

**ERTMS/ETCS – Class 1****FFFIS STM test cases of Functional identity 004****TRANSITION LEVEL STM TO ETCS****Total: 6 Test cases**

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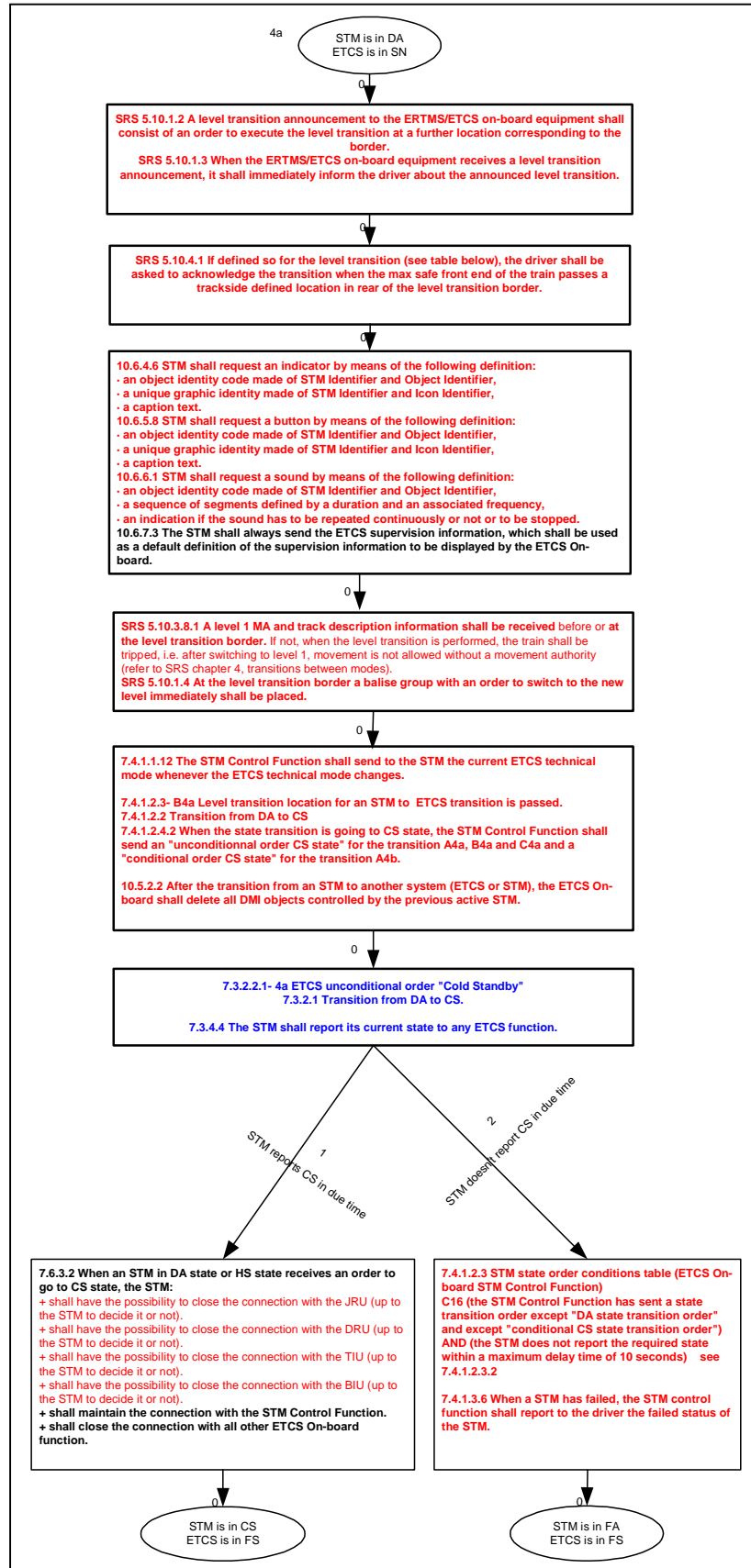
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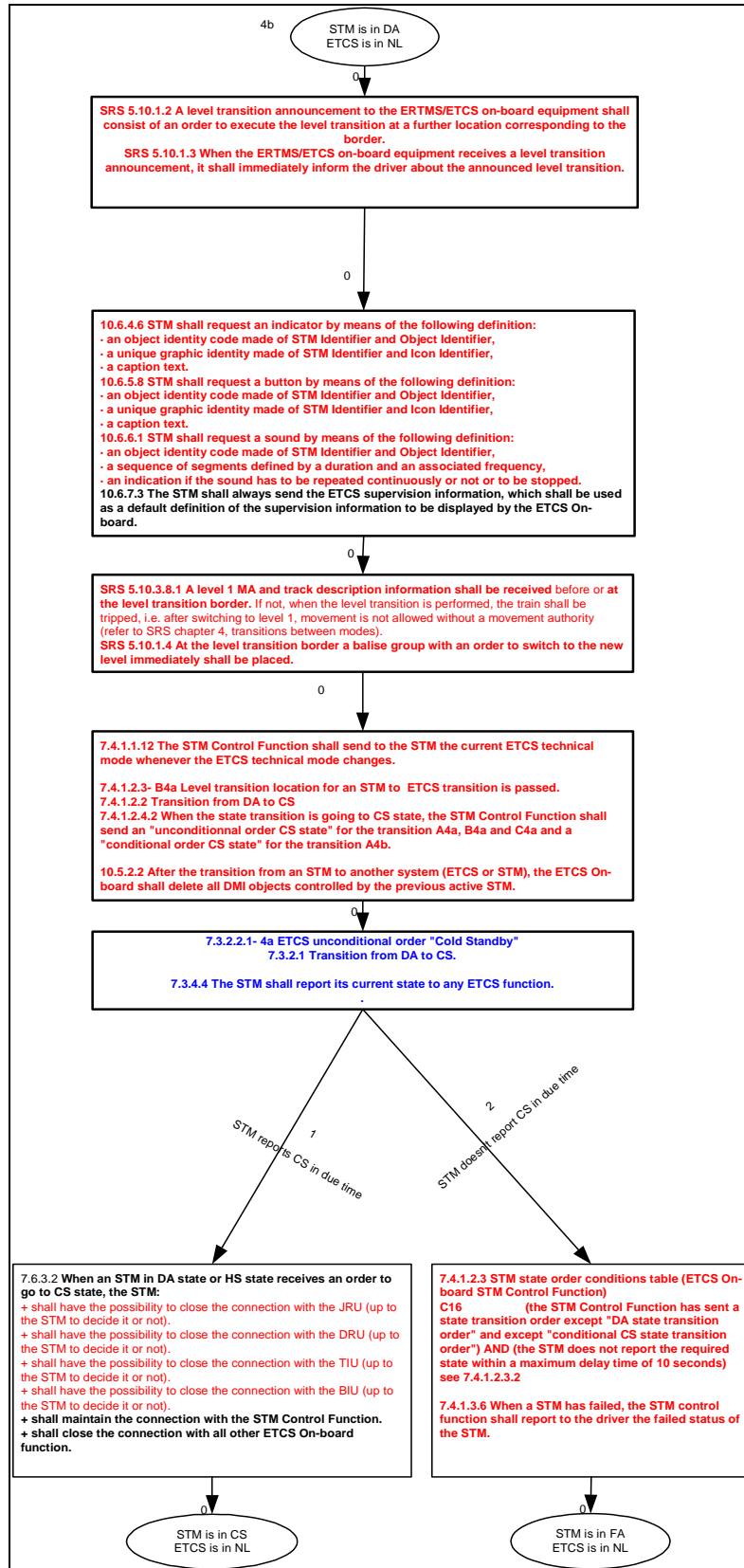
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# DIAGRAMS



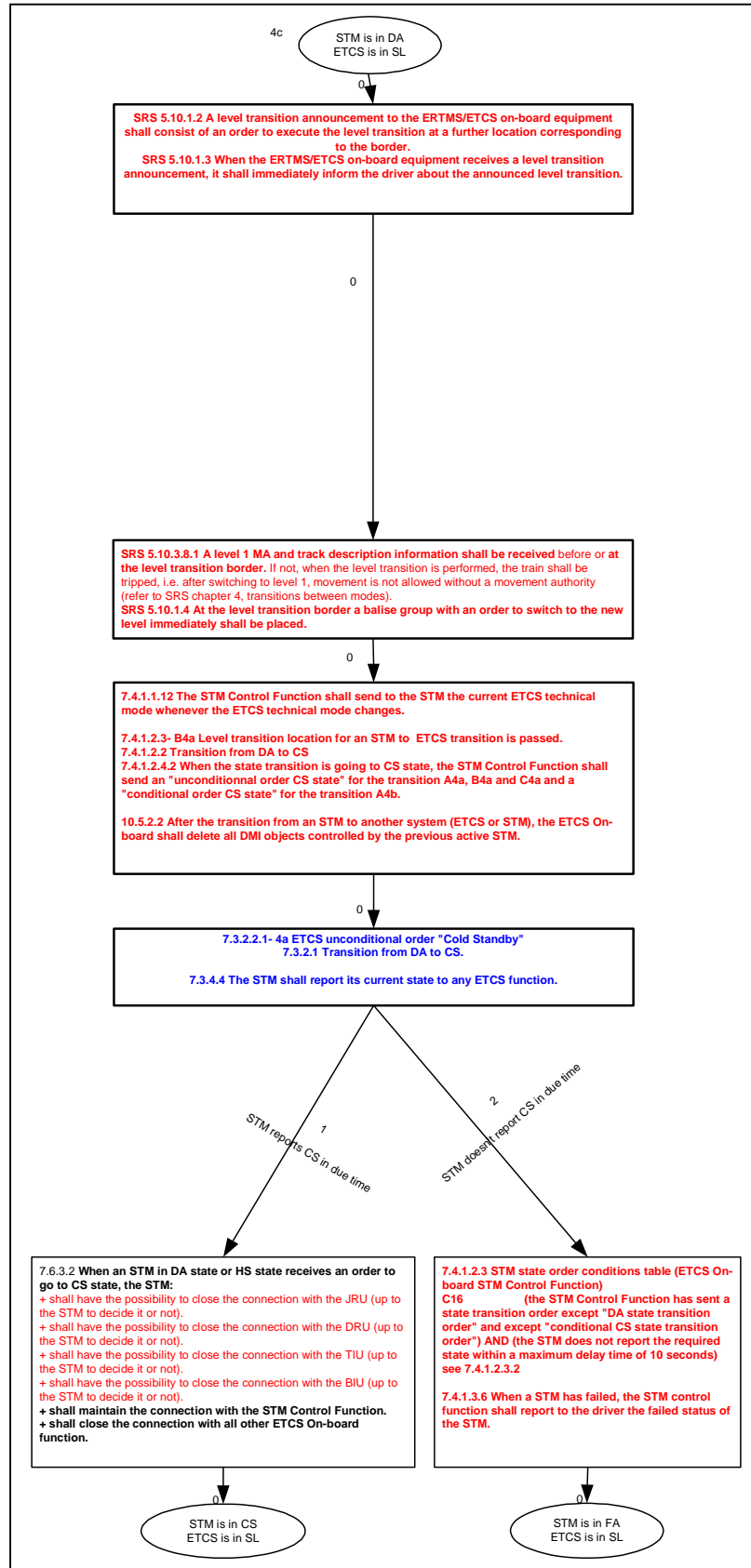
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# TEST CASES

## TEST CASE 4a.0.0.0.0.0.1.0

TEST CASE HEADER	
Test case Identification	Functional identity Level transition STM to ETCS Transition from STM to ETCS, while the ETCS is in SN and the STM reports CS in due time.
	Test the data exchange between ERTMS/ETCS On-board, STM and driver during the level transition from STM level and ERTMS level 1, 2 or 3 while the ERTMS/ETCS on-board system is in mode SN.
ETCS Requirements Tested	Subset-035: 7.4.1.1.12, 7.4.1.2.2 (DA->CS), 7.4.1.2.3 (B4a), 7.4.1.2.4.2, 7.6.3.2, 10.5.2.2., 10.6.4.6, 10.6.5.8, 10.6.6.1, 10.6.7.3, 10.7.3.5.0.
	Subset-026: 5.10.1.2, 5.10.1.3, 5.10.3.8.1, 5.10.4.1, 5.10.1.4.
STM Requirements Tested	Subset-035: 7.3.2.1(DA->CS), 7.3.2.2.1 (4a), 7.3.4.4, 7.6.3.2., 10.6.7.3
	Subset-026: None
Packets transmitted via FFFIS STM	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
Comments and constraints	

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Starting Conditions	Value	Comments
STM_STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	Moving	
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	Not relevant	
TIU Sleeping Status	Not Sleeping	
TIU Traction Cut Off Status	Not relevant	
TIU Direction Controller Position Status	Forward	
TIU Cab Status (Desk Status)	Desk A opened	
BIU Status	Not relevant	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	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 ERTMS/ETCS On-board receive the announcement of level transition and display the announcement to the driver.	BTM	Level transition announcement message: Message 1A :Packet SRS-41 Level Transition Order Message 1B:	ETCS	DMI	Level transition is announced to the driver.
2.	When the acknowledgement area is reached, the ERTMS/ETCS trainborne shall request the driver to acknowledge the level transition.	Odometer	ACK area is reached	ETCS	DMI	Request for ACK is given to the driver.
3.	The driver acknowledges the level transition. (This step should occur now to allow the display of the STM text message to be ACK. Only one text message to be ACK can be displayed at a time.)	DMI	Driver ACK the level transition	ETCS	DMI	ACK request is removed.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
4.	The STM requests the ETCS On-board DMI function to display buttons, indicators, text message, text message to be ACK, supervision information and sound. Remark: Driver should not acknowledge the STM message.	Prof	DMI Connection: Message 2: Packet STM-15: STM state report Packet STM-32: Button Request Message 3: Packet STM-15: STM state report Packet STM-35: Indicator request Message 4: Packet STM-38: Text message Packet STM-15: STM state report Message 5: Packet STM-38: Text message to be ACK Packet STM-43: National ETCS DMI Packet STM-15: STM state report Message 6: Packet STM-46: Sound command Packet STM-15: STM state report	ETCS	DMI	Buttons, Indicators, Text, Text to be ACK, National ETCS DMI info, Sound are displayed.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
5.	The train crosses the level transition location.	BTM	Level transition message: Message 7: Packet SRS-41 Level Transition Order with distance = 0 Message 8: Packet SRS-12 Level 1 MA, Packet SRS-21 Gradient profile Packet SRS-27 International Static Speed Profile	-	-	-
	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2)	-	-	ETCS	Prof	STM Control Connection: Message 10: Packet STM-14 State order to STM is send to the STM with the unconditional order to go to CS.
	The STM control function shall report the new ETCS technical mode to all connected STM's. (7.4.1.1.12)	-	-	ETCS	Prof	STM Control Connection: Message 11: Packet STM-5 ETCS status data is transmitted on Profibus to STM's.
	The ETCS On-board shall delete all STM related objects including buttons, indicators, text message, text message to be ACK, supervision information and sound. (10.5.2.2)	-	-	ETCS	DMI	All STM objects previously displayed should be deleted.
6.	The STM shall report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	Prof	STM Control Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board STM control function.	ETCS	Prof	ETCS On-board shall not put the STM into failure state.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
		Prof	BIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS BIU function	ETCS		
		Prof	TIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS TIU	ETCS		
		Prof	DMI Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS DMI	ETCS		
	The STM shall close the connection to the ETCS DMI function	Prof	The DMI connection is closed	ETCS		

**Test case for STM:**

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1.	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2)	Prof	STM Control Connection: Message 10: Packet STM-14 State Order to STM is sent to the STM with the unconditional order to go to CS. Message 11: Packet STM-5 ETCS Status Data is sent to the with a new ETCS status	-	-	-
	The STM shall report its new state CS to the STM control function in due time (10s). (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	-	-	STM	Prof	STM Control Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board STM control function.
				STM	Prof	BIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board BIU
				STM	Prof	TIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board TIU
				STM	Prof	DMI Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board DMI
	The STM shall close the connection with the DMI. (7.6.3.2)	-	-	STM	Prof	Disconnection at safe link layer level: A disconnect telegram is transmitted from the STM node. No more idle messages are issued on the connection with DMI.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
	The STM shall maintain the connection to the STM control function. (7.6.3.2)	-	-	STM	Prof	Idle message are still exchanged from the STM to the STM control function.

Message 1A: Airgap Packet (Level Transition Announcement)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition order
Q_DIR	2	1	Nominal
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	1000	Level transition at 1000m
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	500	ACK request window starting at 500m from the border.
N_ITER	5	0	
NID_PACKET	8	255 (1111 1111b)	

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Message 1B: Airgap Packet			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	uplink
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	Balise
N_PIG	3	1	2 <sup>nd</sup> Balise
N_TOTAL	3	1	2 Balise in group
M_DUP	2	0	no duplicates
M_MCOUNT	8	255	identical Value for all balises of the group
NID_C	10	FINITE VALUE	ID of country / region
NID_BG	14	FINITE VALUE	ID of Balise Group
Q_LINK	1	1	linked
NID_PACKET	8	11111111	Packet 255 – End of information



Message 2 : Profibus message: (STM->ETCS): Packet STM-32 Button request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	32	Button Request
L_PACKET	13	COMPUTED	
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
L_CAPTION(1)	5	6	
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	"B"	
X_CAPTION(1,6)	8	"1"	
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	6	
X_CAPTION(2,1)	8	"T"	
X_CAPTION(2,2)	8	"e"	

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X_CAPTION(2,3)	8	"s"	
X_CAPTION(2,4)	8	"t"	
X_CAPTION(2,5)	8	"B"	
X_CAPTION(2,6)	8	"2"	
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	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	"B"	
X_CAPTION(3,6)	8	"3"	
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	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	"B"	
X_CAPTION(4,6)	8	"4"	
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	

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NID_BUTPOS(5)	4	5	
NID_ICON(5)	8	5	
M_BUT_ATTRIB(5)	10	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	
X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	"B"	
X_CAPTION(5,6)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 3: Profibus message: (STM => ETCS DMI function): Packet STM 35: Indicator request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State request from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	35	Indicator request
L_PACKET	13	COMPUTED	
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)	4	1	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background
L_CAPTION(1)	5	6	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	

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X_CAPTION(1,5)	8	“ “	
X_CAPTION(1,6)	8	“1”	
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)	4	2	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	6	
X_CAPTION(2,1)	8	“T”	
X_CAPTION(2,2)	8	“e”	
X_CAPTION(2,3)	8	“s”	
X_CAPTION(2,4)	8	“t”	
X_CAPTION(2,5)	8	“ “	
X_CAPTION(2,6)	8	“2”	
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)	4	3	
NID_ICON(3)	8	3	
M_IND_ATTRIB(3)	10	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	" "	
X_CAPTION(3,6)	8	"3"	
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)	4	4	
NID_ICON(4)	8	4	
M_IND_ATTRIB(4)	10	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	" "	
X_CAPTION(4,6)	8	"4"	
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)	4	5	
NID_ICON(5)	8	5	
M_IND_ATTRIB(5)	10	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	

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X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	" "	
X_CAPTION(5,6)	8	"5"	
NID_STM(6)	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(6)	8	6	
NID_INDPOS(6)	4	6	
NID_ICON(6)	8	6	
M_IND_ATTRIB(6)	10	1000000001b	White text on a black background
L_CAPTION(6)	5	6	
X_CAPTION(6,1)	8	"T"	
X_CAPTION(6,2)	8	"e"	
X_CAPTION(6,3)	8	"s"	
X_CAPTION(6,4)	8	"t"	
X_CAPTION(6,5)	8	" "	
X_CAPTION(6,6)	8	"6"	
NID_STM(7)	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(7)	8	7	
NID_INDPOS(7)	4	7	
NID_ICON(7)	8	7	
M_IND_ATTRIB(7)	10	1000000001b	White text on a black background
L_CAPTION(7)	5	6	
X_CAPTION(7,1)	8	"T"	
X_CAPTION(7,2)	8	"e"	
X_CAPTION(7,3)	8	"s"	
X_CAPTION(7,4)	8	"t"	
X_CAPTION(7,5)	8	" "	
X_CAPTION(7,6)	8	"7"	
NID_STM(8)	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(8)	8	8	
NID_INDPOS(8)	4	8	
NID_ICON(8)	8	8	

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M_IND_ATTRIB(8)	10	1000000001b	White text on a black background
L_CAPTION(8)	5	6	
X_CAPTION(8,1)	8	"T"	
X_CAPTION(8,2)	8	"e"	
X_CAPTION(8,3)	8	"s"	
X_CAPTION(8,4)	8	"t"	
X_CAPTION(8,5)	8	" "	
X_CAPTION(8,6)	8	"g"	
NID_STM(9)	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(9)	8	9	
NID_INDPOS(9)	4	9	
NID_ICON(9)	8	9	
M_IND_ATTRIB(9)	10	1000000001b	White text on a black background
L_CAPTION(9)	5	6	
X_CAPTION(9,1)	8	"T"	
X_CAPTION(9,2)	8	"e"	
X_CAPTION(9,3)	8	"s"	
X_CAPTION(9,4)	8	"t"	
X_CAPTION(9,5)	8	" "	
X_CAPTION(9,6)	8	"g"	
NID_STM(10)	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(10)	8	10	
NID_INDPOS(10)	4	10	
NID_ICON(10)	8	10	
M_IND_ATTRIB(10)	10	1000000001b	White text on a black background
L_CAPTION(10)	5	6	
X_CAPTION(10,1j)	8	"T"	
X_CAPTION(10,2)	8	"e"	
X_CAPTION(10,3)	8	"s"	
X_CAPTION(10,4)	8	"t"	
X_CAPTION(10,5)	8	" "	
X_CAPTION(10,6)	8	"A"	

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Padding bits	COMPUTED	COMPUTED	
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Message 4: Profibus message (STM => ETCS DMI function): Packet STM-38: Text message			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	1	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	

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X_TEXT(19)	8	">"	
X_TEXT(20)	8	"1"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	2	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"2"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	3	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	

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X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"3"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	4	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	

X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"4"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	5	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	

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X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 5: Profibus message (STM => ETCS DMI function): Packet STM-38: Text message to be ACK, Packet STM-43 National ETCS DMI			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	6	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	1	Text message to be ACK
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	

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X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"6"	
NID_PACKET	8	43	National ETCS DMI
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
Q_INDICATE	12	0	No inhibition
Q_WARNINGLIMIT	1	1	
Q_INDICATIONLIMIT	1	1	
V_PERMIT	10	160	160 Km/h
V_TARGET	7	16	80 Km/h
V_RELEASE	7	5	25 Km/h
V_INTERV	7	33	165 Km/h
D_TARGET	15	320	3200 m
N_ITER	5	0	
Padding bits	COMPUTED	COMPUTED	

Message 6: Profibus message (STM => ETCS DMI function): Packet STM-46 Sound command			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	46	Sound Command
L_PACKET	13	COMPUTED	
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	2	Continuous sound
N_ITER(1)	5	1	
M_FREQ(1,1)	8	4	128Hz
T_SOUND(1,1)	8	100	10 s to be repeated as it is a continuous sound.
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
Padding bits	COMPUTED	COMPUTED	

Message 7: Airgap Packet (Level Transition Border)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	32767	Level transition now
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	0	ACK request window starting at 0m from the border.
N_ITER	5	0	
NID_PACKET	8	255 (11111111b)	

Message 8: Airgap Packet (L1 Movement Authority, Gradient Profile, International Static Speed Profile)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	1	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG

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Q_LINK	1	1	linked
NID_PACKET	8	12	L1 Movement Authority
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
V_MAIN	7	60	300Km/h
V_LOA	7	0	0Km/h ->EOA
T_LOA	10	1023	No time out: infinite value
N_ITER	5	0	Only one section within the MA.
L_ENDSECTION	15	640	6.4 Km
Q_SECTIONTIMER	1	0	No section timer information
Q_ENDTIMER	1	0	No End section timer information
Q_DANGERPOINT	1	0	No danger point information
Q_OVERLAP	1	0	No overlap information
NID_PACKET	8	21	Gradient Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_GRADIENT	15	0	
Q_GDIR	1	1	
G_A	8	1	
N_ITER	5	0	
NID_PACKET	8	27	International Static Speed Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	1m scale
D_STATIC	15	0	Stating from 0
V_STATIC	7	44	
Q_FRONT	1	1	
N_ITER	5	0	
NID_PACKET	8	255 (11111111b)	

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Message 9: Profibus message (STM => ETCS STM control function): Packet STM-15: State report from STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	4	CS
Padding bits	COMPUTED	COMPUTED	

Message 10: Profibus message (ETCS STM control function => STM): Packet STM-14: State order to STM.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	4	Unconditional order CS
Padding bits	COMPUTED	COMPUTED	

Message 11 : Profibus message (ETCS STM Control Function => STM): Packet STM-5 ETCS Status data.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	5	ETCS Status data
L_PACKET	13	COMPUTED	
M_LEVEL	3	2	Level 1
M_MODE	4	0	Full supervision
Padding bits	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM_STATE	CS	
ETCS Mode	FS	
ETCS Level	1	
Train State	Unchanged	
Train Data	Unchanged	
Additional Data	Unchanged	
National Values	Unchanged	
STM Control Function Connection	Unchanged	
DMI Connection	Not Established	
Odometry Data	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	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	3.0.z	
Track Adhesion		Unchanged	

**TEST CASE 4a.0.0.0.0.2.0**

TEST CASE HEADER	
<b>Test case Identification</b>	Functional identity Level transition STM to ETCS Transition from STM to ETCS, while the ETCS is in SN and the STM does not report CS in due time.
	Test the data exchange between ERTMS/ETCS On-board, STM and driver during the level transition from STM level and ERTMS level 1,2 or 3 while the ERTMS/ETCS on-board system is in mode SN and the STM does not follow the transition order in due time..
<b>ETCS Requirements Tested</b>	Subset-035: 7.4.1.1.12, 7.4.1.2.2 (DA->CS), 7.4.1.2.3 (B4a, C16), 7.4.1.2.4.2, 7.4.1.3.6, 10.5.2.2., 10.6.4.6, 10.6.5.8, 10.6.6.1, 10.6.7.3, 10.7.3.5.0.
	Subset-026:5.10.1.2, 5.10.1.3, 5.10.3.8.1, 5.10.4.1, 5.10.1.4.
<b>STM Requirements Tested</b>	Subset-035: None
	Subset-026: None
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
<b>Comments and constraints</b>	

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Starting Conditions	Value	Comments
STM_STATE	DA	
ETCS Mode	SN	
ETCS Level	STM	
Train State	Moving	
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	Not relevant	
TIU Sleeping Status	Not Sleeping	
TIU Traction Cut Off Status	Not relevant	
TIU Direction Controller Position Status	Forward	
TIU Cab Status (Desk Status)	Desk A opened	
BIU Status	Not relevant	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	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 ERTMS/ETCS On-board receive the announcement of level transition and display the announcement to the driver.	BTM	Level transition announcement message: Message 1A: Packet SRS-41 Level Transition Order Message 1B	ETCS	DMI	Level transition is announced to the driver.
2.	When the acknowledgement area is reached, the ERTMS/ETCS trainborne shall request the driver to acknowledge the level transition.	Odometer	ACK area is reached	ETCS	DMI	Request for ACK is given to the driver.
3.	The driver acknowledges the level transition. (This step should occur now to allow the display of the STM text message to be ACK. Only one text message to be ACK can be displayed at a time.)	DMI	Driver ACK the level transition	ETCS	DMI	ACK request is removed.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
4.	The STM requests the ETCS On-board DMI function to display buttons, indicators, text message, text message to be ACK, supervision information and sound. Remark: Driver should not acknowledge the STM message.	Prof	DMI Connection: Message 2: Packet STM-15: STM State report Packet STM-32: Button Request Message 3: Packet STM-35: Indicator request Packet STM-15: STM State report Message 4: Packet STM-38: Text message Packet STM-15: STM State report Message 5: Packet STM-38: Text message to be ACK Packet STM-43: National ETCS DMI Packet STM-15: STM State report Message 6: Packet STM-46: Sound command	ETCS	DMI	Buttons, Indicators, Text, Text to be ACK, National ETCS DMI info, Sound are displayed.
5.	The train crosses the level transition location.	BTM	Level transition message: Message 7: Packet SRS-41 Level Transition Order with distance = 0 Message 8: Packet SRS-12 Level 1 MA, Packet SRS-21 Gradient Profile Packet SRS-27 International Static Speed Profile	-	-	-
	The ETCS On-board orders the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2) TIME: T0	-	-	ETCS	Prof	STM Control Connection: Message 10: Packet STM-14 State Order to STM is send to the STM with the unconditional order to go to CS.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
	The STM control function shall report the new ETCS technical mode to all connected STM's. (7.4.1.1.12)	-	-	ETCS	Prof	STM Control Connection: Message 9: Packet STM-5 ETCS Status Data is transmitted on Profibus to STM's.
	The ETCS On-board shall delete all STM related objects including buttons, indicators, text message, text message to be ACK, supervision information and sound. (10.5.2.2)	-	-	ETCS	DMI	All STM objects previously displayed should be deleted.
6.	TIME : T0+10s The STM shall not report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	-	-	ETCS	Prof	STM Control Connection: Message 11: Packet STM-14 State Order to STM is transmitted on Profibus to STM's. (ETCS On-board shall put the STM into failure state.)
	The ETCS will display an information about the failed STM to the DMI.	-	-	ETCS	DMI	STM failure DMI information is displayed
				ETCS	Prof	STM control connection is closed

**Test case for STM:**

Not applicable. Degraded mode is not tested.

Message 1A: Airgap Packet (Level Transition Announcement)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	1000	Level transition at 1000m
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	500	ACK request window starting at 500m from the border.
N_ITER	5	0	
NID_PACKET	8	255 (1111 1111b)	

Message 1B: Airgap Packet			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	uplink
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	Balise
N_PIG	3	1	2 <sup>nd</sup> Balise
N_TOTAL	3	1	2 Balise in group
M_DUP	2	0	no duplicates
M_MCOUNT	8	255	identical Value for all balises of the group
NID_C	10	FINITE VALUE	ID of country / region
NID_BG	14	FINITE VALUE	ID of Balise Group
Q_LINK	1	1	linked
NID_PACKET	8	11111111	Packet 255 – End of information

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Message 2: Profibus message (STM => ETCS) : Packet-32 Button request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	32	Button Request
L_PACKET	13	COMPUTED	
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
L_CAPTION(1)	5	6	
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	"B"	
X_CAPTION(1,6)	8	"1"	
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	6	
X_CAPTION(2,1)	8	"T"	
X_CAPTION(2,2)	8	"e"	

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X_CAPTION(2,3)	8	"s"	
X_CAPTION(2,4)	8	"t"	
X_CAPTION(2,5)	8	"B"	
X_CAPTION(2,6)	8	"2"	
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	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	"B"	
X_CAPTION(3,6)	8	"3"	
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	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	"B"	
X_CAPTION(4,6)	8	"4"	
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	

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NID_BUTPOS(5)	4	5	
NID_ICON(5)	8	5	
M_BUT_ATTRIB(5)	10	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	
X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	"B"	
X_CAPTION(5,6)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 3: Profibus message (STM => ETCS): Packet STM-35 Indicator request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	35	Indicator Request
L_PACKET	13	COMPUTED	
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)	4	1	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background
L_CAPTION(1)	5	6	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	

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X_CAPTION(1,5)	8	“ “	
X_CAPTION(1,6)	8	“1”	
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)	4	2	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	6	
X_CAPTION(2,1)	8	“T”	
X_CAPTION(2,2)	8	“e”	
X_CAPTION(2,3)	8	“s”	
X_CAPTION(2,4)	8	“t”	
X_CAPTION(2,5)	8	“ “	
X_CAPTION(2,6)	8	“2”	
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)	4	3	
NID_ICON(3)	8	3	
M_IND_ATTRIB(3)	10	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	" "	
X_CAPTION(3,6)	8	"3"	
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)	4	4	
NID_ICON(4)	8	4	
M_IND_ATTRIB(4)	10	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	" "	
X_CAPTION(4,6)	8	"4"	
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)	4	5	
NID_ICON(5)	8	5	
M_IND_ATTRIB(5)	10	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	

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X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	" "	
X_CAPTION(5,6)	8	"5"	
NID_STM(6)	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(6)	8	6	
NID_INDPOS(6)	4	6	
NID_ICON(6)	8	6	
M_IND_ATTRIB(6)	10	1000000001b	White text on a black background
L_CAPTION(6)	5	6	
X_CAPTION(6,1)	8	"T"	
X_CAPTION(6,2)	8	"e"	
X_CAPTION(6,3)	8	"s"	
X_CAPTION(6,4)	8	"t"	
X_CAPTION(6,5)	8	" "	
X_CAPTION(6,6)	8	"6"	
NID_STM(7)	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(7)	8	7	
NID_INDPOS(7)	4	7	
NID_ICON(7)	8	7	
M_IND_ATTRIB(7)	10	1000000001b	White text on a black background
L_CAPTION(7)	5	6	
X_CAPTION(7,1)	8	"T"	
X_CAPTION(7,2)	8	"e"	
X_CAPTION(7,3)	8	"s"	
X_CAPTION(7,4)	8	"t"	
X_CAPTION(7,5)	8	" "	
X_CAPTION(7,6)	8	"7"	
NID_STM(8)	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(8)	8	8	
NID_INDPOS(8)	4	8	
NID_ICON(8)	8	8	

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M_IND_ATTRIB(8)	10	1000000001b	White text on a black background
L_CAPTION(8)	5	6	
X_CAPTION(8,1)	8	"T"	
X_CAPTION(8,2)	8	"e"	
X_CAPTION(8,3)	8	"s"	
X_CAPTION(8,4)	8	"t"	
X_CAPTION(8,5)	8	" "	
X_CAPTION(8,6)	8	"g"	
NID_STM(9)	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(9)	8	9	
NID_INDPOS(9)	4	9	
NID_ICON(9)	8	9	
M_IND_ATTRIB(9)	10	1000000001b	White text on a black background
L_CAPTION(9)	5	6	
X_CAPTION(9,1)	8	"T"	
X_CAPTION(9,2)	8	"e"	
X_CAPTION(9,3)	8	"s"	
X_CAPTION(9,4)	8	"t"	
X_CAPTION(9,5)	8	" "	
X_CAPTION(9,6)	8	"g"	
NID_STM(10)	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(10)	8	10	
NID_INDPOS(10)	4	10	
NID_ICON(10)	8	10	
M_IND_ATTRIB(10)	10	1000000001b	White text on a black background
L_CAPTION(10)	5	6	
X_CAPTION(10,1j)	8	"T"	
X_CAPTION(10,2)	8	"e"	
X_CAPTION(10,3)	8	"s"	
X_CAPTION(10,4)	8	"t"	
X_CAPTION(10,5)	8	" "	
X_CAPTION(10,6)	8	"A"	

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Padding bits	COMPUTED	COMPUTED	
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Message 4: Profibus message (STM=> ETCS DMI function) : Packet STM-38: Text message			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	1	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	

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X_TEXT(19)	8	">"	
X_TEXT(20)	8	"1"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	2	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"2"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	3	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	

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X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"3"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	4	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	

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X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"4"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	5	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	

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X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 5: Profibus message (STM => ETCS DMI function) : Packet STM-38: Text message to be ACK , Packet STM-43 National ETCS DMI			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Order from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	6	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	1	Text message to be ACK
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	

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X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"6"	
NID_PACKET	8	43	National ETCS DMI
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
Q_INDICATE	12	0	No inhibition
Q_WARNINGLIMIT	1	1	
Q_INDICATIONLIMIT	1	1	
V_PERMIT	10	160	160 Km/h
V_TARGET	7	16	80 Km/h
V_RELEASE	7	5	25 Km/h
V_INTERV	7	33	165 Km/h
D_TARGET	15	320	3200 m
N_ITER	5	0	
Padding bits	COMPUTED	COMPUTED	

Message 6: Profibus message (STM => ETCS DMI function) : packet STM-46 Sound Command			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	46	Sound Command
L_PACKET	13	COMPUTED	
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	2	Continuous sound
N_ITER(1)	5	1	
M_FREQ(1,1)	8	4	128Hz
T_SOUND(1,1)	8	100	10 s to be repeated as it is a continuous sound.
NID_PACKET	8	15	State Report From STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
Padding bits	COMPUTED	COMPUTED	

Message 7: Airgap Packet (Level Transition Border)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	2	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	32767	Level transition now
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	0	ACK request window starting at 0m from the border.
N_ITER	5	0	
NID_PACKET	8	255(11111111b)	

Message 8: Airgap Packet (L1 Movement Authority, Gradient Profile, International Static Speed Profile)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	1	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked

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NID_PACKET	8	12	L1 Movement Authority
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
V_MAIN	7	60	300Km/h
V_LOA	7	0	0Km/h ->EOA
T_LOA	10	1023	No time out: infinite value
N_ITER	5	0	Only one section within the MA.
L_ENDSECTION	15	640	6.4 Km
Q_SECTIONTIMER	1	0	No section timer information
Q_ENDTIMER	1	0	No End section timer information
Q_DANGERPOINT	1	0	No danger point information
Q_OVERLAP	1	0	No overlap information
NID_PACKET	8	21	Gradient Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_GRADIENT	15	0	
Q_GDIR	1	1	
G_A	8	1	
N_ITER	5	0	
NID_PACKET	8	27	International Static Speed Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	1m scale
D_STATIC	15	0	Stating from 0
V_STATIC	7	44	
Q_FRONT	1	1	
N_ITER	5	0	
NID_PACKET	8	255 (11111111b)	

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Message 9 : Profibus message (ETCS STM Control Function => STM): Packet STM-5 ETCS Status data.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	5	ETCS Status data
L_PACKET	13	COMPUTED	
M_LEVEL	3	2	Level 1
M_MODE	4	0	Full supervision
Padding bits	COMPUTED	COMPUTED	

Message 10: Profibus message (ETCS STM Control Function => STM) : Packet STM-14: State order to STM and Packet STM-5 ETCS Status data			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State Order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	4	Unconditional order CS
Padding bits	COMPUTED	COMPUTED	

Message 11: Profibus message (ETCS STM Control Function => STM) : Packet STM-14: State order to STM and Packet STM-5 ETCS Status data			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State Order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	8	FA
Padding bits	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM_STATE	FA	
ETCS Mode	FS	
ETCS Level	1	
Train State	Unchanged	
Train Data	Unchanged	
Additional Data	Unchanged	
National Values	Unchanged	
STM Control Function Connection	Not established	
DMI Connection	Unchanged	
Odometry Data	Unchanged	
Reference Time Data	Unchanged	
TIU Connection	Not established	
BIU Connection	Not established	
JRU Connection	Not established	
Other connections	Not established	
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	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	3.0.z	
Track Adhesion		Unchanged	



**TEST CASE 4b.0.0.0.0.1.0**

TEST CASE HEADER	
<b>Test case Identification</b>	Functional identity Level transition STM to ETCS Transition from STM to ETCS while the ETCS is in NL and the STM reports CS in due time.
	Test the data exchange between ERTMS/ETCS On-board, STM and driver during the level transition from STM level to ERTMS level 1, 2 or 3 while the ERTMS/ETCS on-board system is in mode NL.
<b>ETCS Requirements Tested</b>	Subset-035: 7.4.1.1.12, 7.4.1.2.2 (DA->CS), 7.4.1.2.3 (B4a), 7.4.1.2.4.2, 7.6.3.2, 10.5.2.2., 10.6.4.6, 10.6.5.8, 10.6.6.1, 10.6.7.3, 10.7.3.5.0.
	Subset-026: 5.10.1.2, 5.10.1.3, 5.10.3.8.1, 5.10.1.4.
<b>STM Requirements Tested</b>	Subset-035: 7.3.2.1(DA->CS), 7.3.2.2.1 (4a), 7.3.4.4, 7.6.3.2., 10.6.7.3
	Subset-026: None
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
<b>Comments and constraints</b>	

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Starting Conditions	Value	Comments
STM_STATE	DA	
ETCS Mode	NL	
ETCS Level	STM	
Train State	Moving	
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	Not relevant	
TIU Sleeping Status	Not Sleeping	
TIU Traction Cut Off Status	Not relevant	
TIU Direction Controller Position Status	Forward	
TIU Cab Status (Desk Status)	Desk A opened	
BIU Status	Not relevant	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	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 ERTMS/ETCS On-board receives the announcement of level transition and displays the announcement to the driver.	BTM	Level transition announcement message: Message 1A: Packet SRS-41 Level Transition Order Message 1B	ETCS	DMI	Level transition is announced to the driver.
2.	The STM request the ETCS On-board DMI function to display buttons, indicators, text message, text message to be ACK, supervision information and sound. Remark: Driver should not acknowledge the STM message. Time: T0	Prof	DMI Connection: Message 2: Packet STM-32: Button Request Packet STM-15: STM state report Message 3 : Packet STM-35: Indicator request Packet STM-15: STM state report Message 4: Packet STM-38: Text message to be ACK. Packet STM-38: Text message Message 5: Packet STM-38: Text message to be ACK. Packet STM-43: National ETCS DMI Packet STM-15: STM state report Message 6: Packet STM-46: Sound command Packet STM-15: STM state report	ETCS	DMI	Buttons, Indicators, Text, Text to be ACK, National ETCS DMI info, Sound are displayed.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
3.	Time: T0+30s The train crosses the level transition location.	BTM	Level transition message: Message 7:Packet SRS-41 Level Transition Order with distance = 0 Message 8: Packet SRS-12 Level 1 MA, Packet SRS-21 Gradient Profile Packet SRS-27 International Static Speed Profile	-	-	-
	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2)	-	-	ETCS	Prof	STM Control Connection: Message 10: Packet STM-14 State Order to STM is send to the STM with the unconditional order to go to CS.
	The STM control function shall report the new ETCS technical mode to all connected STM's. (7.4.1.1.12)	-	-	ETCS	Prof	STM Control Connection: Message 11: Packet STM-5 ETCS State Order is transmitted on Profibus to STM's.
	The ETCS On-board shall delete all STM related objects including buttons, indicators, text message, text message to be ACK, supervision information and sound. (10.5.2.2)	-	-	ETCS	DMI	All STM objects previously displayed should be deleted.
4.	The STM shall report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	Prof	STM Control Connection: Message 9 Packet STM-15 State Report from STM is transmitted to the ETCS On-board STM control function.	ETCS	-	-

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
		Prof	BIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS BIU function	ETCS		
		Prof	TIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS TIU	ETCS		
		Prof	DMI Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS DMI	ETCS		
	The STM Shall close the connection to the ETCS DMI function	Prof	The DMI connection is closed	ETCS	-	-

**Test case for STM:**

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1.	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2)	Prof	STM Control Connection: Message 10: Packet STM-14 State Order to STM is sent to the STM with the unconditional order to go to CS. Message 11: Packet STM-5 ETCS status data is sent including the new ETCS status			
	The STM shall report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	-	-	STM	Prof	STM Control Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board STM control function.
				STM	Prof	BIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board BIU
				STM	Prof	TIU Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board TIU
				STM	Prof	DMI Connection: Message 9: Packet STM-15 State Report from STM is transmitted to the ETCS On-board DMI
	The STM shall close the connection with the DMI. (7.6.3.2)	-	-	STM	Prof	No final disconnection (DMI connection) A disconnect telegram is transmitted from the STM.

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Message 1A: Airgap Packet (Level Transition Announcement)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	1000	Level transition at 1000m
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	500	ACK request window starting at 500m from the border.
N_ITER	5	0	
NID_PACKET	8	255 (1111 1111b)	

Message 1B: Airgap Packet			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	uplink
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	Balise
N_PIG	3	1	2 <sup>nd</sup> Balise
N_TOTAL	3	1	2 Balise in group
M_DUP	2	0	no duplicates
M_MCOUNT	8	255	identical Value for all balises of the group

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Message 1B: Airgap Packet			
VARIABLE	Length	VALUE	COMMENTS
NID_C	10	FINITE VALUE	ID of country / region
NID_BG	14	FINITE VALUE	ID of Balise Group
Q_LINK	1	1	linked
NID_PACKET	8	11111111	Packet 255 – End of information

Message 2: Profibus message (STM=> ETCS): Packet STM-32 Button request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	32	Button Request
L_PACKET	13	COMPUTED	
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
L_CAPTION(1)	5	6	
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	"B"	
X_CAPTION(1,6)	8	"1"	
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	6	
X_CAPTION(2,1)	8	"T"	
X_CAPTION(2,2)	8	"e"	

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X_CAPTION(2,3)	8	"s"	
X_CAPTION(2,4)	8	"t"	
X_CAPTION(2,5)	8	"B"	
X_CAPTION(2,6)	8	"2"	
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	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	"B"	
X_CAPTION(3,6)	8	"3"	
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	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	"B"	
X_CAPTION(4,6)	8	"4"	
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	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	
X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	"B"	
X_CAPTION(5,6)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 3: Profibus message (STM => ETCS DMI function) : Packet STM-35 Indicator request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Request from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	35	Indicator Request
L_PACKET	13	COMPUTED	
NID_INDICATOR(1)	8	1	
NID_INDPOS(1)	4	1	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background
L_CAPTION(1)	5	6	
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	"1"	
NID_STM(2)	8	FINITE VALUE	Should be replaced by STM ID when testing STM.

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			When testing ETCS On-board a valid value should be used.
NID_INDICATOR(2)	8	2	
NID_INDPOS(2)	4	2	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	6	
X_CAPTION(2,1)	8	"T"	
X_CAPTION(2,2)	8	"e"	
X_CAPTION(2,3)	8	"s"	
X_CAPTION(2,4)	8	"t"	
X_CAPTION(2,5)	8	" "	
X_CAPTION(2,6)	8	"2"	
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)	4	3	
NID_ICON(3)	8	3	
M_IND_ATTRIB(3)	10	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	" "	
X_CAPTION(3,6)	8	"3"	
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)	4	4	
NID_ICON(4)	8	4	
M_IND_ATTRIB(4)	10	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	" "	
X_CAPTION(4,6)	8	"4"	
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)	4	5	
NID_ICON(5)	8	5	
M_IND_ATTRIB(5)	10	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	

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X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	" "	
X_CAPTION(5,6)	8	"5"	
NID_STM(6)	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(6)	8	6	
NID_INDPOS(6)	4	6	
NID_ICON(6)	8	6	
M_IND_ATTRIB(6)	10	1000000001b	White text on a black background
L_CAPTION(6)	5	6	
X_CAPTION(6,1)	8	"T"	
X_CAPTION(6,2)	8	"e"	
X_CAPTION(6,3)	8	"s"	
X_CAPTION(6,4)	8	"t"	
X_CAPTION(6,5)	8	" "	
X_CAPTION(6,6)	8	"6"	
NID_STM(7)	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(7)	8	7	
NID_INDPOS(7)	4	7	
NID_ICON(7)	8	7	
M_IND_ATTRIB(7)	10	1000000001b	White text on a black background
L_CAPTION(7)	5	6	
X_CAPTION(7,1)	8	"T"	
X_CAPTION(7,2)	8	"e"	
X_CAPTION(7,3)	8	"s"	
X_CAPTION(7,4)	8	"t"	
X_CAPTION(7,5)	8	" "	
X_CAPTION(7,6)	8	"7"	
NID_STM(8)	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(8)	8	8	
NID_INDPOS(8)	4	8	
NID_ICON(8)	8	8	

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M_IND_ATTRIB(8)	10	1000000001b	White text on a black background
L_CAPTION(8)	5	6	
X_CAPTION(8,1)	8	"T"	
X_CAPTION(8,2)	8	"e"	
X_CAPTION(8,3)	8	"s"	
X_CAPTION(8,4)	8	"t"	
X_CAPTION(8,5)	8	" "	
X_CAPTION(8,6)	8	"g"	
NID_STM(9)	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(9)	8	9	
NID_INDPOS(9)	4	9	
NID_ICON(9)	8	9	
M_IND_ATTRIB(9)	10	1000000001b	White text on a black background
L_CAPTION(9)	5	6	
X_CAPTION(9,1)	8	"T"	
X_CAPTION(9,2)	8	"e"	
X_CAPTION(9,3)	8	"s"	
X_CAPTION(9,4)	8	"t"	
X_CAPTION(9,5)	8	" "	
X_CAPTION(9,6)	8	"g"	
NID_STM(10)	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(10)	8	10	
NID_INDPOS(10)	4	10	
NID_ICON(10)	8	10	
M_IND_ATTRIB(10)	10	1000000001b	White text on a black background
L_CAPTION(10)	5	6	
X_CAPTION(10,1j)	8	"T"	
X_CAPTION(10,2)	8	"e"	
X_CAPTION(10,3)	8	"s"	
X_CAPTION(10,4)	8	"t"	
X_CAPTION(10,5)	8	" "	
X_CAPTION(10,6)	8	"A"	

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Padding bits	COMPUTED	COMPUTED	
Message 4: Profibus message (STM => ETCS DMI function): Packet STM-38: Text message , Packet STM-43: National ETCS DMI			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text Message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	1	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	

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X_TEXT(19)	8	">"	
X_TEXT(20)	8	"1"	
NID_PACKET	8	38	Text Message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	2	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"2"	
NID_PACKET	8	38	Text Message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	3	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	

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X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"3"	
NID_PACKET	8	38	Text Message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	4	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	

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X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"4"	
NID_PACKET	8	38	Text Message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	5	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	

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X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 5: Profibus message (STM => ETCS DMI Function): Packet STM-38: Text message to be ACK, Packet STM-43: National ETCS DMI			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text Message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	6	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	1	Text message to be ACK
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	

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X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"6"	
NID_PACKET	8	43	National ETCS DMI
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
Q_INDICATE	12	0	No inhibition
Q_WARNINGLIMIT	1	1	
Q_INDICATIONLIMIT	1	1	
V_PERMIT	10	160	160 Km/h
V_TARGET	7	16	80 Km/h
V_RELEASE	7	5	25 Km/h
V_INTERV	7	33	165 Km/h
D_TARGET	15	320	3200 m
N_ITER	5	0	
Padding bits	COMPUTED	COMPUTED	

Message 6 Profibus message (STM => ETCS DMI Function) : Packet STM-46: Sound command			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	46	Sound Command
L_PACKET	13	COMPUTED	
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	2	Continuous sound
N_ITER(1)	5	1	
M_FREQ(1,1)	8	4	128Hz
T_SOUND(1,1)	8	100	10 s to be repeated as it is a continuous sound.
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
Padding bits	COMPUTED	COMPUTED	

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Message 7: Airgap Packet (Level Transition Border)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	32767	Level transition now
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	0	ACK request window starting at 0m from the border.
N_ITER	5	0	
NID_PACKET	8	255(11111111b)	

Message 8: Airgap Packet (L1 Movement Authority, Gradient Profile, International Static Speed Profile)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	1	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked

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NID_PACKET	8	12	L1 Movement Authority
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
V_MAIN	7	60	300Km/h
V_LOA	7	0	0Km/h ->EOA
T_LOA	10	1023	No time out: infinite value
N_ITER	5	0	Only one section within the MA.
L_ENDSECTION	15	640	6.4 Km
Q_SECTIONTIMER	1	0	No section timer information
Q_ENDTIMER	1	0	No End section timer information
Q_DANGERPOINT	1	0	No danger point information
Q_OVERLAP	1	0	No overlap information
NID_PACKET	8	21	Gradient Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_GRADIENT	15	0	
Q_GDIR	1	1	
G_A	8	1	
N_ITER	5	0	
NID_PACKET	8	27	International Static Speed Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	1m scale
D_STATIC	15	0	Stating from 0
V_STATIC	7	44	
Q_FRONT	1	1	
N_ITER	5	0	
NID_PACKET	8	255(11111111b)	

Message 9: Profibus message(STM => ETCS STM Control Function): Packet STM-15: State report from STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	4	CS
Padding bits	COMPUTED	COMPUTED	

Message 10 : Profibus message (ETCS STM Control Function => STM): Packet STM-14: State Order to STM.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State Order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	4	Unconditional order CS
Padding bits	COMPUTED	COMPUTED	

Message 11 : Profibus message (ETCS STM Control Function => STM): Packet STM-5 ETCS Status data.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	5	ETCS Status data
L_PACKET	13	COMPUTED	
M_LEVEL	3	2	Level 1
M_MODE	4	0	Full supervision
Padding bits	COMPUTED	COMPUTED	

d Conditions	Value	Comments
STM_STATE	CS	
ETCS Mode	Unchanged	
ETCS Level	1	
Train State	Unchanged	
Train Data	Unchanged	
Additional Data	Unchanged	
National Values	Unchanged	
STM Control Function Connection	Unchanged	
DMI Connection	Not Established	
Odometry Data	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	

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BIU Service Brake Status		Unchanged	
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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	3.0.z	
Track Adhesion		Unchanged	

**TEST CASE 4b.0.0.0.0.2.0**

TEST CASE HEADER	
<b>Test case Identification</b>	Functional identity Level transition STM to ETCS Transition from STM while the ETCS is in NL and the STM reports CS in due time.
	Test the data exchange between ERTMS/ETCS On-board, STM and driver during the level transition from STM level and ERTMS level 1, 2 or 3 while the ERTMS/ETCS on-board system is in mode NL. and the STM does not follow the transition order in due time.
<b>ETCS Requirements Tested</b>	Subset-035: 7.4.1.1.12, 7.4.1.2.2 (DA->CS), 7.4.1.2.3 (B4a, C16), 7.4.1.2.4.2, 7.4.1.3.6, 10.5.2.2., 10.6.4.6, 10.6.5.8, 10.6.6.1, 10.6.7.3, 10.7.3.5.0.
	Subset-026: 5.10.1.2, 5.10.1.3, 5.10.3.8.1, 5.10.1.4
<b>STM Requirements Tested</b>	Subset-035: None.
	Subset-026: None
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14 STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
<b>Comments and constraints</b>	

Starting Conditions	Value	Comments
STM_STATE	DA	
ETCS Mode	NL	
ETCS Level	STM	
Train State	Moving	
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	Not relevant	
TIU Sleeping Status	Not Sleeping	
TIU Traction Cut Off Status	Not relevant	
TIU Direction Controller Position Status	Forward	
TIU Cab Status (Desk Status)	Desk A opened	
BIU Status	Not relevant	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	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 ERTMS/ETCS On-board receive the announcement of level transition and display the announcement to the driver.	BTM	Level transition announcement message: Message 1A:Packet SRS-41 Level Transition Order Message 1B	ETCS	DMI	Level transition is announced to the driver.
2.	The STM requests the ETCS On-board DMI function to display buttons, indicators, text message, text message to be ACK, supervision information and sound. Remark: Driver should not acknowledge the STM message. TIME: T0	Prof	DMI Connection: Message 2: Packet STM-15: STM state report Packet STM-32: Button Request Message 3: Packet STM-15: STM state report Packet STM-35: Indicator request Message 4: Packet STM-15: STM state report Packet STM-38: Text message Message 5: Packet STM-15: STM state report Packet STM-38: Text message to be ACK Packet STM-43: National ETCS DMI Message 6: Packet STM-15: STM state report Packet STM-46: Sound command	ETCS	DMI	Buttons, Indicators, Text, Text to be ACK, National ETCS DMI info, Sound are displayed.

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
3.	TIME: T0+30s The train crosses the level transition location.	BTM	Level transition message: Message 7:Packet SRS-41 level transition order with distance = 0 Message 8:Packet SRS-12 Level 1 MA, , Packet SRS-21 Gradient Profile Packet SRS-27 International Static Speed Profile	-	-	-
	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2)	-	-	ETCS	Prof	STM Control Connection: Message 9:Packet STM-14 State order to STM is send to the STM with the unconditional order to go to CS.
	The STM control function shall report the new ETCS technical mode to all connected STM's. (7.4.1.1.12) Time: T0	-	-	ETCS	Prof	STM Control Connection: Message 10:Packet STM-5 ETCS status data is transmitted on Profibus to STM's.
	The ETCS On-board shall delete all STM related objects including buttons, indicators, text message, text message to be ACK, supervision information and sound. (10.5.2.2)	-	-	ETCS	DMI	All STM objects previously displayed should be deleted.
4.	The STM shall not report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4) Time: T0+10s	-	-	ETCS	Prof	ETCS On-board shall put the STM into failure state. STM Control Connection: Message 11: Packet STM-14 State order to STM is send to the STM with the order to go to FA
	The ETCS will send a failure message to the DMI "connection to STM xxx is lost"	-	-	ETCS	DMI	STM failure DMI message is displayed

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**Test case for STM:**

Not applicable. Degraded mode is not tested.

Message 1A: Airgap Packet (Level Transition Announcement)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	1000	Level transition at 1000m
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	500	ACK request window starting at 500m from the border.
N_ITER	5	0	
NID_PACKET	8	255 (1111 1111b)	

Message 1B: Airgap Packet			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	uplink
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	Balise
N_PIG	3	1	2 <sup>nd</sup> Balise
N_TOTAL	3	1	2 Balise in group
M_DUP	2	0	no duplicates
M_MCOUNT	8	255	identical Value for all balises of the group
NID_C	10	FINITE VALUE	ID of country / region

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Message 1B: Airgap Packet			
VARIABLE	Length	VALUE	COMMENTS
NID_BG	14	FINITE VALUE	ID of Balise Group
Q_LINK	1	1	linked
NID_PACKET	8	11111111	Packet 255 – End of information

Message 2: Profibus message (STM=> ETCS) : Packet STM-32 Button Request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	32	Button Request
L_PACKET	13	COMPUTED	
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
L_CAPTION(1)	5	6	
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	"B"	
X_CAPTION(1,6)	8	"1"	
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	6	
X_CAPTION(2,1)	8	"T"	
X_CAPTION(2,2)	8	"e"	

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X_CAPTION(2,3)	8	"S"	
X_CAPTION(2,4)	8	"t"	
X_CAPTION(2,5)	8	"B"	
X_CAPTION(2,6)	8	"2"	
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	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	"B"	
X_CAPTION(3,6)	8	"3"	
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	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	"B"	
X_CAPTION(4,6)	8	"4"	
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	

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NID_BUTPOS(5)	4	5	
NID_ICON(5)	8	5	
M_BUT_ATTRIB(5)	10	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	
X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	"B"	
X_CAPTION(5,6)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 3: Profibus message (STM=> ETCS DMI function) : Packet STM-35: Indicator request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	35	Indicator Request
L_PACKET	13	COMPUTED	
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)	4	1	
NID_ICON(1)	8	1	
M_IND_ATTRIB(1)	10	1000000001b	White text on a black background
L_CAPTION(1)	5	6	
X_CAPTION(1,1)	8	"T"	
X_CAPTION(1,2)	8	"e"	
X_CAPTION(1,3)	8	"s"	
X_CAPTION(1,4)	8	"t"	

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X_CAPTION(1,5)	8	“ “	
X_CAPTION(1,6)	8	“1”	
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)	4	2	
NID_ICON(2)	8	2	
M_IND_ATTRIB(2)	10	1000000001b	White text on a black background
L_CAPTION(2)	5	6	
X_CAPTION(2,1)	8	“T”	
X_CAPTION(2,2)	8	“e”	
X_CAPTION(2,3)	8	“s”	
X_CAPTION(2,4)	8	“t”	
X_CAPTION(2,5)	8	“ “	
X_CAPTION(2,6)	8	“2”	
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)	4	3	
NID_ICON(3)	8	3	
M_IND_ATTRIB(3)	10	1000000001b	White text on a black background
L_CAPTION(3)	5	6	
X_CAPTION(3,1)	8	"T"	
X_CAPTION(3,2)	8	"e"	
X_CAPTION(3,3)	8	"s"	
X_CAPTION(3,4)	8	"t"	
X_CAPTION(3,5)	8	" "	
X_CAPTION(3,6)	8	"3"	
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)	4	4	
NID_ICON(4)	8	4	
M_IND_ATTRIB(4)	10	1000000001b	White text on a black background
L_CAPTION(4)	5	6	
X_CAPTION(4,1)	8	"T"	
X_CAPTION(4,2)	8	"e"	
X_CAPTION(4,3)	8	"s"	
X_CAPTION(4,4)	8	"t"	
X_CAPTION(4,5)	8	" "	
X_CAPTION(4,6)	8	"4"	
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)	4	5	
NID_ICON(5)	8	5	
M_IND_ATTRIB(5)	10	1000000001b	White text on a black background
L_CAPTION(5)	5	6	
X_CAPTION(5,1)	8	"T"	
X_CAPTION(5,2)	8	"e"	
X_CAPTION(5,3)	8	"s"	

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X_CAPTION(5,4)	8	"t"	
X_CAPTION(5,5)	8	" "	
X_CAPTION(5,6)	8	"5"	
NID_STM(6)	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(6)	8	6	
NID_INDPOS(6)	4	6	
NID_ICON(6)	8	6	
M_IND_ATTRIB(6)	10	1000000001b	White text on a black background
L_CAPTION(6)	5	6	
X_CAPTION(6,1)	8	"T"	
X_CAPTION(6,2)	8	"e"	
X_CAPTION(6,3)	8	"s"	
X_CAPTION(6,4)	8	"t"	
X_CAPTION(6,5)	8	" "	
X_CAPTION(6,6)	8	"6"	
NID_STM(7)	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(7)	8	7	
NID_INDPOS(7)	4	7	
NID_ICON(7)	8	7	
M_IND_ATTRIB(7)	10	1000000001b	White text on a black background
L_CAPTION(7)	5	6	
X_CAPTION(7,1)	8	"T"	
X_CAPTION(7,2)	8	"e"	
X_CAPTION(7,3)	8	"s"	
X_CAPTION(7,4)	8	"t"	
X_CAPTION(7,5)	8	" "	
X_CAPTION(7,6)	8	"7"	
NID_STM(8)	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(8)	8	8	
NID_INDPOS(8)	4	8	
NID_ICON(8)	8	8	

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M_IND_ATTRIB(8)	10	1000000001b	White text on a black background
L_CAPTION(8)	5	6	
X_CAPTION(8,1)	8	"T"	
X_CAPTION(8,2)	8	"e"	
X_CAPTION(8,3)	8	"s"	
X_CAPTION(8,4)	8	"t"	
X_CAPTION(8,5)	8	" "	
X_CAPTION(8,6)	8	"g"	
NID_STM(9)	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(9)	8	9	
NID_INDPOS(9)	4	9	
NID_ICON(9)	8	9	
M_IND_ATTRIB(9)	10	1000000001b	White text on a black background
L_CAPTION(9)	5	6	
X_CAPTION(9,1)	8	"T"	
X_CAPTION(9,2)	8	"e"	
X_CAPTION(9,3)	8	"s"	
X_CAPTION(9,4)	8	"t"	
X_CAPTION(9,5)	8	" "	
X_CAPTION(9,6)	8	"g"	
NID_STM(10)	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(10)	8	10	
NID_INDPOS(10)	4	10	
NID_ICON(10)	8	10	
M_IND_ATTRIB(10)	10	1000000001b	White text on a black background
L_CAPTION(10)	5	6	
X_CAPTION(10,1j)	8	"T"	
X_CAPTION(10,2)	8	"e"	
X_CAPTION(10,3)	8	"s"	
X_CAPTION(10,4)	8	"t"	
X_CAPTION(10,5)	8	" "	
X_CAPTION(10,6)	8	"A"	

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Padding bits	COMPUTED	COMPUTED	
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Message 4: Profibus message (STM=> ETCS DMI function): Packet STM-38: Text message			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	1	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	

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X_TEXT(19)	8	">"	
X_TEXT(20)	8	"1"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	2	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"2"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	3	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	

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X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"3"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	4	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	

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X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"4"	
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	5	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	0	
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	

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X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"5"	
Padding bits	COMPUTED	COMPUTED	

Message 5: Profibus message (STM=> ETCS DMI function): Packet STM-38: Text message to be ACK			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
NID_PACKET	8	38	Text message
L_PACKET	13	COMPUTED	
NID_XMESSAGE	8	6	
M_XATTRIBUTE	10	1000000001b	White text on a black background
Q_ACK	1	1	Text message to be ACK
L_TEXT	8	20	
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"E"	
X_TEXT(3)	8	"S"	
X_TEXT(4)	8	"T"	
X_TEXT(5)	8	"_"	
X_TEXT(6)	8	"T"	
X_TEXT(7)	8	"E"	
X_TEXT(8)	8	"X"	
X_TEXT(9)	8	"T"	
X_TEXT(10)	8	"_"	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	

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X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	"_"	
X_TEXT(19)	8	">"	
X_TEXT(20)	8	"6"	
NID_PACKET	8	43	National ETCS DMI
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
Q_INDICATE	12	0	No inhibition
Q_WARNINGLIMIT	1	1	
Q_INDICATIONLIMIT	1	1	
V_PERMIT	10	160	160 Km/h
V_TARGET	7	16	80 Km/h
V_RELEASE	7	5	25 Km/h
V_INTERV	7	33	165 Km/h
D_TARGET	15	320	3200 m
N_ITER	5	0	
Padding bits	COMPUTED	COMPUTED	

Message 6: Profibus message (STM=> ETCS DMI function) : Packet STM-46 Sound Command			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	46	Sound Command
L_PACKET	13	COMPUTED	
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	2	Continuous sound
N_ITER(1)	5	1	
M_FREQ(1,1)	8	4	128Hz
T_SOUND(1,1)	8	100	10 s to be repeated as it is a continuous sound.
NID_PACKET	8	15	State Report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	7	The State is DA
Padding bits	COMPUTED	COMPUTED	

Message 7: Airgap Packet (Level Transition Border)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	32767	Level transition now
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	0	ACK request window starting at 0m from the border.
N_ITER	5	0	
NID_PACKET	8	255 (11111111b)	

Message 8: Airgap Packet (L1 Movement Authority, Gradient Profile, International Static Speed Profile)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	1	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked

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NID_PACKET	8	12	L1 Movement Authority
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
V_MAIN	7	60	300Km/h
V_LOA	7	0	0Km/h ->EOA
T_LOA	10	1023	No time out: infinite value
N_ITER	5	0	Only one section within the MA.
L_ENDSECTION	15	640	6.4 Km
Q_SECTIONTIMER	1	0	No section timer information
Q_ENDTIMER	1	0	No End section timer information
Q_DANGERPOINT	1	0	No danger point information
Q_OVERLAP	1	0	No overlap information
NID_PACKET	8	21	Gradient Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_GRADIENT	15	0	
Q_GDIR	1	1	
G_A	8	1	
N_ITER	5	0	
NID_PACKET	8	27	International static speed profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	1m scale
D_STATIC	15	0	Stating from 0
V_STATIC	7	44	
Q_FRONT	1	1	
N_ITER	5	0	
NID_PACKET	8	255(11111111b)	

Message 9 : Profibus message (ETCS STM control function => STM): Packet STM-14: State Order to STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	4	Unconditional order CS
Padding bits	COMPUTED	COMPUTED	

Message 10 : Profibus message (ETCS STM Control Function => STM): Packet STM-5 ETCS Status data.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	5	ETCS Status data
L_PACKET	13	COMPUTED	
M_LEVEL	3	2	Level 1
M_MODE	4	0	Full supervision
Padding bits	COMPUTED	COMPUTED	

Message 11: Profibus message (ETCS STM Control Function => STM) : Packet STM-14: State order to STM and Packet STM-5 ETCS Status data			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State Order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	8	FA
Padding bits	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM_STATE	FA	
ETCS Mode	NL	
ETCS Level	1	
Train State	Unchanged	
Train Data	Unchanged	
Additional Data	Unchanged	
National Values	Unchanged	
STM Control Function Connection	Not Established	
DMI Connection	Not Established	
Odometry Data	Unchanged	
Reference Time Data	Unchanged	
TIU Connection	Not Established	
BIU Connection	Not Established	
JRU Connection	Not Established	
Other connections	Not Established	
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	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	3.0.z	
Track Adhesion		Unchanged	



**TEST CASE4c.0.0.0.0.1.0**

TEST CASE HEADER	
<b>Test case Identification</b>	Functional identity Level transition STM to ETCS While the ETCS is in SL and the STM reports CS in due time.
	Test the data exchange between ERTMS/ETCS On-board, STM and driver during the level transition from STM level to ERTMS level 1,2 or 3 while the ERTMS/ETCS trainborne system is in mode SL.
<b>ETCS Requirements Tested</b>	Subset-035: 7.4.1.1.12, 7.4.1.2.2 (DA->CS), 7.4.1.2.3 (B4a), 7.4.1.2.4.2, 7.6.3.2, 10.5.2.2.
	Subset-026: 5.10.1.2, 5.10.1.3, 5.10.3.8.1, 5.10.1.4.
<b>STM Requirements Tested</b>	Subset-035: 7.3.2.1(DA->CS), 7.3.2.2.1 (4a), 7.3.4.4, 7.6.3.2.
	Subset-026: None
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15.
<b>Comments and constraints</b>	

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Starting Conditions	Value	Comments
STM_STATE	DA	
ETCS Mode	SL	
ETCS Level	STM	
Train State	Moving	
Train Data	Valid	
Additional Data	Valid	
National Values	Valid	
STM Control Function Connection	Established	
DMI Connection	Not 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	Not relevant	
TIU Sleeping Status	Sleeping	
TIU Traction Cut Off Status	Not relevant	
TIU Direction Controller Position Status	Forward	
TIU Cab Status (Desk Status)	Desk A opened	
BIU Status	Not relevant	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	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 train crosses the level transition location.	BTM	Level transition message: Message 1: Packet SRS-41 with distance = 0 Message 2: Packet SRS-12 Level 1 MA, Packet SRS-21 Gradient Profile Packet SRS-27 International Static Speed Profile	-	-	-
	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2)	-	-	ETCS	Prof	STM Control Connection: Message 4: Packet STM-14 State order to STM is send to the STM with the unconditional order to go to CS.
	The STM control function shall report the new ETCS technical mode to all connected STM's. (7.4.1.1.12)	-	-	ETCS	Prof	STM Control Connection: Message 5: Packet STM-5 ETCS state data is transmitted on Profibus to STM's.
2.	The STM shall report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	Prof	STM Control Connection: Message 3: Packet STM-15 State report from STM is transmitted to the ETCS On-board STM control function.	ETCS		
		Prof	BIU Connection: Message 3: Packet STM-15 State Report from STM is transmitted to the ETCS BIU function	ETCS		

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
		Prof	TIU Connection: Message 3: Packet STM-15 State Report from STM is transmitted to the ETCS TIU	ETCS		

**Test case for STM:**

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1.	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2)	Prof	STM Control Connection: Message 4: Packet STM-14 State order to STM is send to the STM with the unconditional order to go to CS.	-	-	-
		Prof	STM Control Connection: Message 5: Packet STM-5 ETCS Status Data	-	-	-
	The STM shall report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	-	-	STM	Prof	STM Control Connection: Message 3: Packet STM-15 State report from STM is transmitted to the ETCS On-board STM control function.
				STM	Prof	BIU Connection: Message 3: Packet STM-15 State Report from STM is transmitted to the ETCS On-board BIU
				STM	Prof	TIU Connection: Message 3: Packet STM-15 State Report from STM is transmitted to the ETCS On-board TIU

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Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
	The STM shall maintain the connection to the STM control function. (7.6.3.2)	-	-	STM	Prof	Idle message are still exchanged from the STM to the STM control function.

Message 1: Airgap Packet (Level Transition Border)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level transition order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	32767	Level transition now
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	0	ACK request window starting at 0m from the border.
N_ITER	5	0	
NID_PACKET	8	255 (11111111b)	

Message 2: Airgap Packet (L1 Movement authority, Gradient Profile, International Static Speed Profile)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	1	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	

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NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	12	L1 Movement Authority
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
V_MAIN	7	60	300Km/h
V_LOA	7	0	0Km/h ->EOA
T_LOA	10	1023	No time out: infinite value
N_ITER	5	0	Only one section within the MA.
L_ENDSECTION	15	640	6.4 Km
Q_SECTIONTIMER	1	0	No section timer information
Q_ENDTIMER	1	0	No End section timer information
Q_DANGERPOINT	1	0	No danger point information
Q_OVERLAP	1	0	No overlap information
NID_PACKET	8	21	Gradient Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_GRADIENT	15	0	
Q_GDIR	1	1	
G_A	8	1	
N_ITER	5	0	
NID_PACKET	8	27	International static speed profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	1m scale
D_STATIC	15	0	Stating from 0
V_STATIC	7	44	
Q_FRONT	1	1	
N_ITER	5	0	
NID_PACKET	8	255 (11111111b)	



Message 3: Packet STM-15 (STM => ETCS STM control Function): State report from STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	4	CS
Padding bits	COMPUTED	COMPUTED	

Message 4 : Profibus message (ETCS STM Control Function => STM): Packet STM-14 State Order to STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	4	Unconditional order CS
Padding bits	COMPUTED	COMPUTED	

Message 5 : Profibus message (ETCS STM Control Function => STM): Packet STM-5 ETCS Status data			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	5	ETCS status data
L_PACKET	13	COMPUTED	
M_LEVEL	3	2	Level 1
M_MODE	4	0	Full supervision
Padding bits	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM_STATE	CS	
ETCS Mode	SL	
ETCS Level	1	
Train State	Unchanged	
Train Data	Unchanged	
Additional Data	Unchanged	
National Values	Unchanged	
STM Control Function Connection	Unchanged	
DMI Connection	Not Established	
Odometry Data	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	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	3.0.z	
Track Adhesion		Unchanged	

**TEST CASE 4c.0.0.0.0.0.2.0**

TEST CASE HEADER	
<b>Test case Identification</b>	Functional identity Level transition STM to ETCS While the ETCS is in SL and the STM reports CS in due time.
	Test the data exchange between ERTMS/ETCS On-board, STM and driver during the level transition from STM level to ERTMS level 1,2 or 3 while the ERTMS/ETCS trainborne system is in mode SL. and the STM does not follow the transition order in due time.
<b>ETCS Requirements Tested</b>	Subset-035: 7.4.1.1.12, 7.4.1.2.2 (DA->CS), 7.4.1.2.3 (B4a, C16), 7.4.1.2.4.2, 7.4.1.3.6, 10.5.2.2.
	Subset-026: 5.10.1.2, 5.10.1.3, 5.10.3.8.1, 5.10.1.4.
<b>STM Requirements Tested</b>	Subset-035: None
	Subset-026: None
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14,STM-15.
<b>Comments and constraints</b>	

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Starting Conditions	Value	Comments
STM_STATE	DA	
ETCS Mode	SL	
ETCS Level	STM	
Train State	Moving	
Train Data	Valid	
Additional Data	Valid	
National Values	Valid	
STM Control Function Connection	Established	
DMI Connection	Not 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	Not relevant	
TIU Sleeping Status	Sleeping	
TIU Traction Cut Off Status	Not relevant	
TIU Direction Controller Position Status	Forward	
TIU Cab Status (Desk Status)	Desk A opened	
BIU Status	Not relevant	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	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 train crosses the level transition location.	BTM	Level transition message: Message 1 :Packet SRS-41 Level Transition Order with distance = 0 Message 2: Packet SRS-12 Level 1 MA, Packet SRS-21 Gradient Profile Packet SRS-27 International Static Speed Profile	-	-	-
	The ETCS On-board order the active STM to go in CS state.(7.4.1.2.2, 7.4.1.2.3, 7.4.1.2.4.2) Time: T0	-	-	ETCS	Prof	STM Control Connection: Message 3 :Packet STM-14 State Order to STM is sent to the STM with the unconditional order to go to CS.
	The STM control function shall report the new ETCS technical mode to all connected STM's. (7.4.1.1.12)	-	-	ETCS	Prof	STM Control Connection: Message 4:Packet STM-5 ETCS State Data are transmitted on Profibus to STMs.
2.	Time: T0+10s The STM shall not report its new state CS to the STM control function in due time (10s) and to all connected ETCS functions. (7.3.2.1, 7.3.2.2.1, 7.3.4.4)	-	-	ETCS	Prof	ETCS On-board shall put the STM into failure state. STM Control Connection: Message 5: Packet STM-14 State Order to STM is send to the STM with the order to go to FA

**Test case for STM:**

Not applicable. Degraded mode is not tested.

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Message 1: Airgap Packet (Level Transition Border)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	0	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked
NID_PACKET	8	41	Level transition order
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_LEVELTR	15	32767	Level transition now
M_LEVELTR	3	2	For level 1
L_ACKLEVELTR	15	0	ACK request window starting at 0m from the border.
N_ITER	5	0	
NID_PACKET	8	255(11111111b)	

Message 2 Airgap Packet (L1 Movement Authority, Gradient Profile, International Static Speed Profile)			
VARIABLE	Length	VALUE	COMMENTS
Q_UPDOWN	1	1	
M_VERSION	7	FINITE VALUE	SRS version
Q_MEDIA	1	0	
N_PIG	3	1	
N_TOTAL	3	1	
M_DUP	2	00b	
M_MCOUNT	8	255	
NID_C	10	FINITE VALUE	
NID_BG	14	FINITE VALUE	First BG
Q_LINK	1	1	linked

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NID_PACKET	8	12	L1 Movement Authority
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	2	10m scale
V_MAIN	7	60	300Km/h
V_LOA	7	0	0Km/h ->EOA
T_LOA	10	1023	No time out: infinite value
N_ITER	5	0	Only one section within the MA.
L_ENDSECTION	15	640	6.4 Km
Q_SECTIONTIMER	1	0	No section timer information
Q_ENDTIMER	1	0	No End section timer information
Q_DANGERPOINT	1	0	No danger point information
Q_OVERLAP	1	0	No overlap information
NID_PACKET	8	21	Gradient profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	
D_GRADIENT	15	0	
Q_GDIR	1	1	
G_A	8	1	
N_ITER	5	0	
NID_PACKET	8	27	International Static Speed Profile
Q_DIR	2	1	
L_PACKET	13	COMPUTED	
Q_SCALE	2	1	1m scale
D_STATIC	15	0	Starting from 0
V_STATIC	7	44	
Q_FRONT	1	1	
N_ITER	5	0	
NID_PACKET	8	255(11111111b)	

Message 3 : Profibus message (ETCS STM Control Function => STM) : Packet STM-14 State order to STM and Packet STM-5 ETCS Status data.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	4	Unconditional order CS
Padding bits	COMPUTED	COMPUTED	

Message 4 : Profibus message (ETCS STM Control Function => STM): Packet STM-5 ETCS Status data			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	5	ETCS status data
L_PACKET	13	COMPUTED	
M_LEVEL	3	2	Level 1
Padding bits	COMPUTED	COMPUTED	

Message 5 : Profibus message (ETCS STM Control Function => STM) : Packet STM-14 State order to STM and Packet STM-5 ETCS Status data.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM. When testing ETCS On-board a valid value should be used.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	8	FA
Padding bits	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM_STATE	FA	
ETCS Mode	SL	
ETCS Level	1	
Train State	Unchanged	
Train Data	Unchanged	
Additional Data	Unchanged	
National Values	Unchanged	
STM Control Function Connection	Not Established	
DMI Connection	Not Established	
Odometry Data	Unchanged	
Reference Time Data	Unchanged	
TIU Connection	Not Established	
BIU Connection	Not Established	
JRU Connection	Not Established	
Other connections	Not Established	
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	

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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-056	3.0.z	
	Subset-057	3.0.z	
	Subset-058	3.0.z	
Track Adhesion		Unchanged	