

ERTMS/ETCS – Class 1**FFFIS STM Test cases of Functional identity 009****STM in FA****Total: 12 Test cases**

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ALCATEL		
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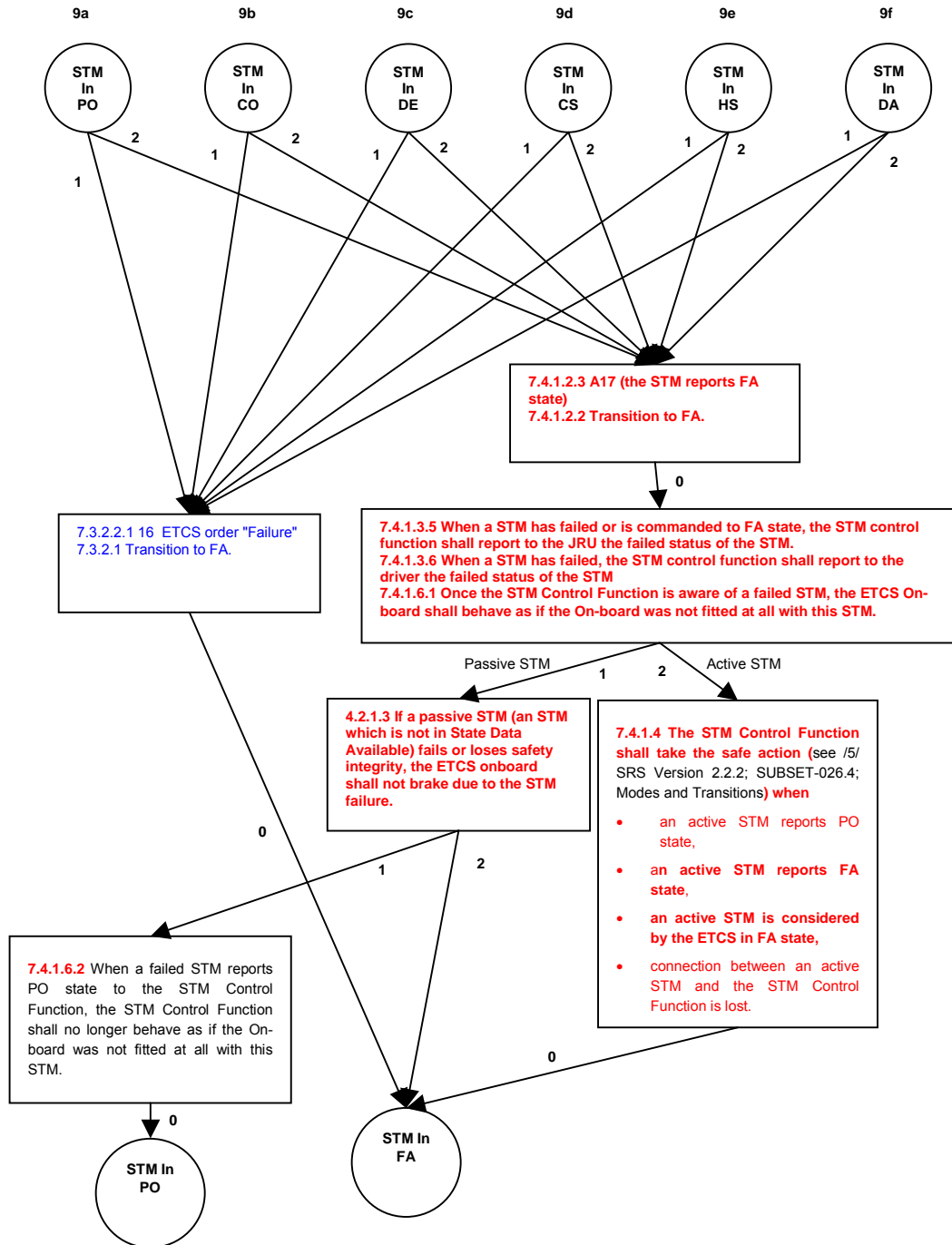
Modification History

Issue Number Date	Section Number	Modification / Description	Author
0.0.1 16/12/2004	All	First version/review issued after WG meeting on the 15/12/2004 based on individual test diagram	Ansaldo FB
0.0.2 21/01/2005		Update according to Siemens comments, Add packet name for each packet number.	F. Bernaudin (Ansaldo)
0.0.3 26/01/2005		Update in Les Ulis meeting for all test case starting by 9b.2.0.1.0 to cover requirement 7.4.1.6.2.	F. Bernaudin (Ansaldo)
0.1.0 27/01/2005		Editorial changes for delivery	F. Bernaudin (Ansaldo)
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TEST DIAGRAM



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TEST CASE

Test case 9a.1.0

TEST CASE HEADER	
Test case Identification	FA
	ETCS order FA to the STM in PO state and the STM report the FA state to the ETCS
ETCS Requirements Tested	Subset-035 :
	Subset-026 :
STM Requirements Tested	Subset-035 : 7.3.2.1 (to FA); 7.3.2.2.1 (16)
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-14, STM-15
Comments and constraints	

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

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

Test Case for ETCS On-Board: Not applicable

Test Case for STM

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

Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14 - State order to STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	STM State order FA
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 - State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

Test case 9a.2.0.1.2

TEST CASE HEADER	
Test case Identification	FA
	An STM in PO state reports FA state to the ETCS, then ETCS report the FA state to the driver and JRU and ETCS does not brake as the STM is passive.
ETCS Requirements Tested	Subset-035 : 7.4.1.2.3 (A17); 7.4.1.2.2 (to FA); 7.4.1.3.5; 7.4.1.3.6; 7.4.1.6.1; 4.2.1.3
	Subset-026 :
STM Requirements Tested	Subset-035:
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15
Comments and constraints	

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

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

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM report FA state	Prof	STM Control Connection: Message-1 (Packet STM_15 - State report from STM)	ETCS	JRU	The ETCS stores the FA state in the JRU
				ETCS	BIU	The ETCS does not Brake

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 - State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

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End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

Test case 9b.1.0

TEST CASE HEADER	
Test case Identification	FA
	ETCS order FA to the STM in CO state and the STM report the FA state to the ETCS
ETCS Requirements Tested	Subset-035 :
	Subset-026 :
STM Requirements Tested	Subset-035 : 7.3.2.1 (to FA); 7.3.2.2.1 (16)
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-14, STM-15
Comments and constraints	

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

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

Test Case for ETCS On-Board: Not applicable

Test Case for STM

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS Order "Failure"	Prof	STM Control Connection: Message-1---(Packet STM_14 State order to STM)	STM		
2	The STM report FA state			STM	Prof	STM Control Connection: Message 2 – (Packet: STM_15 - State report from STM)

Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14 - State order to STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	STM State order FA
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 - State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	

Test case 9b.2.0.1.1.0

TEST CASE HEADER	
Test case Identification	FA
	An STM in CO state reports FA state to the ETCS, then ETCS report the FA state to the driver and JRU and ETCS does not brake as the STM is passive.
ETCS Requirements Tested	Subset-035 : 7.4.1.2.3 (A17); 7.4.1.2.2 (to FA); 7.4.1.3.5; 7.4.1.3.6; 7.4.1.6.1; 4.2.1.3
	Subset-026 :
STM Requirements Tested	Subset-035:
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15
Comments and constraints	

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

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

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM (1) report FA state	Prof	STM Control Connection: Message-1 (Packet STM_15 – State report from STM)	ETCS	JRU	The ETCS stores the FA state in the JRU
						The ETCS indicates the FA state to the DMI.
				ETCS	BIU	The ETCS does not Brake
2	The STM(1) close the STM Control connection	Prof	Close STM Control Connection			
3	Driver request a new level	DMI	Driver request a new level STM.	ETCS	DMI	The connected STMs are displayed to the driver. The failed one is not included in this list.
4		DMI	Driver selects a connected STM(2).	ETCS	DMI	The list is removed.
5	The STM(1) open the STM Control Connection	Prof	Open STM Control Connection			
6	Driver request a new level	DMI	Driver request a new level STM.	ETCS	DMI	The connected STMs are displayed to the driver. The previously failed one is included in this list.
7		DMI	Driver selects a connected STM(1).	ETCS	DMI	The list is removed.

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM(1) STATE	PO	STM(2) in CS
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry Connection	unchanged	

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

Test case 9c.1.0

TEST CASE HEADER	
Test case Identification	FA
	ETCS order FA to the STM in DE state and the STM report the FA state to the ETCS
ETCS Requirements Tested	Subset-035 :
	Subset-026 :
STM Requirements Tested	Subset-035 : 7.3.2.1 (to FA); 7.3.2.2.1 (16)
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-14, STM-15
Comments and constraints	

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

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

Test Case for ETCS On-Board: Not applicable

Test Case for STM

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS Order "Failure"	Prof	STM Control Connection: Message-1---(Packet STM_14 State order to STM)	STM		
2	The STM report FA state			STM	Prof	STM Control Connection: Message 2 – (Packet: STM_15 – State report from STM)

Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14 – State Order to STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	STM State order FA
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	

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

Test case 9c.2.0.1.2

TEST CASE HEADER	
Test case Identification	FA
	AN STM in DE state reports FA state to the ETCS, then ETCS report the FA state to the driver and JRU and ETCS does not brake as the STM is passive.
ETCS Requirements Tested	Subset-035 : 7.4.1.2.3 (A17); 7.4.1.2.2 (to FA); 7.4.1.3.5; 7.4.1.3.6; 7.4.1.6.1; 4.2.1.3
	Subset-026 :
STM Requirements Tested	Subset-035:
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15
Comments and constraints	

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

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

Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM report FA state	Prof	STM Control Connection: Message-1 (Packet STM_15 – State report from STM)	ETCS	JRU	The ETCS stores the FA state in the JRU
				ETCS	DMI	The ETCS indicates the FA state to the DMI.
				ETCS	BIU	The ETCS does not Brake

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	

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

Test case 9d.1.0

TEST CASE HEADER	
Test case Identification	FA
	ETCS order FA to the STM in CS state and the STM report the FA state to the ETCS
ETCS Requirements Tested	Subset-035 :
	Subset-026 :
STM Requirements Tested	Subset-035 : 7.3.2.1 (to FA); 7.3.2.2.1 (16)
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-14, STM-15
Comments and constraints	

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

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

Test Case for ETCS On-Board: Not applicable

Test Case for STM

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS Order "Failure"	Prof	STM Control Connection: Message-1---(Packet STM_14 – State order to STM)	STM		
2	The STM report FA state			STM	Prof	STM Control Connection: Message 2 – (Packet: STM_15- State report from STM)

Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14 – State order to STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	STM State order FA
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	

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

Test case 9d.2.0.1.2

TEST CASE HEADER	
Test case Identification	FA
	An STM in state CS reports FA state to the ETCS, then ETCS report the FA state to the driver and JRU and ETCS does not brake as the STM is passive.
ETCS Requirements Tested	Subset-035 : 7.4.1.2.3 (A17); 7.4.1.2.2 (to FA); 7.4.1.3.5; 7.4.1.3.6; 7.4.1.6.1; 4.2.1.3
	Subset-026 :
STM Requirements Tested	Subset-035:
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15
Comments and constraints	

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

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

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM report FA state	Prof	STM Control Connection: Message-1 (Packet STM_15 – State report from STM)	ETCS	JRU	The ETCS stores the FA state in the JRU
				ETCS	DMI	The ETCS indicates the FA state to the DMI.
				ETCS	BIU	The ETCS does not Brake

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

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

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

Test case 9e.1.0

TEST CASE HEADER	
Test case Identification	FA
	ETCS order FA to the STM in HS state and the STM report the FA state to the ETCS
ETCS Requirements Tested	Subset-035 :
	Subset-026 :
STM Requirements Tested	Subset-035 : 7.3.2.1 (to FA); 7.3.2.2.1 (16)
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-14, STM-15
Comments and constraints	

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

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

Test Case for ETCS On-Board: Not applicable

Test Case for STM

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS Order "Failure"	Prof	STM Control Connection: Message-1---(Packet STM_14 – State order to STM)	STM		
2	The STM report FA state			STM	Prof	STM Control Connection: Message 2 – (Packet: STM_15 – State report from STM)

Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14 – State order to STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	STM State order FA
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	

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

Test case 9e.2.0.1.2

TEST CASE HEADER	
Test case Identification	FA
	An STM in HS state reports FA state to the ETCS, then ETCS report the FA state to the driver and JRU and ETCS does not brake as the STM is passive.
ETCS Requirements Tested	Subset-035 : 7.4.1.2.3 (A17); 7.4.1.2.2 (to FA); 7.4.1.3.5; 7.4.1.3.6; 7.4.1.6.1; 4.2.1.3
	Subset-026 :
STM Requirements Tested	Subset-035:
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15
Comments and constraints	

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

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

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM report FA state	Prof	STM Control Connection: Message-1 (Packet STM_15 – State report from STM)	ETCS	JRU	The ETCS stores the FA state in the JRU
				ETCS	DMI	The ETCS indicates the FA state to the DMI.
				ETCS	BIU	The ETCS does not Brake

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	

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

Test case 9f.1.0

TEST CASE HEADER	
Test case Identification	FA
	ETCS order FA to the STM in DA state and the STM report the FA state to the ETCS
ETCS Requirements Tested	Subset-035 :
	Subset-026 :
STM Requirements Tested	Subset-035 : 7.3.2.1 (to FA); 7.3.2.2.1 (16)
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-14, STM-15
Comments and constraints	

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

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

Test Case for ETCS On-Board: Not applicable

Test Case for STM

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The ETCS Order "Failure"	Prof	STM Control Connection: Message-1---(Packet STM_14 – State order to STM)	STM		
2	The STM report FA state			STM	Prof	STM Control Connection: Message 2 – (Packet: STM_15 – State report from STM)

Message-1: ETCS → STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	14	Packet identifier (STM-14 – State order to STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	STM State order FA
PADDING BITS	COMPUTED	COMPUTED	

Message-2: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	

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

Test case 9f.2.0.2.0

TEST CASE HEADER	
Test case Identification	FA
	An STM in DA state reports FA mode to the ETCS, then this FA mode is reported to the driver and JRU and the ETCS applies the safe action as the STM is active.
ETCS Requirements Tested	Subset-035 : 7.4.1.2.3 (A17); 7.4.1.2.2 (to FA); 7.4.1.3.5; 7.4.1.3.6; 7.4.1.6.1; 7.4.1.4
	Subset-026 :
STM Requirements Tested	Subset-035:
	Subset-026 :
Packets Transmitted via FFFIS STM	Packet STM-15
Comments and constraints	

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

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

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Test Case for ETCS on board

Step	Description/Comments	Input I/F	Input Action	DUT	Output I/F	Output action
1	The STM report FA state	Prof	STM Control Connection: Message-1 (Packet STM_15 – State report from STM)	ETCS	JRU	The ETCS stores the FA state in the JRU
				ETCS	DMI	The ETCS indicates the FA state to the DMI.
				ETCS	BIU/DMI	The ETCS applies the safe action.

Test Case for STM

Not applicable

Message-1: STM → ETCS			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	any valid value for NID_STM
L_MESSAGE	8	COMPUTED	message length
NID_PACKET	8	15	Packet identifier (STM-15 – State report from STM)
L_PACKET	13	COMPUTED	packet length
NID_STMSTATE	4	8	state FA
PADDING BITS	COMPUTED	COMPUTED	

End Conditions	Value	Comments
STM STATE	FA	
ETCS Mode	unchanged	
ETCS Level	unchanged	
Train State	unchanged	
Train Data	unchanged	
Additional Data	unchanged	
National Values	unchanged	
STM Control Function Connection	unchanged	
DMI Connection	unchanged	
Odometry 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	Safe action applied
BIU Service Brake Command	unchanged	
BIU Emergency Brake Status	unchanged	Safe action applied
BIU Service Brake Status	unchanged	
STM Version Number	unchanged	
ETCS Version Number	unchanged	
Track Adhesion	unchanged	