.1.3	The STM in HS shall have the possibility to send an “STM system speed” (V_STMSYS) together with an “STM system distance” (D_STMSYS) to the ERTMS/ETCS on-board through the STM Control Function.	ETCS	True	True	ETCS->STM STM->STM	3b.3, 5b.1, 5b.2, 5b.3, 5b.4	
8.6.1.3.1	Note: This “STM system speed” together with the “STM system distance” is sent to allow the STM, to request a given train speed at a given position (“STM system distance”) before the level transition border in order to be able to detect its national trackside.		False	False			Note
8.6.1.4	When an STM in HS state receives an order to go in CS state, the STM shall have the possibility to close any connection except with STM Control Function.	ETCS	True	True	SOM ETCS->STM STM->STM	3g.1, 3g.2, 5a.3	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
8.7	Data Available (DA)		False	False			
8.7.1			False	False			
8.7.1.1	In DA state, an STM is responsible for the train movement supervision, according to the received national trackside information.		False	False			
8.7.1.2	When an STM in DA state receives an order to go in CS state, the STM shall have the possibility to close any connection except with STM Control Function.	ETCS STM	True	True	DA STM->ETCS STM->STM	4a.1, 4a.2, 4b.1, 4c.1, 4d.2, 4e.1, 5c.1, 5c.2, 5c.3, 5c.4, 5c.5,5c.11, 5d.1, 5d.2, 5d.6	
8.8	Failure (FA)		False	False			
8.8.1			False	False			
8.8.1.1	Being in this state, the STM is not able to work any more, due to internal or external reasons.		False	False			
8.8.1.2	Being in this state, the STM shall not send messages any more on the bus except to report this state to the ERTMS/ETCS on-board functions.	STM	True	False			
9	STM Manager System - Requirements on STM		False	False			
9.1	Scope		False	False			
9.1.1			False	False			
9.1.1.1	The scope of this chapter is to define how the STM handles its state.		False	False			
9.2	STM States transitions table		False	False			
9.2.1			False	False			
9.2.1.1	Transitions table for STM	STM	True	False			
9.2.1.1.0-1.0-1.0-1	NP	STM	True	False			
9.2.1.1.0-1.0-1.0-2	< 15	STM	True	False			PO => NP
9.2.1.1.0-1.0-1.0-3	< 15	STM	True	False			CO => NP
9.2.1.1.0-1.0-1.0-4	< 15	STM	True	False			DE => NP
9.2.1.1.0-1.0-1.0-5	< 15	STM	True	False			CS => NP
9.2.1.1.0-1.0-1.0-6	< 15	STM	True	False			HS => NP
9.2.1.1.0-1.0-1.0-7	< 15	STM	True	False			DA => NP
9.2.1.1.0-1.0-1.0-8	< 15	STM	True	False			FA => NP

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
9.2.1.1.0-1.0-2.0-1	1 >	STM	True	True	ASU SOM	2a.3, 2a.4, 2a.7, 2a.8, 2a.9, 2a.10, 2a.12-23	NP => PO
9.2.1.1.0-1.0-2.0-2	PO	STM	True	False			
9.2.1.1.0-1.0-2.0-3			False	False			
9.2.1.1.0-1.0-2.0-4			False	False			
9.2.1.1.0-1.0-2.0-5			False	False			
9.2.1.1.0-1.0-2.0-6			False	False			
9.2.1.1.0-1.0-2.0-7			False	False			
9.2.1.1.0-1.0-2.0-8			False	False			
9.2.1.1.0-1.0-3.0-1			False	False			
9.2.1.1.0-1.0-3.0-2	2 >	STM	True	True	ASU SOM	2a.7, 2a.8, 2a.9, 2a.10, 2a.12-23	PO => CO
9.2.1.1.0-1.0-3.0-3	CO	STM	True	False			
9.2.1.1.0-1.0-3.0-4			False	False			
9.2.1.1.0-1.0-3.0-5			False	False			
9.2.1.1.0-1.0-3.0-6			False	False			
9.2.1.1.0-1.0-3.0-7			False	False			
9.2.1.1.0-1.0-3.0-8			False	False			
9.2.1.1.0-1.0-4.0-1			False	False			
9.2.1.1.0-1.0-4.0-2			False	False			
9.2.1.1.0-1.0-4.0-3	3 >	STM	True	True	DE	10a.1/6	CO => DE
9.2.1.1.0-1.0-4.0-4	DE	STM	True	False			
9.2.1.1.0-			False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1.0-4.0-5							
9.2.1.1.0-1.0-4.0-6			False	False			
9.2.1.1.0-1.0-4.0-7			False	False			
9.2.1.1.0-1.0-4.0-8			False	False			
9.2.1.1.0-1.0-5.0-1			False	False			
9.2.1.1.0-1.0-5.0-2			False	False			
9.2.1.1.0-1.0-5.0-3	4a >	STM	True	True	ASU SOM	1a.7, 2a.7, 2a.8, 2a.10, 2a.12-23	CO => CS
9.2.1.1.0-1.0-5.0-4	4a >	STM	True	True	ASU DE SOM	10a.1/6	DE => CS
9.2.1.1.0-1.0-5.0-5	CS	STM	True	False			
9.2.1.1.0-1.0-5.0-6	< 4a	STM	True	True	OVR SOM ETCS->STM STM->STM	3e.1, 5a.3, 12c.1	HS => CS
9.2.1.1.0-1.0-5.0-7	< 4a < 4b	STM	True	True	OVR SOM STM->ETCS STM->STM	4a: 4a.1, 4a.2, 4b.1, 4c.1, 4d.2, 4e.1, 12b.2, 12c.2 4b: 5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5d.1, 5d.2, 5d.6	DA => CS
9.2.1.1.0-1.0-5.0-8			False	False			
9.2.1.1.0-1.0-6.0-1			False	False			
9.2.1.1.0-1.0-6.0-2			False	False			
9.2.1.1.0-1.0-6.0-3			False	False			
9.2.1.1.0-1.0-6.0-4			False	False			
9.2.1.1.0-1.0-6.0-5	6 >	STM	True	True	SOM ETCS->STM STM->STM	1a.2, 3a.1, 3j.1, 5a.1, 5a.3	CS => HS
9.2.1.1.0-1.0-6.0-6	HS	STM	True	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
9.2.1.1.0-1.0-6.0-7			False	False			
9.2.1.1.0-1.0-6.0-8			False	False			
9.2.1.1.0-1.0-7.0-1			False	False			
9.2.1.1.0-1.0-7.0-2			False	False			
9.2.1.1.0-1.0-7.0-3			False	False			
9.2.1.1.0-1.0-7.0-4			False	False			
9.2.1.1.0-1.0-7.0-5	9 >	STM	True	True	SOM ETCS->STM STM->STM	1a.1, 1a.4, 1a.7, 1b.1, 3f.1, 5c.3, 5d.1	CS => DA
9.2.1.1.0-1.0-7.0-6	9 >	STM	True	True	SOM ETCS->STM STM->STM	1a.2, 3a.5, 3b.1, 3b.3, 3j.1, 5c.1, 5c.2, 5c.6	HS => DA
9.2.1.1.0-1.0-7.0-7	DA	STM	True	False			
9.2.1.1.0-1.0-7.0-8			False	False			
9.2.1.1.0-1.0-8.0-1			False	False			
9.2.1.1.0-1.0-8.0-2	16 > 17 >	STM	True	True	FA	16: 9a.1	PO => FA
9.2.1.1.0-1.0-8.0-3	16 > 17 >	STM	True	True	FA	16: 3i.1, 9a.1	CO => FA
9.2.1.1.0-1.0-8.0-4	16 > 17 >	STM	True	True	FA	16: 9a.1	DE => FA
9.2.1.1.0-1.0-8.0-5	16 > 17 >	STM	True	True	FA	16: 9a.1	CS => FA
9.2.1.1.0-1.0-8.0-6	16 > 17 >	STM	True	True	FA	16: 9a.1	HS => FA
9.2.1.1.0-1.0-8.0-7	16 > 17 >	STM	True	True	FA	16: 9b.1	DA => FA
9.2.1.1.0-1.0-8.0-8	FA	STM	True	False			
9.2.1.2	Transitions conditions table		False	False			
9.2.1.2.1	Note: This table only contains the event(s) that triggers the transition. It does not describe the reasons why this(these)		False	False			Note

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	event(s) happens. ETCS orders referred to below are described in chapter 10.3.2.						
9.2.1.2.1.0-1.0-1.0-1	Condition Id		False	False			table title
9.2.1.2.1.0-1.0-1.0-2	Content of the conditions		False	False			table title
9.2.1.2.1.0-1.0-2.0-1	1	STM	True	False			
9.2.1.2.1.0-1.0-2.0-2	STM is powered on	STM	True	True	ASU SOM	2a.3, 2a.4, 2a.7, 2a.8, 2a.9, 2a.10, 2a.12-23	NP => PO
9.2.1.2.1.0-1.0-3.0-1	2	STM	True	False			
9.2.1.2.1.0-1.0-3.0-2	ETCS order “Configuration”	STM	True	True	ASU SOM	2a.7, 2a.8, 2a.9, 2a.10, 2a.12-23	PO => CO
9.2.1.2.1.0-1.0-4.0-1	3	STM	True	False			
9.2.1.2.1.0-1.0-4.0-2	ETCS order “Data Entry”	STM	True	True	ASU DE SOM	10a.1/6	CO => DE
9.2.1.2.1.0-1.0-5.0-1	4a	STM	True	False			
9.2.1.2.1.0-1.0-5.0-2	ETCS unconditional order “Cold Standby”	STM	True	True	ASU DE OVR SOM ETCS->STM STM->ETCS STM->STM	1a.7, 2a.7, 2a.8, 2a.10, 2a.12-23, 3e.1, 4a.1, 4a.2, 4b.1, 4c.1, 4d.2, 4e.1, 5a.3, 10a.1/6, 12b.2, 12c.1, 12c.2	CO => CS; DE => CS; HS => CS; DA => CS
9.2.1.2.1.0-1.0-6.0-1	4b	STM	True	False			
9.2.1.2.1.0-1.0-6.0-2	(ETCS conditional order “Cold Standby” has been received) AND (STM does not or no more report National Trip Procedure)	STM	True	True	STM->STM	5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5d.1, 5d.2, 5d.6	DA => CS
9.2.1.2.1.0-1.0-7.0-1	5		False	False			
9.2.1.2.1.0-1.0-7.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-8.0-1	6	STM	True	False			
9.2.1.2.1.0-1.0-8.0-2	ETCS order “Hot Standby”	STM	True	True	SOM ETCS->STM STM->STM	1a.2, 3a.1, 3j.1, 5a.1, 5a.3	CS => HS

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
9.2.1.2.1.0-1.0-9.0-1	7		False	False			
9.2.1.2.1.0-1.0-9.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-10.0-1	8		False	False			
9.2.1.2.1.0-1.0-10.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-11.0-1	9	STM	True	False			
9.2.1.2.1.0-1.0-11.0-2	ETCS order “Data Available”	STM	True	True	SOM ETCS->STM STM->STM	1a.1, 1a.2, 1a.4, 1a.7, 1b.1, 3a.5, 3b.1, 3b.3, 3f.1, 3j.1, 5c.1, 5c.2, 5c.3, 5c.6, 5d.1	HS => DA; CS => DA
9.2.1.2.1.0-1.0-12.0-1	10		False	False			
9.2.1.2.1.0-1.0-12.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-13.0-1	11		False	False			
9.2.1.2.1.0-1.0-13.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-14.0-1	12		False	False			
9.2.1.2.1.0-1.0-14.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-15.0-1	13		False	False			
9.2.1.2.1.0-1.0-15.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-16.0-1	14		False	False			
9.2.1.2.1.0-1.0-16.0-2	intentionally deleted		False	False			
9.2.1.2.1.0-1.0-17.0-1	15	STM	True	False			
9.2.1.2.1.0-1.0-17.0-2	STM is powered off	STM	True	False			PO => NP; CO => NP; DE => NP; CS => NP; HS => NP; DA => NP; FA => NP
9.2.1.2.1.0-1.0-18.0-1	16	STM	True	False			
9.2.1.2.1.0-1.0-18.0-2	ETCS order “Failure”	STM	True	True	FA	3i.1, 9a.1, 9b.1	PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
							=> FA
9.2.1.2.1.0-1.0-19.0-1	17	STM	True	False			
9.2.1.2.1.0-1.0-19.0-2	The STM decides itself to go in FA state	STM	True	False			PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
9.2.1.3	Note: As long as an STM in DA state is in a National Trip Procedure, the STM sends cyclically the “National Trip Procedure” information to the STM Control Function in order to fulfil the timeout requirements defined in 10.3.2.4 (transitions E16 and F16).		False	False			Note
9.3	General STM requirements		False	False			
9.3.1			False	False			
9.3.1.1	The STM antenna shall not energise trackside equipment, and shall not read trackside data, and shall not transmit data to trackside, except:	STM	True	False			
9.3.1.1.0-1	in HS or DA state,	STM	True	False			
9.3.1.1.0-2	for test purpose.	STM	True	False			
9.3.1.2	If the STM receives from the ERTMS/ETCS on-board a state transition order, which is not allowed by the state transition table (9.2.1.2), then the STM shall go in FA state.	STM	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	3a.3	
9.3.1.3	The STM shall report its NID_STM on all point-to-point connections with the ERTMS/ETCS on-board:	STM	True	False			
9.3.1.3.0-1	intentionally deleted						
9.3.1.3.0-2	with each transmitted application message from the STM to the ERTMS/ETCS on-board function or DMI channel.	STM	True	True	ASU DA DE FA OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.3, 2a.4, 2a.7, 2a.8, 2a.9, 2a.10, 2a.12-23	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
9.3.1.4	The STM shall report its current state on all point-to-point connections with the ERTMS/ETCS on-board:	STM	True	False			
9.3.1.4.0-1	intentionally deleted						
9.3.1.4.0-2	with each transmitted application message from the STM to the ERTMS/ETCS on-board function or DMI channel, and	STM	True	True	ASU DA DE FA OT OVR SOM ETCS->STM STM->ETCS STM->STM	2a.4, 2a.7- 2a.10, 2a.12-23, 5b.2, 5b.3, 5d.6, 10a.1/6, 10b.1/3/4, 10c.1	
9.3.1.4.0-3	whenever the STM state is changed, while the connection to the respective ERTMS/ETCS on-board function or DMI channel is established.	STM	True	True	ASU DE SOM ETCS->STM STM->ETCS STM->STM	1a.1, 1a.2, 1a.4, 1a.7, 1b.1, 2a.7, 2a.10, 2a.12-23, 3a.1, 3a.5, 3b.1, 3b.3, 3f.1, 3j.1 4a.1, 4a.2, 4b.1, 4c.1, 4d.2, 4e.1, 5a.1, 5a.3, 5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5c.6, 5d.1, 5d.2, 5d.6, 10a.1/6	
9.3.1.4.1	Exception: The FA state shall be reported if possible. Due to a failure of the STM itself it may not be possible to report the FA state.	STM	True	False			Exception
10	STM Control Function		False	False			
10.1	General requirements		False	False			
10.1.1			False	False			
10.1.1.1	It shall be possible to configure the ERTMS/ETCS on-board equipment with the list of STMs installed on-board.	ETCS	True	True	SOM ETCS->STM	1a.1, 1a.2, 1a.3, 1a.4, 1a.5, 1a.6, 1a.7, 1a.8, 3k.1	
10.1.1.2	The STM Control Function shall maintain a list of “available” STMs, which includes all STMs that have an established connection to the STM Control Function and report either CS, HS or DA state.	ETCS	True	True	SOM ETCS->STM	1a.1, 1a.2, 1a.3, 1a.4, 1a.5, 1a.6, 1a.7, 1a.8, 3j.1	
10.1.1.3	Level NTC X shall be considered as “Available for use” for level transition (see [1] paragraph 5.10.2.4.1) if the STM X associated to this level is available.	ETCS	True	True	SOM ETCS->STM	1a.1, 1a.2, 1a.3, 1a.4, 1a.5, 1a.6, 1a.7, 1a.8, 3a.1, 3a.2, 3j.1	
10.1.1.4	The STM Control Function shall send to the STM the following information when the connection to the STM is established:	ETCS	True	False			
10.1.1.4.0-1	The ERTMS/ETCS on-board functions that are available	ETCS	True	True	ASU SOM	2a.4, 2a.5, 2a.6, 2a.7, 2a.8, 2a.9, 2a.10, 2a.11-24	
10.1.1.4.0-2	The ETCS bus address of all available ERTMS/ETCS on-	ETCS	True	True	ASU	2a.4, 2a.5, 2a.6, 2a.7, 2a.8,	

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	board functions				SOM	2a.9, 2a.10, 2a.11-24	
10.1.1.4.0-3	The safety level of all available ERTMS/ETCS on-board functions (see 6.2)	ETCS	True	True	ASU SOM	2a.4, 2a.5, 2a.6, 2a.7, 2a.8, 2a.9, 2a.10, 2a.11-24	
10.1.1.4.1	Note: Only Juridical Data and DMI channels 2, 3 & 4 can be marked as not available.		False	False			Note
10.1.1.5	The STM Control Function shall inform the STM about the active DMI channel	ETCS	True	False			
10.1.1.5.0-1	whenever the active DMI channel changes,	ETCS	True	False			
10.1.1.5.0-2	whenever the connection to STM Control Function is established.	ETCS	True	True	ASU SOM	2a.4, 2a.5, 2a.6, 2a.7, 2a.8, 2a.9, 2a.10, 2a.11-24	
10.2	Association of STM X to Level NTC X		False	False			
10.2.1			False	False			
10.2.1.1	The ERTMS/ETCS on-board shall be configurable with a look-up table that gives the correspondence between NID_NTC values and the NID_STM values of the STM(s) fitted on-board. For each NID_NTC value within this look-up table, a list of one or several NID_STM values shall be configured, with a priority order.	ETCS	True	True	SOM ETCS->STM	1a.1, 1a.2, 1a.3, 1a.4, 1a.5, 1a.6, 1a.7, 1a.8, 3c.1, 3c.2, 3c.3, 3c.4	
10.2.1.1.1	Note: A National System can cover the functionalities of other National Systems having their own NID_NTC values. For that case, the look-up table is needed to map the NID_NTC values corresponding to these encapsulated National Systems to the NID_STM value(s) of the STM(s) fitted on-board supporting them. But an entry in the look-up table is not needed for the case there is a one-to-one relation between NID_NTC value and NID_STM value.		False	False			Note
10.2.1.1.2	Throughout this document, “STM X” stands for “STM associated to Level NTC X”. This STM is not necessarily fitted on-board.		False	False			
10.2.1.2	If Level NTC X (defined by its NID_NTC) is not already associated to an STM, the ERTMS/ETCS on-board shall associate this Level NTC X to STM X as follows:	ETCS	True	False			
10.2.1.2.0-1	When a level transition order to Level NTC X is accepted,	ETCS	True	False			
10.2.1.2.0-1.0-1	the STM X shall be the STM which NID_STM is equal to NID_NTC, if the level transition order is received from a trackside constituent with ETCS system version strictly lower than 2.0 or if the look-up table does not contain the NID_NTC value of Level NTC X.	ETCS	True	True	ETCS->STM	3a.1, 3a.2, 3a.4, 3c.2, 3c.3, 3c.4, 3d.1, 3j.1	
10.2.1.2.0-1.0-2	Otherwise the STM X shall be the STM having the highest priority among the available STMs linked to the NID_NTC value in the look-up table. If there is no available STM linked	ETCS	True	True	ETCS->STM STM->STM	5a.1, 5a.2, 5a.3, 5a.4, 5a.5, 5a.6, 5a.7, 5c.3	

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	to this NID_NTC value, the STM X shall be the STM having the highest priority among the STMs linked to this NID_NTC value.						
10.2.1.2.0-2	When the ERTMS/ETCS on-board receives airgap data to be transmitted to an STM with the NID_NTC value of Level NTC X, the STM X shall be associated as for the level transition.	ETCS	True	True	ETCS->STM	3c.1	
10.2.1.2.0-3	When the Level NTC X is selected/validated by driver,	ETCS	True	False			
10.2.1.2.0-3.0-1	the STM X shall be the STM which NID_STM is equal to NID_NTC, if the look-up table does not contain the NID_NTC value of Level NTC X.	ETCS	True	True	SOM ETCS->STM	1a.1, 1a.4, 1a.5, 1a.6, 1a.8, 3f.1	
10.2.1.2.0-3.0-2	Otherwise, the STM X shall be the STM having the highest priority among the available STMs linked to this NID_NTC value in the look-up table. If there is no available STM linked to this NID_NTC value, then the STM X shall be the STM having the highest priority among the STMs linked to this NID_NTC value.	ETCS	True	True	SOM ETCS->STM STM->STM	1a.2, 1a.3, 1a.7, 3d.1, 3f.2, 5d.1, 5d.2, 5d.3, 5d.4, 5d.5, 5d.6, 5d.7	
10.2.1.3	The association between a Level NTC X and an STM X shall be kept until the Level NTC X is left after having been entered, or until the Stand-By or No Power mode is entered.	ETCS	True	True	ETCS->STM STM->STM	3d.1, 5c.3	
10.2.1.3.1	Note: If STM X associated to the current Level NTC X is no more available, it remains associated to Level NTC X until one of these conditions is fulfilled, even if another STM supporting NTC X is available. This avoids that there is a change of active STM that is neither due to a level transition from trackside, nor due to a driver level selection/validation.		False	False			Note
10.3	STM MANAGER SYSTEM		False	False			
10.3.1	Scope		False	False			
10.3.1.1	The present chapter does not specify the whole STM Control Function, but only the part of the STM Control Function that manages the states of the connected STM(s).		False	False			
10.3.2	State transition orders		False	False			
10.3.2.1	The STM Control Function STM state order table is a table that lists all the events that lead to a state order given by the STM Control Function to the STM.		True	False			
10.3.2.2	STM state order table (ERTMS/ETCS on-board STM Control Function)	ETCS	True	False			
10.3.2.2.0-1.0-1.0-1	NP	STM	True	False			
10.3.2.2.0-1.0-1.0-2	< A15		True	False			PO => NP

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10.3.2.2.0-1.0-1.0-3	< A15		True	False			CO => NP
10.3.2.2.0-1.0-1.0-4	< A15		True	False			DE => NP
10.3.2.2.0-1.0-1.0-5	< A15		True	False			CS => NP
10.3.2.2.0-1.0-1.0-6	< A15		True	False			HS => NP
10.3.2.2.0-1.0-1.0-7	< A15		True	False			DA => NP
10.3.2.2.0-1.0-1.0-8	< A15		True	False			FA => NP
10.3.2.2.0-1.0-2.0-1	A1 >		True	True	ASU	2a.4-24	NP => PO
10.3.2.2.0-1.0-2.0-2	PO	STM	True	False			
10.3.2.2.0-1.0-2.0-3	< A1		True	False			CO => PO
10.3.2.2.0-1.0-2.0-4	< A1		True	False			DE => PO
10.3.2.2.0-1.0-2.0-5	< A1		True	False			CS => PO
10.3.2.2.0-1.0-2.0-6	< A1		True	False			HS => PO
10.3.2.2.0-1.0-2.0-7	< A1		True	False			DA => PO
10.3.2.2.0-1.0-2.0-8	< A1		True	False			FA => PO
10.3.2.2.0-1.0-3.0-1			False	False			
10.3.2.2.0-1.0-3.0-2	A2 >	ETCS	True	True	ASU SOM	2a.5, 2a.6, 2a.7, 2a.8, 2a.9-10, 2a.12-23	PO => CO
10.3.2.2.0-1.0-3.0-3	CO	STM	True	False			
10.3.2.2.0-1.0-3.0-4			False	False			
10.3.2.2.0-1.0-3.0-5			False	False			
10.3.2.2.0-1.0-3.0-6			False	False			
10.3.2.2.0-			False	False			

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1.0-3.0-7							
10.3.2.2.0-1.0-3.0-8			False	False			
10.3.2.2.0-1.0-4.0-1			False	False			
10.3.2.2.0-1.0-4.0-2			False	False			
10.3.2.2.0-1.0-4.0-3	A3 >	ETCS	True	True	DE	10a.1/2/3/4/5/6, 10e.1/2/3/4	CO => DE
10.3.2.2.0-1.0-4.0-4	DE	STM	True	False			
10.3.2.2.0-1.0-4.0-5			False	False			
10.3.2.2.0-1.0-4.0-6			False	False			
10.3.2.2.0-1.0-4.0-7			False	False			
10.3.2.2.0-1.0-4.0-8			False	False			
10.3.2.2.0-1.0-5.0-1			False	False			
10.3.2.2.0-1.0-5.0-2			False	False			
10.3.2.2.0-1.0-5.0-3	A4a >	ETCS	True	True	ASU SOM	1a.7, 2a.7, 2a.8, 2a.10-23	CO => CS
10.3.2.2.0-1.0-5.0-4	A4a >	ETCS	True	True	ASU DE SOM	10a.1/2/4/6, 10e.1/2/3/4	DE => CS
10.3.2.2.0-1.0-5.0-5	CS	STM	True	False			
10.3.2.2.0-1.0-5.0-6	< C4a < E4a < G4a < H4a < I4a < J4a	ETCS	True	True	DA OVR SOM ETCS->STM STM->STM	C4a: 5a.3, 5a.4, 5a.5 E4a : 3h.1 G4a: 3h.2, 12c.3 H4a: 1a.6, 3d.1 I4a: 12c.1 J4a: 3e.1, 3e.2	HS => CS
10.3.2.2.0-1.0-5.0-7	< B4a < B4b < I4a < A4b < E4a	ETCS	True	True	DA OVR STM->ETCS STM->STM	B4a: 4a.1, 4a.2, 4a.3, 4b.1, 4c.1, 4c.2 , 4d.2, 4e.2 B4b: 5d.1, 5d.2, 5d.3, 5d.4, 5d.6, 5d.7 I4a: 12c.2	DA => CS

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	< K4a < L4a					A4b: 5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5c.7, 5c.8, 5c.11 E4a: K4a: 3b.9, 4e.1, 4e.2 L4a: 12b.2	
10.3.2.2.0-1.0-5.0-8			False	False			
10.3.2.2.0-1.0-6.0-1			False	False			
10.3.2.2.0-1.0-6.0-2			False	False			
10.3.2.2.0-1.0-6.0-3			False	False			
10.3.2.2.0-1.0-6.0-4			False	False			
10.3.2.2.0-1.0-6.0-5	A6 > B6 >	ETCS	True	True	ASU DA SOM ETCS->STM STM->STM	A6: 3a.1, 3a.2, 3c.1, 3c.2, 3c.4, 3d.1, 3e.1, 3e.2, 3j.1, 5a.1, 5a.2, 5a.3, 5a.4, 5a.5 B6: 1a.2, 1a.3, 1a.4, 1a.6, 3d.1	CS => HS
10.3.2.2.0-1.0-6.0-6	HS	STM	True	False			
10.3.2.2.0-1.0-6.0-7			False	False			
10.3.2.2.0-1.0-6.0-8			False	False			
10.3.2.2.0-1.0-7.0-1			False	False			
10.3.2.2.0-1.0-7.0-2			False	False			
10.3.2.2.0-1.0-7.0-3			False	False			
10.3.2.2.0-1.0-7.0-4			False	False			
10.3.2.2.0-1.0-7.0-5	A9>	ETCS	True	True	SOM ETCS->STM STM->STM	1a.1, 1a.5, 1a.7, 1b.1, 1b.2, 3a.5, 3a.6, 3f.1, 3f.2, 5c.3, 5c.9, 5d.1, 5d.2, 5d.3, 5d.6, 5d.7	CS => DA
10.3.2.2.0-1.0-7.0-6	A9 >	ETCS	True	True	ASU DA SOM ETCS->STM STM->STM	1a.2, 1a.3, 1a.4, 3b.1, 3b.3, 3j.1, 5c.1, 5c.2, 5c.5, 5c.6, 5c.7, 5c.8, 5c.11	HS => DA

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10.3.2.2.0-1.0-7.0-7	DA	STM	True	False			
10.3.2.2.0-1.0-7.0-8			False	False			
10.3.2.2.0-1.0-8.0-1	A17 >	ETCS	True	False			NP => FA It is not testable as packet STM-1 is not allowed to be sent in FA state according to SUBSET-058.
10.3.2.2.0-1.0-8.0-2	A16 > B16 > C16 > H16 > I16 > L16 > P16 > A17 >	ETCS	True	True	ASU DA DE FA OT OVR SOM ETCS->STM STM->ETCS STM->STM	A16: 2a.24 B16: 2a.2 C16: 2a.6 H16: 9c.1 I16: L16: 2a.5 P16: 9d.1 A17: 9a.2	PO => FA
10.3.2.2.0-1.0-8.0-3	A16 > B16 > C16 > H16 > I16 > N16 > O16 > P16 > A17 >	ETCS	True	True	ASU DA DE FA OT OVR SOM ETCS->STM STM->ETCS STM->STM	A16: 2a.24 B16: C16: 2a.11, 10a.3 H16: 9c.1 I16: 3i.1 N16: O16: P16: 9d.1 A17: 9a.2	CO => FA
10.3.2.2.0-1.0-8.0-4	A16 > B16 > C16 > H16 > I16 > N16 > O16 > P16 > A17 >	ETCS	True	True	ASU DA DE FA OT OVR SOM ETCS->STM STM->ETCS STM->STM	A16: B16: C16: 10a.2, 10e.4 H16: 9c.1 I16: N16: O16: 10a.5, 10e.2 P16: 9d.1 A17: 9a.2	DE => FA
10.3.2.2.0-1.0-8.0-5	A16 > B16 > C16 > D16 >	ETCS	True	True	ASU DA DE FA	A16: B16: C16: 3a.2, 5a.4, 5a.5 D16: 1a.3, 1a.5, 1b.2, 3b.6, 3f.2,	CS => FA

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	H16 > N16 > O16 > P16 > A17 >				OT OVR SOM ETCS->STM STM->ETCS STM->STM	5d.2, 5d.4 H16: 3a.6, 3a.8, 9c.1 I16: N16: 10f.2, 10f.3 O16: 10b.2 P16: 9d.1 A17: 9a.2	
10.3.2.2.0-1.0-8.0-6	A16 > B16 > C16 > D16 > H16 > N16 > O16 > P16 > A17 >	ETCS	True	True	ASU DA DE FA OT OVR SOM ETCS->STM STM->ETCS STM->STM	A16: B16: C16: 3e.2, 5a.4, 5a.5 D16: 3b.6, 5c.4, 5c.5, 5c.8, 5c.11 H16: 9c.1 N16: 10f.2, 10f.3 O16: 10b.2 P16: 9d.1 A17: 9a.2, 3d.1	HS => FA
10.3.2.2.0-1.0-8.0-7	A16 > B16 > C16> E16 > F16 > H16 > N16 > O16 > P16 > A17 >	ETCS	True	True	ASU DA DE FA OT OVR SOM ETCS->STM STM->ETCS STM->STM	A16: B16. C16: 4a.3, 4c.2, 4e.2 E16: 5c.6, 5d.3, 5d.4 F16: 5c.9, 5d.7 H16: 9c.2 N16: 10f.2, 10f.3 O16: 10b.2 P16: 9e.1 A17: 9b.2	DA => FA
10.3.2.2.0-1.0-8.0-8	FA	STM	True	False			
10.3.2.3	The STM Control Function shall consider the STM to be in NP when it has not received any state report from the STM.	ETCS	True	False			
10.3.2.4	STM state order conditions table applicable to STM X, associated to Level NTC X (ERTMS/ETCS on-board STM Control Function)		False	False			
10.3.2.4.0-1.0-1.0-1	Condition Id		False	False			table title
10.3.2.4.0-1.0-1.0-2	Content of the conditions		False	False			table title
10.3.2.4.0-1.0-2.0-1	A1	STM	True	False			
10.3.2.4.0-1.0-2.0-2	(STM X connects to the STM Control Function) AND (STM X reports PO state)	STM	True	True	ASU SOM	2a.4-24	NP => PO; CO => PO; DE => PO; CS => PO; HS => PO; DA

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							=> PO; FA => PO
10.3.2.4.0-1.0-3.0-1	A2	ETCS	True	False			
10.3.2.4.0-1.0-3.0-2	(“Request CO state” received from STM X)	ETCS	True	True	ASU SOM	2a.5, 2a.6, 2a.7, 2a.8, 2a.9-2a.23	PO => CO
10.3.2.4.0-1.0-4.0-1	A3	ETCS	True	False			
10.3.2.4.0-1.0-4.0-2	(“Request DE state” received from STM X) AND (ETCS Train Data is validated)	ETCS	True	True	ASU DE SOM	10a.1/2/3/4/5/6, 10e.1/2/3/4	CO => DE
10.3.2.4.0-1.0-5.0-1	A4a	ETCS	True	False			
10.3.2.4.0-1.0-5.0-2	(“Request CS state” received from STM X)	ETCS	True	True	ASU DE SOM	1a.7, 2a.7, 2a.8, 2a.10-23, 10a.1/2/4/6, 10e.1/2/3/4	CO => CS; DE => CS
10.3.2.4.0-1.0-6.0-1	B4a	ETCS	True	False			
10.3.2.4.0-1.0-6.0-2	(ERTMS/ETCS on-board performs a level transition ordered by the trackside from Level NTC X to Level 0, 1, 2, 3)	ETCS	True	True	STM->ETCS	4a.1, 4a.2, 4a.3, 4b.1, 4c.1, 4c.2, 4d.2	DA => CS
10.3.2.4.0-1.0-7.0-1	C4a	ETCS	True	False			
10.3.2.4.0-1.0-7.0-2	(announcement for a transition to Level NTC X is stored) AND (STM X reports HS state) AND (a level transition order to Level NTC Y is received before the transition to Level NTC X) AND (STM X is different from the STM Y associated to Level NTC Y)	ETCS	True	True	ETCS->STM STM->STM	5a.3, 5a.4, 5a.5	HS => CS
10.3.2.4.0-1.0-8.0-1	B4b	ETCS	True	False			
10.3.2.4.0-1.0-8.0-2	(The driver manually changes the level from Level NTC X to Level NTC Y) AND (STM X is different from the STM Y associated to Level NTC Y)	ETCS	True	True	STM->STM	5d.1, 5d.2, 5d.3, 5d.4, 5d.6, 5d.7	DA => CS
10.3.2.4.0-1.0-9.0-1	E4a	ETCS	True	False			
10.3.2.4.0-1.0-9.0-2	(ETCS mode changes to SB)	ETCS	True	True	ETCS->STM STM->ETCS	3h.1	HS => CS; DA => CS
10.3.2.4.0-1.0-10.0-1	G4a	ETCS	True	False			
10.3.2.4.0-1.0-10.0-2	(STM X reports “HS state”) AND (no transition to any level associated to STM X for further location is stored on-board) AND (Override function is not active) AND (ETCS level is different from any level associated to STM X)	ETCS	True	True	OVR	3h.2, 12c.3	HS => CS

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10.3.2.4.0-1.0-11.0-1	H4a	ETCS	True	False			
10.3.2.4.0-1.0-11.0-2	(ETCS mode is SB) AND (No cab is active)	ETCS	True	True	SOM	1a.6, 3d.1	HS => CS
10.3.2.4.0-1.0-12.0-1	I4a	ETCS	True	False			
10.3.2.4.0-1.0-12.0-2	(ETCS mode changes to SH)	ETCS	True	True	OVR	12c.1, 12c.2	HS => CS; DA => CS
10.3.2.4.0-1.0-13.0-1	J4a	ETCS	True	False			
10.3.2.4.0-1.0-13.0-2	(announcement for a transition to Level NTC X is stored) AND (STM X reports HS state) AND (a level transition order to Level 0, 1, 2 or 3 is received before the transition to Level NTC X)	ETCS	True	True	DA ETCS->STM	3e.1, 3e.2	HS => CS
10.3.2.4.0-1.0-14.0-1	K4a	ETCS	True	False			
10.3.2.4.0-1.0-14.0-2	(The driver manually changes the level from Level NTC X to Level 0, 1, 2 or 3)	ETCS	True	True	DA STM->ETCS	3b.9, 4e.1, 4e.2	DA => CS
10.3.2.4.0-1.0-15.0-1	L4a	ETCS	True	False			
10.3.2.4.0-1.0-15.0-2	(ETCS mode changes to TR)	ETCS	True	True	OVR	12b.2	DA => CS
10.3.2.4.0-1.0-16.0-1	A4b	ETCS	True	False			
10.3.2.4.0-1.0-16.0-2	(ERTMS/ETCS on-board performs a transition ordered by the trackside from Level NTC X to Level NTC Y) AND (STM X is different from the STM Y associated to Level NTC Y)	ETCS	True	True	DA STM->STM	5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5c.7, 5c.8, 5c.11	DA => CS
10.3.2.4.0-1.0-17.0-1	A6	ETCS	True	False			
10.3.2.4.0-1.0-17.0-2	(A transition to Level NTC X for a further location is stored on-board) AND (STM X reports CS state) AND (no other STM reports HS state)	ETCS	True	True	ETCS->STM STM->STM	3a.1, 3a.2, 3c.1, 3c.2, 3c.4, 3d.1, 3e.1, 3e.2, 3j.1, 5a.1, 5a.2, 5a.3, 5a.4, 5a.5	CS => HS
10.3.2.4.0-1.0-18.0-1	B6	ETCS	True	False			
10.3.2.4.0-1.0-18.0-2	(ETCS mode is SB) AND (Cab is active) AND (valid level of the ERTMS/ETCS on-board is Level NTC X) AND (STM X reports CS state) AND (no other STM reports HS state)	ETCS	True	True	ASU DA SOM	1a.2, 1a.3, 1a.4, 1a.6, 3d.1	CS => HS
10.3.2.4.0-1.0-19.0-1	A9	ETCS	True	False			
10.3.2.4.0-1.0-19.0-2	(level of the ERTMS/ETCS on-board is Level NTC X) AND (STM X reports CS or HS state) AND (no other STM reports DA state) AND (ETCS mode is SN, SL or NL)	ETCS	True	True	ETCS->STM STM->STM	1a.1, 1a.2, 1a.3, 1a.4, 1a.5, 1a.7, 1b.1, 1b.2, 3a.5, 3a.6, 3b.1, 3b.3, 3f.1, 3f.2, 3j.1, 5c.1,	CS => DA; HS => DA

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						5c.2, 5c.3, 5c.5, 5c.6, 5c.7, 5c.8, 5c.9, 5c.11, 5d.1, 5d.2, 5d.3, 5d.6, 5d.7	
10.3.2.4.0-1.0-20.0-1	A15	ETCS	True	False			
10.3.2.4.0-1.0-20.0-2	(the ERTMS/ETCS on-board equipment is NOT powered)	ETCS	True	False			PO => NP; CO => NP; DE => NP; CS => NP; HS => NP; DA => NP; FA => NP
10.3.2.4.0-1.0-21.0-1	A16	ETCS	True	False			
10.3.2.4.0-1.0-21.0-2	(the STM Control Function receives from STM X a state request which is not allowed by the state transition table)	ETCS	True	True	ASU	2a.24	PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
10.3.2.4.0-1.0-22.0-1	B16	ETCS	True	False			
10.3.2.4.0-1.0-22.0-2	(STM X reports a state it must not be in according to table 9.2.1.1)	ETCS	True	True	ASU	2a.2	PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
10.3.2.4.0-1.0-23.0-1	C16	ETCS	True	False			
10.3.2.4.0-1.0-23.0-2	(the STM Control Function has sent a state transition order except “DA state transition order” and except “conditional CS state transition order”) AND (STM X does not report the required state within a maximum delay time of 10 seconds)	ETCS	True	True	ASU DE SOM ETCS->STM STM->ETCS STM->STM	2a.6, 2a.11, 3a.2, 3e.2, 4a.3, 4c.2, 4e.2, 5a.4, 5a.5, 10a.2, 10a.3, 10e.4	PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
10.3.2.4.0-1.0-24.0-1	D16	ETCS	True	False			
10.3.2.4.0-1.0-24.0-2	(the STM Control Function has sent a “DA state transition order”) AND (STM X does not report the required state within a maximum delay time of 5 seconds)	ETCS	True	True	SOM ETCS->STM STM->STM	1a.3, 1a.5, 1b.2, 3b.6, 3f.2, 5c.4, 5c.5, 5c.8, 5c.11, 5d.2, 5d.4	CS => FA; HS => FA
10.3.2.4.0-1.0-25.0-1	E16	ETCS	True	False			
10.3.2.4.0-1.0-25.0-2	(the STM Control Function has sent a “conditional CS state transition order”) AND (STM X does not report CS state or send a “National Trip Procedure” information within a maximum delay time of 10 seconds)	ETCS	True	True	STM->STM	5c.6, 5d.3, 5d.4	DA => FA
10.3.2.4.0-1.0-26.0-1	F16	ETCS	True	False			
10.3.2.4.0-1.0-26.0-2	(the STM Control Function has sent a “conditional CS state transition order”) AND (the STM Control Function has already received a “National Trip Procedure” information	ETCS	True	True	STM->STM	5c.9, 5d.7	DA => FA

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	from STM X) AND (STM X does not report CS state or send a “National Trip Procedure” information within a maximum delay time of 10 seconds)						
10.3.2.4.0-1.0-27.0-1	H16	ETCS	True	False			
10.3.2.4.0-1.0-27.0-2	(a final disconnection between the ERTMS/ETCS on-board STM Control Function and STM X was detected (see [3] and [2]))	ETCS	True	True	FA ETCS->STM	3a.6, 3a.8, 9c.1, 9c.2	PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
10.3.2.4.0-1.0-28.0-1	I16	ETCS	True	False			
10.3.2.4.0-1.0-28.0-2	(The ERTMS/ETCS on-board performs a transition ordered by trackside to Level NTC X) AND (STM X is not available)	ETCS	True	True	ETCS->STM	3i.1	PO => FA; CO => FA; DE => FA
10.3.2.4.0-1.0-29.0-1	L16	ETCS	True	False			
10.3.2.4.0-1.0-29.0-2	(STM X has not yet sent the Specific NTC Data Need) AND (STM X requests CO state)	ETCS	True	True	ASU SOM	2a.5	PO => FA
10.3.2.4.0-1.0-30.0-1	N16	ETCS	True	False			
10.3.2.4.0-1.0-30.0-2	(The timeout TrainDataView_STM_Response_Timeout for STM X has expired)	ETCS	True	True	ASU DA DE SOM	10f.2/3	CO => FA; DE => FA; CS => FA; HS => FA
10.3.2.4.0-1.0-31.0-1	O16	ETCS	True	False			
10.3.2.4.0-1.0-31.0-2	(The timeout TrainDataEntry_STM_Response_Timeout for STM X has expired)	ETCS	True	True	ASU DE SOM	10a.5, 10b.2, 10e.2	CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
10.3.2.4.0-1.0-32.0-1	P16	ETCS	True	False			
10.3.2.4.0-1.0-32.0-2	(A safety-related information has not been transmitted to STM because of disconnection)	ETCS	True	True	FA	9d.1, 9e.1	PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
10.3.2.4.0-1.0-33.0-1	A17	ETCS	True	False			
10.3.2.4.0-1.0-33.0-2	(STM X reports FA state)	ETCS	True	True	ASU FA SOM	3d.1, 9a.2, 9b.2	NP => FA; PO => FA; CO => FA; DE => FA; CS => FA; HS => FA; DA => FA
10.3.2.5	Note: The delay is shorter for transition to DA state because this transition is assumed as the most critical one from a safety aspect.		False	False			Note
10.3.2.6	When the conditions to change the STM state within the STM Control Function are valid according to 10.3.2.2 and	ETCS	True	True	ASU DA	1a.1/2/3/4/5/6/7, 1b.1/2, 3a.1, 3a.2, 3a.5, 3a.8, 3b.1, 3b.3,	

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	10.3.2.4, the STM Control Function shall send the corresponding state transition order to STM X.				DE FA OVR SOM ETCS->STM STM->ETCS STM->STM	3b.6, 3b.9, 3c.1, 3c.2, 3d.1, 3e.1, 3e.2, 3f.1, 3f.2, 3h.1, 3h.2, 3i.1, 3j.1, 4a.1, 4a.2, 4a.3, 4b.1, 4c.1, 4c.2, 4d.2, 4e.1, 4e.2, 5a.1, 5a.2, 5a.3, 5a.4, 5a.5, 5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5c.6, 5c.7, 5c.8, 5c.9, 5c.11, 5d.1, 5d.2, 5d.3, 5d.4, 5d.6, 5d.7	
10.3.2.6.1	Exception 1: The STM Control Function shall not send an order for NP or PO state.	ETCS	True	False			Exception
10.3.2.6.2	Exception 2: The STM Control Function shall not send an order for FA state if the STM has reported FA state (transition A17).	ETCS	True	False			Exception
10.3.2.7	When the state transition order is going to CS state, the STM Control Function shall send an “unconditional order CS state” for the transitions A4a, B4a, C4a, E4a, G4a, H4a, I4a, J4a and K4a, and a “conditional order CS state” for the transitions A4b and B4b.	ETCS	True	True	ASU DA DE FA OVR SOM ETCS->STM STM->ETCS STM->STM	A4a: 1a.2, 1a.7, 10a.1/2/4/6, 10e.1/2/3/4 B4a: 4a.1, 4a.2, 4a.3, 4b.1, 4c.1, 4c.2, 4d.2 C4a: 5a.3, 5a.4, 5a.5 E4a: 3h.1 G4a: 3h.2, 12c.3 H4a: 1a.6, 3d.1 I4a: 12c.1, 12c.2 J4a: 3e.1, 3e.2 K4a: 4e.1, 4e.2 A4b: 5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5c.7, 5c.8, 5c.11 B4b: 5d.1, 5d.2, 5d.3, 5d.4, 5d.6, 5d.7	
10.3.3	Requirements linked to state transition orders and state reports		False	False			
10.3.3.1	The STM Control Function shall not evaluate the state transition order conditions, except conditions to FA state, if this STM has not reported the state corresponding to the last state transition order.	ETCS	True	True	SOM ETCS->STM STM->ETCS STM->STM	1a.7, 3b.9, 4a.3, 4c.2, 4e.2	should normally not happen, possible only with a wrong trac layout
10.3.3.2	An STM is considered as active by the ERTMS/ETCS on-board from the moment it has sent the DA state order to the STM until it sends another state order to this STM (except “conditional CS state transition order”) or receives a state report different from DA from this STM.		False	False			
10.3.3.3	The STM Control Function shall command the emergency brake from the moment a “conditional CS state transition order” has been sent to a STM and this STM is in National	ETCS	True	True	STM->STM	5c.7, 5c.8, 5c.9, 5d.6, 5d.7	

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	Trip Procedure, up to the moment this STM reports CS state, or is considered as failed and the train reaches standstill.						
10.3.3.3.1	Note: This brake command avoids that the train could run untimely without supervision, in case the active STM does not send a brake command but still sends its National Trip Procedure which delays the activation of the STM of the newly entered area.		False	False			Note
10.3.3.4	The STM Control Function shall apply the emergency brake when the level is NTC X and the mode is SN and STM X is known as installed on-board but not available.	ETCS	True	True	DA FA ETCS->STM STM->ETCS STM->STM	3a.6, 3a.7, 3a.8, 3b.6, 3i.1, 3k.1, 5c.5, 5c.8, 5d.2, 5d.4, 6g.1, 9b.2, 9b.3, 9c.2, 9e.1	
10.3.3.5	Exception: the brake shall not be applied in case the STM X is known to be isolated, through the corresponding input on the Train Interface.	ETCS	True	True	ETCS->STM STM->STM	3a.7	Exception
10.3.3.6	The emergency brake application shall be released by the STM Control Function when	ETCS	True	False			
10.3.3.6.0-1	the STM X has established the connection to the STM Control Function after a non-final disconnection and the reported STM X state is DA,	ETCS	True	True	DA	6g.1	
10.3.3.6.0-2	or the level changes to Level 0, 1, 2, 3,	ETCS	True	True	STM->ETCS	4f.1	
10.3.3.6.0-3	or the level changes to a Level NTC Y that is not associated to STM X,	ETCS	True	True	STM->STM	5c.1, 5c.9	
10.3.3.6.0-4	or the mode SN is left with no change of level,	ETCS	True	True	DA FA	9b.2	
10.3.3.6.0-5	or the dedicated input on the Train Interface informs the ERTMS/ETCS on-board that the STM X is isolated.	ETCS	True	True	ETCS->STM STM->STM	3a.8	
10.3.3.7	The ERTMS/ETCS on-board shall accept the reconnection of an STM not considered as in FA state or reporting PO state, except in case of final disconnection on Safety Layers.	ETCS	True	True	ASU	2a.1, 2a.2, 2a.11	
10.3.3.8	The STM Control Function shall inform the driver that the STM X is not available while all of the following conditions are fulfilled	ETCS	True	True	DA SOM ETCS->STM STM->STM FA	1a.8, 3a.6, 3a.7, 3a.8, 3b.6, 3i.1, 3k.1, 5c.5, 5c.8, 5c.11, 5d.2, 5d.4, 6g.1, 9b.2, 9b.3, 9c.2, 9e.1	
10.3.3.8.0-1	the level is NTC X,	ETCS	True	False			
10.3.3.8.0-2	and (the mode is SN) or (the mode is NL and has been so for at least 5s),	ETCS	True	False			
10.3.3.8.0-3	and STM X is known as installed on-board but not available,	ETCS	True	False			
10.3.3.8.0-4	and STM X is not known to be isolated through the	ETCS	True	False			

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	corresponding input on the Train Interface.						
10.3.3.8.1	Note: the 5s delay on the information to the driver is required because the STM X requests to enter in CS state only after the mode has changed to NL.		False	False			Note
10.4	ETCS data		False	False			
10.4.1			False	False			
10.4.1.1	The ETCS data transmitted by the ERTMS/ETCS on-board to the STMs shall include a subset of the ETCS Train Data (defined in [1]), as listed below:	ETCS	True	False			
10.4.1.1.0-1	Train category(ies)	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.1.0-2	Train length	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.1.0-3	Traction / brake parameters	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.1.0-4	Maximum train speed	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.1.0-5	Loading gauge	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.1.0-6	Axle load category	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.1.0-7	Traction system(s) accepted by the engine	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.1.0-8	Train fitted with airtight system	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.2	The ETCS data transmitted by the ERTMS/ETCS on-board to the STMs shall include a subset of the ETCS Train Data entry input fields (defined in [9]), as listed below:	ETCS	True	False			
10.4.1.2.0-1	Train Type, if applicable for the train	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.3	Note: Extra data for the available STMs are handled in the Specific NTC Data Entry procedure see chapter 10.7.		False	False			Note

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10.4.1.4	The traction / brake parameters shall include:	ETCS	True	False			
10.4.1.4.0-1	Equivalent brake build up time for full service brake for the combination of none of the special brakes being used	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.4.0-2	Equivalent brake build up time for emergency brake for the combination of none of the special brakes being used	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.4.0-3	Traction cut off time	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.4.0-4	Brake position	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.4.0-5	Brake percentage, if applicable for the train	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.5	The ETCS data transmitted by the ERTMS/ETCS on-board to the STMs shall include a subset of ETCS Additional Data (defined in [1]) as listed below:	ETCS	True	False			
10.4.1.5.0-1	Train Running Number	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.5.0-2	ETCS identity	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.5.0-3	Adhesion factor	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.5.0-4	Date and Time (UTC Time)	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.6	The ETCS data transmitted by the ERTMS/ETCS on-board to the STMs shall include the ETCS National / Default Values (defined in [1])	ETCS	True	True	ASU DA SOM	2a.9, 2a.10, 2a.11, 2a.12-23, 6h.1	
10.4.1.7	The STM Control Function shall transmit the subset of valid ETCS Train Data when the ETCS Train Data is validated.	ETCS	True	True	ASU DE SOM	10a.1/2/3/4/5/6, 10b.1/2/3/4/5, 10e.1/2/3/4	
10.4.1.7.1	Note: ETCS Train Data could be changed and validated from sources different from the driver if acquired from ERTMS/ETCS on-board external sources.		False	False			Note
10.4.1.8	The STM Control Function shall transmit the valid ETCS Additional Data	ETCS	True	False			

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10.4.1.8.0-1	when the STM has entered into Configuration (CO) state, and	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.8.0-2	when the valid ETCS Additional Data except date / time has changed.	ETCS	True	True	ASU DA DE SOM	6h.1	only slippery rail or train running number can change
10.4.1.9	The STM Control Function shall transmit the currently used ETCS National / Default Values	ETCS	True	False			
10.4.1.9.0-1	when the STM has entered into Configuration (CO) state, and	ETCS	True	True	ASU DE SOM	2a.9, 2a.10, 2a.11, 2a.12-23	
10.4.1.9.0-2	when the currently used ETCS National Values have changed (this also includes the case when the National Values are reset to the Default Values).	ETCS	True	True	DA	6h.1	
10.5	ETCS status data		False	False			
10.5.1			False	False			
10.5.1.1	The STM Control Function shall send the ETCS status data consisting of the current ETCS mode and level (defined in [1]):	ETCS	True	False			
10.5.1.1.0-1	To all connected STMs whenever the ETCS mode or level changes.	ETCS	True	True	ASU DE SOM ETCS->STM STM->ETCS STM->STM	1a.2, 1a.3, 1a.4, 1a.5, 1a.6, 1a.7, 1b.1, 1b.2, 3b.1, 3b.3, 3b.6, 3b.9, 3j.1, 4a.1, 4a.2, 4a.3, 4b.1, 4c.1, 4c.2, 4d.2, 4e.1, 4e.2, 5c.1, 5c.2, 5c.3, 5c.4, 5c.5, 5c.6, 5c.7, 5c.8, 5c.9, 5c.10, 5c.11, 5d.1, 5d.2, 5d.3, 5d.4, 5d.5, 5d.6, 5d.7	
10.5.1.1.0-2	To any STM when the connection to the STM Control Function is established.	ETCS	True	True	ASU DE SOM	2a.4-24	
10.6	Language used to display information to the driver		False	False			
10.6.1			False	False			
10.6.1.1	The STM Control Function shall transmit the language used to display information to the driver:	ETCS	True	False			
10.6.1.1.0-1	To all connected STMs whenever the language is changed,	ETCS	True	True	ASU DE SOM	1a.4	
10.6.1.1.0-2	To any STM when the connection to the STM Control Function is established.	ETCS	True	True	ASU DE SOM	2a.4-24	

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10.7	Specific NTC Data Entry		False	False			
10.7.1	Definitions		False	False			
10.7.1.1	The “Specific NTC Data” are the national data that need to be requested to the driver.		False	False			
10.7.1.2	The STM may use the transmitted ETCS data: ETCS Train Data, ETCS Additional Data and ETCS National Values in order to reduce the entry of “Specific NTC Data” by the driver.		False	False			
10.7.1.3	All “Specific NTC Data” used by all the different STMs are assigned a unique identity made of NID_STM and Data Identifier.		False	False			
10.7.1.4	The process to deliver those “Specific NTC Data” to the STM is called “Specific NTC Data Entry”.		False	False			
10.7.1.4.1	Note: Specific NTC Data Entry is possible at start-up and later on during mission through the Train Data Entry procedure.		False	False			Note
10.7.2	Responsibilities		False	False			
10.7.2.1	The ERTMS/ETCS on-board equipment is responsible for the dialogue with the driver during the Specific NTC Data Entry/Validation process, for checking the technical range checks (if configured on-board) and for the transmission of the Specific NTC Data after the driver’s validation.	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/5, 10e.1/2/3/4	
10.7.2.2	The STM is responsible for checking the content (e.g. range, spares, internal dependency of parameters) of the data. The STM can be exempted of technical range checks if those are configured in the ERTMS/ETCS on-board equipment.	STM	True	False			
10.7.3	General requirements		False	False			
10.7.3.1	The ERTMS/ETCS on-board equipment shall offer the possibility to the driver to skip the Specific NTC Data Entry for a STM.	ETCS	True	True	DE	10a.4, 10b.3, 10e.3	
10.7.3.2	The ETCS Train Data as well as the Specific NTC Data might become invalid within the STM at any time due to national requirements. In this case, the STM may request the data from the ETCS by sending the “Specific NTC Data Need”.		False	False			
10.7.3.3	Specific NTC Data can be or become invalid, because:		False	False			
10.7.3.3.0-1	the ETCS Train Data Entry/Specific NTC Data Entry procedure has not yet been performed or has been aborted, or		False	False			
10.7.3.3.0-2	the driver has skipped the Specific NTC Data Entry for this STM before the STM has sent the “End of Specific NTC		False	False			

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	Data Entry" to the ERTMS/ETCS on-board, or						
10.7.3.3.0-3	the ETCS Train Data Entry procedure has already been performed by the time the STM has entered into CO state, e.g. the STM has been powered on or restarted during train mission, or		False	False			
10.7.3.3.0-4	the ETCS Train Data has changed from sources different from the driver and this change impacts the validity status of the Specific NTC Data, according to national rules, or		False	False			
10.7.3.3.0-5	because of STM internal function, e.g. national shunting.		False	False			
10.7.3.4	When the ERTMS/ETCS on-board receives the "Specific NTC Data Need" while in FS, LS, SR, OS, UN, TR, PT and SN modes, it shall inform the driver that the national system needs data.	ETCS	True	True	DE	10d.1	
10.7.3.5	The ERTMS/ETCS on-board shall delete this information to the driver when the driver initiates the Train Data entry procedure i.e. when the "Train Data" button is pressed.	ETCS	True	True	DE	10d.1	
10.7.3.6	The STM requests its Specific NTC Data with a "Specific NTC Data Entry request" which shall include for each Specific NTC Data, the following information: the label, optionally a default value, and optionally values for a dedicated keyboard.	STM	True	True	DE	10a.1/6, 10b.1	
10.7.3.7	Note: Unless values for a dedicated keyboard are provided or the type of keyboard is configured on-board, an alphanumeric keyboard will by default be used (see document ref [9]).		False	False			Note
10.7.3.8	It shall be possible to configure in the ERTMS/ETCS on-board the following parameters for any STM:		True	False			
10.7.3.8.0-1	The window titles for the NTC data entry, the NTC data validation and the NTC data view windows	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/5, 10e.1/2/3/4	
10.7.3.8.0-2	For each Specific NTC Data Identifier not using a dedicated keyboard:	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/5, 10e.1/2/3/4	
10.7.3.8.0-3	The type of keyboard amongst numeric, enhanced numeric and alphanumeric	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/5, 10e.1/2/3/4	
10.7.3.8.0-4	If the type of keyboard is numeric or enhanced numeric, whether leading zeros have to be kept and sent to the STM	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/5, 10e.1/2/3/4	
10.7.3.8.0-5	The allowed minimum and maximum value, that shall be used by the ERTMS/ETCS on-board with a technical range check	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/5, 10e.1/2/3/4	
10.7.3.9	By analogy to the modification/revalidation of ETCS Train data, the [1] requirements 3.14.1.7.3, 3.18.3.3.1 regarding the brake command/release when a movement is detected	ETCS	True	True	DE	10a.2, 10b.1	

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	while modifying or revalidating the Train Data in normal operation after the start of mission shall also apply for the NTC data modification/revalidation.						
10.7.4	Specific NTC Data Entry procedure		False	False			
10.7.4.1	As soon as the ETCS Train Data is validated by the driver and if the connected STM is in CO, DE, CS, HS or DA state, the ERTMS/ETCS on-board shall indicate to the STM the beginning of its Specific NTC Data Entry procedure by sending the START flag.	ETCS	True	True	DE	10a.1/2/3/4/5/6, 10b.1/2/3/4/5, 10e.1/2/3/4	
10.7.4.2	The ETCS Train Data shall be sent immediately after the START flag.	ETCS	True	True	DE	10a.1/2/3/4/5/6, 10b.1/2/3/4/5, 10e.1/2/3/4	
10.7.4.3	While a Specific NTC Data Entry is on-going, the ERTMS/ETCS on-board shall indicate to the STM the end of its Specific NTC Data Entry procedure by sending the STOP flag when one of the following conditions is fulfilled:	ETCS	True	False			
10.7.4.3.0-1	after having received the “End of Specific NTC Data Entry” from the respective STM,	ETCS	True	True	DE	10a.1/2, 10b.1/4, 10e.1/2/3/4	
10.7.4.3.0-2	at expiration of the timeout specified in 10.7.4.9 for the respective STM,	ETCS	True	True	DE	10a.5, 10b.2, 10e.2	
10.7.4.3.0-3	when the Train Data Entry procedure is aborted by the ERTMS/ETCS on-board for reasons not related to the STM interface	ETCS	True	True	DE	10a.6, 10b.5	
10.7.4.3.0-4	the Specific NTC Data Entry for this STM has been skipped by the driver see 10.7.3.1.	ETCS	True	True	DE	10a.4, 10b.3	
10.7.4.3.1	Note: Reasons leading to the abortion of the Train Data entry procedure and not related to the STM interface can be e.g. the cab deactivation, the driver aborting the Train Data entry procedure,...		False	False			Note
10.7.4.4	Note: ETCS Train Data is also sent without the START and STOP flags outside a Train Data entry procedure, see 10.4.1.7.		False	False			Note
10.7.4.5	Once the STM has received the ETCS Train Data while its Specific NTC Data Entry is on-going:		False	False			
10.7.4.5.0-1	If the STM requires Specific NTC Data, the STM shall send a “Specific NTC Data Entry request” information to the ERTMS/ETCS on-board.	STM	True	True	DE	10a.1/6, 10b.1/3	
10.7.4.5.0-2	If the STM doesn’t require Specific NTC Data, the STM shall send an “End of Specific NTC Data Entry” information to the ERTMS/ETCS on-board.	STM	True	True	DE	10b.4	
10.7.4.6	After the ERTMS/ETCS on-board has received the Specific NTC Data Entry request, it shall perform the Specific NTC Data Entry/Validation exchanges with the driver when the	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/5, 10e.1/2/3/4	

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	driver selects this Specific NTC Data Entry.						
10.7.4.7	Once the Specific NTC Data for an STM has been validated by the driver, the ERTMS/ETCS on-board shall send the “Specific NTC Data” to this STM.	ETCS	True	True	DE	10a.1/2/5/6, 10b.1, 10e.1/2/3/4	
10.7.4.8	When the STM receives the Specific NTC Data, it checks the data according to its national criteria. Depending on the check result:	STM	True	False			
10.7.4.8.0-1	the STM shall send an “End of Specific NTC Data Entry” if the checks are OK and the STM has all the requested data.	STM	True	True	DE	10a.1, 10b.1	
10.7.4.8.0-2	the STM shall send again Specific NTC Data Entry request.	STM	True	True	DE	10a.1/6, 10b.1	
10.7.4.9	For all connected STMs, the ERTMS/ETCS on-board shall supervise separately a timeout of 10s (TrainDataEntry_STM_Response_Timeout, see chapter 10.3.2.4, O16):	ETCS	True	False			
10.7.4.9.0-1	from sending the ETCS Train Data by the ETCS while the Specific NTC Data Entry procedure is running, until the reception of a Specific NTC Data Entry request or the “End of Specific NTC Data Entry” from the STM and	ETCS	True	True	DE	10a.1/2/5/6, 10b.1/2/3/5, 10e.1/2/3/4	
10.7.4.9.0-2	from each sending Specific NTC Data by the ETCS until the reception of the Specific NTC Data Entry request or the “End of Specific NTC Data Entry” from the STM.	ETCS	True	True	DE	10a.1/2/5/6, 10b.1, 10e.1/2/3/4	
10.7.5	Sequence diagrams for the Specific NTC Data Entry		False	False			
10.7.5.0-1			False	False			
10.7.5.0-2	Figure 6 - Specific NTC Data Entry performed		False	False			
10.7.5.0-3			False	False			
10.7.5.0-4	Figure 7 - Specific NTC Data Entry skipped for NTC B		False	False			
10.7.5.0-5			False	False			
10.7.5.0-6	Figure 8 - Specific NTC Data Entry aborted		False	False			
10.8	Specific NTC Data View		False	False			
10.8.1			False	False			
10.8.1.1	This procedure shall allow the driver to view the Specific NTC Data View values currently known by the STM.	ETCS	True	False			
10.8.1.2	When the Data View procedure is triggered, the ERTMS/ETCS on-board shall send to all available STMs a Request for Specific NTC Data View values.	ETCS	True	True	DE	10c.1, 10f.2/3	
10.8.1.3	Once the STM has received the ETCS Request for Specific NTC Data View values:	STM	True	False			
10.8.1.3.0-1	If the STM requires Specific NTC Data View values to be displayed, the STM shall send those Specific NTC Data	STM	True	True	DE	10c.1	

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	View values (labels and corresponding values) to the STM Control Function.						
10.8.1.3.0-2	If the STM doesn't require Specific NTC Data View values to be displayed, the STM shall send a "No Specific NTC Data View values" to the ETCS STM Control Function.	STM	True	True	DE	10f.2	
10.8.1.4	When the ERTMS/ETCS on-board receives the Specific NTC Data View values, it shall present them to the driver.	ETCS	True	True	DE	10c.1, 10f.3	
10.8.1.5	For all connected STMs, the ERTMS/ETCS on-board shall supervise separately a timeout of 10s (TrainDataView_STM_Response_Timeout, see chapter 10.3.2.4, N16) from sending the Request for Specific NTC Data View values until the reception of Specific NTC Data View values or the "No Specific Data View values" information from the respective STM.	ETCS	True	True	DE	10f.2/3	
10.9	STM Test Procedure		False	False			
10.9.1			False	False			
10.9.1.1	The STM shall be allowed to send a Test Procedure Permission Request, including a Test Identity, to the STM Control Function.	ETCS	True	True	OT	11a.1	
10.9.1.2	Having received this Test Procedure Permission Request, the ERTMS/ETCS on-board shall grant Test Procedure Permission when technically suitable.	ETCS	True	True	OT	11a.1	
10.9.1.2.1	Note: the condition to grant this Test Procedure Permission is specific to ERTMS/ETCS on-board implementation and to the Test Identity requested by the STM.		False	False			Note
10.9.1.3	Having received this Test Procedure Permission, the STM shall perform the test and then report the End of Test Procedure, including test result and optional text message.	STM	True	True	OT	11a.1	
10.9.1.3.1	Note: the way the test result and text message are displayed is specific to ERTMS/ETCS on-board implementation.		False	False			Note
10.10	Override		False	False			
10.10.1	Introduction		False	False			
10.10.1.1	This Override procedure (Trip Inhibition, Pass Stop or Pass signal at danger) is specified in order to provide an override for the active system as well as for the system to be activated without applying the brakes (e.g. trip) by both systems.		False	False			
10.10.1.2	When Override is activated in the active system (ERTMS/ETCS on-board or STM), all on-board systems receive a notification. Each system can then activate and monitor its specific Override procedure limits (e.g. time,		False	False			

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	distance and/or reception of trackside information) and trip inhibition. Termination of this monitoring is done independently in each system.						
10.10.1.3	After a level transition, the activated system is able to immediately have its Override function active. It can then start to supervise the relevant speed for Override under the limits of the activated system according to its specific requirements. The limits may be considered from the location where driver requested Override.		False	False			
10.10.2	Requirements		False	False			
10.10.2.1	In addition to the conditions defined in [1], the ETCS Override status shall be activated when in level NTC, the ERTMS/ETCS on-board has received from the active STM the activation report of its own Override procedure.	ETCS	True	True	OVR	12b.1	
10.10.2.2	The ETCS Override function shall be reset each time a new activation report is received from the active STM.	ETCS	True	True	OVR	12b.1	
10.10.2.3	The ERTMS/ETCS on-board shall report its Override status (activated or deactivated):	ETCS	True	False			
10.10.2.3.0-1	To any STM with an established connection to the STM Control Function whenever its Override status changes,	ETCS	True	True	OVR	12a.1, 12a.2, 12b.1	
10.10.2.3.0-2	To any connecting STM when the connection to the STM Control Function is established.	ETCS	True	True	OVR	12a.1	
10.10.2.4	Note: If the Override function is active while in the Mode SN, no speed supervision is performed by the ERTMS/ETCS on-board and all connected STMs except for the active STM.		False	False			Note
10.11	Transmission of ETCS airgap messages for STMs		False	False			
10.11.1			False	False			
10.11.1.1	When the ERTMS/ETCS on-board receives from an RBC or from a Balise Group as non-infill information airgap data to be transmitted to an NTC, the data shall be transmitted by the STM Control Function to the STM associated to the Level NTC which NID_NTC is contained in this airgap data.	ETCS	True	True	DA ETCS->STM	3c.1, 6i.1, 6i.2	
10.11.1.1.1	Note: Airgap data received as infill information is not transmitted to STMs.		False	False			Note
10.11.1.2	The STM Control Function shall add to the transmitted airgap data the odometer reading of the balise group which transmitted the airgap message, or the odometer reading of the LRBG of the message if it was received from RBC.	ETCS	True	True	DA ETCS->STM	3c.1, 6i.1, 6i.2	
10.11.1.3	The odometer reading shall correspond to the estimated odometer value of the location reference of the balise group.	ETCS	True	True	DA ETCS->STM	3c.1, 6i.1, 6i.2	
10.12	STM max speed and STM system speed/distance		False	False			

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10.12.1	After announcement, but before the transition to Level NTC X		False	False			
10.12.1.1	When an “STM max speed” (V_STMMAX) from STM X in HS state is accepted, the ERTMS/ETCS on-board includes the “STM max speed” in the computation of the MRSP (see [1] 4.5.2) as a speed restriction that shall start at the level transition border.	ETCS	True	True	ETCS->STM STM->STM	3b.1, 3b.6, 3b.9, 5b.1, 5b.2, 5b.3, 5b.4	
10.12.1.2	When the ERTMS/ETCS on-board accepts a new “STM max speed” (V_STMMAX) from STM X, the ERTMS/ETCS on-board shall replace the previously received “STM max speed” (V_STMMAX) with the new value.	ETCS	True	True	ETCS->STM	3b.1, 3b.9	
10.12.1.3	If the STM X connected or known as installed on-board (see 10.1.1.1) is not available, then the ERTMS/ETCS on-board shall consider that “STM max speed” = 0.	ETCS	True	True	ETCS->STM STM->STM	3a.4, 3c.3, 5a.4, 5b.1	
10.12.1.3.1	Note: The purpose of the above requirement is to try to prevent the train to enter in a Level NTC area while this STM is not available.		False	False			Note
10.12.1.4	When an “STM system speed” (V_STMSYS) together with an “STM system distance” (D_STMSYS) from STM X in HS state is accepted, the ERTMS/ETCS onboard includes the “STM system speed” (V_STMSYS) into the computation of the MRSP (see [1] 4.5.2), as a new speed restriction that shall start at a location “STM system distance” (D_STMSYS) in rear of the level transition border and shall end at the level transition border.	ETCS	True	True	ETCS->STM	3b.3	
10.12.1.5	When an ERTMS/ETCS on-board accepts a new “STM system speed” (V_STMSYS) and “STM system distance” (D_STMSYS) from STM X, the ERTMS/ETCS on-board shall replace previously received “STM system speed” (V_STMSYS) and “STM system distance” (D_STMSYS) with the new value.	ETCS	True	True	ETCS->STM	3b.3	
10.12.1.6	When the level transition announcement to level NTC X is deleted by the ERTMS/ETCS on-board:	ETCS	True	False			
10.12.1.6.0-1	The “STM system speed” (V_STMSYS) shall be deleted and the supervision of the “STM system speed” (V_STMSYS) shall be stopped by the ERTMS/ETCS on-board;	ETCS	True	True	ETCS->STM	3e.2	
10.12.1.6.0-2	The “STM max speed” (V_STMMAX) shall be deleted and the supervision of the “STM max speed” (V_STMMAX) shall be stopped by the ERTMS/ETCS on-board.	ETCS	True	True	ETCS->STM	3e.1	
10.12.1.6.1	Note: when a new level transition to another level than NTC X is accepted, the previous one is deleted and replaced with this new one.		False	False			Note

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10.12.1.6.2	Note: when a level transition announcement to the same level NTC X is updated (i.e. with a new distance), the "STM system speed" and "STM max speed" are not deleted.		False	False			Note
10.12.2	After the level transition to Level NTC X		False	False			
10.12.2.1	Once the train has passed the level transition border, the ERTMS/ETCS on-board shall supervise the “STM max speed” (V_STMMAX) previously sent by the STM in HS state as ceiling speed until the STM DA state report is received by the ERTMS/ETCS on-board.	ETCS	True	True	ETCS->STM STM->STM	3b.1, 3b.6, 3b.9, 5c.1, 5c.7	
10.12.2.2	If the STM is considered to be in FA state by the ERTMS/ETCS on-board after the level transition border, then the ERTMS/ETCS on-board shall stop the supervision of “STM max speed” (V_STMMAX).	ETCS	True	True	ETCS->STM STM->ETCS	3b.6	
10.12.2.3	If, for any reasons (e.g. reception of a level transition order or a manual change of level), the level changes to another level than NTC X, the “STM max speed” (V_STMMAX) shall be deleted and the supervision of the “STM max speed” (V_STMMAX) shall be stopped by the ERTMS/ETCS on-board.	ETCS	True	True	ETCS->STM	3b.9	
10.13	Validity of “National Trip Procedure” information		False	False			
10.13.1			False	False			
10.13.1.1	The ERTMS/ETCS on-board shall consider that a National Trip Procedure is active if the “National Trip Procedure” packet has been received within the last 10 seconds (see [1]).	ETCS	True	True	OVR STM->ETCS STM->STM	4d.1, 4d.2, 5c.7, 5c.8, 5c.9, 5d.6, 5d.7, 12b.2	
10.13.1.2	Note: if the National Trip Procedure has been released before a level transition, the ERTMS/ETCS on-board will consider it as still active for a maximum of 10 seconds after the reception of the information, but it is assumed that the level transition after the end of this National Trip Procedure won’t happen within this time, as the train is at standstill.		False	False			Note
10.14	Display of STM failure status		False	False			
10.14.1			False	False			
10.14.1.1	When an STM has reported FA state or is commanded to FA state, the ERTMS/ETCS on-board shall inform the driver about the failed status of the national system supported by this STM.	ETCS	True	True	FA ETCS->STM STM->ETCS STM->STM	3a.6, 3a.8, 3i.1, 4a.3, 4e.2, 5a.4, 5b.1, 5c.5, 5c.6, 5c.8, 5c.9, 5c.11, 5d.2, 5d.3, 5d.4, 5d.7, 9a.2, 9b.2, 9c.1, 9c.2, 9d.1, 9e.1	
10.14.1.2	When at Start of Mission just after validation of ETCS Train Data an STM known by ERTMS/ETCS on-board configuration to be installed is not in CO, CS, HS or DA state and this STM is not known to be isolated by TIU “NTC	ETCS	True	True	SOM ETCS->STM	1c.1, 3a.7	

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	isolation status" input data, ERTMS/ETCS on-board shall inform the driver about the failed status of the national system supported by this STM.						
10.15	Interface 'K' Antenna/BTM ID		False	False			
10.15.1			False	False			
10.15.1.1	If the ERTMS/ETCS on-board uses alternative 1 of interface 'K' (see [10]), it shall indicate to all KER (KVB, Ebicab, RSDD) STMs whether it can or not guarantee by its own that the interface 'K' data is coming from the intended Antenna/BTM, when the connection to the STM Control Function is established.	ETCS	True	True	BTM	8a.1, 8a.2	
10.15.1.2	If ERTMS/ETCS on-board cannot guarantee by its own that the interface 'K' data is coming from the intended Antenna/BTM, the STM Control Function shall inform whether there is an active Antenna/BTM and, if so, which one:	ETCS	True	False			
10.15.1.2.0-1	To all connected KER STMs whenever this information changes,	ETCS	True	True	ASU BTM DA SOM ETCS->STM STM->ETCS STM->STM	8a.2	
10.15.1.2.0-2	To any KER STM when the connection to the STM Control Function is established.	ETCS	True	True	ASU BTM SOM	8a.2	
10.15.1.3	Note: This information enables an STM using interface 'K' to fulfil a requirement of [10] asking to supervise that the interface 'K' information comes from the intended source.		False	False			Note
10.16	BTM alarm data		False	False			
10.16.1			False	False			
10.16.1.1	The STM Control Function shall send the BTM alarm data consisting of the BTM alarm status and whether the antenna is within an announced Big Metal Mass track condition:	ETCS	True	False			
10.16.1.1.0-1	To all connected STMs whenever the BTM alarm status changes or whenever an announced Big Metal Mass track condition is entered or exited during a BTM alarm,	ETCS	True	False			
10.16.1.1.0-2	To any STM when the connection to the STM Control Function is established.	ETCS	True	True	ASU BTM SOM	8b.1	
10.16.1.2	Note: The ERTMS/ETCS on-board always sends this		False	False			Note

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	information over the FFFIS STM interface regardless the alarms are ignored according to [1] 3.12.1 and 3.15.7.						
11	TIU and BIU Functions		False	False			
11.1			False	False			
11.1.1			False	False			
11.1.1.1	The TIU Function shall transmit train interface status / availability :	ETCS	True	False			
11.1.1.1.0-1	To any STM with an established connection to the TIU Function whenever a TIU status / availability changes.	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	3g.1, 3g.2, 6b.1, 6c.1	
11.1.1.1.0-2	To any connecting STM when the connection to the TIU Function is established.	ETCS	True	True	ASU SOM ETCS->STM	2a.7, 2a.8, 2a.9, 2a.11, 2a.24, 3g.1, 3g.2	
11.1.1.2	The BIU Function shall transmit the brake performance parameters to any connecting STM when the connection to the BIU Function is established.	ETCS	True	True	ASU SOM ETCS->STM	2a.7, 2a.8, 2a.9, 2a.11, 2a.24, 3g.1, 3g.2	
11.1.1.3	The BIU Function shall transmit the brake status / availability :	ETCS	True	False			
11.1.1.3.0-1	To any STM with an established connection to the BIU Function whenever a brake status / availability changes.	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	3g.1, 3g.2, 6e.1, 6e.2	
11.1.1.3.0-2	To any connecting STM when the connection to the BIU Function is established.	ETCS	True	True	ASU SOM ETCS->STM	2a.7, 2a.8, 2a.9, 2a.11, 2a.24, 3g.1, 3g.2	
11.1.1.4	When the service brake is commanded by an STM, the STM shall indicate in its request if the service brake shall be backed up automatically by the ERTMS/ETCS on-board with an Emergency Brake command if the service brake fails to be applied.	ETCS	True	True	DA	6e.1 6e.2	

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11.1.1.4.1	Note: If it is not the case, this has to be considered as an exception to [1].		False	False			Note
12	Odometer Function		False	False			
12.1	General		False	False			
12.1.1			False	False			
12.1.1.1	The FFFIS STM specifies the odometer information to be transmitted from ERTMS/ETCS on-board to all STMs via FFFIS STM.		False	False			
12.1.1.2	The ERTMS/ETCS on-board shall transmit odometer information via the FFFIS STM interface at regular intervals. This information shall include current values of estimated distance, direction, estimated speed, confidence interval of measurement of distance (i.e. minimum and maximum distances) and confidence interval for speed (i.e. minimum and maximum speeds).	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6f.1, 6f.2	
12.1.1.3	Every transmitted odometer information report shall be time stamped. The time base for timestamp shall be the Reference Time obtained from the Safe Time Layer, see 5.2.2. The time in the timestamp shall be the time when the odometer data were valid.	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6f.1, 6f.2	
12.1.1.3.1	Justification: this time information allows an STM to extrapolate distance and speed to fit its algorithms and processing cycles.		False	False			Justification
12.1.1.4	Positive movement direction is defined as a movements in the forward direction in relation to cab A. It shall be indicated with positive speed and increasing odometer distance values.	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6f.1	
12.1.1.5	Negative movement direction is defined as movements in the backwards direction in relation to cab A. It shall be indicated with negative speed and decreasing odometer	ETCS	True	True	ASU DA DE	6f.2	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	distance values.				OT OVR SOM ETCS->STM STM->ETCS STM->STM		
12.1.1.5.1	Note: Allocation of cab(s) on a specific train is a pure ERTMS/ETCS on-board implementation issue.		False	False			Note
12.1.1.6	The ERTMS/ETCS on-board shall not reset the odometer distance values as long as the ERTMS/ETCS on-board is powered-on.	ETCS	True	False			
12.1.1.6.1	Justification: The ETCS odometer information is used as a common reference within the FFFIS STM.		False	False			Justification
12.1.1.7	The ERTMS/ETCS on-board shall transmit odometer configuration data (see chapter 12.4) to the STMs.	ETCS	True	True	ASU DA SOM	6f.1, 6f.2	
12.2	Speed		False	False			
12.2.1			False	False			
12.2.1.1	Estimated speed, V_Est, shall be the estimated speed as used by the ERTMS/ETCS on-board (also referred as the train speed in [1]).	ETCS	True	True	DA	6f.1, 6f.2	Tested at a constant speed to avoid the error due to transmission delay
12.2.1.2	Maximum speed, V_Max, is defined as the most positive speed, i.e. the highest possible physical speed including under-reading amount, in case of movement in positive direction (V_Max = V_Est + |V_ura|). For movements in negative direction V_Max reports the lowest possible speed in absolute value, i.e. including over-reading amount (V_Max = V_Est + |V_ora|).		False	False			Definition
12.2.1.3	Minimum speed, V_Min, is defined as the most negative speed, i.e. the lowest possible physical speed including over-reading amount, in case of movement in positive direction (V_Min = V_Est - |V_ora|). For movements in negative direction V_Min reports the highest possible speed in absolute value, i.e. including under-reading amount (V_Min = V_Est - |V_ura|).		False	False			Definition
12.2.1.3.0-1			False	False			
12.2.1.3.0-2	Figure 9 - Example of transmitted speed information		False	False			
12.3	Distance		False	False			
12.3.1			False	False			
12.3.1.1	The estimated distance, D_Est, shall be the most probable	ETCS	True	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	position of the vehicle in the vehicle coordinate system at the time given in the odometer packet, with reference to the vehicle position at the last reset of the odometry.						
12.3.1.2	Note: For any train movement, the most probable distance travelled between any two track positions can be computed as the difference between the measurement values of D_Est at the two positions.		False	False			Note
12.3.1.3	D_Max is defined as the most positive position of the vehicle in the vehicle coordinate system at the time given in the odometer packet, with all over- and under-reading amounts accumulated since the last reset of the odometry.		False	False			Definition
12.3.1.4	D_Min is defined as the most negative position of the vehicle in the vehicle coordinate system at the time given in the odometer packet, with all over- and under-reading amounts accumulated since the last reset of the odometry.		False	False			Definition
12.3.1.5	The confidence interval shall comply with the relevant requirements specified in [7].	ETCS	True	False			
12.3.1.6	The resolution part of an odometer report shall be given as a parameter in each odometer report from the ETCS Odometer Function. This allows for sensor technologies with varying resolution.	ETCS	True	True	ASU DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM	6f.1, 6f.2	
12.3.1.7	Note: The STM can then compute the maximum and minimum travelled distances at the current vehicle position p2 with regards to any reference location p1 by using the resolution information, maximum and minimum distances at the these locations, as follows:		False	False			Note
12.3.1.7.0-1	max_distance(p1 p2) = max(D_Res(p1), D_Res(p2)) + D_Max(p2) - D_Max(p1)		False	False			Definition
12.3.1.7.0-2	min_distance(p1 p2) = - max(D_Res(p1), D_Res(p2)) + D_Min(p2) - D_Min(p1)		False	False			Definition
12.3.1.8	The distance parameters D_Est, D_Max and D_Min are allowed to wrap when exceeding the value range. The parameters wrap individually.		False	False			
12.4	Configuration information		False	False			
12.4.1			False	False			
12.4.1.1	The ERTMS/ETCS on-board Odometer Function shall	ETCS	True	True	ASU	6f.1, 6f.2	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	transmit performance related information (configuration data) over the FFFIS STM. The transmission shall be repeated to support restarting STMs.				DA DE OT OVR SOM ETCS->STM STM->ETCS STM->STM		
12.4.1.1.1	Note: The STM may use the performance-related information (e.g. ageing) to adjust its supervision, e.g. braking curves.		False	False			Note
12.4.1.1.1.0-1			False	False			
12.4.1.1.1.0-2	Figure 10 - Odometer cycle and delay times		False	False			
12.4.1.2	Typical cycle time, T_OdoCycle is the typical time for the odometer cycle time between each generating of new odometer data.		False	False			Definition
12.4.1.3	Note: The actual cycle time may well exceed T_OdoCycle.		False	False			Note
12.4.1.4	Maximum production delay time, T_OdoMaxProd is the maximum ageing of odometer data from when the data was true until the data is available on the bus. This shall include clock synchronisation inaccuracy of the Odometer Function.	ETCS	False	False			
12.4.1.5	Note: The actual production delay time should not exceed T_OdoMaxProd.		False	False			Note
13	Driver Machine Interface Function		False	False			
13.1	Introduction		False	False			
13.1.1			False	False			
13.1.1.1	The DMI Function allows the driver to directly interact with the ERTMS/ETCS on-board for what regards the national information related to the default window. That means that all inputs from the driver to the ERTMS/ETCS on-board and all outputs from the ERTMS/ETCS on-board to the driver in the default window are controlled by this function.		False	False			
13.1.1.2	The DMI Function shall provide the unified DMI and the customisable DMI services.	ETCS	True	True	DMI	7a.1 - 7a.9	
13.1.1.3	An STM designed for usage with a customisable DMI provides a set of configuration data for its default window as part of its product documentation as described in chapter 13.5. The ERTMS/ETCS on-board shall be configurable to store this information and serve the STM DMI requests	ETCS	True	True	DMI	7a.2 - 7a.9	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	according to this configuration. The customisable DMI service shall be used, when configuration data for a customisable DMI layout are stored in the ERTMS/ETCS on-board for the NID_STM of the STM.						
13.1.1.4	An STM designed to use the unified DMI provides no configuration data as part of its product documentation. The unified DMI service shall be used, when no configuration data for a customisable DMI layout is stored in the ERTMS/ETCS on-board for the NID_STM of the STM.	ETCS	True	True	DMI	7a.1	
13.1.1.5	Note: Unconfigurable parts of the DMI functions shall be handled in the same way by the unified and the customisable DMI services.		False	False			Note
13.2	General requirements regarding DMI Function		False	False			
13.2.1			False	False			
13.2.1.1	The ERTMS/ETCS on-board shall only allow the active STM to communicate with the driver.	ETCS	True	True	DMI ETCS->STM STM->ETCS STM->STM	7h.1 - 7h.9	the coverage is limited to STM in HS state
13.2.1.2	When the STM is no more active (see 4.1.1.3), the ERTMS/ETCS on-board shall delete all DMI objects controlled by this STM.	ETCS	True	True	DMI FA STM->ETCS STM->STM	4a.1, 4a.2, 4a.3, 4b.1, 4d.2, 4e.1, 4e.2, 5c.1, 5c.3, 5c.5, 5c.6, 5c.7, 5c.8, 5c.9, 5c.11, 5d.1, 5d.2, 5d.3, 5d.4, 5d.6, 5d.7, 7h.1 - 7h.9	
13.2.1.3	When the connection between an STM and the DMI Function is disconnected, the ERTMS/ETCS on-board shall delete all the DMI objects controlled by this STM (including preliminary requests) after a timeout of 2 seconds.	ETCS	True	True	DMI	7h.8	
13.2.1.3.1	Justification: The timeout of 2 seconds is to give the STM the chance to re-establish the connection.		False	False			Justification
13.2.1.4	When the connection between the active STM and the DMI Function is lost and re-established within the timeout of 2 seconds, the ERTMS/ETCS on-board shall delete all the DMI objects controlled by the STM when the DMI connection to the STM is established.	ETCS	True	True	DMI	7h.9	
13.2.1.5	The ERTMS/ETCS on-board shall be able to receive and store preliminary request for DMI objects from an STM being in HS state and display them immediately after having received the DA state report.	ETCS	True	True	DMI ETCS->STM	7h.1 - 7h.9, 3g.1, 3g.2	
13.2.1.5.1	Note: The sending of preliminary request is to allow the DMI Function to prepare in background the information to be presented to the driver once the STM switches to DA state. Therefore, the STM should send all DMI objects that needs		False	False			Note

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	to be displayed after the change to DA as preliminary DMI request.						
13.2.1.6	When an STM reports PO, CS or FA, or is considered as failed, the ERTMS/ETCS on-board shall delete all preliminary requests for DMI objects from this STM.	ETCS	True	False			
13.2.1.7	If the ETCS train speed is configured not to be displayed for an STM while the ERTMS/ETCS on-board is in SN mode (see chapter 13.5.1.1.7), the ERTMS/ETCS on-board shall inhibit the display of the ETCS train speed only once the DA state report is received from this STM by the STM Control Function.	ETCS	True	True	DMI	all 7i	
13.3	DMI channels		False	False			
13.3.1			False	False			
13.3.1.1	The DMI Function shall be allowed to use up to four DMI channels. Each channel shall correspond to one connection.	ETCS	True	False			optional feature
13.3.1.2	At most one DMI channel shall be active, only this one shall be used for the communication related to DMI objects with the DMI Function at application level.	ETCS	True	False			
13.3.1.3	Note: Connections corresponding to the inactive DMI channels can however remain open.		False	False			Note
13.3.1.4	At the time the active DMI channel changes, the DMI Function shall delete all the DMI objects controlled by the STM.	ETCS	True	False			optional feature
13.4	DMI Objects		False	False			
13.4.1	DMI object identities		False	False			
13.4.1.1	The DMI objects indicators and buttons used by the different STMs are assigned a unique object identity made of NID_STM and Indicator/Button Identifier.	ETCS	True	True	DMI	7b2.1 - 7b2.12, 7b3.1 - 7b3.9, 7c2.1 -7c2.20, 7c3.1 -7c3.10, 7c5.1 - 7c5.12, 7e.1 - 7e.40	
13.4.1.2	The STM Identity is implicitly provided by the STM by its announced NID_STM (and repeated in each message header according to the language).	ETCS	True	True	DMI	7b2.1 - 7b2.12, 7b3.1 - 7b3.9, 7c2.1 -7c2.20, 7c3.1 -7c3.10, 7c5.1 - 7c5.12, 7e.1 - 7e.40	
13.4.1.3	The Indicator/Button Identifier is provided by the STM as part of the corresponding Indicator/Button request.	ETCS	True	True	DMI	7b2.1 - 7b2.12 7c2.1 -7c2.20, 7c3.1 -7c3.10	
13.4.1.4	The Indicator/Button Identifier is used by the STM to be able to change the state of objects and to move or remove them. The Button Identifier is also used by the ERTMS/ETCS on-board to transmit the button events to the STM. If the customisable DMI service is used, it is also used to define the properties of the object.	ETCS	True	True	DMI	7b2.1 - 7b2.12 7c2.1 -7c2.20, 7c3.1 -7c3.10	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.4.1.5	All icons (bitmap symbols) used by the different STMs using a customisable DMI are assigned an icon identity made of NID_STM and Icon Identifier.	ETCS	True	True	DMI	7b3.1 - 7b3.9 7c5.1 -7c5.12	
13.4.1.6	An Icon Identifier can be provided by the STM as part of the corresponding Indicator/Button request.	ETCS	True	True	DMI	7b3.1 - 7b3.9 7c5.1 -7c5.12	
13.4.1.7	All sounds (wave form for audible information) used by the different STMs using a customisable DMI are assigned a unique sound identity made of NID_STM and Sound Identifier.	ETCS	True	True	DMI	7e.21 – 7e.32, 7e.35 – 7e.40	
13.4.1.8	A Sound Identifier can be provided by the STM as part of the corresponding sound request.	ETCS	True	True	DMI	7e.1 - 7e.40	
13.4.1.9	For specifying the position of DMI objects, Position Identifiers are used.	ETCS	True	True	DMI	7b2.1 - 7b2.12, 7c2.1 -7c2.20, 7c3.1 -7c3.10	
13.4.1.10	If the unified DMI service is used, the Position Identifier specifies an area of the ETCS layout as defined in [9].	ETCS	True	True	DMI	7b2.1, 7b2.2, 7c2.1 - 7c2.4, 7c3.1, 7c3.2	
13.4.1.11	If the customisable DMI service is used, the Position Identifier and the NID_STM are used to define the position in cell coordinates and size as specified in the configuration data for this STM.	ETCS	True	True	DMI	7b2.3 - 7b2.12, 7c2.5 - 7c2.20, 7c3.3 - 7c3.10	
13.4.2	Text messages		False	False			
13.4.2.1	The DMI Function shall display a text message when requested by the STM. The text message request shall consist of a Text Identifier, a string of text to be shown to the driver, a display attribute and a possible request for driver acknowledgement.	ETCS	True	True	DMI	7d.1 - 7d.17	
13.4.2.2	The DMI Function shall report to the STM the acknowledgement of text messages (which were required to be acknowledged) from the driver referencing the corresponding Text Identifier.	ETCS	True	True	DMI	7d.7 . 7d.14	
13.4.2.3	The DMI Function shall delete a text message when requested by the active STM. The request shall reference the Text Identifier of the text message to be deleted.	ETCS	True	True	DMI	7d.1 - 7d.17	
13.4.2.3.1	Note: The acknowledgement does not lead to the end of the display of a text message.		False	False			Note
13.4.2.4	If the STM requests a text message with the same Text Identifier as a not yet deleted text message, the ERTMS/ETCS on-board shall delete the original text message and display the new requested text message.	ETCS	True	True	DMI	7d.17	
13.4.2.5	The display attribute specifies the colour of the text, its background colour, the flashing mode and the group of text messages.	ETCS	True	True	DMI	7d.1 - 7d.17	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.4.2.6	The flashing mode specifies if the slow, fast or no flashing and if normal or counterphase flashing shall be used.	ETCS	True	True	DMI	7d.1 - 7d.17	
13.4.3	Indicators		False	False			
13.4.3.1	An Indicator is a DMI object for display of information without input.		False	False			
13.4.3.2	The STM shall request the display of an Indicator by means of the following definition:	STM	True	False			Optional feature of STM not testable
13.4.3.2.0-1	its Indicator Identifier,	STM	True	False			Optional feature of STM not testable
13.4.3.2.0-2	an optional Icon Identifier,	STM	True	False			Optional feature of STM not testable
13.4.3.2.0-3	an optional caption text,	STM	True	False			Optional feature of STM not testable
13.4.3.2.0-4	a Position Identifier,	STM	True	False			Optional feature of STM not testable
13.4.3.2.0-5	a display attribute.	STM	True	False			Optional feature of STM not testable
13.4.3.3	The Icon Identifier shall be used by the DMI Function in case of the customisable DMI service to retrieve from the configuration data the corresponding icon attached to an Indicator/Button object.	ETCS	True	True	DMI	7b2.3, 7b2.4, 7b2.7, 7b2.8, 7b2.11, 7b2.12, 7b3.1 - 7b3.9, 7c2.5, 7c2.6, 7c2.11, 7c2.12, 7c2.17-7c2.20, 7c5.1 - 7c5.12	
13.4.3.4	The display attribute shall specify the background colour and the flashing mode for the whole Indicator and the display colour of the caption text.	ETCS	True	True	DMI	7b4.1 - 7b4.4, 7b5.1 - 7b5.3, 7c6.1 - 7c6.8, 7c7.1 - 7c4.4	
13.4.3.5	The flashing mode specifies if the slow, fast or no flashing and if normal or counterphase flashing shall be used.	ETCS	True	True	DMI	7b5.1 - 7b5.3, 7c7.1 - 7c4.4	
13.4.4	Buttons		False	False			
13.4.4.1	Buttons are a pure functional extension of Indicators. All requirements of chapter 13.4.3 shall apply to Buttons, by replacing "Indicator" with "Button".	ETCS	True	True	DMI	7c2.1 -7c2.20, 7c4.1, 7c5.1 - 7c5.12, 7c6.1 - 7c6.8, 7c7.1 - 7c4.4, 7c8.1 - 7c8.7, 7c3.1 - 7c3.10	
13.4.4.2	The extension is the transmission of Button events from the DMI Function to STM. The DMI Function shall make a distinction between push event (transition from Button not pressed to pressed state) and release event (opposite transition).	ETCS	True	True	DMI	7c3.1 - 7c3.10, 7c4.1	
13.4.4.3	The DMI Function shall report Button push and release events to the STM and shall timestamp those event reports to reflect the sequence of events.	ETCS	True	True	DMI	7c3.1 - 7c3.10, 7c4.1	
13.4.4.4	The DMI Function shall use the Reference Time (see chapter 5.2.2) for timestamping the Button events reports.	ETCS	True	True	DMI	7c3.1 - 7c3.10, 7c4.1	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.4.5	Sounds		False	False			
13.4.5.1	STM shall request a Sound by means of the following definition:	STM	True	False			Optional feature of STM not testable
13.4.5.1.0-1	an optional Sound Identifier,	STM	True	False			Optional feature of STM not testable
13.4.5.1.0-2	only in case of a unified DMI and a Sound to be generated, a sequence of segments defined by a duration and an associated frequency,	STM	True	False			Optional feature of STM not testable
13.4.5.1.0-3			False	False			
13.4.5.1.0-4	Figure 11 : Example of sound definition		False	False			
13.4.5.1.0-5	an indication if the Sound has to be repeated continuously or not or to be stopped.	STM	True	False			Optional feature of STM not testable
13.4.5.2	The Sound Identifier shall be used by the ERTMS/ETCS on-board in case of the customisable DMI service to retrieve from the configuration data the corresponding sound.	ETCS	True	True	DMI	7e.21 – 7e.32, 7e.35 – 7e.40	
13.4.5.3	The Sound Identifier shall be used by the ERTMS/ETCS on-board in both DMI services to stop the generation of a Sound, if requested by the STM.	ETCS	True	True	DMI	7e.1 - 7e.40	
13.4.5.4	The DMI Function shall be able to manage two STM requests for Sounds at the same time.	ETCS	True	True	DMI	7e.1 - 7e.40	
13.4.5.4.1	Note: This will allow an STM to request a long Sound and a short Sound simultaneously.		False	False			Note
13.4.6	Supervision information		False	False			
13.4.6.1	There shall be two sets of supervision information:	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.1.0-1	Speed and distance values	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.1.0-2	Colours and display modes	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.2	Speed and distance values consists of :	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.2.0-1	Permitted Speed	STM	True	False			Not testable for STM. Currently not traced in test cases,

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
							because qualified as STM requirement
13.4.6.2.0-2	Target Speed	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.2.0-3	Target Distance	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.2.0-4	Release Speed	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.2.0-5	Intervention Speed	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3	Colours and display modes consists of:	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-1	Current train speed pointer	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-2	Colour	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-3	Permitted Speed	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-4	Colour	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-5	Display mode: no display, bar only, hook only or hook and bar	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.4.6.3.0-6	Target Speed	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-7	Colour	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-8	Display mode: no display, bar only, hook only or hook and bar	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-9	Target Distance	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-10	Display mode: no display, bar only, digital only or bar and digital	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-11	Release Speed	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-12	Colour	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-13	Display mode: no display, bar only, digital only or bar and digital	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-14	Intervention Speed	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-15	Colour	STM	True	False			Not testable for STM. Currently not traced in test cases, because qualified as STM requirement
13.4.6.3.0-16	Display mode: no display, display with normal bar width or display with wide bar width.	STM	True	False			Not testable for STM. Currently not traced in test cases,

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
							because qualified as STM requirement
13.4.6.4	The DMI Function shall use the last received values for Target Speed, Release Speed, Permitted Speed, Intervention Speed and Target Distance.	ETCS	True	True	DMI	7f.2 - 7f.9	
13.5	Customisable DMI service		False	False			
13.5.1			False	False			
13.5.1.1	The configuration of the customisable DMI shall define the following data for each STM using the customisable DMI service:	STM	True	False			
13.5.1.1.1	The NID_STM of the STM.	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.2	The list of Indicators defined for the STM with the following data for each Indicator:	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.2.0-1	identifier (a number);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.2.0-2	font size (height in cells);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.2.0-3	horizontal text-alignment (left, right or centred);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.2.0-4	vertical text-alignment (upper part, lower part or centred).	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.3	The list of Indicator positions defined for the STM, and for each Indicator position:	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.3.0-1	identifier (a number);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.3.0-2	x:y offset of the upper left corner in cells;	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.3.0-3	x:y size of the area in cells.	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.4	The list of Buttons defined for the STM with the following data for each Button:	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.4.0-1	identifier (a number);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.4.0-2	font size (height in cells);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.4.0-3	horizontal text-alignment (left, right or centred);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.4.0-4	vertical text-alignment (upper part, lower part or centred).	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.5	Two lists of Button positions (one list for soft key technology and one list for touch screen technology) defined for the	STM	True	True	DMI	7a.2 - 7a.9	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
	STM and, for each Button position:						
13.5.1.1.5.0-1	identifier (a number);	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.5.0-2	x:y offset of the upper left corner in cells;	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.5.0-3	x:y size of the area in cells;	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.5.0-4	linked soft key (for soft key technology).	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.6	The list of Icons defined for the STM and, for each Icon:	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.6.0-1	identifier (a number);	STM	True	True	DMI	7a.3, 7a.5. 7a.6, 7a.7, 7a.9	
13.5.1.1.6.0-2	bitmap, as RGB bitmap file (according to Microsoft BMP file format); Pixels in the bitmap files shall be understood as cells.	STM	True	True	DMI	7a.3, 7a.5. 7a.6, 7a.7, 7a.9	
13.5.1.1.6.0-3	display of text upon icon: yes/no.	STM	True	True	DMI	7a.3, 7a.5. 7a.6, 7a.7, 7a.9	
13.5.1.1.7	ETCS speed and distance supervision	STM	False	False			
13.5.1.1.7.0-1	For speed and distance supervision display in speed dial as for ETCS in area B0-B2, B6 and A2-A3 (applicable as long as the STM is active):	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.7.0-2	Yes/No; “Yes” means that the ETCS train speed display is re-used as such together with the supervision information as specified in 13.4.6. “No” means that there is no display of speed and distance supervision in the ETCS way.	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.7.0-3	if Yes: speed dial range (0-140/180/250/400 km/h or same range as ETCS).	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.8	Options for flashing of Indicators and Buttons (additionally to flashing mode):	STM	False	False			
13.5.1.1.8.0-1	the frequency for slow and fast flashing;	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.8.0-2	the flashing style either as ‘yellow frame’ or as ‘whole area’.	STM	True	True	DMI	7a.3 - 7a.9	
13.5.1.1.9	The list of Sounds defined for the STM and, for each sound, its Sound definition.	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.9.0-1	identifier (a number);	STM	True	True	DMI	7a.3, 7a.5 - 7a.9	
13.5.1.1.9.0-2	sound, as WAV file (according to Microsoft WAV file format);	STM	True	True	DMI	7a.3, 7a.5 - 7a.9	
13.5.1.1.10	Moved areas of the ETCS layout:	STM	False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.5.1.1.10.0-1	If a STM needs partially or totally the cells used by an area defined in the ETCS layout and in which ETCS DMI objects are displayed in level NTC modes SN or NL, the ETCS objects displayed in it must be moved somewhere else on the national layout. Therefore it shall be possible to specify a changed location for moving the following ETCS areas and their related ETCS objects. For buttons also the new related soft key (F1-F5) must be defined:	STM	True	True	DMI	7a.2 - 7a.9	
13.5.1.1.10.0-2	Areas F1-F5 for the buttons for selecting the main, override, data view, special or settings window;	STM	True	True	DMI	7a.9	
13.5.1.1.10.0-3	Area A4 for the adhesion “slippery rail”;	STM	True	True	DMI	7a.9	
13.5.1.1.10.0-4	Areas B7 and C8 for the ETCS mode and level display;	STM	True	True	DMI	7a.8, 7a.9	
13.5.1.1.10.0-5	Area C1 for the mode/level acknowledgements;	STM	True	True	DMI	7a.9	
13.5.1.1.10.0-6	Area C7 for the Override status indication;	STM	True	True	DMI	7a.8, 7a.9	
13.5.1.1.10.0-7	Area C9 for the brake indication;	STM	True	True	DMI	7a.9	
13.5.1.1.10.0-8	Area E1 for safe radio connection indication;	STM	True	True	DMI	7a.9	
13.5.1.1.10.0-9	Area G13 for local time	STM	True	True	DMI	7a.9	
13.5.1.1.10.0-10	The new location shall be specified by a new x:y position in cells.	STM	True	True	DMI	7a.8, 7a.9	
13.5.1.1.10.0-11	The moved areas shall have the same size as the original ETCS areas.	STM	True	True	DMI	7a.8, 7a.9	
13.5.1.2	Recapping Table with configuration data for customisable DMI:		False	False			
13.5.1.2.0-1.0-1.0-1	Description		False	False			table title
13.5.1.2.0-1.0-1.0-2	Multiplicity		False	False			table title
13.5.1.2.0-1.0-1.0-3	Range and unit		False	False			table title
13.5.1.2.0-1.0-2.0-1	NID_STM of the STM		False	False			Description
13.5.1.2.0-1.0-2.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-2.0-3	0-254		False	False			Range and unit

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.5.1.2.0-1.0-3.0-1	Number of Indicators		False	False			Description
13.5.1.2.0-1.0-3.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-3.0-3	0-255		False	False			Range and unit
13.5.1.2.0-1.0-4.0-1	Indicator id (i)		False	False			Description
13.5.1.2.0-1.0-4.0-2	For each Indicator		False	False			Multiplicity
13.5.1.2.0-1.0-4.0-3	1-255		False	False			Range and unit
13.5.1.2.0-1.0-5.0-1	Font size (i)		False	False			Description
13.5.1.2.0-1.0-5.0-2	For each Indicator		False	False			Multiplicity
13.5.1.2.0-1.0-5.0-3	height in cells (8-60)		False	False			Range and unit
13.5.1.2.0-1.0-6.0-1	Horizontal text alignment (i)		False	False			Description
13.5.1.2.0-1.0-6.0-2	For each Indicator		False	False			Multiplicity
13.5.1.2.0-1.0-6.0-3	Left , right, centred		False	False			Range and unit
13.5.1.2.0-1.0-7.0-1	Vertical text alignment (i)		False	False			Description
13.5.1.2.0-1.0-7.0-2	For each Indicator		False	False			Multiplicity
13.5.1.2.0-1.0-7.0-3	upper part, lower part, centred		False	False			Range and unit
13.5.1.2.0-1.0-8.0-1	Number of Indicator positions		False	False			Description
13.5.1.2.0-1.0-8.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-8.0-3	0-24		False	False			Range and unit
13.5.1.2.0-1.0-9.0-1	Indicator position id (i)		False	False			Description
13.5.1.2.0-1.0-9.0-2	For each Indicator position		False	False			Multiplicity
13.5.1.2.0-	1-24		False	False			Range and unit

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1.0-9.0-3							
13.5.1.2.0-1.0-10.0-1	X Offset of the upper left corner (i)		False	False			Description
13.5.1.2.0-1.0-10.0-2	For each Indicator position		False	False			Multiplicity
13.5.1.2.0-1.0-10.0-3	0-639 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-11.0-1	Y Offset of the upper left corner (i)		False	False			Description
13.5.1.2.0-1.0-11.0-2	For each Indicator position		False	False			Multiplicity
13.5.1.2.0-1.0-11.0-3	0-479 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-12.0-1	Horizontal size (i)		False	False			Description
13.5.1.2.0-1.0-12.0-2	For each Indicator position		False	False			Multiplicity
13.5.1.2.0-1.0-12.0-3	8-640 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-13.0-1	Vertical size (i)		False	False			Description
13.5.1.2.0-1.0-13.0-2	For each Indicator position		False	False			Multiplicity
13.5.1.2.0-1.0-13.0-3	8-480 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-14.0-1	Number of Buttons		False	False			Description
13.5.1.2.0-1.0-14.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-14.0-3	0-255		False	False			Range and unit
13.5.1.2.0-1.0-15.0-1	Button id (i)		False	False			Description
13.5.1.2.0-1.0-15.0-2	For each Button		False	False			Multiplicity
13.5.1.2.0-1.0-15.0-3	1-255		False	False			Range and unit
13.5.1.2.0-1.0-16.0-1	Font size (i)		False	False			Description
13.5.1.2.0-1.0-16.0-2	For each Button		False	False			Multiplicity

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.5.1.2.0-1.0-16.0-3	height in cells (8-60)		False	False			Range and unit
13.5.1.2.0-1.0-17.0-1	Horizontal text alignment (i)		False	False			Description
13.5.1.2.0-1.0-17.0-2	For each Button		False	False			Multiplicity
13.5.1.2.0-1.0-17.0-3	Left , right, centred		False	False			Range and unit
13.5.1.2.0-1.0-18.0-1	Vertical text alignment (i)		False	False			Description
13.5.1.2.0-1.0-18.0-2	For each Button		False	False			Multiplicity
13.5.1.2.0-1.0-18.0-3	upper part, lower part, centred		False	False			Range and unit
13.5.1.2.0-1.0-19.0-1	Number of Button positions in case of touch screen technology		False	False			Description
13.5.1.2.0-1.0-19.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-19.0-3	0-24		False	False			Range and unit
13.5.1.2.0-1.0-20.0-1	Button position id for touch screen (i)		False	False			Description
13.5.1.2.0-1.0-20.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-20.0-3	1-24		False	False			Range and unit
13.5.1.2.0-1.0-21.0-1	X Offset of the upper left corner (i)		False	False			Description
13.5.1.2.0-1.0-21.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-21.0-3	0-639 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-22.0-1	Y Offset of the upper left corner (i)		False	False			Description
13.5.1.2.0-1.0-22.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-22.0-3	0-479 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-23.0-1	Horizontal size (i)		False	False			Description
13.5.1.2.0-	For each Button position		False	False			Multiplicity

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1.0-23.0-2							
13.5.1.2.0-1.0-23.0-3	8-640 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-24.0-1	Vertical size (i)		False	False			Description
13.5.1.2.0-1.0-24.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-24.0-3	8-480 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-25.0-1	Number of Button positions in case of soft key technology		False	False			Description
13.5.1.2.0-1.0-25.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-25.0-3	0-24		False	False			Range and unit
13.5.1.2.0-1.0-26.0-1	Button position id for soft key (i)		False	False			Description
13.5.1.2.0-1.0-26.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-26.0-3	1-24		False	False			Range and unit
13.5.1.2.0-1.0-27.0-1	X Offset of the upper left corner (i)		False	False			Description
13.5.1.2.0-1.0-27.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-27.0-3	0-639 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-28.0-1	Y Offset of the upper left corner (i)		False	False			Description
13.5.1.2.0-1.0-28.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-28.0-3	0-479 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-29.0-1	Horizontal size (i)		False	False			Description
13.5.1.2.0-1.0-29.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-29.0-3	8-640 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-30.0-1	Vertical size (i)		False	False			Description

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.5.1.2.0-1.0-30.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-30.0-3	8-480 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-31.0-1	Linked soft key		False	False			Description
13.5.1.2.0-1.0-31.0-2	For each Button position		False	False			Multiplicity
13.5.1.2.0-1.0-31.0-3	F1-F10,H2-H4		False	False			Range and unit
13.5.1.2.0-1.0-32.0-1	Number of Icons		False	False			Description
13.5.1.2.0-1.0-32.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-32.0-3	0-255		False	False			Range and unit
13.5.1.2.0-1.0-33.0-1	Icon id (i)		False	False			Description
13.5.1.2.0-1.0-33.0-2	For each Icon		False	False			Multiplicity
13.5.1.2.0-1.0-33.0-3	1-255		False	False			Range and unit
13.5.1.2.0-1.0-34.0-1	Icon (i)		False	False			Description
13.5.1.2.0-1.0-34.0-2	For each Icon		False	False			Multiplicity
13.5.1.2.0-1.0-34.0-3	Bitmap file		False	False			Range and unit
13.5.1.2.0-1.0-35.0-1	Display text upon icon		False	False			Description
13.5.1.2.0-1.0-35.0-2	For each Icon		False	False			Multiplicity
13.5.1.2.0-1.0-35.0-3	Yes/No		False	False			Range and unit
13.5.1.2.0-1.0-36.0-1	ETCS speed and distance supervision		False	False			Description
13.5.1.2.0-1.0-36.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-36.0-3	Yes/No		False	False			Range and unit
13.5.1.2.0-	ETCS speed dial range		False	False			Description

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
1.0-37.0-1							
13.5.1.2.0-1.0-37.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-37.0-3	No, same as ETCS, 140, 180, 250, 400 km/h		False	False			Range and unit
13.5.1.2.0-1.0-38.0-1	Slow flashing frequency for Buttons and Indicators		False	False			Description
13.5.1.2.0-1.0-38.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-38.0-3	(0,5 - 8) Hz		False	False			Range and unit
13.5.1.2.0-1.0-39.0-1	Fast flashing frequency for Buttons and Indicators		False	False			Description
13.5.1.2.0-1.0-39.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-39.0-3	(0,5 - 8) Hz		False	False			Range and unit
13.5.1.2.0-1.0-40.0-1	Flashing style		False	False			Description
13.5.1.2.0-1.0-40.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-40.0-3	Frame, whole area		False	False			Range and unit
13.5.1.2.0-1.0-41.0-1	Number of Sounds		False	False			Description
13.5.1.2.0-1.0-41.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-41.0-3	0-255		False	False			Range and unit
13.5.1.2.0-1.0-42.0-1	Sound id (i)		False	False			Description
13.5.1.2.0-1.0-42.0-2	For each Sound		False	False			Multiplicity
13.5.1.2.0-1.0-42.0-3	1-255		False	False			Range and unit
13.5.1.2.0-1.0-43.0-1	sound (i)		False	False			Description
13.5.1.2.0-1.0-43.0-2	For each Sound		False	False			Multiplicity
13.5.1.2.0-1.0-43.0-3	Wave file		False	False			Range and unit

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
13.5.1.2.0-1.0-44.0-1	Number of moved areas of the ETCS layout		False	False			Description
13.5.1.2.0-1.0-44.0-2	1		False	False			Multiplicity
13.5.1.2.0-1.0-44.0-3	0 - 13		False	False			Range and unit
13.5.1.2.0-1.0-45.0-1	ETCS area of moved element(i)		False	False			Description
13.5.1.2.0-1.0-45.0-2	For each moved element		False	False			Multiplicity
13.5.1.2.0-1.0-45.0-3	A4, B7, C1, C7-C9, E1, F1-F5, G13		False	False			Range and unit
13.5.1.2.0-1.0-46.0-1	X Offset of the upper left corner (i) of new location		False	False			Description
13.5.1.2.0-1.0-46.0-2	For each moved element		False	False			Multiplicity
13.5.1.2.0-1.0-46.0-3	0-639 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-47.0-1	Y Offset of the upper left corner (i) of new location		False	False			Description
13.5.1.2.0-1.0-47.0-2	For each moved element		False	False			Multiplicity
13.5.1.2.0-1.0-47.0-3	0-479 [cells]		False	False			Range and unit
13.5.1.2.0-1.0-48.0-1	Soft key Identifier (i)		False	False			Description
13.5.1.2.0-1.0-48.0-2	For each moved button		False	False			Multiplicity
13.5.1.2.0-1.0-48.0-3	F1-F10, H2-H4		False	False			Range and unit
14	Juridical Data Function		False	False			
14.1			False	False			
14.1.1			False	False			
14.1.1.1	The ERTMS/ETCS on-board equipment shall be able to receive and forward national juridical data to the On-Board Recording Device.	ETCS	True	True	DA	6d.1	
14.1.1.2	The STM shall use the Reference Time (see chapter 5.2.2) for time stamping the juridical data sent to the ERTMS/ETCS on-board.	STM	True	False			
14.1.1.3	The time stamp of the juridical data shall represent the time the sent event occurred.	STM	True	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
14.1.1.3.1	Note: This is in order to respect the event chronology.		False	False			Note
15	Limitations		False	False			
15.1	Limitations related to DMI		False	False			
15.1.1			False	False			
15.1.1.1	The maximum number of characters (coded in UTF-8 by 1 or 2 bytes) to display shall be	ETCS STM	True	False			
15.1.1.1.0-1	40 characters for text messages in text message request.	ETCS	True	True	DMI	7d.1 - 7d.17	not testable for the STM
15.1.1.1.0-2	12 characters for button and indicator caption text in button and indicator requests	ETCS	True	True	DMI	7b6.1 - 7b6.4, 7c8.1 - 7c8.7	not testable for the STM
15.1.1.2	The allowed text font height range for the configurable elements of the DMI layout of an STM using the customisable DMI service shall be from 8 to 60 cells.	ETCS	True	True	DMI	7a.3 - 7a.9	
15.1.1.3	The allowed range for the frequencies for slow and fast flashing for an STM using the customisable DMI service is 0,5 - 8 Hz.	ETCS	True	True	DMI	7a.3 - 7a.9	
15.1.1.4	The ERTMS/ETCS on-board DMI Function shall be able to store at least 10 STM text messages.	ETCS	True	True	DMI	7d.1 - 7d.17	
15.2	Limitations related to Specific NTC Data Entry/Data View		False	False			
15.2.1			False	False			
15.2.1.1	The number of Data Identifiers within one “Specific NTC Data Entry request” shall be limited to 15 Data Identifiers.	ETCS STM	True	True	DE	10a.1, 10a.2, 10a.5, 10a.6, 10b.1, 10e.1, 10e.2, 10e.3, 10e.4	STM test case only controls that the STM is compliant to the requested limit
15.2.1.2	The number of Data Identifiers within one “Specific NTC Data values” shall be limited to 15 Data Identifiers.	ETCS STM	True	True	DE	10a.1, 10a.2, 10a.5, 10a.6, 10b.1, 10e.1, 10e.2, 10e.3, 10e.4	STM test case only controls that the STM is compliant to the requested limit
15.2.1.3	The number of Data Identifiers within one “Specific NTC Data View values” shall be limited to 15 Data Identifiers.	ETCS STM	True	True	DE	10c.1	STM test case only controls that the STM is compliant to the requested limit
15.2.1.4	The maximum number of characters (coded in UTF-8 by 1 or 2 bytes) shall be:	ETCS STM	True	False			
15.2.1.4.0-1	20 characters for data labels in “Specific NTC Data Entry request” and “Specific NTC Data View values”	ETCS STM	True	True	DE	10a.1, 10a.2, 10a.5, 10a.6, 10b.1, 10c.1, 10e.1, 10e.2, 10e.3, 10e.4	STM test case only controls that the STM is compliant to the requested limit
15.2.1.4.0-2	10 characters for data values in “Specific NTC Data Entry request” and “Specific NTC Data values”	ETCS STM	True	True	DE	10a.1, 10a.2, 10a.5, 10a.6, 10b.1, 10e.1, 10e.2, 10e.3, 10e.4	STM test case only controls that the STM is compliant to the requested limit
15.2.1.4.0-3	10 characters for data view values in “Specific NTC Data View values”	ETCS STM	True	True	DE	10c.1	STM test case only controls that the STM is compliant to the requested limit
16	Version management		False	False			

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
16.1	Introduction		False	False			
16.1.1			False	False			
16.1.1.1	The version of the FFFIS STM defines unambiguously the mandatory interface functions that ensure technical exchangeability between ERTMS/ETCS on-board and STM.		False	False			
16.1.1.2	During the life time of the FFFIS STM there may be several versions of the FFFIS STM.		False	False			
16.1.1.3	The objective of this section is to define requirements applicable to ERTMS/ETCS on-board equipment and to STM, when different versions of the FFFIS STM have been defined.		False	False			
16.2	Identification/evolution of the versions		False	False			
16.2.1			False	False			
16.2.1.1	The evolution of the versions of the FFFIS STM shall be sequential, i. e. there shall only be a direct upgrade of an existing version and no branch is accepted.	STM	True	False			
16.2.1.2	The version of the FFFIS STM shall be identified by a number which complies with the following:	STM	True	False			
16.2.1.2.0-1	Each Version Number will have the following format: X.Y, where X and Y are any number between 0 and 255 (examples: 2.0, 3.0, 4.2).	STM	True	True	ASU SOM	2a.1-23	
16.2.1.2.0-2	The first number (X) distinguishes not compatible versions.	STM	True	True	ASU SOM	2a.1-23	
16.2.1.2.0-3	The second number (Y) indicates compatibility within a version X.	STM	True	True	ASU SOM	2a.1-23	
16.2.1.2.0-4	If the first number of two versions is the same, that indicates that those versions are compatible, independently of the second number (e. g. version 4.5 is compatible with 4.3, 4.14).		False	False			
16.2.1.3	The “FFFIS STM version number X or Y” is incremented only when the functionality of the FFFIS STM changes.		False	False			
16.3	Version numbers		False	False			
16.3.1			False	False			
16.3.1.1	Table of FFFIS STM version numbers		False	False			
16.3.1.1.0-1.0-1.0-1			False	False			
16.3.1.1.0-1.0-1.0-2	FFFIS STM Version Number		False	False			table title
16.3.1.1.0-1.0-1.0-3	Supported by ERTMS/ETCS on-board equipment		False	False			table title

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
16.3.1.1.0-1.0-1.0-4	Remark		False	False			table title
16.3.1.1.0-1.0-2.0-1			False	False			
16.3.1.1.0-1.0-2.0-2	X=2, Y=0, Z=0	STM	True	False			
16.3.1.1.0-1.0-2.0-3	Supplier specific		False	False			
16.3.1.1.0-1.0-2.0-4	Initial Version, introduced in SUBSET-035 v2.0.0.		False	False			
16.3.1.1.0-1.0-3.0-1			False	False			
16.3.1.1.0-1.0-3.0-2	X=3, Y=0, Z	STM	True	False			
16.3.1.1.0-1.0-3.0-3	Supplier specific		False	False			
16.3.1.1.0-1.0-3.0-4	Introduced in SUBSET-035 v2.1.1 (General revision of the FFFIS STM) Z is vendor specific		False	False			
16.3.1.1.0-1.0-4.0-1	Legal backward compatibility envelope		False	False			
16.3.1.1.0-1.0-4.0-2	X=4, Y=0	STM	True	False			
16.3.1.1.0-1.0-4.0-3	Yes		False	False			
16.3.1.1.0-1.0-4.0-4	Introduced in SUBSET-035 v3.x.0 (General revision of the FFFIS STM in the frame of ETCS baseline 3)		False	False			
16.3.1.2	The STM shall support and send one and only one “FFFIS STM version number”, which is the highest one amongst those included in the “legal backward compatibility envelope”, as defined in table 16.3.1.1.	STM	True	False			
16.3.1.3	The ERTMS/ETCS on-board equipment shall support any of the “FFFIS STM version numbers X” included in the “legal backward compatibility envelope”, as defined in table 16.3.1.1.	ETCS	True	False			
16.3.1.4	All nodes/functions of the ERTMS/ETCS on-board equipment shall support the same “FFFIS STM version numbers” and shall therefore send the same “FFFIS STM version number”, when opening a connection with a given STM (see section 7.1.2).	ETCS	True	True	ASU	2a.5-23	

Paragraph number	FFFIS STM Requirements	Equipment	Requirement	Testable	Functional Identity	Tested in Test Cases	Comment
16.3.1.5	When a connection is successfully established with a “FFFIS STM version number X” lower than the highest STM version numbers X included in the “legal backward compatibility envelope”, the ERTMS/ETCS on-board equipment shall apply the corresponding set of requirements as per section 16.4, in order to ensure backward compatibility between the ERTMS/ETCS on-board equipment and the STM.	ETCS	True	False			
16.4	Management of older FFFIS STM versions by ERTMS/ETCS on-board		False	False			
16.4.1			False	False			
16.4.1.1	The “FFFIS STM version number” introduced in this version of the SUBSET-035 is the starting point of the “legal backward compatibility envelope”, which means that whether an ERTMS/ETCS on-board equipment supports a “FFFIS STM version number X” lower than the one introduced in this version of the SUBSET-035 is supplier specific and outside the scope of this document.		False	False			