

ERTMS/ETCS – Class 1**FFFIS STM Test cases of Functional identity 006****STM in DA****Total: 21 Test cases**

REF : Subset-074-2-6

ISSUE : Version 1.0.0

DATE : 13.10.2005

Company	Technical Approval	Management approval
ALCATEL		
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Modification History

Issue Number Date	Section Number	Modification / Description	Author
0.0.1 01/07/2004	All	First version/review issued after WG meeting on the 16/06/2004 based on individual test case.	Ansaldo FB
0.0.2 01/09/2004	All	All test cases completed.	Ansaldo FB
0.0.3 06/09/2004	ALL	Update during UNISIG STM WG meeting in Madrid	Ansaldo FB
0.0.4 24/09/2004	ALL	Complete the review started during the STM WG meeting in Madrid	Ansaldo FB
0.0.5 22/10/2004	ALL	Add the packet STM_161 in test case 6.1.2.3.0.0.0 Add the packets STM_35 and STM_46 in test case 6.3.0.0.0.0.0.0 Update in Brussels meeting.	Ansaldo FB
0.0.11 30/11/2004	ALL	Update following Brussels meeting	Ansaldo FB
0.0.12 26/01/2005	ALL	Take into account traceability issue : (5.2.10.1.0 DMI); ;10.7.3.5.0 STM Indicator, button & sound + add test case for 10.7.3.5.0 STM Tarck data&track condition, override + slippery.	Ansaldo FB
0.1.0 27/01/2005		Editorial changes for delivery	F. Bernaudin (Ansaldo)
0.1.1 13/10/2005	6.5, 6.7 & 6.10	Take into account input and output to BIU and TIU.	F. Bernaudin (Ansaldo)
1.0.0 13/10/2005		Update version number for official release.	F. Bernaudin (Ansaldo)

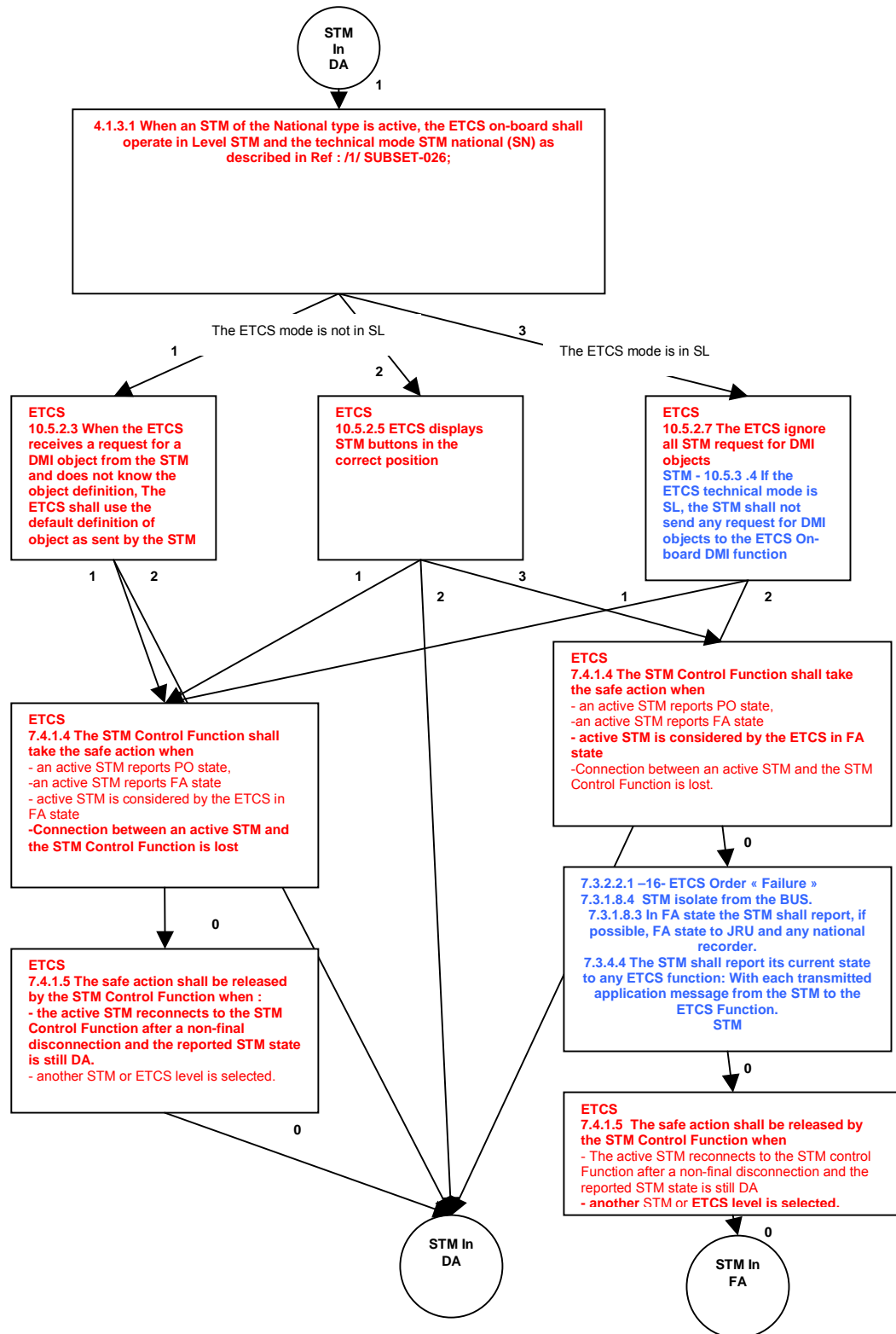
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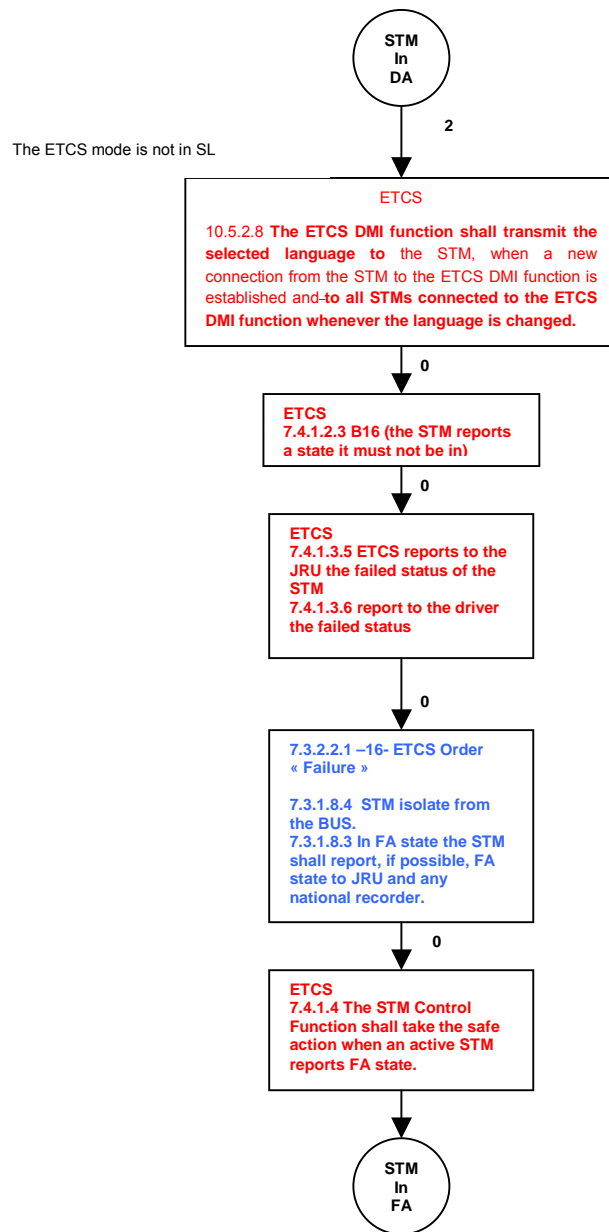
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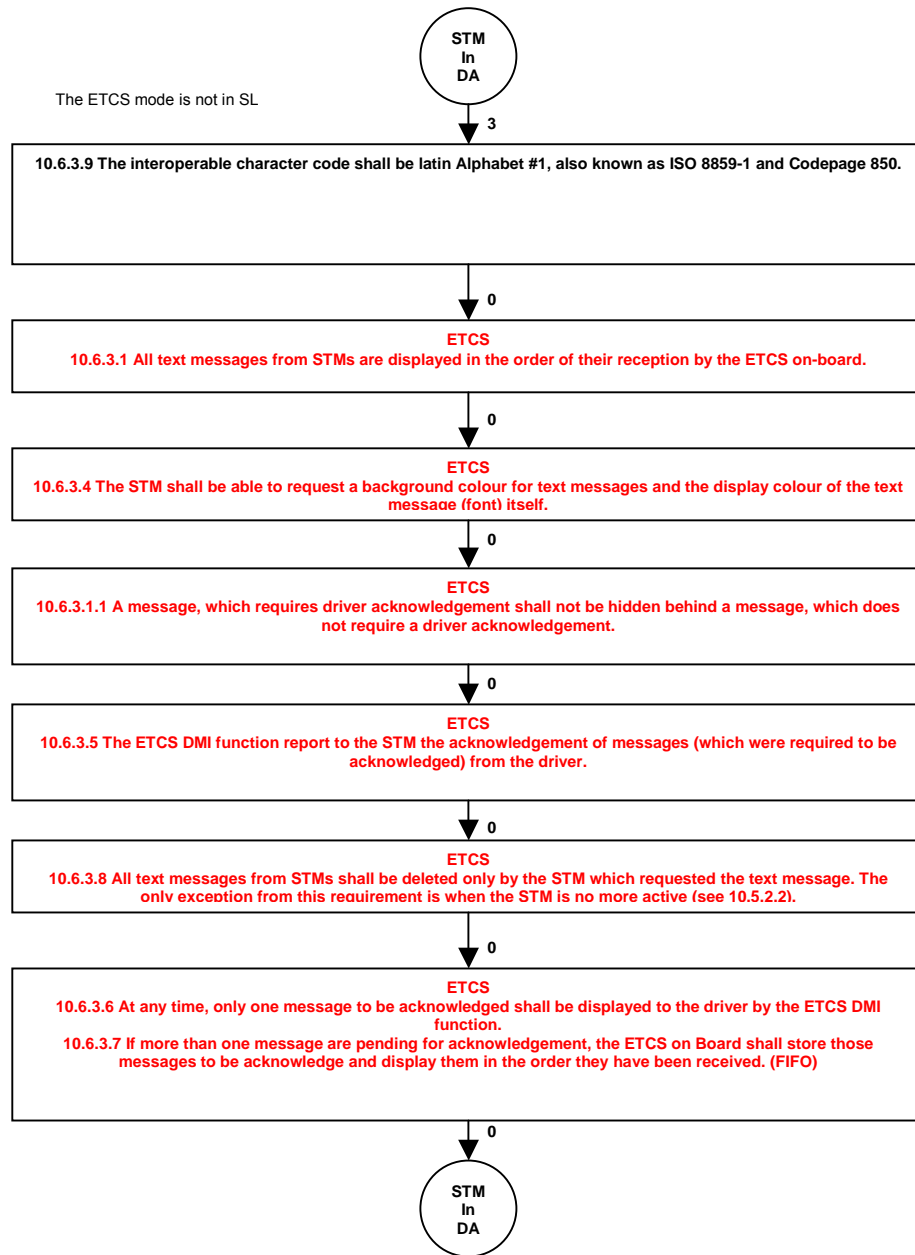
TEST DIAGRAM

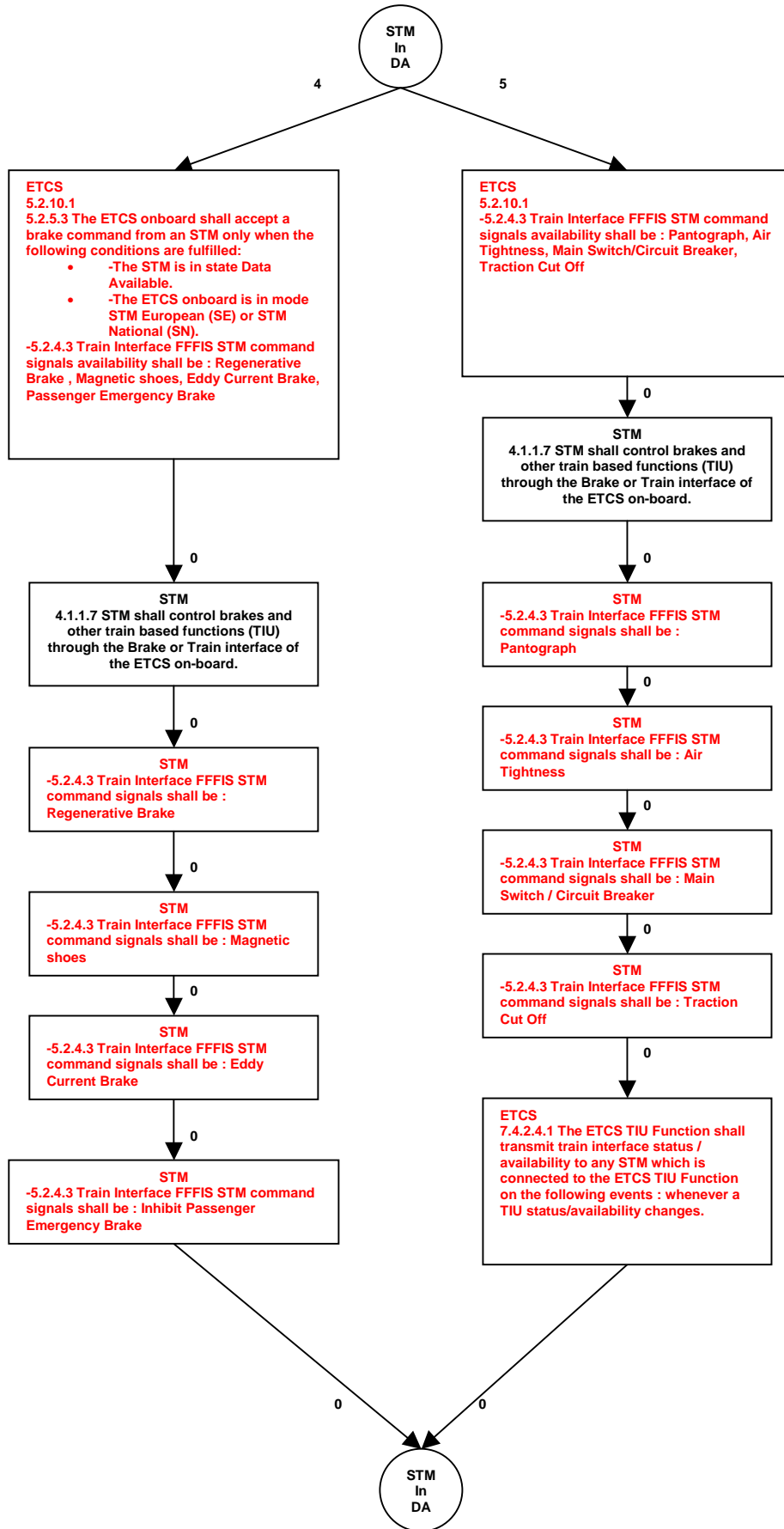


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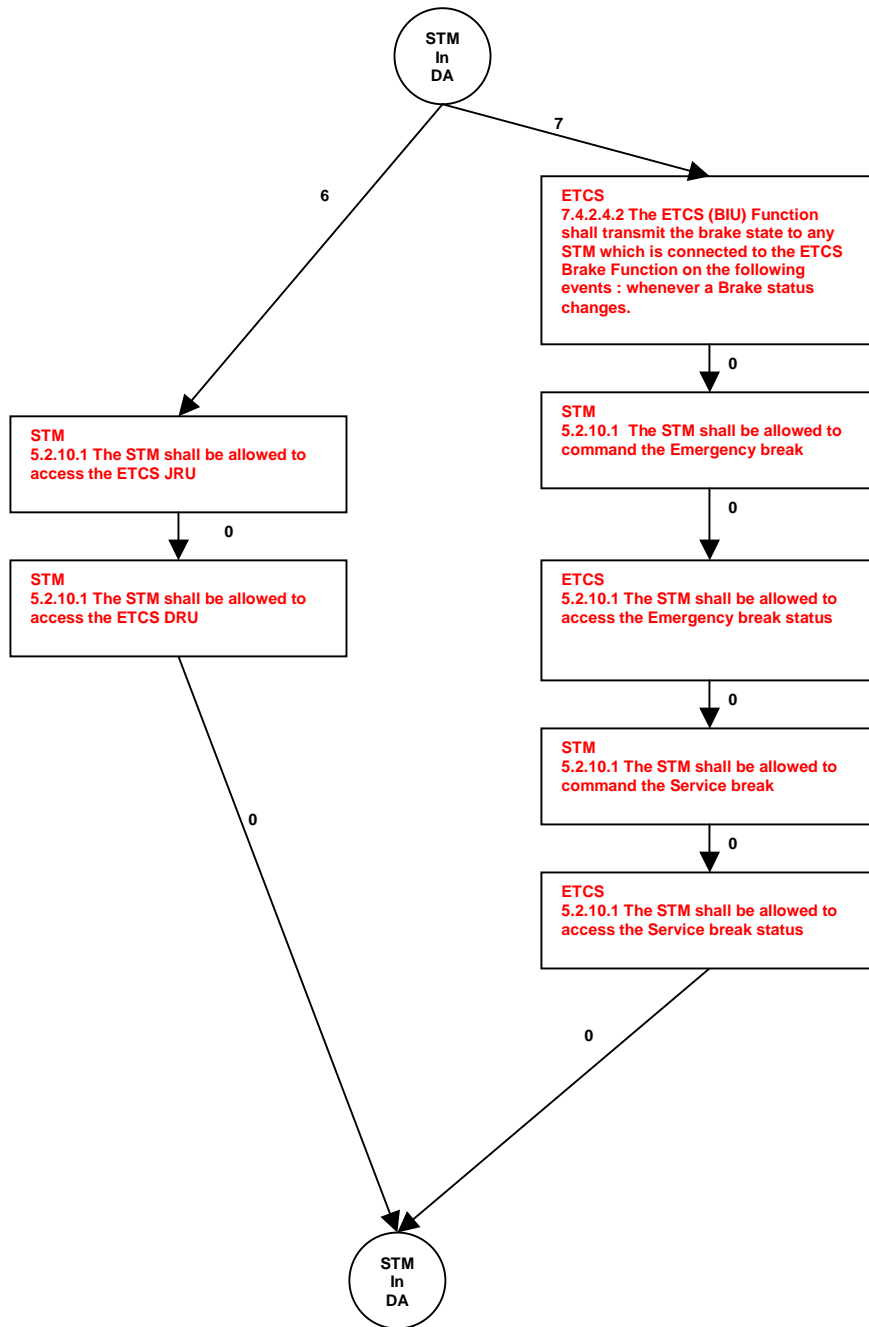


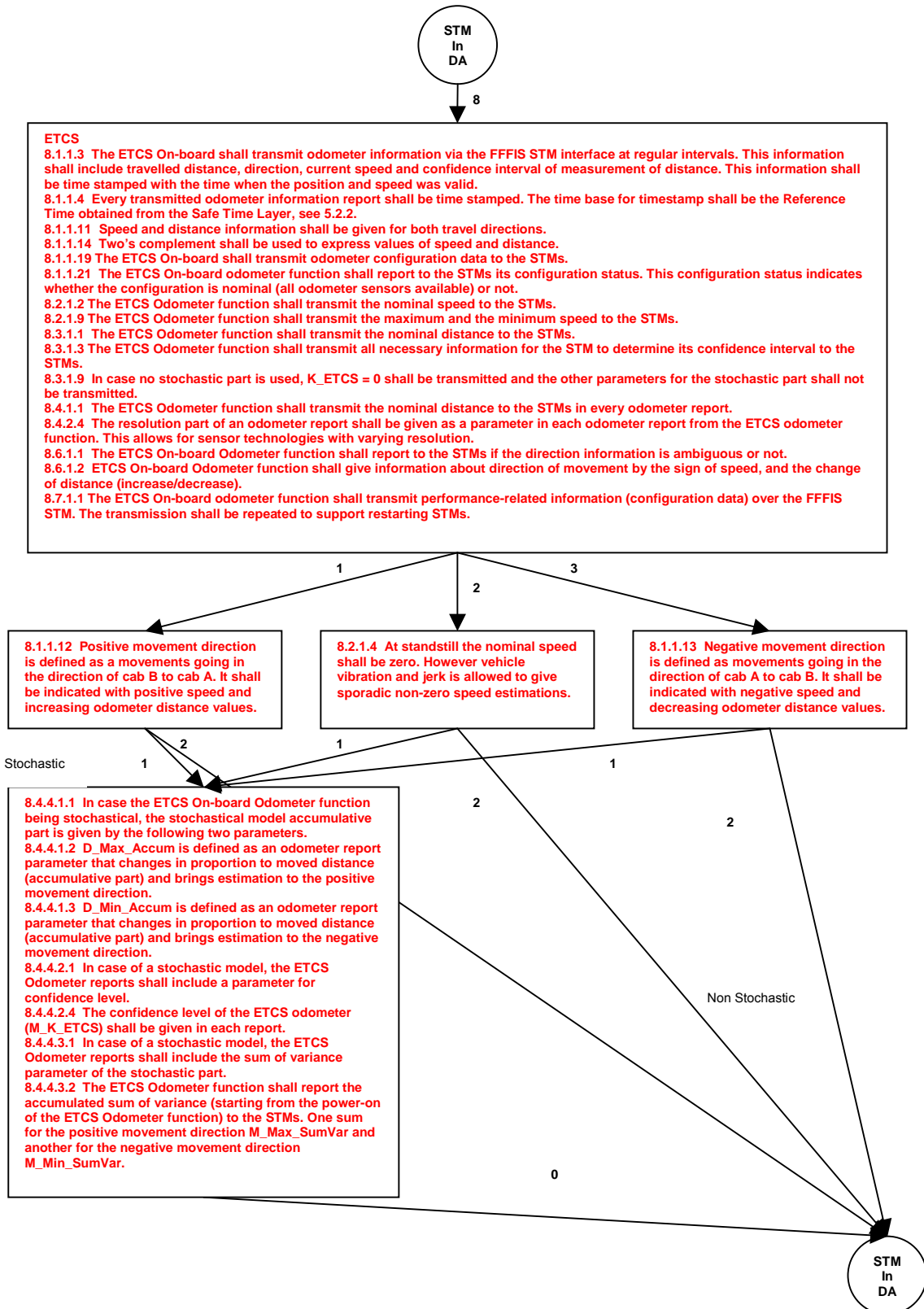


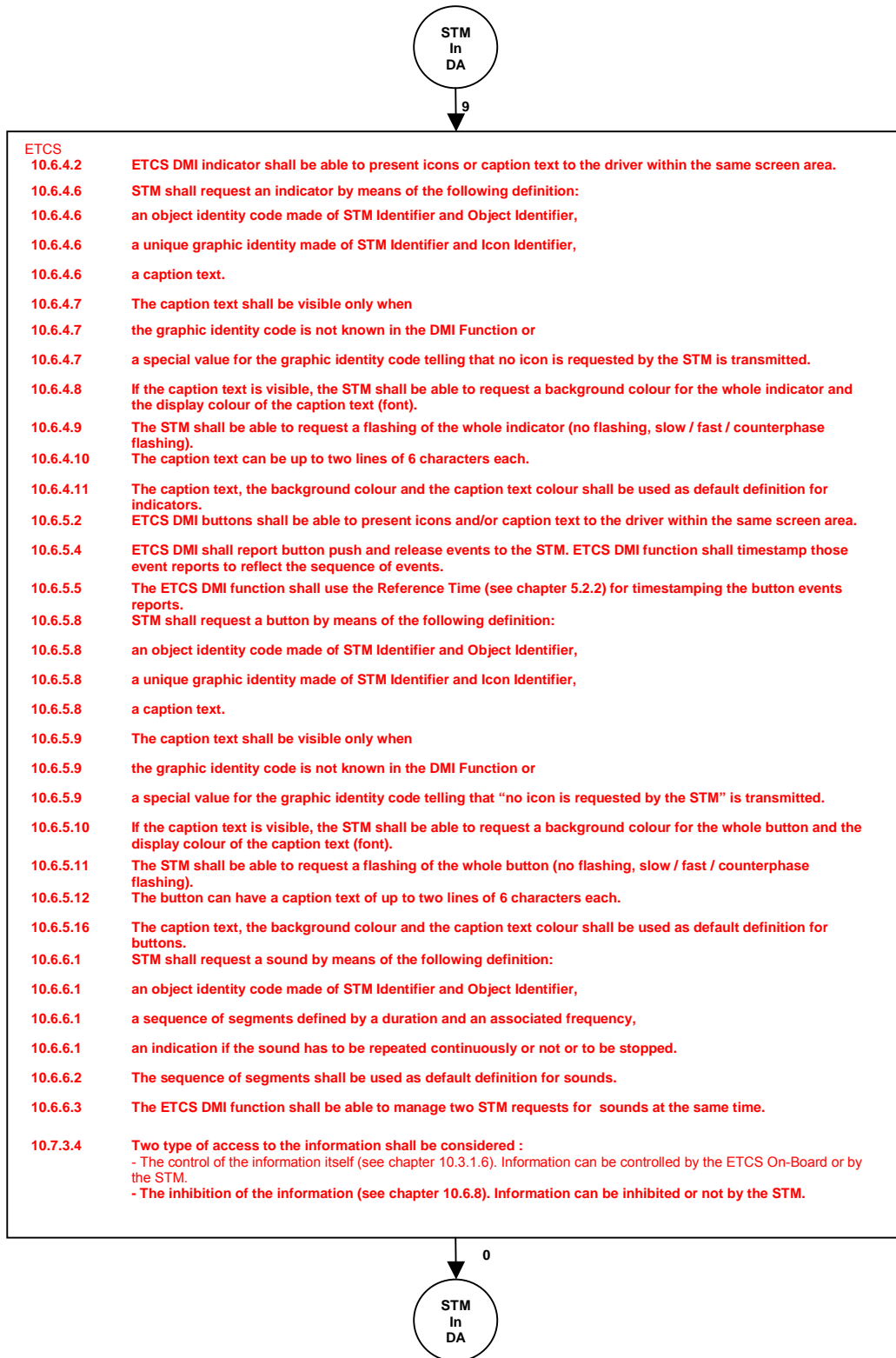


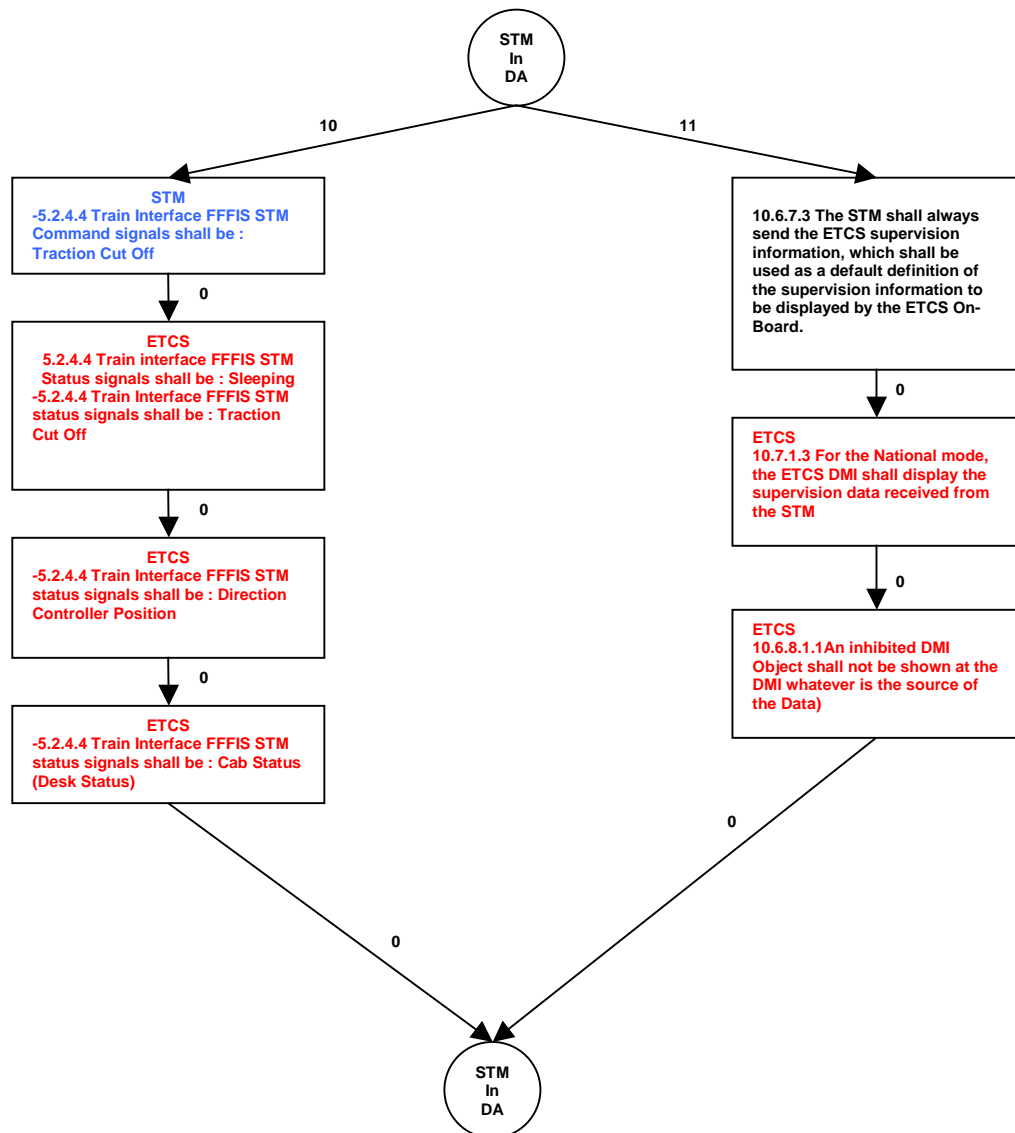
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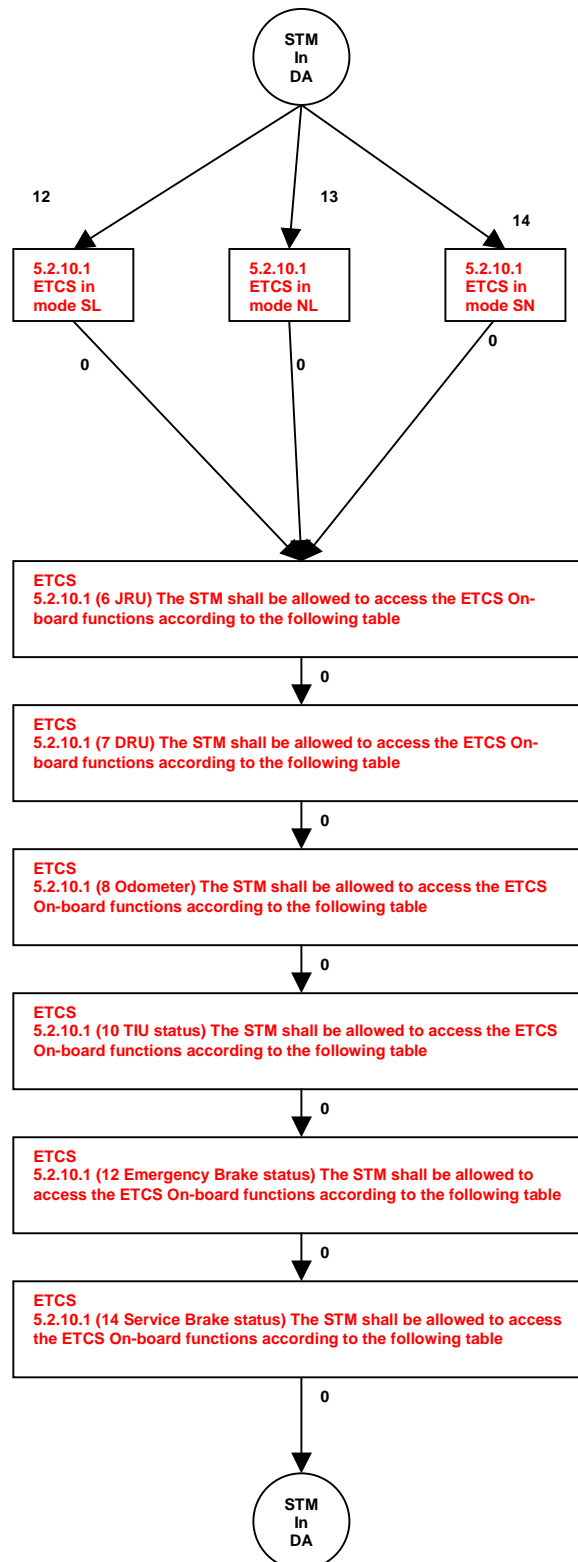
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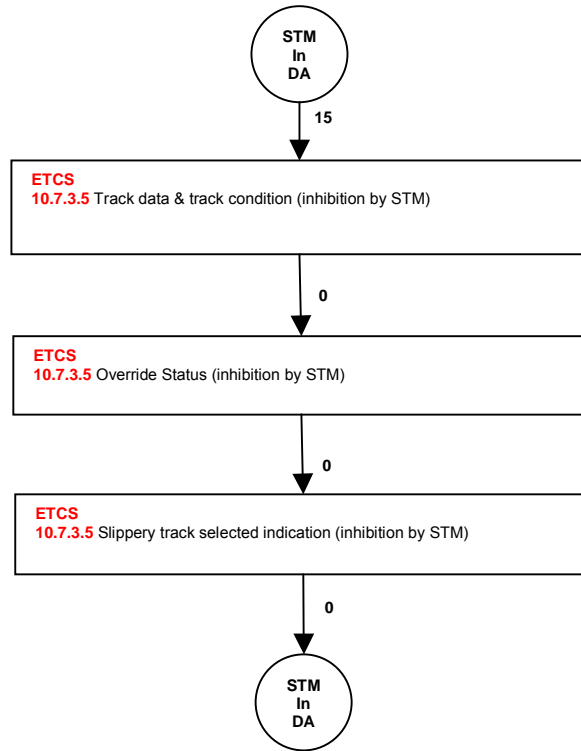












TEST CASE

TEST CASE: 6.1.1.1.0.0	
Test case Identification	STM (DA)
	Test the STM DMI messages send to ETCS then the connection between the active STM and the ETCS is temporarily lost.
ETCS Requirements Tested	Subset-035 : 4.1.3.1; 10.5.2.3; 7.4.1.4; 7.4.1.5; 5.2.10.1.0 DMI
	Subset-026 :
STM Requirements Tested	Subset-035 : 7.3.4.4; 10.5.3.1;10.7.3.5.0 STM Indicator, button & sound
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15, STM-32, STM-35, STM-46
Comments and constraints	Requirement 4.1.3.1 is covered by displaying STM data on the DMI

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM creates DMI objects [10.5.3.1]	Prof	Message-1 (Packet STM_15; Packet STM_32 button request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check the buttons, indicators and sounds on the DMI.
2	The STM creates DMI Objects. The ETCS does not know the object definition. The ETCS uses the default definition [10.5.2.3]	Prof	Message 2 (Packet STM_15 ; Packet STM_32 button request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check the default button, indicators and sounds on the DMI.
3	Non-final disconnection between the ETCS and the STM (STM control connection)	Prof	A non final disconnect message is sent from the STM to the ETCS (disconnect reason 40h)	ETCS	BIU / DMI	Safe action is applied at the ETCS level.
4	Resume the error	Prof	The STM control connection is established by the STM.	ETCS	BIU / DMI	Release safe action at the ETCS level.

Test Case for STM

Not applicable

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Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	9	
X_CAPTION(2)	8	"1"	
X_CAPTION(2)	8	"."	
X_CAPTION(2)	8	"0"	
X_CAPTION(2)	8	"."	

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X_CAPTION(2)	8	“0”	
X_CAPTION(2)	8	“ ”	
X_CAPTION(2)	8	“0”	
X_CAPTION(2)	8	“ ”	
X_CAPTION(2)	8	“0”	

NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"A"	
X_CAPTION(1,7)	8	"2"	
X_CAPTION(1,8)	8	"L"	
X_CAPTION(1,9)	8	"I"	
X_CAPTION(1,10)	8	"n"	
X_CAPTION(1,11)	8	"e"	
X_CAPTION(1,12)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	2	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	

NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	One shot play
N_ITER (1)	5	1	
M_FREQ (1,1)	8	40	40*32 Hz = 1280Hz
T_SOUND (1,1)	8	60	60*100ms = 6 s
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a non valid value should be used in order to force the ETCS to use the default definition of the object as sent by the STM;
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"B"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	9	
X_CAPTION(2)	8	"1"	
X_CAPTION(2)	8	"."	
X_CAPTION(2)	8	"0"	

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X_CAPTION(2)	8	“ ” .	
X_CAPTION(2)	8	“0”	
X_CAPTION(2)	8	“ ” .	
X_CAPTION(2)	8	“0”	
X_CAPTION(2)	8	“ ” .	
X_CAPTION(2)	8	“0”	

NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	5	
X_CAPTION(1,1)	8	"M"	
X_CAPTION(1,2)	8	"S"	
X_CAPTION(1,3)	8	"G"	
X_CAPTION(1,4)	8	" "	
X_CAPTION(1,5)	8	"2"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	5	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
X_CAPTION(2,3)	8	"M"	
X_CAPTION(2,4)	8	"S"	
X_CAPTION(2,5)	8	"G"	
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	One shot play

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N_ITER (1)	5	1	
M_FREQ (1,1)	8	80	80*32 Hz = 2560Hz
T_SOUND (1,1)	8	60	60*100ms = 6 s
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.1.1.2	
Test case Identification	STM (DA)
	Test DMI messages exchange by the STM (in DA state) and ETCS (in SN state)
ETCS Requirements Tested	Subset-035 : 4.1.3.1; 10.5.2.3; 5.2.10.1.0 DMI
	Subset-026 :
STM Requirements Tested	Subset-035: 7.3.4.4. 10.5.3.1
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15, STM-32, STM-35, STM-46;10.7.3.5.0 STM Indicator, button & sound
Comments and constraints	Requirement 4.1.3.1 is covered by displaying STM data on the DMI

Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	

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Starting Conditions		Value	Comments
TIU Cab Status (Desk Status)		not Relevant	
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM creates DMI objects [10.5.3.1]	Prof	Message-1 (Packet STM_15; Packet STM_32 button request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check the buttons, indicators and sounds on the DMI.
2	The STM creates DMI Objects. The ETCS does not know the object definition. The ETCS uses the default definition [10.5.2.3]	Prof	Message-2 (Packet STM_15; Packet STM_32 button request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check the buttons, indicators and sounds on the DMI.

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	2	
X_CAPTION(2)	8	"2"	
X_CAPTION(2)	8	" "	
NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length

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N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"A"	
X_CAPTION(1,7)	8	"2"	
X_CAPTION(1,8)	8	"L"	
X_CAPTION(1,9)	8	"I"	
X_CAPTION(1,10)	8	"n"	
X_CAPTION(1,11)	8	"e"	
X_CAPTION(1,12)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	2	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.

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NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	One shot play
N_ITER (1)	5	1	
M_FREQ (1,1)	8	40	40*32 Hz = 1280Hz
T_SOUND (1,1)	8	60	60*100ms = 6 s
PADDINGS BIT	COMPUTED	COMPUTED	
Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a non valid value should be used in order to force the ETCS to use the default definition of the object as sent by the STM;
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"B"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	

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NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	2	
X_CAPTION(2)	8	"2"	
X_CAPTION(2)	8	" "	
NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	5	
X_CAPTION(1,1)	8	"M"	
X_CAPTION(1,2)	8	"S"	
X_CAPTION(1,3)	8	"G"	
X_CAPTION(1,4)	8	" "	
X_CAPTION(1,5)	8	"2"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	5	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
X_CAPTION(2,3)	8	"M"	
X_CAPTION(2,4)	8	"S"	
X_CAPTION(2,5)	8	"G"	
NID_PACKET	8	46	Packet identifier (STM-46)

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L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	One shot play
N_ITER (1)	5	1	
M_FREQ (1,1)	8	80	80*32 Hz = 2560Hz
T_SOUND (1,1)	8	60	60*100ms = 6 s
PADDINGS BIT	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	

TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	
TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

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TEST CASE: 6.1.2.2	
Test case Identification	STM (DA)
	Test DMI messages exchange by the STM (in DA state) and ETCS (in SN state)
ETCS Requirements Tested	Subset-035 : 4.1.3.1; 10.5.2.5; 5.2.10.1.0 DMI
STM Requirements Tested	SUBSET-035 : 7.3.4.4; 10.5.3.1
Packets Transmitted via FFFIS STM	Packet STM_15, STM-32
Comments and constraints	Requirement 4.1.3.1 is covered by displaying STM data on the DMI

Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	

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Starting Conditions		Value	Comments
TIU Direction Controller Position Status		not Relevant	
TIU Cab Status (Desk Status)		not Relevant	
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM creates buttons for the DMI [10.5.2.5]; [10.5.3.1]	Prof	Message-1 (Packet STM_15; Packet STM_32 button request)	ETCS		Check the buttons on the DMI.

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	2	
X_CAPTION(2)	8	"3"	
X_CAPTION(2)	8	" "	
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	

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TIU Direction Controller Position Status	unchanged	
TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.1.2.3.0.0.0	
Test case Identification	STM (DA)
	Test DMI messages exchange by the STM (in DA state) and ETCS (in SN state) then the active STM is considered by the ETCS in FA state.
ETCS Requirements Tested	Subset-035: 4.1.3.1. 10.5.2.5; 7.4.1.4; 7.4.1.5; 5.2.10.1.0 DMI
STM Requirements Tested	SUBSET-035: 10.5.3.1; 7.3.2.2.1; 7.3.1.8.4; 7.3.1.8.3; 7.3.4.4
Packets Transmitted via FFFIS STM	Packet STM-30, STM-14, STM_15, STM-32; STM-35; STM-46; STM-161
Comments and constraints	Requirement 4.1.3.1 is covered by displaying STM data on the DMI

Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	

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Starting Conditions		Value	Comments
TIU Cab Status (Desk Status)		not Relevant	
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM creates DMI objects [10.5.2.5]; [10.5.3.1]	Prof	Message-1 (Packet STM_15; Packet STM_32 buttons request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check the buttons, indicators and sounds on the DMI.
2	The active STM is considered by ETCS in FA state	Prof	A final disconnect message is sent from the STM to the ETCS for the STM control function (disconnect reason ...)	ETCS	BIU / DMI	Safe action is applied at the ETCS level.
				ETCS	Prof	STM Control function orders the STM in FA state.
3	The STM reports the FA state to the JRU.	Prof	Message-1bis (Packet STM_15; Packet STM_161)	ETCS	JRU	Check on the JRU
4	The train is at Standstill, the driver switches to ERTMS level	DMI	.	ETCS	BIU / DMI	Release safe action at the ETCS level.

Test Case for STM

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS Order "Failure"	Prof	Message-2---(Packet STM_14)	STM		
2	The STM report FA state		Message 3 – (Packet: STM_15)	STM	Prof	The STM is in FA state

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Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	2	
X_CAPTION(2)	8	"4"	
X_CAPTION(2)	8	" "	
NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length

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N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"A"	
X_CAPTION(1,7)	8	"2"	
X_CAPTION(1,8)	8	"L"	
X_CAPTION(1,9)	8	"I"	
X_CAPTION(1,10)	8	"n"	
X_CAPTION(1,11)	8	"e"	
X_CAPTION(1,12)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	2	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.

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NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	One shot play
N_ITER (1)	5	1	
M_FREQ (1,1)	8	40	40*32 Hz = 1280Hz
T_SOUND (1,1)	8	60	60*100ms = 6 s
PADDING BITS	COMPUTED	COMPUTED	

Message-1 bis: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	161	Packet identifier (STM-161)
L_PACKET	13	COMPUTED	Packet length
T_JRU	32	341	Time Stamp
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to JRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"J"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"i"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	STM State order FA
PADDING BITS	COMPUTED	COMPUTED	

Message-3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode		Depends on the driver selection SR or UN mode depending on the level 0, 1 or 2.
ETCS Level		Depends on the driver selection on the level 0, 1 or 2.
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	Unchanged	
Reference Time Data	Unchanged	
TIU Connection	Unchanged	
BIU Connection	Unchanged	
JRU Connection	Unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.1.3.2	
Test case Identification	STM (DA)
	Test DMI messages ignore by ETCS (in SL state)
ETCS Requirements Tested	Subset-035 : 4.1.3.1; 10.5.2.7
STM Requirements Tested	SUBSET-035 : 7.3.4.4; 10.5.3.1; 10.5.3.4
Packets Transmitted via FFFIS STM	Packet STM_15, STM-32, STM-35, STM-46
Comments and constraints	Requirement 4.1.3.1 is covered by displaying STM data on the DMI

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SL	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	Not Relevant	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	

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Starting Conditions		Value	Comments
TIU Direction Controller Position Status		not Relevant	
TIU Cab Status (Desk Status)		not Relevant	
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM creates buttons for the DMI [10.5.2.5]; [10.5.3.1]	Prof	Message-1 (Packet STM_15; Packet STM_32 button request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check that the DMI remains unchanged.

Test Case for STM

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM DMI connection shall be closed	Prof		STM	Prof	Check that the STM DMI connection is closed.

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Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	2	
X_CAPTION(2)	8	"3"	
X_CAPTION(2)	8	" "	
NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length

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N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"A"	
X_CAPTION(1,7)	8	"2"	
X_CAPTION(1,8)	8	"L"	
X_CAPTION(1,9)	8	"I"	
X_CAPTION(1,10)	8	"n"	
X_CAPTION(1,11)	8	"e"	
X_CAPTION(1,12)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	2	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.

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NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	One shot play
N_ITER (1)	5	1	
M_FREQ (1,1)	8	40	40*32 Hz = 1280Hz
T_SOUND (1,1)	8	60	60*100ms = 6 s
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	

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TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	
TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.2.0.0.0.0	
Test case Identification	STM 1 (DA) STM 2 (CS)
	New STM connection, the ETCS shall transmit the selected language to the newly connected STM. Then when the driver changes the language, all the connected STM shall be notified.
ETCS Requirements Tested	Subset_035 : 10.5.2.8; 7.4.1.2.3 B16; 7.4.1.3.5; 7.4.1.3.6; 7.4.1.4
STM Requirements Tested	Subset-035 7.3.2.2.1-16; 7.3.1.8.4; 7.3.1.8.3
Packets Transmitted via FFFIS STM	Packet STM-15, STM_14, STM-30
Comments and constraints	

Starting Conditions	Value	Comments
STM 1 STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The operator choose the language from the DMI [10.5.2.8]			ETCS	Prof	Message 1 (Packet STM_30) For All STMs
2	The STM reports a state it must not be in [7.4.1.2.3 B16]		Message 2 (Packet STM-15)	ETCS		ETCS report to the JRU the Failed status [7.4.1.3.5] ETCS report to the driver the Failed status [7.4.1.3.6] ETCS Order "Failure" to the STM The ETCS takes safe action.

Test Case for STM(1)

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS Order "Failure" [7.3.2.2.1-16]	Prof	Message 3 (Packet STM_14)	STM		The STM isolate from the bus [7.3.1.8.4]

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Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	The value used for NID-STM shall be the one to address all the connected STM. So may be 255.
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	30	Packet identifier (STM-30)
L_PACKET	13	COMPUTED	packet length
NID_DRV_LANG	16	sr	Driver language selection SERBIAN
Padding bits	Computed	Computed	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	3	state DE
Padding bits	Computed	Computed	

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Message-3: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
Padding bits	Computed	Computed	

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End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	
TIU Cab Status (Desk Status)	unchanged	

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BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.3.0.0.0.0.0.0	
Test case Identification	STM (DA)
	Test DMI messages exchange by the STM (in DA state) and ETCS (in SN state) queuing / non queuing of text messages.
ETCS Requirements Tested	Subset-035 : 10.6.3.9; 10.6.3.1; 10.6.3.1.1; 10.6.3.5; 10.6.3.6; 10.6.3.7; 5.2.10.1.0 DMI
	Subset-026 :
STM Requirements Tested	Subset-035 : 10.6.3.9; 7.3.4.4; 10.6.3.4; 10.6.3.8
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15, STM-32, STM-35, STM-46;10.7.3.5.0 STM plain text information
Comments and constraints	

Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board -

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
0	Check that all messages sent by the STM are displayed in order of the reception by the ETCS.					
1	The STM creates DMI objects]	Prof	Message-1 (Packet STM_15; Packet STM_32 button request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check the buttons, indicators and sounds on the DMI.
2	The STM creates DMI Objects. The ETCS does not know the object definition. The ETCS uses the default definition	Prof	Message 2 (Packet STM_15 ; Packet STM_32 button request) + Indicators STM_35 + sounds STM_46	ETCS	DMI	Check the default buttons, indicators and sounds on the DMI.
3	The STM creates a text message for the DMI without Acknowledgement [10.6.3.4][10.6.3.9]	Prof	Message 3 (Packet STM_15 ; Packet STM_38 Text message)	ETCS	DMI	Check the text message on the DMI.
4	The STM creates two text messages for the DMI without Acknowledgement [10.6.3.1];	Prof	Message 4 (Packet STM_15 ; Packet STM_38 Text message, Packet STM_38 Text message)	ETCS	DMI	Check the text messages on the DMI.
5	The STM creates a text message for the DMI with Acknowledgement Request [10.6.3.1.1]	Prof	Message 5 (Packet STM_15 ; Packet STM_38 Text message)	ETCS	DMI	Check the Ack text message on the DMI. It shall not be hidden

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
6	The STM creates a text message for the DMI with Acknowledgement Request [10.6.3.6];[10.6.3.7]	Prof	Message 6 (Packet STM_15 ; Packet STM_38 Text message)	ETCS	DMI	Check the Ack text message on the DMI. It is not displayed as long as the driver has not acknowledge the first ack message.
7	The STM creates a text message for the DMI with Acknowledgement Request [10.6.3.6];[10.6.3.7]	Prof	Message 7 (Packet STM_15 ; Packet STM_38 Text message)	ETCS	DMI	Check the Ack text message on the DMI. It is not displayed as long as the driver has not acknowledge the first ack message.
8	The Driver acknowledge the first ack message 5 from the DMI [10.6.3.5]	DMI	Ack message	ETCS	Prof	The Acknowledgement is sent to the STM. Message 8 (packet STM_40)
9	The STM delete the text message defined in message 5 [10.6.3.8]	Prof	Message 9 (Packet STM_15; Packet STM_39 delete text message)	ETCS	Prof/DMI	The Acknowledge message 5 is removed from the DMI. The DMI display the pending ack message (see message 6)
10	The Driver acknowledge the ack message 6 from the DMI [10.6.3.5]	DMI	Ack message	ETCS	Prof	The Acknowledgement is sent to the STM. Message 10 (packet STM_40)
11	The STM delete the text message defined in message 6 [10.6.3.8]	Prof	Message 11 (Packet STM_15; Packet STM_39 delete text message)	ETCS	Prof/DMI	The Acknowledge message 6 is removed from the DMI. The DMI display the pending ack message (see message 7)
12	The STM delete the text message defined in message 7 even though the message has not been acknowledge [10.6.3.8]	Prof	Message 12 (Packet STM_15; Packet STM_39 delete text message)	ETCS	Prof/DMI	The Non Acknowledge message 7 is removed from the DMI.

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Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	9	
X_CAPTION(2)	8	"1"	
X_CAPTION(2)	8	"."	
X_CAPTION(2)	8	"0"	
X_CAPTION(2)	8	"."	

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X_CAPTION(2)	8	“0”	
X_CAPTION(2)	8	“ ”	
X_CAPTION(2)	8	“0”	
X_CAPTION(2)	8	“ ”	
X_CAPTION(2)	8	“0”	

NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"A"	
X_CAPTION(1,7)	8	"2"	
X_CAPTION(1,8)	8	"L"	
X_CAPTION(1,9)	8	"I"	
X_CAPTION(1,10)	8	"n"	
X_CAPTION(1,11)	8	"e"	
X_CAPTION(1,12)	8	"s"	
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	
N_ITER (1)	5	1	
M_FREQ (1,1)	8	70	70*32 Hz = 2240Hz
T_SOUND (1,1)	8	100	100*100ms = 10 s
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a non valid value should be used in order to force the ETCS to use the default definition of the object as sent by the STM;
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	6	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"B"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	
M_BUT_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	9	
X_CAPTION(2)	8	"1"	
X_CAPTION(2)	8	"."	
X_CAPTION(2)	8	"0"	

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X_CAPTION(2)	8	" "	
X_CAPTION(2)	8	"0"	
X_CAPTION(2)	8	" "	
X_CAPTION(2)	8	"0"	
X_CAPTION(2)	8	" "	
X_CAPTION(2)	8	"0"	

NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a non valid value should be used in order to force the ETCS to use the default definition of the object as sent by the STM;
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"D"	
X_CAPTION(1,7)	8	"e"	
X_CAPTION(1,8)	8	"f"	
X_CAPTION(1,9)	8	"a"	
X_CAPTION(1,10)	8	"u"	
X_CAPTION(1,11)	8	"l"	
X_CAPTION(1,12)	8	"t"	
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	1	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a non valid value should be used in order to force the ETCS to use the default definition of the object as sent by the STM;
NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	
N_ITER (1)	5	1	
M_FREQ (1,1)	8	100	100*32 Hz = 3200Hz
T_SOUND (1,1)	8	50	50*100ms = 5 s

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PADDING BITS	COMPUTED	COMPUTED	
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Message-3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	38	Packet identifier (STM-38)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_XMESSAGE	8	30	Sequence number of given text message
M_XATTRIBUTE	10	1000001000	No flashing, white text background, black text
Q_ACK	1	0	No ack required
L_TEXT	8	10	
X_TEXT(1)	8	"M"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"a"	
X_TEXT(1)	8	"g"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"3"	
X_TEXT(1)	8	"-"	
X_TEXT(1)	8	"1"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-4: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	38	Packet identifier (STM-38)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_XMESSAGE	8	41	Sequence number of given text message
M_XATTRIBUTE	10	1000011000	No flashing, blue text background, black text
Q_ACK	1	0	No ack required
L_TEXT	8	10	
X_TEXT(1)	8	"M"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"a"	
X_TEXT(1)	8	"g"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"4"	
X_TEXT(1)	8	"_"	
X_TEXT(1)	8	"1"	
NID_PACKET	8	38	Packet identifier (STM-38)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_XMESSAGE	8	42	Sequence number of given text message
M_XATTRIBUTE	10	1000001100	No flashing, white text background, green text
Q_ACK	1	0	No ack required
L_TEXT	8	10	
X_TEXT(1)	8	"M"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"s"	

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X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"a"	
X_TEXT(1)	8	"g"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"4"	
X_TEXT(1)	8	"_"	
X_TEXT(1)	8	"2"	
PADDING BITS	COMPUTED	COMPUTED	

Message-5: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	38	Packet identifier (STM-38)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_XMESSAGE	8	50	Sequence number of given text message
M_XATTRIBUTE	10	1010010000	Normal fast flashing, red text background, black text
Q_ACK	1	1	ack required
L_TEXT	8	10	
X_TEXT(1)	8	"M"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"a"	
X_TEXT(1)	8	"g"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"5"	
X_TEXT(1)	8	"_"	
X_TEXT(1)	8	"1"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-6: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	38	Packet identifier (STM-38)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_XMESSAGE	8	60	Sequence number of given text message
M_XATTRIBUTE	10	1101110100	Counter phase slow flashing, light red text background, green text
Q_ACK	1	1	ack required
L_TEXT	8	10	
X_TEXT(1)	8	"M"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"a"	
X_TEXT(1)	8	"g"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"6"	
X_TEXT(1)	8	"_"	
X_TEXT(1)	8	"1"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-7: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	38	Packet identifier (STM-38)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_XMESSAGE	8	70	Sequence number of given text message
M_XATTRIBUTE	10	1001101010	Normal slow flashing, yellow text background, red text
Q_ACK	1	1	ack required
L_TEXT	8	10	
X_TEXT(1)	8	"M"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"s"	
X_TEXT(1)	8	"a"	
X_TEXT(1)	8	"g"	
X_TEXT(1)	8	"e"	
X_TEXT(1)	8	"7"	
X_TEXT(1)	8	"_"	
X_TEXT(1)	8	"1"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-8: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_PACKET	8	40	Packet identifier (STM-40)
L_PACKET	13	COMPUTED	packet length
NID_XMESSAGE	8	50	Sequence number of given text message
PADDING BITS	COMPUTED	COMPUTED	

Message-9: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	39	Packet identifier (STM-39)
L_PACKET	13	COMPUTED	Packet length
NID_XMESSAGE	8	50	Sequence number of given text message
PADDING BITS	COMPUTED	COMPUTED	

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Message-10: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_PACKET	8	40	Packet identifier (STM-40)
L_PACKET	13	COMPUTED	packet length
NID_XMESSAGE	8	60	Sequence number of given text message
PADDING BITS	COMPUTED	COMPUTED	

Message-11: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	39	Packet identifier (STM-39)
L_PACKET	13	COMPUTED	Packet length
NID_XMESSAGE	8	60	Sequence number of given text message
PADDING BITS	COMPUTED	COMPUTED	

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Message-12: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	39	Packet identifier (STM-39)
L_PACKET	13	COMPUTED	Packet length
NID_XMESSAGE	8	70	Sequence number of given text message
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.4.0.0.0.0.0	
Test case Identification	STM (DA)
	Train interface command signals
ETCS Requirements Tested	Subset-035 : 5.2.10.1; 5.2.5.3; 5.2.4.3
	Subset-026 :
STM Requirements Tested	Subset-035 : 4.1.1.7; 5.2.4.3
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-129
Comments and constraints	

Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	Allow	
TIU Magnetic Shoes Command	Allow	
TIU Eddy Current Brake Command	Allow	
TIU Inhibit Passenger Emergency Brake Command	Allow	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
0	The STM reset " command signal	Prof	Message-0 (Packet STM_15; Packet STM_129)	ETCS	TIU	Check on the TIU.
1	The STM issue a "Regenerative Brake" command signal	Prof	Message-1 (Packet STM_15; Packet STM_129)	ETCS	TIU	Check on the TIU.
2	The STM issue a "Magnetic shoes" command signal	Prof	Message-2 (Packet STM_15; Packet STM_129)	ETCS	TIU	Check on the TIU.
3	The STM issue a "Eddy Current Brake" command signal	Prof	Message-3 (Packet STM_15; Packet STM_129)	ETCS	TIU	Check on the TIU.
4	The STM issue a "Inhibit Passenger Emergency Brake" command signal	Prof	Message-4 (Packet STM_15; Packet STM_129)	ETCS	TIU	Check on the TIU.

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Test Case for STM

Not applicable

Message-0: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	129	Packet identifier (STM-129)
L_PACKET	13	COMPUTED	Packet length
M_TIRB_CMD	2	2	Suppress regenerative brake (off)
M_TIMSH_CMD	2	2	Suppress MB (off)
M_TIEDCB_CMD	2	2	Suppress eddy current brake (off)
M_TIPAEB_CMD	2	2	Inhibit Passenger emergency brake (off)
PADDING BITS	COMPUTED	COMPUTED	

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Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	129	Packet identifier (STM-129)
L_PACKET	13	COMPUTED	Packet length
M_TIRB_CMD	2	1	allow regenerative brake (on)
M_TIMSH_CMD	2	3	No command from STM -> Keep current output status
M_TIEDCB_CMD	2	3	No command from STM -> Keep current output status
M_TIPAEB_CMD	2	3	No command from STM -> Keep current output status
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	129	Packet identifier (STM-129)
L_PACKET	13	COMPUTED	Packet length
M_TIRB_CMD	2	3	No command from STM -> Keep current output status
M_TIMSH_CMD	2	1	Allow MB (on)
M_TIEDCB_CMD	2	3	No command from STM -> Keep current output status
M_TIPAEB_CMD	2	3	No command from STM -> Keep current output status
PADDING BITS	COMPUTED	COMPUTED	

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Message-3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	129	Packet identifier (STM-129)
L_PACKET	13	COMPUTED	Packet length
M_TIRB_CMD	2	3	No command from STM -> Keep current output status
M_TIMSH_CMD	2	3	No command from STM -> Keep current output status
M_TIEDCB_CMD	2	1	Allow eddy current brake (on)
M_TIPAEB_CMD	2	3	No command from STM -> Keep current output status
PADDING BITS	COMPUTED	COMPUTED	

Message-4: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	129	Packet identifier (STM-129)
L_PACKET	13	COMPUTED	Packet length
M_TIRB_CMD	2	3	No command from STM -> Keep current output status
M_TIMSH_CMD	2	3	No command from STM -> Keep current output status
M_TIEDCB_CMD	2	3	No command from STM -> Keep current output status
M_TIPAEB_CMD	2	1	Allow Passenger emergency brake (on)
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.5.0.0.0.0.0.0	
Test case Identification	STM (DA)
	Train interface command signals
ETCS Requirements Tested	Subset-035 : 5.2.10.1; 5.2.4.3; 7.4.2.4
	Subset-026 :
STM Requirements Tested	Subset-035 : 4.1.1.7; 5.2.4.3
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-130; STM-139
Comments and constraints	

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	No command	
TIU Air Tightness Command	No command	
TIU Main Switch / Circuit Breaker Command	No command	
TIU Traction Cut Off Command	No command	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	No traction cut off	
TIU Direction Controller Position Status	forward	
TIU Cab Status (Desk Status)	Cab A opened	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
0	The STM reset " command signal	Prof	Message-0 (Packet STM_15; Packet STM_130)	ETCS	TIU	Check on TIU
1	The STM issue a "Pantograph" command signal	Prof	Message-1 (Packet STM_15; Packet STM_130)	ETCS	TIU	Check on TIU
2	The STM issue a "Air Tightness" command signal	Prof	Message-2 (Packet STM_15; Packet STM_130)	ETCS	TIU	Check on TIU
3	The STM issue a "Main Switch / Circuit Breaker" command signal	Prof	Message-3 (Packet STM_15; Packet STM_130)	ETCS	TIU	Check on TIU
4	The STM issue a "Traction Cut Off" command signal	Prof	Message-4 (Packet STM_15; Packet STM_130)	ETCS	TIU	Check on TIU
					Prof	Message 5 is sent by the ETCS to notify to the STMs the change of status.

Test Case for STM

Not applicable

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Message-0: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	130	Packet identifier (STM-130)
L_PACKET	13	COMPUTED	Packet length
M_TIPANTO_CMD	2	2	Pantograph lower
M_TIFLAP_CMD	2	2	Flap close (air conditioning off)
M_TIMS_CMD	2	2	Main switch open (off)
M_TITR_C_CMD	2	2	No Traction cut off
PADDING BITS	COMPUTED	COMPUTED	

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	130	Packet identifier (STM-130)
L_PACKET	13	COMPUTED	Packet length
M_TIPANTO_CMD	2	1	Pantograph lift
M_TIFLAP_CMD	2	3	No command from STM -> Keep current output status
M_TIMS_CMD	2	3	No command from STM -> Keep current output status
M_TITR_C_CMD	2	3	No command from STM -> Keep current output status
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	130	Packet identifier (STM-130)
L_PACKET	13	COMPUTED	Packet length
M_TIPANTO_CMD	2	3	No command from STM -> Keep current output status
M_TIFLAP_CMD	2	1	Flap open (air conditioning on)
M_TIMS_CMD	2	3	No command from STM -> Keep current output status
M_TITR_C_CMD	2	3	No command from STM -> Keep current output status
PADDING BITS	COMPUTED	COMPUTED	

Message-3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	130	Packet identifier (STM-130)
L_PACKET	13	COMPUTED	Packet length
M_TIPANTO_CMD	2	3	No command from STM -> Keep current output status
M_TIFLAP_CMD	2	3	No command from STM -> Keep current output status
M_TIMS_CMD	2	1	Main switch close (on)
M_TITR_C_CMD	2	3	No command from STM -> Keep current output status
PADDING BITS	COMPUTED	COMPUTED	

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Message-4: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	130	Packet identifier (STM-130)
L_PACKET	13	COMPUTED	Packet length
M_TIPANTO_CMD	2	3	No command from STM -> Keep current output status
M_TIFLAP_CMD	2	3	No command from STM -> Keep current output status
M_TIMS_CMD	2	3	No command from STM -> Keep current output status
M_TITR_C_CMD	2	1	Traction cut off
PADDING BITS	COMPUTED	COMPUTED	

Message-5: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	1	traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	Lift	
TIU Air Tightness Command	Open	
TIU Main Switch / Circuit Breaker Command	Close	
TIU Traction Cut Off Command	Cut	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.6.0.0	
Test case Identification	STM (DA)
	Access to the JRU and DRU function.
ETCS Requirements Tested	Subset-035 :
	Subset-026 :
STM Requirements Tested	Subset-035 : 5.2.10.1
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-161; STM-77
Comments and constraints	

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM Send DATA to the JRU	Prof	Message-1 (Packet STM_15; Packet STM_161)	ETCS	JRU	Check on the DATA stored in the JRU
2	The STM Send DATA to the DRU	Prof	Message-2 (Packet STM_15; Packet STM_77)	ETCS	DRU	Check on the DATA stored in the DRU

Test Case for STM

Not applicable

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Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	161	Packet identifier (STM-161)
L_PACKET	13	COMPUTED	Packet length
T_JRU	32	341	Time Stamp
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to JRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"J"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	77	Packet identifier (STM-77)
L_PACKET	13	COMPUTED	Packet length
L_TEXT	8	1	
X_TEXT(1)	8	"1"	STM provider Identity in ASCII example (UNISIG ID for ASFA)
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to DRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"D"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.7.0.0.0.0.0	
Test case Identification	STM (DA)
	Access to the BIU function.
ETCS Requirements Tested	Subset-035 : 7.4.2.4.2; 5.2.10.1
	Subset-026 :
STM Requirements Tested	Subset-035 : 5.2.10.1
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-128; STM-136
Comments and constraints	

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Starting Conditions	Value	Comments
STM (1) STATE	DA	
STM (2) STATE	CS	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	

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Starting Conditions		Value	Comments
TIU Cab Status (Desk Status)		not Relevant	
BIU Status		Active	
BIU Emergency Brake Command		No command	
BIU Service Brake Command		No command	
BIU Emergency Brake Status		Release	
BIU Service Brake Status		Release	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM (1) issue a "Service brake" command	Prof	Message-1 (Packet STM_15; Packet STM_128)	ETCS	BIU / DMI	Check on BIU / DMI
				ETCS	Prof	Message 2 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status
				ETCS	Prof	Message 3 (Packet STM_136) send by the ETCS to Notify the STM(2) from the change of status
2	The STM (1) issue a "Emergency brake" command	Prof	Message-4 (Packet STM_15; Packet STM_128)	ETCS	BIU / DMI	Check on BIU / DMI
				ETCS	Prof	Message 5 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status
				ETCS	Prof	Message 6 (Packet STM_136) send by the ETCS to Notify the STM(2) from the change of status

Test Case for STM

Not applicable

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Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	128	Packet identifier (STM-128)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_CMD	2	3	EB command No command from STM -> keep current output status
M_BISB_CMD	2	1	Apply SB
PADDING BITS	COMPUTED	COMPUTED	

Message-2: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	2	EB released
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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Message-3: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(2)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	2	EB released
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

Message-4: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	128	Packet identifier (STM-128)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_CMD	2	1	Apply EB
M_BISB_CMD	2	3	SB command No command from STM -> keep current output status
PADDING BITS	COMPUTED	COMPUTED	

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Message-5: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	1	EB applied
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

Message-6: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(2)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	1	EB applied
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	Apply	
BIU Service Brake Status	Apply	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE: 6.8.1.1.0	
Test case Identification	STM (DA)
	Odometry.
ETCS Requirements Tested	Subset-035 : 8.1.1.3; 8.1.1.4; 8.1.1.11; 8.1.1.14; 8.1.1.19; 8.1.1.21; 8.2.1.2; 8.2.1.9; 8.3.1.1; 8.3.1.3; 8.3.1.9; 8.4.1.1; 8.4.2.4; 8.6.1.1; 8.6.1.2; 8.7.1.1; 8.1.1.12; 8.4.4.1.1; 8.4.4.1.2; 8.4.1.3; 8.4.4.2.1; 8.4.4.2.4; 8.4.4.3.1; 8.4.3.2
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-1; STM-9; STM-8
Comments and constraints	

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Starting Conditions	Value	Comments
STM (1) STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS performed periodic transmission of odometer data	Prof	Message-1 (Packet STM-1; STM_9; STM_8;)	ETCS	Prof	
2	The Odometer simulate a positive movement	Prof	Message-2 (Packet STM-1; STM_9; STM_8;)	ETCS	Prof	

Test Case for STM

Not applicable

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Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	FINITE VALUE	
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	FINITE VALUE	
D_MAX_ACCUM	32	FINITE VALUE	
D_MIN_ACCUM	32	FINITE VALUE	
M_MAXSUMVAR	32	FINITE VALUE	
M_MINSUMVAR	32	FINITE VALUE	
PADDING BITS	COMPUTED	COMPUTED	

Message-2: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	FINITE VALUE	
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	D_MON message 2 > D_NOM message 1
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	FINITE VALUE	
D_MAX_ACCUM	32	FINITE VALUE	
D_MIN_ACCUM	32	FINITE VALUE	
M_MAXSUMVAR	32	FINITE VALUE	
M_MINSUMVAR	32	FINITE VALUE	
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.8.2.2	
Test case Identification	ETCS -> STM (DA)
	Odometry.
ETCS Requirements Tested	Subset-035 : 8.1.1.3; 8.1.1.4; 8.1.1.11; 8.1.1.14; 8.1.1.19; 8.1.1.21; 8.2.1.2; 8.2.1.9; 8.3.1.1; 8.3.1.3; 8.3.1.9; 8.4.1.1; 8.4.2.4; 8.6.1.1; 8.6.1.2; 8.7.1.1
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-1; STM-9; STM-8
Comments and constraints	

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Starting Conditions	Value	Comments
STM (1) STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS performed periodic transmission of odometer data The train is at standstill	Prof	Message-1 (Packet STM-1; STM_9; STM_8;)	ETCS	Prof	
2		Prof	Message-2 (Packet STM-1; STM_9; STM_8;)	ETCS	Prof	

Test Case for STM

Not applicable

Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	0	At standstill the nominal speed shall be zero
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	0	
PADDING BITS	COMPUTED	COMPUTED	

Message-2: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	0	At standstill the nominal speed shall be zero
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	0	
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.8.3.2	
Test case Identification	ETCS -> STM (DA)
	Odometry.
ETCS Requirements Tested	Subset-035 : 8.1.1.3; 8.1.1.4; 8.1.1.11; 8.1.1.14; 8.1.1.19; 8.1.1.21; 8.2.1.2; 8.2.1.9; 8.3.1.1; 8.3.1.3; 8.3.1.9; 8.4.1.1; 8.4.2.4; 8.6.1.1; 8.6.1.2; 8.7.1.1
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-1; STM-9; STM-8
Comments and constraints	

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Starting Conditions	Value	Comments
STM (1) STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	not Relevant	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS performed periodic transmission of odometer data The train is at standstill	Prof	Message-1 (Packet STM-1; STM_9; STM_8;)	ETCS	Prof	
2	Negative movement	Prof	Message-2 (Packet STM-1; STM_9; STM_8;)	ETCS	Prof	

Test Case for STM

Not applicable

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Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	FINITE VALUE	Negative value
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	0	
PADDING BITS	COMPUTED	COMPUTED	

Message-2: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	FINITE VALUE	Negative value
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	0	
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.9.0	
Test case Identification	ETCS -> STM (DA)
	Test DMI characteristic
ETCS Requirements Tested	Subset-035 : 10.6.4.2; 10.6.4.6; 10.6.4.7; 10.6.4.8; 10.6.4.9; 10.6.4.10; 10.6.4.11; 10.6.5.2; 10.6.5.4; 10.6.5.5; 10.6.5.8; 10.6.5.9; 10.6.5.10; 10.6.5.11; 10.6.5.12; 10.6.5.16; 10.6.6.1; 10.6.6.2; 10.6.6.3; 10.6.8; 5.2.10.1.0 DMI
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15, STM-32, STM-35, STM-46
Comments and constraints	

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	

Starting Conditions		Value	Comments
TIU Cab Status (Desk Status)		not Relevant	
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM creates DMI objects [10.5.2.5]; [10.5.3.1]	Prof	Message-1.1 (Packet STM_15; Packet STM_32 button request) Message 1.2 (Packet STM_15; Indicators STM_35) Message 1.3 (Packet STM_15 + sounds STM_46)	ETCS	DMI	Check buttons and indicators on the DMI.
2	The STM creates DMI objects [10.5.2.5]; [10.5.3.1]	Prof	Message 2.1 (Packet STM_15 ; Packet STM_32 button request) Message 2.2 (Packet STM15 + Indicators STM_35) Message 2.3 (Packet STM_15 + sounds STM_46)	ETCS	DMI	Check buttons and indicators on the DMI.
2	The Operator Push and release two buttons on the DMI.	DMI		ETCS	Prof	Message 3 (Packet STM-34) then Message 4 (Packet STM_34)

Test Case for STM

Not applicable

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Message-1.1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	5	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
X_CAPTION(1)	8	"2"	
X_CAPTION(1)	8	"L"	
X_CAPTION(1)	8	"I"	
X_CAPTION(1)	8	"n"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	

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M_BUT_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	2	
X_CAPTION(2)	8	"2"	
X_CAPTION(2)	8	" "	
NID_STM(3)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(3)	8	3	
NID_BUTPOS(3)	4	3	
NID_ICON(3)	8	3	
M_BUT_ATTRIB(3)	10	1010011010b	Indicator Normal fast flashing Red text on a Blue background
L_CAPTION(3)	5	2	
X_CAPTION(3)	8	"3"	
X_CAPTION(3)	8	" "	
NID_STM(4)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(4)	8	4	
NID_BUTPOS(4)	4	4	
NID_ICON(4)	8	4	
M_BUT_ATTRIB(4)	10	1110100101b	Indicator Normal fast counter phase flashing yellow text on a Green background
L_CAPTION(4)	5	2	
X_CAPTION(4)	8	"4"	
X_CAPTION(4)	8	" "	
NID_STM(5)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(5)	8	5	
NID_BUTPOS(5)	4	5	
NID_ICON(5)	8	5	
M_BUT_ATTRIB(5)	10	1101101110b	Indicator Normal slow counter phase flashing light red text on a Yellow background
L_CAPTION(5)	5	2	
X_CAPTION(5)	8	"5"	
X_CAPTION(5)	8	" "	
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Message-1.2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	5	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"A"	
X_CAPTION(1,7)	8	"2"	
X_CAPTION(1,8)	8	"L"	
X_CAPTION(1,9)	8	"I"	
X_CAPTION(1,10)	8	"n"	
X_CAPTION(1,11)	8	"e"	
X_CAPTION(1,12)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	

M_IND_ATTRIB(2)	10	1001010011b	Indicator Normal slow flashing Blue text on a Red background
L_CAPTION(2)	5	2	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
NID_STM(3)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(3)	8	3	
NID_INDPOS (3)	5	8	
NID_ICON(3)	8	3	
M_IND_ATTRIB(3)	10	1010011010b	Indicator Normal fast flashing Red text on a Blue background
L_CAPTION(3)	5	2	
X_CAPTION(3,1)	8	"3"	
X_CAPTION(3,2)	8	" "	
NID_STM(4)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(4)	8	4	
NID_INDPOS (4)	5	9	
NID_ICON(4)	8	4	
M_IND_ATTRIB(4)	10	1110100101b	Indicator Normal fast counter phase flashing yellow text on a Green background
L_CAPTION(4)	5	2	
X_CAPTION(4,1)	8	"4"	
X_CAPTION(4,2)	8	" "	
NID_STM(5)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(5)	8	5	
NID_INDPOS (5)	5	10	
NID_ICON(5)	8	5	
M_IND_ATTRIB(5)	10	1101101110b	Indicator Normal slow counter phase flashing light red text on a Yellow background
L_CAPTION(5)	5	2	
X_CAPTION(5,1)	8	"5"	
X_CAPTION(5,2)	8	" "	
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Message-1.3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	
N_ITER (1)	5	1	
M_FREQ (1,1)	8	70	70*32 Hz = 2240Hz
T_SOUND (1,1)	8	100	100*100ms = 10 s
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (2)	8	2	
Q_SOUND (2)	2	2	Continuous play
N_ITER (2)	5	1	
M_FREQ (2,1)	8	100	100*32 Hz = 3200Hz
T_SOUND (2,1)	8	100	100*100ms = 10 s
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Message-2.1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	32	Packet identifier (STM-32)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	5	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
NID_BUTPOS(1)	4	1	
NID_ICON(1)	8	1	
M_BUT_ATTRIB(1)	10	0000000000b	Black text no button displayed, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1)	8	"T"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
X_CAPTION(1)	8	"t"	
X_CAPTION(1)	8	"_"	
X_CAPTION(1)	8	"A"	
X_CAPTION(1)	8	"2"	
X_CAPTION(1)	8	"L"	
X_CAPTION(1)	8	"I"	
X_CAPTION(1)	8	"n"	
X_CAPTION(1)	8	"e"	
X_CAPTION(1)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
NID_BUTPOS(2)	4	2	
NID_ICON(2)	8	2	

M_BUT_ATTRIB(2)	10	1001110011b	Indicator Normal slow flashing Blue text on a light Red background
L_CAPTION(2)	5	2	
X_CAPTION(2)	8	"2"	
X_CAPTION(2)	8	" "	
NID_STM(3)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(3)	8	3	
NID_BUTPOS(3)	4	3	
NID_ICON(3)	8	3	
M_BUT_ATTRIB(3)	10	1010111010b	Indicator Normal fast flashing Red text on a light green background
L_CAPTION(3)	5	2	
X_CAPTION(3)	8	"3"	
X_CAPTION(3)	8	" "	
NID_STM(4)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(4)	8	4	
NID_BUTPOS(4)	4	4	
NID_ICON(4)	8	4	
M_BUT_ATTRIB(4)	10	1110000110b	Indicator Normal fast counter phase flashing light red text on a Black background
L_CAPTION(4)	5	2	
X_CAPTION(4)	8	"4"	
X_CAPTION(4)	8	" "	
NID_STM(5)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(5)	8	5	
NID_BUTPOS(5)	4	5	
NID_ICON(5)	8	5	
M_BUT_ATTRIB(5)	10	1101000111b	Indicator Normal slow counter phase flashing light green text on a Black background
L_CAPTION(5)	5	2	
X_CAPTION(5)	8	"5"	
X_CAPTION(5)	8	" "	
PADDING BITS	COMPUTED	COMPUTED	

Message-2.2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	35	Packet identifier (STM-35)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	5	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(1)	8	1	
NID_INDPOS (1)	5	6	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	0000000000b	Black text no button displayed, not flashing
L_CAPTION(1)	5	12	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	
X_CAPTION(1,5)	8	"_"	
X_CAPTION(1,6)	8	"A"	
X_CAPTION(1,7)	8	"2"	
X_CAPTION(1,8)	8	"L"	
X_CAPTION(1,9)	8	"I"	
X_CAPTION(1,10)	8	"n"	
X_CAPTION(1,11)	8	"e"	
X_CAPTION(1,12)	8	"s"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS (2)	5	7	
NID_ICON(2)	8	2	

M_IND_ATTRIB(2)	10	1001110011b	Indicator Normal slow flashing Blue text on a light Red background
L_CAPTION(2)	5	2	
X_CAPTION(2,1)	8	"2"	
X_CAPTION(2,2)	8	" "	
NID_STM(3)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(3)	8	3	
NID_INDPOS (3)	5	8	
NID_ICON(3)	8	3	
M_IND_ATTRIB(3)	10	1010111010b	Indicator Normal fast flashing Red text on a light green background
L_CAPTION(3)	5	2	
X_CAPTION(3,1)	8	"3"	
X_CAPTION(3,2)	8	" "	
NID_STM(4)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(4)	8	4	
NID_INDPOS (4)	5	9	
NID_ICON(4)	8	4	
M_IND_ATTRIB(4)	10	1110000110b	Indicator Normal fast counter phase flashing light red text on a Black background
L_CAPTION(4)	5	2	
X_CAPTION(4,1)	8	"4"	
X_CAPTION(4,2)	8	" "	
NID_STM(5)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_INDICATOR(5)	8	5	
NID_INDPOS (5)	5	10	
NID_ICON(5)	8	5	
M_IND_ATTRIB(5)	10	1101000111b	Indicator Normal slow counter phase flashing light green text on a Black background
L_CAPTION(5)	5	2	
X_CAPTION(5,1)	8	"5"	
X_CAPTION(5,2)	8	" "	
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Message-2.3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	46	Packet identifier (STM-46)
L_PACKET	13	COMPUTED	Packet length
N_ITER	5	2	
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (1)	8	1	
Q_SOUND (1)	2	1	One shot play
N_ITER (1)	5	2	
M_FREQ (1,1)	8	40	40*32 Hz = 1280Hz
T_SOUND (1,1)	8	60	60*100ms = 6 s
N_ITER (2)	5	2	
M_FREQ (1,2)	8	80	80*32 Hz = 2560Hz
T_SOUND (1,2)	8	100	100*100ms = 10 s
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_SOUND (2)	8	2	
Q_SOUND (2)	2	0	Stop sound generation
N_ITER (2)	5	1	
M_FREQ (2,1)	8	100	100*32 Hz = 3200Hz
T_SOUND (2,1)	8	100	100*100ms = 10 s
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Message-3: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	34	Packet identifier (STM-34)
L_PACKET	13	COMPUTED	packet length
N_ITER	5	2	Number of event being reported
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
Q_BUTTON(1)	1	0	Push event
T_BUTTONEVENT(1)	32	FINITE VALUE	Set by ETCS while running test
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
Q_BUTTON(2)	1	0	Push event
T_BUTTONEVENT(2)	32	FINITE VALUE	Set by ETCS while running test
PADDING BITS	COMPUTED	COMPUTED	

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Message-4: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	34	Packet identifier (STM-34)
L_PACKET	13	COMPUTED	packet length
N_ITER	5	2	Number of event being reported
NID_STM(1)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(1)	8	1	
Q_BUTTON(1)	1	1	Release event
T_BUTTONEVENT(1)	32	FINITE VALUE	Set by ETCS while running test
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
NID_BUTTON(2)	8	2	
Q_BUTTON(2)	1	0	Release event
T_BUTTONEVENT(2)	32	FINITE VALUE	Set by ETCS while running test
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	

National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	
TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

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TEST CASE : 6.10.0.0.0.0	
Test case Identification	ETCS -> STM (DA)
	Train interface inputs status
ETCS Requirements Tested	Subset-035 : 5.2.4.4
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-130; STM-129; STM_139
Comments and constraints	

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	1	Traction Cut Off system command is available
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	No traction cut off	
TIU Direction Controller Position Status	forward	
TIU Cab Status (Desk Status)	Cab A opened	

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
0	The STM reset " command signal	Prof	Message-0 (Packet STM_15; Packet STM_130)	ETCS	TIU	Check on the TIU
1	The STM issue a "Traction Cut Off" command signal	Prof	Message-1 (Packet STM_15; Packet STM_129)	ETCS	Prof	Message 2(Packet STM_139) send by the ETCS to notify the STMs from the change of status.
2	Direction controller change from Forward to Neutral	TIU	Direction controller change from Forward to Neutral	ETCS	Prof	Message 3 (Packet STM_139) is sent by the ETCS to notify to the STMs the change of status.
3	Direction controller change from Neutral to Backward	TIU	Direction controller change from Neutral to Backward	ETCS	Prof	Message 4 (Packet STM_139) is sent by the ETCS to notify to the STMs the change of status.
4	Direction controller change from Backward to Neutral	TIU	Direction controller change from Backward to Neutral	ETCS	Prof	Message 3 (Packet STM_139) is sent by the ETCS to notify to the STMs the change of status.
5	Direction controller change from Neutral to Forward	TIU	Direction controller change from Neutral to Forward	ETCS	Prof	Message 5 (Packet STM_139) is sent by the ETCS to notify to the STMs the change of status.
6	Desk A closed	TIU	Desk A closed	ETCS	Prof	Message 6 (Packet STM_139) is sent by the ETCS to notify to the STMs the change of status.
7	Desk B opened	TIU	Desk B opened	ETCS	Prof	Message 7 (Packet STM_139) is sent by the ETCS to notify to the STMs the change of status.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
8	Desk A & B opened	TIU	Desk A & B opened	ETCS	Prof	Message 8 (Packet STM_139) is sent by the ETCS to notify to the STMs the change of status.

Test Case for STM

Not applicable

Message-0: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	130	Packet identifier (STM-130)
L_PACKET	13	COMPUTED	Packet length
M_TIPANTO_CMD	2	2	Pantograph lower
M_TIFLAP_CMD	2	2	Flap close (air conditioning off)
M_TIMS_CMD	2	2	Main switch open (off)
M_TITR_C_CMD	2	2	No Traction cut off
PADDING BITS	COMPUTED	COMPUTED	

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	129	Packet identifier (STM-129)
L_PACKET	13	COMPUTED	Packet length
M_TIPANTO_CMD	2	3	No command from STM -> Keep current output status
M_TIFLAP_CMD	2	3	No command from STM -> Keep current output status
M_TIMS_CMD	2	3	No command from STM -> Keep current output status
M_TITR_C_CMD	2	1	Traction cut off
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	1	traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

Message-3: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	2	No traction cut off
M_TIDIR_STATUS	2	2	neutral
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

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Message-4: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	2	No traction cut off
M_TIDIR_STATUS	2	4	backward
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

Message-5: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	2	No traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

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Message-6: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	2	No traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	2	Desk A & B closed
Padding bits	COMPUTED	COMPUTED	

Message-7: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	2	No traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	4	Desk B opened
Padding bits	COMPUTED	COMPUTED	

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Message-8: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	2	No traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	5	Desk A & B opened
Padding bits	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	Lower	Pantograph lower
TIU Air Tightness Command	Closed	Flap close (air conditioning off)
TIU Main Switch / Circuit Breaker Command	Open	Main switch open (off)
TIU Traction Cut Off Command	Cut	Traction cut off
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	Desk A & B opened	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.11.0.0.0

Test case Identification	STM (DA)
	Test DMI Supervision information
ETCS Requirements Tested	Subset-035 : 10.6.7.3; 10.7.1.3; 10.6.8.1.1; 5.2.10.1.0 DMI
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM_15; STM-43
Comments and constraints	

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	not Relevant	
BIU Connection	not Relevant	
JRU Connection	not Relevant	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	

Starting Conditions		Value	Comments
TIU Cab Status (Desk Status)		not Relevant	
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM creates DMI objects Supervision	Prof	Message-1 (Packet STM_15; Packet STM_43)	ETCS	DMI	Check supervision information on the DMI.
2	Reduce the Target Distance to display	Prof	Message-2 (Packet STM_15; Packet STM_43)	ETCS	DMI	Check supervision information on the DMI.
3	Inhibit from the DMI the : Permitted Speed, Target Speed, Target Distance	Prof	Message-3 (Packet STM_15; Packet STM_43)	ETCS	DMI	Check supervision information on the DMI.
4	remove inhibition from the DMI for : Target Distance	Prof	Message-4 (Packet STM_15; Packet STM_43)	ETCS	DMI	Check supervision information on the DMI.
5	remove inhibition from the DMI for : Target Speed	Prof	Message-5 (Packet STM_15; Packet STM_43)	ETCS	DMI	Check supervision information on the DMI.

Test Case for STM

Not applicable

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Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale.(1 m scale)
Q_INDICATE	12	0000 0000 0000	Inhibition of ETCS DMI objects
Q_WARNINGLIMIT	1	0	Warning limit status (No warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (No indication status to be displayed)
V_PERMIT	10	170	Permitted speed (170 * 1= 170 km/h)
V_TARGET	7	0	Target speed (0 * 5 = 0 km/h)
V_RELEASE	7	7	Release speed (7 * 5 = 35 km/h)
V_INTERV	7	25	Intervention speed (25 * 5 = 125 km/h)
D_TARGET	15	2000	Target distance (2000 m)
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale.(1 m scale)
Q_INDICATE	12	0000 0000 0000	Inhibition of ETCS DMI objects
Q_WARNINGLIMIT	1	0	Warning limit status (No warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (No indication status to be displayed)
V_PERMIT	10	170	Permitted speed (170 * 1= 170 km/h)
V_TARGET	7	0	Target speed (0 * 5 = 0 km/h)
V_RELEASE	7	7	Release speed (7 * 5 = 35 km/h)
V_INTERV	7	25	Intervention speed (25 * 5 = 125 km/h)
D_TARGET	15	1500	Target distance (1500 m)
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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Message-3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale.(1 m scale)
Q_INDICATE	12	0000 0000 1110	Inhibition of ETCS DMI objects Inhibit : Permitted Speed, Target Speed, Target Distance
Q_WARNINGLIMIT	1	0	Warning limit status (No warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (No indication status to be displayed)
V_PERMIT	10	170	Permitted speed (170 * 1= 170 km/h)
V_TARGET	7	0	Target speed (0 * 5 = 0 km/h)
V_RELEASE	7	7	Release speed (7 * 5 = 35 km/h)
V_INTERV	7	25	Intervention speed (25 * 5 = 125 km/h)
D_TARGET	15	1200	Target distance (1200 m)
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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Message-4: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale.(1 m scale)
Q_INDICATE	12	0000 0000 0110	Inhibition of ETCS DMI objects Inhibit : Permitted Speed, Target Speed
Q_WARNINGLIMIT	1	0	Warning limit status (No warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (No indication status to be displayed)
V_PERMIT	10	170	Permitted speed (170 * 1= 170 km/h)
V_TARGET	7	0	Target speed (0 * 5 = 0 km/h)
V_RELEASE	7	7	Release speed (7 * 5 = 35 km/h)
V_INTERV	7	25	Intervention speed (25 * 5 = 125 km/h)
D_TARGET	15	1000	Target distance (1000 m)
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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Message-5: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale.(1 m scale)
Q_INDICATE	12	0000 0000 0100	Inhibition of ETCS DMI objects Inhibit : Permitted Speed
Q_WARNINGLIMIT	1	0	Warning limit status (No warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (No indication status to be displayed)
V_PERMIT	10	170	Permitted speed (170 * 1= 170 km/h)
V_TARGET	7	0	Target speed (0 * 5 = 0 km/h)
V_RELEASE	7	7	Release speed (7 * 5 = 35 km/h)
V_INTERV	7	25	Intervention speed (25 * 5 = 125 km/h)
D_TARGET	15	700	Target distance (700 m)
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.12.0.0.0.0.0.0	
Test case Identification	STM (DA)
	STM shall have access to JRU, DRU, Odometer, TIU, BIU while ETCS is in SL Level.
ETCS Requirements Tested	Subset-035 : 5.2.10.1
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-161; STM-77; STM-1; STM-8; STM-9; STM_139; STM_136
Comments and constraints	

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Starting Conditions	Value	Comments
STM (1) STATE	DA	
ETCS Mode	SN	
ETCS Level	SL	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	not Relevant	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	Inactive	No traction cut off
TIU Direction Controller Position Status	Forward	forward
TIU Cab Status (Desk Status)	Desk A opened	cab A opened

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM Send DATA to the JRU	Prof	Message-1 (Packet STM_15; Packet STM_161)	ETCS	JRU	Check on the DATA stored in the JRU
2	The STM Send DATA to the DRU	Prof	Message-2 (Packet STM_15; Packet STM_77)	ETCS	DRU	Check on the DATA stored in the DRU
3	The ETCS performed periodic transmission of odometer data The train is at standstill	Prof		ETCS	Prof	Message-3 (Packet STM-1; STM_9; STM_8;)
4	Simulate from the TIU interface a service brake status	TIU		ETCS	Prof	Message 4 (Packet STM_139) send by the ETCS to notify the STMs from the change of status.
5	Simulate from the TIU interface a service brake status	TIU		ETCS	Prof	Message 5 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status
6	Simulate from the TIU interface an emergency brake status	TIU		ETCS	Prof	Message 6 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status

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Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	161	Packet identifier (STM-161)
L_PACKET	13	COMPUTED	Packet length
T_JRU	32	341	Time Stamp
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to JRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"J"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	77	Packet identifier (STM-77)
L_PACKET	13	COMPUTED	Packet length
L_TEXT	8	1	
X_TEXT(1)	8	"1"	STM provider Identity in ASCII example (UNISIG ID for ASFA)
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to DRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"D"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-3: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	FINITE VALUE	
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	0	
PADDING BITS	COMPUTED	COMPUTED	

Message-4: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	1	traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

Message-5: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	2	EB released
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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Message-6: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	1	EB applied
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	Cut	traction cut off
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	Apply	EB applied
BIU Service Brake Status	Apply	SB applied
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.13.0.0.0.0.0.0	
Test case Identification	STM (DA)
	STM shall have access to JRU, DRU, Odometer, TIU, BIU while ETCS is in NL level.
ETCS Requirements Tested	Subset-035 : 5.2.10.1
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-161; STM-77; STM-1; STM-8; STM-9; STM_139; STM_136
Comments and constraints	

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Starting Conditions	Value	Comments
STM (1) STATE	DA	
ETCS Mode	SN	
ETCS Level	NL	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	Inactive	No traction cut off
TIU Direction Controller Position Status	Forward	forward
TIU Cab Status (Desk Status)	Desk A opened	cab A opened

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM Send DATA to the JRU	Prof	Message-1 (Packet STM_15; Packet STM_161)	ETCS	JRU	Check on the DATA stored in the JRU
2	The STM Send DATA to the DRU	Prof	Message-2 (Packet STM_15; Packet STM_77)	ETCS	DRU	Check on the DATA stored in the DRU
3	The ETCS performed periodic transmission of odometer data The train is at standstill	Prof		ETCS	Prof	Message-3 (Packet STM-1; STM_9; STM_8;)
4	Simulate from the TIU interface a service brake status	TIU		ETCS	Prof	Message 4 (Packet STM_139) send by the ETCS to notify the STMs from the change of status.
5	Simulate from the TIU interface a service brake status	TIU		ETCS	Prof	Message 5 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status
6	Simulate from the TIU interface an emergency brake status	TIU		ETCS	Prof	Message 6 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status

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Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	161	Packet identifier (STM-161)
L_PACKET	13	COMPUTED	Packet length
T_JRU	32	341	Time Stamp
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to JRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"J"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	77	Packet identifier (STM-77)
L_PACKET	13	COMPUTED	Packet length
L_TEXT	8	1	
X_TEXT(1)	8	"1"	STM provider Identity in ASCII example (UNISIG ID for ASFA)
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to DRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"D"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

Message-3: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	FINITE VALUE	
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	0	
PADDING BITS	COMPUTED	COMPUTED	

Message-4: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	1	traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

Message-5: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	2	EB released
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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Message-6: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	1	EB applied
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	Cut	traction cut off
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	Apply	EB applied
BIU Service Brake Status	Apply	SB applied
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.14.0.0.0.0.0.0	
Test case Identification	STM (DA)
	STM shall have access to JRU, DRU, Odometer, TIU, BIU while ETCS is in SN Level.
ETCS Requirements Tested	Subset-035 : 5.2.10.1
	Subset-026 :
STM Requirements Tested	Subset-035 :
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15; STM-161; STM-77; STM-1; STM-8; STM-9; STM_139; STM_136
Comments and constraints	

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Starting Conditions	Value	Comments
STM (1) STATE	DA	
ETCS Mode	SN	
ETCS Level	SL	
Train State	not Relevant	
Train Data	valid	
Additional Data	valid	
National Values	valid	
STM Control Function Connection	established	
DMI Connection	established	
Odometry Data	transmitted	
Reference Time Data	transmitted	
TIU Connection	established	
BIU Connection	established	
JRU Connection	established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	Inactive	No traction cut off
TIU Direction Controller Position Status	Forward	forward
TIU Cab Status (Desk Status)	Desk A opened	cab A opened

Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

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Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM Send DATA to the JRU	Prof	Message-1 (Packet STM_15; Packet STM_161)	ETCS	JRU	Check on the DATA stored in the JRU
2	The STM Send DATA to the DRU	Prof	Message-2 (Packet STM_15; Packet STM_77)	ETCS	DRU	Check on the DATA stored in the DRU
3	The ETCS performed periodic transmission of odometer data The train is at standstill	Prof		ETCS	Prof	Message-3 (Packet STM-1; STM_9; STM_8;)
4	Simulate from the TIU interface a service brake status	TIU		ETCS	Prof	Message 4 (Packet STM_139) send by the ETCS to notify the STMs from the change of status.
5	Simulate from the TIU interface a service brake status	TIU		ETCS	Prof	Message 5 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status
6	Simulate from the TIU interface an emergency brake status	TIU		ETCS	Prof	Message 6 (Packet STM_136) send by the ETCS to Notify the STM(1) from the change of status

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Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	161	Packet identifier (STM-161)
L_PACKET	13	COMPUTED	Packet length
T_JRU	32	341	Time Stamp
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to JRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"J"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	77	Packet identifier (STM-77)
L_PACKET	13	COMPUTED	Packet length
L_TEXT	8	1	
X_TEXT(1)	8	"1"	STM provider Identity in ASCII example (UNISIG ID for ASFA)
N_L_ITER	8	14	Number of data bytes in message
M_DATA(1)	8	"S"	Information to DRU
M_DATA(2)	8	"T"	
M_DATA(3)	8	"M"	
M_DATA(4)	8	" "	
M_DATA(5)	8	"D"	
M_DATA(6)	8	"R"	
M_DATA(7)	8	"U"	
M_DATA(8)	8	" "	
M_DATA(9)	8	"R"	
M_DATA(10)	8	"e"	
M_DATA(11)	8	"c"	
M_DATA(12)	8	"o"	
M_DATA(13)	8	"r"	
M_DATA(14)	8	"d"	
PADDING BITS	COMPUTED	COMPUTED	

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Message-3: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	1	Packet identifier (STM-1)
L_PACKET	13	COMPUTED	packet length
N_058_VERMAJOR	8	3	
N_058_VERMID	8	0	
N_058_VERMINOR	8	Z	
N_035_VERMAJOR	8	3	
N_035_VERMID	8	0	
N_035_VERMINOR	8	Z	
N_SRS_VERMAJOR	8	1	
N_SRS_VERMINOR	8	0	
NID_PACKET	8	9	Packet identifier (STM-9)
L_PACKET	13	COMPUTED	packet length
T_ODOCYCLE	8	FINITE VALUE	
T_ODOMAXPROD	8	FINITE VALUE	
Q_V_ABS	8	FINITE VALUE	
Q_V_REL	8	FINITE VALUE	
Q_D_ABS	8	FINITE VALUE	
Q_D_REL	8	FINITE VALUE	
NID_PACKET	8	8	Packet identifier (STM-8)
L_PACKET	13	COMPUTED	packet length
T_ODO	32	FINITE VALUE	
V_MAX	16	FINITE VALUE	
V_NOM	16	FINITE VALUE	
V_MIN	16	FINITE VALUE	
D_MAX	32	FINITE VALUE	
D_NOM	32	FINITE VALUE	
D_MIN	32	FINITE VALUE	
D_RES	8	FINITE VALUE	

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Q_SAFEDIR	1	FINITE VALUE	
Q_NOM_ODO	1	FINITE VALUE	
M_K_ETCS	3	0	
PADDING BITS	COMPUTED	COMPUTED	

Message-4: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	139	Train Interface inputs status / availability to STM (STM-139)
L_PACKET	13	COMPUTED	packet length
M_TITR_C_STATUS	2	1	traction cut off
M_TIDIR_STATUS	2	1	forward
M_TICAB_STATUS	2	1	cab A opened
Padding bits	COMPUTED	COMPUTED	

Message-5: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	2	EB released
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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Message-6: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	valid value for NID_STM for STM(1)
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	136	Packet identifier (STM-136)
L_PACKET	13	COMPUTED	Packet length
M_BIEB_STATUS	2	1	EB applied
M_BISB_STATUS	2	1	SB applied
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	Cut	traction cut off
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	Apply	EB applied
BIU Service Brake Status	Apply	SB applied
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

TEST CASE : 6.15.0.0.0	
Test case Identification	STM (DA)
	STM shall have access to DMI while ETCS is in SN Level.
ETCS Requirements Tested	Subset-035 : 10.7.3.5.0 Track data, Override & slippery
	Subset-026 : None
STM Requirements Tested	Subset-035 : None
	Subset-026 : None
Packets Transmitted via FFFIS STM	Packet STM-15; STM-43
Comments and constraints	The information: Track data & track condition; Override status and slippery track are available on the DMI screen. The purpose of this test is to request the inhibition or not of these information from the DMI by sending the packet STM-043 from the STM to the ETCS.

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Starting Conditions	Value	Comments
STM STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	Not Relevant	
Train Data	Valid	
Additional Data	Valid	
National Values	Valid	
STM Control Function Connection	Established	
DMI Connection	Established	
Odometry Data	Transmitted	
Reference Time Data	Transmitted	
TIU Connection	Established	
BIU Connection	Established	
JRU Connection	Established	
Other connections	not Relevant	
TIU Regenerative Brake Command	not Relevant	
TIU Magnetic Shoes Command	not Relevant	
TIU Eddy Current Brake Command	not Relevant	
TIU Inhibit Passenger Emergency Brake Command	not Relevant	
TIU Pantograph Command	not Relevant	
TIU Air Tightness Command	not Relevant	
TIU Main Switch / Circuit Breaker Command	not Relevant	
TIU Traction Cut Off Command	not Relevant	
TIU Sleeping Status	not Relevant	
TIU Traction Cut Off Status	not Relevant	
TIU Direction Controller Position Status	not Relevant	
TIU Cab Status (Desk Status)	Desk A opened	cab A opened

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Starting Conditions		Value	Comments
BIU Status		not Relevant	
BIU Emergency Brake Command		not Relevant	
BIU Service Brake Command		not Relevant	
BIU Emergency Brake Status		not Relevant	
BIU Service Brake Status		not Relevant	
STM Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
ETCS Version Number	Subset-026	1.0	
	Subset-035	3.0.z	
	Subset-058	3.0.z	
	Subset-056	3.0.z	
	Subset-057	3.0.z	
Track Adhesion		not Relevant	

Test Case for ETCS On-Board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1				ETCS	DMI	Check the information "Track data & track condition", "Override status" and "Slippery track" on the DMI before starting the test.
2	Inhibit the display of information "Track data & track condition"	Prof	Message-1 State report from STM (Packet STM_15) and National ETCS DMI (Packet STM_43)	ETCS	DMI	Check on the DMI the Inhibition of the data.
3	Remove the Inhibition of information "Track data & track condition"	Prof	Message-2 State report from STM (Packet STM_15) and National ETCS DMI (Packet STM_43)	ETCS	DMI	Check on the DMI the display of the data.
4	Inhibit the display of information "Override status"	Prof	Message-3 State report from STM (Packet STM_15) and National ETCS DMI (Packet STM_43)	ETCS	DMI	Check on the DMI the Inhibition of the data.
5	Remove the Inhibition of information "Override status"	Prof	Message-4 State report from STM (Packet STM_15) and National ETCS DMI (Packet STM_43)	ETCS	DMI	Check on the DMI the display of the data.
6	Inhibit the display of information "Slippery track"	Prof	Message-5 State report from STM (Packet STM_15) and National ETCS DMI (Packet STM_43)	ETCS	DMI	Check on the DMI the Inhibition of the data.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
7	Remove the Inhibition of information "Slippery track"	Prof	Message-6 State report from STM (Packet STM_15) and National ETCS DMI (Packet STM_43)	ETCS	DMI	Check on the DMI the display of the data.

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale (meter)
Q_INDICATE	12	512	Inhibition of ETCS DMI objects (inhibit Track data/condition: Balise transmission control)
Q_WARNINGLIMIT	1	0	Warning limit status (no warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (no indication status to be displayed)
V_PERMIT	10	111	Permitted speed (111km/h)
V_TARGET	7	15	Target speed (75 km/h)
V_RELEASE	7	10	Release speed (50 km/h)
V_INTERV	7	23	Intervention speed (115 km/h)
D_TARGET	15	500	Target distance
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale (meter)
Q_INDICATE	12	0	Inhibition of ETCS DMI objects (remove inhibition Track data/condition: Balise transmission control)
Q_WARNINGLIMIT	1	0	Warning limit status (no warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (no indication status to be displayed)
V_PERMIT	10	111	Permitted speed (111km/h)
V_TARGET	7	15	Target speed (75 km/h)
V_RELEASE	7	10	Release speed (50 km/h)
V_INTERV	7	23	Intervention speed (115 km/h)
D_TARGET	15	500	Target distance
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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Message-3: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale (meter)
Q_INDICATE	12	1024	Inhibition of ETCS DMI objects (inhibition Override status)
Q_WARNINGLIMIT	1	0	Warning limit status (no warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (no indication status to be displayed)
V_PERMIT	10	111	Permitted speed (111km/h)
V_TARGET	7	15	Target speed (75 km/h)
V_RELEASE	7	10	Release speed (50 km/h)
V_INTERV	7	23	Intervention speed (115 km/h)
D_TARGET	15	500	Target distance
N_ITER	5	0	
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Message-4: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale (meter)
Q_INDICATE	12	0	Inhibition of ETCS DMI objects (remove inhibition Override status)
Q_WARNINGLIMIT	1	0	Warning limit status (no warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (no indication status to be displayed)
V_PERMIT	10	111	Permitted speed (111km/h)
V_TARGET	7	15	Target speed (75 km/h)
V_RELEASE	7	10	Release speed (50 km/h)
V_INTERV	7	23	Intervention speed (115 km/h)
D_TARGET	15	500	Target distance
N_ITER	5	0	
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Message-5: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale (meter)
Q_INDICATE	12	32	Inhibition of ETCS DMI objects (inhibition Slippery track selected indication)
Q_WARNINGLIMIT	1	0	Warning limit status (no warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (no indication status to be displayed)
V_PERMIT	10	111	Permitted speed (111km/h)
V_TARGET	7	15	Target speed (75 km/h)
V_RELEASE	7	10	Release speed (50 km/h)
V_INTERV	7	23	Intervention speed (115 km/h)
D_TARGET	15	500	Target distance
N_ITER	5	0	
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Message-6: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	7	state DA
NID_PACKET	8	43	Packet identifier (STM-43)
L_PACKET	13	COMPUTED	Packet length
Q_SCALE	2	1	Qualifier for the distance scale (meter)
Q_INDICATE	12	0	Inhibition of ETCS DMI objects (remove inhibition Slippery track selected indication)
Q_WARNINGLIMIT	1	0	Warning limit status (no warning to be displayed)
Q_INDICATIONLIMIT	1	0	Indication limit status (no indication status to be displayed)
V_PERMIT	10	111	Permitted speed (111km/h)
V_TARGET	7	15	Target speed (75 km/h)
V_RELEASE	7	10	Release speed (50 km/h)
V_INTERV	7	23	Intervention speed (115 km/h)
D_TARGET	15	500	Target distance
N_ITER	5	0	
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	unchanged	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	
Reference Time Data	unchanged	
TIU Connection	unchanged	
BIU Connection	unchanged	
JRU Connection	unchanged	
Other connections	unchanged	
TIU Regenerative Brake Command	unchanged	
TIU Magnetic Shoes Command	unchanged	
TIU Eddy Current Brake Command	unchanged	
TIU Inhibit Passenger Emergency Brake Command	unchanged	
TIU Pantograph Command	unchanged	
TIU Air Tightness Command	unchanged	
TIU Main Switch / Circuit Breaker Command	unchanged	
TIU Traction Cut Off Command	unchanged	
TIU Sleeping Status	unchanged	
TIU Traction Cut Off Status	unchanged	
TIU Direction Controller Position Status	unchanged	

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TIU Cab Status (Desk Status)	unchanged	
BIU Status	unchanged	
BIU Emergency Brake Command	unchanged	
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	