

Assetmanagement

Richtlijn

ETCS System Compatibility (ESC)

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CONTENTS

1	Revision information	5
2	General	6
2.1	Language	6
2.2	Scope	6
2.3	Terms and abbreviations / Definities en afkortingen	6
3	Process	8
3.1	Process	8
3.2	Test location	8
3.3	Version Management of this document	8
3.3.1	Transition due to new version of this document	8
3.4	Interoperability Constituents versus Subsystem	8
4	ESC-types Operational scenarios (overview)	9
4.1	ESC-NL-01 Class B track BetuweRoute connections (Meteren / Elst)	. 10
4.2	ESC-NL-02 Class B track BetuweRoute connections (Zevenaar)	. 10
4.3	ESC-NL-03 Class B track Hanzelijn connections	. 10
4.4	Intentionally deleted: ESC-NL-04	. 10
4.5	ESC-NL-05 Class B track HSL-South connections	. 11
4.6	ESC-NL-06 Class B track Amsterdam-Utrecht connections	. 11
4.7	Intentionally deleted: ESC-NL-07	. 11
4.8	Intentionally deleted: ESC-NL-08	. 11
4.9	Intentionally deleted: ESC-NL-09	. 11
4.10	ESC-NL-10 ERTMS track Havenspoorlijn – Kijfhoek	. 11
4.11	ESC-NL-11 ERTMS track Havenspoorlijn – Kijfhoek transition from/to ATB	. 11
4.12	ESC-NL-12 ERTMS track Kijfhoek – BetuweRoute transition Level 1 from/to Level 2	. 12
4.13	ESC-NL-13 ERTMS track BetuweRoute – Zevenaar Oost	. 12
4.14	ESC-NL-14 ERTMS track BetuweRoute – Zevenaar Oost transition Meteren and Elst .	. 12
4.15	ESC-NL-15 ERTMS track BetuweRoute – Zevenaar Oost transition Zevenaar	. 12
4.16	ESC-NL-16 ERTMS track Zevenaar Oost – border Germany	. 13
4.17	ESC-NL 17 ERTMS track Hanzelijn	. 13
4.18	ESC-NL-18 ERTMS track Hanzelijn transitions Level 2	. 13
4.19	ESC-NL-19 ERTMS track HSL-South	. 14
4.20	ESC-NL-20 ERTMS track HSL-South transitions	. 14
4.21	ESC-NL-21 ERTMS track HSL-South border Belgium	. 14
4.22	ESC-NL-22 ERTMS track Amsterdam – Utrecht	. 14
4.23	ESC-NL-23 ERTMS track Amsterdam – Utrecht transitions Level 2	. 15
4.24	ESC-NL-24 Class B track border Germany - specific border crossings	. 15
4.25	ESC-NL-25 Class B track border Germany - Venlo	. 15
4.26	ESC-NL-26 Class B track border Germany - Landgraaf	. 16
4.27	ESC-NL-27 Class B track border Belgium - Roosendaal	. 16
4.28	ESC-NL-28 ERTMS track NCBG border Belgium - Weert	. 16
5	Operational scenarios (detailed)	.17
5.1	Class B track	. 19
5.1.1	Crossing an ERTMS track when route remains on Class B system using NTC-ATB	. 19
5.1.2	Running over an ERTMS overlay track in NTC-ATB	. 24
5.1.3	National borders	. 26

ETCS System Compatibility (ESC)

5.2	ERTMS track Havenspoorlijn – Kijfhoek	35
5.2.1	Confidence run over complete track	35
5.2.2	Exit when failure STM-ATB	38
5.2.3	Running in OS	38
5.2.4	Entrance specialties from ATB to ERTMS	38
5.2.5	Exit specialties to ATB	41
5.2.6	Mode Transition to Shunting (for NORM or ROZ route)	42
5.2.7	Signal passed at danger	45
5.3	ERTMS track Kijfhoek – BetuweRoute	46
5.3.1	Transition Level 1 -> Level 2: Late connection	46
5.4	ERTMS track BetuweRoute – Zevenaar Oost	47
5.4.1	Confidence run over complete track	47
5.4.2	Exit when failure STM-ATB	52
5.4.3	Running in OS	52
5.4.4	Entrance specialties from ATB to ERTMS	52
5.4.5	Exit specialties to ATB	55
5.4.6	Movement revocation	56
5.4.7	Override (STS passage)	56
5.4.8	Signal passed at danger	56
5.4.9	Change direction	56
5.4.10	RBC Handover with one active modem	56
5.5	ERTMS Track Zevenaar Oost – border Germany	58
5.5.1	Exit when failure STM-PZB	58
5.6	ERTMS track Hanzelijn	59
5.6.1	Confidence run over complete track	59
5.6.2	Exit when failure STM-ATB	63
5.6.3	Running in OS	63
5.6.4	Entrance specialties from ATB to ERTMS	63
5.6.5	Exit specialties to ATB	65
5.6.6	Movement revocation	66
5.6.7	Override (STS passage)	66
5.6.8	Signal passed at danger	67
5.6.9	Change direction	67
5.7	ERTMS Track HSL-South	68
5.7.1	Confidence run over complete track	68
5.7.2	Exit when failure STM-ATB	73
5.7.3	Running in OS	73
5.7.4	Entrance specialties from ATB to ERTMS	73
5.7.5	Exit specialties to ATB	76
5.7.6	Override (STS passage)	77
5.7.7	Signal passed at danger	78
5.7.8	Change direction	78
5.8	ERTMS Track HSL-South – border Belgium	79
5.8.1	Confidence run over complete track	79
5.8.2	RBC Handover with one active modem	82
5.9	ERTMS Track Amsterdam – Utrecht	84
5.9.1	Confidence run over complete track	84
5.9.2	Exit when failure STM-ATB	87
5.9.3	Running in OS	87
5.9.4	Entrance specialties from ATB to ERTMS	87
5.9.5	Exit specialties to ATB	89

ETCS System Compatibility (ESC)

5	Overview footnotes	.98
5.11.6	Change direction	. 97
5.11.5	Signal passed at danger	. 96
5.11.4	Override (STS passage)	. 96
5.11.3	Movement revocation	. 95
5.11.2	Entering OS mode profile	. 94
5.11.1	Exit when failure STM-ATB	. 94
5.11	Generic scenarios	. 94
5.10.2	Exit from ERTMS to ATB	. 92
5.10.1	Entrance from ATB to ERTMS	. 92
5.10	ERTMS track NCBG border Belgium – Weert	. 92
5.9.9	Change direction	. 92
5.9.8	Signal passed at danger	. 91
5.9.7	Override (STS passage)	. 91
5.9.6	Movement revocation	. 91

1 Revision information

Date	Version	Chapter / paragraph	Change	
08-04-2020	V001	All sections	First final version	
31-12-2022	V002	All sections	Editorials	
		3.3.1	Information about transition ESC types due to new	
			version included	
		4	Scenarios for ESC-NL-04 and ESC-NL-07 included	
			in other ESC types and both ESC-types removed	
			Scenarios 5.1.1.1, 5.1.1.2, 5.1.1.3, 5.1.1.4, 5.1.1.5	
			added to ESC-NL-14, ESC-NL-15, ESC-NL-18,	
			ESC-NL-20, ESC-NL-23	
			Scenario 5.7.8 added to ESC-NL-19	
			Scenarios 5.1.3.1, 5.1.3.2 and 5.1.3.4 replaced by	
			5.1.3.5 and 5.1.3.7 for ESC-NL-09	
			ESC-NL-24, ESC-NL-25 and ESC-NL-26 added	
		5	Various clarifications and corrections	
23-01-2023	V003	5.7.4	Note added	
		5.7.5	Note corrected	
		5.7.8	Scenario corrected	
		6.1.2	Clarification additional functions	
18-12-2024	V004	All sections	Include findings from test campaigns	
			Editorial changes	
			Removal of chapter 6	
			Update to Baseline 4	

2 General

This document describes the ProRail ESC checks as defined in Commission Implementing Regulation (EU) 2023/1695 of 10 August 2023.

2.1 Language

To facilitate the use of the content of this document on EU level, the document has been written as much as possible in the English language.

2.2 Scope

The ESC checks cover:

- 1. ERTMS onboard equipment used on ERTMS trackside
- 2. ERTMS onboard equipment used on Class B trackside which is additionally (partly) equipped with ERTMS trackside equipment

The following references are used:

Reference	Document
TSI CCS	Commission Implementing Regulation (EU) 2023/1695 of 10 August 2023 on the technical specification for interoperability relating to the control-command and signalling subsystems of the rail system in the European Union and repealing Regulation (EU) 2016/919 and Commission implementing Regulation (EU) 2020/387 of 9 March 2020 amending Regulations (EU) No 321/2013, (EU) No 1302/2014 and (EU) 2016/919 as regards the extension of the area of use and transition phases
Application Guide	Guide for the application of the CCS TSI Version 7.2 – 15/03/2022
TSI CCS (including	
Principles doc)	
TVG00559-V012	ERTMS level 2 beveiligingsinstallatie Zevenaar-Oost (- Emmerich) en
	Betuweroute A15-tracé.
VRF60561-3-V002	Vrijgave Betuweroute A15 ERTMS L2 2.3.0d
(TVG00405-V001)	
VRF60561-4-V001	Vrijgave Hanzelijn ERTMS L2 systeem
(TVG00382-V008)	(including engineering changes made in 2024)
VRF60561-2-V003	Vrijgave Alstom ERTMS L1 Trackside Havenspoorlijn + Kijfhoek
VRF00592-V001	Vrijgave Alstom EbiLock 950 op Amsterdam-Utrecht

2.3 Terms and abbreviations / Definities en afkortingen

Term	Verklaring (Nederlands)	Explanation (English)
A-U	Level 2/Level NTC-ATB Amsterdam – Utrecht	Overlay track ERTMS Level 2 with Level NTC-ATB between Amsterdam and Utrecht
ATB	Automatische treinbeïnvloeding – Nederlandse treinbeïnvloedingssysteem	Dutch Class B system
CUP	Rangeer locatie BetuweRoute, Container Uitwissel Punt (Valburg)	Yard location on BetuweRoute
Betuweroute	Level 2 BetuweRoute tussen Kijfhoek en grens Duitsland	ERTMS Level 2 only track for mainly freight trains between Rotterdam (Kijfhoek) and the German border (Emmerich)

ETCS System Compatibility (ESC)

Term	Verklaring (Nederlands)	Explanation (English)
HSL-South	HSL-Zuid	ERTMS Level 2 with fallback Level 1 track for highspeed passenger trains between Amsterdam and the Belgium border via Rotterdam (HSL-South)
HZL	Level 2/Level NTC-ATB Hanzelijn	Overlay track ERTMS Level 2 with Level NTC-ATB from Zwolle to Lelystad (Hanzelijn)
In advance	Geen letterlijke vertaling mogelijk, vergelijkbaar in het Nederlands met de term: achter het sein	A term indicating a spot beyond a specific location on the track, see Subset-023
	In Rear	In Advance
	Train is in approach	
In rear	Geen letterlijke vertaling mogelijk, vergelijkbaar in het Nederlands met de term: voor het sein	A term indicating a spot on the approach to a specific location on the track, see Subset-023
	Train is in approach	
Level NTC	Level voor Nationaal treinbeïnvloedingssysteem (B2: Level STM)	Level for National Train Control (for onboards with B2: Level STM)
NORM	Normale rijweginstelling	Normal route
STM-ATB	Nederlands ATB systeem gebruik makend van NID NTC=1 (ATB)	Dutch National train control with NID_NTC=1 (ATB)
PZB, LZB	Duitse conventionele trein beheersingssystemen	German Class B systems
ROZ	Op zicht rijweginstelling	On sight route
TBL1, TBL1+, TBL2, Memor, KVB	Belgische conventionele trein beheersingssystemen	Belgium Class B systems
Train	Geen Nederlandse term gebruikt. Engelstalige term in gebruik	Train can be read as trainset or locomotive
STS	STS-route (stoptonend sein)	Signal at Danger route

3 Process

3.1 Process

ProRail works according to the document "Principles for the demonstration of ETCS system compatibility" as included in the TSI CCS Application guide. The roles in the ESC process will be assigned to the involved parties on a project (case-by-case) basis.

The ESC check consists of the execution of test scenarios.

The email address for ESC check requests is: inzet.spoorvoertuigen@prorail.nl

3.2 Test location

ProRail has specified in this document the operational scenarios which are applicable for all track with ERTMS equipment within the Netherlands. This document does not contain any detailed trackside information like track layout, balise content, etc.

ProRail has for most of the checks the ProRail lab test facilities available to perform the operational test scenario's described in this document. As an alternative to the lab test facilities, onsite test can be performed on the trackside.

3.3 Version Management of this document

This document has been written with the best knowledge at this moment. At any moment in time, ProRail has the right to modify this document, e.g. due to feedback from experience and knowledge.

3.3.1 Transition due to new version of this document

When a new version of this document becomes applicable the registration of ESC types already issued to onboards could be affected. However, for this version there is no impact on previously assigned ESC types, so the existing ESC statements remain valid. Intentionally deleted ESC types will remain in the Registers of Infrastructure (RINF) for the applicable tracks, to facilitate vehicles with existing ESC statements.

3.4 Interoperability Constituents versus Subsystem

The ESC checks described in this document do not require specific parameter configurations for the onboard Interoperability Constituent(s) or Subsystem unless stated otherwise. ProRail doesn't require that the ESC checks are performed on the level of the Subsystem. However, it is the responsibility of the applicant to provide evidence that the results of the ESC checks on the level of Interoperability Constituents are valid for the concerned onboard Subsystem configuration.

4 ESC-types Operational scenarios (overview)

ProRail has defined the ESC types in such way that it facilitates the intended use of the ERTMS vehicle on the network. E.g. for the infrastructure which is equipped with both Class B and ERTMS Level 2, two ESC types have been defined. One for ERTMS vehicles running on the line in Level 2 and one for ERTMS vehicles running on the line in Class B (these ERTMS vehicles will still set up a connection with the RBC at the entrance of the line although this connection is terminated by the RBC shortly after). Test scenarios have to be tested at the location where the relevant ESC type is required. Unless stated otherwise, cross acceptance of test scenarios from different ESC types is not allowed.

This leads for the current ERTMS infrastructure in the Netherlands to the following ESC types.

ESC types:

- ESC-NL-01 Class B track BetuweRoute connections (Meteren / Elst)
- ESC-NL-02 Class B track BetuweRoute connections (Zevenaar)
- ESC-NL-03 Class B track Hanzelijn connections
- Intentionally deleted: ESC-NL-04
- ESC-NL-05 Class B track HSL-South connections
- ESC-NL-06 Class B track Amsterdam-Utrecht connections
- Intentionally deleted: ESC-NL-07
- Intentionally deleted: ESC-NL-08
- Intentionally deleted: ESC-NL-09
- ESC-NL-10 ERTMS track Havenspoorlijn Kijfhoek
- ESC-NL-11 ERTMS track Havenspoorlijn Kijfhoek transition from/to ATB
- ESC-NL-12 ERTMS track Kijfhoek BetuweRoute transition Level 1 from/to Level 2
- ESC-NL-13 ERTMS track BetuweRoute Zevenaar Oost
- ESC-NL-14 ERTMS track BetuweRoute Zevenaar Oost transition Meteren and Elst
- ESC-NL-15 ERTMS track BetuweRoute Zevenaar Oost transition Zevenaar
- ESC-NL-16 ERTMS track Zevenaar Oost border Germany
- ESC-NL 17 ERTMS track Hanzelijn
- ESC-NL-18 ERTMS track Hanzelijn transitions Level 2
- ESC-NL-19 ERTMS track HSL-South
- ESC-NL-20 ERTMS track HSL-South transitions
- ESC-NL-21 ERTMS track HSL-South border Belgium
- ESC-NL-22 ERTMS track Amsterdam Utrecht
- ESC-NL-23 ERTMS track Amsterdam Utrecht transitions Level 2
- ESC-NL-24 Class B track border Germany specific border crossings
- ESC-NL-25 Class B track border Germany Venlo
- ESC-NL-26 Class B track border Germany Landgraaf
- ESC-NL-27 Class B track border Belgium Roosendaal
- ESC-NL-28 ERTMS track NCBG border Belgium Weert

Note: It is possible that (partially) foreign ESC types apply to border tracks in the Netherlands, see Registers of Infrastructure (RINF).

This chapter contains for each ESC type the operational scenarios which are covered in this document. The next chapter contains the details for each operational scenario. Each id in the tables corresponds to a section in the next chapter, e.g. 5.1.1.1 in section 4.1 corresponds to section 5.1.1.1.

ETCS System Compatibility (ESC)

4.1 ESC-NL-01 Class B track BetuweRoute connections (Meteren / Elst)

This section contains all operational scenarios for running on Class B track in which balises have been installed to connect / disconnect with the ERTMS Level 2 system of the BetuweRoute locations Meteren and Elst.

ld	Title	Sub scenario
5.1.1.1	Crossing ERTMS track BetuweRoute – Zevenaar Oost	
Table 4.4.4 List of assuration for Olass D tools Data was Doute assurations (Mataman / Elst)		

 Table 4.1-1 List of scenarios for Class B track BetuweRoute connections (Meteren / Elst)

In case ESC-types ESC-NL-13 ERTMS track BetuweRoute – Zevenaar Oost and ESC-NL-14 ERTMS track BetuweRoute – Zevenaar Oost transition Meteren and Elst are also being tested or already have been successfully tested, no specific scenarios need to be tested for ESC-NL-01 Class B track BetuweRoute connections (Meteren / Elst).

Note that in case the scenario for this ESC type is only executed without valid key, it should be noted as a condition in the ESC report.

4.2 ESC-NL-02 Class B track BetuweRoute connections (Zevenaar)

This section contains all operational scenarios for running on Class B track in which balises have been installed to connect / disconnect with the ERTMS Level 2 system of the BetuweRoute location Zevenaar.

ld	Title	Sub scenario
5.1.1.2	Crossing ERTMS track Zevenaar Oost – border Germany	leading, sleeping
Table 4.2-1	List of scenarios for Class B track BetuweRoute connections	s (Zevenaar)

In case ESC-types ESC-NL-13 ERTMS track BetuweRoute – Zevenaar Oost and ESC-NL-15 ERTMS track BetuweRoute – Zevenaar Oost transition Zevenaar are also being tested or already have been successfully tested, no specific scenarios need to be tested for ESC-NL-02 Class B track BetuweRoute connections (Zevenaar).

Note that in case the scenario for this ESC type is only executed without valid key, it should be noted as a condition in the ESC report.

4.3 ESC-NL-03 Class B track Hanzelijn connections

This section contains all operational scenarios for running on Class B track in which balises have been installed to connect / disconnect with the ERTMS Level 2 system of the Hanzelijn.

ld	Title	Sub scenario
5.1.1.3	Crossing ERTMS track Hanzelijn	
T 1 1 1 0		1 ¹¹ /

Table 4.3-1 List of scenarios for Class B track Hanzelijn connections

In case ESC-types ESC-NL 17 ERTMS track Hanzelijn and ESC-NL-18 ERTMS track Hanzelijn transitions Level 2 are also being tested or already have been successfully tested, no specific scenarios need to be tested for ESC-NL-03 Class B track Hanzelijn connections.

Note that in case the scenario for this ESC type is only executed without valid key, it should be noted as a condition in the ESC report.

4.4 Intentionally deleted: ESC-NL-04

ETCS System Compatibility (ESC)

4.5 ESC-NL-05 Class B track HSL-South connections

This section contains all operational scenarios for running on Class B track in which balises have been installed to connect / disconnect with the ERTMS Level 2 system of HSL-South.

ld	Title	Sub scenario
5.1.1.4	Crossing ERTMS track HSL - South	
Table AF	1 List of a service for Olass B track USL Couth as measting	

Table 4.5-1 List of scenarios for Class B track HSL-South connections

In case ESC-types ESC-NL-19 ERTMS track HSL-South and ESC-NL-20 ERTMS track HSL-South transitions are also being tested or already have been successfully tested, no specific scenarios need to be tested for ESC-NL-05 Class B track HSL-South connections.

Note that in case the scenario for this ESC type is only executed without valid key, it should be noted as a condition in the ESC report.

4.6 ESC-NL-06 Class B track Amsterdam-Utrecht connections

This section contains all operational scenarios for running on Class B track in which balises have been installed to connect / disconnect with the ERTMS Level 2 system of the Amsterdam-Utrecht trackside.

ld	Title	Sub scenario
5.1.1.5	Crossing ERTMS track Amsterdam – Utrecht	t
Table 4.6-1 List of scenarios for Class B track Amsterdam-Utrecht connections		

In case ESC-types ESC-NL-22 ERTMS track Amsterdam – Utrecht and ESC-NL-23 ERTMS track Amsterdam – Utrecht transitions Level 2 are also being tested or already have been successfully tested, no specific scenarios need to be tested for ESC-NL-06 Class B track Amsterdam-Utrecht connections.

Note that in case the scenario for this ESC type is only executed without valid key, it should be noted as a condition in the ESC report.

4.7 Intentionally deleted: ESC-NL-07

4.8 Intentionally deleted: ESC-NL-08

4.9 Intentionally deleted: ESC-NL-09

4.10 ESC-NL-10 ERTMS track Havenspoorlijn – Kijfhoek

This section contains all operational scenarios for running on the ERTMS equipped track Havenspoorlijn and Kijfhoek.

ld	Title	Sub scenario
5.2.1	Confidence run over complete track	ld 2,3,4
5.2.3	Running in OS	
5.2.6	Mode Transition to Shunting (for NORM or ROZ route)	
5.2.7	Signal passed at danger	

Table 4.10-1 List of scenarios for ERTMS track Havenspoorlijn – Kijfhoek

4.11 ESC-NL-11 ERTMS track Havenspoorlijn – Kijfhoek transition from/to ATB

This section contains all operational scenarios for running on the ERTMS transition from/to ATB equipped track Havenspoorlijn and Kijfhoek.

ETCS System Compatibility (ESC)

ld	Title	Sub scenario
5.2.1	Confidence run over complete track	ld 1,5
5.2.2	Exit when failure STM-ATB	
5.2.4	Entrance specialties from ATB to ERTMS	
5.2.5	Exit specialties to ATB	

Table 4.11-1 List of scenarios for ERTMS track Havenspoorlijn – Kijfhoek transition from/to ATB

4.12 ESC-NL-12 ERTMS track Kijfhoek – BetuweRoute transition Level 1 from/to Level 2

This section contains all operational scenarios for running on the ERTMS transition Level 1 from/to Level 2 equipped track Kijfhoek and BetuweRoute.

ld	Title	Sub scenario
5.4.1	Confidence run over complete track	ld 1,7
5.3.1	Transition Level 1 -> Level 2: Late connection	
Table A AC		Dente (news'flere Level & free with Level

Table 4.12-1 List of scenarios for ERTMS track Kijfhoek – BetuweRoute transition Level 1 from/to Level 2

4.13 ESC-NL-13 ERTMS track BetuweRoute – Zevenaar Oost

This section contains all operational scenarios for running on the ERTMS equipped track BetuweRoute and Zevenaar Oost.

ld	Title	Sub scenario
5.4.1	Confidence run over complete track	ld 2,5,6
5.4.3	Running in OS	
5.4.6	Movement revocation	
5.4.7	Override (STS passage)	
5.4.8	Signal passed at danger	
5.4.9	Change direction	
5.4.10	RBC Handover with one active modem	

Table 4.13-1 List of scenarios for ERTMS track BetuweRoute – Zevenaar Oost

4.14 ESC-NL-14 ERTMS track BetuweRoute – Zevenaar Oost transition Meteren and Elst

This section contains all operational scenarios for running on the ERTMS equipped track BetuweRoute and Zevenaar Oost, transition Meteren and Elst.

ld	Title	Sub scenario
5.4.2	Exit when failure STM-ATB	
5.4.4	Entrance specialties from ATB to ERTMS	
5.4.5	Exit specialties to ATB	
5.1.1.1	Crossing ERTMS track BetuweRoute – Zevenaar Oost	leading
Table 4.14	-1 List of scenarios for ERTMS track BetuweRoute – Zevenaar (Dost transition Meteren and

Elst

4.15 ESC-NL-15 ERTMS track BetuweRoute – Zevenaar Oost transition Zevenaar

This section contains all operational scenarios for running on the ERTMS equipped track BetuweRoute and Zevenaar Oost, transition Zevenaar.

ld	Title	Sub scenario
5.4.1	Confidence run over complete track	Id 8,9,sleeping
5.4.2	Exit when failure STM-ATB	
5.4.4	Entrance specialties from ATB to ERTMS	
5.4.5	Exit specialties to ATB	



ETCS System Compatibility (ESC)

ld	Title	Sub scenario
5.1.1.2	Crossing ERTMS track Zevenaar Oost – border Germany	leading, sleeping

Table 4.15-1 List of scenarios for ERTMS track BetuweRoute – Zevenaar Oost transition Zevenaar

4.16 ESC-NL-16 ERTMS track Zevenaar Oost – border Germany

This section contains all operational scenarios for running on the ERTMS equipped track Zevenaar Oost including the border with Germany.

ld	Title	Sub scenario
5.4.1	Confidence run over complete track	Id 3,4,sleeping
5.5.1	Exit when failure STM-PZB	

Table 4.16-1 List of scenarios for ERTMS track Zevenaar Oost border Germany

4.17 ESC-NL 17 ERTMS track Hanzelijn

This section contains all operational scenarios for running on the ERTMS equipped track Hanzelijn.

ld	Title	Sub scenario
5.6.1	Confidence run over complete track	ld 2,5,6
5.6.3	Running in OS	
5.6.6	Movement revocation	
5.6.7	Override (STS passage)	
5.6.8	Signal passed at danger	
5.6.9	Change direction	

Table 4.17-1 List of scenarios for ERTMS track Hanzelijn

In case operation on the ERTMS equipped track Hanzelijn is only to be performed without valid key, the list of scenarios in Table 4.17-1 shall be replaced by Table 4.17-2.

ld	Title
5.1.2	Running over an ERTMS overlay track in NTC-ATB
Table 4 17	-2 List of scenarios for Class B track Hanzeliin overlay Level 2

Table 4.17-2 List of scenarios for Class B track Hanzelijn overlay Level 2

Note that in case the scenario for this ESC type is only executed without valid key, it should be noted as a condition in the ESC report.

4.18 ESC-NL-18 ERTMS track Hanzelijn transitions Level 2

This section contains all operational scenarios for running on the ERTMS equipped track Hanzelijn, transitions.

ld	Title	Sub scenario
5.6.1	Confidence run over complete track	ld 1,3,4,7
5.6.2	Exit when failure STM-ATB	
5.6.4	Entrance specialties from ATB to ERTMS	
5.6.5	Exit specialties to ATB	
5.1.1.3	Crossing ERTMS track Hanzelijn	

Table 4.18-1 List of scenarios for ERTMS track Hanzelijn transitions Level 2

In case operation on the ERTMS equipped track Hanzelijn is only to be performed without valid key, the list of scenarios in Table 4.18-1 shall be replaced by Table 4.18-2.

ld	Title
5.1.2	Running over an ERTMS overlay track in NTC-ATB
5.1.1.3	Crossing ERTMS track Hanzelijn
Table 4.18-	2 List of scenarios for Class B track Hanzelijn overlay Level 2

Note that in case the scenarios for this ESC type are only executed without valid key, it should be noted as a condition in the ESC report.

4.19 ESC-NL-19 ERTMS track HSL-South

This section contains all operational scenarios for running on the ERTMS equipped track HSL-South.

ld	Title	Sub scenario
5.7.1	Confidence run over complete track	ld 2,3,6,7
5.8.1	Confidence run over complete track	ld 1,4
5.7.3	Running in OS	
5.7.6	Override (STS passage)	
5.7.7	Signal passed at danger	
5.7.8	Change direction	

Table 4.19-1 List of scenarios for ERTMS track HSL-South

4.20 ESC-NL-20 ERTMS track HSL-South transitions

This section contains all operational scenarios for running on the ERTMS equipped track HSL-South, transitions.

ld	Title	Sub scenario
5.7.1	Confidence run over complete track	ld 1,4,5,8
5.7.2	Exit when failure STM-ATB	
5.7.4	Entrance specialties from ATB to ERTMS	
5.7.5	Exit specialties to ATB	
5.1.1.4	Crossing ERTMS track HSL - South	

Table 4.20-1 List of scenarios for ERTMS track HSL-South transitions

4.21 ESC-NL-21 ERTMS track HSL-South border Belgium

This section contains all operational scenarios for running on the ERTMS equipped track HSL-South including the border with Belgium.

ld	Title	Sub scenario
5.8.1	Confidence run over complete track	ld 2,3
5.8.2	RBC Handover with one active modem	

Table 4.21-1 List of scenarios for ERTMS track HSL-South border Belgium

4.22 ESC-NL-22 ERTMS track Amsterdam – Utrecht

This section contains all operational scenarios for running on the ERTMS equipped track Amsterdam - Utrecht.

ld	Title	Sub scenario
5.9.1	Confidence run over complete track	ld 2,5,6
5.9.3	Running in OS	
5.9.6	Movement revocation	
5.9.7	Override (STS passage)	
5.9.8	Signal passed at danger	
5.9.9	Change direction	

Table 4.22-1 List of scenarios for ERTMS track Amsterdam – Utrecht

In case operation on the ERTMS equipped track Amsterdam - Utrecht is only to be performed without valid key, the list of scenarios in Table 4.22-1 shall be replaced by Table 4.22-2.

Title

ETCS System Compatibility (ESC)

ld

5.1.2 Running over an ERTMS overlay track in NTC-ATB

 Table 4.22-2 List of scenarios for Class B track Amsterdam – Utrecht overlay Level 2

Note that in case the scenario for this ESC type is only executed without valid key, it should be noted as a condition in the ESC report.

4.23 ESC-NL-23 ERTMS track Amsterdam – Utrecht transitions Level 2

This section contains all operational scenarios for running on the ERTMS equipped track Amsterdam – Utrecht, transitions.

ld	Title	Sub scenario
5.9.1	Confidence run over complete track	ld 1,3,4,7
5.9.2	Exit when failure STM-ATB	
5.9.4	Entrance specialties from ATB to ERTMS	
5.9.5	Exit specialties to ATB	
5.1.1.5	Crossing ERTMS track Amsterdam – Utrecht	
Table 4.23-1 List of scenarios for ERTMS track Amsterdam – Utrecht transitions Level 2		

Table 4.23-1 List of scenarios for ERTINS track Amsterdam – Otrecht transitions Level 2

In case operation on the ERTMS equipped track Amsterdam - Utrecht is only to be performed without valid key, the list of scenarios in Table 4.23-1 shall be replaced by Table 4.23-2.

ld	Title
5.1.2	Running over an ERTMS overlay track in NTC-ATB
5.1.1.5	Crossing ERTMS track Amsterdam – Utrecht
Table 12	2-2 List of scenarios for Class B track Amsterdam – Utrecht overlav Level 2

Table 4.23-2 List of scenarios for Class B track Amsterdam – Utrecht overlay Level 2

Note that in case the scenarios for this ESC type are only executed without valid key, it should be noted as a condition in the ESC report.

4.24 ESC-NL-24 Class B track border Germany - specific border crossings

This section contains all operational scenarios for running on specific border crossings between Netherlands-Germany where ERTMS balises have been installed to facilitate the transitions from and to the Class B systems. The relevant scenarios only have to be tested at one of the locations where this ESC type is valid.

ld	Title
5.1.3.1	Normal transition from NTC-ATB to NTC-YYY
5.1.3.2	Normal transition from NTC-XXX to NTC-ATB
5.1.3.3	Degraded transition from NTC-XXX to NTC-ATB
5.1.3.4	Transition into The Netherlands when failure in STM-ATB
Table 4.24	-1 List of scenarios for Class B track border Germany using Class B

4.25 ESC-NL-25 Class B track border Germany - Venlo

This section contains all operational scenarios for running on border crossing Venlo between Netherlands-Germany where ERTMS balises have been installed to facilitate the transitions from and to the Class B systems.

ld	Title
5.1.3.3	Degraded transition from NTC-XXX to NTC-ATB
5.1.3.5	Normal transition from NTC-ATB/YYY to NTC-YYY
5.1.3.7	Normal transition from NTC-XXX to NTC-ATB/XXX

Table 4.25-1 List of scenarios for Class B track border Germany - Venlo

ETCS System Compatibility (ESC)

4.26 ESC-NL-26 Class B track border Germany - Landgraaf

This section contains all operational scenarios for running on border crossing Landgraaf between Netherlands-Germany where ERTMS balises have been installed to facilitate the transitions from and to the Class B systems.

ld	Title
5.1.3.2	Normal transition from NTC-XXX to NTC-ATB
5.1.3.3	Degraded transition from NTC-XXX to NTC-ATB
5.1.3.4	Transition into The Netherlands when failure in STM-ATB
5.1.3.6	Normal transition from NTC-ATB to NTC-YYY/ATB

Table 4.26-1 List of scenarios for Class B track border Germany - Landgraaf

4.27 ESC-NL-27 Class B track border Belgium - Roosendaal

This section contains all operational scenarios for running on Roosendaal border crossing between Netherlands-Belgium where ERTMS balises have been installed to facilitate the transitions from and to the Class B systems.

ld	Title
5.1.3.3	Degraded transition from NTC-XXX to NTC-ATB
5.1.3.5	Normal transition from NTC-ATB/YYY to NTC-YYY
5.1.3.7	Normal transition from NTC-XXX to NTC-ATB/XXX

Table 4.27-1 List of scenarios for Class B track border Belgium using Class B

4.28 ESC-NL-28 ERTMS track NCBG border Belgium - Weert

This section contains all operational scenarios for running on the transition from ERTMS to ATB and vice versa, between the ERTMS equipped NCBG and Weert on the border crossing between Netherlands-Belgium.

ld	Title
5.10.1	Entrance from ATB to ERTMS
5.10.2	Exit from ERTMS to ATB

Table 4.28-1 List of scenarios for ERTMS track NCBG border Belgium - Weert

5 Operational scenarios (detailed)

In the following sections the operational scenarios are described in detail. Optionally a scenario is explained in a situation drawing. These schematic drawings are oriented left to right, where at the start location the train is drawn in full colour and the end location the train is drawn in dotted lines. The exact location for the start and end locations on the trackside has to be chosen in such a way that all steps of an operational scenario can be performed and the correct behaviour can be verified. Each section has a table with scenario steps. In addition to this table optional tables may be present. The steps in this document must be seen as actions to be performed or functionality to be verified. The description of the step will make this distinction clear.

In general, the steps are sequentially numbered to determine the order of execution, however due to dynamic behaviour sequence changes are possible. Steps are given a character in addition to the number, e.g. 1a or 1b, if steps are at the same location/time but not applicable for all situations.

Checks based on information received from the trackside are only to be considered if this information is valid for the direction of travel. Information valid for the other direction shall be discarded.

The driver has to operate according to the operational rules applicable for the situation. In some situations, e.g. passing a signal at stop, specific operational procedures could be required during field tests for safe execution of the scenario.

All test scenarios should be carried out at the maximum allowed speed, unless stated otherwise.

If a train is equipped with two onboards, it is sufficient to perform the sleeping tests with only one train to examine the behaviour of the sleeping onboard, under the condition that evidence can be supplied that the behaviour of this sleeping onboard is not altered in a multiple onboard operation.

All test results must be provided with one of the following statuses:

- OK
 - The test execution is fully in accordance with the description, checks have been fully passed and there are no side effects noticed
- OK with remark
 - The test execution is in accordance with the description, but with a small deviation and/or partial checks have not been fully passed and/or there are some minor side effect noticed. The applicant foresees no compliancy issues.
- NOK
 - The test execution is not in accordance with the description or checks have not been passed or there are some significant side effects noticed. The applicant foresees compliancy issues.

In general, onboard related responses that are not described in the scenarios should be remarked.

Some onboard behaviour is dependent on the operated onboard System Version. Currently, the following on-board system versions are distinguished: SV1.0, SV1.1, SV2.0, SV2.1, SV2.2 and SV3.0. The scenarios in this document are written with onboard behaviour as specified with reference to TSI CCS Baseline 4 Release 1 for System Version from 1.0 up to respectively 2.1, 2.2. and 3.0. However, the onboard behaviour of an onboard authorised against a previous TSI CCS framework, may differ from the Baseline 4 Release 1 specifications. In case the ESC tests reveal these discrepancies, a case by case analysis regarding the onboard compatibility with the trackside is required.

ETCS System Compatibility (ESC)

DMI for the Class B system could be integrated into the ERTMS DMI or could be separated with dedicated ATB cab display. In the test steps the term "DMI" is used for both options.

Signals could be lineside signals or stop maker boards (SMB).

5.1 Class B track

5.1.1 Crossing an ERTMS track when route remains on Class B system using NTC-ATB

5.1.1.1 Crossing ERTMS track BetuweRoute – Zevenaar Oost

This scenario must be performed with and/or without a valid key, depending on the presence of a valid key for the connecting ERTMS track. This scenario must be performed for each of the applicable locations.

This scenario is applicable at the geographical locations:

Geographical location	Class B track	ERTMS track
Meteren	Geldermalsen – 's Hertogenbosch	BetuweRoute: Zevenaar - Kijfhoek
Elst	Arnhem – Nijmegen	BetuweRoute: Zevenaar - Kijfhoek





Figure 5.1-1 Situation

ld	Main function
BG1	Network registration
BG2	Setup communication with RBC
BG3	Level transition to Level 2 or Cancel transition (i.e. new transition to Level NTC)
BGF	(redundant) Cancel transition (i.e. new transition to Level NTC), disconnection order RBC

Table 5.1-2 Description of balises

The scenario is described in detail in Table 5.1-3. The dispatcher has to set the route from the start location on the Class B track to the end location on the Class B track with the requirement that the entrance to the ERTMS track is passed by (crossed) between start and destination. Table 5.1-1 contains the geographical locations for this test case. Table 5.1-2 describes the main functions of the passed balise groups. Some balise groups contain redundant function of previous passed balise groups.

Note that the location of the signals is not relevant for executing this scenario.



ETCS System Compatibility (ESC)

I ne tollo	owing steps must be performed.		
Step	Action / check		
Pre	Level is Level NTC-ATB		
	Mode is starting mode:		
	Route is set between start and destination		
1	When passing BG1 with Network registration information (if BG present), verify that:		
	a. Modem is registered to the Dutch Network		
2	When passing BG2 with Session management information, verify that:		
	a. DMI shows connection is established (valid key) or not established ¹ (no valid key)		
3	When passing BG3 with level transition order to Level 2 (if function not cancel transition),		
	verify that:		
	a. DMI shows level transition announcement to Level 2		
4	When passing BGF, Verify that:		
	a. DMI shows level remaining Level NTC-ATB		
	b. DMI shows mode remaining starting mode		
	c. DMI shows connection is terminated, if connection was established		

Table 5.1-3 Scenario steps

5.1.1.2 Crossing ERTMS track Zevenaar Oost – border Germany

This scenario must be performed with and/or without a valid key, depending on the presence of a valid key for the connecting ERTMS track. This scenario must be performed at the applicable location.

This scenario is applicable at the geographical location:

Geographical location	Class B track	ERTMS track		
Zevenaar	Zevenaar – Winterswijk ²	BetuweRoute Zevenaar		
Table 5.1-4 Geographical location				



Figure 5.1-2 Situation

ld	Main function
BG1	Network registration
BG2	Setup communication with RBC
BG3	Setup communication with RBC (redundant)
BG4	Cancel transition (i.e. new transition Level NTC), disconnection order RBC
BGF	Redundant cancel transition (i.e. new transition Level NTC), disconnection order RBC

Table 5.1-5 Description of balises

The scenario is described in detail in Table 5.1-6 and Table 5.1-7. The dispatcher has to set the route from the start location on the Class B track to the end location on the Class B track with the requirement

¹ It could happen that the indication that the connection is not established will not be shown because the "Connection status" timer did not expire before the train passed BGF.

² A major part of this route is operated under ATBNG. In rear of the crossing with the ERTMS track a transition from NG to EG is made (and in opposite direction from EG to NG).

ETCS System Compatibility (ESC)

that an entrance to the ERTMS track is passed by (crossed) between start and destination. Table 5.1-4 contains the geographical locations for this test case. Table 5.1-5 describes the main functions of the passed balise groups. Some balise groups contain redundant function of previous passed balise groups.

Note that the location of the signals is not relevant for executing this scenario.

This operational scenario shall also be executed for multiple onboard operation, where the onboard entity under test is a sleeping engine (i.e. mode Sleeping).

The following steps must be performed.

Step	Action / check		
Pre	Level is Level NTC-ATB		
	Mode is starting mode		
	Route is set between start and destination		
1	When passing BG1 with Network registration information, verify that:		
	a. Modem is registered to the Dutch Network		
2	When passing BG2 with Session management information, verify that:		
	a. DMI shows connection is established (valid key) or not established ¹ (no valid key)		
3	When passing BGF, Verify that:		
	a. DMI shows level remaining Level NTC-ATB		
	 DMI shows mode remaining starting mode 		
	c. DMI shows connection is terminated, if connection was established		
Table F	1. C. Cooncris stand loading anding		

Table 5.1-6 Scenario steps leading engine

Step	Action / check	
1	When sleeping is requested, verify that:	
	a. Sleeping cab in mode SL: no information shall be shown	

Table 5.1-7 Scenario steps sleeping engine

5.1.1.3 Crossing ERTMS track Hanzelijn

This scenario must be performed with and/or without a valid key, depending on the presence of a valid key for the connecting ERTMS track. This scenario must be performed for each of the applicable locations.

This scenario is applicable at the geographical locations:

Geographical location	Class B track	ERTMS track
Lelystad	Almere – Lelystad (opstel)	Hanzelijn: Zwolle – Lelystad
Hattemmerbroek	Zwolle – Amersfoort	Hanzelijn: Zwolle – Lelystad

Table 5.1-8 Geographical locations



Figure 5.1-3 Situation

ld	Main function
BG1	Network registration

ETCS System Compatibility (ESC)

ld	Main function
BG2	Setup communication with RBC
BG3	Setup communication with RBC (redundant)
BGF	Cancel transition (i.e. new transition to level), disconnection order RBC

Table 5.1-9 Description of balises

The scenario is described in detail in Table 5.1-10. The dispatcher has to set the route from the start location on the Class B track to the end location on the Class B track with the requirement that an entrance to the ERTMS track is passed by (crossed) between start and destination. Table 5.1-8 contains the geographical locations for this test case. Table 5.1-9 describes the main functions of the passed balise groups. Some balise groups contain redundant function of previous passed balise groups.

Note that the location of the signals is not relevant for executing this scenario.

The following steps must be performed.

Step	Action / check		
Pre	Level is Level NTC-ATB		
	Mode is starting mode		
	Route is set between start and destination		
1	When passing BG1 with Network registration information (if BG present), verify that:		
	a. Modem is registered to the Dutch Network		
2	When passing BG2 with Session management information, verify that:		
	a. DMI shows connection is established (valid key) or not established ¹ (no valid key)		
3	When passing BGF, verify that:		
	a. DMI shows level remaining Level NTC-ATB		
	b. DMI shows mode remaining starting mode		
	c. DMI shows connection is terminated, if connection was established		

Table 5.1-10 Scenario steps

5.1.1.4 Crossing ERTMS track HSL - South

This scenario must be performed with and/or without a valid key, depending on the presence of a valid key for the connecting ERTMS track. This scenario must be performed for each of the applicable locations.

This scenario is applicable at the geographical locations:

Geographical location	Class B track	ERTMS track
Breda	Breda – Roosendaal	HSL-South
Zevenbergschenhoek	Breda – Dordrecht	HSL-South
Hoofddorp	Schiphol – Nieuw Vennep	HSL-South

Table 5.1-11 Geographical locations



Figure 5.1-4 Situation

ld	Main function
BG1	Network registration
BG2	Setup communication with RBC
BG3	Cancel transition (i.e. new transition to Level NTC),
BGF	Cancel transition (i.e. new transition to Level NTC), disconnection order RBC

Table 5.1-12 Description of balises

The scenario is described in detail in Table 5.1-13. The dispatcher has to set the route from the start location on the Class B track to the end location on the Class B track with the requirement that an entrance to a Dutch ERTMS track is passed by (crossed) between start and destination. Table 5.1-11 contains the geographical locations for this test case. Table 5.1-12 describes the main functions of the passed balise groups. Some balise groups contain redundant function of previous passed balise groups.

Note that the location of the signals is not relevant for executing this scenario.

The following steps must be performed.

Step	Action / check
Pre	Level is Level NTC-ATB Mode is starting mode
	Route is set between start and destination
1	When passing BG1 with Network registration information (if BG present), verify that:
	a. Modem is registered to the Dutch Network
2	When passing BG2 with Session management information, verify that:
	a. DMI shows connection is established (valid key) or not established ¹ (no valid key)
3	When passing BGF, verify that:
	a. DMI shows level remaining Level NTC-ATB
	b. DMI shows mode remaining starting mode
	c. DMI shows connection is terminated, if connection was established

Table 5.1-13 Scenario steps

5.1.1.5 Crossing ERTMS track Amsterdam – Utrecht

This scenario must be performed with and/or without a valid key, depending on the presence of a valid key for the connecting ERTMS track. This scenario must be performed for each of the applicable locations.

This scenario is applicable at the geographical locations³:

Geographical location	Class B track	ERTMS track
Duivendrecht	Amsterdam Zuid – Diemen Zuid	Amsterdam - Utrecht
Utrecht	Utrecht – Utrecht Cartesiusweg	Amsterdam - Utrecht

Table 5.1-14 Geographical locations

³ There are other locations, but those are not suitable for this test. At those locations some important balises are missing that are necessary for the correct execution of this test.





Figure 5.1-5 Situation

ld	Main function
BG1	Network registration
BG2	Setup communication with RBC
BG3	Setup communication with RBC (redundant)
BGF	Disconnection order RBC

Table 5.1-15 Description of balises

The scenario is described in detail in Table 5.1-16. The dispatcher has to set the route from the start location on the Class B track to the end location on the Class B track with the requirement that the entrance to the ERTMS track is passed by (crossed) between start and destination. Table 5.1-14 contains the geographical locations for this test case. Table 5.1-15 describes the main functions of the passed balise groups. Some balise groups contain redundant function of previous passed balise groups.

Note that the location of the signals is not relevant for executing this scenario.

The following steps must be performed.

Step	Action / check	
Pre	Level is Level NTC-ATB	
	Mode is starting mode	
	Route is set between start and destination	
1	When passing BG1 with Network registration information (if BG present), verify that:	
	a. Modem is registered to the Dutch Network	
2	When passing BG2 with Session management information, verify that:	
	a. DMI shows connection is established (valid key) or not established ¹ (no valid key)	
3	When passing BGF, verify that:	
	a. DMI shows level remaining Level NTC-ATB	
	 DMI shows mode remaining starting mode 	
	c. DMI shows connection is terminated, if connection was established	

Table 5.1-16 Scenario steps

5.1.2 Running over an ERTMS overlay track in NTC-ATB

The tracks Amsterdam - Utrecht and Hanzelijn are constructed with ERTMS Level 2 with ATB in overlay. ERTMS equipped trains without a valid key will pass these tracks in Level NTC-ATB mode SN. The scenario below must be performed without a valid key, to run on this track in Level NTC-ATB mode SN.

This scenario is to verify that all trains without an RBC key are running in Level NTC-ATB mode SN over this track. Note that also trains without ERTMS equipment can use this track as any Class B track, but these trains are out of the scope of this document.

108

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Figure 5.1-6 Situation

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102

The track contains several balise groups which may contain different information. The scenario is running from Amsterdam to Utrecht (or vice versa) and from Lelystad to Zwolle (or vice versa) and running all the way in Level NTC-ATB mode SN. There is one planned stop at a station in the middle of the track, e.g. Maarssen or Dronten to perform some manual DMI actions. It is allowed to stop at another location to perform these actions.

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106

Step	Action / check	A-U	HZL
Pre	Level is Level NTC-ATB		
	Mode is SN	х	х
	Route is set between start and destination		
1	When passing BG with Network registration information (if BG present), verify		
	that:		
	a. Modem is registered to the Dutch Network	х	Х
	b. No brakes are applied		
	c. DMI shows mode remaining mode SN		
2	When passing BG with Session management information, verify that:		
	a. DMI shows no connection is established with the RBC due to invalid key	v	v
	b. No brakes are applied	^	^
	c. DMI shows mode remaining mode SN		
3	When passing BG with conditional level transition order information, verify that:		
	a. DMI shows level remaining Level NTC-ATB	v	v
	b. No brakes are applied	^	^
	c. DMI shows mode remaining mode SN		
4	When passing BG with text message information, verify that:		
	 DMI shows no text because the onboard is in Level NTC-ATB 	v	
	b. No brakes are applied	~	
	c. DMI shows mode remaining mode SN		
5	When passing BG with Stop-If-In-SR information, verify that:		
	a. No brakes are applied	х	х
	 DMI shows mode remaining mode SN 		
6	When passing BG with termination order, verify that:		
	a. DMI shows no reaction because there is no connection	v	v
	b. No brakes are applied	X	X
	c. DMI shows mode remaining mode SN		
7	When passing BG with level transition order information, verify that:		
	a. DMI shows level remaining Level NTC-ATB		v
	b. No brakes are applied	X	X
	c. DMI shows mode remaining mode SN		
8	When receiving National Values for braking curves, verify that:		
	a. DMI does not show any related indication	х	х
	b. No brakes are applied		

ETCS System Compatibility (ESC)

Step	Action / check	A-U	HZL
9	Train stops at station Maarssen or Dronten. Verify that:	v	v
	a. DMI shows in level menu only Level NTC-ATB and Level 2	^	^
10	Train continues to destination. Verify that:	v	v
	a. Checks steps 1 through 8	^	^
11	Train stops at Utrecht / Amsterdam or at Lelystad / Zwolle. Verify that:	v	v
	a. DMI shows in level menu only Level NTC-ATB.	~	~

Table 5.1-17 Scenario steps

5.1.3 National borders

For the national border scenarios, the train is running in Level NTC using STM-XXX and makes a transition to Level NTC using STM-YYY. The following figure shows the basic track layout. Note that the position of any lineside signals is not relevant for the transition scenarios.



Figure 5.1-7 Border situation

The transition is announced at the A-BG (Announcement Balise Group). At the T-BG (Transition Balise Group) the actual transition takes place. For redundancy reasons, at some locations redundant A-BG and T-BG are placed with the same transition information as respectively the A-BG and T-BG. At some locations the National Values could be placed in an additional balise group instead of in the A-BG and T-BG.

At some locations redundant A-BG and T-BG are passed before passing the A-BG and T-BG, however these redundant A-BG and T-BG do nominally not lead to a level transition as the train is nominally in a allowed level.

At some locations a train not equipped with STM-XXX is already running in STM-YYY and at some locations a train not equipped with STM-YYY keeps running in STM-XXX. In both situations, technically no transition takes place.

5.1.3.1 Normal transition from NTC-ATB to NTC-YYY

Step	Action / check	Border Crossing to Belgium	Border Crossing to Germany
Pre	Level is Level NTC-ATB	Belgium	Germany
	Mode is SN		
	Route is set from NL into		
1	Train runs from the Netherlands towards	Belgium	Germany
2a	When passing A-BG, verify that:		
	a. DMI shows level transition announcement to	Х	Х
	NTC-YYY		
2b	When passing A-BG and if A-BG contains data to		
	be used by applications outside ERTMS/ETCS,		
	verify that:	х	
	a. This data is forwarded to the relevant system		
	b. No brakes are applied		

ETCS System Compatibility (ESC)

Step	Action / check	Border Crossing to Belgium	Border Crossing to Germany
3	When train front end passes start of level		
	acknowledgement window, verify that:		
	a. DMI shows level acknowledgement request	х	Х
	 Driver acknowledges level transition within 5 seconds after passing transition location 		
4a	When passing T-BG, verify that:	TBL1+, TBL2,	PZB, LZB or
	 DMI shows level changes to Level NTC-YYY 	TBL1, Memor or	ERTMS L0
	(available level with highest priority)	KVB	
4b	When passing T-BG and if T-BG contains data to be		
	used by applications outside ERTMS/ETCS, verify		
	that:	х	
	a. This data is forwarded to the relevant system		
	b. No brakes are applied		
5a	When passing BG with national value information,		
	verify that:	v	v
	a. No brakes are applied	^	^
	b. DMI shows mode remaining mode SN		
5b	When passing BG with Network registration		
	information (if BG present), verify that:	Y	X
	a. No brakes are applied	X	X
	b. DMI shows mode remaining mode SN		
6	When passing redundant A-BG and T-BG, verify		
	that	v	v
	a. DMI shows no level acknowledgement request	Ā	X
	b. No brakes are applied		

Table 5.1-18 Scenario steps

5.1.3.2 Normal transition from NTC-XXX to NTC-ATB

The operational scenarios towards the Netherlands shall be performed for ATBEG or ATBNG in case the onboard supports both ATB systems if multiple trackside configurations are applicable for a ESC type.

Step	Action / check	Border Crossing from Belgium	Border Crossing from Germany
Pre-1	Level is Level NTC-XXXMode is SN	TBL1+, TBL2, TBL1, Memor or KVB	PZB or LZB
Pre-2	Route is set into the Netherlands from	Belgium	Germany
1	Train runs from Belgium/Germany towards the Netherlands	x	х
2a	When passing A-BG, verify that:a. DMI shows level transition announcement to NTC-ATB	X	х

ETCS System Compatibility (ESC)

Step	Action / check	Border Crossing	Border Crossing
		from Belgium	from Germany
2b	When passing A-BG and if A-BG contains data		
	to be used by applications outside		
	ERIMS/EICS, verify that:	х	
	a. I his data is forwarded to the relevant		
	system		
	b. No brakes are applied		
3	When train front end passes start of level		
	acknowledgement window, verify that:		
	a. DMI shows level acknowledgement request	х	Х
	b. Driver acknowledges level transition within 5		
	seconds after passing transition location		
4a	When passing T-BG, verify that:		
	a. DMI shows level changes to Level NTC-ATB	х	Х
	 DMI shows mode remaining mode SN 		
4b	When passing T-BG and if T-BG contains data		
	to be used by applications outside		
	ERTMS/ETCS, verify that:	Y	
	a. This data is forwarded to the relevant	X	
	system		
	b. No brakes are applied		
5a	When passing BG with national value		
	information, verify that:	Y	X
	a. No brakes are applied	X	X
	a. DMI shows mode remaining mode SN		
5b	When passing BG with Network registration		
	information (if BG present), verify that:	Y	X
	a. No brakes are applied	X	X
	b. DMI shows mode remaining mode SN		
6	When passing redundant A-BG and T-BG, verify		
	that		
	a. DMI shows no level acknowledgement	х	х
	request		
	b. No brakes are applied		
P			

Table 5.1-19 Scenario steps

5.1.3.3 Degraded transition from NTC-XXX to NTC-ATB

This degraded scenario is similar as described in section 5.1.3.2 in case the A-BG is missed e.g. due to balise group failure or reversing between the A-BG and the T-BG. Both situations are covered when starting up between the A-BG and the T-BG. The immediate transition to Level NTC-ATB is received from the T-BG without an announcement (from the A-BG). Note that this may cause a reaction from the NTC-ATB due to insufficient ATB code reception.

At VenIo for the start location the redundant transition located at tracks leaving the station area in direction of the Netherlands should be used instead and no other redundant A-BG and T-BG are passed.

ETCS System Compatibility (ESC)

Step	Action / check	Border Crossing	Border Crossing
Pre-1		TBI 1+ TBI 2	PZB or LZB
1101	Mode is SN	TBL1. Memor or	
		KVB	
Pre-2	Route is set into the Netherlands from:	Belgium	Germany
	 train starts between A-BG and T-BG 		
1	Train runs from Belgium/Germany towards the		v
	Netherlands	X	X
2a	When passing T-BG, verify that:		
	a. DMI shows level changes to Level NTC-ATB		
	b. DMI shows mode remaining mode SN		
	c. DMI shows level acknowledgement request	Y	¥
	d. Driver acknowledges level transition within 5	X	X
	seconds after passing transition location		
	e. Only if STM-ATB is not installed: brakes are		
	applied		
2b	When passing T-BG and if T-BG contains data to		
	be used by applications outside ERTMS/ETCS,		
	verify that:	Х	
	a. This data is forwarded to the relevant system		
	b. No brakes are applied		
за	when passing BG with national value information,		
	Venity that.	х	х
	a. No brakes are applied b. DMI shows mode remaining mode SN		
3h	When passing BG with Network registration		
55	information (if BG present) verify that:		
	a No brakes are applied	х	Х
	b. DMI shows mode remaining mode SN		
4	When passing redundant A-BG and T-BG, verify		
	that		
	a. DMI shows no level acknowledgement	х	х
	request		
	b. No brakes are applied		

Table 5.1-20 Scenario steps

5.1.3.4 Transition into The Netherlands when failure in STM-ATB

For this test scenario the train shall be prepared in advance. The onboard is connected to an STM-ATB which is in failure state and not isolated. This scenario is applicable for both Belgium and Germany.

Step	Action / check	Class B track
Pre	STM-ATB is in failure and not isolated	Х
	Level is Level NTC-XXX, according to local Class B system	
1	Train runs from Belgium/Germany towards the Netherlands	Х

ETCS System Compatibility (ESC)

Step	Action / check	Class B track
2	When passing BG with level transition order to ATB, verify that:	Х
	a. DMI shows message indicating the unavailability of the STM-ATB ⁴	
3	When passing the level transition location, verify that:	Х
	a. Brakes are applied	
	b. DMI shows message indicating the unavailability of the STM-ATB ⁴	

Table 5.1-21 Scenario step

5.1.3.5 Normal transition from NTC-ATB/YYY to NTC-YYY

This scenario is applicable at specific locations where a train without STM-ATB can start up in STM-YYY, while a train with STM-ATB installed starts up in STM-ATB. At VenIo this train doesn't pass the redundant transition located at tracks leaving the station in direction of Germany. The following steps must be performed.

Step	Action / check	Border Crossing	Border Crossing
Pre-1	 Level is Level NTC-ATB if STM-ATB installed Level is Level NTC-YYY if STM-ATB not installed Mode is SN 	ATB, TBL1+, TBL2, TBL1, Memor or KVB	PZB, LZB or ATB
Pre-2	Route is set from NL into	Belgium	Germany
1	Train runs from the Netherlands towards	Belgium	Germany
2a	When passing A-BG and level is not the availablelevel with highest priority, verify that:a. DMI shows level transition announcement toNTC-YYY	ATB, TBL1+, TBL2, TBL1, Memor or KVB	PZB, LZB or ATB
2b	When passing A-BG and if A-BG contains data to be used by applications outside ERTMS/ETCS, verify that:a. This data is forwarded to the relevant systemb. No brakes are applied	x	
3	 Only if level is not the available level with highest priority: When train front end passes start of level acknowledgement window, verify that: a. DMI shows level acknowledgement request b. Driver acknowledges level transition within 5 seconds after passing transition location 	ATB, TBL1+, TBL2, TBL1, Memor or KVB	PZB, LZB or ATB
4a	Only if level is not the available level with highest priority: When passing T-BG, verify that: a. DMI shows level changes to Level NTC-YYY (available level with highest priority)	TBL1+, TBL2, TBL1, Memor or KVB	PZB, LZB or ERTMS L0
4b	Only if level is the available level with highest priority: When passing T-BG, verify that: a. DMI shows level is Level NTC-YYY (available level with highest priority)	TBL1+, TBL2, TBL1, Memor or KVB	PZB, LZB or ERTMS L0

⁴ Depending on onboard implementation this message is displayed at the startup of the system or when the level transition order is received. The message could be displayed a certain amount of time and could not be shown again.

ETCS System Compatibility (ESC)

Step	Action / check	Border Crossing to Belgium	Border Crossing to Germany
4c	When passing T-BG and if T-BG contains data to		
	be used by applications outside ERTMS/ETCS,	v	
	a. This data is forwarded to the relevant system	^	
	b. No brakes are applied		
5a	When passing BG with national value information,		
	verify that:	x	x
	a. No brakes are applied	X	~
	 DMI shows mode remaining mode SN 		
5b	When passing BG with Network registration		
	information (if BG present), verify that:		
	a. No brakes are applied	X	X
	b. DMI shows mode remaining mode SN		
6	When passing redundant A-BG and T-BG, verify		
	that		
	a. DMI shows no level acknowledgement	Х	
	request		
	b. No brakes are applied		

Table 5.1-22 Scenario steps

5.1.3.6 Normal transition from NTC-ATB to NTC-YYY/ATB

This scenario is applicable at specific locations where a train with both STM-ATB and STM-YYY installed performs the normal transition, but a train without STM-YYY installed can pass the transition location in STM-ATB to reach a specific location. Although operationally not planned, for testing purpose this train passes the redundant transition and performs a transition to level 0.

Step	Action / check	Border Crossing to Germany
Pre	Level is Level NTC-ATB	Х
	Mode is SN	
	Route is set from NL into Germany	
1	Train runs from the Netherlands towards Germany	Х
2a	Only if STM-YYY is installed: When passing A-	
	BG, verify that:	P7B or L7B
	a. DMI shows level transition announcement to	
	NTC-YYY	
2b	Only if STM-YYY is not installed: When passing	
	A-BG and T-BG, verify that:	
	a. DMI shows no level transition announcement	
	to NTC-YYY	P7B or L7B
	b. DMI shows no level acknowledgement	
	request	
	c. DMI shows no level change	
	d. No brakes are applied	

ETCS System Compatibility (ESC)

Step	Action / check	Border Crossing
		to Germany
3	Only if STM-YYY is installed: When train front end	
	passes start of level acknowledgement window,	
	verify that:	PZB or LZB
	a. DMI shows level acknowledgement request	
	b. Driver acknowledges level transition within 5	
4	Only if STM-YYY is installed: When passing T-	
	BG, verify that:	
	a. DMI shows level changes to Level NTC-YYY	PZB or LZB
	(available level with highest priority)	
5a	Only if STM-YYY is installed: When passing	
	redundant T-BG, verify that	
	a. DMI shows no level acknowledgement	PZB or LZB
	request	
	b. No brakes are applied	
5b	Only if STM-YYY is not installed: When passing	
	first redundant T-BG, verify that	
	a. DMI shows level acknowledgement request	D7R or I 7R
	b. Driver acknowledges level transition within 5	
	seconds after passing transition location	
	c. DMI shows level changes to Level 0	
6a	When passing BG with national value information,	
	verify that:	Y
	a. No brakes are applied	^
	b. DMI shows mode remaining mode SN/UN	
6b	When passing BG with Network registration	
	information (if BG present), verify that:	x
	a. No brakes are applied	~
	 DMI shows mode remaining mode SN/UN 	

Table 5.1-23 Scenario steps

5.1.3.7 Normal transition from NTC-XXX to NTC-ATB/XXX

This scenario is applicable at specific locations where a train without STM-ATB can reach the first station in STM-XXX. At these specific locations a train with STM-ATB installed performs the normal transition. At Venlo the nominal scenario is that the driver selects the correct level when the train is at standstill in the station. At this location, the test covers the fallback scenario (manual transition was not performed). Therefore, at Venlo a train with STM-ATB only passes the redundant transition located at tracks leaving the station in direction of the Netherlands. In this case, the A-BG and T-BG in the scenario refers to the redundant A-BG and redundant T-BG respectively.

Step	Action / check	Border Crossing from Belgium	Border Crossing from Germany
Pre-1	Level is Level NTC-XXXMode is SN	TBL1+, TBL2, TBL1, Memor or KVB	PZB or LZB
Pre-2	Route is set into the Netherlands from	Belgium	Germany

ETCS System Compatibility (ESC)

Step	Action / check	Border Crossing from Belgium	Border Crossing from Germany
1	Train runs from Belgium/Germany towards the		
	Netherlands	X	X
2a	If STM-ATB is installed: When passing A-BG,		
	verify that:	Y	v
	a. DMI shows level transition announcement to	~	^
	NTC-ATB		
2b	If STM-ATB is not installed: When passing A-BG		
	and T-BG, verify that:		
	a. DMI shows no level transition		
	announcement to NIC-AIB	х	х
	b. DMI shows no level acknowledgement		
	request		
	c. Divil shows no level change		
0.	d. No brakes are applied		
20	when passing A-BG and if A-BG contains data		
	EDTMS/ETCS verify that		
	This data is forwarded to the relevant	x	
	a. This data is forwarded to the relevant		
	b No brakes are applied		
3	If STM-ATB is installed: When train front end		
Ŭ	passes start of level acknowledgement window		
	verify that:		
	a. DMI shows level acknowledgement request	х	х
	b. Driver acknowledges level transition within 5		
	seconds after passing transition location		
4a	If STM-ATB is installed: When passing T-BG,		
	verify that:	N.	×.
	a. DMI shows level changes to Level NTC-ATB	X	X
	b. DMI shows mode remaining mode SN		
4b	When passing T-BG and if T-BG contains data		
	to be used by applications outside		
	ERTMS/ETCS, verify that:	x	
	a. This data is forwarded to the relevant	~	
	system		
	b. No brakes are applied		
5a	When passing BG with national value		
	information, verify that:	х	х
	a. No brakes are applied		
	D. Divil snows mode remaining mode SN		
50	when passing BG with Network registration		
	Information (II be present), verify that:	x	х
	a. No prakes are applied		
1	D. DIVILSHOWS THODE REMAINING MODE SIN		

ETCS System Compatibility (ESC)

Step	Ac	tion / check	Border Crossing from Belgium	Border Crossing from Germany
6	Wł tha a. b.	nen passing redundant A-BG and T-BG, verify at DMI shows no level acknowledgement request No brakes are applied	x	
T () C				

Table 5.1-24 Scenario steps

5.2 ERTMS track Havenspoorlijn – Kijfhoek

5.2.1 Confidence run over complete track

This operational scenario is a normal run over the ERTMS track of multiple ESC types in both directions. The dispatcher sets all routes with normal aspects (NORM). If the scenario to run in OS is executed during the confidence run, the dispatcher sets the routes required for this scenario with on sight aspects (ROZ). The driver shall react on DMI or trackside signals according to normal operations. The driving speed is the maximum allowed speed. There are no special actions required from both dispatcher and driver. The routes are described in Table 5.2-1. The start and end locations are described in Table 5.2-2.

ld	Location	Route setting
1	Zwijndrecht (Zwd) – Kijfhoek (Kfh)	NORM: Zwd -> 67 -> DA
2	Kijfhoek (Kfh) – Botlek (Bot)	NORM: DA -> DB -> CC -> CD -> CE -> NA -> NB -> NC -> ND - > RD -> SE -> RF -> RK
3	Botlek (Bot) – Maasvlakte (Mvt)	NORM: RK -> RL -> RO -> RP -> RR -> RT -> Mvt 801-818
4	Maasvlakte (Mvt) – Kijfhoek (Kfh)	NORM: Mvt 810-818 -> PT -> PS -> PR -> PP -> PO -> PL -> PK -> PF -> PE -> PD -> MD -> MC -> MB -> DE -> Kfh 150-154
5	Kijfhoek (Kfh) – Zwijndrecht (Zwd)	NORM: Kfh 150-154 -> 67 -> HR -> Zwd

Table 5.2-1 Route settings

ld	Location	Start location	End location
1	Zwijndrecht – Kijfhoek	Zwd (not specific)	DA
2	Kijfhoek – Botlek	DA	RK, in rear of infill balise group signal 222 at km 816.800
3	Botlek – Maasvlakte	RK, in rear of infill balise group signal 222 at km 816.800	M∨t (801-818)
4	Maasvlakte – Kijfhoek	M∨t (801-818)	Kfh (150-154)
5	Kijfhoek – Zwijndrecht	Kfh (150-154)	Zwd (not specific)

Table 5.2-2 Start and end locations

During the execution of the route, the following steps must be performed.

Step	Action / check	
Pre	Level is Level NTC-ATB	
	Mode in SN	
	Route is set from start location 1 to end location 1	
1	Train is running towards transition signal. When receiving the level transition	
	announcement, verify that:	
	a. DMI shows level transition announcement	
2	When train front end passes start of level acknowledgement window (only for	
	onboards not implementing CR1166), verify that:	
	a. DMI shows level acknowledgement request	
	b. Driver acknowledges level transition within 5 seconds after passing	
	transition location	

ETCS System Compatibility (ESC)

Step	Action / check	
3	When passing transition signal, verify that:	
	a. DMI shows level change to Level 1	
	b. DMI shows mode FS	
	c. No brakes are applied	
	d. DMI shows no braking (pre)-indication	
4	When train is at end location 1, driver continues next scenario	
Table F	2.2 Secondria stand 1	

Table 5.2-3 Scenario steps 1

Step	Ac	tion / check	
Pre	٠	Level is Level 1	
	٠	Mode in FS	
	٠	Route is set from start location 2 to end location 2	
1	When passing signals, verify that:		
	a.	DMI shows level remaining Level 1	
	b.	DMI shows mode remaining mode FS	
	C.	No brakes are applied	
2	When receiving track conditions at voltage change over, verify that		
	a.	DMI shows track condition information (announcement, start and end) at the	
		defined locations	
	b.	If applicable the train systems show correct behaviour at the defined	
		locations	
3	Wł	nen approaching end of route, verify that	
	a.	DMI shows braking curve to EoA	
4	When train is stopped at end location 2, verify that		
	a.	DMI shows only Level 1 enabled in the ERTMS/ETCS level window	
5	Driver closes desk		

Table 5.2-4 Scenario steps 2

Step	Ac	tion / check	
Pre	•	Level is Level 1	
	٠	Mode in SB	
	٠	Route is set from start location 3 to end location 3	
1	When driver perform Start of Mission procedure, verify that:		
	a.	DMI shows level remaining Level 1	
	b.	DMI shows mode change to mode SR	
2	When passing infill balise group, verify that		
	a.	DMI shows level remaining Level 1	
	b.	DMI shows mode remaining mode SR	
3	When passing signal 222, verify that:		
	a.	DMI shows level remaining Level 1	
	b.	DMI shows mode change to mode FS	
	C.	No brakes are applied	
4	Wł	nen passing signals, verify that:	
	a.	DMI shows level remaining Level 1	
	b.	DMI shows mode remaining mode FS	
	C.	No brakes are applied	
ETCS System Compatibility (ESC)

Step	Action / check					
5	Onboard receives MA towards Mvt with mode profile shunting. When passing					
	start of acknowledgement window mode profile shunting with allowed speed in					
	SH, verify that:					
	a. DMI shows an SH acknowledgement request					
	b. DMI shows braking curve at start of mode profile SH with no release speed					
	c. When driver acknowledges SH acknowledgement request, DMI shows					
	mode change to mode SH					
6	When train is stopped at end location 3, driver closes desk.					

Table 5.2-5 Scenario steps 3

Step	Ac	tion / check			
Pre	٠	Train direction is changed			
	٠	Level is Level 1			
	٠	Mode in SB			
	٠	Route is set from start location 4 to end location 4			
1	W	When driver perform Start of Mission procedure, verify that:			
	a.	DMI shows level remaining Level 1			
	b.	DMI shows mode change to mode SR			
3	W	nen passing first signal, verify that:			
	a.	DMI shows level remaining Level 1			
	b.	DMI shows mode change to mode FS			
	c.	No brakes are applied			
4	W	nen passing signals, verify that:			
	a.	DMI shows level remaining Level 1			
	b.	DMI shows mode remaining mode FS			
	C.	No brakes are applied			
5	W	nen receiving track conditions at voltage change over, verify that			
	a.	DMI shows track condition information (announcement, start and end) at the			
		defined locations			
	b.	If applicable the train systems show correct behaviour at the defined			
		locations			
6	Or	board receives MA towards Kfh with mode profile shunting. When passing			
	sta	art of acknowledgement window mode profile shunting with allowed speed in			
	SF	I, verify that:			
	a.	DMI shows an SH acknowledgement request			
	b.	DMI shows braking curve at start of mode profile SH with no release speed			
	C.	When driver acknowledges SH acknowledgement request, DMI shows			
		mode change to mode SH			
7	WI	nen train is stopped at end location 4, driver performs exit shunting			
	pro	ocedure. Verify that:			
	a.	DMI shows mode change to mode SB			

Table 5.2-6 Scenario steps 4

ETCS System Compatibility (ESC)

Step	Action / check
Pre	Level is Level 1
	Mode in SB
	Route is set from start location 5 to end location 5
1	When driver perform Start of Mission procedure, verify that:
	a. DMI shows level remaining Level 1
	b. DMI shows mode change to mode SR
2	When receiving the connection establishment order from the balise group, verify
	that:
	a. DMI shows connection is established with the RBC
3	When receiving the connection termination order from the balise group, verify
	that:
	a. DMI shows connection termination with the RBC
4	When passing in opposite direction signal 3220 with balise group, verify that:
	a. DMI shows level remaining Level 1
	 DMI shows mode change to mode FS
	c. No brakes are applied
5	When receiving level transition order to Level NTC-ATB, verify that:
	a. DMI shows level transition announcement to Level NTC-ATB
6	When the train front end passes the start of the level transition
	acknowledgement, verify that:
	a. DMI show level acknowledgement request
	b. Driver acknowledges level transition within 5 seconds after passing
	transition location
7	When passing the level transition location, verify that:
	a. DMI show level change to Level NTC-ATB
	b. DMI shows mode change to mode SN
8	When train is stopped at end location 5, driver closes desk

Table 5.2-7 Scenario steps 5

5.2.2 Exit when failure STM-ATB

Use scenario in 5.11.1 Exit when failure STM-ATB. Cross acceptance with other ESC types is not possible.

5.2.3 Running in OS

Use scenario in 5.11.2 Entering OS. Cross acceptance with other ESC types is not possible. It is allowed to execute this scenario during the confidence run (5.2.1 Confidence run over complete track) at a location that does not interfere with the steps that have to be performed for the confidence run.

5.2.4 Entrance specialties from ATB to ERTMS

This operational scenario contains special entrance scenarios. Figure 5.2-1 shows the situation of the entrance as used. The train starts in rear of signal 102 or at least before passing the first balise group. The dispatcher sets all routes according to Table 5.2-8, unless a signal is a Permissive-signal and will automatically switch to yellow or green if the track is not occupied. After the route is set, the train runs the route following the signals and DMI information. The route setting ends at signal 204.

On the transition to overlay tracks Kijfhoek the CAB sign is not present. The CAB sign is only present at the transition to Havenspoorlijn (non-overlay area).



The entry is controlled by several balises. Balise BGA announces the transition and gives a track description for the sections in rear of the transition to prevent the "entry in FS/OS" message. Balise BGB provides the MA for the ERTMS area.



Figure 5.2-1 Entrance situation

Note: balise group BGA is not placed when going only to a ERTMS shunting area. Balise BGD is not placed when signal 106 cannot be set with ROZ route.

Scenario	Description	102	104	106	202
2.4a	NORM-ROZ	NORM	NORM	ROZ	ROZ
2.4b	STS-NORM	NORM	NORM	STOP	NORM
2.4c	To Yard NORM	NORM	NORM	NORM	Yard
2.4d	To Yard ROZ	NORM	NORM	ROZ	Yard
2.4e	To yard STS	NORM	NORM	STOP	Yard

Table 5.2-8 Route settings

Scenario	Description	102	104	106	202
2.4a	NORM-ROZ	SN/ATB	SN/ATB	OS	OS
2.4b	STS-NORM	SN/ATB	SN/ATB	TR	FS
2.4c	To yard NORM	SN/ATB	SN/ATB	SN/ATB	SH
2.4d	To yard ROZ	SN/ATB	SN/ATB	SN/ATB	SH
2.4e	To yard STS	SN/ATB	SN/ATB	TR	SH

Table 5.2-9 Mode after passing signal

The scenarios 2.4c, 2.4d and 2.4e are special cases on Kijfhoek when a train drives from ATB area (tracks 67, 68 and 69) directly into the yard (ERTMS shunting area).

For each scenario the following steps must be performed.

Step	Action / check						
Pre	Level is Level NTC-ATB						
	Mode is SN						
	Route is set according to Table 5.3-2						
1	When receiving the level transition announcement (not scenario 2.4b and 2.4e), verify that:						
	a. DMI shows level transition announcement						
2	When train front end passes start of level acknowledgement window (not scenario 2.4b and						
	2.4e) (only for onboards not implementing CR1166), verify that:						
	a. DMI shows level acknowledgement request						
	b. Driver acknowledges level transition within 5 seconds after passing transition location						

ETCS System Compatibility (ESC)

Step	Action / check				
3a	When passing signal 106 (not scenario 2.4b, 2.4c, 2.4d and 2.4e), verify that:				
	a. DMI shows level change to Level 1				
	b. DMI shows mode according to Table 5.2-9				
	c. DMI shows no ATB information				
3b	Only scenario 2.4b: When passing signal 106, verify that:				
	a. DMI shows level change to Level 1				
	b. Brakes are applied				
	c. DMI shows mode TR ⁵				
	d. When driver acknowledges Train trip, DMI shows mode change to mode PT				
3c	Only scenario 2.4c and 2.4d: When passing signal 106, verify that:				
	a. DMI shows Level NTC				
	 DMI shows mode according to Table 5.2-9 				
	c. After about 50m DMI shows level change to Level 1 and mode change to mode SH				
3d	Only scenario 2.4e: When passing signal 106, verify that:				
	a. DMI shows level change to Level 1				
	b. Brakes are applied				
	c. DMI shows mode TR				
	d. When driver acknowledges Train trip, DMI shows mode change to mode PT				
4a	Only scenario 2.4a: Verify that:				
	a. DMI shows an OS acknowledgement request				
	b. Driver acknowledges OS acknowledgement request				
4b	Only scenario 2.4b: When driver request start, verify that:				
	a. DMI shows mode change to mode SR				
4c	Only scenario 2.4c and 2.4d: Verify that:				
	a. DMI shows an SH acknowledgement request				
	b. Driver acknowledges SH acknowledgement request				
4d	Only scenario 2.4e: When driver request shunting, verify that:				
	a. DMI shows mode change to mode SH				
5	Only scenario 2.4a and 2.4b: When passing signal 202, verify that:				
	a. DMI shows level is Level 1				
	b. DMI shows mode according to Table 5.2-9				
	c. DMI shows movement authority ending at or in advance of signal 204				
6	When receiving National Values for braking curves, verify that:				
	a. DMI does not show any related indication				
	b. No brakes are applied				

Table 5.2-10 Scenario steps

⁵ If ATB-Vv beacons are placed at the signal: when the onboard is not already switched to TR, a brake invention will be triggered while passing the ATB-Vv beacons.



5.2.5 Exit specialties to ATB

This operational scenario contains all special exit scenarios.



Figure 5.2-2 Exit situation

Figure 5.2-2 shows the situation of the exit. The train starts in rear of signal 204. The dispatcher sets all routes according to Table 5.2-11. After the route is set, the train runs the route following the signals and DMI information.

Note that on the overlay track Kijfhoek the CAB and END-CAB signs are not present.

Scenario	Description	204	202	106	104
2.5a	NORM-ROZ	NORM	NORM	ROZ	NORM
2.5b	ROZ-NORM	NORM	ROZ	NORM	NORM
2.5c	ROZ-ROZ	NORM	ROZ	ROZ	NORM
2.5d ⁶	STS-NORM	NORM	NORM	STOP	NORM

Table 5.2-11 Route settings

Scenario	Description	204	202	106	104
2.5a	NORM-ROZ	FS	FS	SN/ATB	SN/ATB
2.5b	ROZ-NORM	FS	OS	SN/ATB	SN/ATB
2.5c	ROZ-ROZ	FS	OS	SN/ATB	SN/ATB
2.5d ⁶	STS-NORM	FS	FS	SN/ATB	SN/ATB

Table 5.2-12 Mode after passing signal

For each scenario the following steps must be performed.

Step	Action / check					
Pre	Level is Level 1					
	Mode is according to Table 5.2-12					
	Route is set according Table 5.2-11.					
1	When passing signal 204, verify that:					
	a. DMI shows mode according to Table 5.2-12.					
2	Only scenario 2.5b and 2.5c: Before passing signal 202, verify that:					
	a. DMI shows braking curve ending at signal 202 with no release speed					
	 DMI shows an OS acknowledgement request 					
	c. When driver acknowledge OS acknowledgement, DMI shows MA extension ⁷ to signal 106					
	and mode is mode OS					

⁶ The appropriate scenario is that after approaching the signal, the train overshoots the signal at stop, due to e.g. slippery track and that the transition takes place before the train is at standstill. Only when it is possible to make the MA extension visible, e.g. by toggling.

ETCS System Compatibility (ESC)

Step	Action / check				
3	When passing signal 202, verify that:				
	a. DMI shows mode according to Table 5.2-12				
4	Before passing signal 106 (not scenario 2.5d), verify that:				
	a. DMI shows announcement level transition to Level NTC-ATB ⁸				
5	When train front end passes start of level acknowledgement window (not scenario 2.5d),				
	verify that:				
	a. DMI shows level acknowledgement request				
	b. Driver acknowledges level transition within 5 seconds after passing transition location				
6	Only scenario 2.5a: Before passing signal 106, verify that:				
	a. DMI shows braking curve ending at signal 106 with no release speed				
	 DMI shows an OS acknowledgement request 				
	c. When driver acknowledge OS acknowledgement, DMI shows MA extension ⁷ to signal 104				
7a	After passing signal 106 (not scenario 2.5d), verify that:				
	a. DMI shows level change to Level NTC-ATB				
	b. DMI shows mode change to mode SN⁹				
	c. DMI shows Level NTC-ATB				
7b	Only scenario 2.5d: When passing signal 106, verify that:				
	a. DMI shows mode change to mode TR				
	b. brakes are applied				
	c. DMI shows level change to Level NTC-ATB				
	 When driver acknowledge the Trip, DMI shows mode change to mode SN 				
	e. DMI shows level acknowledgement request				
	f. Driver acknowledges level transition				

Table 5.2-13 Scenario steps

Mode Transition to Shunting (for NORM or ROZ route) 5.2.6

This scenario verifies the behaviour of the train for the several types of mode transitions that occurs when driving from the mainline to the yard (Shunting area).

The scenarios 2.6a to 2.6d and 2.6h deal with locations where the transition to mode SH takes place at the signal.

Typical for these scenarios is that shunting is announced sufficient in advance to avoid braking due to no release speed at start of the mode profile. The driver shall get the acknowledgement request in rear of the signal and the train is forced into mode SH directly after passing the signal. For scenario 2.6e to 2.6g the principle is the same, only the transition does not take place at a signal but in the middle of a route: a speed sign is placed at that location. Currently there is one location where this transition happens, at Kijfhoek when leaving the Sophia tunnel running to the yard, with the transition taking place when leaving the main track¹⁰.

The test must be performed with all the brake parameters and characteristics the train may have when it is used in operation with maximum length and weight and minimum brake force.

⁸ Situations can occur where an already announced level transition is repeated from the trackside. The reception of this repeated level transition order may not interfere with the announced level transition order in the case that the contents are similar.

⁹ For scenario 2.5b depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to mode SN.

¹⁰ For this specific location in step Pre the level is Level 2 and the infill is not present, this is a location in rear of the OS ackn (see Figure 5.2-3).



Figure 5.2-3 Situations

Scenario	Description	100	102
2.6a	Normal route	NORM	NORM
2.6b	ROZ route	NORM	ROZ
2.6c	ROZ-ROZ route	ROZ	ROZ
2.6d	Normal route (acknowledgment	NORM	NORM
	of SH after passing the start of		
	the SH area)		
2.6e	Normal route	NORM	NORM
2.6f	ROZ route	NORM	ROZ
2.6g	ROZ route (acknowledgment of	NORM	ROZ
	SH after passing the start of the		
	SH area)		
2.6h	ROZ route (no acknowledgment	NORM	ROZ
	of OS)		

Table 5.2-14 Route settings

Scenario	Description	Passes infill in	OS ackn	SH ackn 1	Passes 102 in	SH ackn 2
2.6a	Normal route	FS	N/A	SH	SH	N/A
2.6b	ROZ route	FS	OS	SH	SH	N/A
2.6c	ROZ-ROZ route	OS	N/A	N/A	SH	N/A
2.6d	Normal route (acknowledgment of SH after passing the start of the SH area)	FS	N/A	N/A	SH	N/A
2.6e	Normal route	FS	N/A	N/A	FS	SH
2.6f	ROZ route	FS	OS	N/A	OS	SH

ETCS System Compatibility (ESC)

Scenario	Description	Passes infill in	OS ackn	SH ackn 1	Passes 102 in	SH ackn 2
2.6g	ROZ route (acknowledgment of SH after passing the start of the SH area)	FS	OS	N/A	OS	SH
2.6h	ROZ route (no acknowledgment of OS)	FS	OS	N/A	SH	N/A

Table 5.2-15 Mode after scenario steps

For each scenario the following steps must be performed.

Step	Action / check
Pre	Level is Level 1
	Mode is mode FS
	Route is set according to Table 5.2-14
1a	Only scenarios 2.6b, 2.6f and 2.6g: When passing start of OS ackn in rear of signal 102,
	verify that:
	a. Start of OS ackn can be reached with 40 km/h or a reasonable speed
	 DMI shows an OS acknowledgement request
	c. DMI shows braking curve at signal 102 with no release speed
	d. When driver acknowledge OS acknowledgement request, DMI shows MA extension ⁷ in
	advance of signal 102
1b	Only scenario 2.6h: When passing start of OS ackn in rear of signal 102, verify that:
	a. Start of OS ackn can be reached with 40 km/h or a reasonable speed
	 DMI shows an OS acknowledgement request
	c. DMI shows braking curve at signal 102 with no release speed
	d. Driver does not acknowledge OS acknowledgement request
2a	Only scenarios 2.6a, 2.6b and 2.6d: When passing start of SH ackn 1 in rear of signal 102,
	verify that:
	a. Start of <i>SH ackn 1</i> can be reached with 40 km/h or a reasonable speed
	b. DMI shows an SH acknowledgement request
	c. No brakes are applied
2b	Only scenario 2.6h: When passing start of <i>SH ackn 1</i> in rear of signal 102, verify that:
	a. DMI remains to show an OS acknowledgement request
	b. Divil snows braking curve at signal 102 with no release speed
	c. When driver acknowledge OS acknowledgement request, DMI shows MA extension'
	in advance of signal 102
3	Only scenario 2.6h: Verify that:
	a. DMI shows an SH acknowledgement request
	b. No brakes are applied
4	Only scenarios 2.6a, 2.6b and 2.6h: Before passing signal 102, Verify that:
	a. When driver acknowledges SH acknowledgement request, Divil shows mode change
5-	to mode SH
58	Only scenarios 2.00 and 2.00. when passing signal 102, verify that:
	a. Divit shows mode change to mode ST
	 Driver acknowledges SH acknowledgement request within 5 seconds after mode
	change
5b	Only scenarios 2.6e, 2.6f and 2.6g; When passing signal 102, verify that:
30	a DMI shows mode according to Table 5.2-15
	a. Divit shows mode according to Table 5.2-15

ETCS System Compatibility (ESC)

Step	Action / check
6	Only scenarios 2.6e, 2.6f and 2.6g: When passing start of <i>SH ackn</i> 2-window, verify that: a. Start of <i>SH ackn</i> 2 can be reached with 40 km/h or a reasonable speed
	b. DMI shows an SH acknowledgement request
7a	Only scenarios 2.6e and 2.6f: Before passing balise BGS, verify that
	a. When driver acknowledges SH acknowledgement request, DMI shows mode change
	to mode SH
7b	Only scenario 2.6g: When passing balise BGS, verify that
	a. DMI shows mode change to mode SH
	 DMI shows an SH acknowledgement request
	c. Driver acknowledges SH acknowledgement request within 5 seconds after mode
	change
Table 5	.2-16 Scenario steps

5.2.7 Signal passed at danger

Use scenario in 5.11.5 Signal passed at danger. Cross acceptance with other ESC types is not possible.

ProRail

5.3 ERTMS track Kijfhoek – BetuweRoute

5.3.1 Transition Level 1 -> Level 2: Late connection

This operational scenario is a special scenario of the transition from Level 1 to Level 2.



Figure 5.3-1 Transition Level 1 -> Level 2

Description	2318	3990	3998
FS-FS Late connection	NORM ¹¹	NORM	NORM
Table F.O. A. Davida a stilling			

Table 5.3-1 Route setting

This scenario tests the behaviour when a train makes the transition when the connection with the RBC is not set up and at a later moment when the train is in the Level 2 area the connection is established. This scenario has a route setting according Table 5.3-1 and has to follow the steps as defined in Table 5.3-2.

The following steps must be performed.

Step	Action / check
Pre	Level is Level 1
	Mode is mode SR or FS
	Train is in rear of infill2
	Modem is registered on applicable radio network
	Modem has no connection with RBC
1	Route signal 3990 in set according to Table 5.3-1
2	When passing BG infill2, verify that:
	a. DMI Shows mode remains in mode SR or FS
3	When passing signal 3990, verify that:
	a. DMI shows mode change to/remaining mode FS
4	When passing BGE, verify that:
	a. DMI shows level change to Level 2
5	After passing signal 3990 and before communication session is established, route signal
	3998 in set according to Table 5.3-1
6	When the communication is established, verify that:
	a. DMI shows MA extension ¹² in advance of signal 3998
Table F	

Table 5.3-2 Scenario steps

¹¹ Signal 2318 can also be set to ROZ instead of NORM. In step Pre and step 2 the mode is then SR or OS.

¹² Due to trackside design, the MA extension can include an OS mode profile.

5.4 ERTMS track BetuweRoute – Zevenaar Oost

5.4.1 Confidence run over complete track

This operational scenario is a normal run over the ERTMS track of multiple ESC types in both directions. The dispatcher sets all routes with normal aspects (NORM). If the scenario to run in OS is executed during the confidence run, the dispatcher sets the routes required for this scenario with on sight aspects (ROZ). The driver shall react on DMI or trackside signals according to normal operations. The driving speed is the maximum allowed speed. There are no special actions required from both dispatcher and driver. The routes are described in Table 5.4-1. The start and end locations are described in Table 5.4-2. For sleeping engines Table 5.4-12 is applicable during the complete operational scenario.

ld	Route	Route setting
1	Kijfhoek (Kfh) –	NORM: Kfh -> ZAn -> ZB1
	Papendrecht (Brppd)	
2	Papendrecht (Brppd) –	NORM: ZB1 -> ZCn -> ZDn -> 523 -> ZEn -> ZFn ->
	Zevenaar-Oost (Zvo)	ZGn -> ZJn -> ZLn -> 813
3	Zevenaar-Oost (Zvo) –	NORM: 813 -> 822 -> FZ -> Emm
	Emmerich (Emm)	
4	Emmerich (Emm) –	NORM: Emm -> EZ -> 821 -> 815
	Zevenaar-Oost (Zvo)	
5	Zevenaar-Oost (Zvo) –	NORM: 815 -> KLn -> KJn -> -> 564 -> 731-733
	Valburg CUP (Brcup)	
6	Valburg CUP (Brcup) –	NORM: 731-733 -> KGn -> KFn ->KEn -> 521 ->
	Papendrecht (Brppd)	KDn -> KCn -> KB1
7	Papendrecht (Brppd) –	NORM: KB1 -> KA -> IA
	Kijfhoek (Kfh)	
8	Zevenaar-Oost (Zvo) –	NORM: 815 -> 809 -> 902 -> Ah
	Arnhem (Ah) –	
9	Arnhem (Ah) –	NORM: Ah -> 904 -> 810 -> 814
	Zevenaar-Oost (Zvo)	

Table 5.4-1 Route settings

ld	Location	Start location	End location
1	Kijfhoek (Kfh) – Papendrecht (Brppd)	Kfh (not specific)	ZB1
2	Papendrecht (Brppd) – Zevenaar- Oost (Zvo)	ZB1	813
3	Zevenaar-Oost (Zvo) – Emmerich (Emm)	813	Emm (not specific)
4	Emmerich (Emm) – Zevenaar- Oost (Zvo)	Emm (not specific)	815
5	Zevenaar-Oost (Zvo) – Valburg CUP (Brcup)	815	731-733
6	Valburg CUP (Brcup) – Papendrecht (Brppd)	731-733	KB1
7	Papendrecht (Brppd) – Kijfhoek (Kfh)	KB1	IA
8	Zevenaar-Oost (Zvo) – Arnhem (Ah) –	815	Ah (not specific)

ETCS System Compatibility (ESC)

ld	Location	Start location	End location	
9	Arnhem (Ah) – Zevenaar-Oost	Ah (not specific)	814	
	(Zvo)			

Table 5.4-2 Start and end locations

During the execution of the route, the following steps must be performed.

Step	Action / check
Pre	Level is Level 1
	Mode in SB
	 Route is set from start location 1 to end location 1
1	When driver perform Start of Mission procedure, verify that:
	a. DMI shows level remaining Level 1
	 DMI shows mode change to mode SR
2	When passing first signal, verify that:
	a. DMI shows level remaining Level 1
	 DMI shows mode change to mode FS
	c. No brakes are applied
3	Train is running towards transition signal. When receiving the level transition
	announcement, verify that:
	a. DMI shows level transition announcement
	b. DMI shows connection is established with the RBC
4	When passing transition signal, verify that:
	a. DMI shows level change to Level 2
	 DMI shows mode remaining mode FS
	c. No brakes are applied
5	When receiving track conditions at voltage change over, verify that
	a. DMI shows track condition information (announcement, start and end) at the
	defined locations
	b. If applicable the train systems show correct behaviour at the defined
	locations
6	When train is at end location 1, driver continues next scenario

Table 5.4-3 Scenario steps 1

Step	Ac	tion / check
Pre	٠	Level is Level 2
	•	Mode in FS
	•	Route is set from start location 2 to end location 2
1	Wł	nen passing signal, verify that:
	a.	DMI shows level remaining Level 2
	b.	DMI shows mode remaining mode FS
	c.	No brakes are applied
2	Wł	nen receiving track conditions at phase lock, verify that:
	a.	DMI shows track condition information (announcement, start and end) at the
		defined locations
	b.	If applicable the train systems show correct behaviour at the defined
		locations

ETCS System Compatibility (ESC)

Step	Ac	tion / check
3	When receiving RBC transition order, verify that:	
	a.	DMI shows connection is established with (handing over ¹³) RBC
	b.	When train front end passes RBC transition location, DMI shows connection
		is established with (accepting) RBC
	c.	No brakes are applied
4	W	nen train is at end location 2, driver continues next scenario

Table 5.4-4 Scenario steps 2

Step	Action / check			
Pre	Level is Level 2			
	Mode in FS			
	Route is set from start location 3 to end location 3			
1	When receiving level transition order to Level NTC-PZB and Level 0, verify that:			
	a. DMI shows level transition announcement to Level NTC-PZB			
2	When the train front end passes the start of the level transition			
	acknowledgement, verify that:			
	a. DMI show level acknowledgement request			
	b. Driver acknowledges level transition within 5 seconds after passing			
	transition location			
3	When passing the level transition location, verify that:			
	a. DMI show level change to Level NTC-PZB			
	b. DMI shows mode change to mode SN			
4	When train is stopped at end location 3, driver closes desk			

Table 5.4-5 Scenario steps 3

Step	Action / check							
Pre	Train direction is changed							
	Level is Level NTC-PZB							
	Mode in SN							
	Route is set from start location 4 to end location 4							
1	Train is running towards transition signal. When receiving the level transition							
	announcement, verify that:							
	a. DMI shows level transition announcement							
	 DMI shows connection is established with the RBC 							
2	When train front end passes start of level acknowledgement window (only for							
	onboards not implementing CR1166), verify that:							
	a. DMI shows level acknowledgement request							
	b. Driver acknowledges level transition within 5 seconds after passing							
	transition location							
3	When passing transition signal, verify that:							
	a. DMI shows level change to Level 2							
	 DMI shows mode change to mode FS 							
	c. No brakes are applied							
	d. DMI shows no braking (pre)-indication							
4	When train is at end location 4, driver continues next scenario							

Table 5.4-6 Scenario steps 4

¹³ DMI shows only one connection without information to which RBC the connection is established. Some B2 DMI could show 2 connections.

Step	Action / check		
Pre	Level is Level 2		
	Mode in FS		
	Route is set from start location 5 to end location 5		
1	When passing signals, verify that:		
	a. DMI shows level remaining Level 2		
	 DMI shows mode remaining mode FS 		
	c. No brakes are applied		
2	When approaching end of route, verify that		
	a. DMI shows braking curve to EoA		
3	When train is stopped at end location 5, verify that		
	a. DMI shows only Level 2 enabled in the ERTMS/ETCS level window		
4	Driver closes desk		

Table 5.4-7 Scenario steps 5

Step	Ac	tion / check
Pre	٠	Level is Level 2
	٠	Mode in SB
	٠	Route is set from start location 6 to end location 6
1	Wł	nen driver perform Start of Mission procedure, verify that:
	a.	DMI shows level remaining Level 2
	b.	DMI shows mode change to mode OS
	C.	DMI shows OS acknowledgement request
	d.	Driver acknowledges OS acknowledgement request
2	Wł	nen passing first signal, verify that:
	a.	DMI shows level remaining Level 2
	b.	DMI shows mode change to mode FS
	C.	No brakes are applied
3	When passing signals, verify that:	
	a.	DMI shows level remaining Level 2
	b.	DMI shows mode remaining mode FS
	C.	No brakes are applied
4	When receiving track conditions at phase lock, verify that	
	a.	DMI shows track condition information (announcement, start and end) at the
		defined locations
	b.	If applicable the train systems show correct behaviour at the defined
		locations
5	When receiving RBC transition order, verify that:	
	a.	DMI shows connection is established with (handing over ¹³) RBC
	b.	When train front end passes RBC transition location, DMI shows connection
		is established with (accepting) RBC
	C.	No brakes are applied
6	Wł	nen train is at end location 6, driver continues next scenario

Table 5.4-8 Scenario steps 6

ETCS System Compatibility (ESC)

Step	Action / check			
Pre	٠	Level is Level 2		
	•	Mode in FS		
	٠	Route is set from start location 7 to end location 7		
1	Wł	nen receiving track conditions at voltage change over, verify that		
	a.	DMI shows track condition information (announcement, start and end) at the		
		defined locations		
	b.	If applicable the train systems show correct behaviour at the defined		
		locations		
2	Wł	nen receiving level transition order to Level 1, verify that:		
	a.	DMI shows level transition announcement to Level 1		
3	Wł	nen passing the level transition location, verify that:		
	a.	DMI show level change to Level 1		
	b.	DMI shows mode remaining mode FS		
	C.	No brakes are applied		
4	Wł	nen train is stopped at end location 7, driver closes desk		

Table 5.4-9 Scenario steps 7

Step	Action / check		
Pre	Level is Level 2		
	Mode in SB		
	 Route is set from start location 8 to end location 8 		
1	When driver perform Start of Mission procedure, verify that:		
	a. DMI shows level remaining Level 2		
	 DMI shows mode change to mode OS 		
	 DMI shows OS acknowledgement request 		
	 Driver acknowledges OS acknowledgement request 		
2	When passing first signal, verify that:		
	a. DMI shows level remaining Level 2		
	 DMI shows mode change to mode FS 		
	c. No brakes are applied		
3	When receiving track conditions at voltage change over, verify that		
	a. DMI shows track condition information (announcement, start and end) at the		
	defined locations		
	b. If applicable the train systems show correct behaviour at the defined		
	locations		
4	When receiving level transition order to Level NTC-ATB, verify that:		
	DMI shows level transition announcement to Level NTC-ATB		
5	When passing the level transition location, verify that:		
	a. DMI show level change to Level NTC-ATB		
	 DMI shows mode change to mode SN 		
	c. No brakes are applied		
6	When train is at end location 4, driver closes desk		

Table 5.4-10 Scenario steps 8

Step	Ac	tion / check
Pre	٠	Level is Level NTC-ATB
	•	Mode in SN
	•	Route is set from start location 9 to end location 9

ETCS System Compatibility (ESC)

Step	Action / check						
1	Train is running towards transition signal. When receiving the level transition	١					
	announcement, verify that:						
	a. DMI shows level transition announcement						
	 DMI shows connection is established with the RBC 						
2	When train front end passes start of level acknowledgement window (only for	or					
	onboards not implementing CR1166), verify that:						
	 DMI shows level acknowledgement request 						
	b. Driver acknowledges level transition within 5 seconds after passing						
	transition location						
3	When passing transition signal, verify that:						
	a. DMI shows level change to Level 2						
	 DMI shows mode change to mode FS 						
	c. No brakes are applied						
	 DMI shows no braking (pre)-indication 						
4	When receiving track conditions at voltage change over, verify that						
	a. DMI shows track condition information (announcement, start and end) a	t the					
	defined locations						
	b. If applicable the train systems show correct behaviour at the defined						
	locations						
5	When train is at end location 1, driver continues next scenario						
Toblo 5	1 11 Secondria stand 0						

Table 5.4-11 Scenario Steps 9

Step	Action / check		
1	When sleeping is requested, verify that:		
	a. Sleeping cab in mode SL: no information shall be shown		
T. I.I. C			

Table 5.4-12 Scenario steps sleeping engine

5.4.2 Exit when failure STM-ATB

Use scenario in 5.11.1 Exit when failure STM-ATB. Cross acceptance with other ESC types is not possible.

5.4.3 **Running in OS**

Use scenario in 5.11.2 Entering OS. Cross acceptance with other ESC types is not possible. It is allowed to execute this scenario during the confidence run (5.4.1 Confidence run over complete track) at a location that does not interfere with the steps that have to be performed for the confidence run.

5.4.4 Entrance specialties from ATB to ERTMS

This operational scenario contains special entrance scenarios. Figure 5.4-1 shows the situations of the entrances as used. The train starts in rear of signal 102 or at least before passing the first balise group. The dispatcher sets all routes according to Table 5.4-13. Note that signal 106 could be a virtual signal¹⁴ on some tracksides. After the route is set, the train runs the route following the signals and DMI information. The route setting ends at signal 204.

¹⁴ Signal is not controlled by traffic control center and not placed at the track.



Figure 5.4-1 Entrance situations

Scenario	Description	102	104	106	202
4.4a	NORM-ROZ	NORM	NORM	ROZ	ROZ
4.4b	STS-NORM	NORM	NORM	NORM ¹⁵	NORM
4.4c	Radio failure / Section timer expiration	NORM	NORM	NORM	NORM

Table 5.4-13 Route settings

Scenario	Description	102	104	106	202
4.4a	NORM-ROZ	SN/ATB	SN/ATB	OS	OS
4.4b	STS-NORM	SN/ATB	SN/ATB	TR	FS
4.4c	Radio Failure/ Section timer expiration	SN/ATB	SN/ATB	TR	-

Table 5.4-14 Mode after passing signal

Scenario 4.4a is only required for Zevenaar entrance (starting at track 902, 903 or 904).

Scenario 4.4c is a special scenario for BetuweRoute tracks about radio failure before entering inside the Level 2 area leading to the expiration of section timer and the train trip at the border. In this scenario the entry routes are set, but the train does not immediately enter inside the Level 2 area. The radio connection is lost after the reception of the entrance MA message, then the section timer part of the MA message expires, and the MA is shortened onboard at the border leading to a train trip when crossing signal 106. The radio connection is not restored. When performing this scenario, step 4c must be performed such that the train passes signal 106 with ample distance (roughly > 25 m, to pass the adapted EoA, after elapsing the section timer, with the min safe front end).

For each scenario the following steps must be performed.

Step	Action / check
Pre	Level is Level NTC-ATB
	Mode is SN
	Route is set according to Table 5.4-13.

¹⁵ The route has to be set with NORM, however in a later step this signal will change to STOP when the dispatcher revokes the route.

ETCS System Compatibility (ESC)

Step	Action / check			
1	When receiving the level transition announcement, verify that:			
	a. DMI shows level transition announcement			
	 DMI shows connection is established with the RBC 			
2	When train front end passes start of level acknowledgement window (only for onboards not			
	implementing CR1166), verify that:			
	a. DMI shows level acknowledgement request			
	b. Driver acknowledges level transition within 5 seconds after passing transition location			
3a	Only scenario 4.4b: Train stops in rear of signal 106, after that the dispatcher revokes the			
	route in advance of signal 106.			
3b	Only scenario 4.4c: Train stops before signal 106 and radio connection fails. When connection			
	to the RBC is lost, verify that:			
	a. DMI shows connection lost with the RBC			
4a	When passing signal 106 (only scenario 4.4a), verify that:			
	a. DMI shows level change to Level 2			
	 DMI shows mode according to Table 5.4-14 			
	c. DMI shows no ATB information			
4b	Only scenario 4.4b: When passing signal 106, verify that:			
	a. DMI shows level change to Level 2			
	 DMI shows mode change to mode TR⁵ 			
	c. When driver acknowledges Train trip, DMI shows mode change to mode PT			
4c	Only scenario 4.4c: Wait more than 130 seconds at standstill to expire section timer. When			
	passing signal 106 after the section timer expired, verify that:			
	a. DMI shows level change to Level 2			
	b. DMI shows mode change to mode TR ¹⁶			
	c. When driver acknowledges Train trip, DMI shows mode change to mode PT			
5a	Only scenario 4.4a: Verify that:			
	a. DMI shows an OS acknowledgement request			
	b. DMI shows MA ending at signal 202			
5b	Only scenario 4.4b: When driver request start, verify that:			
	a. DMI shows mode change to mode SR/OS/FS ¹⁷			
	b. DMI shows speed restriction of 20 km/h ending 200m in advance of signal 106 (only at			
	location Zevenaar)			
6	Only scenario 4.4a: Before passing signal 202, verify that:			
	a. DMI shows no OS acknowledgement request			
7	When passing signal 202 (not scenario 4.4c), verify that:			
	a. DMI shows Level is Level 2			
	b. DMI shows mode according to Table 5.4-14			
	c. DMI shows movement authority ending at or in advance of signal 204			
8	When receiving National Values for braking curves, verify that:			
	a. DMI does not show any related indication			
	b. No brakes are applied			

Table 5.4-15 Scenario steps

¹⁶ Depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to TR.

¹⁷ Depending on the stop location: first mode change to mode SR and before next signal mode change to mode OS, or directly mode change to mode OS or FS.

ProRail

ETCS System Compatibility (ESC)

5.4.5 Exit specialties to ATB

This operational scenario contains special exit scenarios.



Figure 5.4-2 Exit situations

Figure 5.4-2 shows the situations of the exits as used. The train starts in rear of signal 204. The dispatcher sets all routes according to Table 5.4-16. After the route is set, the train runs the route following the signals and DMI information.

Scenario	Description	204	202	106	104
4.5a	NORM-ROZ	NORM	NORM	ROZ	NORM
4.5b	ROZ-NORM	NORM	ROZ	NORM	NORM
4.5c	ROZ-ROZ	NORM	ROZ	ROZ	NORM
4.5d ⁶	STS-NORM	NORM	NORM	STOP	NORM

Table 5.4-16 Route settings

Scenario	Description	204	202	106	104
4.5a	NORM-ROZ	FS	FS	SN/ATB	SN/ATB
4.5b	ROZ-NORM	FS	OS	SN/ATB	SN/ATB
4.5c	ROZ-ROZ	FS	OS	SN/ATB	SN/ATB
4.5d ⁶	STS-NORM	FS	FS	SN/ATB	SN/ATB

Table 5.4-17 Mode after passing signal

For each scenario the following steps must be performed.

Step	Action / check		
Pre	Level is Level 2		
	Mode is according to Table 5.4-17		
	Route is set according to Table 5.4-16.		
1	When passing signal 204, verify that:		
	a. DMI shows mode according to Table 5.4-17.		
2	Only scenario 4.5b and 4.5c: Before passing signal 202, verify that:		
	a. DMI shows braking curve ending at signal 202 with no release speed		
	 DMI shows an OS acknowledgement request 		
	c. when driver acknowledge OS acknowledgement, DMI shows MA extension ⁷ to signal 106		

ETCS System Compatibility (ESC)

Step	Action / check		
3	When passing signal 202, verify that:		
	a. DMI shows mode according to Table 5.4-17		
4	Before passing signal 106 (not scenario 4.5d), verify that:		
	a. DMI shows announcement level transition to Level NTC-ATB ⁸		
5	When train front end passes start of level acknowledgement window (not scenario 4.5d), verify		
	that:		
	a. DMI shows level acknowledgement request		
	b. driver acknowledges level transition within 5 seconds after passing transition location		
6	Only scenario 4.5a: Before passing signal 106, verify that:		
	 DMI shows braking curve ending at signal 106 with no release speed 		
	 DMI shows an OS acknowledgement request 		
	c. When driver acknowledge OS acknowledgement, DMI shows MA extension ⁷ to signal 104		
7a	When passing signal 106 ¹⁸ (not scenario 4.5d), verify that:		
	a. DMI shows level change to Level NTC-ATB		
	b. DMI shows mode change to mode SN¹⁹		
	c. DMI shows Level NTC-ATB		
7b	Only scenario 4.5d: When passing signal 106 ¹⁸ , verify that:		
	a. DMI shows mode change to mode TR		
	b. brakes are applied		
	c. DMI shows level change to Level NTC-ATB		
	d. driver acknowledges level transition		
	e. when driver acknowledge the Trip, DMI shows mode change to mode SN		
8	After passing signal 106, verify that:		
	a. DMI shows termination of the RBC connection ³⁷		

Table 5.4-18 Scenario steps

5.4.6 Movement revocation

Use scenario in 5.11.3 Movement revocation. Cross acceptance with other ESC types is not possible.

5.4.7 **Override (STS passage)**

Use scenario in 5.11.4 Override (STS passage). Cross acceptance with other ESC types is not possible.

5.4.8 Signal passed at danger

Use scenario in 5.11.5 Signal passed at danger. Cross acceptance with other ESC types is not possible.

5.4.9 **Change direction**

Use scenario in 5.11.6 Change direction. Cross acceptance with other ESC types is not possible.

5.4.10 RBC Handover with one active modem

This scenario verifies the behaviour of the onboard in the event of an RBC Handover with only one active modem. For onboards equipped with multiple modems, for this scenario the system must be configured such that only one modem is active.

¹⁸ Due to trackside engineering the transition location can be at or some distance beyond the signal. ¹⁹ For scenario 4.5b depending on the level transition location and the train confidence interval the DMI could show mode change to mode FS before mode change to mode SN.

While the onboard is still connected to the handing over RBC, there are no possibilities to contact the accepting RBC. Once the session with the handing over RBC is terminated, the onboard shall connect with the accepting RBC. The time interval between the termination of the session with the handing over RBC and the successful session establishment of the accepting RBC is a good performance indication. This connection attempt must be successful within T_NVCONTACT.

The following steps must be performed.

Step	Action / check		
Pre	Level is Level 2		
	Train is connected with handing over RBC		
	Train length is the maximum allowed train length		
	 Routes are set from handing over RBC into accepting RBC with NORM 		
1	Train is running ²⁰ from handing over RBC to accepting RBC		
2	When the onboard receives an RBC Transition order announcement, verify that:		
	a. DMI shows connection is established with (handing over ¹³) RBC		
3	When the train front end passes the RBC-RBC border, verify that:		
	a. DMI shows connection is established with (handing over) RBC		
4	When the train rear end passes the RBC-RBC border, verify that:		
	a. DMI shows connection termination with (handing over) RBC		
5	When connection with (handing over) RBC is terminated, verify that:		
	a. DMI shows connection is established with (accepting) RBC within T_NVCONTACT		
	 No brakes are applied due M_NVCONTACT reaction 		

Table 5.4-19: Scenario Steps

 $^{^{20}}$ During the handover the minimum speed of the train shall be 40 km/h to avoid a movement revocation due to time out of the RBC handover.

ProRail

5.5 ERTMS Track Zevenaar Oost – border Germany

5.5.1 Exit when failure STM-PZB

This operational scenario is a normal run when the STM-PZB is in failure and not isolated, or not installed at the German-Dutch border at Zevenaar-Oost. Due to the failure or absence of the STM the driver is not able to make a dynamic transition from ERTMS to PZB. Based on German engineering rules the trackside gives a speed restriction and text message to the driver when the transition to Level 0 is made. For the outcome of the test the applicant is advised to consult the German infrastructure manager and German national safety authority.

The following steps must be performed.

Step	Action / check
Pre	STM-PZB is in failure and not isolated, or not installed
	Level is the applicable level valid for the ERTMS trackside
	 Routes are set passing the exit of the ERTMS area with NORM
1	Train is running towards exit of ERTMS area. Verify that:
	a. DMI shows mode FS
	b. DMI shows a message indicating the unavailability of the STM-PZB ⁴ (only if installed)
2a	Only if STM-PZB is not installed: When receiving level transition order to Level NTC-PZB
	and Level 0, verify that
	a. DMI shows level transition announcement to Level 0
2b	Only if STM-PZB is in failure and not isolated: When receiving level transition order to Level
	NTC-PZB and Level 0, verify that
	a. DMI shows level transition announcement to Level NTC-PZB
3a	Only if STM-PZB is not installed: When passing the level transition location, verify that:
	a. DMI shows level change to Level 0
	b. DMI shows mode change to mode UN
3b	Only if STM-PZB is in failure and not isolated: When passing the level transition location,
	verify that:
	a. DMI shows level change to Level NTC-PZB
	b. After driver stops and selects Level 0, DMI shows level change to level 0 and mode
	change to UN
4	When passing the redundant level transition balise group, verify that:
	a. DMI shows a message about failure PZB
	b. Speed restriction of 20 km/h is applicable in rear of German main signal
Table 5	5.5-1 Scenario steps

5.6 ERTMS track Hanzelijn

When performing the operational scenarios on the ERTMS track Hanzelijn, the RBC could send one of the following text messages to the train:

- "Wacht": in case the driver selects start and the train has a valid position, but there is no MA available. During ESC testing, this could easily happen.
- "Omschakelen ATB": in case the driver selects start and the train has an unknown/invalid position. During ESC testing, this should normally not occur.

Although "Wacht" is not mentioned in the scenarios, it should not be remarked when the RBC sends this text message. For the text message "Omschakelen ATB", the corresponding scenario should be marked as NOK.

5.6.1 Confidence run over complete track

This operational scenario is a normal run over the ERTMS track of multiple ESC types in both directions. The dispatcher sets all routes with normal aspects (NORM). If the scenario to run in OS is executed during the confidence run, the dispatcher sets the routes required for this scenario with on sight aspects (ROZ). The driver shall react on DMI or trackside signals according to normal operations. The driving speed is the maximum allowed speed. There are no special actions required from both dispatcher and driver. The routes are described in Table 5.6-1. The start and end locations are described in Table 5.6-2.

ld	Route	Route setting
1	Zwolle (Zl) – Hattemerbroek aansluiting (Hba)	NORM: ZI -> GG16
2	Hattemerbroek aansluiting (Hba) – Swifterbant (Stb)	NORM: GG16 -> 2201/2202
3	Swifterbant (Stb) – Lelystad (Lls)	NORM: 2201/2202 -> Lls
4	Lelystad (Lls) – Swifterbant (Stb)	NORM: Lls -> 2203/2204
5	Swifterbant (Stb)– Dronten (Dron)	NORM: 2203/2204 -> 2504
6	Dronten (Dron) – Hattemerbroek aansluiting (Hba)	NORM: 2504 -> GT15
7	Hattemerbroek aansluiting (Hba) – Zwolle (ZI)	NORM: GT15 -> ZI

Table 5.6-1 Route settings

ld	Location	Start location	End location
1	Zwolle (ZI) – Hattemerbroek aansluiting (Hba)	ZI (not specific)	GG16
2	Hattemerbroek aansluiting (Hba) – Swifterbant (Stb)	GG16	2201/2202
3	Swifterbant (Stb) – Lelystad (Lls)	2201/2202	Lls (not specific)
4	Lelystad (Lls) – Swifterbant (Stb)	Lls (not specific)	2203/2204
5	Swifterbant (Stb)- Dronten (Dron)	2203/2204	2504
6	Dronten (Dron) – Hattemerbroek aansluiting (Hba)	2504	GT15
7	Hattemerbroek aansluiting (Hba) – Zwolle (ZI)	GT15	ZI (not specific)

Table 5.6-2 Start and end locations

During the execution of the route, the following steps must be performed.

Step	Ac	tion / check	
Pre	Level is Level NTC-ATB		
	٠	Mode in SN	
	٠	Route is set from start location 1 to end location 1	
1	Tra	ain is running towards transition signal. When receiving the level transition	
	an	nouncement, verify that:	
	a.	DMI shows level transition announcement	
	b.	DMI shows connection is established with the RBC	
2	When train front end passes start of level acknowledgement window (only for		
	on	boards not implementing CR1166), verify that:	
	a.	DMI shows level acknowledgement request	
	b.	Driver acknowledges level transition within 5 seconds after passing	
		transition location	
3	Wł	nen passing transition signal, verify that:	
	a.	DMI shows level change to Level 2	
	b.	DMI shows mode change to mode FS	
	C.	No brakes are applied	
	d.	DMI shows no braking (pre)-indication	
5	Wł	nen train is at end location 1, driver continues next scenario	

Table 5.6-3 Scenario steps 1

Step	Ac	tion / check	
Pre	Level is Level 2		
	٠	Mode in FS	
	•	Route is set from start location 2 to end location 2	
1	W	nen passing signals, verify that:	
	a.	DMI shows level remaining Level 2	
	b.	DMI shows mode remaining mode FS	
	C.	No brakes are applied	
2	When receiving track conditions non stopping area, verify that:		
	a.	DMI shows track condition information (announcement, start and end) at the	
		defined locations	
3	W	nen receiving track conditions air tightness, verify that:	
	a.	If applicable DMI shows track condition information (announcement, start	
		and end) at the defined locations	
	b.	If applicable the train systems show correct behaviour at the defined	
		locations	
4	W	nen train is at end location 2, driver continues next scenario	
Toble 5	6 1	Sopportio atopo 2	

Table 5.6-4 Scenario steps 2

Step	Action / check			
Pre	Level is Level 2			
	Mode in FS			
	Route is set from start location 3 to end location 3			
1	When receiving level transition order to Level NTC-ATB, verify that:			
	a. DMI shows level transition announcement to Level NTC-ATB			

ETCS System Compatibility (ESC)

Step	Action / check						
2	When the train front end passes the start of the level transition						
	acknowledgement, verify that:						
	a. DMI show level acknowledgement request						
	b. Driver acknowledges level transition within 5 seconds after passing						
	transition location						
3	When passing the level transition location, verify that:						
	a. DMI show level change to Level NTC-ATB						
	b. DMI shows mode change to mode SN						
	c. No brakes are applied						
4	When train is stopped at end location 3, driver closes desk						

Table 5.6-5 Scenario steps 3

Step	Ac	tion / check					
Pre	Train direction is changed						
	Level is Level NTC-ATB						
	٠	Mode in SN					
	٠	Route is set from start location 4 to end location 4					
1	Tra	ain is running towards transition signal. When receiving the level transition					
	an	nouncement (only for onboards not implementing CR1166), verify that:					
	a.	DMI shows level transition announcement					
	b.	DMI shows connection is established with the RBC					
2	When train front end passes start of level acknowledgement window, verify that:						
	a.	DMI shows level acknowledgement request					
	b. Driver acknowledges level transition within 5 seconds after passing						
		transition location					
3	Wł	nen passing transition signal, verify that:					
	a.	DMI shows level change to Level 2					
	b.	DMI shows mode change to mode FS					
	C.	No brakes are applied					
	d.	DMI shows no braking (pre)-indication					
4	Wł	nen train is at end location 4, driver continues next scenario					

Table 5.6-6 Scenario steps 4

Step	Ac	tion / check					
Pre	٠	Level is Level 2					
	٠	Mode in FS					
	٠	Route is set from start location 5 to end location 5					
1	Wł	nen passing signals, verify that:					
	a.	DMI shows level remaining Level 2					
	b.	DMI shows mode remaining mode FS					
	C.	No brakes are applied					
2	When receiving text message about Station, verify that:						
	a.	If passenger train category, DMI shows text message					
	b.	No brakes are applied					
3	When approaching end of route, verify that						
	a.	DMI shows braking curve to EoA					
4	Wł	nen train is stopped at end location 5, verify that					

ETCS System Compatibility (ESC)

	a.	DMI shows only Level 2 and Level NTC-ATB enabled in the ERTMS/ETCS level window
5	Dr	ver closes desk

Table 5.6-7 Scenario steps 5

Step	Action / check					
Pre	٠	Level is Level 2				
	٠	Mode in SB				
	٠	Route is set from start location 6 to end location 6				
1	W	nen driver perform Start of Mission procedure, verify that:				
	a.	DMI shows level remaining Level 2				
	b.	DMI shows mode change to mode OS				
	C.	DMI shows OS acknowledgement request				
	d.	Driver acknowledges OS acknowledgement request				
2	W	nen passing first signal, verify that:				
	a.	DMI shows level remaining Level 2				
	b.	DMI shows mode change to mode FS				
	C.	No brakes are applied				
3	When passing signals, verify that:					
	a.	DMI shows level remaining Level 2				
	b.	DMI shows mode remaining mode FS				
	c. No brakes are applied					
4	W	nen receiving track conditions non stopping area, verify that:				
	a.	DMI shows track condition information (announcement, start and end) at the				
		defined locations				
5	W	nen receiving track conditions air tightness, verify that:				
	a.	If applicable DMI shows track condition information (announcement, start				
		and end) at the defined locations				
	b.	If applicable the train systems show correct behaviour at the defined				
		locations				
6	W	nen train is at end location 6, driver continues next scenario				

Table 5.6-8 Scenario steps 6

Step	Ac	tion / check				
Pre	٠	Level is Level 2				
	٠	Mode in FS				
	•	Route is set from start location 7 to end location 7				
1	Wł	nen receiving level transition order to Level NTC-ATB, verify that:				
	a.	DMI shows level transition announcement to Level NTC-ATB				
2	Wł	When the train front end passes the start of the level transition				
	acl	knowledgement, verify that:				
	a.	DMI show level acknowledgement request				
	b.	Driver acknowledges level transition within 5 seconds after passing				
		transition location				
3	Wł	nen passing the level transition location, verify that:				
	a.	DMI show level change to Level NTC-ATB				
	b.	DMI shows mode change to mode SN				
	C.	No brakes are applied				
4	Wł	nen train is stopped at end location 7, driver closes desk				
Table 5	.6-9	Scenario steps 7				

5.6.2 Exit when failure STM-ATB

Use scenario in 5.11.1 Exit when failure STM-ATB. Cross acceptance with other ESC types is not possible.

5.6.3 Running in OS

Use scenario in 5.11.2 Entering OS. Cross acceptance with other ESC types is not possible. It is allowed to execute this scenario during the confidence run (5.6.1 Confidence run over complete track) at a location that does not interfere with the steps that have to be performed for the confidence run.

5.6.4 Entrance specialties from ATB to ERTMS

This operational scenario contains special entrance scenarios. Figure 5.6-1 shows the situations of the entrance as used. The train starts in rear of signal 102 or at least before passing the first balise group. The dispatcher sets all routes according to Table 5.6-10. After the route is set, the train runs the route following the signals and DMI information. The driver has to operate according to the operation rules applicable for the situation. The route setting ends at signal 204, unless signal 204 is a Permissive-signal and will automatically switch to yellow or green if the track is not occupied.

On Hanzelijn track the entry transition is completely controlled by the RBC and is depending on position reports of the train.



Figure 5.6-1 Entrance situation

Scenario	Description	102	104	106	202
6.4a	NORM-ROZ	NORM	NORM	ROZ	ROZ
6.4b	STS-NORM	NORM	NORM	STOP	NORM
6.4c	Radio failure / Section timer expiration	NORM	NORM	NORM	NORM

Table 5.6-10 Route settings

Scenario	Description	102	104	106	202		
6.4a	NORM-ROZ	SN/ATB	SN/ATB	OS	OS		
6.4b	STS-NORM	SN/ATB	SN/ATB	TR	FS		
6.4c	Radio failure / Section timer expiration	SN/ATB	SN/ATB	TR	-		
Table 5.6.11 Mode after pagaing signal							

Table 5.6-11 Mode after passing signal

Scenario 6.4c is a special scenario for Hanzelijn track about radio failure before entering inside the Level 2 area leading to the expiration of section timer and the train trip at the border. In this scenario the entry route is set, but the train does not enter immediately inside the Level 2 area. The radio connection is lost after the reception of the entrance MA message, then the section timer part of the MA message

expires, and the MA is shortened onboard at the border leading to a train trip when crossing signal 106. The radio connection is not restored.

For each scenario the following	steps must be performed.
---------------------------------	--------------------------

Step	Action / check					
Pre	Level is Level NTC-ATB					
	Mode is SN					
	Route is set according to Table 5.6-10.					
1	When receiving the level transition announcement, verify that:					
	a. DMI shows level transition announcement					
	b. DMI shows connection is established with the RBC					
2	When train front end passes start of level acknowledgement window (only for onboards not					
	implementing CR1166), verify that:					
	a. DMI shows level acknowledgement request					
	b. Driver acknowledges level transition within 5 seconds after passing transition location					
3	Only scenario 6.4c: Train stops before signal 106 and radio connection fails. When connection					
	to the RBC is lost, verify that:					
	a. DMI shows connection lost with the RBC					
4a	When passing signal 106 (not scenario 6.4b and 6.4c), verify that:					
	a. DMI shows level change to Level 2					
	b. DMI shows mode according to Table 5.6-11					
	c. DIVII shows no ATB information					
40	Only scenario 6.4b: When passing signal 106, verify that:					
	a. Divit shows level change to Level 2					
	 Division Shows mode change to mode TR² When driver acknowledges Train trip. DMI shows mode change to mode. PT 					
40	Only scenario 6 4c: Wait more than 30 seconds at standstill to expire section timer. When					
40	passing signal 106 after the section timer expired verify that:					
	a DMI shows level change to Level 2					
	b. DMI shows mode change to mode TR					
	c. When driver acknowledges Train trip, DMI shows mode change to mode PT					
5a	Only scenario 6.4a: Verify that:					
	a. DMI shows an OS acknowledgement request					
	b. Driver acknowledges OS acknowledgement request					
5b	Only scenario 6.4b: When driver request start, verify that:					
	a. DMI shows mode change to mode OS/FS ²¹					
	b. DMI shows speed restriction of 20 km/h ending at signal 202.					
5c	Only scenario 6.4c: When driver selects the Override function, verify that:					
	a. DMI shows mode change to mode SR					
6	Only scenario 6.4a: Before passing signal 202, verify that:					
	a. DMI shows no OS acknowledgement request					
7	When passing signal 202 (not scenario 6.4c), verify that:					
	a. DMI shows level is Level 2					
	b. DMI shows mode according to Table 5.6-11					
	c. DMI shows movement authority ending at or in advance of signal 204					

²¹ When performing this scenario at Hattemerbroek aansluiting (Hba), the DMI will show the text message "Wacht". To continue with the scenario, the dispatcher should set a route with on sight aspect (ROZ) over the train.

ETCS System Compatibility (ESC)

Step	Action / check
8	When receiving National Values for braking curves, verify that:
	a. DMI does not show any related indication
	b. No brakes are applied
Tabla E	6 12 Secondria atoma

Table 5.6-12 Scenario steps

5.6.5 Exit specialties to ATB

This operational scenario contains special exit scenarios.





Figure 5.6-2 Exit situation

Figure 5.6-2 shows the situation of the exit as used. The train starts in rear of signal 204. The dispatcher sets all routes according to Table 5.6-13. After the route is set, the train runs the route following the signals and DMI information.

On the track Hanzelijn, it is possible to set a Temporary Speed Restriction (TSR) from the RBC outside the Level 2 area. The TSR for scenario 6.5e shall be located somewhere in the first signalling block in advance of the transition signal with a permitted speed lower than the static speed profile, e.g. 60 km/h.

Scenario	Description	204	202	106	104
6.5a	NORM-ROZ	NORM	NORM	ROZ	NORM
6.5b	ROZ-NORM	NORM	ROZ	NORM	NORM
6.5c	ROZ-ROZ	NORM	ROZ	ROZ	NORM
6.5d ⁶	STS-NORM	NORM	NORM	STOP	NORM
6.5e	NORM-NORM with TSR	NORM	NORM	NORM	NORM

Table 5.6-13 Route settings

Scenario	Description	204	202	106	104
6.5a	NORM-ROZ	FS	FS	SN/ATB	SN/ATB
6.5b	ROZ-NORM	FS	OS	SN/ATB	SN/ATB
6.5c	ROZ-ROZ	FS	OS	SN/ATB	SN/ATB
6.5d ⁶	STS-NORM	FS	FS	SN/ATB	SN/ATB
6.5e	NORM-NORM with TSR	FS	FS	SN/ATB	SN/ATB

Table 5.6-14 Mode after passing signal

For each scenario the following steps must be performed.

Step	Action / check		
Pre	٠	Level is Level 2	
	٠	Mode is according to Table 5.6-14	
	•	Route is set according Table 5.6-13	

ETCS System Compatibility (ESC)

Step	Action / check
1	When passing signal 204, verify that:
	a. DMI shows mode according to Table 5.6-14
2	Only scenario 6.5b and 6.5c: Before passing signal 202, verify that:
	a. DMI shows braking curve ending at signal 202 with no release speed
	 DMI shows an OS acknowledgement request
	c. When driver acknowledge OS acknowledgement, DMI shows MA extension ⁷ to signal 106
3	When passing signal 202, verify that:
	a. DMI shows mode according to Table 5.6-14
4	Before passing signal 106 (not scenario 6.5d), verify that:
	a. DMI shows announcement level transition to Level NTC-ATB ⁸
5	When train front end passes start of level acknowledgement window (not scenario 6.5d),
	verify that:
	a. DMI shows level acknowledgement request
	b. Driver acknowledges level transition within 5 seconds after passing transition location
6a	Only scenario 6.5e: Before passing signal 106, verify that:
	a. DMI shows the speed restriction which has been set after the border
6b	Only scenario 6.5a: Before passing signal 106, verify that:
	 DMI shows braking curve ending at signal 106 with no release speed
	 DMI shows an OS acknowledgement request
	c. When driver acknowledge OS acknowledgement, DMI shows MA extension ⁷ to signal 104
7a	When passing signal 106 (not scenario 6.5d), verify that:
	a. DMI shows level change to Level NTC-ATB
	 DMI shows mode change to mode SN²²
	c. DMI shows Level NTC-ATB
7b	Only scenario 6.5d: When passing signal 106 ²³ , verify that:
	a. DMI shows mode change to mode TR
	b. Brakes are applied
	c. DMI shows level acknowledgement request
	d. Driver acknowledges level transition
	e. DMI shows level change to Level NTC-ATB
	f. When driver acknowledges the Trip, DMI shows mode change to mode SN
8	After passing signal 106, verify that:
	a. DMI shows termination of the RBC connection ³⁷

Table 5.6-15 Scenario steps

5.6.6 Movement revocation

Use scenario in 5.11.3 Movement revocation. Cross acceptance with other ESC types is not possible.

5.6.7 Override (STS passage)

Use scenario in 5.11.4 Override (STS passage). Cross acceptance with other ESC types is not possible.

²² For scenario 6.5b depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to mode SN.

²³ The signal has to be passed with sufficient speed to comply with the scenario, otherwise the DMI will show the text message "Wacht".

5.6.8 Signal passed at danger

This operational scenario is used when the driver passes an EoA in release speed (> 0 km/h). To comply with step 6, it is necessary to check if the trackside can give a Movement Authority or text message at the stop location of the train. A straight track section without points or other special objects is required.

The following steps must be performed.

Step	Action / check
Pre	Level is the applicable level valid for the ERTMS trackside
_	Mode is FS
	Route is set to next signal
	 Signalling block in advance of next signal does not have movable elements.
1	Train is in running towards and of route. Verify that:
	a DMI shows MA with EoA at next signal
2	Train reduce speed to below the release speed. When approaching and of route, verify that:
2	DMI shows mode ES
	a. Divit shows mode FS b. DMI shows permitted speed reducing to zero
	 DMI shows permitted speed reducing to zero DMI shows allowed release speed
	d. No brakes are applied
2	U. No blaces are applied
3	Milen une train front end passes EoA al end of route, verify that.
	a. Divit shows mode change to mode TR
	b. brakes applied
4	When driver acknowledges train trip, verify that:
	a. DMI shows mode change to mode PT
	b. Brakes can be released
	c. Reverse movement protection is active, i.e. driving in forward direction is not allowed
5	Route is set from signal in advance of train to next signal
6	When driver requests start, verify that:
	a. (Depending on the location) DMI shows mode change to mode OS OR the text message
	"Omschakelen ATB" (for this specific scenario it is OK that the text message could be
	shown).
Table C	

Table 5.6-16 Scenario steps

5.6.9 Change direction

Use scenario in 5.11.6 Change direction. Cross acceptance with other ESC types is not possible.

5.7 ERTMS Track HSL-South

5.7.1 Confidence run over complete track

This operational scenario is a normal run over the ERTMS track of multiple ESC types. The dispatcher sets all routes with normal aspects (NORM). If the scenario to run in OS is executed during the confidence run, the dispatcher sets the routes required for this scenario with on sight aspects (ROZ). The driver shall react on DMI or trackside signals according to normal operations. The driving speed is the maximum allowed speed. There are no special actions required from both dispatcher and driver. When performing this scenario, it could be that the track conditions and level transition orders are received one step Id earlier or later. The routes are described in Table 5.7-1. The start and end locations are described in Table 5.7-2.

The following trackside configuration must be used:

- HSL-South (Northern section) operates in ERTMS Level 1
- HSL-South (Southern section) operates in ERTMS Level 2

ld	Route	Route setting
1	Schiphol (Shl) – Hoofddorp aansluiting (Hfdea)	Shl -> HZ/HY -> 209/201 -> 231 -> MZ
2	Hoofddorp aansluiting (Hfdea) – HSL Hoogmade Overloopwissels (Hshmdo)	MZ -> MY -> MX -> MW ->MV -> MU
3	HSL Hoogmade Overloopwissels (Hshmdo) – Rotterdam Westelijke splitsing (Wspl)	MU -> MT -> MR ->> MC
4	Rotterdam Westelijke splitsing (Wspl) – Rotterdam (Rtd)	MC -> Rtd
5	Rotterdam (Rtd) – Barendrecht overloopwissels (Brda)	Rtd -> HG -> BH -> SA -> SB
6	Barendrecht overloopwissels (Brda) – Zevenbergschen Hoek aansluiting (Zha)	SB -> SJ
7	Zevenbergschen Hoek aansluiting (Zha)	SJ -> SK -> SL -> SM -> XZ1
8	Zevenbergschen Hoek aansluiting (Zha) – Breda (Bd)	XZ1 -> Bd

Table 5.7-1 Route settings

ld	Location	Start location	End location
1	Schiphol (Shl) – Hoofddorp aansluiting (Hfdea)	ShI (not specific)	MZ
2	Hoofddorp aansluiting (Hfdea) – HSL Hoogmade Overloopwissels (Hshmdo)	MZ	MU, in rear of infill balise group SMB2158 at km 136.889
3	HSL Hoogmade Overloopwissels (Hshmdo) – Rotterdam Westelijke splitsing (Wspl)	MU, in rear of infill balise group SMB2158 at km 136.889	MC
4	Rotterdam Westelijke splitsing (Wspl) – Rotterdam (Rtd)	MC	Rtd (not specific)

ETCS System Compatibility (ESC)

ld	Location	Start location	End location
5	Rotterdam (Rtd) – Barendrecht overloopwissels (Brda)	Rtd (not specific)	SB
6	Barendrecht overloopwissels (Brda) – Zevenbergschen Hoek aansluiting (Zha)	SB	SJ, approx. 100m in rear of SMB 2332
7	Zevenbergschen Hoek aansluiting (Zha)	SJ, approx. 100m in rear of SMB 2332	XZ1
8	Zevenbergschen Hoek aansluiting (Zha) – Breda (Bd)	XZ1	Bd (not specific)

Table 5.7-2 Start and end locations

During the execution of the route, the following steps must be performed.

Step	Action / check		
Pre	Level is Level NTC-ATB		
	Mode in SN		
	Route is set from start location 1 to end location 1		
1	When receiving the connection establishment order from the balise group, verify		
	that:		
	a. DMI shows connection is not established with the RBC ²⁴		
2	Train is running towards transition signal. If receiving the level transition		
	announcement, verify that:		
	a. DMI shows level transition announcement ²⁵		
3	When train front end passes start of level acknowledgement window (only for		
	onboards not implementing CR1166), verify that:		
	a. DMI shows level acknowledgement request		
	b. Driver acknowledges level transition within 5 seconds after passing		
	transition location		
4	When passing transition location, verify that:		
	a. DMI shows level change to Level 1		
	 DMI shows mode change to mode FS 		
	c. No brakes are applied		
	d. DMI shows no braking (pre)-indication		
5	When receiving track conditions at voltage change over, verify that:		
	a. DMI shows track condition information (announcement, start and end) at the		
	defined locations		
	b. If applicable the train systems show correct behaviour at the defined		
	locations		
6	When train is at end location 1, driver continues next scenario		

Table 5.7-3 Scenario steps 1

Step	Ac	tion / check
Pre	٠	Level is Level 1
	•	Mode in FS
	•	Route is set from start location 2 to end location 2

²⁴ It could happen that the indication that the connection is not established will not be shown because the "Connection status" timer did not expire.

²⁵ On specific locations, trackside will not send a level transition announcement.

ETCS System Compatibility (ESC)

Step	Action / check		
1	When passing signals, verify that:		
	a. DMI shows level remaining Level 1		
	b. DMI shows mode remains mode FS		
	c. No brakes are applied		
2	When receiving track conditions non stopping area, verify that:		
	a. DMI shows track condition information (announcement, start and end) at the		
	defined locations		
3	When receiving track conditions air tightness, verify that:		
	a. If applicable DMI shows track condition information (announcement, start		
	and end) at the defined locations		
	b. If applicable the train systems show correct behaviour at the defined		
	locations		
4	When approaching end of route, verify that:		
	a. DMI shows braking curve to EoA		
5	When train is at end location 2, driver closes desk		

Table 5.7-4 Scenario steps 2

Step	Ac	tion / check
Pre	٠	Level is Level 1
	٠	Mode in SB
	٠	Route is set from start location 3 to end location 3
1	Wł	nen driver perform Start of Mission procedure, verify that:
	c.	DMI shows level remaining Level 1
	d.	DMI shows mode change to mode SR
2	Wł	nen passing infill balise group, verify that
	a.	DMI shows level remaining Level 1
	b.	DMI shows mode remaining mode SR
3	Wł	nen passing SMB 2158, verify that:
	a.	DMI shows level remaining Level 1
	b.	DMI shows mode change to mode FS
	C.	No brakes are applied
4	When passing signals, verify that:	
	a.	DMI shows level remaining Level 1
	b.	DMI shows mode remaining mode FS
	C.	No brakes are applied
5	When receiving track conditions at voltage change over or phase lock, verify	
	that:	
	a.	DMI shows track condition information (announcement, start and end) at the
		defined locations
	b.	If applicable the train systems show correct behaviour at the defined
		locations
6	Wł	nen train is at end location 3, driver continues next scenario
T. I. I. C		

Table 5.7-5 Scenario steps 3

Step	Ac	tion / check
Pre	٠	Level is Level 1
	٠	Mode in FS
	•	Route is set from start location 4 to end location 4

ETCS System Compatibility (ESC)

Step	Action / check		
1	When receiving level transition order to Level NTC-ATB, verify that:		
	a. DMI shows level transition announcement to Level NTC-ATB		
2	When the train front end passes the start of the level transition		
	acknowledgement, verify that:		
	a. DMI show level acknowledgement request		
	b. Driver acknowledges level transition within 5 seconds after passing		
	transition location		
3	When passing the level transition location, verify that:		
	a. DMI show level change to Level NTC-ATB		
	b. DMI shows mode change to mode SN		
4	When train is stopped at end location 4, driver closes desk		

Table 5.7-6 Scenario steps 4

Step	Action / check		
Pre	Level is Level NTC-ATB		
	Mode in SN		
	Route is set from start location 5 to end location 5		
1	Train is running towards transition signal. If receiving the level transition		
	announcement, verify that:		
	a. DMI shows level transition announcement ²⁵		
	b. DMI shows connection is established with the RBC		
2	When train front end passes start of level acknowledgement window (only for		
	onboards not implementing CR1166), verify that:		
	 DMI shows level acknowledgement request 		
	 Driver acknowledges level transition within 5 seconds after passing 		
	transition location		
3	When passing transition location, verify that:		
	a. DMI shows level change to Level 1		
	 DMI shows mode change to mode FS 		
	c. No brakes are applied		
	d. DMI shows no braking (pre)-indication		
4	When passing SMB 2252, verify that:		
	a. DMI shows level change to Level 2		
	b. DMI shows mode remaining mode FS		
	c. No brakes are applied		
5	When train is at end location 5, driver continues next scenario		

Table 5.7-7 Scenario steps 5

Step	Ac	Action / check	
Pre	٠	Level is Level 2	
	٠	Mode in FS	
	•	Route is set from start location 6 to end location 6	
1	When passing signals, verify that:		
	a.	DMI shows level remaining Level 2	
	b.	DMI shows mode remaining mode FS	
	c.	No brakes are applied	

ETCS System Compatibility (ESC)

Step	Action / check		
2	Wł	nen receiving track conditions at voltage change over, verify that:	
	a.	DMI shows track condition information (announcement, start and end) at the	
		defined locations	
	b.	If applicable the train systems show correct behaviour at the defined	
		locations	
3	When receiving track conditions non stopping area, verify that:		
	a.	DMI shows track condition information (announcement, start and end) at the	
		defined locations	
4	When receiving track conditions air tightness, verify that:		
	a.	If applicable DMI shows track condition information (announcement, start	
		and end) at the defined locations	
	b.	If applicable the train systems show correct behaviour at the defined	
		locations	
5	Wł	nen approaching end of route, verify that:	
	a.	DMI shows braking curve to EoA	
6	Wł	nen train is stopped at end location 6, verify that	
	a.	DMI shows only Level 1 and Level 2 enabled in the ERTMS/ETCS level	
		window	
7	Driver closes desk		
- , , , , , , , , , , , , , , , , , , ,			

Table 5.7-8 Scenario steps 6

Step	Action / check		
Pre	٠	Level is Level 2	
	٠	Mode in SB	
	•	Route is set from start location 7 to end location 7	
1	When driver perform Start of Mission procedure, verify that:		
	a.	DMI shows level remaining Level 2	
	b.	DMI shows mode SR	
2	When approaching signal ²⁶ , verify that:		
	a.	DMI shows level remaining Level 2	
	b.	DMI shows TAF request	
	C.	When driver acknowledges TAF request, DMI shows mode change to mode	
		FS	
	d.	No brakes are applied	
3	When passing signals, verify that:		
	a.	DMI shows level remaining Level 2	
	b.	DMI shows mode remaining mode FS	
	C.	No brakes are applied	
4	When receiving track conditions at phase lock, verify that		
	a.	DMI shows track condition information (announcement, start and end) at the	
		defined locations	
	b.	If applicable the train systems show correct behaviour at the defined	
		locations	

²⁶ When performing SoM closely to a signal/SMB it could happen that a TAF request is displayed immediately. This is normal behaviour and not a non-compliancy.
ETCS System Compatibility (ESC)

Step	Action / check						
5	When receiving track conditions at voltage change over, verify that						
	 DMI shows track condition information (announcement, start and end) at the defined locations 						
	b. If applicable the train systems show correct behaviour at the defined						
-							
6	When approaching end of route, verify that:						
	a. DMI shows braking curve to EoA						
7	When train is at end location 7, driver stops without closing desk						
Table 5	5.7-9 Scenario steps 7						

Step	Action / check						
Pre	Level is Level 2						
	Mode in FS						
	Route is set from start location 8 to end location 8						
1	When receiving level transition order to Level NTC-ATB, verify that:						
	a. DMI shows level transition announcement to Level NTC-ATB						
2	When the train front end passes the start of the level transition						
	acknowledgement, verify that:						
	a. DMI show level acknowledgement request						
	b. Driver acknowledges level transition within 5 seconds after passing						
	transition location						
3	When passing the level transition location, verify that:						
	a. DMI show level change to Level NTC-ATB						
	b. DMI shows mode change to mode SN						
4	When train is stopped at end location 8, driver closes desk						

Table 5.7-10 Scenario steps 8

5.7.2 Exit when failure STM-ATB

Use scenario in 5.11.1 Exit when failure STM-ATB. Cross acceptance with other ESC types is not possible.

The scenario must be performed twice, once with the trackside in Level 1 and once with the trackside in Level 2.

5.7.3 Running in OS

Use scenario in 5.11.2 Entering OS. Cross acceptance with other ESC types is not possible. It is allowed to execute this scenario during the confidence run (5.7.1 Confidence run over complete track) at a location that does not interfere with the steps that have to be performed for the confidence run.

The scenario must be performed twice, once with the trackside in Level 1 and once with the trackside in Level 2.

5.7.4 Entrance specialties from ATB to ERTMS

This operational scenario contains special entrance scenarios. Figure 5.7-1 shows the situation of the entrance. The train starts in rear of signal 102 or at least before passing the first balise group. The dispatcher sets all routes according to Table 5.7-11. After the route is set, the train runs the route following the signals and DMI information. The driver has to operate according to the operation rules applicable for the situation. The route setting ends at signal 204.

ETCS System Compatibility (ESC)



Figure 5.7-1 Entrance situation

Scenario	Description	102	104	106	202
7.4a	NORM-ROZ	NORM	NORM	ROZ	ROZ
7.4b	STS-NORM	NORM	NORM	STOP	NORM

Table 5.7-11 Route settings

Scenario	Description	102	104	106	202	
7.4a	NORM-ROZ	SN/ATB	SN/ATB	OS	OS	
7.4b	STS-NORM	SN/ATB	SN/ATB	SN/ATB	FS	

Table 5.7-12 Mode after passing signal

Each scenario must be performed twice, once with the trackside in Level 1 and once with the trackside in Level 2. Different scenario steps are applicable as described below.

For each scenario the following steps must be performed. HSL-South operates in Level 1

Step	Action / check
Pre	Level is Level NTC-ATB
	Mode is SN
	Route is set according to Table 5.7-11.
1a	Only scenario 7.4a: When passing signal 106, verify that:
	a. DMI shows level transition announcement ²⁵
	b. DMI shows no connection is established with the RBC
1b	Only scenario 7.4b: When passing signal 106, verify that:
	a. DMI shows Level NTC-ATB ²⁷
	b. DMI shows no connection is established with the RBC
2	When train front end passes start of level acknowledgement window (only scenario 7.4a) (only
	for onboards not implementing CR1166), verify that:
	a. DMI shows level acknowledgement request
	b. Driver acknowledges level transition within 5 seconds after passing transition location
3a	Only scenario 7.4a: When passing level transition location, verify that:
	a. DMI shows level change to Level 1
	b. DMI shows mode according to Table 5.7-12
	c. DMI shows no ATB information
3b	Only scenario 7.4b: When passing level transition location, verify that:
	a. DMI shows level remaining to Level NTC-ATB
	b. DMI shows mode according to Table 5.7-12
	c. when driver selects override function and within 30 seconds Level 1, DMI shows level
	change to Level 1 and mode change to SR

²⁷ If ATB-Vv beacons are placed at the signal: a brake invention will be triggered while passing the ATB-Vv beacons.

ETCS System Compatibility (ESC)

Step	Ac	tion / check						
4	On	Only scenario 7.4a: Verify that:						
	a.	DMI shows an OS acknowledgement request						
	b.	Driver acknowledges OS acknowledgement request						
5	Be	fore passing signal 202, verify that:						
	a.	infill information transmitted from the infill balise group (approximately 800m in rear of the						
		signal) is rejected						
	b.	information is only accepted from the balise group at signal 202						
6	On	ly scenario 7.4a: Before passing signal 202, verify that:						
	a.	DMI shows no OS acknowledgement request ²⁸						
7	Wł	nen passing signal 202, verify that:						
	a.	DMI shows level is Level 1						
	b.	DMI shows mode according to Table 5.7-12						
	C.	DMI shows movement authority ending at or in advance of signal 204						
8	Wł	nen receiving National Values for braking curves, verify that:						
	a.	DMI does not show any related indication						
	b.	No brakes are applied						

Table 5.7-13 Scenario steps with HSL-South in Level 1

For each scenario the following steps must be performed. HSL-South operates in Level 2

Step	Action / check
Pre	Level is Level NTC-ATB
	Mode is SN
	Route is set according to Table 5.7-11.
1a	Only scenario 7.4a: When passing signal 106, verify that:
	a. DMI shows level transition announcement ²⁵
	 DMI shows connection is established with the RBC
1b	Only scenario 7.4b: When passing signal 106, verify that:
	a. DMI shows Level NTC-ATB ²⁷
	 DMI shows connection is established with the RBC
2	When train front end passes start of level acknowledgement window (not scenario 7.4d),
	verify that:
	a. DMI shows level acknowledgement request
	b. Driver acknowledges level transition within 5 seconds after passing transition location
3a	Only scenario 7.4a: When passing level transition location, verify that:
	a. DMI shows level change to Level 1
	b. DMI shows mode according to Table 5.7-12
3b	Only scenario 7.4b: When passing level transition location, verify that:
	a. DMI shows level remaining to Level NTC-ATB
	 DMI shows mode according to Table 5.7-12
	c. When driver selects override function and within 30 seconds Level 1, DMI shows level
	change to Level 1 and mode change to SR
4	Only scenario 7.4a: Verify that:
	a. DMI shows an OS acknowledgement request
	 Driver acknowledges OS acknowledgement request

²⁸ For scenario 7.4a depending on the train confidence interval the DMI could shortly show mode change to mode FS before mode changes back to OS. In this case check if DMI shows an OS acknowledgement request.

ETCS System Compatibility (ESC)

Step	Ac	tion / check						
5	Be	Before passing signal 202, verify that:						
	a.	infill information transmitted from the infill balise group (approximately 800m in rear of the						
		signal) is rejected						
	b.	information is only accepted from the balise group at signal 202						
6	Or	ily scenario 7.4a: Before passing signal 202, verify that:						
	a.	DMI shows no OS acknowledgement request ²⁸						
7	W	nen passing signal 202, verify that:						
	a.	DMI shows level is Level 2						
	b.	DMI shows mode according to Table 5.7-12						
	C.	DMI shows movement authority ending at or in advance of signal 204						
8	Or	ly scenario 7.4a: When the train is in rear of signal 204 (less than 100m), verify that:						
	a.	DMI shows TAF request						
	b.	When driver acknowledges TAF request, DMI shows mode OS until MA without Mode						
		Profile was received from the RBC ²⁹						
9	W	nen receiving National Values for braking curves, verify that:						
	a.	DMI does not show any related indication						
	b.	No brakes are applied						

Table 5.7-14 Scenario steps with HSL-South in Level 2

5.7.5 Exit specialties to ATB

This operational scenario contains special exit scenarios.



Figure 5.7-2 Exit situation

Figure 5.7-2 shows the situation of the exit as used. The train starts in rear of signal 204. The dispatcher sets all routes according to Table 5.7-15. After the route is set, the train runs the route following the signals and DMI information.

Scenario	Description	204	202	106	104
7.5a	NORM-ROZ	NORM	NORM	ROZ	NORM
7.5b	ROZ-NORM	NORM	ROZ	NORM	NORM
7.5c	ROZ-ROZ	NORM	ROZ	ROZ	NORM
7.5d ⁶	STS-NORM	NORM	NORM	STOP	NORM

Table 5.7-15 Route settings

Scenario	Description	204	202	106	104
7.5a	NORM-ROZ	FS	FS	SN/ATB	SN/ATB
7.5b	ROZ-NORM	FS	OS	SN/ATB	SN/ATB
7.5c	ROZ-ROZ	FS	OS	SN/ATB	SN/ATB
7.5d ⁶	STS-NORM	FS	FS	SN/ATB	SN/ATB

²⁹ The RBC sends a new MA without Mode Profile if TAF is granted.

Table 5.7-16 Mode after passing signal

Scenarios 7.5a, 7.5b and 7.5c must be performed twice, once with the trackside in Level 1 and once with the trackside in Level 2. Scenario 7.5d must be performed only with the trackside in Level 1.

F or	aaah	aconaria	the	following	otopo	munt	ha	norformod	
гu	each	Scenario	uie	ronowing	steps	musi	be	penonneu	•

Step	Action / check
Pre	Level is Level 1 or Level 2 is according to trackside level
	Mode is according to Table 5.7-16
	Route is set according to Table 5.7-15
1	When passing signal 204, verify that:
	a. DMI shows mode according to Table 5.7-16.
2	Only scenario 7.5b and 7.5c (not for trackside in Level 1): Before passing signal 202, verify
	that:
	a. DMI shows braking curve ending at signal 202 with no release speed
	b. DMI shows an OS acknowledgement request
	c. When driver acknowledge OS acknowledgement, DMI shows MA extension' to signal 106
3	When passing signal 202, verify that:
	a. DMI shows mode according to Table 5.7-16
4	Before passing signal 106, verify that:
	a. DMI shows announcement level transition to Level NTC-ATB ⁸
5	When train front end passes start of level acknowledgement window, verify that:
	a. DMI shows level acknowledgement request
	b. Driver acknowledges level transition within 5 seconds after passing transition location
6	Only scenario 7.5a: Before passing signal 106, verify that:
	a. DMI shows braking curve ending at signal 106 with no release speed
	b. DMI shows an OS acknowledgement request
	c. When driver acknowledge OS acknowledgement, DMI shows MA extension' to signal 104
7	When passing signal 106 (not scenario 7.5d), verify that:
	a. DMI shows level change to Level NTC-ATB
	b. DMI shows mode change to mode SN ³⁰
	c. DMI shows Level NTC-ATB
8	Only scenario 7.5d: When passing signal 106, verify that:
	a. DMI shows mode change to mode TR
	b. brakes are applied
	c. Divit snows level change to Level NTC-ATB
	a. when anyer acknowledge the Thp, Divil shows mode change to mode Six
9	NOT FOR TRACKSIDE IN LEVELT: After passing signal 106, Verify that:
	a. Divit snows termination of the RBC connection"

Table 5.7-17 Scenario steps

5.7.6 Override (STS passage)

Use scenario in 5.11.4 Override (STS passage). Cross acceptance with other ESC types is not possible.

The scenario must be performed only with the trackside in Level 2.

³⁰ For scenario 7.5b and 7.5c depending on the level transition location and the train confidence interval the DMI could shortly show mode change to mode FS before mode change to mode SN. If this is the case and the test is performed in Level 2 also a TAF request is shown.

RLN00445

5.7.7 Signal passed at danger

Use scenario in 5.11.5 Signal passed at danger. Cross acceptance with other ESC types is not possible.

The scenario must be performed only with the trackside in Level 1.

5.7.8 Change direction

This operational scenario is used when the driver stops at the end of a route, changes direction and receives an MA after granting track ahead free. This scenario could also start with the onboard in mode Sleeping. It is important that there is a movement passing one of more balise groups followed by a direction change and a consecutive movement in the other direction without switching off the onboard.

The scenario must be performed only with the trackside in Level 2.

The following steps must be performed.

Step	Action / check
Pre	Level is Level 2
	Mode is FS or SL
	Route is set to next signal
1	Train is in running towards end of route. Verify that:
	a. DMI shows MA with EoA at next signal (not mode SL)
2	When train is stopped at end of route, driver closes desk (not in mode SL), changes direction
	and opens desk for the other direction
3	Route is set from signal in advance of train to next signal
4	When start of mission is performed, verify that:
	a. DMI shows mode change to mode SR
5	When approaching signal ²⁶ and passing a balise group, verify that:
	a. DMI shows TAF request
	b. When driver acknowledges TAF request, DMI shows mode change to mode FS
	c. No brakes are applied
6	When passing signal, verify that:
	a. DMI shows mode FS
	b. No brakes are applied
Table F	

Table 5.7-18 Scenario steps

RLN00445

ETCS System Compatibility (ESC)

5.8 ERTMS Track HSL-South – border Belgium

5.8.1 Confidence run over complete track

This operational scenario is a normal run over the ERTMS track of multiple ESC types in both directions. The dispatcher sets all routes with normal aspects (NORM). The driver shall react on DMI or trackside signals according to normal operations. The driving speed is the maximum allowed speed. There are no special actions required from both dispatcher and driver. The routes are described in Table 5.8-1. The start and end locations are described in Table 5.8-2.

The following trackside configuration must be used:

- HSL-South (Southern section) operates in ERTMS Level 2
- L4 (Belgium) operates in ERTMS Level 2

ld	Route	Route setting
1	Breda (Bd) – Breda aansluiting HSL (Bda)	Bd -> BC -> BB -> SU -> HA1 -> SU
2	Breda aansluiting HSL (Bda) – België Noorderkempen	SU -> SZ1 -> Ndk
3	België Noorderkempen – Breda aansluiting HSL (Bda)	Ndk -> TZ2 -> TU
4	Breda aansluiting HSL (Bda) – Breda (Bd)	TU -> TT -> HB1 -> Bd

Table 5.8-1 Route settings

ld	Location	Start location	End location
1	Breda (Bd) – Breda aansluiting HSL (Bda)	Bd (not specific)	SU
2	Breda aansluiting HSL (Bda) – België Noorderkempen	SU	Ndk (not specific)
3	België Noorderkempen – Breda aansluiting HSL (Bda)	Ndk (not specific)	TU
4	Breda aansluiting HSL (Bda) – Breda (Bd)	TU	Bd (not specific)

Table 5.8-2 Start and end locations

During the execution of the route, the following steps must be performed.

0	, 5 1 1	
Step	Action / check	
Pre	Level is Level NTC-ATB	
	Mode in SN	
	Route is set from start location 1 to end location 1	
1	Train is running towards transition signal. If receiving the level transition	
	announcement, verify that:	
	a. DMI shows level transition announcement	
	b. DMI shows connection is established with the RBC	
2	When train front end passes start of level acknowledgement window (only for	
	onboards not implementing CR1166), verify that:	
	a. DMI shows level acknowledgement request	
	b. Driver acknowledges level transition within 5 seconds after passing	
	transition location	

ETCS System Compatibility (ESC)

Step	Action / check	
3	When passing transition location, verify that:	
	a. DMI shows level change to Level 1	
	 DMI shows mode change to mode FS 	
	c. No brakes are applied	
4	When passing SMB 2412, verify that:	
	a. DMI shows level change to Level 2	
	 DMI shows mode remaining mode FS 	
	c. No brakes are applied	
	 DMI shows no braking (pre)-indication 	
5	When receiving track conditions at voltage change over, verify that:	
	a. DMI shows track condition information (announcement, start and end) at the	
	defined locations	
	b. If applicable the train systems show correct behaviour at the defined	
	locations	
6	When train is at end location 1, driver continues next scenario	

Table 5.8-3 Scenario steps 1

Step	Action / check	
Pre	Level is Level 2	
	Mode in FS	
	Route is set from start location 2 to end location 2	
1	When passing signal, verify that:	
	a. DMI shows level remaining Level 2	
	 DMI shows mode remaining mode FS 	
	. No brakes are applied	
2	When receiving RBC transition order, verify that:	
	 DMI shows connection is established with (handing over¹³) RBC 	
	b. When train front end passes RBC transition location, DMI shows connection	
	is established with (accepting) RBC	
	. No brakes are applied	
3	When receiving text message about GSM-R, verify that:	
	a. DMI shows text message	
4	When approaching end of route, verify that	
	a. DMI shows braking curve to EoA	
4	When train is stopped at end location 2, driver closes desk	

Table 5.8-4 Scenario steps 2

Step	Action / check	
Pre	Level is Level 2	
	Mode in SB	
	•	Route is set from start location 3 to end location 3
1	When driver perform Start of Mission procedure, verify that:	
	a. DMI shows level remaining Level 2	
	 DMI shows mode change to mode SR 	

ETCS System Compatibility (ESC)

Step	Action / check		
2	W	nen passing first signal ²⁶ , verify that:	
	a.	a. DMI shows level remaining Level 2	
	b.	b. DMI shows TAF request	
	c.	When driver acknowledges TAF request, DMI shows mode change to mode	
		FS	
	d.	No brakes are applied	
3	W	nen passing signals, verify that:	
	a.	DMI shows level remaining Level 2	
	b.	DMI shows mode remaining mode FS	
	C.	c. No brakes are applied	
4	When receiving text message about GSM-R, verify that:		
	a.	DMI shows text message	
5	When receiving RBC transition order, verify that:		
	a.	DMI shows connection is established with (handing over ¹³) RBC	
	b.	When train front end passes RBC transition location, DMI shows connection	
		is established with (accepting) RBC	
	C.	No brakes are applied	
6	When receiving track conditions at phase lock, verify that		
	a.	DMI shows track condition information (announcement, start and end) at the	
		defined locations	
	b.	If applicable the train systems show correct behaviour at the defined	
		locations	
7	When train is at end location 3, driver continues next scenario		

Table 5.8-5 Scenario steps 3

Step	Action / check		
Pre	٠	Level is Level 2	
	٠	Mode in FS	
	٠	Route is set from start location 4 to end location 4	
1	Wł	nen receiving level transition order to Level NTC-ATB, verify that:	
	a.	DMI shows level transition announcement to Level NTC-ATB	
2	Wł	nen receiving track conditions at voltage change over, verify that	
	a.	DMI shows track condition information (announcement, start and end) at the	
		defined locations	
	b.	If applicable the train systems show correct behaviour at the defined	
		locations	
3	When the train front end passes the start of the level transition		
	acknowledgement, verify that:		
	a.	DMI show level acknowledgement request	
	b.	Driver acknowledges level transition within 5 seconds after passing	
		transition location	
4	Wł	nen passing the level transition location, verify that:	
	a.	DMI show level change to Level NTC-ATB	
	b.	DMI shows mode change to mode SN	
5	Wł	nen train is stopped at end location 4, driver closes desk	

Table 5.8-6 Scenario steps 4

ETCS System Compatibility (ESC)

5.8.2 RBC Handover with one active modem

This scenario verifies the behaviour of the onboard system in the event of an RBC Handover with only one active modem. The scenario has to be performed in both directions. For onboards equipped with multiple modems, for this scenario the system must be configured such that only one modem is active.

While the onboard is still connected to the handing over RBC, there are no possibilities to contact the accepting RBC. Once the session with the handing over RBC is terminated, the onboard shall connect with the accepting RBC. The time interval between the termination of the session with the handing over RBC and the successful session establishment of the accepting RBC is a good performance indication. This connection attempt must be successful within T_NVCONTACT.

The following trackside configuration must be used:

- HSL-South (Southern section) operates in ERTMS Level 2
- L4 (Belgium) operates in ERTMS Level 2

The following steps must be performed.

Step	Action / check		
Pre	Level is Level 2		
	Train is connected with handing over RBC		
	Train length is the maximum allowed train length		
	• Routes are set from handing over RBC into accepting RBC with NORM from Belgium into		
	the Netherlands		
1	Train is running ³¹ from handing over RBC to accepting RBC		
2	When the onboard receives an RBC Transition order announcement, verify that:		
	 DMI shows connection is established with (handing over¹³) RBC 		
3	When the train front end passes the RBC-RBC border, verify that:		
	a. DMI shows connection is established with (handing over) RBC		
4	When the train rear end passes the RBC-RBC border, verify that:		
	a. DMI shows connection termination with (handing over) RBC		
5	When connection with (handing over) RBC is terminated, verify that:		
	a. DMI shows connection is established with (accepting) RBC within T_NVCONTACT		
	b. No brakes are applied due M_NVCONTACT reaction		

Table 5.8-7 Scenario steps from Belgium to the Netherlands

Step	Action / check	
Pre	Level is Level 2	
	Train is connected with handing over RBC	
	Train length is the maximum allowed train length	
	Routes are set from handing over RBC into accepting RBC with NORM from Netherlands	
	into Belgium	
1	Train is running ³¹ from handing over RBC to accepting RBC	
2	When the onboard receives an RBC Transition order announcement, verify that:	
	a. DMI shows connection is established with (handing over ¹³) RBC	
3	When the train front end passes the RBC-RBC border, verify that:	
	a. DMI shows connection is established with (handing over) RBC	
4	When the train rear end passes the RBC-RBC border, verify that:	
	a. DMI shows connection termination with (handing over) RBC	

³¹ During the handover the maximum speed of the train shall be used to avoid a movement revocation due to time out of the RBC handover without recovery possibilities.

5

ETCS System Compatibility (ESC)

Step Action / check

When connection with (handing over) RBC is terminated, verify that:

- a. DMI shows connection is established with (accepting) RBC within T_NVCONTACT
- b. No brakes are applied due M_NVCONTACT reaction

Table 5.8-8 Scenario steps from the Netherlands to Belgium

ProRail

5.9 ERTMS Track Amsterdam – Utrecht

When performing the operational scenarios on the ERTMS track Amsterdam – Utrecht, the RBC could send one of the following text messages to the train:

- "Wacht": in case the driver selects start and the train has a valid position, but there is no MA available. During ESC testing, this could easily happen.
- "Omschakelen ATB": in case the driver selects start and the train has an unknown/invalid position. During ESC testing, this should normally not occur.

Although "Wacht" is not mentioned in the scenarios, it should not be remarked when the RBC sends this text message. For the text message "Omschakelen ATB", the corresponding scenario should be marked as NOK.

5.9.1 Confidence run over complete track

This operational scenario is a normal run over the ERTMS track of multiple ESC types in both directions. The dispatcher sets all routes with normal aspects (NORM). If the scenario to run in OS is executed during the confidence run, the dispatcher sets the routes required for this scenario with on sight aspects (ROZ). The driver shall react on DMI or trackside signals according to normal operations. The driving speed is the maximum allowed speed. There are no special actions required from both dispatcher and driver. The routes are described in Table 5.9-1. The start and end locations are described in Table 5.9-2.

ld	Route	Route setting
1	Utrecht (Ut) – Maarssen (Mas)	NORM: Ut -> AE5/AS4
2	Maarssen (Mas) – Amsterdam Bijlmer (Asb)	NORM: AE5/AS4 -> 601/603
3	Amsterdam Bijlmer (Asb) – Amsterdam (Asd)	NORM: 601/603 -> Asd
4	Amsterdam (Asd) – Amsterdam Bijlmer (Asb)	NORM: Asd -> 606/608
5	Amsterdam Bijlmer (Asb) – Maarssen (Mas)	NORM: 606/608 -> 813b
6	Maarssen (Mas) – Maarssen (Mas)	NORM 813b -> US1/UE1
7	Maarssen (Mas) – Utrecht (Ut)	NORM: US1/UE1 -> Ut

Table 5.9-1 Route settings

ld	Location	Start location	End location
1	Utrecht (Ut) – Maarssen (Mas)	Ut (not specific)	AE5/AS4
2	Maarsen (Mas) – Amsterdam Bijlmer (Asb)	AE5/AS4	601/603
3	Amsterdam Bijlmer (Asb) – Amsterdam (Asd)	601/603	Asd (not specific)
4	Amsterdam (Asd) – Amsterdam Bijlmer (Asb)	Asd (not specific)	606/608
5	Amsterdam Bijlmer (Asb) – Maarsen (Mas)	606/608	813b
6	Maarssen (Mas) – Maarssen (Mas)	813b	US1/UE1
7	Maarssen (Mas) – Utrecht (Ut)	US1/UE1	Ut (not specific)
Table	e 5.9-2 Start and end locations		

During the execution of the route, the following steps must be performed.

Step	Action / check
Pre	Level is Level NTC-ATB
	Mode in SN
	Route is set from start location 1 to end location 1
1	Train is running towards transition signal. When receiving the level transition
	announcement, verify that:
	a. DMI shows level transition announcement
	b. DMI shows connection is established with the RBC
2	When train front end passes start of level acknowledgement window (only for
	onboards not implementing CR1166), verify that:
	a. DMI shows level acknowledgement request
	b. Driver acknowledges level transition within 5 seconds after passing
	transition location
3	When passing transition signal, verify that:
	a. DMI shows level change to Level 2
	 DMI shows mode change to mode FS
	c. No brakes are applied
	d. DMI shows no braking (pre)-indication
4	When train is at end location 1, driver continues next scenario

Table 5.9-3 Scenario steps 1

Step	Ac	tion / check
Pre	٠	Level is Level 2
	٠	Mode in FS
	٠	Route is set from start location 2 to end location 2
1	When passing signals, verify that:	
	a.	DMI shows level remaining Level 2
	b.	DMI shows mode remaining mode FS
	C.	No brakes are applied
2	Wł	nen train is at end location 2, driver continues next scenario
Tahle 5	: 0_ <i>1</i>	Scenario stens 2

Table 5.9-4 Scenario steps 2

Step	Action / check	
Pre	Level is Level 2	
	Mode in FS	
	Route is set from start location 3 to end location 3	
1	When receiving level transition order to Level NTC-ATB, verify that:	
	a. DMI shows level transition announcement to Level NTC-ATB	
2	When the train front end passes the start of the level transition	
	acknowledgement, verify that:	
	a. DMI show level acknowledgement request	
	b. Driver acknowledges level transition within 5 seconds after passing	
	transition location	
3	When passing the level transition location, verify that:	
	a. DMI show level change to Level NTC-ATB	
	b. DMI shows mode change to mode SN	
4	When train is stopped at end location 3, driver closes desk	

Table 5.9-5 Scenario steps 3

Step	Act	ion / check	
Pre	•	Train direction is changed	
	Level is Level NTC-ATB		
	Mode in SN		
	•	Route is set from start location 4 to end location 4	
1	Tra	in is running towards transition signal. When receiving the level transition	
	ann	nouncement, verify that:	
	a.	DMI shows level transition announcement	
	b.	DMI shows connection is established with the RBC	
2	When train front end passes start of level acknowledgement window (only for		
	onboards not implementing CR1166), verify that:		
	a. DMI shows level acknowledgement request		
	b.	Driver acknowledges level transition within 5 seconds after passing	
		transition location	
3	Wh	en passing transition signal, verify that:	
	a.	DMI shows level change to Level 2	
	b.	DMI shows mode change to mode FS	
	c.	No brakes are applied	
	d.	DMI shows no braking (pre)-indication	
4	Wh	en train is at end location 4, driver continues next scenario	

Table 5.9-6 Scenario steps 4

Step	Action / check		
Pre	Level is Level 2		
	Mode in FS		
	Route is set from start location 5 to end location 5		
1	When passing signals, verify that:		
	a. DMI shows level remaining Level 2		
	 DMI shows mode remaining mode FS 		
	c. No brakes are applied		
2	When approaching end of route, verify that		
	a. DMI shows braking curve to EoA		
3	When train is stopped at end location 2, verify that		
	a. DMI shows only Level 2 and Level NTC-ATB enabled in the ERTMS/ETCS		
	level window		
4	When train is stopped at end location 5, driver closes desk		

Table 5.9-7 Scenario steps 5

Step	Action / check	
Pre	•	Level is Level 2
	٠	Mode in SB
	•	Route is set from start location 6 to end location 6
1	When driver perform Start of Mission procedure, verify that:	
	a.	DMI shows level remaining Level 2
	b.	DMI shows mode change to mode OS
	C.	DMI shows OS acknowledgement request
	d.	Driver acknowledges OS acknowledgement request

ETCS System Compatibility (ESC)

Step	Action / check	
2	When passing first signal, verify that:	
	a. DMI shows level remaining Level 2	
	 DMI shows mode change to mode FS 	
	c. No brakes are applied	
3	When passing signals, verify that:	
	a. DMI shows level remaining Level 2	
	 DMI shows mode remaining mode FS 	
	c. No brakes are applied	
4	When train is at end location 6, driver continues next scenario	
Table F	0.0 Cooperio stars 6	

Table 5.9-8 Scenario steps 6

Step	Action / check
Pre	Level is Level 2
	Mode in FS
	Route is set from start location 7 to end location 7
1	When receiving level transition order to Level NTC-ATB, verify that:
	a. DMI shows level transition announcement to Level NTC-ATB
2	When passing the level transition location, verify that:
	a. DMI show level change to Level NTC-ATB
	 DMI shows mode change to mode SN
	c. No brakes are applied
3	When train is stopped at end location 7, driver closes desk
Tabla E	0.0 Secondria stope 7

Table 5.9-9 Scenario steps 7

5.9.2 Exit when failure STM-ATB

Use scenario in 5.11.1 Exit when failure STM-ATB. Cross acceptance with other ESC types is not possible.

5.9.3 Running in OS

Use scenario in 5.11.2 Entering OS. Cross acceptance with other ESC types is not possible. It is allowed to execute this scenario during the confidence run (5.9.1 Confidence run over complete track) at a location that does not interfere with the steps that have to be performed for the confidence run.

5.9.4 Entrance specialties from ATB to ERTMS

This operational scenario contains special entrance scenarios. Figure 5.9-1 shows the situation of the entrance as used. The train starts in rear of signal 102 or at least before passing the first balise group. The dispatcher sets all routes according to Table 5.9-10. After the route is set, the train runs the route following the signals and DMI information. The route setting ends at signal 204, unless signal 204 is a Permissive-signal and will automatically switch to yellow or green if the track is not occupied .

On Amsterdam - Utrecht tracks the entry transition is completely controlled by the RBC and is depending on position reports of the train.

Figure 5.9-1 Entrance situation

Scenario	Description	102	104	106	202
9.4a	NORM-ROZ	NORM	NORM	ROZ	ROZ
9.4b	No transition announcement	NORM	NORM	STOP ³²	NORM

Table 5.9-10 Route settings

Scenario	Description	102	104	106	202	
9.4a	NORM-ROZ	SN/ATB	SN/ATB	OS	OS	
9.4b	No transition announcement	SN/ATB	SN/ATB	SN/FS	FS	

Table 5.9-11 Mode after passing signal

Scenario 9.4b is a special scenario for Amsterdam – Utrecht track about late route setting. In this scenario the entry route is not set (signal 106 STOP). When the train has passed signal 102 and signal 104, the train stops within 50 meters in rear of signal 106. Then the route will be set (signal 106 NORM) by the dispatcher. When the train arrives at signal 106 the RBC will send a transition order accompanied by the movement authority for the entry route.

For each scenario the following steps must be performed.

Step	Action / check		
Pre	Level is Level NTC-ATB		
	Mode is SN		
	Route is set according to Table 5.9-10		
1	Only scenario 9.4a: When receiving the level transition announcement, verify that:		
	a. DMI shows level transition announcement		
	 DMI shows connection is established with the RBC 		
2a	Only scenario 9.4b: Train stops 50m in rear of signal 106. When route from signal 106 is set		
	NORM, verify that:		
	a. DMI shows level transition announcement		
2b	Only scenario 9.4a: When train front end passes start of level acknowledgement window (only		
	for onboards not implementing CR1166), verify that:		
	a. DMI shows level acknowledgement request		
	b. Driver acknowledges level transition within 5 seconds after passing transition location		
3	Only scenario 9.4a: When train front end passes level transition location, verify that:		
	a. DMI shows level change to Level 2		
	b. DMI shows no ATB information		

³² Initially this route shall not be set, however in a later step this signal will change to NORM when the dispatcher sets the route.

ETCS System Compatibility (ESC)

Step	Action / check
4	Only scenario 9.4a: Verify that:
	a. DMI shows an OS acknowledgement request
	 Driver acknowledges OS acknowledgement request³³
5a	Only scenario 9.4a: When passing signal 106, verify that:
	a. DMI shows level is Level 2
	 DMI shows mode according to Table 5.9-11
5b	Only scenario 9.4b: When passing signal 106, verify that:
	a. DMI shows level change to Level 2
	 DMI shows level acknowledgement request (only for onboards not implementing CR1166
	c. Driver acknowledges level transition within 5 seconds
6	Only scenario 9.4a: Before passing signal 202, verify that:
	a. DMI shows no OS acknowledgement request
7	When passing signal 202, verify that:
	a. DMI shows level is Level 2
	 DMI shows mode according to Table 5.9-11
	c. DMI shows movement authority ending at or in advance of signal 204
8	When receiving National Values for braking curves, verify that:
	a. DMI does not show any related indication
	b. No brakes are applied

Table 5.9-12 Scenario steps

5.9.5 Exit specialties to ATB

This operational scenario contains special exit scenarios.



Figure 5.9-2 Exit situation

Figure 5.9-2 shows the situation of the exit as used. The train starts in rear of signal 204. The Dispatcher sets all routes according Table 5.9-13. After the route is set, the train runs the route following the signals and DMI information.

On the track Amsterdam – Utrecht the exit transition scenarios should be performed at controlled signals. A location without controlled signals is not suitable for this scenario. In the figure above signal 106 is the last controlled signal of the Amsterdam – Utrecht safety system.

Scenario	Description	204	202	106	104
9.5a	NORM-ROZ	NORM	NORM	ROZ	NORM
9.5b	ROZ-NORM	NORM	ROZ	NORM	NORM
9.5c	ROZ-ROZ	NORM	ROZ	ROZ	NORM

³³ Due to trackside design an overspeed brake intervention could be triggered before acknowledging.

Scenario

9.5d⁶

ETCS System Compatibility (ESC)				
Description	204	202	106	104
STS-NORM	NORM	NORM	STOP	NORM

Table 5.9-13 Route settings

Scenario	Description	204	202	106	104
9.5a	NORM-ROZ	FS	FS	SN/ATB	SN/ATB
9.5b	ROZ-NORM	FS	OS	SN/ATB	SN/ATB
9.5c	ROZ-ROZ	FS	OS	SN/ATB	SN/ATB
9.5d ⁶	STS-NORM	FS	FS	SN/ATB	SN/ATB

Table 5.9-14 Mode after passing signal

For each scenario the following steps must be performed.

Step	Action	/ check
Pre	• Lev	el is Level 2
	• Mo	de is according to Table 5.9-14
	• Rou	ute is set according Table 5.9-13.
1	When p	assing signal 204, verify that:
	a. DM	I shows mode according to Table 5.9-14.
2	Only sc	enario 9.5b and 9.5c: Before passing signal 202, verify that:
	a. DM	I shows braking curve ending at signal 202 with no release speed
	b. DM	I shows an OS acknowledgement request
	c. Wh	en driver acknowledges OS acknowledgement, DMI shows MA extension ⁷ to signal
	106	
3	When p	assing signal 202, verify that:
	a. DM	I shows mode according to Table 5.9-14
4	Before	passing ³⁴ signal 106, verify that:
	a. DM	I shows announcement level transition to Level NTC-ATB ⁸
5	When to	rain front end passes start of level acknowledgement window ³⁵ , verify that:
	a. DM	I shows level acknowledgement request
	b. Driv	ver acknowledges level transition within 5 seconds after passing transition location
6	Only sc	enario 9.5a: Before passing signal 106, verify that:
	a. DM	I shows braking curve ending at signal 106 with no release speed
	b. DM	I shows an OS acknowledgement request
	c. Wh	en driver acknowledges OS acknowledgement, DMI shows MA extension ⁷ to signal
	104	
7	When p	assing signal 106, verify that:
	a. DM	I shows level change to Level NTC-ATB
	b. DM	I shows mode change to mode SN ³⁶
	c. DM	I shows Level NTC-ATB
8	Only sc	enario 9.5d: When passing signal 106, verify that:
	a. DM	I shows mode change to mode TR
	b. Bra	kes are applied
	c. DM	I shows level change to Level NIC-AIB
	d. Wh	en driver acknowledges the Trip, DMI shows mode change to mode SN

³⁴ At some locations if signal 106 is stop, the DMI does not show the level transition announcement. ³⁵ At some locations if signal 106 is stop, the DMI shows level acknowledgement request only when passing signal 106.

³⁶ For scenario 9.5b depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to mode SN.

Step Action / check

9	After passing signal 106, verify that:
	DMI shows termination of the RBC connection. ³⁷

Table 5.9-15 Scenario steps

5.9.6 Movement revocation

Use scenario in 5.11.3 Movement revocation. Cross acceptance with other ESC types is not possible.

5.9.7 Override (STS passage)

Use scenario in 5.11.4 Override (STS passage). Cross acceptance with other ESC types is not possible.

5.9.8 Signal passed at danger

This operational scenario is used when the driver passes an EoA in release speed (> 0 km/h). To comply with step 6, it is necessary to check if the trackside can give a Movement Authority or text message at the stop location of the train. A straight track section without points or other special objects is required.

The following steps must be performed.

Step	Ac	ction / check
Pre	٠	Level is the applicable level valid for the ERTMS trackside
	٠	Mode is FS
	٠	Route is set to next signal
	٠	Signalling block in advance of next signal does not have movable elements
1	Tra	ain is in running towards end of route. Verify that:
	a.	DMI shows MA with EoA at next signal
2	Tra	ain reduce speed to below the release speed. When approaching end of route, verify that:
	a.	DMI shows mode FS
	b.	DMI shows permitted speed reducing to zero
	C.	DMI shows allowed release speed
	d.	No brakes are applied
3	W	hen the train front end passes EoA at end of route, verify that:
	a.	DMI shows mode change to mode TR
	b.	brakes applied
4	W	hen driver acknowledges train trip, verify that:
	a.	DMI shows mode change to mode PT
	b.	Brakes can be released
	C.	Reverse movement protection is active, i.e. driving in forward direction is not allowed
5	Ro	oute is set from signal in advance of train to next signal
6	W	hen driver requests start, verify that:
	a.	(Depending on the location) DMI shows mode change to mode OS OR the text message
		"Omschakelen ATB" (for this specific scenario it is OK that the text message could be
		shown).
T 11 F		

Table 5.9-16 Scenario steps

³⁷ Depending on the situation it could happen that the RBC sends a termination order, or that the train terminates the connection with the RBC.

5.9.9 Change direction

Use scenario in 5.11.6 Change direction. Cross acceptance with other ESC types is not possible.

5.10 ERTMS track NCBG border Belgium – Weert

5.10.1 Entrance from ATB to ERTMS

This operational scenario is a normal run from ATB to ERTMS L1 SH.



Figure 5.10-1 Entrance situation

Figure 5.10-1 shows the situation of the entrance from ATB to ERTMS as used, with only the balises relevant for the scenario being shown. The train starts in rear of the balise group that announces the transition to L1. When passing the balise group at the S-bord, the train will immediately change to L1 SH.

The following steps must be performed.

Step	Action / check
Pre	Level is Level NTC-ATB
	Mode is SN
1	Train is running towards S-bord at the border. When receiving the level transition
	announcement, verify that:
	a. DMI shows level transition announcement to Level 1
2	When train front end passes start of level acknowledgement window (only for onboards not
	implementing CR1166), verify that:
	a. DMI shows level acknowledgement request
	b. Driver acknowledges level transition before passing transition location
3	When train front end passes level transition location, verify that:
	a. DMI shows level change to Level 1
	b. DMI shows mode SH
	c. DMI shows an SH acknowledgement request
	d. Driver acknowledges SH acknowledgement request within 5 seconds after mode change
4	When passing BG with national value information, verify that:
	a. DMI does not show any related indication
	b. No brakes are applied

Table 5.10-1 Scenario steps

5.10.2 Exit from ERTMS to ATB

This operational scenario is a normal run from ERTMS L1 SH to ATB.



Figure 5.10-2 Exit situation

Figure 5.10-2 shows the situation of the exit from ERTMS to ATB as used, with only the balises relevant for the scenario being shown. The train stops before the signal at the border. the driver performs a Start of Mission in order to go to L1 mode SR. When passing the balise group at the signal, the train performs immediate transition to ATB.

The following steps must be performed.

Step	Action / check
Pre	Level is Level 1
	Mode is SH
1	Train is standing still before the signal at the border. When driver exits shunting and performs
	Start of Mission procedure, verify that:
	a. DMI shows level remaining Level 1
	b. DMI shows mode change to mode SR
2	When train front end passes level transition location, verify that:
	a. DMI shows level change to Level NTC-ATB
	b. DMI shows mode change to SN
	c. DMI shows level acknowledgement request
	d. Driver acknowledges level transition within 5 seconds after passing transition location
3	When passing BG with national value information, verify that:
	a. DMI does not show any related indication
	b. No brakes are applied
Toble 5	10.2 Secondria stops

Table 5.10-2 Scenario steps

RLN00445

5.11 Generic scenarios

This paragraph contains operational scenario that are applicable for more than one ESC type and use the same operational scenario. The actual outcome depends however on the ESC type being tested.

5.11.1 Exit when failure STM-ATB

This operational scenario is a normal run when the STM-ATB is in failure and not isolated or not installed. Due to the failure or absence of the STM the driver is not able to make a dynamic transition from ERTMS to ATB.

The following steps must be performed.

Step	Action / check
Pre	STM-ATB is in failure and not isolated or not installed
	Level is the applicable level valid for the ERTMS trackside
	 Routes are set passing the exit of the ERTMS area with NORM
1	Train is running towards exit of ERTMS area. Verify that:
	a. DMI shows mode FS
	b. DMI shows a message indicating the unavailability of the STM-ATB ⁴ (only if installed)
2	When receiving level transition order to Level NTC-ATB, verify that
	a. DMI shows level transition announcement to Level NTC-ATB or LNTC if STM-ATB is not
	installed
3	Verify that:
	a. DMI shows MA ending at the level transition location ³⁸
	b. DMI shows braking curve
4	When passing the level transition location, due to e.g. slippery track, verify that:
	a. Brakes are applied
	b. DMI shows level change to Level NTC-ATB or LNTC if STM-ATB is not installed
	c. DMI shows mode change to mode SN

Table 5.11-1 Scenario steps

5.11.2 Entering OS mode profile

This operational scenario is an entering of an OS mode profile, followed by a second, consecutive OS mode profile. This scenario shall be executed with the combination of train length, weight and minimum brake force which gives the "most flat" braking curve that is allowed during operational conditions. This scenario checks if the train can normally reach the acknowledgement window and does show any specific behaviour when approaching the second OS mode profile.

The following steps must be performed.

Step	Action / check		
Pre	Level is the applicable level valid for the ERTMS trackside		
	 Route is set with NORM followed by 2 routes set with ROZ 		
	 The second route has to be long enough to avoid a braking curve at its start 		
1	Train is running towards first route set with On Sight. Verify that:		
	a. DMI shows mode FS.		
2	When receiving movement authority with mode profile OS		
	a. DMI shows MA with an End of Authority at the start of the OS mode profile with no		
	release speed		

³⁸ It is permissible that only the permitted speed is set to zero at the level transition location.

ETCS System Compatibility (ESC)

Step	Ac	tion / check	
3	When passing start of the OS acknowledgement window and when the speed is below OS		
	pe	mitted speed, verify that:	
	a.	Start of OS acknowledgement window can be reached with 40 km/h or a reasonable	
		speed	
	b.	DMI shows an OS acknowledgement request	
4	When driver acknowledge OS acknowledgement request, verify that		
	a.	DMI shows mode change to mode OS	
	b.	DMI shows MA extension ⁷ in advance of start of OS mode profile	
5	When train is approaching second route set with On Sight. Verify that:		
	a.	DMI shows mode OS	
	b.	DMI shows no OS acknowledgement request	
	C.	Train can enter the second route set with On Sight with speed of 40 km/h	

Table 5.11-2 Scenario steps

5.11.3 Movement revocation

This operational scenario consists of 2 sub scenarios; the scenario where the train can stop in rear of the signal and the scenario where the train cannot stop in rear of the signal.

This scenario assumes that a route has been set, containing at least two (or more blocks). Route revocation makes only sense if the route that is revoked involves the blocks in front of the train (and not the block occupied by the train) and the route has been received by the train.

For tracksides where cooperative route revocation is implemented, the sequence is as follows:

- a. Dispatcher revokes the route
- b. RSMA message is sent to a moving³⁹ train and response is validated
- c. Based on response the route release is direct or delayed

The following steps must be performed.

Step	Action / check		
Pre	Level is Level 2		
	Mode is FS		
	Route is set containing at least 2 blocks		
1	Dispatcher revokes the last route and RBC sends request to shorten MA and a shortened		
2	When receiving the request to shorten MA and shortened MA, verify that:		
	 DMI shows MA shortening to start of revoked route 		
3a	When train can stop in rear of signal, verify that:		
	a. DMI shows mode remaining mode FS		
3b	When train is not able to stop in rear of signal, verify that:		
	a. brakes are applied		
	b. when the train front end of the train has passed the signal the mode, DMI shows mode		
	change to mode TR		

Table 5.11-3 Scenario steps

³⁹ When the train is at standstill, the RBC immediately concludes that route can be released and will inform the IXL to release the route.

⁴⁰ The request to shorten MA and the shortened MA are sent consecutively with a configured delay independent on the response of the request to shorten MA. The sequence itself is trackside dependent.

5.11.4 Override (STS passage)

This operational scenario is used when the driver has to pass a signal at stop using function to override End of Authority.

The following steps must be performed.

Step	Action / check		
Pre	Level is Level 2		
	Mode is FS		
	Route is set to next signal		
1	Train is in running towards end of route. Verify that:		
	a. DMI shows MA with EoA at next signal		
2	Train is stopped before the end of route where a balise group is placed with Stop-If-In-SR		
3	When the driver selects the Override function, verify that:		
	a. DMI shows that Override function is active		
	 speed is supervised at V_NVSUPOVTRP 		
4	When the train passes end of route within T_NVOVTRP, verify that:		
	a. DMI shows mode SR		
	b. No brakes are applied		
	c. speed is supervised at V_NVSTFF		

Table 5.11-4 Scenario steps

5.11.5 Signal passed at danger

This operational scenario is used when the driver passes an EoA in release speed (> 0 km/h). To comply with step 6, it is necessary to check if the trackside can give a Movement Authority or SR authorisation at the stop location of the train. A straight track section without points or other special objects is required.

The following steps must be performed.

_		
Step	Action / check	
Pre	 Level is the applicable level valid for the ERTMS trackside 	
	Mode is FS	
	Route is set to next signal	
	 Signalling block in advance of next signal does not have movable elements 	
1	Train is in running towards end of route. Verify that:	
	a. DMI shows MA with EoA at next signal	
2	Train reduce speed to below the release speed. When approaching end of route, verify that:	
	a. DMI shows mode FS	
	 DMI shows permitted speed reducing to zero 	
	c. DMI shows allowed release speed	
	d. No brakes are applied	
3	When the train front end passes EoA at end of route, verify that:	
	a. DMI shows mode change to mode TR	
	b. brakes applied	
4	When driver acknowledges train trip, verify that:	
	a. DMI shows mode change to mode PT	
	b. Brakes can be released	
	c. Reverse movement protection is active, i.e. driving in forward direction is not allowed	
5	Route is set from signal in advance of train to next signal	

6

Step	Action /	check
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- When driver requests start, verify that:
- a. DMI shows mode change to mode OS or SR

Table 5.11-5 Scenario steps

5.11.6 Change direction

This operational scenario is used when the driver stops at end of a route, changes direction and receives an MA with a shifted location reference. This scenario could also start with the onboard in mode Sleeping. It is important that there is a movement passing one of more balise groups followed by a direction change and a consecutive movement in the other direction without switching off the onboard.

The following steps must be performed.

Step	Action / check
Pre	Level is Level 2
	Mode is FS or SL
	Route is set to next signal
1	Train is in running towards end of route. Verify that:
	a. DMI shows MA with EoA at next signal (not mode SL)
2	When train is stopped at end of route, driver closes desk (not in mode SL), changes direction
	and opens desk for the other direction
3	Route is set from signal in advance of train to next signal
4	When start of mission is performed, verify that:
	a. DMI shows mode change to mode OS
	 DMI shows OS acknowledgement request
	c. Driver acknowledges OS acknowledgement request
5	When passing signal, verify that:
	c. DMI shows mode change to mode FS
	d. No brakes are applied
Table 5	5.11-6 Scenario stens

Table 5.11-6 Scenario steps

6 Overview footnotes

In this chapter an overview of all footnotes is provided for information to the users of the document.

1 It could happen that the indication that the connection is not established will not be shown because the "Connection status" timer did not expire before the train passed BGF.

2 A major part of this route is operated under ATBNG. In rear of the crossing with the ERTMS track a transition from NG to EG is made (and in opposite direction from EG to NG).

3 There are other locations, but those are not suitable for this test. At those locations some important balises are missing that are necessary for the correct execution of this test.

4 Depending on onboard implementation this message is displayed at the startup of the system or when the level transition order is received. The message could be displayed a certain amount of time and could not be shown again.

5 If ATB-Vv beacons are placed at the signal: when the onboard is not already switched to TR, a brake invention will be triggered while passing the ATB-Vv beacons.

6 The appropriate scenario is that after approaching the signal, the train overshoots the signal at stop, due to e.g. slippery track and that the transition takes place before the train is at standstill.

7 Only when it is possible to make the MA extension visible, e.g. by toggling.

8 Situations can occur where an already announced level transition is repeated from the trackside. The reception of this repeated level transition order may not interfere with the announced level transition order in the case that the contents are similar.

9 For scenario 2.5b depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to mode SN.

10 For this specific location in step Pre the level is Level 2 and the infill is not present, this is a location in rear of the OS ackn (see Figure 5.2-3).

11 Signal 2318 can also be set to ROZ instead of NORM. In step Pre and step 2 the mode is then SR or OS.

12 Due to trackside design, the MA extension can include an OS mode profile.

13 DMI shows only one connection without information to which RBC the connection is established. Some B2 DMI could show 2 connections.

14 Signal is not controlled by traffic control center and not placed at the track.

15 The route has to be set with NORM, however in a later step this signal will change to STOP when the dispatcher revokes the route.

16 Depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to TR.

17 Depending on the stop location: first mode change to mode SR and before next signal mode change to mode OS, or directly mode change to mode OS or FS.

18 Due to trackside engineering the transition location can be at or some distance beyond the signal. 19 For scenario 4.5b depending on the level transition location and the train confidence interval the DMI

could show mode change to mode FS before mode change to mode SN.

20 During the handover the minimum speed of the train shall be 40 km/h to avoid a movement revocation due to time out of the RBC handover.

21 When performing this scenario at Hattemerbroek aansluiting (Hba), the DMI will show the text message "Wacht". To continue with the scenario, the dispatcher should set a route with on sight aspect (ROZ) over the train.

22 For scenario 6.5b depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to mode SN.

23 The signal has to be passed with sufficient speed to comply with the scenario, otherwise the DMI will show the text message "Wacht".

24 It could happen that the indication that the connection is not established will not be shown because the "Connection status" timer did not expire.

25 On specific locations, trackside will not send a level transition announcement.

26 When performing SoM closely to a signal/SMB it could happen that a TAF request is displayed immediately. This is normal behaviour and not a non-compliancy.

27 If ATB-Vv beacons are placed at the signal: a brake invention will be triggered while passing the ATB-Vv beacons.

28 For scenario 7.4a depending on the train confidence interval the DMI could shortly show mode change to mode FS before mode changes back to OS. In this case check if DMI shows an OS acknowledgement request.

29 The RBC sends a new MA without Mode Profile if TAF is granted.

ETCS System Compatibility (ESC)

30 For scenario 7.5b and 7.5c depending on the level transition location and the train confidence interval the DMI could shortly show mode change to mode FS before mode change to mode SN. If this is the case and the test is performed in Level 2 also a TAF request is shown.

31 During the handover the maximum speed of the train shall be used to avoid a movement revocation due to time out of the RBC handover without recovery possibilities.

32 Initially this route shall not be set, however in a later step this signal will change to NORM when the dispatcher sets the route.

33 Due to trackside design an overspeed brake intervention could be triggered before acknowledging. 34 At some locations if signal 106 is stop, the DMI does not show the level transition announcement. 35 At some locations if signal 106 is stop, the DMI shows level acknowledgement request only when passing signal 106.

36 For scenario 9.5b depending on the level transition location and the train confidence interval the DMI shows shortly mode change to mode FS before mode change to mode SN.

37 Depending on the situation it could happen that the RBC sends a termination order, or that the train terminates the connection with the RBC.

38 It is permissible that only the permitted speed is set to zero at the level transition location. 39 When the train is at standstill, the RBC immediately concludes that route can be released and will inform the IXL to release the route.

40 The request to shorten MA and the shortened MA are sent consecutively with a configured delay independent on the response of the request to shorten MA. The sequence itself is trackside dependent.