



**ERTMS/ETCS**

**FFFIS STM Test cases of Functional identity 007**

**DMI FUNCTION: DMI OF NON ACTIVE STM**

**Total: 9 Test cases**

REF: SUBSET-074-2-7-h

ISSUE: 3.1.0

DATE: 2015-12-16

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



### Modification History

Issue Number Date	Section Number	Modification / Description	Author
2.9.1 2013-01-30	All	Created in line with Subset 35 issue 3.0.0 date 2010-02-29, SRS issue 3.3.0 date 2012-03-07 and ETCS DMI specification issue 3.3.0 date 2012-03-01	Bombardier Astrid Geck
2.9.2 2013-08-30	All	Updated according to comments from 2 <sup>nd</sup> internal review and from ERA traceability review	Bombardier Astrid Geck
2.9.3 2013-10-31		Updated according to CR 1158 (considering impact from CR 1173)	Bombardier Astrid Geck
2.9.4 2014-02-28	All	Corrected length of NID_BUTPOS	Bombardier Astrid Geck
2.9.5 2014-04-24	Front page	Baseline 3 1 <sup>st</sup> Maintenance pre-release version	Thomas Mandry (Alstom)
3.0.0 2014-05-09	-	Baseline 3 1 <sup>st</sup> Maintenance release version	Philippe Prieels
3.0.1 2015-08-17	No change to this part of the Subset	CR 1278: impact from CRs 1094 & 1242 and from STMWP review	Thomas Mandry (Alstom)
3.0.2 2015-10-19	No change to this part of the Subset	CR 1278: Updated according to SUBSET-074v301ERAreview	Thomas Mandry (Alstom)
3.1.0 2015-12-16	-	Baseline 3 2 <sup>nd</sup> release version	Thomas Mandry (Alstom)



## Table of Contents

2.8	DMI OF NON ACTIVE STM	4
2.8.1	Test Case 7h.1	4
2.8.2	Test Case 7h.2	19
2.8.3	Test Case 7h.3	48
2.8.4	Test Case 7h.4	55
2.8.5	Test Case 7h.5	62
2.8.6	Test Case 7h.6	78
2.8.7	Test Case 7h.7	99
2.8.8	Test Case 7h.8	125
2.8.9	Test Case 7h.9	145

## 2.8 DMI of non active STM

### 2.8.1 Test Case 7h.1

TEST CASE HEADER	
Test case identification	DMI Function
	7h.2.0.1.1.0
	Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode SN and removal of DMI objects after the STM is no more active for Customisable DMI service with no DMI objects:
	At start of the test the Level is NTC and STM Y is active, STM X is in CS, mode is SN. The train passes a level announcement for level NTC X different from level NTC Y.
	The STM X is ordered to HS and reports HS in due time. The STM sends a preliminary DMI request with 1 text message. At the border the STM Y is ordered to CS and after it has reported CS, STM X is ordered to DA. The STM reports DA in due time and the preliminarily requested DMI elements are displayed. The STM sends a DMI request with 1 text message. Eventually the train passes a border to level 1 and the STM X is ordered to CS. All DMI elements of STM X are removed.
ERTMS/ETCS on-board requirements tested	SUBSET-035 5.3.1.1 preliminary DMI access in mode SN, 13.2.1.1, 13.2.1.2, 13.2.1.5
STM requirements tested	
Packets transmitted via FFFIS STM	STM-5, STM-14, STM-15, STM-38
ERTMS/ETCS on-board	Customisable DMI service with configuration 7a.2.



<b>configuration</b>	
<b>Comments and constraints</b>	

Starting Conditions	Value	Comments
STM State	CS DA	For STM X For STM Y
ETCS Mode	SN	
ETCS Level	NTC Y	
Train State	moving	
ETCS Train Data	not relevant	
Active DMI channel Connection	Established	For STM X and STM Y
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 or B active	For the test it is not relevant, what cab is 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 isolated for all STMs	

#### 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	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS. Time:T1
					DMI		The ETCS displays the level announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-S1			
3	STM requests a text message in HS	PROF	T1+13s	connection of active DMI channel: Message-D1	DMI		The text message is not displayed and the ETCS default window layout is kept.
4	The train passes the border to level NTC	BTM	T0+18s	Message-B2: balise group received with level border to Level NTC for the STM in HS	DMI		The driver is requested to acknowledge the level transition.

© This document has been developed and released by UNISIG



					PROF		STM control connection: Message-E2  The ETCS reports the changed mode to STM Y and conditionally orders it to CS.  Time:T2
					PROF		STM control connection: Message-E3  The ETCS reports the changed mode to STM X.
5	The driver acknowledges the transition	DMI	T0+21s	The driver presses the (level announcement) ack button			
6	The STM Y reports CS in due time	PROF	T2+8s	STM Control Connection: Message-S2	PROF		STM control connection: Message-E4  The ETCS orders STM X to DA.  Time:T3
7	The STM reports DA in due time	PROF	T3+3s	STM Control Connection: Message-S3	DMI		The preliminary DMI information sent by the STM in HS is displayed.  Text message 'THIS IS A MESSAGE FROM STM IN HS' is shown in group 1.
	The STM reports DA in due time			STM Control Connection: Message-S3	DMI		The ETCS speed dial is hidden.
8	STM changes the text message.	PROF	T3+8s	connection of active DMI channel: Message-D2	DMI		Text message 'THIS IS A MESSAGE FROM STM IN DA' is shown in group 1
9	The train passes the border to level 1	BTM	T3+13s	Message-B3: balise group received with level border to Level 1	DMI		The driver is requested to acknowledge the level transition.



					PROF		STM control connection: Message-E5 The ETCS reports the changed mode to STM X and orders it to CS.
					DMI		The text message of the STM is removed from the text area.
					DMI		The ETCS speed dial is shown again.

Message-B1 balise 1 of 2 : Level transition announcement for Level NTC for STM X			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale





D_LEVELTR	15	5000	5000m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for STM X
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B1 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E1: ETCS->STM X: The ETCS orders the STM X to HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in CS

© This document has been developed and released by UNISIG



L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	6	State order to HS
Padding bits	7	NOT RELEVANT	

Message-S1: STM X->ETCS: STM X reports HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
Padding bits	7	0000000b	

Message-D1: STM X->ETCS: STM requests a text message			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	44	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
NID_PACKET	8	38	text message from STM (STM-38)
L_PACKET	13	304	Packet Length

© This document has been developed and released by UNISIG



NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing
Q_ACK	1	0	No acknowledgement required
L_TEXT	8	32	Text="THIS IS A MESSAGE FROM STM IN HS"
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	
X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	
X_TEXT(19)	8	"F"	



X_TEXT(20)	8	"R"	
X_TEXT(21)	8	"O"	
X_TEXT(22)	8	"M"	
X_TEXT(23)	8	" "	
X_TEXT(24)	8	"S"	
X_TEXT(25)	8	"T"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"I"	
X_TEXT(29)	8	"N"	
X_TEXT(30)	8	" "	
X_TEXT(31)	8	"H"	
X_TEXT(32)	8	"S"	
Padding bits	7	0000000b	

Message-B2 balise 1 of 2 : Level transition border for Level NTC for STM in HS			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates



M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM X in HS
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B2 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates



M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E2: ETCS->STM Y: The ETCS reports the changed mode to the STM Y and conditionally orders it to CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM Y in DA
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM X in HS
M_MODESTM	4	13	National System
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	5	Conditional state order to CS
Padding bits	3	NOT RELEVANT	

Message-E3: ETCS->STM X: The ETCS reports the changed mode to the STM X			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	7	Message Length

© This document has been developed and released by UNISIG



NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM X in HS
M_MODESTM	4	13	National System
Padding bits	4	NOT RELEVANT	

Message-S2: STM Y->ETCS: STM Y reports CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM Y previously in DA
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=4, (State CS)			

Message-E4: ETCS->STM X: The ETCS orders STM X to DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	6	Message Length
STM-14: PL=25, STO=7, (State order to DA)			

Message-S3: STM X->ETCS: STM X reports DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in HS
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=7, (State DA)			



Message-D2: STM X->ETCS: STM changes the text message			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	43	Message Length
STM-15: PL=25, ST=7, (State DA)			
STM-38: PL=300, NX=100, MX=1000010000b (black on red, no flashing in group 1), Q=0 (No acknowledgement required), L=32, T="THIS IS A MESSAGE FROM STM IN DA"			

Message-B3 balise 1 of 2 : Level transition border for Level 1			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	63	





Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	2	Level 1
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B3 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E5: ETCS->STM X: The ETCS reports the changed mode to the STM X and orders it to CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA

© This document has been developed and released by UNISIG



L_MESSAGE	8	9	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	28	Packet Length
M_LEVEL	3	2	ETCS Level 1
M_MODESTM	4	0	Full Supervision
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	4	Unconditional state order to CS
Padding bits	3	NOT RELEVANT	

End Conditions	Value	Comments
STM State	CS	For both STMs
ETCS Mode	FS	
ETCS Level	1	
Train State	moving	
ETCS Train Data	not relevant	
Active DMI channel Connection	Unchanged	For both STMs
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	unchanged	

## 2.8.2 Test Case 7h.2

TEST CASE HEADER		
Test case identification	DMI Function	
	7h.2.0.1.1.0	
	<p>Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode FS, LS, SR, OS or UN and removal of DMI objects after the STM is no more active for Unified DMI service or Customisable DMI service with configuration with ETCS speed dial and sounds:</p> <p>At start of the test the Level is 1 and the STM X is in CS, mode is FS, LS, SR, OS or UN. The train passes a level announcement</p>	



	<p>for level NTC X.</p> <p>The STM X is ordered to HS and reports HS in due time.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>At the border the STM X is ordered to DA.</p> <p>The STM reports DA in due time and the preliminarily requested DMI elements are displayed.</p> <p>The STM sends new DMI requests changing the text of the buttons and indicators, changing the text message, updating supervision info and requesting a continuous sound.</p> <p>Eventually the train passes a border to level 1 and the STM X is ordered to CS.</p> <p>All DMI elements of STM X are removed.</p>
<b>ERTMS/ETCS on-board requirements tested</b>	SUBSET-035 5.3.1.1 preliminary DMI access in modes FS, LS, SR, OS or UN, 13.2.1.1, 13.2.1.2, 13.2.1.5
<b>STM requirements tested</b>	
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
<b>ERTMS/ETCS on-board configuration</b>	<p>Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.5, 7a.6, 7a.7 or 7a.9.</p> <p>The test shall be performed at least with configurations 7a.1 and 7a.5.</p>
<b>Comments and constraints</b>	

Starting Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS, LS, SR, OS or UN	The test shall be performed for all modes
ETCS Level	1	
Train State	moving	
ETCS Train Data	not relevant	

© This document has been developed and released by UNISIG



Active DMI channel Connection	Established	
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 or B active	For the test it is not relevant, what cab is 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 isolated for all STMs	

## ERTMS/ETCS on-board Test Case

© This document has been developed and released by UNISIG



Step	Description/Comments	Input I/F	Input time	Input Action	Output I/F	Output time limit	Output action
1	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS. Time:T1
					DMI		The ETCS displays the level announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-S1			
3	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T1+13s	connection of active DMI channel: Message-D1U for unified DMI service, Message-D1C for customisable DMI service	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept. The sound is not played
4	The STM sends another preliminary DMI request changing the background colour of the buttons and indicators.	PROF	T1+18s	connection of active DMI channel: Message-D2	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.
5	The train passes the border to level NTC	BTM	T0+23s	Message-B2: balise group received with level border to Level NTC for the STM in HS	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-E2 The ETCS reports the changed mode to the STM and orders it to DA. Time:T2



					DMI	Ts3a	If the speed range configured for the STM is different from the speed range configured for the ETCS it is changed to the STM range. If ETCS areas are moved by the configuration of the STM they are moved.
6	The driver acknowledges the transition	DMI	T0+26s	The driver presses the (level announcement) ack button			
7	The STM reports DA in due time	PROF	T2+3s	STM Control Connection: Message-S2	DMI		<p>The preliminary DMI information sent by the STM in HS is displayed.</p> <p>Text message 'THIS IS A MESSAGE FROM STM IN HS' is shown in group 1.</p> <p>The ETCS displays the 2 buttons and 3 indicators requested by the STM in HS with lower case characters and green background colour.</p> <p>The ETCS displays the supervision info requested by the STM in HS with permitted speed = 40km/h and intervention speed = 50km/h.</p> <p>The ETCS plays the sound requested by the STM in HS once.</p>
8	STM sends request with 2 buttons and 3 indicators changing the caption texts to upper case.	PROF	T2+8s	connection of active DMI channel: Message-D3	DMI		Button and indicator captions are shown with upper case.
9	STM sends supervision information with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and	PROF	T2+13s	connection of active DMI channel: Message-D4	DMI		Supervision information display is shown with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and



	target distance = 10.000m.						target distance = 10.000m.
10	STM changes the text message.	PROF	T2+18s	connection of active DMI channel: Message-D5	DMI		Text message 'THIS IS A MESSAGE FROM STM IN DA' is shown in group 1
11	STM requests a continuous sound.	PROF	T2+23s	connection of active DMI channel: Message-D6U for unified DMI service, Message-D6C for customisable DMI service	DMI		The requested sound is played continuously.
12	The train passes the border to level 1	BTM	T2+28s	Message-B3: balise group received with level border to Level 1	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-E3 The ETCS reports the changed mode to STM X and orders it to CS.
					DMI		The buttons and indicators of the STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed from the text area. The sound requested by the STM is stopped.
					DMI	Ts3c	If the speed dial range was changed for the STM, it is changed back to the ETCS configured range. If ETCS areas were moved for the STM, they are moved back.

Message-B1 balise 1 of 2 : Level transition announcement for Level NTC for STM X			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram





M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	5000	5000m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for STM X
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B1 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram



M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E1: ETCS->STM X: The ETCS orders the STM X to HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	6	State order to HS
Padding bits	7	NOT RELEVANT	

Message-S1: STM X->ETCS: STM X reports HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in CS
L_MESSAGE	8	6	Message Length

© This document has been developed and released by UNISIG



NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
Padding bits	7	0000000b	

Message-D1U: STM X->ETCS: STM requests buttons, indicators, a text message, supervision info and a sound for unified DMI service (configuration 7a.1)			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	127	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
NID_PACKET	8	32	Button request from STM (STM-32)
L_PACKET	13	164	Packet Length
N_ITER	5	2	Request for 2 buttons
NID_BUTTON(1)	8	1	Button 1
NID_BUTPOS(1)	5	1	
NID_ICON(1)	8	0	
M_BUT_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="but1"
X_CAPTION(1,1)	8	"b"	
X_CAPTION(1,2)	8	"u"	



X_CAPTION(1,3)	8	"t"	
X_CAPTION(1,4)	8	"1"	
NID_BUTTON(2)	8	2	Button 2
NID_BUTPOS(2)	5	2	
NID_ICON(2)	8	0	
M_BUT_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="but2"
X_CAPTION(2,1)	8	"b"	
X_CAPTION(2,2)	8	"u"	
X_CAPTION(2,3)	8	"t"	
X_CAPTION(2,4)	8	"2"	
NID_PACKET	8	35	Indicator request from STM (STM-35)
L_PACKET	13	233	Packet Length
N_ITER	5	3	Request for 3 indicators
NID_INDICATOR(1)	8	1	Indicator 1
NID_INDPOS(1)	5	1	
NID_ICON(1)	8	0	
M_IND_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="ind1"
X_CAPTION(1,1)	8	"i"	
X_CAPTION(1,2)	8	"n"	
X_CAPTION(1,3)	8	"d"	
X_CAPTION(1,4)	8	"1"	



NID_INDICATOR(2)	8	2	Indicator2
NID_INDPOS(2)	5	2	
NID_ICON(2)	8	0	
M_IND_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="ind2"
X_CAPTION(2,1)	8	"i"	
X_CAPTION(2,2)	8	"n"	
X_CAPTION(2,3)	8	"d"	
X_CAPTION(2,4)	8	"2"	
NID_INDICATOR(3)	8	3	Indicator3
NID_INDPOS(3)	5	3	
NID_ICON(3)	8	0	
M_IND_ATTRIB(3)	10	1000010000b	black on red, no flashing
L_CAPTION(3)	6	4	Caption="ind3"
X_CAPTION(3,1)	8	"i"	
X_CAPTION(3,2)	8	"n"	
X_CAPTION(3,3)	8	"d"	
X_CAPTION(3,4)	8	"3"	
NID_PACKET	8	38	text message from STM (STM-38)
L_PACKET	13	304	Packet Length
NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing in group 1
Q_ACK	1	0	No acknowledgement required



L_TEXT	8	32	Text="THIS IS A MESSAGE FROM STM IN HS"
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	
X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	
X_TEXT(19)	8	"F"	
X_TEXT(20)	8	"R"	
X_TEXT(21)	8	"O"	
X_TEXT(22)	8	"M"	



X_TEXT(23)	8	" "	
X_TEXT(24)	8	"S"	
X_TEXT(25)	8	"T"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"I"	
X_TEXT(29)	8	"N"	
X_TEXT(30)	8	" "	
X_TEXT(31)	8	"H"	
X_TEXT(32)	8	"S"	
NID_PACKET	8	43	Supervision Information from STM (STM-43)
L_PACKET	13	100	Packet Length
Q_SCALE	2	1	1m scale
V_PERMIT	10	40	40km/h
V_TARGET	7	0	0km/h
V_RELEASE	10	0	0km/h
V_INTERV	10	50	50km/h
D_TARGET	15	0	0m
M_COLOUR_SP	3	0	White
M_COLOUR_PS	3	1	Grey
Q_DISPLAY_PS	2	11b	Speed bar with hook
M_COLOUR_TS	3	3	Dark grey
Q_DISPLAY_TS	2	00b	No display



M_COLOUR_RS	3	3	Dark grey
Q_DISPLAY_RS	2	00b	No display
M_COLOUR_IS	3	0	White
Q_DISPLAY_IS	2	10b	wide bar width
Q_DISPLAY_TD	2	00b	No display
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	169	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	1	One shot play
N_ITER(1)	5	8	8 segments
M_FREQ(1,1)	8	8	256Hz
T_SOUND(1,1)	8	100	10000ms
M_FREQ(1,2)	8	9	288Hz
T_SOUND(1,2)	8	100	10000ms
M_FREQ(1,3)	8	10	320Hz
T_SOUND(1,3)	8	100	10000ms
M_FREQ(1,4)	8	11	352Hz
T_SOUND(1,4)	8	100	10000ms
M_FREQ(1,5)	8	12	384Hz
T_SOUND(1,5)	8	100	10000ms
M_FREQ(1,6)	8	14	448Hz
T_SOUND(1,6)	8	100	10000ms





M_FREQ(1,7)	8	15	480Hz
T_SOUND(1,7)	8	100	10000ms
M_FREQ(1,8)	8	16	512Hz
T_SOUND(1,8)	8	100	10000ms
Padding bits	5	00000b	

Message-D1C: STM X->ETCS: STM requests buttons, indicators, a text message, supervision info and a sound for customized DMI service			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	111	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
NID_PACKET	8	32	Button request from STM (STM-32)
L_PACKET	13	164	Packet Length
N_ITER	5	2	Request for 2 buttons
NID_BUTTON(1)	8	1	Button 1
NID_BUTPOS(1)	5	1	
NID_ICON(1)	8	0	
M_BUT_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="but1"
X_CAPTION(1,1)	8	"b"	



X_CAPTION(1,2)	8	"u"	
X_CAPTION(1,3)	8	"t"	
X_CAPTION(1,4)	8	"1"	
NID_BUTTON(2)	8	2	Button 2
NID_BUTPOS(2)	5	2	
NID_ICON(2)	8	0	
M_BUT_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="but2"
X_CAPTION(2,1)	8	"b"	
X_CAPTION(2,2)	8	"u"	
X_CAPTION(2,3)	8	"t"	
X_CAPTION(2,4)	8	"2"	
NID_PACKET	8	35	Indicator request from STM (STM-35)
L_PACKET	13	233	Packet Length
N_ITER	5	3	Request for 3 indicators
NID_INDICATOR(1)	8	1	Indicator 1
NID_INDPOS(1)	5	1	
NID_ICON(1)	8	0	
M_IND_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="ind1"
X_CAPTION(1,1)	8	"i"	
X_CAPTION(1,2)	8	"n"	
X_CAPTION(1,3)	8	"d"	



X_CAPTION(1,4)	8	"1"	
NID_INDICATOR(2)	8	2	Indicator2
NID_INDPOS(2)	5	2	
NID_ICON(2)	8	0	
M_IND_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="ind2"
X_CAPTION(2,1)	8	"i"	
X_CAPTION(2,2)	8	"n"	
X_CAPTION(2,3)	8	"d"	
X_CAPTION(2,4)	8	"2"	
NID_INDICATOR(3)	8	3	Indicator3
NID_INDPOS(3)	5	3	
NID_ICON(3)	8	0	
M_IND_ATTRIB(3)	10	1000010000b	black on red, no flashing
L_CAPTION(3)	6	4	Caption="ind3"
X_CAPTION(3,1)	8	"i"	
X_CAPTION(3,2)	8	"n"	
X_CAPTION(3,3)	8	"d"	
X_CAPTION(3,4)	8	"3"	
NID_PACKET	8	38	text message from STM (STM-38)
L_PACKET	13	304	Packet Length
NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing in group 1



Q_ACK	1	0	No acknowledgement required
L_TEXT	8	32	Text="THIS IS A MESSAGE FROM STM IN HS"
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	
X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	
X_TEXT(19)	8	"F"	
X_TEXT(20)	8	"R"	
X_TEXT(21)	8	"O"	



X_TEXT(22)	8	"M"	
X_TEXT(23)	8	" "	
X_TEXT(24)	8	"S"	
X_TEXT(25)	8	"T"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"I"	
X_TEXT(29)	8	"N"	
X_TEXT(30)	8	" "	
X_TEXT(31)	8	"H"	
X_TEXT(32)	8	"S"	
NID_PACKET	8	43	Supervision Information from STM (STM-43)
L_PACKET	13	100	Packet Length
Q_SCALE	2	1	1m scale
V_PERMIT	10	40	40km/h
V_TARGET	7	0	0km/h
V_RELEASE	10	0	0km/h
V_INTERV	10	50	50km/h
D_TARGET	15	0	0m
M_COLOUR_SP	3	0	White
M_COLOUR_PS	3	1	Grey
Q_DISPLAY_PS	2	11b	Speed bar with hook
M_COLOUR_TS	3	3	Dark grey



Q_DISPLAY_TS	2	00b	No display
M_COLOUR_RS	3	3	Dark grey
Q_DISPLAY_RS	2	00b	No display
M_COLOUR_IS	3	0	White
Q_DISPLAY_IS	2	10b	wide bar width
Q_DISPLAY_TD	2	00b	No display
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	41	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	1	One shot play
N_ITER(1)	5	0	no sound segments
Padding bits	5	00000b	

Message-D2: STM X->ETCS: STM requests changed background colour for buttons and indicators			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	55	Message Length
STM-15: PL=25, ST=6, (State HS)			
STM-32: PL=164, N=2, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="but1"			
(2): ID=2, P=2, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="but2"			
STM-35: PL=233, N=3, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind1"			
(2): ID=2, P=2, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind2"			



(3): ID=3, P=3, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind3"

Message-B2 balise 1 of 2 : Level transition border for Level NTC for STM in HS			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM X in HS
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area



NID_PACKET	8	255	Finishing flag of the telegram
------------	---	-----	--------------------------------

Message-B2 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E2: ETCS->STM X: The ETCS reports the changed mode to the STM and orders it to DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM in HS
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM in HS

© This document has been developed and released by UNISIG





M_MODESTM	4	13	National System
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	7	State order to DA
Padding bits	3	NOT RELEVANT	

Message-S2: STM X->ETCS: STM X reports DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in HS
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=7, (State DA)			

Message-D3: STM X->ETCS: STM requests changed captions for buttons and indicators			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	55	Message Length
STM-15: PL=25, ST=7, (State DA)			
STM-32: PL=164, N=2, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="BUT1"			
(2): ID=2, P=2, IC=0, MI=1000100000b, L=4, T="BUT2"			
STM-35: PL=233, N=3, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="IND1"			
(2): ID=2, P=2, IC=0, MI=1000100000b, L=4, T="IND2"			
(3): ID=3, P=3, IC=0, MI=1000100000b, L=4, T="IND3"			

Message-D4: STM X->ETCS: STM updates supervision info
---



VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	18	Message Length
STM-15: PL=25, ST=7, (State DA)			
STM-43: PL=100, QS=1, VP=120, VT=0, VR=40, VI=130, DT=10000 MS=0(White), MP=1(Grey), QP=11b(Speed bar with hook), MT=3(Dark grey), QT=00b(No display), MR=3(Dark grey), QR=11b(Bar and digital), MI=0(White), QI=10b(wide bar width), QD=11b(Bar and digital),			

Message-D5: STM X->ETCS: STM changes the text message			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	43	Message Length
STM-15: PL=25, ST=7, (State DA)			
STM-38: PL=300, NX=100, MX=1000010000b (black on red, no flashing in group 1), Q=0 (No acknowledgement required), L=32, T="THIS IS A MESSAGE FROM STM IN DA"			

Message-D6U: STM X->ETCS: STM requests a continuous sound for unified DMI service (configuration 7a.1)			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	27	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	7	State DA



NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	169	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	2	Continuous play
N_ITER(1)	5	8	8 segments
M_FREQ(1,1)	8	8	256Hz
T_SOUND(1,1)	8	100	10000ms
M_FREQ(1,2)	8	9	288Hz
T_SOUND(1,2)	8	100	10000ms
M_FREQ(1,3)	8	10	320Hz
T_SOUND(1,3)	8	100	10000ms
M_FREQ(1,4)	8	11	352Hz
T_SOUND(1,4)	8	100	10000ms
M_FREQ(1,5)	8	12	384Hz
T_SOUND(1,5)	8	100	10000ms
M_FREQ(1,6)	8	14	448Hz
T_SOUND(1,6)	8	100	10000ms
M_FREQ(1,7)	8	15	480Hz
T_SOUND(1,7)	8	100	10000ms
M_FREQ(1,8)	8	16	512Hz
T_SOUND(1,8)	8	100	10000ms
Padding bits	6	000000b	



Message-D6C: STM X->ETCS: STM requests a continuous sound for customized DMI service			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	11	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	7	State DA
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	41	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	2	Continuous play
N_ITER(1)	5	0	no sound segments
Padding bits	6	000000b	

Message-B3 balise 1 of 2 : Level transition border for Level 1			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group

© This document has been developed and released by UNISIG



M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	63	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	2	Level 1
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B3 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates



M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E3: ETCS->STM X: The ETCS reports the changed mode to the STM X and orders it to CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	9	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	28	Packet Length
M_LEVEL	3	2	ETCS Level 1
M_MODESTM	4	0	Full Supervision
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	4	Unconditional state order to CS
Padding bits	3	NOT RELEVANT	

End Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS	
ETCS Level	1	
Train State	moving	

© This document has been developed and released by UNISIG



ETCS Train Data	not relevant	
Active DMI channel Connection	unchanged	
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	unchanged	



### 2.8.3 Test Case 7h.3

TEST CASE HEADER	
Test case identification	DMI Function
	7h.2.0.1.2.0
	<p>Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode FS, LS, SR, OS or UN and removal of DMI objects after failure of the STM in DA for Unified DMI service or Customisable DMI service with configuration with ETCS speed dial and sounds:</p> <p>At start of the test the Level is 1 and the STM X is in CS, mode is FS, LS, SR, OS or UN. The train passes a level announcement for level NTC X.</p> <p>The STM X is ordered to HS and reports HS in due time.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>At the border the STM X is ordered to DA.</p> <p>The STM reports DA in due time and the preliminarily requested DMI elements are displayed.</p> <p>The STM sends new DMI requests changing the text of the buttons and indicators, changing the text message, updating supervision info and requesting a continuous sound.</p> <p>Eventually the STM reports FA in DA.</p> <p>All DMI elements of STM X are removed.</p>
ERTMS/ETCS on-board requirements tested	SUBSET-035 5.3.1.1 preliminary DMI access in modes FS, LS, SR, OS or UN, 13.2.1.1, 13.2.1.2, 13.2.1.5
STM requirements tested	
Packets transmitted via FFFIS STM	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
ERTMS/ETCS on-board configuration	<p>Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.5, 7a.6, 7a.7 or 7a.9.</p> <p>The test shall be performed at least with configurations 7a.1 and 7a.5.</p>





<b>Comments and constraints</b>	Balise Messages Bn and DMI request messages Dn, DnU and DnC as in test case 7h.2
---------------------------------	--

Starting Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS, LS, SR, OS or UN	The test shall be performed for all modes
ETCS Level	1	
Train State	moving	
ETCS Train Data	not relevant	
Active DMI channel Connection	Established	
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	

© This document has been developed and released by UNISIG



TIU Cab Status	Cab A or B active	For the test it is not relevant, what cab is 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 isolated for all STMs	

#### 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	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS. Time:T1
					DMI		The ETCS displays the level announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-S1			
3	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T1+13s	connection of active DMI channel: Message-D1U for unified DMI service, Message-D1C for customisable DMI service	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept. The sound is not played
4	The STM sends another preliminary DMI request changing the background colour of the buttons and indicators.	PROF	T1+18s	connection of active DMI channel: Message-D2	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.

5	The train passes the border to level NTC	BTM	T0+23s	Message-B2: balise group received with level border to Level NTC for the STM in HS	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-E2  The ETCS reports the changed mode to the STM and orders it to DA.  Time:T2
					DMI	Ts3a	If the speed range configured for the STM is different from the speed range configured for the ETCS it is changed to the STM range. If ETCS areas are moved by the configuration of the STM they are moved.
6	The driver acknowledges the transition	DMI	T0+26s	The driver presses the (level announcement) ack button			
7	The STM reports DA in due time	PROF	T2+3s	STM Control Connection: Message-S2	DMI		The preliminary DMI information sent by the STM in HS is displayed.  Text message 'THIS IS A MESSAGE FROM STM IN HS' is shown in group 1.  The ETCS displays the 2 buttons and 3 indicators requested by the STM in HS with lower case characters and green background colour.  The ETCS displays the supervision info requested by the STM in HS with permitted speed = 40km/h and intervention speed = 50km/h.



							The ETCS plays the sound requested by the STM in HS once.
8	The STM reports FA	PROF	T2+8s	STM Control Connection: Message-S3	DMI		ETCS shows message '[name of NTC for failed STM] failed' with acknowledgement.
					TIU		ETCS applies emergency brake
					DMI		The buttons and indicators of the STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed from the text area. The sound requested by the STM is stopped.
					DMI	Ts3c	If the speed dial range was changed for the STM, it is changed back to the ETCS configured range. If ETCS areas were moved for the STM, they are moved back.

Message-E1: ETCS->STM X: The ETCS orders the STM X to HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	6	State order to HS
Padding bits	7	NOT RELEVANT	

Message-S1: STM X->ETCS: STM X reports HS
---



VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
Padding bits	7	0000000b	

Message-E2: ETCS->STM X: The ETCS reports the changed mode to the STM and orders it to DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM in HS
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM in HS
M_MODESTM	4	13	National System
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	7	State order to DA
Padding bits	3	NOT RELEVANT	

Message-S2: STM X->ETCS: STM X reports DA			
VARIABLE	Length	VALUE	COMMENT



NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in HS
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=7, (State DA)			

Message-S3: STM X->ETCS: STM X reports FA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=8, (State FA)			

End Conditions	Value	Comments
STM State	FA	
ETCS Mode	SN	
ETCS Level	NTC	
Train State	not relevant	
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	not relevant	

© This document has been developed and released by UNISIG



Brake		
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	unchanged	

#### 2.8.4 Test Case 7h.4

TEST CASE HEADER	
Test case identification	DMI Function
	7h.2.0.2.0
	<p>Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode FS, LS, SR, OS or UN and removal of DMI objects after failure of the STM in HS for Unified DMI service or Customisable DMI service with configuration with ETCS speed dial and sounds:</p> <p>At start of the test the Level is 1 and the STM X is in CS, mode is FS, LS, SR, OS or UN. The train passes a level announcement for level NTC X.</p>



	<p>The STM X is ordered to HS and reports HS in due time.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>At the border the STM X is ordered to DA.</p> <p>The STM reports FA.</p>
<b>ERTMS/ETCS on-board requirements tested</b>	SUBSET-035 5.3.1.1 preliminary DMI access in modes FS, LS, SR, OS or UN, 13.2.1.1, 13.2.1.2, 13.2.1.5
<b>STM requirements tested</b>	
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
<b>ERTMS/ETCS on-board configuration</b>	<p>Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.5, 7a.6, 7a.7 or 7a.9.</p> <p>The test shall be performed at least with configurations 7a.1 and 7a.5.</p>
<b>Comments and constraints</b>	Balise Messages Bn and DMI request messages Dn, DnU and DnC as in test case 7h.2

Starting Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS, LS, SR, OS or UN	The test shall be performed for all modes
ETCS Level	1	
Train State	moving	
ETCS Train Data	not relevant	
Active DMI channel Connection	Established	
Other DMI channels Connections	not relevant	
TIU Connection	not relevant	
BIU Connection	not relevant	

© This document has been developed and released by UNISIG





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 or B active	For the test it is not relevant, what cab is 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 isolated for all STMs	

#### 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	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS.



							Time:T1
					DMI		The ETCS displays the level announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-S1			
3	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T1+13s	connection of active DMI channel: Message-D1U for unified DMI service, Message-D1C for customisable DMI service	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept. The sound is not played
4	The STM sends another preliminary DMI request changing the background colour of the buttons and indicators.	PROF	T1+18s	connection of active DMI channel: Message-D2	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.
5	The train passes the border to level NTC	BTM	T0+23s	Message-B2: balise group received with level border to Level NTC for the STM in HS	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-E2  The ETCS reports the changed mode to the STM and orders it to DA.  Time:T2
					DMI	Ts3a	If the speed range configured for the STM is different from the speed range configured for the ETCS it is changed to the STM range. If ETCS areas are moved by the configuration of the STM they are moved.



6	The driver acknowledges the transition	DMI	T0+26s	The driver presses the (level announcement) ack button			
7	The STM reports FA	PROF	T2+3s	STM Control Connection: Message-S2	DMI		ETCS shows message '[name of NTC for failed STM] failed' with acknowledgement.
					TIU		ETCS applies emergency brake
					DMI		The preliminary DMI objects requested by the STM are not displayed.
					DMI	Ts3c	If the speed dial range was changed for the STM, it is changed back to the ETCS configured range. If ETCS areas were moved for the STM, they are moved back.

Message-E1: ETCS->STM X: The ETCS orders the STM X to HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	6	State order to HS
Padding bits	7	NOT RELEVANT	

Message-S1: STM X->ETCS: STM X reports HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in CS



L_MESSAGE	8	6	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
Padding bits	7	0000000b	

Message-E2: ETCS->STM X: The ETCS reports the changed mode to the STM and orders it to DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM in HS
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM in HS
M_MODESTM	4	13	National System
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	7	State order to DA
Padding bits	3	NOT RELEVANT	

Message-S2: STM X->ETCS: STM X reports FA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length

© This document has been developed and released by UNISIG



STM-15: PL=25, ST=8, (State FA)

End Conditions	Value	Comments
STM State	FA	
ETCS Mode	SN	
ETCS Level	NTC	
Train State	not relevant	
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	

© This document has been developed and released by UNISIG



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	unchanged	

## 2.8.5 Test Case 7h.5

TEST CASE HEADER	
Test case identification	DMI Function
	7h.3.0.1.1.0
	<p>Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode TR and removal of DMI objects after STM is no more active for Unified DMI service or Customisable DMI service with configuration with ETCS speed dial and sounds:</p> <p>At start of the test the Level is 1 and the STM X is in CS, mode is FS. The train passes a level announcement for level NTC X.</p> <p>The STM X is ordered to HS and reports HS in due time.</p> <p>The train passes a trip order, ETCS activates the emergency brake and the mode changes to TR.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>Before the border the driver acknowledges the transition to level NTC on request.</p> <p>When the train reaches standstill (after the border), the driver acknowledges the trip, the emergency brake is released, the mode changes to SN and the STM X is ordered to DA.</p> <p>The STM reports DA in due time and the preliminarily requested DMI elements are displayed.</p> <p>The STM sends new DMI requests changing the text of the buttons and indicators, changing the text message, updating supervision info and requesting a continuous sound.</p>



	Eventually the train passes a border to level 1 and the STM X is ordered to CS. All DMI elements of STM X are removed.
<b>ERTMS/ETCS on-board requirements tested</b>	SUBSET-035 5.3.1.1 preliminary DMI access in mode TR, 13.2.1.1, 13.2.1.2, 13.2.1.5
<b>STM requirements tested</b>	
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46
<b>ERTMS/ETCS on-board configuration</b>	Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.5, 7a.6, 7a.7 or 7a.9. The test shall be performed at least with configurations 7a.3.
<b>Comments and constraints</b>	DMI request messages Dn, DnU and DnC as in test case 7h.2.

Starting Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS	
ETCS Level	1	
Train State	moving	
ETCS Train Data	valid	
Active DMI channel Connection	Established	
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 or B active	For the test it is not relevant, what cab is 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 isolated for all STMs	

#### 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	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS. Time:T1
					DMI		The ETCS displays the level





							announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-S1			
3	Trip order by Level 1 Movement Authority with V_MAIN = 0	BTM	T1+13s	Message-B2: balise group received with trip order	TIU		ETCS applies emergency brake
				The mode changes to TR	PROF		STM control connection: Message-E2 The ETCS reports the new mode to the STM.
4	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T1+18s	connection of active DMI channel: Message-D1U for unified DMI service, Message-D1C for customisable DMI service	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept. The sound is not played
5	The STM sends another preliminary DMI request changing the background colour of the buttons and indicators.	PROF	T1+23s	connection of active DMI channel: Message-D2	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.
6	The train passes the position for acknowledgement of transition to level NTC	ODO	T1+28s	Odometer reports position = 500m before border	DMI		The driver is requested to acknowledge the level transition.
7	The driver acknowledges the transition	DMI	T1+31s	The driver presses the (level announcement) ack button			
8	The train passes the border to level NTC	BTM	T1+36s	Message-B3: balise group received with level border to Level NTC for the STM in HS	PROF		STM control connection: Message-E3 The ETCS reports the changed level to the STM.
9	Train reaches standstill	ODO	T1+41s	Odometer reports standstill	DMI		The driver is requested to acknowledge the trip



10	The driver acknowledges the trip	DMI	T1+46s	The driver presses the ack button	TIU		ETCS releases emergency brake
				The mode changes to SN	PROF		STM control connection: Message-E4 The ETCS reports the new mode to the STM and orders it to DA. Time:T2
					DMI	Ts3b	If the speed range configured for the STM is different from the speed range configured for the ETCS it is changed to the STM range. If ETCS areas are moved by the configuration of the STM they are moved.
11	The STM reports DA in due time	PROF	T2+3s	STM Control Connection: Message-S2	DMI		The preliminary DMI information sent by the STM in HS is displayed. Text message 'THIS IS A MESSAGE FROM STM IN HS' is shown in group 1. The ETCS displays the 2 buttons and 3 indicators requested by the STM in HS with lower case characters and green background colour. The ETCS displays the supervision info requested by the STM in HS with permitted speed = 40km/h and intervention speed = 50km/h. The ETCS plays the sound requested by the STM in HS once.
12	The driver moves the train again		T2+8s	The driver speeds up the train to 40km/h		60	



13	STM sends request with 2 buttons and 3 indicators changing the caption texts to upper case.	PROF	T2+68s	connection of active DMI channel: Message-D3	DMI		Button and indicator captions are shown with upper case.
14	STM sends supervision information with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.	PROF	T2+73s	connection of active DMI channel: Message-D4	DMI		Supervision information display is shown with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.
15	STM changes the text message.	PROF	T2+78s	connection of active DMI channel: Message-D5	DMI		Text message 'THIS IS A MESSAGE FROM STM IN DA' is shown in group 1
16	STM requests a continuous sound.	PROF	T2+83s	connection of active DMI channel: Message-D6U for unified DMI service, Message-D6C for customisable DMI service	DMI		The requested sound is played continuously.
17	The train passes the border to level 1	BTM	T2+88s	Message-B4: balise group received with level border to Level 1	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-E5 The ETCS reports the changed mode to STM X and orders it to CS.
					DMI		The buttons and indicators of the STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed from the text area. The sound requested by the STM is stopped.
					DMI	Ts3c	If the speed dial range was changed for the STM, it is changed back to the ETCS configured range. If ETCS



						areas were moved for the STM, they are moved back.
--	--	--	--	--	--	--

Message-B1 balise 1 of 2 : Level transition announcement for Level NTC for STM X			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	5000	5000m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for STM X
L_ACKLEVELTR	15	500	500m
N_ITER	5	0	no mixed level area



NID_PACKET	8	255	Finishing flag of the telegram
------------	---	-----	--------------------------------

Message-B1 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E1: ETCS->STM X: The ETCS orders the STM X to HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	6	State order to HS
Padding bits	7	NOT RELEVANT	

© This document has been developed and released by UNISIG



Message-S1: STM X->ETCS: STM X reports HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
Padding bits	7	0000000b	

Message-B2 balise 1 of 2 : Trip order by Level 1 Movement Authority with V_MAIN=0			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	12	Level 1 Movement Authority
Q_DIR	2	01b	Nominal

© This document has been developed and released by UNISIG



L_PACKET	13	73	
Q_SCALE	2	01b	1m scale
V_MAIN	7	0	Trip order
V_LOA	7	0	0 km/h
T_LOA	10	1023	Unlimited
N_ITER	5	0	Only one section
L_ENDSECTION	15	0	
Q_SECTIONTIMER	1	0	
Q_ENDTIMER	1	0	
Q_DANGERPOINT	1	0	
Q_OVERLAP	1	0	
NID_PACKET	8	255	Finishing flag of the telegram

Message-B2 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region



NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E2: ETCS->STM X: The ETCS reports mode change to TR to the STM X			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	28	Packet Length
M_LEVEL	3	2	ETCS Level 1
M_MODESTM	4	7	Trip
Padding bits	4	NOT RELEVANT	

Message-B3 balise 1 of 2 : Level transition border for Level NTC for STM in HS			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region





NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM X in HS
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B3 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region



NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E3: ETCS->STM X: The ETCS reports level change to level NTC X to the STM X			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	7	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM X in HS
M_MODESTM	4	7	Trip
Padding bits	4	NOT RELEVANT	

Message-E4: ETCS->STM X: The ETCS reports the changed mode to the STM and orders it to DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM in HS
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM in HS
M_MODESTM	4	13	National System

© This document has been developed and released by UNISIG



NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	7	State order to DA
Padding bits	3	NOT RELEVANT	

Message-S2: STM X->ETCS: STM X reports DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in HS
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=7, (State DA)			

Message-B4 balise 1 of 2 : Level transition border for Level 1			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order

© This document has been developed and released by UNISIG



Q_DIR	2	01b	Nominal
L_PACKET	13	63	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	2	Level 1
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B4 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E5: ETCS->STM X: The ETCS reports the changed mode to the STM X and orders it to CS
---



VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	9	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	28	Packet Length
M_LEVEL	3	2	ETCS Level 1
M_MODESTM	4	0	Full Supervision
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	4	Unconditional state order to CS
Padding bits	3	NOT RELEVANT	

End Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS	
ETCS Level	1	
Train State	moving	
ETCS Train Data	not relevant	
Active DMI channel Connection	unchanged	
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	unchanged	

## 2.8.6 Test Case 7h.6

TEST CASE HEADER		
Test case identification	DMI Function	
	7h.1.0.1.1.0	
	Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode SB at SOM and removal of DMI	



	<p>objects after STM is no more active. :</p> <p>At start of the test the stored level is valid and Level NTC for STM X. The mode is SB, the desk is open, the driver Id and the train running number are valid. The STM needs no specific NTC data and requests CS after it has received all configuration data.</p> <p>The STM is ordered to CS by the ETCS and reports CS in due time.</p> <p>The STM is then ordered to HS and reports HS in due time.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message and supervision info. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>The driver enters and validates ETCS train data that are sent to the STM also.</p> <p>The driver selects start and acknowledges level NTC for STM X.</p> <p>The changed mode is reported to the STM and it is ordered to DA.</p> <p>The STM reports DA in due time and the preliminarily requested DMI elements are displayed.</p> <p>The STM sends new DMI requests changing the text of the buttons and indicators, changing the text message and updating supervision info.</p> <p>Eventually the train passes a border to level 1 and the STM X is ordered to CS.</p> <p>All DMI elements of STM X are removed.</p>
<b>ERTMS/ETCS on-board requirements tested</b>	SUBSET-035 5.3.1.1 preliminary DMI access in mode SB, 13.2.1.1, 13.2.1.2, 13.2.1.5
<b>STM requirements tested</b>	
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-175, STM-176, STM-179, STM-184
<b>ERTMS/ETCS on-board configuration</b>	<p>Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.4, 7a.5, 7a.6, 7a.7 or 7a.9.</p> <p>The test shall be performed at least with configuration 7a.4.</p>
<b>Comments and constraints</b>	

Starting Conditions	Value	Comments
---------------------	-------	----------



STM State	CO	
ETCS Mode	SB	
ETCS Level	Level NTC	For STM X
Train State	standstill	
ETCS Train Data	Not Valid	
Active DMI channel Connection	Established	
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 or B active	For the test it is not relevant, what cab is 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 isolated for active STM. Not relevant for other STMs	

#### 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	STM requests CS	PROF	T0	STM control connection: Message-S1	PROF	Ts4	STM control connection: Message-E1 The ETCS orders the STM to CS. Time:T1
2	STM reports CS in due time	PROF	T1+8s	STM control connection: Message-S2	PROF	Ts6	STM control connection: Message-E2 The ETCS orders the STM to HS. Time:T2
3	STM reports HS in due time	PROF	T2+8s	STM control connection: Message-S3			
4	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message and supervision info.	PROF	T2+13s	connection of active DMI channel: Message-D1	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.
5	The STM sends another preliminary DMI request changing the background colour of the buttons and indicators.	PROF	T2+18s	connection of active DMI channel: Message-D2	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.
6	Train data entry	DMI	T3 > T2+23s	Driver enters and validates ETCS train data	PROF	Ts7	STM control connection: Message-E3



							The ETCS sends the start flag to the STM. Time:T4
7	ETCS sends train data to STM		T4		PROF	Ts8	STM control connection: Message-E4 The ETCS sends train data to the STM. Time:T5
8	STM sends End of Specific NTC Data Entry	PROF	T5+8s	STM control connection: Message-S4	PROF	Ts9	STM control connection: Message-E5 The ETCS sends the stop flag. Time:T6
9	Driver selects Start	DMI	T5+13s	Driver presses 'Start' button	DMI		The default window is entered with SN mode acknowledgement requested.
10	Driver acknowledges mode SN	DMI	T5+18s	Driver presses mode (ack) button	PROF	Ts10	STM control connection: Message-E6 The ETCS orders the STM to DA. Time:T6
					DMI	Ts3a	If the speed range configured for STM Y is different from the speed range configured for the ETCS it is changed to the STM range. If ETCS areas are moved by the configuration of the STM Y they are moved.
11	The STM reports DA in due time	PROF	T6+3s	STM Control Connection: Message-S5	DMI		The preliminary DMI information sent by the STM in HS is displayed. Text message 'THIS IS A

							<p>MESSAGE FROM STM IN HS' is shown in group 1.</p> <p>The ETCS displays the 2 buttons and 3 indicators requested by the STM in HS with lower case characters and green background colour.</p> <p>The ETCS displays the supervision info requested by the STM in HS with permitted speed = 40km/h and intervention speed = 50km/h.</p>
12	STM sends request with 2 buttons and 3 indicators changing the caption texts to upper case.	PROF	T6+8s	connection of active DMI channel: Message-D3	DMI		Button and indicator captions are shown with upper case.
13	STM sends supervision information with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.	PROF	T6+13s	connection of active DMI channel: Message-D4	DMI		Supervision information display is shown with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.
14	STM changes the text message.	PROF	T6+18s	connection of active DMI channel: Message-D5	DMI		Text message 'THIS IS A MESSAGE FROM STM IN DA' is shown in group 1
15	Train is moved.	DMI	T6+23s	The driver speeds up the train to 20km/h.			
16	The train passes the border to level 1	BTM	T6+53s	Message-B1: balise group received with level border to Level 1	DMI		The driver is requested to acknowledge the level transition.
					PROF		<p>STM control connection: Message-E7</p> <p>The ETCS reports the changed mode to STM X and orders it to CS.</p>
					DMI		The buttons and indicators of the



							STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed from the text area.
					DMI	Ts3c	If the speed dial range was changed for the STM, it is changed back to the ETCS configured range. If ETCS areas were moved for the STM, they are moved back.

Message-S1: STM requests CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
NID_PACKET	8	13	State request from STM (STM-13)
L_PACKET	13	25	Packet Length
NID_STMSTATEREQUEST	4	4	State CS
Padding bits	7	0000000b	

Message-E1: The ETCS orders STM to CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	4	Unconditional state order to CS



Padding bits	7	NOT RELEVANT	
--------------	---	--------------	--

Message-S2: STM X reports CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	4	State CS
Padding bits	7	0000000b	

Message-E2: The ETCS orders STM to HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
STM-14: PL=25, STO=6, (State order to HS)			

Message-S3: STM X reports HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=6, (State HS)			

Message-D1: STM X->ETCS: STM requests buttons, indicators, a text message and supervision info			
--	--	--	--



VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	106	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
NID_PACKET	8	32	Button request from STM (STM-32)
L_PACKET	13	164	Packet Length
N_ITER	5	2	Request for 2 buttons
NID_BUTTON(1)	8	1	Button 1
NID_BUTPOS(1)	5	1	
NID_ICON(1)	8	0	
M_BUT_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="but1"
X_CAPTION(1,1)	8	"b"	
X_CAPTION(1,2)	8	"u"	
X_CAPTION(1,3)	8	"t"	
X_CAPTION(1,4)	8	"1"	
NID_BUTTON(2)	8	2	Button 2
NID_BUTPOS(2)	5	2	
NID_ICON(2)	8	0	
M_BUT_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="but2"



X_CAPTION(2,1)	8	"b"	
X_CAPTION(2,2)	8	"u"	
X_CAPTION(2,3)	8	"t"	
X_CAPTION(2,4)	8	"2"	
NID_PACKET	8	35	Indicator request from STM (STM-35)
L_PACKET	13	233	Packet Length
N_ITER	5	3	Request for 3 indicators
NID_INDICATOR(1)	8	1	Indicator 1
NID_INDPOS(1)	5	1	
NID_ICON(1)	8	0	
M_IND_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="ind1"
X_CAPTION(1,1)	8	"i"	
X_CAPTION(1,2)	8	"n"	
X_CAPTION(1,3)	8	"d"	
X_CAPTION(1,4)	8	"1"	
NID_INDICATOR(2)	8	2	Indicator2
NID_INDPOS(2)	5	2	
NID_ICON(2)	8	0	
M_IND_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="ind2"
X_CAPTION(2,1)	8	"i"	
X_CAPTION(2,2)	8	"n"	



X_CAPTION(2,3)	8	"d"	
X_CAPTION(2,4)	8	"2"	
NID_INDICATOR(3)	8	3	Indicator3
NID_INDPOS(3)	5	3	
NID_ICON(3)	8	0	
M_IND_ATTRIB(3)	10	1000010000b	black on red, no flashing
L_CAPTION(3)	6	4	Caption="ind3"
X_CAPTION(3,1)	8	"i"	
X_CAPTION(3,2)	8	"n"	
X_CAPTION(3,3)	8	"d"	
X_CAPTION(3,4)	8	"3"	
NID_PACKET	8	38	text message from STM (STM-38)
L_PACKET	13	304	Packet Length
NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing in group 1
Q_ACK	1	0	No acknowledgement required
L_TEXT	8	32	Text="THIS IS A MESSAGE FROM STM IN HS"
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	





X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	
X_TEXT(19)	8	"F"	
X_TEXT(20)	8	"R"	
X_TEXT(21)	8	"O"	
X_TEXT(22)	8	"M"	
X_TEXT(23)	8	" "	
X_TEXT(24)	8	"S"	
X_TEXT(25)	8	"T"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"I"	
X_TEXT(29)	8	"N"	



X_TEXT(30)	8	" "	
X_TEXT(31)	8	"H"	
X_TEXT(32)	8	"S"	
NID_PACKET	8	43	Supervision Information from STM (STM-43)
L_PACKET	13	100	Packet Length
Q_SCALE	2	1	1m scale
V_PERMIT	10	40	40km/h
V_TARGET	7	0	0km/h
V_RELEASE	10	0	0km/h
V_INTERV	10	50	50km/h
D_TARGET	15	0	0m
M_COLOUR_SP	3	0	White
M_COLOUR_PS	3	1	Grey
Q_DISPLAY_PS	2	11b	Speed bar with hook
M_COLOUR_TS	3	3	Dark grey
Q_DISPLAY_TS	2	00b	No display
M_COLOUR_RS	3	3	Dark grey
Q_DISPLAY_RS	2	00b	No display
M_COLOUR_IS	3	0	White
Q_DISPLAY_IS	2	10b	wide bar width
Q_DISPLAY_TD	2	00b	No display
Padding bits	6	000000b	



Message-D2: STM X->ETCS: STM requests changed background colour for buttons and indicators			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	55	Message Length
STM-15: PL=25, ST=6, (State HS)			
STM-32: PL=164, N=2, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="but1"			
(2): ID=2, P=2, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="but2"			
STM-35: PL=233, N=3, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind1"			
(2): ID=2, P=2, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind2"			
(3): ID=3, P=3, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind3"			

Message-E3: The ETCS sends the start flag			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	5	Message Length
NID_PACKET	8	184	Specific NTC Data Entry flag (STM-184)
L_PACKET	13	22	Packet Length
M_DATAENTRYFLAG	1	1	START
Padding bits	2	00b	

Message-E4: The ETCS sends train data			
The sequence of packets in the message may be switched and this message may be merged with the previous one			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X



L_MESSAGE	8	COMPUTED	Message Length
NID_PACKET	8	175	Validated train data (STM-175)
L_PACKET	13	COMPUTED	Packet Length
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	FINITE_VALUE (n)	Following elements missing if value is 0
M_VOLTAGE(1)	4	FINITE_VALUE	
NID_CTRACTION (1)	10	FINITE_VALUE	Missing, if M_VOLTAGE(1)=0
...			
M_VOLTAGE(n)	4	FINITE_VALUE	
NID_CTRACTION (n)	10	FINITE_VALUE	Missing, if M_VOLTAGE(n)=0
NID_PACKET	8	176	Validated train data traction/brake parameters (STM-176)
L_PACKET	13	COMPUTED	Packet Length
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_STM	8	FINITE_VALUE	
Padding bits	COMPUTED	NOT RELEVANT	

Message-S4: The STM sends End of Specific NTC Data Entry			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
NID_PACKET	8	179	Request for Specific NTC Data Entry (STM-179)
L_PACKET	13	27	Packet Length
Q_FOLLOWING	1	0	No following packet
N_ITER	5	0	End of Specific NTC Data Entry"
Padding bits	5	00000b	

Message-E5: The ETCS sends the stop flag			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	5	Message Length
NID_PACKET	8	184	Specific NTC Data Entry flag (STM-184)
L_PACKET	13	22	Packet Length
M_DATAENTRYFLAG	1	0	STOP
Padding bits	2	00b	

Message-E6: The ETCS reports the changed mode to STM X and orders it to DA			
--	--	--	--



VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for STM X
M_MODESTM	4	13	National System
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	7	State order to DA
Padding bits	3	NOT RELEVANT	

Message-S5: STM X reports DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=7, (State DA)			

Message-D3: STM X->ETCS: STM requests changed captions for buttons and indicators			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	55	Message Length
STM-15: PL=25, ST=7, (State DA)			



STM-32: PL=164, N=2, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="BUT1"
(2): ID=2, P=2, IC=0, MI=1000100000b, L=4, T="BUT2"
STM-35: PL=233, N=3, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="IND1"
(2): ID=2, P=2, IC=0, MI=1000100000b, L=4, T="IND2"
(3): ID=3, P=3, IC=0, MI=1000100000b, L=4, T="IND3"

Message-D4: STM X->ETCS: STM updates supervision info			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	18	Message Length
STM-15: PL=25, ST=7, (State DA)			
STM-43: PL=100, QS=1, VP=120, VT=0, VR=40, VI=130, DT=10000 MS=0(White), MP=1(Grey), QP=11b(Speed bar with hook), MT=3(Dark grey), QT=00b(No display), MR=3(Dark grey), QR=11b(Bar and digital), MI=0(White), QI=10b(wide bar width), QD=11b(Bar and digital),			

Message-D5: STM X->ETCS: STM changes the text message			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	43	Message Length
STM-15: PL=25, ST=7, (State DA)			
STM-38: PL=300, NX=100, MX=1000010000b (black on red, no flashing in group 1), Q=0 (No acknowledgement required), L=32, T="THIS IS A MESSAGE FROM STM IN DA"			

Message-B1 balise 1 of 2 : Level transition border for Level 1
--



VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	63	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	2	Level 1
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B1 balise 2 of 2 : End of group

VARIABLE	Length	VALUE	COMMENT
----------	--------	-------	---------





Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E7: ETCS->STM X: The ETCS reports the changed mode to the STM X and orders it to CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	9	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	28	Packet Length
M_LEVEL	3	2	ETCS Level 1
M_MODESTM	4	0	Full Supervision
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	4	Unconditional state order to CS



Padding bits	3	NOT RELEVANT	
--------------	---	--------------	--

End Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS	
ETCS Level	1	
Train State	moving	
ETCS Train Data	Valid	
Active DMI channel Connection	unchanged	
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	

© This document has been developed and released by UNISIG



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	unchanged	

## 2.8.7 Test Case 7h.7

TEST CASE HEADER	
Test case identification	DMI Function
	7h.4.0.1.1.0
	<p>Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode NL and removal of DMI objects after STM is no more active for Unified DMI service or Customisable DMI service with sounds:</p> <p>At start of the test the Level is 1 and the STM X is in CS, mode is NL. The train passes a level announcement for level NTC X.</p> <p>The STM X is ordered to HS and reports HS in due time.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message and a one shot sound request. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>At the border the STM X is ordered to DA.</p> <p>The STM reports DA in due time and the preliminarily requested DMI elements are displayed.</p> <p>The STM sends new DMI requests changing the text of the buttons and indicators, changing the text message and requesting a continuous sound.</p> <p>Eventually the train passes a border to level 1 and the STM X is ordered to CS.</p> <p>All DMI elements of STM X are removed.</p>
ERTMS/ETCS on-board	SUBSET-035 5.3.1.1 preliminary DMI access in mode NL, 13.2.1.1, 13.2.1.2, 13.2.1.5



<b>requirements tested</b>	
<b>STM requirements tested</b>	
<b>Packets transmitted via FFFIS STM</b>	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-46
<b>ERTMS/ETCS on-board configuration</b>	Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.5, 7a.6, 7a.7, 7a.8 or 7a.9. The test shall be performed at least with configuration 7a.8.
<b>Comments and constraints</b>	

Starting Conditions	Value	Comments
STM State	CS	
ETCS Mode	NL	
ETCS Level	1	
Train State	moving	
ETCS Train Data	not relevant	
Active DMI channel Connection	Established	
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 or B active	For the test it is not relevant, what cab is 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 isolated for all STMs	

#### 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	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS. Time:T1
					DMI		The ETCS displays the level announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-			



				S1			
3	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message and a one shot sound request.	PROF	T1+13s	connection of active DMI channel: Message-D1U for unified DMI service, Message-D1C for customisable DMI service	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept. The sound is not played
4	The STM sends another preliminary DMI request changing the background colour of the buttons and indicators.	PROF	T1+18s	connection of active DMI channel: Message-D2	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.
5	The train passes the border to level NTC	BTM	T0+23s	Message-B2: balise group received with level border to Level NTC for the STM in HS	PROF		STM control connection: Message-E2  The ETCS reports the changed level to the STM and orders it to DA.  Time:T2
6	The STM reports DA in due time	PROF	T2+3s	STM Control Connection: Message-S2	DMI		The preliminary DMI information sent by the STM in HS is displayed.  Text message 'THIS IS A MESSAGE FROM STM IN HS' is shown in group 1.  The ETCS displays the 2 buttons and 3 indicators requested by the STM in HS with lower case characters and green background colour.  The ETCS plays the sound requested by the STM in HS once.
7	STM sends request with 2 buttons and 3 indicators changing the caption texts to upper case.	PROF	T2+8s	connection of active DMI channel: Message-D3	DMI		Button and indicator captions are shown with upper case.
8	STM changes the text message.	PROF	T2+13s	connection of active DMI channel:	DMI		Text message 'THIS IS A



				Message-D4			MESSAGE FROM STM IN DA' is shown in group 1
9	STM requests a continuous sound.	PROF	T2+18s	connection of active DMI channel: Message-D5U for unified DMI service, Message-D5C for customisable DMI service	DMI		The requested sound is played continuously.
10	The train passes the border to level 1	BTM	T2+23s	Message-B3: balise group received with level border to Level 1	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-E3  The ETCS reports the changed level to STM X and orders it to CS.
					DMI		The buttons and indicators of the STM are removed from the default window. The text message of the STM is removed from the text area. The sound requested by the STM is stopped.
					DMI	Ts3c	If the speed dial range was changed for the STM, it is changed back to the ETCS configured range. If ETCS areas were moved for the STM, they are moved back.

Message-B1 balise 1 of 2 : Level transition announcement for Level NTC for STM X			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise



N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	5000	5000m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for STM X
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B1 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise





N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E1: ETCS->STM X: The ETCS orders the STM X to HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	6	State order to HS
Padding bits	7	NOT RELEVANT	

Message-S1: STM X->ETCS: STM X reports HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length

© This document has been developed and released by UNISIG



NID_STMSTATE	4	6	State HS
Padding bits	7	0000000b	

Message-D1U: STM X->ETCS: STM requests buttons, indicators, a text message and a sound for unified DMI service (configuration 7a.1)			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	114	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
NID_PACKET	8	32	Button request from STM (STM-32)
L_PACKET	13	164	Packet Length
N_ITER	5	2	Request for 2 buttons
NID_BUTTON(1)	8	1	Button 1
NID_BUTPOS(1)	5	1	
NID_ICON(1)	8	0	
M_BUT_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="but1"
X_CAPTION(1,1)	8	"b"	
X_CAPTION(1,2)	8	"u"	
X_CAPTION(1,3)	8	"t"	
X_CAPTION(1,4)	8	"1"	



NID_BUTTON(2)	8	2	Button 2
NID_BUTPOS(2)	5	2	
NID_ICON(2)	8	0	
M_BUT_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="but2"
X_CAPTION(2,1)	8	"b"	
X_CAPTION(2,2)	8	"u"	
X_CAPTION(2,3)	8	"t"	
X_CAPTION(2,4)	8	"2"	
NID_PACKET	8	35	Indicator request from STM (STM-35)
L_PACKET	13	233	Packet Length
N_ITER	5	3	Request for 3 indicators
NID_INDICATOR(1)	8	1	Indicator 1
NID_INDPOS(1)	5	1	
NID_ICON(1)	8	0	
M_IND_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="ind1"
X_CAPTION(1,1)	8	"i"	
X_CAPTION(1,2)	8	"n"	
X_CAPTION(1,3)	8	"d"	
X_CAPTION(1,4)	8	"1"	
NID_INDICATOR(2)	8	2	Indicator2
NID_INDPOS(2)	5	2	



NID_ICON(2)	8	0	
M_IND_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="ind2"
X_CAPTION(2,1)	8	"i"	
X_CAPTION(2,2)	8	"n"	
X_CAPTION(2,3)	8	"d"	
X_CAPTION(2,4)	8	"2"	
NID_INDICATOR(3)	8	3	Indicator3
NID_INDPOS(3)	5	3	
NID_ICON(3)	8	0	
M_IND_ATTRIB(3)	10	1000010000b	black on red, no flashing
L_CAPTION(3)	6	4	Caption="ind3"
X_CAPTION(3,1)	8	"i"	
X_CAPTION(3,2)	8	"n"	
X_CAPTION(3,3)	8	"d"	
X_CAPTION(3,4)	8	"3"	
NID_PACKET	8	38	text message from STM (STM-38)
L_PACKET	13	304	Packet Length
NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing in group 1
Q_ACK	1	0	No acknowledgement required
L_TEXT	8	32	Text="THIS IS A MESSAGE FROM STM IN HS"
X_TEXT(1)	8	"T"	



X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	
X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	
X_TEXT(19)	8	"F"	
X_TEXT(20)	8	"R"	
X_TEXT(21)	8	"O"	
X_TEXT(22)	8	"M"	
X_TEXT(23)	8	" "	
X_TEXT(24)	8	"S"	



X_TEXT(25)	8	"T"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"I"	
X_TEXT(29)	8	"N"	
X_TEXT(30)	8	" "	
X_TEXT(31)	8	"H"	
X_TEXT(32)	8	"S"	
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	169	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	1	One shot play
N_ITER(1)	5	8	8 segments
M_FREQ(1,1)	8	8	256Hz
T_SOUND(1,1)	8	100	10000ms
M_FREQ(1,2)	8	9	288Hz
T_SOUND(1,2)	8	100	10000ms
M_FREQ(1,3)	8	10	320Hz
T_SOUND(1,3)	8	100	10000ms
M_FREQ(1,4)	8	11	352Hz
T_SOUND(1,4)	8	100	10000ms
M_FREQ(1,5)	8	12	384Hz



T_SOUND(1,5)	8	100	10000ms
M_FREQ(1,6)	8	14	448Hz
T_SOUND(1,6)	8	100	10000ms
M_FREQ(1,7)	8	15	480Hz
T_SOUND(1,7)	8	100	10000ms
M_FREQ(1,8)	8	16	512Hz
T_SOUND(1,8)	8	100	10000ms
Padding bits	1	0b	

Message-D1C: STM X->ETCS: STM requests buttons, indicators, a text message and a sound for customized DMI service			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	98	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
NID_PACKET	8	32	Button request from STM (STM-32)
L_PACKET	13	164	Packet Length
N_ITER	5	2	Request for 2 buttons
NID_BUTTON(1)	8	1	Button 1
NID_BUTPOS(1)	5	1	
NID_ICON(1)	8	0	



M_BUT_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="but1"
X_CAPTION(1,1)	8	"b"	
X_CAPTION(1,2)	8	"u"	
X_CAPTION(1,3)	8	"t"	
X_CAPTION(1,4)	8	"1"	
NID_BUTTON(2)	8	2	Button 2
NID_BUTPOS(2)	5	2	
NID_ICON(2)	8	0	
M_BUT_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="but2"
X_CAPTION(2,1)	8	"b"	
X_CAPTION(2,2)	8	"u"	
X_CAPTION(2,3)	8	"t"	
X_CAPTION(2,4)	8	"2"	
NID_PACKET	8	35	Indicator request from STM (STM-35)
L_PACKET	13	233	Packet Length
N_ITER	5	3	Request for 3 indicators
NID_INDICATOR(1)	8	1	Indicator 1
NID_INDPOS(1)	5	1	
NID_ICON(1)	8	0	
M_IND_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="ind1"





X_CAPTION(1,1)	8	"i"	
X_CAPTION(1,2)	8	"n"	
X_CAPTION(1,3)	8	"d"	
X_CAPTION(1,4)	8	"1"	
NID_INDICATOR(2)	8	2	Indicator2
NID_INDPOS(2)	5	2	
NID_ICON(2)	8	0	
M_IND_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="ind2"
X_CAPTION(2,1)	8	"i"	
X_CAPTION(2,2)	8	"n"	
X_CAPTION(2,3)	8	"d"	
X_CAPTION(2,4)	8	"2"	
NID_INDICATOR(3)	8	3	Indicator3
NID_INDPOS(3)	5	3	
NID_ICON(3)	8	0	
M_IND_ATTRIB(3)	10	1000010000b	black on red, no flashing
L_CAPTION(3)	6	4	Caption="ind3"
X_CAPTION(3,1)	8	"i"	
X_CAPTION(3,2)	8	"n"	
X_CAPTION(3,3)	8	"d"	
X_CAPTION(3,4)	8	"3"	
NID_PACKET	8	38	text message from STM (STM-38)



L_PACKET	13	304	Packet Length
NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing in group 1
Q_ACK	1	0	No acknowledgement required
L_TEXT	8	32	Text="THIS IS A MESSAGE FROM STM IN HS"
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	
X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"M"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"S"	
X_TEXT(14)	8	"S"	
X_TEXT(15)	8	"A"	
X_TEXT(16)	8	"G"	
X_TEXT(17)	8	"E"	
X_TEXT(18)	8	" "	



X_TEXT(19)	8	"F"	
X_TEXT(20)	8	"R"	
X_TEXT(21)	8	"O"	
X_TEXT(22)	8	"M"	
X_TEXT(23)	8	" "	
X_TEXT(24)	8	"S"	
X_TEXT(25)	8	"T"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"I"	
X_TEXT(29)	8	"N"	
X_TEXT(30)	8	" "	
X_TEXT(31)	8	"H"	
X_TEXT(32)	8	"S"	
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	41	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	1	One shot play
N_ITER(1)	5	0	no sound segments
Padding bits	1	0b	

Message-D2: STM X->ETCS: STM requests changed background colour for buttons and indicators



VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	55	Message Length
STM-15: PL=25, ST=6, (State HS)			
STM-32: PL=164, N=2, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="but1"			
(2): ID=2, P=2, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="but2"			
STM-35: PL=233, N=3, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind1"			
(2): ID=2, P=2, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind2"			
(3): ID=3, P=3, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="ind3"			

Message-B2 balise 1 of 2 : Level transition border for Level NTC for STM in HS			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order



Q_DIR	2	01b	Nominal
L_PACKET	13	71	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	1	Level NTC specified by NID_NTC
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM X in HS
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B2 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram



Message-E2: ETCS->STM X: The ETCS reports the changed level to the STM and orders it to DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM in HS
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM in HS
M_MODESTM	4	11	Non Leading
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	7	State order to DA
Padding bits	3	NOT RELEVANT	

Message-S2: STM X->ETCS: STM X reports DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in HS
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=7, (State DA)			

Message-D3: STM X->ETCS: STM requests changed captions for buttons and indicators			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	55	Message Length

© This document has been developed and released by UNISIG



STM-15: PL=25, ST=7, (State DA)
STM-32: PL=164, N=2, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="BUT1"
(2): ID=2, P=2, IC=0, MI=1000100000b, L=4, T="BUT2"
STM-35: PL=233, N=3, ID=1, P=1, IC=0, MI=1000100000b (black on green, no flashing), L=4, T="IND1"
(2): ID=2, P=2, IC=0, MI=1000100000b, L=4, T="IND2"
(3): ID=3, P=3, IC=0, MI=1000100000b, L=4, T="IND3"

Message-D4: STM X->ETCS: STM changes the text message			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	43	Message Length
STM-15: PL=25, ST=7, (State DA)			
STM-38: PL=300, NX=100, MX=1000010000b (black on red, no flashing in group 1), Q=0 (No acknowledgement required), L=32, T="THIS IS A MESSAGE FROM STM IN DA"			

Message-D5U: STM X->ETCS: STM requests a continuous sound for unified DMI service (configuration 7a.1)			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	27	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	7	State DA
NID_PACKET	8	46	Sound command from STM (STM-46)



L_PACKET	13	169	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	2	Continuous play
N_ITER(1)	5	8	8 segments
M_FREQ(1,1)	8	8	256Hz
T_SOUND(1,1)	8	100	10000ms
M_FREQ(1,2)	8	9	288Hz
T_SOUND(1,2)	8	100	10000ms
M_FREQ(1,3)	8	10	320Hz
T_SOUND(1,3)	8	100	10000ms
M_FREQ(1,4)	8	11	352Hz
T_SOUND(1,4)	8	100	10000ms
M_FREQ(1,5)	8	12	384Hz
T_SOUND(1,5)	8	100	10000ms
M_FREQ(1,6)	8	14	448Hz
T_SOUND(1,6)	8	100	10000ms
M_FREQ(1,7)	8	15	480Hz
T_SOUND(1,7)	8	100	10000ms
M_FREQ(1,8)	8	16	512Hz
T_SOUND(1,8)	8	100	10000ms
Padding bits	6	000000b	





Message-D5C: STM X->ETCS: STM requests a continuous sound for customized DMI service			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	11	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	7	State DA
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	41	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	2	Continuous play
N_ITER(1)	5	0	no sound segments
Padding bits	6	000000b	

Message-B3 balise 1 of 2 : Level transition border for Level 1			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	0	Balise 1 of group
N_TOTAL	3	1	2 balises in group



M_DUP	2	00b	No duplicates
M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	41	Level Transition Order
Q_DIR	2	01b	Nominal
L_PACKET	13	63	
Q_SCALE	2	01b	1m scale
D_LEVELTR	15	0	0m
M_LEVELTR	3	2	Level 1
L_ACKLEVELTR	15	0	0m
N_ITER	5	0	no mixed level area
NID_PACKET	8	255	Finishing flag of the telegram

Message-B3 balise 2 of 2 : End of group			
VARIABLE	Length	VALUE	COMMENT
Q_UPDOWN	1	1	Up-link telegram
M_VERSION	7	FINITE_VALUE	Version of the ERTMS/ETCS system
Q_MEDIA	1	0	Balise
N_PIG	3	1	Balise 2 of group
N_TOTAL	3	1	2 balises in group
M_DUP	2	00b	No duplicates



M_MCOUNT	8	255	The telegram fits with all telegrams of the same balise group
NID_C	10	FINITE_VALUE	Identifier of country or region
NID_BG	14	FINITE_VALUE	Identifier of balise group
Q_LINK	1	0	Unlinked
NID_PACKET	8	255	Finishing flag of the telegram

Message-E3: ETCS->STM X: The ETCS reports the changed level to the STM X and orders it to CS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	9	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	28	Packet Length
M_LEVEL	3	2	ETCS Level 1
M_MODESTM	4	11	Non Leading
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	4	Unconditional state order to CS
Padding bits	3	NOT RELEVANT	

End Conditions	Value	Comments
STM State	CS	
ETCS Mode	NL	
ETCS Level	1	
Train State	moving	

© This document has been developed and released by UNISIG



ETCS Train Data	not relevant	
Active DMI channel Connection	unchanged	
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	unchanged	



## 2.8.8 Test Case 7h.8

TEST CASE HEADER	
Test case identification	DMI Function
	7h.2.0.1.3.0
	<p>Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode FS, LS, SR, OS or UN and removal of DMI objects after STM disconnects the connection to the active DMI channel and reconnects after 4s for Unified DMI service or Customisable DMI service with configuration with ETCS speed dial and sounds:</p> <p>At start of the test the Level is 1 and the STM X is in CS, mode is FS, LS, SR, OS or UN. The train passes a level announcement for level NTC X.</p> <p>The STM X is ordered to HS and reports HS in due time.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>At the border the STM X is ordered to DA.</p> <p>The STM reports DA in due time and the preliminarily requested DMI elements are displayed.</p> <p>STM disconnects the connection to the active DMI channel and reconnects after 4s. All DMI elements of the STM are removed</p> <p>The STM sends new DMI requests with changed text for the buttons and indicators, new text message, new supervision info and requesting a continuous sound.</p> <p>STM disconnects the connection to the active DMI channel and reconnects after 4s. All DMI elements of the STM are removed</p> <p>The STM sends new DMI requests with changed text for the buttons and indicators, new text message, new supervision info and requesting a one shot sound.</p>
ERTMS/ETCS on-board requirements tested	SUBSET-035 5.3.1.1 preliminary DMI access in modes FS, LS, SR, OS or UN, 13.2.1.1, 13.2.1.2, 13.2.1.3, 13.2.1.5
STM requirements tested	
Packets transmitted via FFFIS STM	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46



<b>ERTMS/ETCS on-board configuration</b>	Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.5, 7a.6, 7a.7 or 7a.9. The test shall be performed at least with configurations 7a.1 and 7a.5.
<b>Comments and constraints</b>	Balise Messages Bn and DMI request messages Dn, DnU and DnC as in test case 7h.2, except D7U and D7C

Starting Conditions	Value	Comments
STM State	CS	
ETCS Mode	FS, LS, SR, OS or UN	The test shall be performed for one mode
ETCS Level	1	
Train State	moving	
ETCS Train Data	not relevant	
Active DMI channel Connection	Established	
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 or B active	For the test it is not relevant, what cab is active
BIU Emergency Brake Command	Release	
BIU Service Brake Command	not relevant	
BIU Emergency Brake Status	not relevant	
BIU Service Brake Status	not relevant	
NTC isolation status	Not isolated for all STMs	

#### 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	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS. Time:T1
					DMI		The ETCS displays the level announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-S1			
3	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T1+13s	connection of active DMI channel: Message-D1U for unified DMI service, Message-D1C for customisable DMI service	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept. The sound is not played
4	The STM sends another preliminary	PROF	T1+18s	connection of active DMI channel:	DMI		The requested DMI elements are not



	DMI request changing the background colour of the buttons and indicators.			Message-D2			displayed but ETCS default window layout is kept.
5	The train passes the border to level NTC	BTM	T0+23s	Message-B2: balise group received with level border to Level NTC for the STM in HS	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-E2  The ETCS reports the changed mode to STM X and orders the STM to DA.  Time: T2:
					DMI	Ts3a	If the speed range configured for the STM is different from the speed range configured for the ETCS it is changed to the STM range. If ETCS areas are moved by the configuration of the STM they are moved.
6	The driver acknowledges the transition	DMI	T0+26s	The driver presses the (level announcement) ack button			
7	The STM reports DA in due time	PROF	T2+3s	STM Control Connection: Message-S2	DMI		The preliminary DMI information sent by the STM in HS is displayed.  Text message 'THIS IS A MESSAGE FROM STM IN HS' is shown in group 1.  The ETCS displays the 2 buttons and 3 indicators requested by the STM in HS with lower case characters and green background colour.  The ETCS displays the supervision





							info requested by the STM in HS with permitted speed = 40km/h and intervention speed = 50km/h.  The ETCS plays the sound requested by the STM in HS once.
8	STM disconnects the connection to the active DMI channel.	PROF	T2+8s	connection of active DMI channel disconnected by non final disconnect telegram from STM	DMI	2s	DMI display is kept. Sound is not stopped.
	ETCS removes DMI objects of the STM after 2 seconds.				DMI	2s + Ts11	The buttons and indicators of the STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed from the text area. The sound requested by the STM is stopped.
9	STM re-establishes connection to the active DMI channel and reports DA within 4 seconds.	PROF	T2+12s	connection of active DMI channel: Message-S2	DMI		DMI display is kept. No DMI elements of the STM are shown, no sound is played
10	STM sends request with 2 buttons and 3 indicators with upper case caption texts on green background colour.	PROF	T2+17s	connection of active DMI channel: Message-D3	DMI		The ETCS displays the 2 buttons and 3 indicators requested by the STM with upper case characters and green background colour.
11	STM sends supervision information with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.	PROF	T2+22s	connection of active DMI channel: Message-D4	DMI		Supervision information display is shown with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.
12	STM sends new text message.	PROF	T2+27s	connection of active DMI channel: Message-D5	DMI		Text message 'THIS IS A MESSAGE FROM STM IN DA' is shown in group 1
13	STM requests a continuous sound.	PROF	T2+32s	connection of active DMI channel: Message-D6U for unified DMI	DMI		The requested sound is played continuously.



				service, Message-D6C for customisable DMI service			
14	STM disconnects the connection to the active DMI channel.	PROF	T2+37s	connection of active DMI channel disconnected by non final disconnect telegram from STM	DMI	2s	DMI display is kept. Sound is not stopped.
	ETCS removes DMI objects of the STM after 2 seconds.				DMI	2s + Ts11	The buttons and indicators of the STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed from the text area. The sound requested by the STM is stopped.
15	STM re-establishes connection to the active DMI channel and reports DA within 4 seconds.	PROF	T2+41s	connection of active DMI channel: Message-S2	DMI		DMI display is kept. No DMI elements of the STM are shown, no sound is played
16	The STM sends a DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T2+41s	connection of active DMI channel: Message-D7U for unified DMI service, Message-D7C for customisable DMI service	DMI		<p>The requested DMI elements are displayed. Text message 'THIS IS A NEW MESSAGE FROM STM' is shown in group 1.</p> <p>The ETCS displays the 2 buttons and 3 indicators with lower case characters and red background colour.</p> <p>The ETCS displays the supervision info permitted speed = 40km/h and intervention speed = 50km/h.</p> <p>The ETCS plays the sound requested by the STM once.</p>

Message-E1: ETCS->STM X: The ETCS orders the STM X to HS			
VARIABLE	Length	VALUE	COMMENT



NID_STM	8	FINITE_VALUE	NID_STM of the STM X in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	6	State order to HS
Padding bits	7	NOT RELEVANT	

Message-S1: STM X->ETCS: STM X reports HS			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X previously in CS
L_MESSAGE	8	6	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	6	State HS
Padding bits	7	0000000b	

Message-E2: ETCS->STM X: The ETCS reports the changed mode to the STM and orders it to DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in HS
L_MESSAGE	8	10	Message Length
NID_PACKET	8	5	ETCS status data (STM-5)
L_PACKET	13	36	Packet Length
M_LEVEL	3	1	Level STM
NID_NTC	8	FINITE_VALUE	NID_NTC for the STM in HS

© This document has been developed and released by UNISIG



M_MODESTM	4	13	National System
NID_PACKET	8	14	State order to STM (STM-14)
L_PACKET	13	25	Packet Length
NID_STMSTATEORDER	4	7	State order to DA
Padding bits	3	NOT RELEVANT	

Message-S2: STM X->ETCS: STM X reports DA			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM X in DA
L_MESSAGE	8	6	Message Length
STM-15: PL=25, ST=7, (State DA)			

Message-D7U: STM X->ETCS: STM requests buttons, indicators, a text message, supervision info and a sound for unified DMI service (configuration 7a.1)			
VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM in DA
L_MESSAGE	8	125	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	7	State DA
NID_PACKET	8	32	Button request from STM (STM-32)
L_PACKET	13	164	Packet Length
N_ITER	5	2	Request for 2 buttons
NID_BUTTON(1)	8	1	Button 1



NID_BUTPOS(1)	5	1	
NID_ICON(1)	8	0	
M_BUT_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="but1"
X_CAPTION(1,1)	8	"b"	
X_CAPTION(1,2)	8	"u"	
X_CAPTION(1,3)	8	"t"	
X_CAPTION(1,4)	8	"1"	
NID_BUTTON(2)	8	2	Button 2
NID_BUTPOS(2)	5	2	
NID_ICON(2)	8	0	
M_BUT_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="but2"
X_CAPTION(2,1)	8	"b"	
X_CAPTION(2,2)	8	"u"	
X_CAPTION(2,3)	8	"t"	
X_CAPTION(2,4)	8	"2"	
NID_PACKET	8	35	Indicator request from STM (STM-35)
L_PACKET	13	233	Packet Length
N_ITER	5	3	Request for 3 indicators
NID_INDICATOR(1)	8	1	Indicator 1
NID_INDPOS(1)	5	1	
NID_ICON(1)	8	0	



M_IND_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="ind1"
X_CAPTION(1,1)	8	"i"	
X_CAPTION(1,2)	8	"n"	
X_CAPTION(1,3)	8	"d"	
X_CAPTION(1,4)	8	"1"	
NID_INDICATOR(2)	8	2	Indicator2
NID_INDPOS(2)	5	2	
NID_ICON(2)	8	0	
M_IND_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="ind2"
X_CAPTION(2,1)	8	"i"	
X_CAPTION(2,2)	8	"n"	
X_CAPTION(2,3)	8	"d"	
X_CAPTION(2,4)	8	"2"	
NID_INDICATOR(3)	8	3	Indicator3
NID_INDPOS(3)	5	3	
NID_ICON(3)	8	0	
M_IND_ATTRIB(3)	10	1000010000b	black on red, no flashing
L_CAPTION(3)	6	4	Caption="ind3"
X_CAPTION(3,1)	8	"i"	
X_CAPTION(3,2)	8	"n"	
X_CAPTION(3,3)	8	"d"	



X_CAPTION(3,4)	8	"3"	
NID_PACKET	8	38	text message from STM (STM-38)
L_PACKET	13	288	Packet Length
NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing in group 1
Q_ACK	1	0	No acknowledgement required
L_TEXT	8	30	Text="THIS IS A NEW MESSAGE FROM STM"
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	
X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"N"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"W"	
X_TEXT(14)	8	" "	
X_TEXT(15)	8	"M"	
X_TEXT(16)	8	"E"	



X_TEXT(17)	8	"S"	
X_TEXT(18)	8	"S"	
X_TEXT(19)	8	"A"	
X_TEXT(20)	8	"G"	
X_TEXT(21)	8	"E"	
X_TEXT(22)	8	" "	
X_TEXT(23)	8	"F"	
X_TEXT(24)	8	"R"	
X_TEXT(25)	8	"O"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"S"	
X_TEXT(29)	8	"T"	
X_TEXT(30)	8	"M"	
NID_PACKET	8	43	Supervision Information from STM (STM-43)
L_PACKET	13	100	Packet Length
Q_SCALE	2	1	1m scale
V_PERMIT	10	40	40km/h
V_TARGET	7	0	0km/h
V_RELEASE	10	0	0km/h
V_INTERV	10	50	50km/h
D_TARGET	15	0	0m
M_COLOUR_SP	3	0	White





M_COLOUR_PS	3	1	Grey
Q_DISPLAY_PS	2	11b	Speed bar with hook
M_COLOUR_TS	3	3	Dark grey
Q_DISPLAY_TS	2	00b	No display
M_COLOUR_RS	3	3	Dark grey
Q_DISPLAY_RS	2	00b	No display
M_COLOUR_IS	3	0	White
Q_DISPLAY_IS	2	10b	wide bar width
Q_DISPLAY_TD	2	00b	No display
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	169	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	1	One shot play
N_ITER(1)	5	8	8 segments
M_FREQ(1,1)	8	8	256Hz
T_SOUND(1,1)	8	100	10000ms
M_FREQ(1,2)	8	9	288Hz
T_SOUND(1,2)	8	100	10000ms
M_FREQ(1,3)	8	10	320Hz
T_SOUND(1,3)	8	100	10000ms
M_FREQ(1,4)	8	11	352Hz
T_SOUND(1,4)	8	100	10000ms



M_FREQ(1,5)	8	12	384Hz
T_SOUND(1,5)	8	100	10000ms
M_FREQ(1,6)	8	14	448Hz
T_SOUND(1,6)	8	100	10000ms
M_FREQ(1,7)	8	15	480Hz
T_SOUND(1,7)	8	100	10000ms
M_FREQ(1,8)	8	16	512Hz
T_SOUND(1,8)	8	100	10000ms
Padding bits	5	00000b	

Message-D7C: STM X->ETCS: STM requests buttons, indicators, a text message, supervision info and a sound  
for customized DMI service

VARIABLE	Length	VALUE	COMMENT
NID_STM	8	FINITE_VALUE	NID_STM of the STM in DA
L_MESSAGE	8	109	Message Length
NID_PACKET	8	15	State report from STM (STM-15)
L_PACKET	13	25	Packet Length
NID_STMSTATE	4	7	State DA
NID_PACKET	8	32	Button request from STM (STM-32)
L_PACKET	13	164	Packet Length
N_ITER	5	2	Request for 2 buttons
NID_BUTTON(1)	8	1	Button 1
NID_BUTPOS(1)	5	1	



NID_ICON(1)	8	0	
M_BUT_ATTRIB(1)	10	1000010000b	black on red, no flashing
L_CAPTION(1)	6	4	Caption="but1"
X_CAPTION(1,1)	8	"b"	
X_CAPTION(1,2)	8	"u"	
X_CAPTION(1,3)	8	"t"	
X_CAPTION(1,4)	8	"1"	
NID_BUTTON(2)	8	2	Button 2
NID_BUTPOS(2)	5	2	
NID_ICON(2)	8	0	
M_BUT_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="but2"
X_CAPTION(2,1)	8	"b"	
X_CAPTION(2,2)	8	"u"	
X_CAPTION(2,3)	8	"t"	
X_CAPTION(2,4)	8	"2"	
NID_PACKET	8	35	Indicator request from STM (STM-35)
L_PACKET	13	233	Packet Length
N_ITER	5	3	Request for 3 indicators
NID_INDICATOR(1)	8	1	Indicator 1
NID_INDPOS(1)	5	1	
NID_ICON(1)	8	0	
M_IND_ATTRIB(1)	10	1000010000b	black on red, no flashing



L_CAPTION(1)	6	4	Caption="ind1"
X_CAPTION(1,1)	8	"i"	
X_CAPTION(1,2)	8	"n"	
X_CAPTION(1,3)	8	"d"	
X_CAPTION(1,4)	8	"1"	
NID_INDICATOR(2)	8	2	Indicator2
NID_INDPOS(2)	5	2	
NID_ICON(2)	8	0	
M_IND_ATTRIB(2)	10	1000010000b	black on red, no flashing
L_CAPTION(2)	6	4	Caption="ind2"
X_CAPTION(2,1)	8	"i"	
X_CAPTION(2,2)	8	"n"	
X_CAPTION(2,3)	8	"d"	
X_CAPTION(2,4)	8	"2"	
NID_INDICATOR(3)	8	3	Indicator3
NID_INDPOS(3)	5	3	
NID_ICON(3)	8	0	
M_IND_ATTRIB(3)	10	1000010000b	black on red, no flashing
L_CAPTION(3)	6	4	Caption="ind3"
X_CAPTION(3,1)	8	"i"	
X_CAPTION(3,2)	8	"n"	
X_CAPTION(3,3)	8	"d"	
X_CAPTION(3,4)	8	"3"	



NID_PACKET	8	38	text message from STM (STM-38)
L_PACKET	13	288	Packet Length
NID_XMESSAGE	8	100	
M_XATTRIBUTE	10	1000010000b	black on red, no flashing in group 1
Q_ACK	1	0	No acknowledgement required
L_TEXT	8	30	Text="THIS IS A NEW MESSAGE FROM STM"
X_TEXT(1)	8	"T"	
X_TEXT(2)	8	"H"	
X_TEXT(3)	8	"I"	
X_TEXT(4)	8	"S"	
X_TEXT(5)	8	" "	
X_TEXT(6)	8	"I"	
X_TEXT(7)	8	"S"	
X_TEXT(8)	8	" "	
X_TEXT(9)	8	"A"	
X_TEXT(10)	8	" "	
X_TEXT(11)	8	"N"	
X_TEXT(12)	8	"E"	
X_TEXT(13)	8	"W"	
X_TEXT(14)	8	" "	
X_TEXT(15)	8	"M"	
X_TEXT(16)	8	"E"	
X_TEXT(17)	8	"S"	



X_TEXT(18)	8	"S"	
X_TEXT(19)	8	"A"	
X_TEXT(20)	8	"G"	
X_TEXT(21)	8	"E"	
X_TEXT(22)	8	" "	
X_TEXT(23)	8	"F"	
X_TEXT(24)	8	"R"	
X_TEXT(25)	8	"O"	
X_TEXT(26)	8	"M"	
X_TEXT(27)	8	" "	
X_TEXT(28)	8	"S"	
X_TEXT(29)	8	"T"	
X_TEXT(30)	8	"M"	
NID_PACKET	8	43	Supervision Information from STM (STM-43)
L_PACKET	13	100	Packet Length
Q_SCALE	2	1	1m scale
V_PERMIT	10	40	40km/h
V_TARGET	7	0	0km/h
V_RELEASE	10	0	0km/h
V_INTERV	10	50	50km/h
D_TARGET	15	0	0m
M_COLOUR_SP	3	0	White
M_COLOUR_PS	3	1	Grey



Q_DISPLAY_PS	2	11b	Speed bar with hook
M_COLOUR_TS	3	3	Dark grey
Q_DISPLAY_TS	2	00b	No display
M_COLOUR_RS	3	3	Dark grey
Q_DISPLAY_RS	2	00b	No display
M_COLOUR_IS	3	0	White
Q_DISPLAY_IS	2	10b	wide bar width
Q_DISPLAY_TD	2	00b	No display
NID_PACKET	8	46	Sound command from STM (STM-46)
L_PACKET	13	41	Packet Length
N_ITER	5	1	
NID_SOUND(1)	8	1	
Q_SOUND(1)	2	1	One shot play
N_ITER(1)	5	0	no sound segments
Padding bits	5	00000b	

End Conditions	Value	Comments
STM State	DA	
ETCS Mode	SN	
ETCS Level	NTC	
Train State	not relevant	
ETCS Train Data	not relevant	
Active DMI channel Connection	unchanged	



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	Release	
BIU Service Brake Command	not relevant	
BIU Emergency Brake Status	not relevant	
BIU Service Brake Status	not relevant	
NTC isolation status	unchanged	





## 2.8.9 Test Case 7h.9

TEST CASE HEADER	
Test case identification	DMI Function
	7h.2.0.1.4.0
	<p>Test of DMI display of non active STM with preliminary DMI requests in HS and ETCS mode FS, LS, SR, OS or UN and removal of DMI objects after STM disconnects the connection to the active DMI channel and reconnects after 1s for Unified DMI service or Customisable DMI service with configuration with ETCS speed dial and sounds:</p> <p>At start of the test the Level is 1 and the STM X is in CS, mode is FS, LS, SR, OS or UN. The train passes a level announcement for level NTC X.</p> <p>The STM X is ordered to HS and reports HS in due time.</p> <p>The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request. The STM sends another preliminary DMI request changing the colour of the buttons and indicators.</p> <p>At the border the STM X is ordered to DA.</p> <p>The STM reports DA in due time and the preliminarily requested DMI elements are displayed.</p> <p>STM disconnects the connection to the active DMI channel and reconnects after 1s. All DMI elements of the STM are removed</p> <p>The STM sends new DMI requests with changed text for the buttons and indicators, new text message, new supervision info and requesting a continuous sound.</p> <p>STM disconnects the connection to the active DMI channel and reconnects after 1s. All DMI elements of the STM are removed</p> <p>The STM sends new DMI requests with changed text for the buttons and indicators, new text message, new supervision info and requesting a one shot sound.</p>
ERTMS/ETCS on-board requirements tested	SUBSET-035 5.3.1.1 preliminary DMI access in modes FS, LS, SR, OS or UN, 13.2.1.1, 13.2.1.2, 13.2.1.4, 13.2.1.5
STM requirements tested	
Packets transmitted via FFFIS STM	STM-5, STM-14, STM-15, STM-32, STM-35, STM-38, STM-43, STM-46



<b>ERTMS/ETCS on-board configuration</b>	Unified DMI service (7a.1) or Customisable DMI service with configuration 7a.3, 7a.5, 7a.6, 7a.7 or 7a.9. The test shall be performed at least with configurations 7a.1 and 7a.5.
<b>Comments and constraints</b>	Messages, starting and end conditions as for test case 7h.8

#### 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	Level transition to NTC for STM X	BTM	T0	Message-B1: balise group received with level transition announcement to Level NTC for STM X	PROF		STM control connection: Message-E1 The ETCS orders the STM to HS. Time:T1
					DMI		The ETCS displays the level announcement in C1. The ETCS layout of the default window is kept unchanged
2	STM reports HS in due time	PROF	T1+8s	STM Control connection: Message-S1			
3	The STM sends a preliminary DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T1+13s	connection of active DMI channel: Message-D1U for unified DMI service, Message-D1C for customisable DMI service	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept. The sound is not played
4	The STM sends another preliminary DMI request changing the background colour of the buttons and indicators.	PROF	T1+18s	connection of active DMI channel: Message-D2	DMI		The requested DMI elements are not displayed but ETCS default window layout is kept.
5	The train passes the border to level NTC	BTM	T0+23s	Message-B2: balise group received with level border to Level NTC for the STM in HS	DMI		The driver is requested to acknowledge the level transition.
					PROF		STM control connection: Message-

							<p>E2</p> <p>The ETCS reports the changed mode to STM X and orders the STM to DA.</p> <p>Time: T2:</p>
					DMI	Ts3a	<p>If the speed range configured for the STM is different from the speed range configured for the ETCS it is changed to the STM range. If ETCS areas are moved by the configuration of the STM they are moved.</p>
6	The driver acknowledges the transition	DMI	T0+26s	The driver presses the (level announcement) ack button			
7	The STM reports DA in due time	PROF	T2+3s	STM Control Connection: Message-S2	DMI		<p>The preliminary DMI information sent by the STM in HS is displayed.</p> <p>Text message 'THIS IS A MESSAGE FROM STM IN HS' is shown in group 1.</p> <p>The ETCS displays the 2 buttons and 3 indicators requested by the STM in HS with lower case characters and green background colour.</p> <p>The ETCS displays the supervision info requested by the STM in HS with permitted speed = 40km/h and intervention speed = 50km/h.</p> <p>The ETCS plays the sound requested by the STM in HS once.</p>
8	STM disconnects the connection to the active DMI channel.	PROF	T2+8s	connection of active DMI channel disconnected by non final	DMI	2s	<p>DMI display is kept. Sound is not stopped.</p>

				disconnect telegram from STM			
9	STM re-establishes connection to the active DMI channel and reports DA within 1 second.	PROF	T2+9s	connection of active DMI channel: Message-S2	DMI	Ts12	The buttons and indicators of the STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed from the text area. The sound requested by the STM is stopped.
10	STM sends request with 2 buttons and 3 indicators with upper case caption texts on green background colour.	PROF	T2+14s	connection of active DMI channel: Message-D3	DMI		The ETCS displays the 2 buttons and 3 indicators requested by the STM with upper case characters and green background colour.
11	STM sends supervision information with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.	PROF	T2+19s	connection of active DMI channel: Message-D4	DMI		Supervision information display is shown with permitted speed = 120km/h, release speed = 40km/h, intervention speed = 130km/h and target distance = 10.000m.
12	STM sends new text message.	PROF	T2+24s	connection of active DMI channel: Message-D5	DMI		Text message 'THIS IS A MESSAGE FROM STM IN DA' is shown in group 1
13	STM requests a continuous sound.	PROF	T2+29s	connection of active DMI channel: Message-D6U for unified DMI service, Message-D6C for customisable DMI service	DMI		The requested sound is played continuously.
14	STM disconnects the connection to the active DMI channel.	PROF	T2+34s	connection of active DMI channel disconnected by non final disconnect telegram from STM	DMI	2s	DMI display is kept. Sound is not stopped.
15	STM re-establishes connection to the active DMI channel and reports DA within 1 second.	PROF	T2+35s	connection of active DMI channel: Message-S2	DMI	Ts12	The buttons and indicators of the STM are removed from the default window. The supervision information of the STM is removed. The text message of the STM is removed



							from the text area. The sound requested by the STM is stopped.
16	The STM sends a DMI request with 2 buttons, 3 indicators, a text message, supervision info and a one shot sound request.	PROF	T2+35s	connection of active DMI channel: Message-D7U for unified DMI service, Message-D7C for customisable DMI service	DMI		<p>The requested DMI elements are displayed. Text message 'THIS IS A NEW MESSAGE FROM STM' is shown in group 1.</p> <p>The ETCS displays the 2 buttons and 3 indicators with lower case characters and red background colour.</p> <p>The ETCS displays the supervision info permitted speed = 40km/h and intervention speed = 50km/h.</p> <p>The ETCS plays the sound requested by the STM once.</p>