



**ERTMS/ETCS**

**FFFIS STM test cases of Functional identity 010**

**PROCEDURE SPECIFIC DATA ENTRY / DATA VIEW**

**Total: 22 Test cases**

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

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## Modification History

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2.9.4 28.02 .2014	No change	No change to this part of the Subset	Alstom Thomas Mandry

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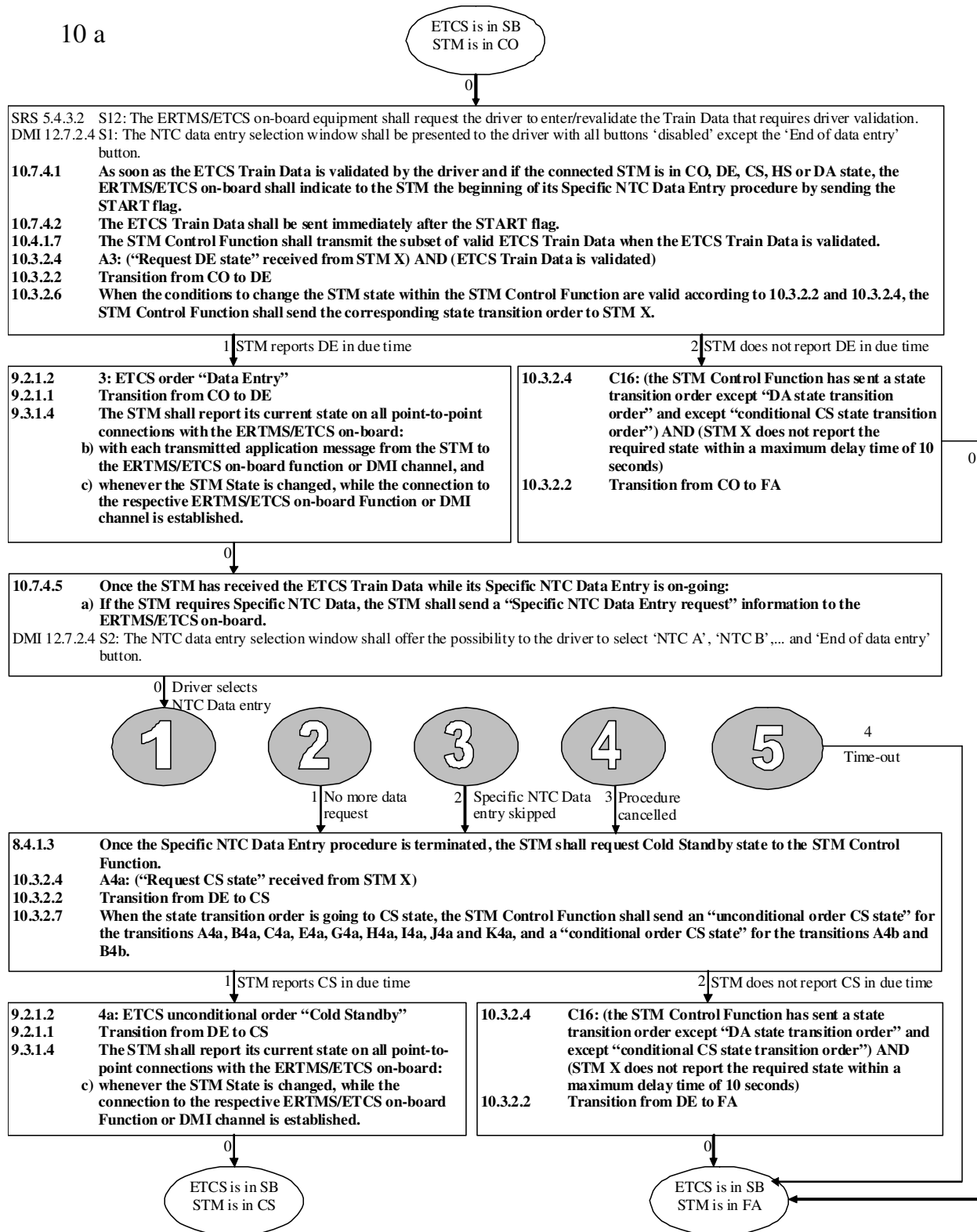
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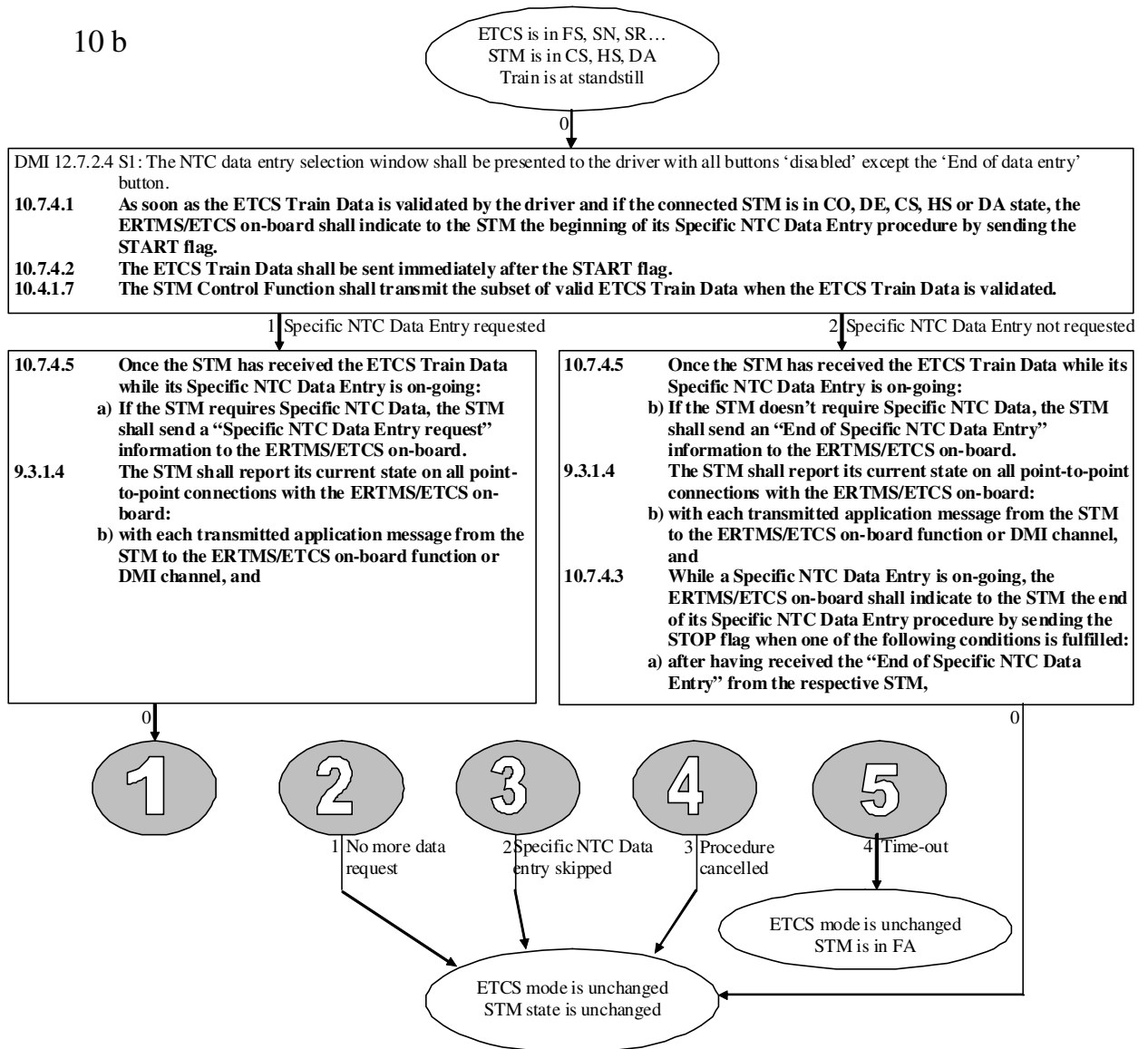
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## Diagrams

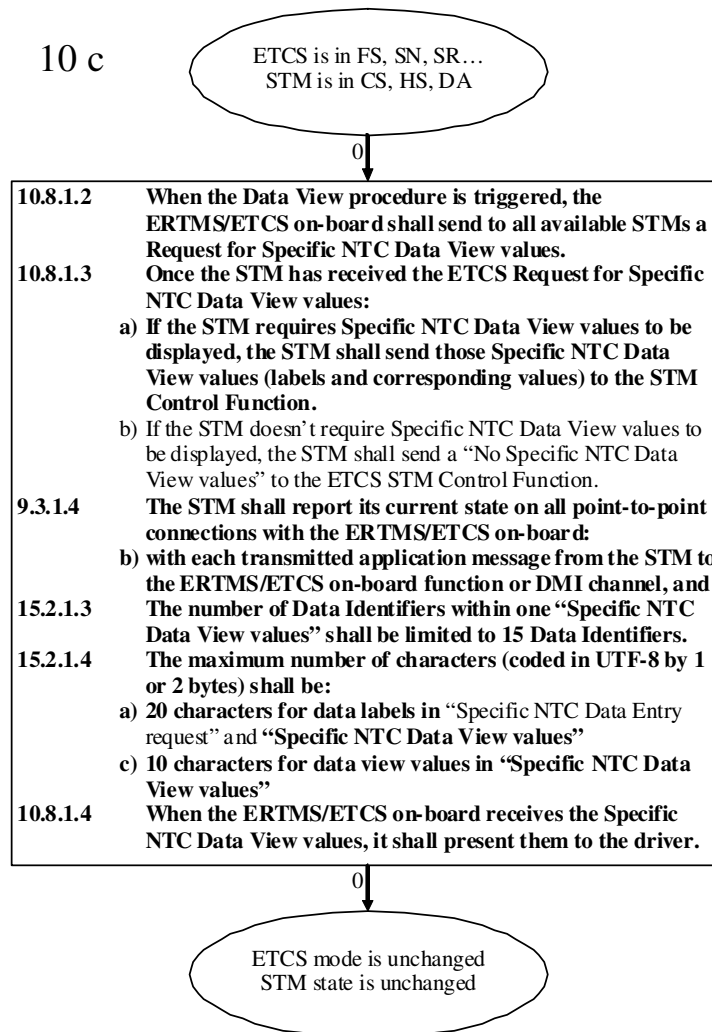
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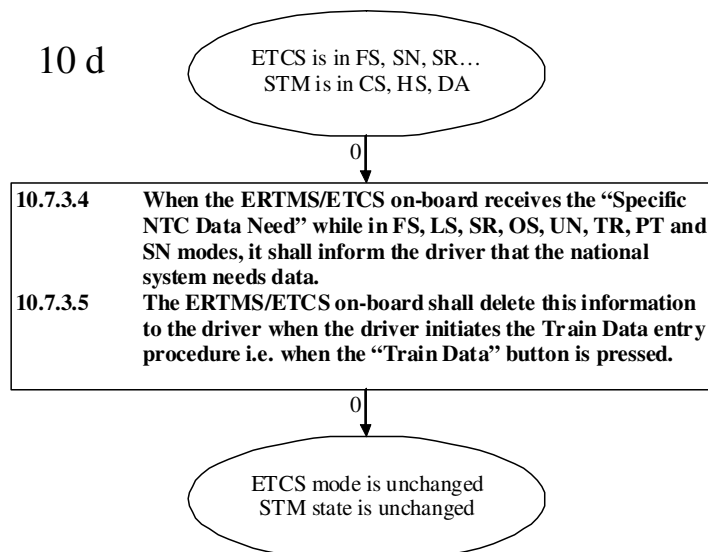
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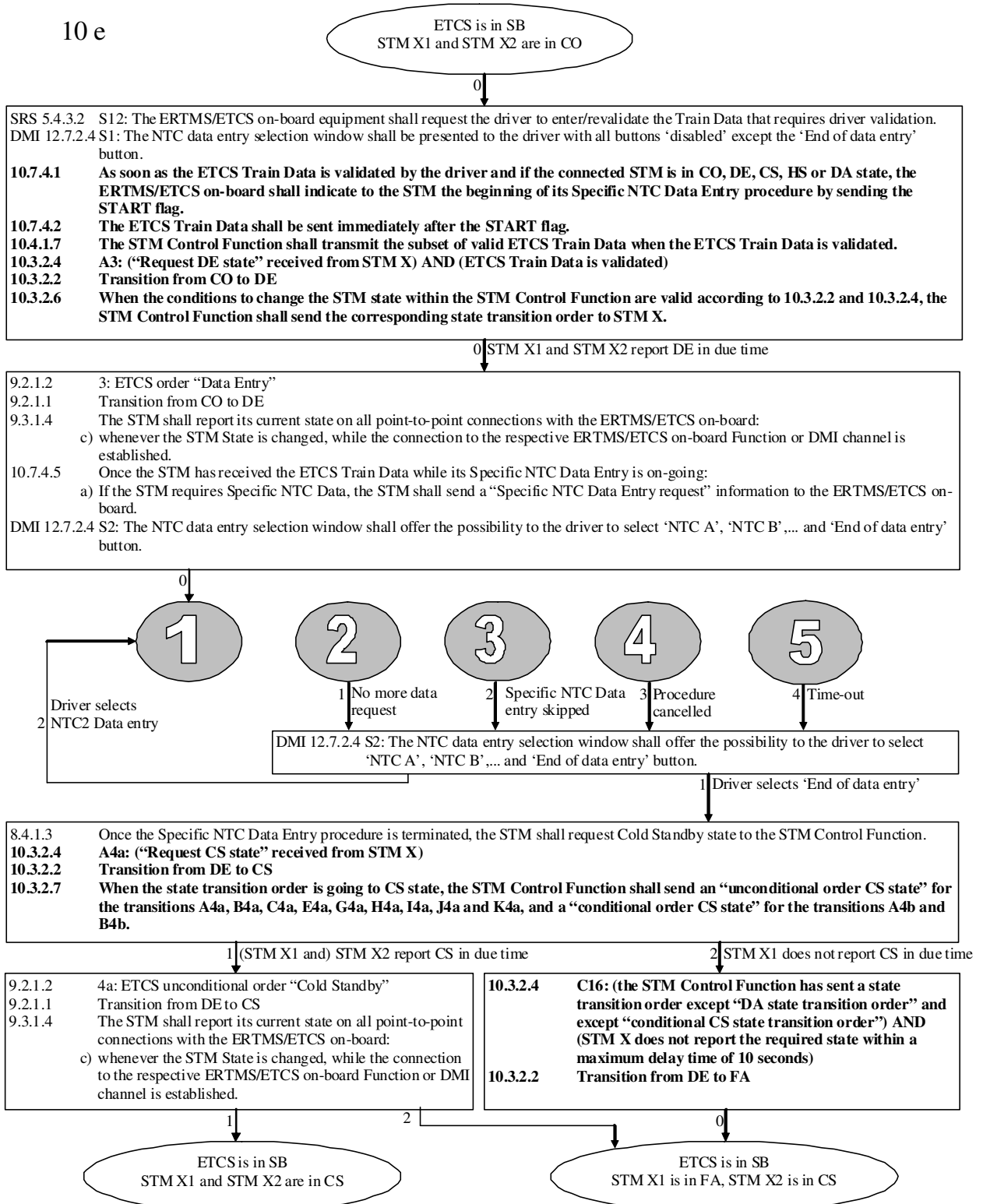


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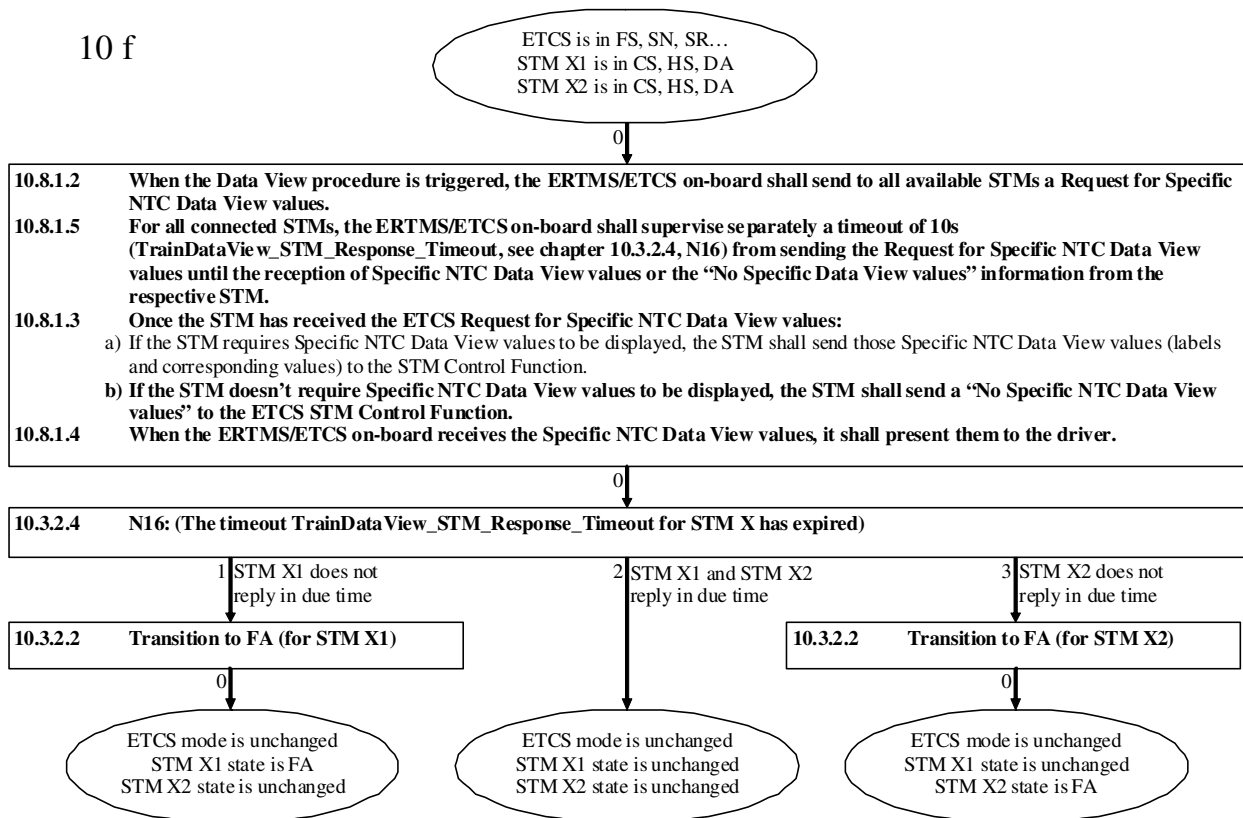




10 e

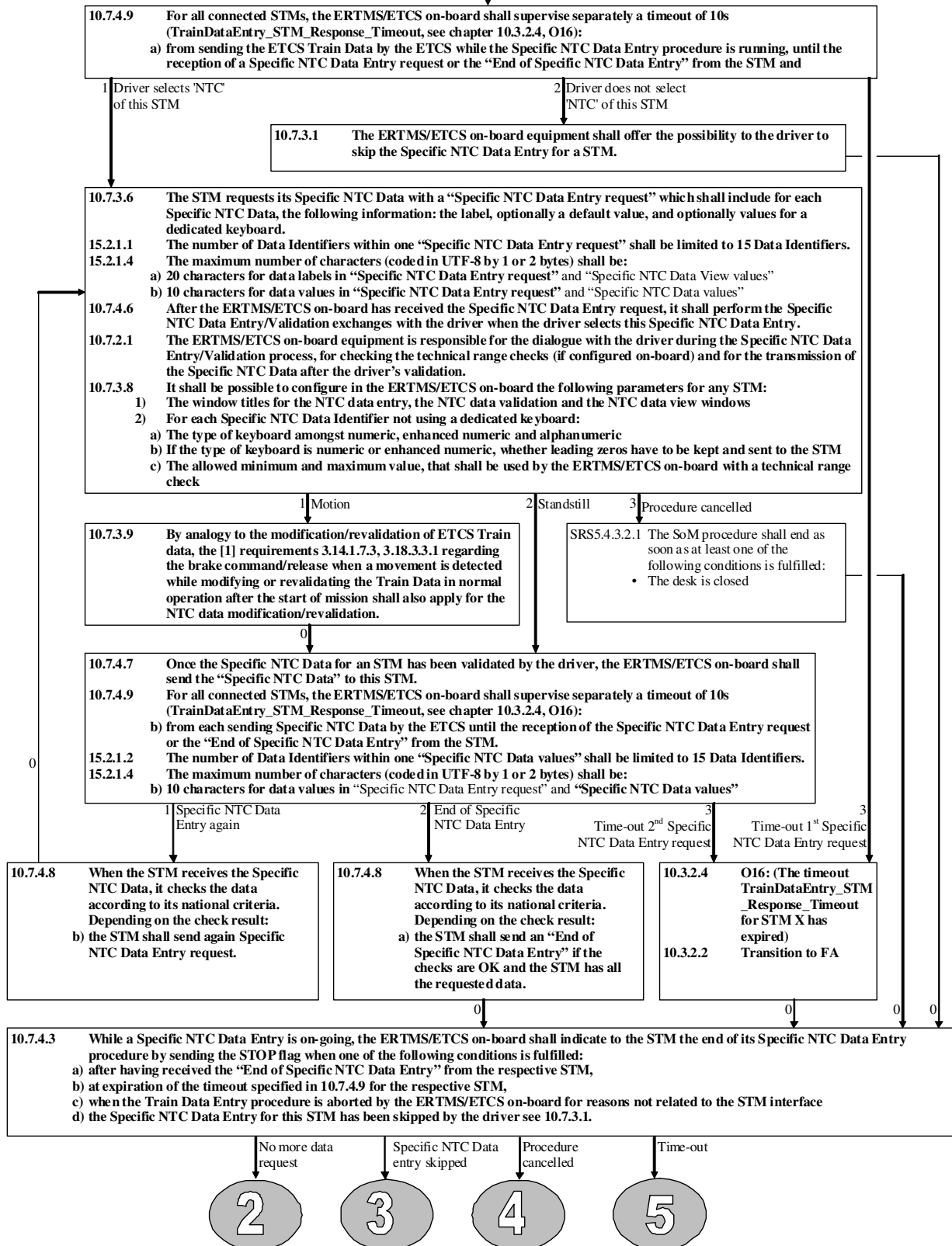


10 f



## Main Specific NTC Data Entry procedure

1





## Supplier-specific delays table

#	Supplier of	Start time	End time
Ts1	ETCS	Time-stamp of message including STM-13 "DE"	Time-stamp of message including STM-14 "DE"
Ts2	ETCS	Time-stamp of message including STM-179 with N_ITER > 0	Reference time at which the "NTC X" button is enabled in "National data entry selection" window
Ts3	ETCS	Reference time at which the train reaches standstill during brake reaction while in Specific NTC Data Entry	Reference time at which the brake acknowledgment is requested to the driver
Ts4	ETCS	Time-stamp of message including STM-179 with N_ITER > 0	Reference time at which the "NTC X data" window is displayed again
Ts5	ETCS	Time-stamp of message including STM-179 with N_ITER = 0	Time-stamp of message including STM-184 "STOP"
Ts6	ETCS	Time-stamp of message including STM-13 "CS"	Time-stamp of message including STM-14 "U-CS" (from CO or DE)
Ts7	STM	Time-stamp of message including STM-184, STM-175 & STM-176	Time-stamp of message including STM-13 "DE" (from CO)
Ts8	STM	Time-stamp of message including STM-184 "STOP"	Time-stamp of message including STM-13 "CS" (from CO or DE)
Ts9	ETCS	Reference time at which the driver acknowledges the brake reaction while in Specific NTC Data Entry	Reference time when both the brake release has been ordered and the "NTC X" button is enabled again in "National data entry selection" window
Ts10	ETCS	Reference time at which the 'End of data entry' or 'close' button is activated in "National data entry selection" window	Time-stamp of message including STM-184 "STOP"
Ts11	ETCS	Reference time at which the active cabin is closed	Time-stamp of message including STM-184 "STOP"
Ts12	ETCS	Reference time at which the "Data view" button is activated	Time-stamp of message including STM-182
Ts13	ETCS	Time-stamp of message including STM-183	Reference time at which the "NTC X data view" window is accessible
Ts14	ETCS	Time-stamp of message including STM-181	Reference time at which the "[name of NTC] needs data" system status message is displayed
Ts15	ETCS	Reference time at which the "Train data" button is activated	Reference time at which the "[name of NTC] needs data" system status message is deleted
Ts16	ETCS	For STM not answering in time: timestamp of message including a packet for which an answer is expected (STM-184 "START"/STM-175/STM-176 or STM-180 or STM-182 or STM-14 "DE" or STM-14 "U-CS") + 10s	Time-stamp of message including STM-14 "FA"
Ts17	ETCS	Reference time at which the train starts to move with an acceleration of 1 m/s <sup>2</sup> up to 3 km/h during a Specific NTC Data Entry	Reference time at which the brake is applied

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## General Specific NTC Data Entry test requirements (\*)

To test the Specific NTC Data Entry on ERTMS/ETCS on-board Test Case, the following points shall be controlled:

- the window title is the one configured
- all data contained in the Specific NTC Data Entry sent by the SMS can be edited and validated
- for data configured as enhanced numeric with range 0 to 10 and leading zeros kept:
  - The entered value "10.1" is displayed as echo data '++++' and cannot be validated.
  - The entered value "09.8765432" is displayed as such as echo data, as data to validate and is transmitted as such to STM.
- for data configured as numeric with range 1 to 1000 and leading zeros removed:
  - The entered value "0" is displayed as echo data '++++' and cannot be validated.
  - The entered value "1001" is displayed as echo data '++++' and cannot be validated.
  - The entered value "0000000001" is displayed as such as echo data, as data to validate and is transmitted as "1" to STM.
- for data configured as alphanumeric, or for data without applicable configuration and without transmitted dedicated keyboard:
  - The entered value "alpha01234" is displayed as such as echo data, as data to validate and is transmitted as such to STM.
- for data transmitted with a dedicated keyboard:
  - Every possible value is selected and displayed as echo data.
  - The last selected value (chosen randomly) is displayed as such as data to validate and is transmitted as such to STM.

Note: the introduction of spaces & line breaks in the display of data, as specified in the ETCS DMI specification, is not considered in the above description.

In the related Test Cases steps, the input time gives the time at which this action is started and the output time limits are marked as "not relevant", because several exchanges on the DMI are needed (as specified in the ETCS DMI specification, out of scope of the SUBSET-074 test coverage). However, every exchange on the DMI, as well as between the data validation and the sending of packet STM-180, is subject to the default "5s" output time limit.



## TEST CASE 10a.1

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10a.0.1.0.0.1.2.1.0.2.1.0.2.2.0.1.1.0
	Data Entry at Start-up with 1 STM and with 3 Specific NTC Data requests for ERTMS/ETCS on-board Test Case (the first two being identical and transmitted with 2 packets). The STM state changes from CO to DE and then to CS. STM answers in due time. The train is kept at standstill.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CO to DE, DE to CS); 10.3.2.4 (A3, A4a); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3a; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>STM requirements tested</b>	Subset-035: 8.4.1.3; 9.2.1.1 (CO to DE, DE to CS); 9.2.1.2 (3, 4a); 9.3.1.4b/c; 10.7.3.6; 10.7.4.5a; 10.7.4.8a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>Packets transmitted via FFFIS STM</b>	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data Entry: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
<b>Comments and constraints</b>	All 'configuration data' except ETCS Train Data has been transmitted to STM before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state. Test case for STM: only applicable if the STM requests Specific NTC Data Entry.



Starting Conditions	Value	Comments
STM State	CO	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	The ETCS receives from STM a DE state request.	PROF	T1+1s	Message 1: Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2: Packet STM-14 State order to STM (DE)  Time: T2
3.	STM sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T2+1s	Message 4a: Packet STM-179 Specific NTC Data Entry request	DMI	T1-T2+7s	Nothing happens
4.	second part	PROF	T1+8s	Message 4b: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
5.	Specific NTC Data Entry procedure is started.	DMI	T3=T1+8s+Ts2	Driver selects the NTC button corresponding to the STM of the test.	DMI		NTC data window is displayed with the configured title.
6.	The driver performs the Specific NTC Data Entry.	DMI	T3+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a: Packet STM-180 Specific NTC Data values  Time: T4
7.	The STM is allowed to request the same data: first part.	PROF	T4+1s	Message 4a: Packet STM-179 Specific NTC Data Entry request	DMI	7s	Nothing happens

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
8.	second part	PROF	T5=T4+8s	Message 4b: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with the configured title.
9.	The driver performs the Specific NTC Data Entry.	DMI	T5+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a: Packet STM- 180 Specific NTC Data values Time: T6
10.	The STM is allowed to request another data.	PROF	T7=T6+8s	Message 4c: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with new data labels and with the configured title.
11.	The driver performs the Specific NTC Data Entry.	DMI	T7+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)
					PROF	not relevant	Message 5b: Packet STM-180 Specific NTC Data values Time: T8
12.	STM sends the "END of Specific NTC Data Entry", ETCS stops the Specific NTC Data entry procedure.	PROF	T9=T8+8s	Message 6a: Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)
13.	STM requests CS state.	PROF	T9+Ts5	Message 8a: Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9: Packet STM-14 State order to STM (CS) Time: T10
14.	STM reports CS state in due time.	PROF	T10+8s	Message 10: Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11 Packet STM-14 State order to STM (FA) <b>No</b> disconnection from ETCS with the STM Control Function

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# **STM Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
-	This test case is only valid when the STM shall request Specific NTC Data Entry						
1.	Once the STM has received the START flag and the ETCS train data, the STM requests Data Entry state.	PROF	T0	Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM	PROF	Ts7	Message 1 : Packet STM-13 State request from STM (DE)
2.	ETCS orders STM state to change to "Data-Entry". STM requests Specific NTC Data.	PROF	T0+Ts7	Message 2: Packet STM-14 State order to STM (DE)	PROF	10s-Ts7	Message 4d: Packet STM-179 Specific NTC Data Entry request
3.	ETCS sends the parameter to the STM.	PROF	T0+10s	Message 5c: Packet STM-180 Specific NTC Data values			
	Zero, one or several iteration(s) of step 4 and step 5 is possible depending on STM						
4.	STM requests again Specific NTC Data.				PROF	10s	Message 4d: Packet STM-179 Specific NTC Data Entry request  Time: T2
5.	ETCS sends the parameter to the STM.	PROF	T2+1s	Message 5c: Packet STM-180 Specific NTC Data values			



Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
Ending Specific NTC Data Entry procedure for STM							
6.	The STM sends the “END of Specific NTC Data Entry”				PROF	10s	Message 6a: Packet STM-179 with N_ITER = 0  Time: T3
7.	The ETCS stops the Specific NTC Data entry procedure. The data entry is completed, then the STM requests CS state to the ETCS.	PROF	T3+1s	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)	PROF	Ts8	Message 8a: Packet STM-13 State request from STM (CS)
8.	ETCS orders CS state	PROF	T3+1s +Ts8	Message 9: Packet STM-14 State order to STM (CS)	PROF	10s	Message 10: Packet STM-15 State report from STM (CS)



Message 1: (STM => ETCS STM control function) Packet STM-13 State request 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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-13.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	2	CO
NID_PACKET	8	13	State request from STM
L_PACKET	13	COMPUTED	
NID_STMSTATEREQUEST	4	3	DE
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 2: (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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	3	DE
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 3: (ETCS => STM) Packet STM-184 Specific NTC Data Entry flag, STM-175 Train Data, STM-176 Train Data traction/brake parameters.			
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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	184	Specific NTC Data Entry flag This packet could be sent in a previous separated message.
L_PACKET	13	COMPUTED	
M_DATAENTRYFLAG	1	1	Start flag
NID_PACKET	8	175	Train Data This packet could be sent in a separated message or after packet STM-176.
L_PACKET	13	COMPUTED	
NC_CDTRAIN	4	FINITE VALUE	
NC_TRAIN	15	FINITE VALUE	
L_TRAIN	12	FINITE VALUE	
V_MAXTRAIN	7	FINITE VALUE	
M_LOADINGGAUGE	8	FINITE VALUE	
M_AXLELOADCAT	7	FINITE VALUE	
M_AIRTIGHT	2	FINITE VALUE	
M_TRAINTYPE	8	FINITE VALUE	
N_ITER	5	0	
NID_PACKET	8	176	Train data traction/brake parameters to STM This packet could be sent in a separated message or before packet STM-175.
L_PACKET	13	COMPUTED	
T_BRAKE_SERVICE	12	FINITE VALUE	
T_BRAKE_EMERGENCY	12	FINITE VALUE	
T_TRACTION_CUT_OFF	12	FINITE VALUE	
M_BRAKE_POSITION	2	FINITE VALUE	
M_BRAKE_PERCENTAGE	8	FINITE VALUE	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 4a: (STM => ETCS) Packet STM-179 Specific NTC Data Entry request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	DE
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	1	
N_ITER	5	4	
NID_DATA(1)	8	1	
L_CAPTION(1)	5	7	
X_CAPTION(1,1)	8	'V'	
X_CAPTION(1,2)	8	'A'	
X_CAPTION(1,3)	8	'L'	
X_CAPTION(1,4)	8	'U'	
X_CAPTION(1,5)	8	'E'	
X_CAPTION(1,6)	8	' '	
X_CAPTION(1,7)	8	'1'	
L_VALUE(1)	8	3	
X_VALUE(1,1)	8	'0'	
X_VALUE(1,2)	8	'.'	
X_VALUE(1,3)	8	'1'	
N_ITER(1)	5	0	
NID_DATA(2)	8	2	
L_CAPTION(2)	5	7	
X_CAPTION(2,1)	8	'V'	
X_CAPTION(2,2)	8	'A'	
X_CAPTION(2,3)	8	'L'	
X_CAPTION(2,4)	8	'U'	
X_CAPTION(2,5)	8	'E'	

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X_CAPTION(2,6)	8	' '	
X_CAPTION(2,7)	8	'2'	
L_VALUE(2)	8	1	
X_VALUE(2,1)	8	'1'	
N_ITER(2)	5	0	
NID_DATA(3)	8	3	
L_CAPTION(3)	5	7	
X_CAPTION(3,1)	8	'V'	
X_CAPTION(3,2)	8	'A'	
X_CAPTION(3,3)	8	'L'	
X_CAPTION(3,4)	8	'U'	
X_CAPTION(3,5)	8	'E'	
X_CAPTION(3,6)	8	' '	
X_CAPTION(3,7)	8	'3'	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	'A'	
N_ITER(3)	5	0	
NID_DATA(4)	8	4	
L_CAPTION(4)	5	7	
X_CAPTION(4,1)	8	'V'	
X_CAPTION(4,2)	8	'A'	
X_CAPTION(4,3)	8	'L'	
X_CAPTION(4,4)	8	'U'	
X_CAPTION(4,5)	8	'E'	
X_CAPTION(4,6)	8	' '	
X_CAPTION(4,7)	8	'4'	
L_VALUE(4)	8	4	
X_VALUE(4,1)	8	'R'	
X_VALUE(4,2)	8	'O'	
X_VALUE(4,3)	8	'M'	
X_VALUE(4,4)	8	'A'	
N_ITER(4)	5	16	
L_VALUE(4,1)	8	10	
X_VALUE(4,1,1)	8	'L'	

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X_VALUE(4,1,2)	8	'U'	
X_VALUE(4,1,3)	8	'X'	
X_VALUE(4,1,4)	8	'E'	
X_VALUE(4,1,5)	8	'M'	
X_VALUE(4,1,6)	8	'B'	
X_VALUE(4,1,7)	8	'O'	
X_VALUE(4,1,8)	8	'U'	
X_VALUE(4,1,9)	8	'R'	
X_VALUE(4,1,10)	8	'G'	
L_VALUE(4,2)	8	9	
X_VALUE(4,2,1)	8	'B'	
X_VALUE(4,2,2)	8	'R'	
X_VALUE(4,2,3)	8	'U'	
X_VALUE(4,2,4)	8	'X'	
X_VALUE(4,2,5)	8	'E'	
X_VALUE(4,2,6)	8	'L'	
X_VALUE(4,2,7)	8	'L'	
X_VALUE(4,2,8)	8	'E'	
X_VALUE(4,2,9)	8	'S'	
L_VALUE(4,3)	8	9	
X_VALUE(4,3,1)	8	'A'	
X_VALUE(4,3,2)	8	'M'	
X_VALUE(4,3,3)	8	'S'	
X_VALUE(4,3,4)	8	'T'	
X_VALUE(4,3,5)	8	'E'	
X_VALUE(4,3,6)	8	'R'	
X_VALUE(4,3,7)	8	'D'	
X_VALUE(4,3,8)	8	'A'	
X_VALUE(4,3,9)	8	'M'	
L_VALUE(4,4)	8	9	
X_VALUE(4,4,1)	8	'S'	
X_VALUE(4,4,2)	8	'T'	
X_VALUE(4,4,3)	8	'O'	
X_VALUE(4,4,4)	8	'C'	

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X_VALUE(4,4,5)	8	'K'	
X_VALUE(4,4,6)	8	'H'	
X_VALUE(4,4,7)	8	'O'	
X_VALUE(4,4,8)	8	'L'	
X_VALUE(4,4,9)	8	'M'	
L_VALUE(4,5)	8	8	
X_VALUE(4,5,1)	8	'W'	
X_VALUE(4,5,2)	8	'A'	
X_VALUE(4,5,3)	8	'R'	
X_VALUE(4,5,4)	8	'S'	
X_VALUE(4,5,5)	8	'Z'	
X_VALUE(4,5,6)	8	'A'	
X_VALUE(4,5,7)	8	'W'	
X_VALUE(4,5,8)	8	'A'	
L_VALUE(4,6)	8	8	
X_VALUE(4,6,1)	8	'L'	
X_VALUE(4,6,2)	8	'A'	
X_VALUE(4,6,3)	8	'U'	
X_VALUE(4,6,4)	8	'S'	
X_VALUE(4,6,5)	8	'A'	
X_VALUE(4,6,6)	8	'N'	
X_VALUE(4,6,7)	8	'N'	
X_VALUE(4,6,8)	8	'E'	
L_VALUE(4,7)	8	9	
X_VALUE(4,7,1)	8	'B'	
X_VALUE(4,7,2)	8	'A'	
X_VALUE(4,7,3)	8	'R'	
X_VALUE(4,7,4)	8	'C'	
X_VALUE(4,7,5)	8	'E'	
X_VALUE(4,7,6)	8	'L'	
X_VALUE(4,7,7)	8	'O'	
X_VALUE(4,7,8)	8	'N'	
X_VALUE(4,7,9)	8	'A'	
L_VALUE(4,8)	8	8	

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X_VALUE(4,8,1)	8	'B'	
X_VALUE(4,8,2)	8	'U'	
X_VALUE(4,8,3)	8	'D'	
X_VALUE(4,8,4)	8	'A'	
X_VALUE(4,8,5)	8	'P'	
X_VALUE(4,8,6)	8	'E'	
X_VALUE(4,8,7)	8	'S'	
X_VALUE(4,8,8)	8	'T'	
L_VALUE(4,9)	8	9	
X_VALUE(4,9,1)	8	'F'	
X_VALUE(9,2)	8	'R'	
X_VALUE(4,9,3)	8	'A'	
X_VALUE(4,9,4)	8	'N'	
X_VALUE(4,9,5)	8	'K'	
X_VALUE(4,9,6)	8	'F'	
X_VALUE(4,9,7)	8	'U'	
X_VALUE(4,9,8)	8	'R'	
X_VALUE(4,9,9)	8	'T'	
L_VALUE(4,10)	8	10	
X_VALUE(4,10,1)	8	'D'	
X_VALUE(4,10,2)	8	'Ü'	
X_VALUE(4,10,3)	8	'S'	
X_VALUE(4,10,4)	8	'S'	
X_VALUE(4,10,5)	8	'E'	
X_VALUE(4,10,6)	8	'L'	
X_VALUE(4,10,7)	8	'D'	
X_VALUE(4,10,8)	8	'O'	
X_VALUE(4,10,9)	8	'R'	
X_VALUE(4,10,10)	8	'F'	
L_VALUE(4,11)	8	8	
X_VALUE(4,11,1)	8	'T'	
X_VALUE(4,11,2)	8	'O'	
X_VALUE(4,11,3)	8	'U'	
X_VALUE(4,11,4)	8	'L'	

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X_VALUE(4,11,5)	8	'O'	
X_VALUE(4,11,6)	8	'U'	
X_VALUE(4,11,7)	8	'S'	
X_VALUE(4,11,8)	8	'E'	
L_VALUE(4,12)	8	10	
X_VALUE(4,12,1)	8	'S'	
X_VALUE(4,12,2)	8	'T'	
X_VALUE(4,12,3)	8	'R'	
X_VALUE(4,12,4)	8	'A'	
X_VALUE(4,12,5)	8	'S'	
X_VALUE(4,12,6)	8	'B'	
X_VALUE(4,12,7)	8	'O'	
X_VALUE(4,12,8)	8	'U'	
X_VALUE(4,12,9)	8	'R'	
X_VALUE(4,12,10)	8	'G'	
L_VALUE(4,13)	8	9	
X_VALUE(4,13,1)	8	'M'	
X_VALUE(4,13,2)	8	'A'	
X_VALUE(4,13,3)	8	'R'	
X_VALUE(4,13,4)	8	'S'	
X_VALUE(4,13,5)	8	'E'	
X_VALUE(4,13,6)	8	'I'	
X_VALUE(4,13,7)	8	'L'	
X_VALUE(4,13,8)	8	'L'	
X_VALUE(4,13,9)	8	'E'	
L_VALUE(4,14)	8	8	
X_VALUE(4,14,1)	8	'C'	
X_VALUE(4,14,2)	8	'H'	
X_VALUE(4,14,3)	8	'A'	
X_VALUE(4,14,4)	8	'M'	
X_VALUE(4,14,5)	8	'O'	
X_VALUE(4,14,6)	8	'N'	
X_VALUE(4,14,7)	8	'I'	
X_VALUE(4,14,8)	8	'X'	

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L_VALUE(4,15)	8	9	
X_VALUE(4,15,1)	8	'C'	
X_VALUE(4,15,2)	8	'H'	
X_VALUE(4,15,3)	8	'A'	
X_VALUE(4,15,4)	8	'R'	
X_VALUE(4,15,5)	8	'L'	
X_VALUE(4,15,6)	8	'E'	
X_VALUE(4,15,7)	8	'R'	
X_VALUE(4,15,8)	8	'O'	
X_VALUE(4,15,9)	8	'I'	
L_VALUE(4,16)	8	4	
X_VALUE(4,16,1)	8	'R'	
X_VALUE(4,16,2)	8	'O'	
X_VALUE(4,16,3)	8	'M'	
X_VALUE(4,16,4)	8	'A'	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 4b: (STM => ETCS) Packet STM-179 Specific NTC Data Entry request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	DE
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	1	
NID_DATA(1)	8	5	
L_CAPTION(1)	5	20	
X_CAPTION(1,1)	8	'V'	
X_CAPTION(1,2)	8	'A'	
X_CAPTION(1,3)	8	'L'	
X_CAPTION(1,4)	8	'U'	
X_CAPTION(1,5)	8	'E'	
X_CAPTION(1,6)	8	' '	
X_CAPTION(1,7)	8	'5'	
X_CAPTION(1,8)	8	' '	
X_CAPTION(1,9)	8	(''	
X_CAPTION(1,10)	8	'L'	
X_CAPTION(1,11)	8	'O'	
X_CAPTION(1,12)	8	'N'	
X_CAPTION(1,13)	8	'G'	
X_CAPTION(1,14)	8	' '	
X_CAPTION(1,15)	8	'L'	
X_CAPTION(1,16)	8	'A'	
X_CAPTION(1,17)	8	'B'	
X_CAPTION(1,18)	8	'E'	
X_CAPTION(1,19)	8	'L'	

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X_CAPTION(1,20)	8	')	
L_VALUE(1)	8	1	
X_VALUE(1,1)	8	'A'	
N_ITER(1)	5	3	
L_VALUE(1,1)	8	1	
X_VALUE(1,1,1)	8	'A'	
L_VALUE(1,2)	8	1	
X_VALUE(1,2,1)	8	'B'	
L_VALUE(1,3)	8	1	
X_VALUE(1,3,1)	8	'C'	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 4c: (STM => ETCS) Packet STM-179 Specific NTC Data Entry request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	DE
NID_PACKET	8	179	Specific NTC Data Entry Request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	15	Maximum allowed value
NID_DATA(1)	8	6	
L_CAPTION(1)	5	7	
X_CAPTION(1,1)	8	'V'	
X_CAPTION(1,2)	8	'A'	
X_CAPTION(1,3)	8	'L'	
X_CAPTION(1,4)	8	'U'	
X_CAPTION(1,5)	8	'E'	
X_CAPTION(1,6)	8	' '	
X_CAPTION(1,7)	8	'6'	

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L_VALUE(1)	8	1	
X_VALUE(1,1)	8	'A'	
N_ITER(1)	5	3	
L_VALUE(1,1)	8	1	
X_VALUE(1,1,1)	8	'A'	
L_VALUE(1,2)	8	1	
X_VALUE(1,2,1)	8	'B'	
L_VALUE(1,3)	8	1	
X_VALUE(1,3,1)	8	'C'	
NID_DATA(2)	8	7	
L_CAPTION(2)	5	7	
X_CAPTION(2,1)	8	'V'	
X_CAPTION(2,2)	8	'A'	
X_CAPTION(2,3)	8	'L'	
X_CAPTION(2,4)	8	'U'	
X_CAPTION(2,5)	8	'E'	
X_CAPTION(2,6)	8	' '	
X_CAPTION(2,7)	8	'7'	
L_VALUE(2)	8	1	
X_VALUE(2,1)	8	'A'	
N_ITER(2)	5	3	
L_VALUE(2,1)	8	1	
X_VALUE(2,1,1)	8	'A'	
L_VALUE(2,2)	8	1	
X_VALUE(2,2,1)	8	'B'	
L_VALUE(2,3)	8	1	
X_VALUE(2,3,1)	8	'C'	
NID_DATA(3)	8	8	
L_CAPTION(3)	5	7	
X_CAPTION(3,1)	8	'V'	
X_CAPTION(3,2)	8	'A'	
X_CAPTION(3,3)	8	'L'	
X_CAPTION(3,4)	8	'U'	
X_CAPTION(3,5)	8	'E'	

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X_CAPTION(3,6)	8	' '	
X_CAPTION(3,7)	8	'8'	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	'A'	
N_ITER(3)	5	3	
L_VALUE(3,1)	8	1	
X_VALUE(3,1,1)	8	'A'	
L_VALUE(3,2)	8	1	
X_VALUE(3,2,1)	8	'B'	
L_VALUE(3,3)	8	1	
X_VALUE(3,3,1)	8	'C'	
NID_DATA(4)	8	9	
L_CAPTION(4)	5	7	
X_CAPTION(4,1)	8	'V'	
X_CAPTION(4,2)	8	'A'	
X_CAPTION(4,3)	8	'L'	
X_CAPTION(4,4)	8	'U'	
X_CAPTION(4,5)	8	'E'	
X_CAPTION(4,6)	8	' '	
X_CAPTION(4,7)	8	'9'	
L_VALUE(4)	8	1	
X_VALUE(4,1)	8	'A'	
N_ITER(4)	5	3	
L_VALUE(4,1)	8	1	
X_VALUE(4,1,1)	8	'A'	
L_VALUE(4,2)	8	1	
X_VALUE(4,2,1)	8	'B'	
L_VALUE(4,3)	8	1	
X_VALUE(4,3,1)	8	'C'	
NID_DATA(5)	8	10	
L_CAPTION(5)	5	8	
X_CAPTION(5,1)	8	'V'	
X_CAPTION(5,2)	8	'A'	
X_CAPTION(5,3)	8	'L'	

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X_CAPTION(5,4)	8	'U'	
X_CAPTION(5,5)	8	'E'	
X_CAPTION(5,6)	8	','	
X_CAPTION(5,7)	8	'I'	
X_CAPTION(5,8)	8	'O'	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	'A'	
N_ITER(5)	5	3	
L_VALUE(5,1)	8	1	
X_VALUE(5,1,1)	8	'A'	
L_VALUE(5,2)	8	1	
X_VALUE(5,2,1)	8	'B'	
L_VALUE(5,3)	8	1	
X_VALUE(5,3,1)	8	'C'	
NID_DATA(6)	8	11	
L_CAPTION(6)	5	8	
X_CAPTION(6,1)	8	'V'	
X_CAPTION(6,2)	8	'A'	
X_CAPTION(6,3)	8	'L'	
X_CAPTION(6,4)	8	'U'	
X_CAPTION(6,5)	8	'E'	
X_CAPTION(6,6)	8	','	
X_CAPTION(6,7)	8	'I'	
X_CAPTION(6,8)	8	'I'	
L_VALUE(6)	8	0	
N_ITER(6)	5	0	
NID_DATA(7)	8	12	
L_CAPTION(7)	5	8	
X_CAPTION(7,1)	8	'V'	
X_CAPTION(7,2)	8	'A'	
X_CAPTION(7,3)	8	'L'	
X_CAPTION(7,4)	8	'U'	
X_CAPTION(7,5)	8	'E'	
X_CAPTION(7,6)	8	','	

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X_CAPTION(7,7)	8	'1'	
X_CAPTION(7,8)	8	'2'	
L_VALUE(7)	8	0	
N_ITER(7)	5	0	
NID_DATA(8)	8	13	
L_CAPTION(8)	5	8	
X_CAPTION(8,1)	8	'V'	
X_CAPTION(8,2)	8	'A'	
X_CAPTION(8,3)	8	'L'	
X_CAPTION(8,4)	8	'U'	
X_CAPTION(8,5)	8	'E'	
X_CAPTION(8,6)	8	' '	
X_CAPTION(8,7)	8	'1'	
X_CAPTION(8,8)	8	'3'	
L_VALUE(8)	8	0	
N_ITER(8)	5	0	
NID_DATA(9)	8	14	
L_CAPTION(9)	5	8	
X_CAPTION(9,1)	8	'V'	
X_CAPTION(9,2)	8	'A'	
X_CAPTION(9,3)	8	'L'	
X_CAPTION(9,4)	8	'U'	
X_CAPTION(9,5)	8	'E'	
X_CAPTION(9,6)	8	' '	
X_CAPTION(9,7)	8	'1'	
X_CAPTION(9,8)	8	'4'	
L_VALUE(9)	8	0	
N_ITER(9)	5	0	
NID_DATA(10)	8	15	
L_CAPTION(10)	5	8	
X_CAPTION(10,1)	8	'V'	
X_CAPTION(10,2)	8	'A'	
X_CAPTION(10,3)	8	'L'	
X_CAPTION(10,4)	8	'U'	

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X_CAPTION(10,5)	8	'E'	
X_CAPTION(10,6)	8	' '	
X_CAPTION(10,7)	8	'1'	
X_CAPTION(10,8)	8	'5'	
L_VALUE(10)	8	0	
N_ITER(10)	5	0	
NID_DATA(11)	8	16	
L_CAPTION(11)	5	8	
X_CAPTION(11,1)	8	'V'	
X_CAPTION(11,2)	8	'A'	
X_CAPTION(11,3)	8	'L'	
X_CAPTION(11,4)	8	'U'	
X_CAPTION(11,5)	8	'E'	
X_CAPTION(11,6)	8	' '	
X_CAPTION(11,7)	8	'1'	
X_CAPTION(11,8)	8	'6'	
L_VALUE(11)	8	0	
N_ITER(11)	5	0	
NID_DATA(12)	8	17	
L_CAPTION(12)	5	8	
X_CAPTION(12,1)	8	'V'	
X_CAPTION(12,2)	8	'A'	
X_CAPTION(12,3)	8	'L'	
X_CAPTION(12,4)	8	'U'	
X_CAPTION(12,5)	8	'E'	
X_CAPTION(12,6)	8	' '	
X_CAPTION(12,7)	8	'1'	
X_CAPTION(12,8)	8	'7'	
L_VALUE(12)	8	0	
N_ITER(12)	5	0	
NID_DATA(13)	8	18	
L_CAPTION(13)	5	8	
X_CAPTION(13,1)	8	'V'	
X_CAPTION(13,2)	8	'A'	

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X_CAPTION(13,3)	8	'L'	
X_CAPTION(13,4)	8	'U'	
X_CAPTION(13,5)	8	'E'	
X_CAPTION(13,6)	8	' '	
X_CAPTION(13,7)	8	'1'	
X_CAPTION(13,8)	8	'8'	
L_VALUE(13)	8	0	
N_ITER(13)	5	0	
NID_DATA(14)	8	19	
L_CAPTION(14)	5	8	
X_CAPTION(14,1)	8	'V'	
X_CAPTION(14,2)	8	'A'	
X_CAPTION(14,3)	8	'L'	
X_CAPTION(14,4)	8	'U'	
X_CAPTION(14,5)	8	'E'	
X_CAPTION(14,6)	8	' '	
X_CAPTION(14,7)	8	'1'	
X_CAPTION(14,8)	8	'9'	
L_VALUE(14)	8	0	
N_ITER(14)	5	0	
NID_DATA(15)	8	20	
L_CAPTION(15)	5	8	
X_CAPTION(15,1)	8	'V'	
X_CAPTION(15,2)	8	'A'	
X_CAPTION(15,3)	8	'L'	
X_CAPTION(15,4)	8	'U'	
X_CAPTION(15,5)	8	'E'	
X_CAPTION(15,6)	8	' '	
X_CAPTION(15,7)	8	'2'	
X_CAPTION(15,8)	8	'0'	
L_VALUE(15)	8	0	
N_ITER(15)	5	0	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

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Message 4d: (STM => ETCS) Packet STM-179 Specific NTC Data Entry			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	DE
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	Note that this value may not be the one received on the first message including packet STM-179, but is however mandatory on the last one.
N_ITER	5	FINITE VALUE	This value shall be lower or equal than 15. Moreover, if the previous packet(s) STM-179 is(are) transmitted with Q_FOLLOWING=1, the sum of the N_ITER of these packets STM-179 (including the one with Q_FOLLOWING=0) shall be lower or equal than 15.
NID_DATA(j)	8	FINITE VALUE	
L_CAPTION(j)	5	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_CAPTION) shall be lower or equal than 20.
X_CAPTION(j,q)	8	FINITE VALUE	
L_VALUE(j)	8	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_VALUE) shall be lower or equal than 10.
X_VALUE(j,i)	8	FINITE VALUE	
N_ITER(j)	5	FINITE VALUE	
L_VALUE(j,i)	8	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_VALUE) shall be lower or equal than 10.
X_VALUE(j,i,k)	8	FINITE VALUE	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 5a: (ETCS=> STM) Packet STM-180 Specific NTC Data values to STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	180	Specific NTC Data values
L_PACKET	13	COMPUTED	
N_ITER	5	5	
NID_DATA(1)	8	1	
L_VALUE(1)	8	FINITE VALUE	
X_VALUE(1,k)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(2)	8	2	
L_VALUE(2)	8	FINITE VALUE	
X_VALUE(2,k)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(3)	8	3	
L_VALUE(3)	8	FINITE VALUE	
X_VALUE(3,k)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(4)	8	4	
L_VALUE(4)	8	FINITE VALUE	
X_VALUE(4,k)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(5)	8	5	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 5b: (ETCS=> STM) Packet STM-180 Specific NTC Data values to STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	180	Specific NTC Data values
L_PACKET	13	COMPUTED	
N_ITER	5	15	
NID_DATA(1)	8	6	
L_VALUE(1)	8	1	
X_VALUE(1,1)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(2)	8	7	
L_VALUE(2)	8	1	
X_VALUE(2,1)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(3)	8	8	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(4)	8	9	
L_VALUE(4)	8	1	
X_VALUE(4,1)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(5)	8	10	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(6)	8	11	
L_VALUE(6)	8	FINITE VALUE	
X_VALUE(6, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(7)	8	12	
L_VALUE(7)	8	FINITE VALUE	
X_VALUE(7, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(8)	8	13	
L_VALUE(8)	8	FINITE VALUE	
X_VALUE(8, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(9)	8	14	
L_VALUE(9)	8	FINITE VALUE	

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X_VALUE(9, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(10)	8	15	
L_VALUE(10)	8	FINITE VALUE	
X_VALUE(10, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(11)	8	16	
L_VALUE(11)	8	FINITE VALUE	
X_VALUE(11, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(12)	8	17	
L_VALUE(12)	8	FINITE VALUE	
X_VALUE(12, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(13)	8	18	
L_VALUE(13)	8	FINITE VALUE	
X_VALUE(13, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(14)	8	19	
L_VALUE(14)	8	FINITE VALUE	
X_VALUE(14, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
NID_DATA(15)	8	20	
L_VALUE(15)	8	FINITE VALUE	
X_VALUE(15, x)	8	FINITE VALUE	Value shall be identical to the one entered on DMI
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 5c: (ETCS=> STM) Packet STM-180 Specific NTC Data values to STM			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	180	Specific NTC Data values
L_PACKET	13	COMPUTED	
N_ITER	5	FINITE VALUE	
NID_DATA(j)	8	FINITE VALUE	
L_VALUE(j)	8	FINITE VALUE	
X_VALUE(j,k)	8	FINITE VALUE	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 6a: (STM => ETCS) Packet STM-179 End of Specific NTC Data Entry			
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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	DE
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	0	End of Specific NTC Data Entry
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 7: (ETCS STM control function => STM) Packet STM-184 Specific NTC Data Entry flag.			
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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	184	Specific NTC Data Entry flag
L_PACKET	13	COMPUTED	
M_DATAENTRYFLAG	1	0	Stop flag
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 8a: (STM => ETCS STM control function) Packet STM-13 State request 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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-13.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	DE
NID_PACKET	8	13	State request from STM
L_PACKET	13	COMPUTED	
NID_STMSTATEREQUEST	4	4	CS
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 9: (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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	4	Unconditional order to CS
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 10: (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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	4	CS
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 11: (ETCS STM control function => STM) Packet STM-14 State order to STM.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	14	State order to STM
L_PACKET	13	COMPUTED	
NID_STMSTATEORDER	4	8	FA
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



End Conditions	Value	Comments
STM State	CS	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



## TEST CASE 10a.2

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10a.0.1.0.0.1.2.1.0.1.0.1.0.2.2.0.1.2.0
	Data Entry at Start-up with 1 STM and with 3 Specific NTC Data requests (the first two being identical and transmitted with 1 packet). STM answers in due time for the transition CO to DE. The STM does not answer in due time for the transition DE to CS. The train moves during Specific NTC Data Entry.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CO to DE, DE to CS, DE to FA); 10.3.2.4 (A3, A4a, C16); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.3.9; 10.7.4.1; 10.7.4.2; 10.7.4.3a; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>STM requirements tested</b>	Subset-035: None
<b>Packets transmitted via FFFIS STM</b>	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data Entry: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
<b>Comments and constraints</b>	All 'configuration data' except ETCS Train Data has been transmitted to STM before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CO	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	The ETCS receives from STM a DE state request.	PROF	T1+1s	Message 1: Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2: Packet STM-14 State order to STM (DE)
3.	STM sends a message for specific NTC data entry with 5 Data Identifiers.	PROF	T1+8s	Message 4e: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
4.	Specific NTC Data Entry procedure is started.	DMI	T2=T1+8s+Ts2	Driver selects the NTC button corresponding to the STM of the test.	DMI		NTC data window is displayed with the configured title.
5.	The driver performs the Specific NTC Data Entry.	DMI	T2+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards.(*)
					PROF	not relevant	Message 5a: Packet STM-180 Specific NTC Data values  Time: T3
6.	The STM is allowed to request the same data.	PROF	T3+1s	Message 4e: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with the configured title.
7.	The train moves during Specific NTC Data Entry: brake reaction.	ODO	T4=T3+1s+Ts4	Train moves (acceleration of 1 m/s <sup>2</sup> up to 18 km/h)	TIU	Ts17	ETCS commands the brake (EB or SB).
8.	The train decelerates until standstill.	ODO	T4+5s	Train decelerates (deceleration of 1 m/s <sup>2</sup> up to standstill)			

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
9.	The train reaches standstill, acknowledgement is requested to the driver.	ODO	T5=T4 +10s	Train reaches standstill	DMI	Ts3	ETCS requests the brake reaction acknowledgment.
10.	The driver acknowledges the brake reaction.	DMI	T6=T5 +Ts3	The driver acknowledges.	TIU	Ts9	ETCS releases the brake command.
					DMI	Ts9	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
11.	New selection of the STM for its Specific NTC Data Entry.	DMI	T7=T6 +Ts9	Driver selects the NTC button corresponding to the STM of the test.	DMI		NTC data window is displayed with the configured title.
12.	The driver performs the Specific NTC Data Entry.	DMI	T7+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards.(*)
					PROF	not relevant	Message 5a: Packet STM- 180 Specific NTC Data values  Time: T8
13.	The STM is allowed to request another data.	PROF	T9=T8+ 8s	Message 4c: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with new data labels and with the configured title.
14.	The driver performs the Specific NTC Data Entry.	DMI	T9+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)
					PROF	not relevant	Message 5b: Packet STM-180 Specific NTC Data values  Time: T10
15.	STM sends the "END of Specific NTC Data Entry", ETCS stops the Specific NTC Data entry procedure.	PROF	T11=T10 +8s	Message 6a: Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)



Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
16.	STM requests CS state.	PROF	T11+Ts5	Message 8a: Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9: Packet STM-14 State order to STM (CS)  Time: T12
17.	STM does not report CS state in due time.	PROF	T12	-	PROF	10s+ Ts16	Message 11: Packet STM-14 State order to STM to go to FA



**STM Test Case:**

All requirements are tested in TEST CASE 10a.1



Same messages than for TEST CASE 10a.1, except Message 4e:

Message 4e: (STM => ETCS) Packet STM-179 Specific NTC Data Entry			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	DE
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	5	
NID_DATA(1)	8	1	
L_CAPTION(1)	5	7	
X_CAPTION(1,1)	8	'V'	
X_CAPTION(1,2)	8	'A'	
X_CAPTION(1,3)	8	'L'	
X_CAPTION(1,4)	8	'U'	
X_CAPTION(1,5)	8	'E'	
X_CAPTION(1,6)	8	' '	
X_CAPTION(1,7)	8	'1'	
L_VALUE(1)	8	1	
X_VALUE(1,1)	8	'A'	
N_ITER(1)	5	3	
L_VALUE(1,1)	8	1	
X_VALUE(1,1,1)	8	'A'	
L_VALUE(1,2)	8	1	
X_VALUE(1,2,1)	8	'B'	
L_VALUE(1,3)	8	1	
X_VALUE(1,3,1)	8	'C'	
NID_DATA(2)	8	2	
L_CAPTION(2)	5	7	
X_CAPTION(2,1)	8	'V'	

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X_CAPTION(2,2)	8	'A'	
X_CAPTION(2,3)	8	'L'	
X_CAPTION(2,4)	8	'U'	
X_CAPTION(2,5)	8	'E'	
X_CAPTION(2,6)	8	' '	
X_CAPTION(2,7)	8	'2'	
L_VALUE(2)	8	3	
X_VALUE(2,1)	8	'A'	
N_ITER(2)	5	3	
L_VALUE(2,1)	8	1	
X_VALUE(2,1,1)	8	'A'	
L_VALUE(2,2)	8	1	
X_VALUE(2,2,1)	8	"B"	
L_VALUE(2,3)	8	1	
X_VALUE(2,3,1)	8	"C"	
NID_DATA(3)	8	3	
L_CAPTION(3)	5	7	
X_CAPTION(3,1)	8	'V'	
X_CAPTION(3,2)	8	'A'	
X_CAPTION(3,3)	8	'L'	
X_CAPTION(3,4)	8	'U'	
X_CAPTION(3,5)	8	'E'	
X_CAPTION(3,6)	8	' '	
X_CAPTION(3,7)	8	'3'	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	'A'	
N_ITER(3)	5	3	
L_VALUE(3,1)	8	1	
X_VALUE(3,1,1)	8	'A'	
L_VALUE(3,2)	8	1	
X_VALUE(3,2,1)	8	'B'	
L_VALUE(3,3)	8	1	
X_VALUE(3,3,1)	8	'C'	
NID_DATA(4)	8	4	

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L_CAPTION(4)	5	7	
X_CAPTION(4,1)	8	'V'	
X_CAPTION(4,2)	8	'A'	
X_CAPTION(4,3)	8	'L'	
X_CAPTION(4,4)	8	'U'	
X_CAPTION(4,5)	8	'E'	
X_CAPTION(4,6)	8	' '	
X_CAPTION(4,7)	8	'4'	
L_VALUE(4)	8	1	
X_VALUE(4,1)	8	'A'	
N_ITER(4)	5	3	
L_VALUE(4,1)	8	1	
X_VALUE(4,1,1)	8	'A'	
L_VALUE(4,2)	8	1	
X_VALUE(4,2,1)	8	'B'	
L_VALUE(4,3)	8	1	
X_VALUE(4,3,1)	8	'C'	
NID_DATA(5)	8	5	
L_CAPTION(5)	5	7	
X_CAPTION(5,1)	8	'V'	
X_CAPTION(5,2)	8	'A'	
X_CAPTION(5,3)	8	'L'	
X_CAPTION(5,4)	8	'U'	
X_CAPTION(5,5)	8	'E'	
X_CAPTION(5,6)	8	' '	
X_CAPTION(5,7)	8	'5'	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	'A'	
N_ITER(5)	5	3	
L_VALUE(5,1)	8	1	
X_VALUE(5,1,1)	8	'A'	
L_VALUE(5,2)	8	1	
X_VALUE(5,2,1)	8	'B'	
L_VALUE(5,3)	8	1	

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X_VALUE(5,3,1)	8	'C'	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

End Conditions	Value	Comments
STM State	FA	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10a.3

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10a.0.2.0
	Data Entry at Start-up with 1 STM. The STM does not answer in due time for the transition CO to DE.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CO to DE, CO to FA); 10.3.2.4 (A3, C16); 10.3.2.6; 10.4.1.7; 10.7.4.1; 10.7.4.2
<b>STM requirements tested</b>	Subset-035: None.
<b>Packets transmitted via FFFIS STM</b>	STM-13, STM-14, STM-15, STM-175, STM-176, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	
<b>Comments and constraints</b>	All 'configuration data' except ETCS Train Data has been transmitted to STM before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.





Starting Conditions	Value	Comments
STM State	CO	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



#### **ERTMS/ETCS on-board Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM
2.	The ETCS receives from STM a DE state request.	PROF	T0+5s	Message 1: Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2: Packet STM-14 State order to STM (DE)  Time: T1
3.	STM does not report DE state in due time.	PROF	T1	-	PROF	10s +Ts16	Message 11: Packet STM-14 State order to STM to go to FA

#### **STM Test Case:**

Not applicable. Degraded mode is not tested.

Same messages than for TEST CASE 10a.1.



End Conditions	Value	Comments
STM State	FA	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



## TEST CASE 10a.4

TEST CASE HEADER	
Test Case identification	Procedure Specific Data Entry / Data View
	10a.0.1.0.0.2.0.2.1.0
	Data Entry at Start-up with 1 STM. The STM state changes from CO to DE and then to CS. STM answers in due time. Driver skips the NTC Data Entry procedure.
ERTMS/ETCS on-board requirements tested	Subset-035: 10.3.2.2 (CO to DE, DE to CS); 10.3.2.4 (A3, A4a); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.3.1; 10.7.4.1; 10.7.4.2; 10.7.4.3d
STM requirements tested	Subset-035: None
Packets transmitted via FFFIS STM	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-184.
ERTMS/ETCS on-board configuration	
Comments and constraints	All 'configuration data' except ETCS Train Data has been transmitted to STM before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CO	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



# **ERTMS/ETCS on-board Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	The ETCS receives from STM a DE state request.	PROF	T1+1s	Message 1: Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2: Packet STM-14 State order to STM (DE)
3.	STM sends a message for specific NTC data entry with 5 Data Identifiers.	PROF	T1+8s	Message 4e: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
4.	Driver does not select this STM and closes the NTC data entry selection window.	DMI	T2=T1+8s+Ts2	Driver closes the NTC data entry selection window.	PROF	Ts10	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)
5.	STM requests CS state	PROF	T2+Ts10	Message 8a: Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9: Packet STM-14 State order to STM (CS)  Time: T3
6.	STM reports CS state in due time.	PROF	T3+8s	Message 10: Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11: Packet STM-14 State order to STM to go to FA <b>No</b> disconnection from ETCS with the STM Control Function



**STM Test Case:**

All requirement are tested in TEST CASE 10a.1.

Message 4e : Same as for TEST CASE 10a.2

Other messages: Same as for TEST CASE 10a.1



End Conditions	Value	Comments
STM State	CS	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	





## TEST CASE 10a.5

TEST CASE HEADER	
Test Case identification	Procedure Specific Data Entry / Data View
	10a.0.1.0.0.1.2.3.0.4
	Data Entry at Start-up with 1 STM and with 2 Specific NTC Data request (transmitted with 2 packets). STM answers in due time. The train is kept at standstill. Time-out on waiting the third Specific NTC Data request.
ERTMS/ETCS on-board requirements tested	Subset-035: 10.3.2.2 (CO to DE, DE to FA); 10.3.2.4 (A3, O16); 10.3.2.6; 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3b; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
STM requirements tested	Subset-035: None
Packets transmitted via FFFIS STM	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
ERTMS/ETCS on-board configuration	Specific NTC Data Entry: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
Comments and constraints	All 'configuration data' except ETCS Train Data has been transmitted to STM before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CO	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	The ETCS receives from STM a DE state request.	PROF	T1+1s	Message 1: Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2: Packet STM-14 State order to STM (DE)  Time: T2
3.	STM sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T2+1s	Message 4a: Packet STM-179 Specific NTC Data Entry request	DMI	T1-T2+7s	Nothing happens
4.	second part	PROF	T1+8s	Message 4b: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
5.	Specific NTC Data Entry procedure is started.	DMI	T3=T1+8s+Ts2	Driver selects the NTC button corresponding to the STM of the test.	DMI		NTC data window is displayed with the configured title.
6.	The driver performs the Specific NTC Data Entry.	DMI	T3+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a: Packet STM-180 Specific NTC Data values  Time: T4
7.	The STM is allowed to request the same data: first part.	PROF	T4+1s	Message 4a: Packet STM-179 Specific NTC Data Entry request	DMI	7s	Nothing happens

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
8.	second part	PROF	T5=T4+8s	Message 4b: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with the configured title.
9.	The driver performs the Specific NTC Data Entry.	DMI	T5+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a: Packet STM- 180 Specific NTC Data values  Time: T6
10.	STM has not sent the "END of Specific NTC Data Entry". ETCS stops the Specific NTC Data entry procedure.		T6		PROF	10s +Ts16	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)
	ETCS orders STM to failure.				PROF	10s +Ts16	Message 11: Packet STM-14 State order to STM (FA)



**STM Test Case:**

All requirements are tested in TEST CASE 10a.1  
Same messages than for TEST CASE 10a.1.

End Conditions	Value	Comments
STM State	FA	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



## TEST CASE 10a.6

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10a.0.1.0.0.1.2.1.0.3.0.3.1.0
	Data Entry at Start-up with 1 STM and with 2 Specific NTC Data requests for ERTMS/ETCS on-board Test Case (identical and transmitted with 2 packets). The STM state changes from CO to DE and then to CS (at procedure cancellation). STM answers in due time. The train is kept at standstill. ETCS cancels data entry procedure (cab is closed).
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CO to DE, DE to CS); 10.3.2.4 (A3, A4a); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3c; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>STM requirements tested</b>	Subset-035: 8.4.1.3; 9.2.1.1 (CO to DE, DE to CS); 9.2.1.2 (3, 4a); 9.3.1.4b/c; 10.7.3.6; 10.7.4.5a; 10.7.4.8b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>Packets transmitted via FFFIS STM</b>	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data Entry: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
<b>Comments and constraints</b>	All 'configuration data' except ETCS Train Data has been transmitted to STM before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state. Test case for STM: only applicable if the STM requests Specific NTC Data Entry.



Starting Conditions	Value	Comments
STM State	CO	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	The ETCS receives from STM a DE state request.	PROF	T1+1s	Message 1: Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2: Packet STM-14 State order to STM (DE)  Time: T2
3.	STM sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T2+1s	Message 4a: Packet STM-179 Specific NTC Data Entry request	DMI	T1-T2+7s	Nothing happens
4.	second part	PROF	T1+8s	Message 4b: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
5.	Specific NTC Data Entry procedure is started.	DMI	T3=T1+8s+Ts2	Driver selects the NTC button corresponding to the STM of the test.	DMI		NTC data window is displayed with the configured title.
6.	The driver performs the Specific NTC Data Entry.	DMI	T3+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a: Packet STM-180 Specific NTC Data values  Time: T4
7.	The STM is allowed to request the same data: first part.	PROF	T4+1s	Message 4a: Packet STM-179 Specific NTC Data Entry request	DMI	7s	Nothing happens

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
8.	second part	PROF	T5=T4+8s	Message 4b: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with the configured title.
9.	ETCS cancels the Data Entry procedure, e.g. cab is closed.	TIU	T6=T5+Ts4	Close the active cab.	PROF	Ts11	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)
10.	STM requests CS state	PROF	T6+Ts11	Message 8a: Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9: Packet STM-14 State order to STM (CS)  Time: T7
11.	STM reports CS state in due time.	PROF	T7+8s	Message 10: Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11: Packet STM-14 State order to STM to go to FA <b>No</b> disconnection from ETCS with the STM Control Function



# **STM Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
-	This test case is only valid when the STM shall request Specific Data Entry						
1.	Once the STM has received the START flag and the ETCS train data, the STM requests Data Entry state.	PROF	T0	Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data additional „braking characteristic” to STM	PROF	Ts7	Message 1: Packet STM-13 State request from STM (DE)
2.	ETCS orders STM state to change to “Data-Entry”.	PROF	T0+Ts7	Message 2: Packet STM-14 State order to STM (DE)	PROF	10s-Ts7	Message 4d: Packet STM-179 Specific NTC Data Entry request
Ending Specific Data Entry procedure for STM							
3.	ETCS cancels the Data Entry procedure. Then the STM requests CS state to the ETCS.	PROF	T1=T0+10s	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)	PROF	Ts8	Message 8a: Packet STM-13 State request from STM (CS)
4.	ETCS orders CS state	PROF	T1+Ts8	Message 9: Packet STM-14 State order to STM (CS)	PROF	10s	Message 10: Packet STM-15 State report from STM (CS)



Same messages than for TEST CASE 10a.1

End Conditions	Value	Comments
STM State	CS	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	No cab active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



## TEST CASE 10a.7 (not implemented)

Path on the Test Diagram: 10a.0.1.0.0.3.0.4

All the branches and requirements are covered in test case TEST CASE 10e.2.



## TEST CASE 10b.1

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10b.0.1.0.1.1.0.1.0.2.1.0.2.2.0.1
	The train fitted with 1 STM was in mission and is now at standstill. Data Entry is done with 3 Specific NTC Data requests for ERTMS/ETCS on-board Test Case (the first two being identical). STM answers in due time. The train moves during Specific NTC Data Entry.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.3.9; 10.7.4.1; 10.7.4.2; 10.7.4.3a; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>STM requirements tested</b>	Subset-035: 9.3.1.4b; 10.7.3.6; 10.7.4.5a; 10.7.4.8a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>Packets transmitted via FFFIS STM</b>	STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data Entry: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
<b>Comments and constraints</b>	Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state. Test case for STM: only applicable if the STM requests Specific NTC Data Entry.



Starting Conditions	Value	Comments
STM State	CS/HS/DA	All of these STM states (several test executions)
ETCS Mode	FS/LS/SR/OS/UN/S N	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	STM sends a message for specific NTC data entry with 5 Data Identifiers.	PROF	T1+8s	Message 4f: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
3.	The train moves during Specific NTC Data Entry: brake reaction.	ODO	T2=T1+8s+Ts2	Train moves (acceleration of 1 m/s <sup>2</sup> up to 18 km/h)	TIU	Ts17	ETCS commands the brake (EB or SB).
4.	The train decelerates until standstill.	ODO	T2+5s	Train decelerates (deceleration of 1 m/s <sup>2</sup> up to standstill)			
5.	The train reaches standstill, acknowledgement is requested to the driver.	ODO	T3=T2+10s	Train reaches standstill	DMI	Ts3	ETCS requests the brake reaction acknowledgement.
6.	The driver acknowledges the brake reaction.	DMI	T4=T3+Ts3	The driver acknowledges.	TIU	Ts9	ETCS releases the brake command.
					DMI	Ts9	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
7.	New selection of the STM for its Specific NTC Data Entry.	DMI	T5=T4+Ts9	Driver selects the NTC button corresponding to the STM of the test.	DMI		NTC data window is displayed with the configured title.
8.	The driver performs the Specific NTC Data Entry.	DMI	T5+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards.(*)

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
					PROF	not relevant	Message 5a: Packet STM-180 Specific NTC Data values  Time: T6
9.	The STM is allowed to request the same data.	PROF	T6+8s	Message 4f: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with the configured title.
10.	The driver performs the Specific NTC Data Entry.	DMI	T6+8s+ Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards.(*)
					PROF	not relevant	Message 5a: Packet STM- 180 Specific NTC Data values  Time: T7
11.	The STM is allowed to request another data.	PROF	T7+8s	Message 4g: Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC data window is displayed again with new data labels and with the configured title.
12.	The driver performs the Specific NTC Data Entry.	DMI	T7+8s+ Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)
					PROF	not relevant	Message 5b: Packet STM-180 Specific NTC Data values  Time: T8
13.	STM sends the "END of Specific NTC Data Entry", ETCS stops the Specific NTC Data entry procedure.	PROF	T8+8s	Message 6b: Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)





# STM Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
-	This test case is only valid when the STM shall request Specific Data Entry						
1.	STM receives the ETCS train data, the STM requests Specific NTC Data Entry.	PROF	T0	Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data additional „braking characteristic” to STM			
Specific NTC Data Entry is performed depending on STM							
2.					PROF	10s	Message 4h: Packet STM-179 Specific NTC Data Entry request Time: T1
3.	ETCS sends the parameter to the STM.	DMI	T1+1s	Message 5c: Packet STM-180 Specific NTC Data values			
4.	Iteration(s) of step 2 and step 3 is possible depending on STM						
Ending Specific Data Entry procedure for STM							
5.	The STM sends the “END of specific data entry”				PROF	10s	Message 6b: Packet STM-179 with N_ITER = 0  Time: T2

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
6.	The ETCS stops the Specific NTC Data entry procedure (13.1.1.2.10.2).	PROF	T2+1s	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)	PROF		<b>No</b> Message 12: Packet-STM-15 State report from STM (FA) <b>No</b> disconnection from STM with the STM Control Function



Same messages than for TEST CASE 10a.1, except messages 4f, 4g, 4h, 6b & 12 defined below:

Message 4f: (STM => ETCS) Packet STM-179 Specific NTC Data Entry			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
N_ITER	5	5	
NID_DATA(1)	8	1	
L_CAPTION(1)	5	7	
X_CAPTION(1,1)	8	'V'	
X_CAPTION(1,2)	8	'A'	
X_CAPTION(1,3)	8	'L'	
X_CAPTION(1,4)	8	'U'	
X_CAPTION(1,5)	8	'E'	
X_CAPTION(1,6)	8	' '	
X_CAPTION(1,7)	8	'1'	
L_VALUE(1)	8	1	
X_VALUE(1,1)	8	'A'	
N_ITER(1)	5	3	
L_VALUE(1,1)	8	1	
X_VALUE(1,1,1)	8	'A'	
L_VALUE(1,2)	8	1	
X_VALUE(1,2,1)	8	'B'	
L_VALUE(1,3)	8	1	
X_VALUE(1,3,1)	8	'C'	
NID_DATA(2)	8	2	
L_CAPTION(2)	5	7	
X_CAPTION(2,1)	8	'V'	
X_CAPTION(2,2)	8	'A'	

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X_CAPTION(2,3)	8	'L'	
X_CAPTION(2,4)	8	'U'	
X_CAPTION(2,5)	8	'E'	
X_CAPTION(2,6)	8	' '	
X_CAPTION(2,7)	8	'2'	
L_VALUE(2)	8	1	
X_VALUE(2,1)	8	'A'	
N_ITER(2)	5	3	
L_VALUE(2,1)	8	1	
X_VALUE(2,1,1)	8	'A'	
L_VALUE(2,2)	8	1	
X_VALUE(2,2,1)	8	'B'	
L_VALUE(2,3)	8	1	
X_VALUE(2,3,1)	8	'C'	
NID_DATA(3)	8	3	
L_CAPTION(3)	5	7	
X_CAPTION(3,1)	8	'V'	
X_CAPTION(3,2)	8	'A'	
X_CAPTION(3,3)	8	'L'	
X_CAPTION(3,4)	8	'U'	
X_CAPTION(3,5)	8	'E'	
X_CAPTION(3,6)	8	' '	
X_CAPTION(3,7)	8	'3'	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	'A'	
N_ITER(3)	5	3	
L_VALUE(3,1)	8	1	
X_VALUE(3,1,1)	8	'A'	
L_VALUE(3,2)	8	1	
X_VALUE(3,2,1)	8	'B'	
L_VALUE(3,3)	8	1	
X_VALUE(3,3,1)	8	'C'	
NID_DATA(4)	8	4	
L_CAPTION(4)	5	7	

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X_CAPTION(4,1)	8	'V'	
X_CAPTION(4,2)	8	'A'	
X_CAPTION(4,3)	8	'L'	
X_CAPTION(4,4)	8	'U'	
X_CAPTION(4,5)	8	'E'	
X_CAPTION(4,6)	8	' '	
X_CAPTION(4,7)	8	'4'	
L_VALUE(4)	8	1	
X_VALUE(4,1)	8	'A'	
N_ITER(4)	5	3	
L_VALUE(4,1)	8	1	
X_VALUE(4,1,1)	8	'A'	
L_VALUE(4,2)	8	1	
X_VALUE(4,2,1)	8	'B'	
L_VALUE(4,3)	8	1	
X_VALUE(4,3,1)	8	'C'	
NID_DATA(5)	8	5	
L_CAPTION(5)	5	7	
X_CAPTION(5,1)	8	'V'	
X_CAPTION(5,2)	8	'A'	
X_CAPTION(5,3)	8	'L'	
X_CAPTION(5,4)	8	'U'	
X_CAPTION(5,5)	8	'E'	
X_CAPTION(5,6)	8	' '	
X_CAPTION(5,7)	8	'5'	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	'A'	
N_ITER(5)	5	3	
L_VALUE(5,1)	8	1	
X_VALUE(5,1,1)	8	'A'	
L_VALUE(5,2)	8	1	
X_VALUE(5,2,1)	8	'B'	
L_VALUE(5,3)	8	1	
X_VALUE(5,3,1)	8	'C'	

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PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked
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Message 4g: (STM => ETCS) Packet STM-179 Specific NTC Data Entry request			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	179	Specific NTC Data Entry Request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	15	Maximum allowed value
NID_DATA(1)	8	6	
L_CAPTION(1)	5	7	
X_CAPTION(1,1)	8	'V'	
X_CAPTION(1,2)	8	'A'	
X_CAPTION(1,3)	8	'L'	
X_CAPTION(1,4)	8	'U'	
X_CAPTION(1,5)	8	'E'	
X_CAPTION(1,6)	8	' '	
X_CAPTION(1,7)	8	'6'	
L_VALUE(1)	8	1	
X_VALUE(1,1)	8	'A'	
N_ITER(1)	5	3	
L_VALUE(1,1)	8	1	
X_VALUE(1,1,1)	8	'A'	
L_VALUE(1,2)	8	1	
X_VALUE(1,2,1)	8	'B'	
L_VALUE(1,3)	8	1	
X_VALUE(1,3,1)	8	'C'	
NID_DATA(2)	8	7	
L_CAPTION(2)	5	7	
X_CAPTION(2,1)	8	'V'	

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X_CAPTION(2,2)	8	'A'	
X_CAPTION(2,3)	8	'L'	
X_CAPTION(2,4)	8	'U'	
X_CAPTION(2,5)	8	'E'	
X_CAPTION(2,6)	8	' '	
X_CAPTION(2,7)	8	'7'	
L_VALUE(2)	8	1	
X_VALUE(2,1)	8	'A'	
N_ITER(2)	5	3	
L_VALUE(2,1)	8	1	
X_VALUE(2,1,1)	8	'A'	
L_VALUE(2,2)	8	1	
X_VALUE(2,2,1)	8	'B'	
L_VALUE(2,3)	8	1	
X_VALUE(2,3,1)	8	'C'	
NID_DATA(3)	8	8	
L_CAPTION(3)	5	7	
X_CAPTION(3,1)	8	'V'	
X_CAPTION(3,2)	8	'A'	
X_CAPTION(3,3)	8	'L'	
X_CAPTION(3,4)	8	'U'	
X_CAPTION(3,5)	8	'E'	
X_CAPTION(3,6)	8	' '	
X_CAPTION(3,7)	8	'8'	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	'A'	
N_ITER(3)	5	3	
L_VALUE(3,1)	8	1	
X_VALUE(3,1,1)	8	'A'	
L_VALUE(3,2)	8	1	
X_VALUE(3,2,1)	8	'B'	
L_VALUE(3,3)	8	1	
X_VALUE(3,3,1)	8	'C'	
NID_DATA(4)	8	9	

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L_CAPTION(4)	5	7	
X_CAPTION(4,1)	8	'V'	
X_CAPTION(4,2)	8	'A'	
X_CAPTION(4,3)	8	'L'	
X_CAPTION(4,4)	8	'U'	
X_CAPTION(4,5)	8	'E'	
X_CAPTION(4,6)	8	' '	
X_CAPTION(4,7)	8	'9'	
L_VALUE(4)	8	1	
X_VALUE(4,1)	8	'A'	
N_ITER(4)	5	3	
L_VALUE(4,1)	8	1	
X_VALUE(4,1,1)	8	'A'	
L_VALUE(4,2)	8	1	
X_VALUE(4,2,1)	8	'B'	
L_VALUE(4,3)	8	1	
X_VALUE(4,3,1)	8	'C'	
NID_DATA(5)	8	10	
L_CAPTION(5)	5	8	
X_CAPTION(5,1)	8	'V'	
X_CAPTION(5,2)	8	'A'	
X_CAPTION(5,3)	8	'L'	
X_CAPTION(5,4)	8	'U'	
X_CAPTION(5,5)	8	'E'	
X_CAPTION(5,6)	8	' '	
X_CAPTION(5,7)	8	'1'	
X_CAPTION(5,8)	8	'0'	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	'A'	
N_ITER(5)	5	3	
L_VALUE(5,1)	8	1	
X_VALUE(5,1,1)	8	'A'	
L_VALUE(5,2)	8	1	
X_VALUE(5,2,1)	8	'B'	

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L_VALUE(5,3)	8	1	
X_VALUE(5,3,1)	8	'C'	
NID_DATA(6)	8	11	
L_CAPTION(6)	5	8	
X_CAPTION(6,1)	8	'V'	
X_CAPTION(6,2)	8	'A'	
X_CAPTION(6,3)	8	'L'	
X_CAPTION(6,4)	8	'U'	
X_CAPTION(6,5)	8	'E'	
X_CAPTION(6,6)	8	' '	
X_CAPTION(6,7)	8	'1'	
X_CAPTION(6,8)	8	'1'	
L_VALUE(6)	8	0	
N_ITER(6)	5	0	
NID_DATA(7)	8	12	
L_CAPTION(7)	5	8	
X_CAPTION(7,1)	8	'V'	
X_CAPTION(7,2)	8	'A'	
X_CAPTION(7,3)	8	'L'	
X_CAPTION(7,4)	8	'U'	
X_CAPTION(7,5)	8	'E'	
X_CAPTION(7,6)	8	' '	
X_CAPTION(7,7)	8	'1'	
X_CAPTION(7,8)	8	'2'	
L_VALUE(7)	8	0	
N_ITER(7)	5	0	
NID_DATA(8)	8	13	
L_CAPTION(8)	5	8	
X_CAPTION(8,1)	8	'V'	
X_CAPTION(8,2)	8	'A'	
X_CAPTION(8,3)	8	'L'	
X_CAPTION(8,4)	8	'U'	
X_CAPTION(8,5)	8	'E'	
X_CAPTION(8,6)	8	' '	

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X_CAPTION(8,7)	8	'1'	
X_CAPTION(8,8)	8	'3'	
L_VALUE(8)	8	0	
N_ITER(8)	5	0	
NID_DATA(9)	8	14	
L_CAPTION(9)	5	8	
X_CAPTION(9,1)	8	'V'	
X_CAPTION(9,2)	8	'A'	
X_CAPTION(9,3)	8	'L'	
X_CAPTION(9,4)	8	'U'	
X_CAPTION(9,5)	8	'E'	
X_CAPTION(9,6)	8	' '	
X_CAPTION(9,7)	8	'1'	
X_CAPTION(9,8)	8	'4'	
L_VALUE(9)	8	0	
N_ITER(9)	5	0	
NID_DATA(10)	8	15	
L_CAPTION(10)	5	8	
X_CAPTION(10,1)	8	'V'	
X_CAPTION(10,2)	8	'A'	
X_CAPTION(10,3)	8	'L'	
X_CAPTION(10,4)	8	'U'	
X_CAPTION(10,5)	8	'E'	
X_CAPTION(10,6)	8	' '	
X_CAPTION(10,7)	8	'1'	
X_CAPTION(10,8)	8	'5'	
L_VALUE(10)	8	0	
N_ITER(10)	5	0	
NID_DATA(11)	8	16	
L_CAPTION(11)	5	8	
X_CAPTION(11,1)	8	'V'	
X_CAPTION(11,2)	8	'A'	
X_CAPTION(11,3)	8	'L'	
X_CAPTION(11,4)	8	'U'	

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X_CAPTION(11,5)	8	'E'	
X_CAPTION(11,6)	8	' '	
X_CAPTION(11,7)	8	'1'	
X_CAPTION(11,8)	8	'6'	
L_VALUE(11)	8	0	
N_ITER(11)	5	0	
NID_DATA(12)	8	17	
L_CAPTION(12)	5	8	
X_CAPTION(12,1)	8	'V'	
X_CAPTION(12,2)	8	'A'	
X_CAPTION(12,3)	8	'L'	
X_CAPTION(12,4)	8	'U'	
X_CAPTION(12,5)	8	'E'	
X_CAPTION(12,6)	8	' '	
X_CAPTION(12,7)	8	'1'	
X_CAPTION(12,8)	8	'7'	
L_VALUE(12)	8	0	
N_ITER(12)	5	0	
NID_DATA(13)	8	18	
L_CAPTION(13)	5	8	
X_CAPTION(13,1)	8	'V'	
X_CAPTION(13,2)	8	'A'	
X_CAPTION(13,3)	8	'L'	
X_CAPTION(13,4)	8	'U'	
X_CAPTION(13,5)	8	'E'	
X_CAPTION(13,6)	8	' '	
X_CAPTION(13,7)	8	'1'	
X_CAPTION(13,8)	8	'8'	
L_VALUE(13)	8	0	
N_ITER(13)	5	0	
NID_DATA(14)	8	19	
L_CAPTION(14)	5	8	
X_CAPTION(14,1)	8	'V'	
X_CAPTION(14,2)	8	'A'	

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X_CAPTION(14,3)	8	'L'	
X_CAPTION(14,4)	8	'U'	
X_CAPTION(14,5)	8	'E'	
X_CAPTION(14,6)	8	' '	
X_CAPTION(14,7)	8	'1'	
X_CAPTION(14,8)	8	'9'	
L_VALUE(14)	8	0	
N_ITER(14)	5	0	
NID_DATA(15)	8	20	
L_CAPTION(15)	5	8	
X_CAPTION(15,1)	8	'V'	
X_CAPTION(15,2)	8	'A'	
X_CAPTION(15,3)	8	'L'	
X_CAPTION(15,4)	8	'U'	
X_CAPTION(15,5)	8	'E'	
X_CAPTION(15,6)	8	' '	
X_CAPTION(15,7)	8	'2'	
X_CAPTION(15,8)	8	'0'	
L_VALUE(15)	8	0	
N_ITER(15)	5	0	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 4h: (STM => ETCS) Packet STM-179 Specific NTC Data Entry			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	Note that this value may not be the one received on the first message including packet STM-179, but is however mandatory on the last one.
N_ITER	5	FINITE VALUE	This value shall be lower or equal than 15. Moreover, if the previous packet(s) STM-179 is(are) transmitted with Q_FOLLOWING=1, the sum of the N_ITER of these packets STM-179 (including the one with Q_FOLLOWING=0) shall be lower or equal than 15.
NID_DATA(j)	8	FINITE VALUE	
L_CAPTION(j)	5	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_CAPTION) shall be lower or equal than 20.
X_CAPTION(j,q)	8	FINITE VALUE	
L_VALUE(j)	8	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_VALUE) shall be lower or equal than 10.
X_VALUE(j,i)	8	FINITE VALUE	
N_ITER(j)	5	FINITE VALUE	
L_VALUE(j,i)	8	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_VALUE) shall be lower or equal than 10.
X_VALUE(j,i,k)	8	FINITE VALUE	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 6b: (STM => ETCS) Packet STM-179 End of Specific NTC Data Entry			
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 (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	0	End of Specific NTC Data Entry
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 12: (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.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	8	FA
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



End Conditions	Value	Comments
STM State	Unchanged	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	





## TEST CASE 10b.2

TEST CASE HEADER	
Test Case identification	Procedure Specific Data Entry / Data View
	10b.0.1.0.3.0.4
	The train fitted with 1 STM was in mission and is now at standstill. Data Entry is started. Time-out on waiting the first Specific NTC Data request.
ERTMS/ETCS on-board requirements tested	Subset-035: 10.3.2.2 (CS/HS/DA to FA); 10.3.2.4 (O16); 10.4.1.7; 10.7.4.1; 10.7.4.2; 10.7.4.3b; 10.7.4.9a
STM requirements tested	Subset-035: None
Packets transmitted via FFFIS STM	STM-15, STM-175, STM-176, STM-184.
ERTMS/ETCS on-board configuration	
Comments and constraints	Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CS/HS/DA	All of these STM states (several test executions)
ETCS Mode	FS/LS/SR/OS/UN/S N	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	



# **ERTMS/ETCS on-board Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	STM has not send the "END of Specific NTC Data Entry". ETCS stops the Specific NTC Data entry procedure.		T1		PROF	10s +Ts16	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)
	ETCS orders STM to failure.				PROF	10s +Ts16	Message 11: Packet STM-14 State order to STM (FA)

# **STM Test Case:**

Not applicable. Degraded mode is not tested.

Same messages than for TEST CASE 10a.1.



End Conditions	Value	Comments
STM State	FA	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10b.3

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10b.0.1.0.2.0.2
	The train fitted with 1 STM was in mission and is now at standstill. Driver skips the NTC Data Entry procedure.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.4.1.7; 10.7.3.1; 10.7.4.1; 10.7.4.2; 10.7.4.3d; 10.7.4.9a
<b>STM requirements tested</b>	Subset-035: 9.3.1.4b; 10.7.4.5a
<b>Packets transmitted via FFFIS STM</b>	STM-15, STM-175, STM-176, STM-179, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	
<b>Comments and constraints</b>	Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state. Test case for STM: only applicable if the STM requests Specific NTC Data Entry.



Starting Conditions	Value	Comments
STM State	CS/HS/DA	All of these STM states (several test executions)
ETCS Mode	FS/LS/SR/OS/UN/SSN	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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**ERTMS/ETCS on-board Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	STM sends a message for specific NTC data entry with 5 Data Identifiers.	PROF	T1+8s	Message 4f: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
3.	Driver does not select this STM and closes the NTC data entry selection window.	DMI	T1+8s+ Ts2	Driver closes the NTC data entry selection window.	PROF	Ts10	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)



# **STM Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
-	This test case is only valid when the STM shall request Specific Data Entry						
1.	STM receives the ETCS train data, the STM requests Specific NTC Data Entry.	PROF	T0	Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data additional „braking characteristic” to STM	PROF	10s	STM request data entry : Message 4h: Packet STM-179 Specific NTC Data Entry request
Ending Specific Data Entry procedure for STM							
2.	ETCS cancels the data entry procedure.	PROF	T0+10s	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)	PROF		<b>No</b> Message 12: Packet-STM-15 State report from STM (FA) <b>No</b> disconnection from STM with the STM Control Function





Messages 4f, 4h & 12: Same as for TEST CASE 10b.1.

Other messages: Same as for TEST CASE 10a.1.

End Conditions	Value	Comments
STM State	Unchanged	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10b.4

### TEST CASE HEADER

Test Case identification	Procedure Specific Data Entry / Data View
	10b.0.2.0
	The train fitted with 1 STM was in mission and is now at standstill. Data Entry is started. STM answers in due time, but does not need Specific NTC Data.
ERTMS/ETCS on-board requirements tested	Subset-035: 10.4.1.7; 10.7.4.1; 10.7.4.2; 10.7.4.3a
STM requirements tested	Subset-035: 9.3.1.4b; 10.7.4.5b
Packets transmitted via FFFIS STM	STM-15, STM-175, STM-176, STM-179, STM-184.
ERTMS/ETCS on-board configuration	
Comments and constraints	Test case for ETCS: STM simulator indicated that it does <b>NOT</b> need Specific NTC Data in PO state. Test case for STM: only applicable if the STM does <b>NOT</b> request Specific NTC Data Entry.



Starting Conditions	Value	Comments
STM State	CS/HS/DA	All of these STM states (several test executions)
ETCS Mode	FS/LS/SR/OS/UN/SSN	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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**ERTMS/ETCS on-board Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	STM sends End of Specific NTC Data Entry message.	PROF	T1+8s	Message 6b: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as disabled the NTC button corresponding to the STM of the test.
					PROF	Ts5	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)



# **STM Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
-	The STM shall <b>NOT</b> request Specific Data Entry.						
1.	The driver performs the ETCS Train Data entry. STM sends End of Specific NTC Data Entry message;	PROF	T0	Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM	PROF	10s	Message 6b: Packet STM-179 Specific NTC Data Entry request
2.	The ETCS stops the Specific NTC Data Entry procedure.	PROF	T0+10s	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)	PROF		<b>No</b> Message 12: Packet-STM-15 State report from STM (FA) <b>No</b> disconnection from STM with the STM Control Function



Messages 6b & 12: Same as for TEST CASE 10b.1.

Other messages: Same as for TEST CASE 10a.1.

End Conditions	Value	Comments
STM State	Unchanged	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10b.5

TEST CASE HEADER	
Test Case identification	Procedure Specific Data Entry / Data View
	10b.0.1.0.1.3.0.3
	The train fitted with 1 STM was in mission and is now at standstill. Data Entry is started. STM answers in due time. ETCS cancels data entry procedure (cab is closed) before any Specific NTC Data Entry done by driver.
ERTMS/ETCS on-board requirements tested	Subset-035: 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3c; 10.7.4.6; 10.7.4.9a
STM requirements tested	Subset-035: None
Packets transmitted via FFFIS STM	STM-15, STM-175, STM-176, STM-179, STM-184.
ERTMS/ETCS on-board configuration	Specific NTC Data Entry: <ul style="list-style-type: none"><li>• window title: "STM Simulator Data Entry"</li></ul>
Comments and constraints	Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CS/HS/DA	All of these STM states (several test executions)
ETCS Mode	FS/LS/SR/OS/UN/S N	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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#### ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3: Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
2.	STM sends a message for specific NTC data entry with 5 Data Identifiers.	PROF	T1+8s	Message 4f: Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC data entry selection window shows as enabled the NTC button corresponding to the STM of the test.
3.	Specific NTC Data Entry procedure is started.	DMI	T2=T1+8s+Ts2	Driver selects the NTC button corresponding to the STM of the test.	DMI		NTC data window is displayed with the configured title.
4.	ETCS cancels the Data Entry procedure, e.g. cab is closed.	TIU	T2+5s	Close the active cab.	PROF	Ts11	Message 7: Packet STM-184 Specific NTC Data Entry flag (STOP)

#### STM Test Case:

All requirements are tested in TEST CASE 10b.1.



Message 4f: Same as for TEST CASE 10b.1.

Other messages: Same as for TEST CASE 10a.1

End Conditions	Value	Comments
STM State	Unchanged	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	No cab active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10c.1

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10c.0.0
	Specific NTC Data View with one STM, transmitted with 2 packets for ERTMS/ETCS on-board Test Case. A second STM does not need Specific NTC Data View.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.8.1.2; 10.8.1.4; 15.2.1.3; 15.2.1.4a/c
<b>STM requirements tested</b>	Subset-035: 9.3.1.4b; 10.8.1.3a; 15.2.1.3; 15.2.1.4a/c
<b>Packets transmitted via FFFIS STM</b>	STM-15, STM-182, STM-183.
<b>ERTMS/ETCS on-board configuration</b>	
<b>Comments and constraints</b>	Test case for STM: only applicable if the STM requests Specific NTC Data View values.



Starting Conditions	Value	Comments
STM State	CS/HS/DA	All of these STM states (several test executions)
ETCS Mode	SB/FS/LS/SR/OS/U N/SN	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The ERTMS/ETCS On-board sends a request of "STM specific Data View values" to the STMs	DMI	T0	The driver requests the Data View.	PROF	Ts12	Message 13a (STM X1): Packet STM-182 Request for Specific NTC Data View values  Time: T1
					PROF	Ts12	Message 13b (STM X2): Packet STM-182 Request for Specific NTC Data View values  Time: T2
2.	Answer of STM X1	PROF	T1+1s	Message 14a: Packet STM-183 Specific NTC Data View values	DMI	7s	Nothing happens.
3.		PROF	T1+8s	Message 14b: Packet STM-183 Specific NTC Data View values	PROF	2s +Ts16	<b>No</b> Message 11: Packet STM-14 State order to STM to go to FA <b>No</b> disconnection from ETCS with the STM Control Function
4.	Answer of STM X2	PROF	T2+8s	Message 14c: Packet STM-183 Specific NTC Data View values	PROF	2s +Ts16	<b>No</b> Message 11: Packet STM-14 State order to STM to go to FA <b>No</b> disconnection from ETCS with the STM Control Function
5.	The driver scrolls down up to the first NTC Data View window.	DMI	max(T1, T2) +8s +Ts13	The driver pushes [Next] button on the last ETCS Data view window.	DMI		The NTC X data view window is displayed with the data contained in packet STM-183 of STM X1. The [Next] button is not displayed on the last Data View window of this STM X1 (i.e. the window including "DATA 14" label.

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### STM Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	Answer of STM	PROF	T0	Message 13a: Packet STM-182 Request for Specific NTC Data View values (STM X1)	PROF	10s	Message 14d: Packet STM-183 Specific NTC Data View values

Message 11: Same as for TEST CASE 10a.1

Other messages:

Message 13a: ETCS => STM X1 Packet STM-182 Request for Specific NTC Data View			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM X1 ID when testing STM. When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	182	
L_PACKET	13	COMPUTED	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 13b: ETCS => STM X2 Packet STM-182 Request of Specific NTC Data View			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM X2 ID when testing STM. When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	182	
L_PACKET	13	COMPUTED	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

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Message 14a: STM X1 => ETCS Packet STM-183 Specific NTC Data View values			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	183	
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	1	
N_ITER	5	6	
NID_DATA(1)	8	1	
L_CAPTION(1)	5	20	
X_CAPTION(1,1)	8	"M"	
X_CAPTION(1,2)	8	"A"	
X_CAPTION(1,3)	8	"X"	
X_CAPTION(1,4)	8	"I"	
X_CAPTION(1,5)	8	"M"	
X_CAPTION(1,6)	8	"U"	
X_CAPTION(1,7)	8	"M"	
X_CAPTION(1,8)	8	" "	
X_CAPTION(1,9)	8	"L"	
X_CAPTION(1,10)	8	"E"	
X_CAPTION(1,11)	8	"N"	
X_CAPTION(1,12)	8	"G"	
X_CAPTION(1,13)	8	"T"	
X_CAPTION(1,14)	8	"H"	
X_CAPTION(1,15)	8	" "	
X_CAPTION(1,16)	8	"L"	
X_CAPTION(1,17)	8	"A"	
X_CAPTION(1,18)	8	"B"	
X_CAPTION(1,19)	8	"E"	
X_CAPTION(1,20)	8	"L"	

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L_VALUE(1)	8	7	
X_VALUE(1,1)	8	"1"	
X_VALUE(1,2)	8	"0"	
X_VALUE(1,3)	8	"C"	
X_VALUE(1,4)	8	" "	
X_VALUE(1,5)	8	"0"	
X_VALUE(1,6)	8	" "	
X_VALUE(1,7)	8	"0"	
X_VALUE(1,8)	8	" "	
NID_DATA(2)	8	2	
L_CAPTION(2)	5	7	
X_CAPTION(2,1)	8	"D"	
X_CAPTION(2,2)	8	"A"	
X_CAPTION(2,3)	8	"T"	
X_CAPTION(2,4)	8	"A"	
X_CAPTION(2,5)	8	" "	
X_CAPTION(2,6)	8	"0"	
X_CAPTION(2,7)	8	"1"	
L_VALUE(2)	8	1	
X_VALUE(2,1)	8	"A"	
NID_DATA(3)	8	3	
L_CAPTION(3)	5	7	
X_CAPTION(3,1)	8	"D"	
X_CAPTION(3,2)	8	"A"	
X_CAPTION(3,3)	8	"T"	
X_CAPTION(3,4)	8	"A"	
X_CAPTION(3,5)	8	" "	
X_CAPTION(3,6)	8	"0"	
X_CAPTION(3,7)	8	"2"	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	"B"	
NID_DATA(4)	8	4	
L_CAPTION(4)	5	7	
X_CAPTION(4,1)	8	"D"	

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X_CAPTION(4,2)	8	"A"	
X_CAPTION(4,3)	8	"T"	
X_CAPTION(4,4)	8	"A"	
X_CAPTION(4,5)	8	" "	
X_CAPTION(4,6)	8	"0"	
X_CAPTION(4,7)	8	"3"	
L_VALUE(4)	8	1	
X_VALUE(4,1)	8	"C"	
NID_DATA(5)	8	5	
L_CAPTION(5)	5	7	
X_CAPTION(5,1)	8	"D"	
X_CAPTION(5,2)	8	"A"	
X_CAPTION(5,3)	8	"T"	
X_CAPTION(5,4)	8	"A"	
X_CAPTION(5,5)	8	" "	
X_CAPTION(5,6)	8	"0"	
X_CAPTION(5,7)	8	"4"	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	"D"	
NID_DATA(6)	8	6	
L_CAPTION(6)	5	7	
X_CAPTION(6,1)	8	"D"	
X_CAPTION(6,2)	8	"A"	
X_CAPTION(6,3)	8	"T"	
X_CAPTION(6,4)	8	"A"	
X_CAPTION(6,5)	8	" "	
X_CAPTION(6,6)	8	"0"	
X_CAPTION(6,7)	8	"5"	
L_VALUE(6)	8	1	
X_VALUE(6,1)	8	"E"	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 14b: STM X1 => ETCS Packet STM-183 Specific NTC Data View values			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	183	
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	9	
NID_DATA(1)	8	7	
L_CAPTION(1)	5	7	
X_CAPTION(1,1)	8	"D"	
X_CAPTION(1,2)	8	"A"	
X_CAPTION(1,3)	8	"T"	
X_CAPTION(1,4)	8	"A"	
X_CAPTION(1,5)	8	" "	
X_CAPTION(1,6)	8	"0"	
X_CAPTION(1,7)	8	"6"	
L_VALUE(1)	8	1	
X_VALUE(1,1)	8	"F"	
NID_DATA(2)	8	8	
L_CAPTION(2)	5	7	
X_CAPTION(2,1)	8	"D"	
X_CAPTION(2,2)	8	"A"	
X_CAPTION(2,3)	8	"T"	
X_CAPTION(2,4)	8	"A"	
X_CAPTION(2,5)	8	" "	
X_CAPTION(2,6)	8	"0"	
X_CAPTION(2,7)	8	"7"	
L_VALUE(2)	8	1	
X_VALUE(2,1)	8	"G"	

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NID_DATA(3)	8	9	
L_CAPTION(3)	5	7	
X_CAPTION(3,1)	8	"D"	
X_CAPTION(3,2)	8	"A"	
X_CAPTION(3,3)	8	"T"	
X_CAPTION(3,4)	8	"A"	
X_CAPTION(3,5)	8	" "	
X_CAPTION(3,6)	8	"0"	
X_CAPTION(3,7)	8	"8"	
L_VALUE(3)	8	1	
X_VALUE(3,1)	8	"H"	
NID_DATA(4)	8	10	
L_CAPTION(4)	5	7	
X_CAPTION(4,1)	8	"D"	
X_CAPTION(4,2)	8	"A"	
X_CAPTION(4,3)	8	"T"	
X_CAPTION(4,4)	8	"A"	
X_CAPTION(4,5)	8	" "	
X_CAPTION(4,6)	8	"0"	
X_CAPTION(4,7)	8	"9"	
L_VALUE(4)	8	1	
X_VALUE(4,1)	8	"I"	
NID_DATA(5)	8	11	
L_CAPTION(5)	5	7	
X_CAPTION(5,1)	8	"D"	
X_CAPTION(5,2)	8	"A"	
X_CAPTION(5,3)	8	"T"	
X_CAPTION(5,4)	8	"A"	
X_CAPTION(5,5)	8	" "	
X_CAPTION(5,6)	8	"1"	
X_CAPTION(5,7)	8	"0"	
L_VALUE(5)	8	1	
X_VALUE(5,1)	8	"J"	
NID_DATA(6)	8	12	

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L_CAPTION(6)	5	7	
X_CAPTION(6,1)	8	"D"	
X_CAPTION(6,2)	8	"A"	
X_CAPTION(6,3)	8	"T"	
X_CAPTION(6,4)	8	"A"	
X_CAPTION(6,5)	8	" "	
X_CAPTION(6,6)	8	"1"	
X_CAPTION(6,7)	8	"1"	
L_VALUE(6)	8	1	
X_VALUE(6,1)	8	"K"	
NID_DATA(7)	8	13	
L_CAPTION(7)	5	7	
X_CAPTION(7,1)	8	"D"	
X_CAPTION(7,2)	8	"A"	
X_CAPTION(7,3)	8	"T"	
X_CAPTION(7,4)	8	"A"	
X_CAPTION(7,5)	8	" "	
X_CAPTION(7,6)	8	"1"	
X_CAPTION(7,7)	8	"2"	
L_VALUE(7)	8	1	
X_VALUE(7,1)	8	"L"	
NID_DATA(8)	8	14	
L_CAPTION(8)	5	7	
X_CAPTION(8,1)	8	"D"	
X_CAPTION(8,2)	8	"A"	
X_CAPTION(8,3)	8	"T"	
X_CAPTION(8,4)	8	"A"	
X_CAPTION(8,5)	8	" "	
X_CAPTION(8,6)	8	"1"	
X_CAPTION(8,7)	8	"3"	
L_VALUE(8)	8	1	
X_VALUE(8,1)	8	"M"	
NID_DATA(9)	8	15	
L_CAPTION(9)	5	7	

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X_CAPTION(9,1)	8	"D"	
X_CAPTION(9,2)	8	"A"	
X_CAPTION(9,3)	8	"T"	
X_CAPTION(9,4)	8	"A"	
X_CAPTION(9,5)	8	" "	
X_CAPTION(9,6)	8	"1"	
X_CAPTION(9,7)	8	"4"	
L_VALUE(9)	8	10	
X_VALUE(9,1)	8	"N"	
X_VALUE(9,2)	8	"O"	
X_VALUE(9,3)	8	"P"	
X_VALUE(9,4)	8	"Q"	
X_VALUE(9,5)	8	"R"	
X_VALUE(9,6)	8	"S"	
X_VALUE(9,7)	8	"T"	
X_VALUE(9,8)	8	"U"	
X_VALUE(9,9)	8	"V"	
X_VALUE(9,10)	8	"W"	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 14c: STM X2 => ETCS Packet STM-183 Specific NTC Data View values			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM X2 ID when testing STM. When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	183	
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	0	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



Message 14d: STM => ETCS Packet STM-183 Specific NTC Data View values (generic)			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	Should be replaced by STM ID when testing STM.
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	183	
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	Note that this value may not be the one received on the first message including packet STM-183, but is however mandatory on the last one.
N_ITER	5	FINITE VALUE	This value shall be lower or equal than 15. Moreover, if the previous packet(s) STM-183 is(are) transmitted with Q_FOLLOWING=1, the sum of the N_ITER of these packets STM-183 (including the one with Q_FOLLOWING=0) shall be lower or equal than 15.
NID_DATA(j)	8	FINITE VALUE	
L_CAPTION(j)	5	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_CAPTION) shall be lower or equal than 20.
X_CAPTION(j,q)	8	FINITE VALUE	
L_VALUE(j)	8	FINITE VALUE	The number of characters (each one coded by 1 or 2 values of X_VALUE) shall be lower or equal than 10.
X_VALUE(j,i)	8	FINITE VALUE	
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked



End Conditions	Value	Comments
STM State	Unchanged	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10d.1

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10d.0.0
	Specific NTC Data Need display & deletion
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.7.3.4; 10.7.3.5
<b>STM requirements tested</b>	Subset-035: None
<b>Packets transmitted via FFFIS STM</b>	STM-15, STM-181
<b>ERTMS/ETCS on-board configuration</b>	
<b>Comments and constraints</b>	



Starting Conditions	Value	Comments
STM State	CS/HS/DA	All of these STM states (several test executions)
ETCS Mode	FS/LS/SR/OS/UN/T R/PT/SN	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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#### ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The ERTMS/ETCS On-board receives "Specific NTC Data Need" from the STM	PROF	T0	Message 15 : Packet STM-181 Specific NTC Data Need	DMI	Ts14	The ETCS shall inform the driver that the STM needs Specific NTC Data. Check the message on the DMI
2.	Driver starts the ETCS train data entry procedure	DMI	T0+Ts14	The driver presses the "Train Data" button.	DMI	Ts15	The message is deleted. Check that the message is deleted on the DMI.

#### STM Test Case:

Not applicable

Message 15: STM => ETCS Packet STM-181 Specific NTC Data Need			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	FINITE VALUE	Set to the STM state selected for the test (4=CS, 6=HS, 7=DA)
NID_PACKET	8	181	
L_PACKET	13	COMPUTED	
Q_DATAENTRY	1	1	Specific NTC Data needed

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End Conditions	Value	Comments
STM State	Unchanged	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10e.1

TEST CASE HEADER	
Test Case identification	Procedure Specific Data Entry / Data View
	10e.0.0.0.1.2.1.0.2.1.0.2.2.0.1.2.1.2.1.0.2.1.0.2.2.0.1.1.1.1
	Data Entry at Start-up with 2 STMs and both with 3 Specific NTC Data requests (the first two being identical and transmitted with 2 packets). Both STMs state changes from CO to DE and then to CS. Both STMs answer in due time.
ERTMS/ETCS on-board requirements tested	Subset-035: 10.3.2.2 (CO to DE, DE to CS); 10.3.2.4 (A3, A4a); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3a; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
STM requirements tested	Subset-035: None
Packets transmitted via FFFIS STM	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
ERTMS/ETCS on-board configuration	Specific NTC Data Entry of STM X1: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
Comments and constraints	All 'configuration data' except ETCS Train Data has been transmitted to STMs before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CO (both STMs)	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3 (STM X1): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
					PROF		Message 3 (STM X2): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T2
2.	The ETCS receives from STM X1 a DE state request.	PROF	T1+1s	Message 1 (STM X1): Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2 (STM X1): Packet STM-14 State order to STM (DE)  Time: T3
3.	The ETCS receives from STM X2 a DE state request.	PROF	T2+1s	Message 1 (STM X2): Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2 (STM X2): Packet STM-14 State order to STM (DE)  Time: T4
4.	STM X1 sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T3+1s	Message 4a (STM X1): Packet STM-179 Specific NTC Data Entry request	DMI	T1-T3+7s	Nothing happens
5.	STM X2 sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T4+1s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	T2-T4+7s	Nothing happens

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
6.	second part from STM X1	PROF	T1+8s	Message 4b (STM X1): Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC-1 data entry selection window shows as enabled the NTC-1 button corresponding to the STM X1 of the test.
7.	second part from STM X2	PROF	T2+8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC-2 data entry selection window shows as enabled the NTC-2 button corresponding to the STM X2 of the test.
8.	Specific NTC-1 Data Entry procedure is started.	DMI	T5=T1+8s+Ts2	Driver selects the NTC-1 button corresponding to the STM X1 of the test.	DMI		NTC-1 data window is displayed with the configured title.
9.	The driver performs the Specific NTC Data Entry of the STM X1.	DMI	T5+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured. (*)
					PROF	not relevant	Message 5a (STM X1): Packet STM-180 Specific NTC Data values  Time: T6
10.	The STM X1 is allowed to request the same data: first part.	PROF	T6+1s	Message 4a (STM X1): Packet STM-179 Specific NTC Data Entry request	DMI	7s	Nothing happens
11.	second part	PROF	T7=T6+8s	Message 4b (STM X1): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-1 data window is displayed again with the configured title.
12.	The driver performs the Specific NTC Data Entry of the STM X1.	DMI	T7+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured. (*)
					PROF	not relevant	Message 5a (STM X1): Packet STM- 180 Specific NTC Data values  Time: T8
13.	The STM X1 is allowed to request another data.	PROF	T9=T8+8s	Message 4c (STM X1): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-1 data window is displayed again with new data labels and with the configured title.

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
14.	The driver performs the Specific NTC Data Entry of the STM X1.	DMI	T9+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)
					PROF	not relevant	Message 5b (STM X1): Packet STM-180 Specific NTC Data values Time: T10
15.	STM X1 sends the "END of Specific NTC Data Entry", ETCS stops the Specific NTC Data entry procedure.	PROF	T11=T10 +8s	Message 6a (STM X1): Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7 (STM X1): Packet STM-184 Specific NTC Data Entry flag (STOP)
16.	Specific NTC-2 Data Entry procedure is started.	DMI	T12=T11 +Ts5	Driver selects the NTC-2 button corresponding to the STM X2 of the test.	DMI		NTC-2 data window is displayed.
17.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T12+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a (STM X2): Packet STM-180 Specific NTC Data values Time: T13
18.	The STM X2 is allowed to request the same data: first part.	PROF	T13+1s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	7s	Nothing happens
19.	second part	PROF	T14=T13 + 8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again.
20.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T14+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
					PROF	not relevant	Message 5a (STM X2): Packet STM- 180 Specific NTC Data values  Time: T15
21.	The STM X2 is allowed to request another data.	PROF	T16=T15 + 8s	Message 4c (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again with new data labels.
22.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T16+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)
					PROF	not relevant	Message 5b (STM X2): Packet STM-180 Specific NTC Data values  Time: T17
23.	STM X2 sends the “END of Specific NTC Data Entry”, ETCS stops the Specific NTC Data entry procedure.	PROF	T18=T17 +8s	Message 6a (STM X2): Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7 (STM X2): Packet STM-184 Specific NTC Data Entry flag (STOP)
24.	STM X1 requests CS state.	PROF	T18+Ts5	Message 8a (STM X1): Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9 (STM X1): Packet STM-14 State order to STM (CS)  Time: T19
25.	STM X1 reports CS state in due time.	PROF	T19+8s	Message 10 (STM X1): Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11 Packet STM-14 State order to STM (FA) <b>No</b> disconnection from ETCS with the STM Control Function
26.	STM X2 requests CS state.	PROF	T19+10s +Ts16	Message 8a (STM X2): Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9 (STM X2): Packet STM-14 State order to STM (CS)  Time: T20

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
27.	STM X2 reports CS state in due time.	PROF	T20+8s	Message 10 (STM X2): Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11 Packet STM-14 State order to STM (FA) <b>No</b> disconnection from ETCS with the STM Control Function



**STM Test Case:**

All the branches and requirements are covered in test case TEST CASE 10a.1.

Same messages than for TEST CASE 10a.1.



End Conditions	Value	Comments
STM State	CS (both STMs)	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10e.2

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10e.0.0.0.3.0.4.2.1.2.1.0.2.1.0.2.2.0.1.1.1.2
	Data Entry at Start-up with 2 STMs. STM X1 does not answer in due time to send the first Specific NTC Data request. STM X2 answers in due time for its 3 Specific NTC Data requests (the first two being identical and transmitted with 2 packets). This STM state changes from CO to DE and then to CS. The first STM state changes from CO to DE and then to FA.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CO to DE, DE to CS, DE to FA); 10.3.2.4 (A3, A4a, O16); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3a/b; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>STM requirements tested</b>	Subset-035: None
<b>Packets transmitted via FFFIS STM</b>	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data Entry of STM X1: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
<b>Comments and constraints</b>	All 'configuration data' except ETCS Train Data has been transmitted to STMs before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CO (both STMs)	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3 (STM X1): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
					PROF		Message 3 (STM X2): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T2
2.	The ETCS receives from STM X1 a DE state request.	PROF	T1+1s	Message 1 (STM X1): Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2 (STM X1): Packet STM-14 State order to STM (DE)  Time: T3
3.	The ETCS receives from STM X2 a DE state request.	PROF	T2+1s	Message 1 (STM X2): Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2 (STM X2): Packet STM-14 State order to STM (DE)  Time: T4
4.	STM X1 sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T3+1s	Message 4a (STM X1): Packet STM-179 Specific NTC Data Entry request	DMI	T1-T3+7s	Nothing happens
5.	STM X2 sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T4+1s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	T2-T4+7s	Nothing happens

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
6.	second part from STM X2	PROF	T2+8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC-2 data entry selection window shows as enabled the NTC-2 button corresponding to the STM X2 of the test.
7.	No second part from STM X1: Failure is requested		T1		PROF	10s +Ts16	Message 11 (STM X1): Packet STM-14 State order to STM (FA)
8.	Specific NTC-2 Data Entry procedure is started.	DMI	T5=max( T2+8s+ Ts2, T1+10s+ Ts16)	Driver selects the NTC-2 button corresponding to the STM X2 of the test.	DMI		NTC-2 data window is displayed.
9.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T5+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a (STM X2): Packet STM-180 Specific NTC Data values  Time: T6
10.	The STM X2 is allowed to request the same data: first part.	PROF	T6+1s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	7s	Nothing happens
11.	second part	PROF	T7=T6+ 8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again.
12.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T7+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a (STM X2): Packet STM- 180 Specific NTC Data values  Time: T8

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
13.	The STM X2 is allowed to request another data.	PROF	T9=T8+8s	Message 4c (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again with new data labels.
14.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T9+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)
					PROF	not relevant	Message 5b (STM X2): Packet STM-180 Specific NTC Data values Time: T10
15.	STM X2 sends the “END of Specific NTC Data Entry”, ETCS stops the Specific NTC Data entry procedure.	PROF	T11=T10+8s	Message 6a (STM X2): Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7 (STM X2): Packet STM-184 Specific NTC Data Entry flag (STOP)
16.	STM X2 requests CS state.	PROF	T11+Ts5	Message 8a (STM X2): Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9 (STM X2): Packet STM-14 State order to STM (CS) Time: T12
17.	STM X2 reports CS state in due time.	PROF	T12+8s	Message 10 (STM X2): Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11 (STM X2): Packet STM-14 State order to STM (FA) <b>No</b> disconnection from ETCS with the STM Control Function

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**STM Test Case:**

Not applicable. Degraded mode is not tested.

Same messages than for TEST CASE 10a.1.



End Conditions	Value	Comments
STM State	FA (STM X1) CS (STM X2)	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10e.3

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10e.0.0.0.2.0.2.2.1.2.1.0.2.1.0.2.2.0.1.1.1.1
	Data Entry at Start-up with 2 STMs. Driver skips the Specific NTC Data Entry procedure for STM X1. STM X2 asks 3 Specific NTC Data requests (the first two being identical and transmitted with 2 packets). Both STMs state changes from CO to DE and then to CS.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CO to DE, DE to CS); 10.3.2.4 (A3, A4a); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.2.1; 10.7.3.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3a; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>STM requirements tested</b>	Subset-035: None
<b>Packets transmitted via FFFIS STM</b>	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data Entry of STM X1: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
<b>Comments and constraints</b>	All 'configuration data' except ETCS Train Data has been transmitted to STMs before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CO (both STMs)	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3 (STM X1): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
					PROF		Message 3 (STM X2): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T2
2.	The ETCS receives from STM X1 a DE state request.	PROF	T1+1s	Message 1 (STM X1): Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2 (STM X1): Packet STM-14 State order to STM (DE)  Time: T3
3.	The ETCS receives from STM X2 a DE state request.	PROF	T2+1s	Message 1 (STM X2): Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2 (STM X2): Packet STM-14 State order to STM (DE)  Time: T4
4.	STM X1 sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T3+1s	Message 4a (STM X1): Packet STM-179 Specific NTC Data Entry request	DMI	T1-T3+7s	Nothing happens
5.	STM X2 sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T4+1s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	T2-T4+7s	Nothing happens

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
6.	second part from STM X1	PROF	T1+8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC-1 data entry selection window shows as enabled the NTC-1 button corresponding to the STM X1 of the test.
7.	second part from STM X2	PROF	T2+8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC-2 data entry selection window shows as enabled the NTC-2 button corresponding to the STM X2 of the test.
8.	Specific NTC-2 Data Entry procedure is started.	DMI	T5=max(T2+8s+Ts2, T1+10s+Ts16)	Driver selects the NTC-2 button corresponding to the STM X2 of the test.	DMI		NTC-2 data window is displayed.
9.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T5+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a (STM X2): Packet STM-180 Specific NTC Data values Time: T6
10.	The STM X2 is allowed to request the same data: first part.	PROF	T6+1s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	7s	Nothing happens
11.	second part	PROF	T7=T6+8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again.
12.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T7+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a (STM X2): Packet STM- 180 Specific NTC Data values Time: T8

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
13.	The STM X2 is allowed to request another data.	PROF	T9=T8+8s	Message 4c (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again with new data labels.
14.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T9+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)
					PROF	not relevant	Message 5b (STM X2): Packet STM-180 Specific NTC Data values Time: T10
15.	STM X2 sends the "END of Specific NTC Data Entry", ETCS stops the Specific NTC Data entry procedure.	PROF	T11=T10+8s	Message 6a (STM X2): Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7 (STM X2): Packet STM-184 Specific NTC Data Entry flag (STOP)
16.	STM X2 requests CS state.	PROF	T11+Ts5	Message 8a (STM X2): Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9 (STM X2): Packet STM-14 State order to STM (CS) Time: T12
17.	STM X2 reports CS state in due time.	PROF	T12+8s	Message 10 (STM X2): Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11 (STM X2): Packet STM-14 State order to STM (FA) <b>No</b> disconnection from ETCS with the STM Control Function
18.	The driver ends the data entry without selecting NTC-1.	DMI	T12+10s+Ts16	The driver selects 'End of data entry'	PROF	Ts5	Message 7 (STM X1): Packet STM-184 Specific NTC Data Entry flag (STOP)

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**STM Test Case:**

All the branches and requirements are covered in test cases TEST CASE 10a.1 and TEST CASE 10b.3.

Same messages than for TEST CASE 10a.1.



End Conditions	Value	Comments
STM State	CS	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10e.4

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10e.0.0.0.2.0.2.2.1.2.1.0.2.1.0.2.2.0.1.1.2.0
	Data Entry at Start-up with 2 STMs. STM X1 does not need data and does not report CS in time. STM X2 answers in due time for its 3 Specific NTC Data requests (the first two being identical and transmitted with 2 packets). This STM state changes from CO to DE and then to CS. STM X1 state changes from CO to FA.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CO to DE, DE to CS, DE to FA); 10.3.2.4 (A3, A4a, C16); 10.3.2.6; 10.3.2.7; 10.4.1.7; 10.7.2.1; 10.7.3.8; 10.7.4.1; 10.7.4.2; 10.7.4.3a; 10.7.4.6; 10.7.4.7; 10.7.4.9a/b; 15.2.1.1; 15.2.1.2; 15.2.1.4a/b
<b>STM requirements tested</b>	Subset-035: None
<b>Packets transmitted via FFFIS STM</b>	STM-13, STM-14, STM-15, STM-175, STM-176, STM-179, STM-180, STM-184.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data Entry of STM X1: <ul style="list-style-type: none"> <li>• window title: "STM Simulator Data Entry"</li> <li>• type of keyboard for Data 1: enhanced numeric</li> <li>• type of keyboard for Data 2: numeric</li> <li>• type of keyboard for Data 3: alphanumeric</li> <li>• leading zeros for Data 1: kept</li> <li>• leading zeros for Data 2: removed</li> <li>• range of Data 1: 0 to 10</li> <li>• range of Data 2: 1-1000</li> </ul>
<b>Comments and constraints</b>	All 'configuration data' except ETCS Train Data has been transmitted to STMs before the start of the Test Case. Test case for ETCS: STM simulator indicated that it needs Specific NTC Data in PO state.



Starting Conditions	Value	Comments
STM State	CO (both STMs)	
ETCS Mode	SB	
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Not relevant	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The driver performs the ETCS Train Data entry.	DMI	T0	Driver validates ETCS Train Data after having entered it.	PROF		Message 3 (STM X1): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T1
					PROF		Message 3 (STM X2): Packet STM-184 Specific NTC Data Entry flag (START) Packet STM-175 Train Data Packet STM-176 Train Data traction/brake parameters to STM  Time: T2
2.	The ETCS receives from STM X1 an END of Specific NTC Data Entry (it needs no data).	PROF	T1+1s	Message 6c (STM X1): Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7 (STM X1): Packet STM-184 Specific NTC Data Entry flag (STOP)
3.	The ETCS receives from STM X2 a DE state request.	PROF	T2+1s	Message 1 (STM X2): Packet STM-13 State request from STM (DE)	PROF	Ts1	Message 2 (STM X2): Packet STM-14 State order to STM (DE)  Time: T3
4.	STM X2 sends a message for specific NTC data entry with 5 Data Identifiers: first part.	PROF	T3+1s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	T2-T3+7s	Nothing happens
5.	second part from STM X2	PROF	T2+8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts2	The NTC-2 data entry selection window shows as enabled the NTC-2 button corresponding to the STM X2 of the test.

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Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
6.	Specific NTC-2 Data Entry procedure is started.	DMI	T4=T2+8s+Ts2	Driver selects the NTC-2 button corresponding to the STM X2 of the test.	DMI		NTC-2 data window is displayed.
7.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T4+5s	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a (STM X2): Packet STM-180 Specific NTC Data values Time: T5
8.	The STM X2 is allowed to request the same data: first part.	PROF	T5+7s	Message 4a (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	1s	Nothing happens
9.	second part	PROF	T6=T5+8s	Message 4b (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again.
10.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T6+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards or the ranges/types of keyboard configured.(*)
					PROF	not relevant	Message 5a (STM X2): Packet STM- 180 Specific NTC Data values Time: T7
11.	The STM X2 is allowed to request another data.	PROF	T8=T7+8s	Message 4c (STM X2): Packet STM-179 Specific NTC Data Entry request	DMI	Ts4	NTC-2 data window is displayed again with new data labels.
12.	The driver performs the Specific NTC Data Entry of the STM X2.	DMI	T8+Ts4	The Driver enters all the needed parameters and validates them.	DMI	not relevant	The data entry is restricted to the values within the dedicated keyboards when relevant or data entry is alphanumeric (no range limitation).(*)



Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
					PROF	not relevant	Message 5b (STM X2): Packet STM-180 Specific NTC Data values  Time: T9
13.	STM X2 sends the "END of Specific NTC Data Entry", ETCS stops the Specific NTC Data entry procedure.	PROF	T10=T9+8s	Message 6a (STM X2): Packet STM-179 with N_ITER = 0	PROF	Ts5	Message 7 (STM X2): Packet STM-184 Specific NTC Data Entry flag (STOP)
14.	STM X1 requests CS state.	PROF	T10+Ts5	Message 8b (STM X1): Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9 (STM X1): Packet STM-14 State order to STM (CS)  Time: T11
15.	STM X1 does not reports CS state in due time.		T11		PROF	10s +Ts16	Message 11 (STM X1): Packet STM-14 State order to STM (FA)
16.	STM X2 requests CS state.	PROF	T11+10s +Ts16	Message 8a (STM X2): Packet STM-13 State request from STM (CS)	PROF	Ts6	Message 9 (STM X2): Packet STM-14 State order to STM (CS)  Time: T12
17.	STM X2 reports CS state in due time.	PROF	T12+8s	Message 10 (STM X2): Packet STM-15 State report from STM (CS)	PROF	2s +Ts16	<b>No</b> Message 11 Packet STM-14 State order to STM (FA) <b>No</b> disconnection from ETCS with the STM Control Function





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# **STM Test Case:**

All the branches and requirements are covered in test case TEST CASE 10a.1.

Same messages than for TEST CASE 10a.1, except messages 6c and 8b below:

Message 6c: (STM => ETCS) Packet STM-179 End of Specific NTC Data Entry			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-179.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	CO
NID_PACKET	8	179	Specific NTC Data Entry request
L_PACKET	13	COMPUTED	
Q_FOLLOWING	1	0	
N_ITER	5	0	End of Specific NTC Data Entry
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

Message 8b: (STM => ETCS STM control function) Packet STM-13 State request from STM.			
VARIABLE	Length	VALUE	COMMENTS
NID_STM	8	FINITE VALUE	When testing ETCS On-board a valid value should be used (same value for all messages used in the test for the corresponding STM).
L_MESSAGE	8	COMPUTED	
NID_PACKET	8	15	State report from STM This packet could be sent after packet STM-13.
L_PACKET	13	COMPUTED	
NID_STMSTATE	4	3	CO
NID_PACKET	8	13	State request from STM
L_PACKET	13	COMPUTED	
NID_STMSTATEREQUEST	4	4	CS
PADDING_BITS	COMPUTED	NOT RELEVANT	Value not to be checked

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End Conditions	Value	Comments
STM State	FA (STM X1) CS (STM X2)	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10e.5 (not implemented)

Path on the Test Diagram: 10e.0.0.0.1.3.0.4.2.1.3.0.3.1.1.2

All the branches and requirements are covered in TEST CASE 10a.2, TEST CASE 10a.5 & TEST CASE 10a.6.



## TEST CASE 10f.1 (not implemented)

Path on the Test Diagram: 10f.0.0.2

All the branches and requirements are covered in TEST CASE 10c.1.



## TEST CASE 10f.2

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10f.0.0.1.0
	Specific NTC Data View at Start-up with 2 STMs. STM X2 answers in due time but requests no data view. STM X1 does not answers in due time.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CS/HS/DA to FA); 10.3.2.4 (N16); 10.8.1.2; 10.8.1.5
<b>STM requirements tested</b>	Subset-035: 10.8.1.3b
<b>Packets transmitted via FFFIS STM</b>	STM-14, STM-15, STM-182, STM-183.
<b>ERTMS/ETCS on-board configuration</b>	
<b>Comments and constraints</b>	Test case for STM: only applicable if the STM does not request Specific NTC Data View values.



Starting Conditions	Value	Comments
STM State	CS/HS/DA (both STMs)	All of these STM states (several test executions)
ETCS Mode	SB/FS/LS/SR/OS/U N/SN	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The ERTMS/ETCS On-board sends a request of "STM specific Data View values" to the STMs	DMI	T0	Driver requests to see the train data.	PROF	Ts12	Message 13a (STM X1): Packet STM-182 Request for Specific NTC Data View values  Time: T1
					PROF	Ts12	Message 13b (STM X2): Packet STM-182 Request for Specific NTC Data View values  Time: T2
2..	Answer of STM X2	PROF	T2+8s	Message 14c: Packet STM-183 Specific NTC Data View values	PROF	2s +Ts16	<b>No</b> Message 11 to STM X2: Packet STM-14 State order to STM to go to FA <b>No</b> disconnection from ETCS with the STM Control Function
3.	No answer of STM X1		T1		PROF	10s +Ts16	Message 11 (STM X1): Packet STM-14 State order to STM (FA)
					DMI	10s +Ts13	<b>No</b> data for STM X1 is displayed on the DMI (no next window indicated).
4.	The driver scrolls down up to the last ETCS Data View window.	DMI	max(T2+8s+Ts13, T1+10s+Ts13)	The driver pushes [Next] button up to the last ETCS Data view window.	DMI		The [Next] button is not displayed on the last ETCS Data View window.

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**STM Test Case:**

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	Answer of STM	PROF	T0	Message 13b: Packet STM-182 Request for Specific NTC Data View values	PROF	10s	Message 14c: Packet STM-183 Specific NTC Data View values

Messages 13a, 13b, 14c: same than for TEST CASE 10c.1.  
Message 11: same than for TEST CASE 10a.1.



End Conditions	Value	Comments
STM State	FA (STM X1) Unchanged (STM X2)	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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## TEST CASE 10f.3

### TEST CASE HEADER

<b>Test Case identification</b>	Procedure Specific Data Entry / Data View
	10f.0.0.3.0
	Specific NTC Data View at Start-up with 2 STMs. STM X1 answers in due time and requests data view (transmitted in 2 packets). STM X2 does not answer in due time.
<b>ERTMS/ETCS on-board requirements tested</b>	Subset-035: 10.3.2.2 (CS/HS/DA to FA); 10.3.2.4 (N16); 10.8.1.2; 10.8.1.4; 10.8.1.5
<b>STM requirements tested</b>	Subset-035: None
<b>Packets transmitted via FFFIS STM</b>	STM-14, STM-15, STM-182, STM-183.
<b>ERTMS/ETCS on-board configuration</b>	Specific NTC Data View of STM X1: <ul style="list-style-type: none"><li>• window title: "STM Simulator Data View"</li></ul>
<b>Comments and constraints</b>	



Starting Conditions	Value	Comments
STM State	CS/HS/DA (both STMs)	All of these STM states (several test executions)
ETCS Mode	SB/FS/LS/SR/OS/U N/SN	Any of these modes
ETCS Level	Not relevant	
Train State	Standstill	
ETCS Train Data	Valid	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Cab A active	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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# ERTMS/ETCS on-board Test Case:

Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1.	The ERTMS/ETCS On-board sends a request of "STM specific Data View values" to the STMs	DMI	T0	Driver requests to see the train data.	PROF	Ts12	Message 13a (STM X1): Packet STM-182 Request for Specific NTC Data View values  Time: T1
					PROF	Ts12	Message 13b (STM X2): Packet STM-182 Request for Specific NTC Data View values  Time: T2
2.	Answer of STM X1	PROF	T1+1s	Message 14a: Packet STM-183 Specific NTC Data View values	DMI	7s	Nothing happens.
3.		PROF	T1+8s	Message 14b: Packet STM-183 Specific NTC Data View values	DMI	2s +Ts16	<b>No</b> Message 11 to STM X1: Packet STM-14 State order to STM to go to FA <b>No</b> disconnection from ETCS with the STM Control Function
3.	No answer of STM X2		T2		PROF	10s +Ts16	Message 11 (STM X2): Packet STM-14 State order to STM (FA)
4.	The driver scrolls down up to the first NTC Data View window.	DMI	max(T2+10s +Ts13, T1+8s +Ts13)	The driver pushes [Next] button on the last ETCS Data view window.	DMI		The NTC X data view window is displayed with the data contained in packet STM-183 of STM X1 and with the configured title. The [Next] button is not displayed on the last Data View window of this STM X1 (i.e. the window including "DATA 14" label).

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**STM Test Case:**

All requirements are tested in TEST CASE 10c.1

Message 13a, 13b, 14a, 14b: same than for TEST CASE 10c.1.

Message 11: same than for TEST CASE 10a.1.



End Conditions	Value	Comments
STM State	Unchanged (STM X1) FA (STM X2)	
ETCS Mode	Unchanged	
ETCS Level	Not relevant	
Train State	Unchanged	
ETCS Train Data	Unchanged	
Active DMI channel Connection	Not relevant	
Other DMI channels Connections	Not relevant	
TIU Connection	Not relevant	
BIU Connection	Not relevant	
JD Connection	Not relevant	
TIU Regenerative Brake Command	Not relevant	
TIU Magnetic Shoes Brake Command	Not relevant	
TIU Eddy Current Brake Command for Emergency Brake	Not relevant	
TIU Eddy Current Brake Command for Service Brake	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 Traction Status	Not relevant	
TIU Direction Controller Position Status	Not relevant	
TIU Cab Status	Unchanged	
BIU Emergency Brake Command	Not relevant	
BIU Service Brake Command	Not relevant	
BIU Emergency Brake Status	Not relevant	
BIU Service Brake Status	Not relevant	
NTC isolation status	Not relevant	

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