PROJECT	CUSTOMER	VEHICLE
X'trapolis-PRASA	**PRASA**	**314 – M4 – VFT**

RTR Vehicle Functional Static Testing TS314 M4 Report

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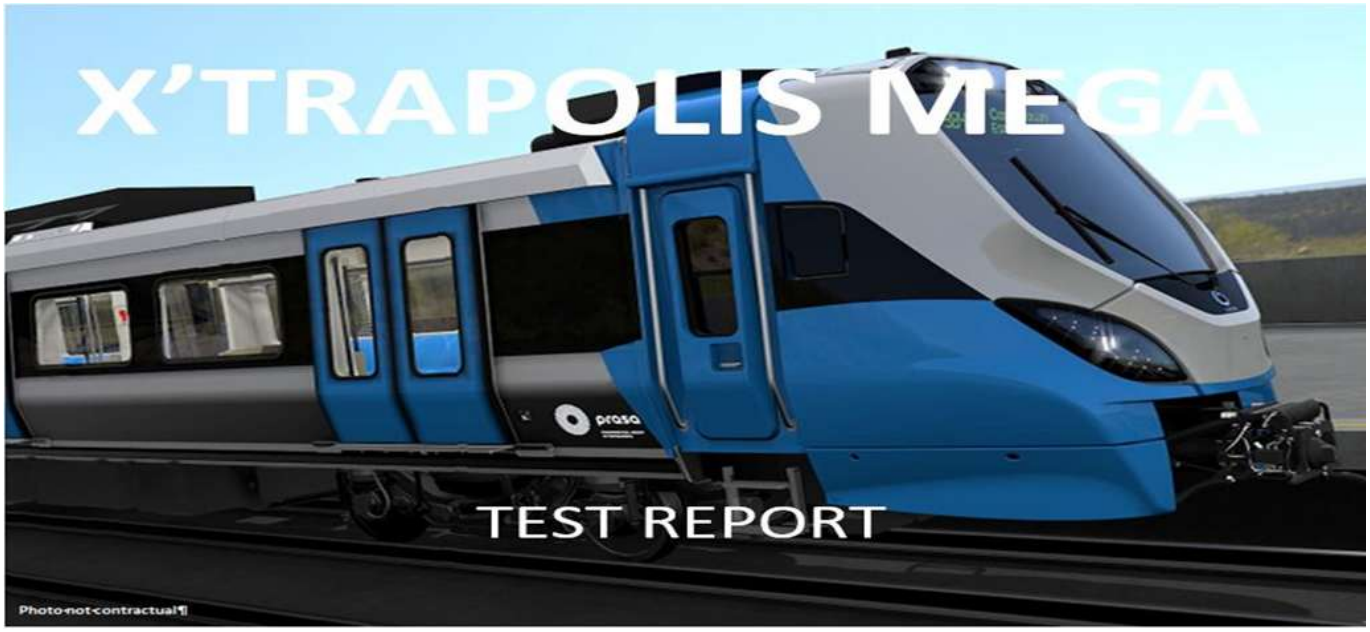

	CREATED	VERIFIED	APPROVED	DISTRIBUTION
Name	Nhlakanipho MASONDO	Lindani NGUBANE	Kgomotso NKOANA	Confidentiality Category *Restricted* ☐ *Project* ☐ *Normal* ☑
Date	03/12/2025	03/12/2025	03/12/2025	Control Category *Controlled* ☑ *Not Controlled* ☐
Signature				Language **EN**

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Table of modifications

Rev	Date	Modifications Content	Writer
A0	03/12/2025	Creation	Nhlakanipho MASONDO

Internal validations

	Name	Function	Date	Signature
Creator	Nhlakanipho MASONDO	EPU Manager	03/12/2025	X Nhlakanipho MASONDO EPU Manager
Verifier	Lindani NGUBANE	Serial Test Manager	03/12/2025	X Lindani NGUBANE Serial Test Manager
Approver	Kgomotso NKOANA	Test Expert	03/12/2025	X Kgomotso NKOANA Test Expert

Execution Plan

Start Date	20/11/2025
End Date	23/11/2025

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Section 1 – Purpose / Objectives

1. Energy Distribution

Ensure the distribution of 110Vdc and 400Vac through the vehicle from the battery and Auxiliary converter

2. TCMS Network

Verify the working of the TCMS network and its core elements, i.e TRS, CRS.

3. Cabin Control

Verify the cabin control functions in both normal and backup modes, their commanding of the train lines, and the TCMS response to each function.

4. Internal Lighting

Verify the working of all internal lighting functions.

5. PACIS System

Verify power supply to all PACIS network equipment.

6. Train-Ground Communication

Setup the Train-to-ground systems and verify correct installation of the antennas by VSWR test.

7. Rescue Mode and Emergency Disconnection

The objective of this procedure is to verify the correct operation of the emergency disconnection function, as well as the correct activation of the Back-Up mode.

10. Emergency Brake

The objective of this procedure is to verify all electrical components of the Emergency braking system.

11. Service Brake

The objective of this procedure is to verify all electrical components of the Service brake system.

12. Holding and Parking Brake

The objective of this procedure is to verify all electrical components of the Parking/holding brake system.

13. Passenger Doors

The objective of this procedure is to ensure the proper operation of the train doors.

14. Air Conditioning

Verify the voltage distribution to and correct operation of the HVAC system

15. Fire protection

The objective of this procedure is to verify the configuration of the fire detection units, as well as the presence of the safety resistor in the auxiliary converter.

16. Traction and Electric Brake

The objective of this procedure is to verify all the train lines associated with the traction and electric brake systems of the train

18. Vehicle Normalization

The objective of this procedure is to ensure that all connectors, panels a8nd covers are normalized.

Section 2 – Energy Distribution

2.1 Instructions list

2.1.1 Energy Distribution

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Energy Distribution (SPP=015)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10002	I	Initial Conditions		OK		Dilikani Ngubane 526515 21.11.2025	M4
10003	I	All the Circuit Breakers should be OPEN		OK		Dilikani Ngubane 526515 21.11.2025	M4
10004	I	Test bench should be connected but with no power supply		OK		Dilikani Ngubane 526515 21.11.2025	M4
10005	I	NO 400Vac should be connected to the car		OK		Dilikani Ngubane 526515 21.11.2025	M4
10006	A	Close Circuit Breaker 15Q3 (Normal Line)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10007	I	Voltage Isolation 110Vdc		OK		Dilikani Ngubane 526515 21.11.2025	M4
10008	I	230Vac and 400Vac Circuit breakers		OK		Dilikani Ngubane 526515 21.11.2025	M4
10009	A	Close Circuit Breaker 13Q1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10010	A	Close the circuit breaker 13Q3		OK		Dilikani Ngubane 526515 21.11.2025	M4
10011	I	Normal and Permanent Power Supply		OK		Dilikani Ngubane 526515 21.11.2025	M4
10012	I	110Vdc Permanent Train Line Apply 110Vdc on -93XT304_1 pin 4 to simulate Permanent Train Line		OK		Dilikani Ngubane 526515 21.11.2025	M4
10013	A	Apply 110Vdc on the Normal Line using the external power supply		OK		Dilikani Ngubane 526515 21.11.2025	M4
10014	A	Measure 110Vdc between 90XR50.X1/1 (+) and 90XR50.X2/1 (-) (intercar connector). [Normal line]		OK		Dilikani Ngubane 526515 21.11.2025	M4
10015	I	Permanent Line Circuit Breakers		OK		Dilikani Ngubane 526515 21.11.2025	M4

10016	A	Close Circuit Breaker 15Q4 for battery voltage above 80Vdc and close it(permanent Line)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10017	I	230Vac Circuit Breakers		OK		Dilikani Ngubane 526515 21.11.2025	M4
10018	A	Close Circuit Breaker 13Q2		OK		Dilikani Ngubane 526515 21.11.2025	M4
10019	A	Close Circuit Breaker 13Q3		OK		Dilikani Ngubane 526515 21.11.2025	M4
10020	I	230Vac and 400Vac Voltage Supply		OK		Dilikani Ngubane 526515 21.11.2025	M4
10021	A	Apply 400Vac to the Vehicle, either on End1 or End2		OK		Dilikani Ngubane 526515 21.11.2025	M4
10022	A	Perform a phase rotation measurement on Connector 90XR62 between phases U(X3),V(X2),W(X1) and ensure the rotation is in the correct direction		OK		Dilikani Ngubane 526515 21.11.2025	M4
10023	R	Phase rotation between U,V,W is correct		OK		Dilikani Ngubane 526515 21.11.2025	M4
10024	A	Perform a phase rotation measurement on Connector 90XR52 between phases U(X1),V(X2),W(X3) and ensure the rotation is in the correct direction		OK		Dilikani Ngubane 526515 21.11.2025	M4
10025	R	Phase rotation between U,V,W is correct		OK		Dilikani Ngubane 526515 21.11.2025	M4
10026	A	Check 230Vac between points L and N of socket -13XT1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10027	R	230Vac present		OK		Dilikani Ngubane 526515 21.11.2025	M4
10028	A	Check 230Vac between points L and N of socket -13XT2		OK		Dilikani Ngubane 526515 21.11.2025	M4
10029	R	230Vac present		OK		Dilikani Ngubane 526515 21.11.2025	M4
10030	A	Remove connector 57XP1_10		OK		Dilikani Ngubane 526515 21.11.2025	M4
10031	A	Remove connector 93XP150		OK		Dilikani Ngubane 526515 21.11.2025	M4
10032	A	Close circuit breaker 34Q1 and 57Q1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10033	A	Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 57XP1_10 (10.b1,10a2,10a1)		OK		Dilikani Ngubane 526515 21.11.2025	M4

10034	R	400Vac +- 5% tolerance is measured between all three phases of 57XP1_10		OK		Dilikani Ngubane 526515 21.11.2025	M4
10035	A	Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 93XP150 (E2,E3,E1)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10036	R	400Vac +- 5% tolerance is measured between all three phases on connector 93XP150		OK		Dilikani Ngubane 526515 21.11.2025	M4
10037	A	Put back connector 57XP1_10		OK		Dilikani Ngubane 526515 21.11.2025	M4
10038	A	Put back connector 93XP150		OK		Dilikani Ngubane 526515 21.11.2025	M4
10039	A	Switch off the 400Vac power supply from the socket		OK		Dilikani Ngubane 526515 21.11.2025	M4
10040	I	Auxiliary Converters Command		OK		Amanda Ntuli 526239 20.11.2025	M4
10041	A	Battery Connection Train Lines Measure continuity between END 1 90XR14 pin 30 END 2 90XP24 pin 30		OK		Amanda Ntuli 526239 20.11.2025	M4
10042	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10043	A	Battery Disconnection Train Lines Measure continuity between END 1 90XR14 pin 31 END 2 90XP24 pin 31		OK		Amanda Ntuli 526239 20.11.2025	M4
10044	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10045	A	IES StatusTrain Lines Measure continuity between END 1 90XR15 pin 61 END 2 90XP25 pin 61 and END 1 90XR15 pin 62 END 2 90XP25 pin 62		OK		Amanda Ntuli 526239 20.11.2025	M4
10046	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 3 – TCMS Network

3.1 Instructions list

3.1.1 TCMS Network

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	TCMS Network (SPP=25)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10002	I	Initial conditions		OK		Mphato Mphahlele 480716 21.11.2025	M4
10003	I	Vehicle test bench should be configured as TC1: 1. TC1 Dataplugs 2. MCE switch set to TC1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10004	A	110Vdc supply to the Normal Train line is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10005	I	Power Supply to the Router Switches		OK		Mphato Mphahlele 480716 21.11.2025	M4
10006	I	Power supply to the 25A10 SWITCH ETHERNET (CRS1)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10007	A	Close Circuit Breaker 25Q10		OK		Mphato Mphahlele 480716 21.11.2025	M4
10008	R	CRS1 25A10 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10009	I	Power supply to the 25A11 SWITCH ETHERNET (CRS2)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10010	A	Close Circuit Breaker 25Q11		OK		Mphato Mphahlele 480716 21.11.2025	M4
10011	R	CRS2 25A11 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10012	I	Power supply to the 25A14 ETHERNET REPEATER (TBR)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10013	A	Close Circuit Breaker 25Q14		OK		Mphato Mphahlele 480716 21.11.2025	M4
10014	R	TBR 25A14 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10015	A	Close Circuit Breaker 25Q6		OK		Mphato Mphahlele 480716 21.11.2025	M4

10016	A	Close Circuit Breaker 25Q7		OK		Mphato Mphahlele 480716 21.11.2025	M4
10017	I	Ethernet Loop		OK		Mphato Mphahlele 480716 21.11.2025	M4
10018	A	For each CRS, check that the Ethernet Loop LEDs are flashing		OK		Mphato Mphahlele 480716 21.11.2025	M4
10019	R	CRS1 has LEDs on ports X3 and X4 flashing		OK		Mphato Mphahlele 480716 21.11.2025	M4
10020	R	CRS2 has ONLY LED on port X4 flashing		OK		Mphato Mphahlele 480716 21.11.2025	M4
10021	R	Check on the Test Bench DDU that all Router Switches are available on the network		OK		Mphato Mphahlele 480716 21.11.2025	M4
10022	I	Power Supply to the BRIOMS		OK		Mphato Mphahlele 480716 21.11.2025	M4
10023	I	Power supply to the 25A6 BRIOM 40/10 ETH 6		OK		Mphato Mphahlele 480716 21.11.2025	M4
10024	R	BRIOM 25A6 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10025	A	Check visually that ground braid is connected to BRIOM		OK		Mphato Mphahlele 480716 21.11.2025	M4
10026	I	Power supply to the 25A7 BRIOM 40/10 ETH 7		OK		Mphato Mphahlele 480716 21.11.2025	M4
10027	R	BRIOM 25A7 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10028	A	Check visually that ground braid is connected to BRIOM		OK		Mphato Mphahlele 480716 21.11.2025	M4

Section 4 – Cabin Control

4.1 Instructions list

4.1.1 Cabin Control

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Cabin Control (SPP=020)		OK		Amanda Ntuli 526239 20.11.2025	M4
10002	I	Train Lines		OK		Amanda Ntuli 526239 20.11.2025	M4
10003	A	Cab Selected on Train - Train Lines Measure continuity between END1 90XR14 pin 3 END2 90XP24 pin 3		OK		Amanda Ntuli 526239 20.11.2025	M4
10004	R	Both pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10005	A	Cab Active TC1 Train Lines Measure continuity between END1 90XR14 pin 4 END2 90XP24 pin 4		OK		Amanda Ntuli 526239 20.11.2025	M4
10006	R	Both pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10007	A	Cab Active TC2 Train Lines Measure continuity between END1 90XR14 pin 5 END2 90XP24 pin 5		OK		Amanda Ntuli 526239 20.11.2025	M4
10008	R	Both pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10009	A	Master Key TC1 Train Lines Measure continuity between END1 90XR14 pin 17 END2 90XP24 pin 17		OK		Amanda Ntuli 526239 20.11.2025	M4
10010	R	Both pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 5 – Internal Lighting

5.1 Instructions list

5.1.1 Internal Lighting

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Internal Lighting (SPP=52)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10002	I	Initial Conditions		OK		Mphato Mphahlele 480716 21.11.2025	M4
10003	I	110Vdc Normal line is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10004	I	Cleaning Lighting Command		OK		Mphato Mphahlele 480716 21.11.2025	M4
10005	A	110Vdc Permanent Train Line Apply 110V on 93XT304_1 pin 4 to simulate permanent supply		OK		Mphato Mphahlele 480716 21.11.2025	M4
10006	A	Close Circuit Breaker 52Q3		OK		Mphato Mphahlele 480716 21.11.2025	M4
10007	A	Close Circuit Breaker 52Q4		OK		Mphato Mphahlele 480716 21.11.2025	M4
10008	A	Close Circuit Breaker 52Q5		OK		Mphato Mphahlele 480716 21.11.2025	M4
10009	R	All saloon emergency lights (low intensity) are OFF on all light modules (Left + Right).		OK		Mphato Mphahlele 480716 21.11.2025	M4
10010	A	Turn Cleaning Staff Lights Switch 52S6 to ON position		OK		Mphato Mphahlele 480716 21.11.2025	M4
10011	R	All saloon emergency lights (low intensity) are "ON" on all light modules (Left + Right).		OK		Mphato Mphahlele 480716 21.11.2025	M4
10012	A	Reset Circuit Breaker 52Q5 (Open and Close)		OK		Mphato Mphahlele 480716 21.11.2025	M4

10013	A	Close Circuit Breaker 52Q1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10014	A	Close Circuit Breaker 52Q2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10015	R	All saloon emergency lights (low intensity) are "ON" on all light modules (Left + Right).		OK		Mphato Mphahlele 480716 21.11.2025	M4

Section 6 – PACIS System

6.1 Instructions list

6.1.1 PACIS System

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	PACIS System IO (SPP=054)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10002	I	Initial conditions		OK		Mphato Mphahlele 480716 21.11.2025	M4
10003	I	110Vdc Normal line is connected and ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10004	I	Circuit Breakers		OK		Mphato Mphahlele 480716 21.11.2025	M4
10005	A	Close Circuit Breaker 54Q1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10006	A	Close Circuit Breaker 54Q2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10007	A	Close Circuit Breaker 54Q10		OK		Mphato Mphahlele 480716 21.11.2025	M4
10008	A	Close Circuit Breaker 54Q11		OK		Mphato Mphahlele 480716 21.11.2025	M4
10009	A	Close Circuit Breaker 55Q2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10010	A	Close Circuit Breaker 55Q3		OK		Mphato Mphahlele 480716 21.11.2025	M4
10011	R	All 'Pacis System' circuit breakers are closed		OK		Mphato Mphahlele 480716 21.11.2025	M4
10012	I	Power Supply of Router Switches		OK		Mphato Mphahlele 480716 21.11.2025	M4
10013	I	Ethernet Switch CRS1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10014	R	CRS1 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10015	I	Ethernet Switch CRS2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10016	R	CRS2 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4

10017	I	DPAI-1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10018	R	DPAI-1 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10019	I	DPAI-2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10020	R	DPAI-2 is ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10021	I	Lateral Display 'LAT1'		OK		Mphato Mphahlele 480716 21.11.2025	M4
10022	R	The PWR (power) LED is "ON" on the Lateral Display 'LAT1'.		OK		Mphato Mphahlele 480716 21.11.2025	M4
10023	I	Lateral Display 'LAT2'		OK		Mphato Mphahlele 480716 21.11.2025	M4
10024	R	The PWR (power) LED is "ON" on the Lateral Display 'LAT2'.		OK		Mphato Mphahlele 480716 21.11.2025	M4
10025	I	Interior Display 'INT1'		OK		Mphato Mphahlele 480716 21.11.2025	M4
10026	R	The PWR (power) LED is "ON" on the Interior Display 'INT1'.		OK		Mphato Mphahlele 480716 21.11.2025	M4
10027	I	Interior Display 'INT2'		OK		Mphato Mphahlele 480716 21.11.2025	M4
10028	R	The PWR (power) LED is "ON" on the Interior Display 'INT2' is ON.		OK		Mphato Mphahlele 480716 21.11.2025	M4
10029	I	Impedance of Loudspeaker		OK		Mphato Mphahlele 480716 21.11.2025	M4
10030	I	Saloon Speakers Commanded by DPAI-1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10031	A	Measure the impedance connector '54XP1_X4' between pins: z32(+) and z30 (-).		OK		Mphato Mphahlele 480716 21.11.2025	M4
10032	R	ImpedanceResult Max : x <= 32.00 (Ohm)		OK	31.1	Mphato Mphahlele 480716 21.11.2025	M4
10033	I	Saloon Speakers Commanded by DPAI-2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10034	A	Measure the impedance connector '54XP2_X4' between pins: z32(+) and z30 (-).		OK		Mphato Mphahlele 480716 21.11.2025	M4

10035	R	ImpedanceResult Max : x <= 32.00 (Ohm)		OK	31.1	Mphato Mphahlele 480716 21.11.2025	M4

Section 7 – Train Ground Communication

7.1 Instructions list

7.1.1 ERTMS

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	ERTMS (SPP=062)		OK		Amanda Ntuli 526239 20.11.2025	M4
10002	A	ERTMS Bypass Train Lines Check continuity between END1 90XR14 pin 11 END2 90XP24 pin 11		OK		Amanda Ntuli 526239 20.11.2025	M4
10003	R	Both pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10004	A	Emergency Brake ERTMS 1 Train Lines Check continuity between END1 90XR14 pin 18 END2 90XP24 pin 18		OK		Amanda Ntuli 526239 20.11.2025	M4
10005	R	Both pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10006	I	Emergency Brake ERTMS 2 Train Lines Check continuity between END1 90XR14 pin 20 END2 90XP24 pin 20		OK		Amanda Ntuli 526239 20.11.2025	M4
10007	R	Both pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10008	I	Eurobalise Antenna Cable		OK		Amanda Ntuli 526239 20.11.2025	M4
10009	A	Check continuity between [Inter-car (LOCAL: +END1; Connector -90XR10) and Inter-car (LOCAL: +END2; connector -90XP20)] according to the image below.		OK		Amanda Ntuli 526239 20.11.2025	M4
10010	R	Eurobalise Antenna cable is correctly configured		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 8 – Rescue Mode and Emergency Disconnection

8.1 Instructions list

8.1.1 Rescue Mode and Emergency Disconnection

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Rescue Mode and Emergency Disconnection (SPP=027)		OK		Amanda Ntuli 526239 20.11.2025	M4
10002	I	Backup Mode		OK		Amanda Ntuli 526239 20.11.2025	M4
10003	R	Points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10004	A	Check continuity on Timer 27D1 between points A4 and B3		OK		Amanda Ntuli 526239 20.11.2025	M4
10005	A	Backup Mode Train Lines Check continuity between END1 90XR15 pin23 END2 90XP25 pin 23 and 27K1 A1		OK		Amanda Ntuli 526239 20.11.2025	M4
10006	R	All points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10007	A	Check continuity between 27K1 A2 and Ground		OK		Amanda Ntuli 526239 20.11.2025	M4
10008	R	The points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10009	I	Emergency Disconnection		OK		Amanda Ntuli 526239 20.11.2025	M4
10010	A	Emergency Disconnection Train Lines Check continuity between END1 90XR15 pin24 END2 90XP25 pin 24		OK		Amanda Ntuli 526239 20.11.2025	M4
10011	R	All points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 9 – Emergency Brake

9.1 Instructions list

9.1.1 Emergency Brake

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Emergency Brake (SPP=044)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10002	I	Initial Conditions		OK		Mphato Mphahlele 480716 21.11.2025	M4
10003	I	No PEAs are activated		OK		Mphato Mphahlele 480716 21.11.2025	M4
10004	I	110Vdc Normal power supply should be connected to the vehicle and ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10005	I	Visual Inspection		OK		Mphato Mphahlele 480716 21.11.2025	M4
10006	A	Physically and visually inspect all the Disk Break Units (DBU) and brake pads, to ensure they are securely fitted.		OK		Mphato Mphahlele 480716 21.11.2025	M4
10007	R	All the brake DBUs are correctly installed, and all the brake pads are correctly installed and locked.		OK		Mphato Mphahlele 480716 21.11.2025	M4
10008	A	Check the piping installation		OK		Mphato Mphahlele 480716 21.11.2025	M4
10009	R	All the pipes are installed on the vehicle		OK		Mphato Mphahlele 480716 21.11.2025	M4
10010	A	Check all the Passenger Emergency Alarm handles, and ensure they are connected to their respective connectors		OK		Mphato Mphahlele 480716 21.11.2025	M4
10011	R	All the PEAs are installed and connected		OK		Mphato Mphahlele 480716 21.11.2025	M4
10012	I	Train Lines		OK		Mphato Mphahlele 480716 21.11.2025	M4
10013	A	Emergency Brake Loop Train Lines Check continuity between END1 90XR24 pin 8 END2 90XP34 pin 8		OK		Mphato Mphahlele 480716 21.11.2025	M4
10014	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10015	A	Emergency Brake Loop Override Train Lines Check continuity between		OK		Amanda Ntuli 526239 20.11.2025	M4

		END1 90XR24 pin 9 END2 90XP34 pin 9					
10016	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10017	I	Emergency Brake Train Line Check continuity between END1 90XR25 pin 67 END2 90XP35 pin 67		OK		Amanda Ntuli 526239 20.11.2025	M4
10018	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10019	A	PEA Loop OTDR Train Lines Check continuity between END1 90XR24 pin 10 END2 90XP34 pin 10		OK		Amanda Ntuli 526239 20.11.2025	M4
10020	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10021	A	PEA Loop Train Lines Check continuity between END1 90XR25 pin 95 END2 90XP35 pin95		OK		Amanda Ntuli 526239 20.11.2025	M4
10022	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10023	A	Close Circuit breaker 44Q1		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 10 – Service Brake

10.1 Instructions list

10.1.1 Service Brake

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Service Brake (SPP=040)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10002	I	Initial Conditions		OK		Dilikani Ngubane 526515 21.11.2025	M4
10003	I	No air supply to the vehicle		OK		Dilikani Ngubane 526515 21.11.2025	M4
10004	I	All brake panel cocks are in normal position (not isolated)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10005	I	110Vdc Normal power supply should be connected to the vehicle and ON		OK		Dilikani Ngubane 526515 21.11.2025	M4
10006	I	Follow the procedure in the document below to upload software onto the TBCU electronic. ***[16-31-51-335717_TBCU Software Upload.pdf]***		OK		Dilikani Ngubane 526515 21.11.2025	M4
10007	I	Power Supply		OK		Dilikani Ngubane 526515 21.11.2025	M4
10008	A	Remove the connector 10XR12_XCB2 from the propulsion box		OK		Dilikani Ngubane 526515 21.11.2025	M4
10009	A	Close Circuit Breaker 33Q1, 33Q3 and 33Q5		OK		Dilikani Ngubane 526515 21.11.2025	M4
10010	A	Check the voltage on connector 10XR12_XCB2 between pins 4 (+) and 69 (-) ; 4(+) and 67(-); and 5(+) and 68(-)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10011	R	Battery Voltage (above 80Vdc) is measured on connector 10XR12_XCB2 between pins 4 (+) and 69 (-) ; 4(+) and 67(-); and 5(+) and 68(-)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10012	A	Open Circuit Breaker 33Q1 and 33Q3, Replace connector 10XR12_XCB2 on the propulsion box, and Close Circuit breaker 33Q1 and 33Q3		OK		Dilikani Ngubane 526515 21.11.2025	M4
10013	A	Remove the connector -40XP2_C2_16 from pneumatic brake panel		OK		Dilikani Ngubane 526515 21.11.2025	M4
10014	A	Close Circuit Breaker 40Q1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10015	A	Check the voltage on connector 40XP2_C2_16 between pins 13 (+) and 31 (-)		OK		Dilikani Ngubane 526515 21.11.2025	M4

10016	R	Battery Voltage (above 80Vdc) is measured on connector 40XP2_C2_16 between pins 13 (+) and 31 (-)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10017	A	Open Circuit Breaker 40Q1, Replace connector -40XP2_C2_16 on the pneumatic brake panel, and Close Circuit breaker -40Q1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10018	R	The pneumatic brake panel 40A2 is ON		OK		Dilikani Ngubane 526515 21.11.2025	M4
10019	I	Train Lines		OK		Amanda Ntuli 526239 20.11.2025	M4
10020	A	EB Reduced Train Lines Check continuity between END1 90XR15 pin 60 END2 90XP25 pin 60		OK		Amanda Ntuli 526239 20.11.2025	M4
10021	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10022	A	Brake Applied Train Lines Check continuity between END1 90XR15 pin 50 END2 90XP25 pin 50		OK		Amanda Ntuli 526239 20.11.2025	M4
10023	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10024	A	Remote Isolation Train Lines Check continuity between END1 90XR15 pin 59 END2 90XP25 pin 59		OK		Amanda Ntuli 526239 20.11.2025	M4
10025	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 11 – Holding and Parking Brake

11.1 Instructions list

11.1.1 Holding and Parking Brake

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Holding and Parking Brake (SPP_045)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10002	I	Initial Conditions		OK		Dilikani Ngubane 526515 21.11.2025	M4
10003	A	Using the tools list on the side of your screen, record the serial number of the manometer that will be used during this test.		OK		Dilikani Ngubane 526515 21.11.2025	M4
10004	A	Check that the pressure on Test point C2.11/1 is >5bar		OK		Dilikani Ngubane 526515 21.11.2025	M4
10005	I	Visual Inspection		OK		Dilikani Ngubane 526515 21.11.2025	M4
10006	A	Check the installation of the manual parking brake release components (lever + cable)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10007	R	The lever is securely fixed (tight), and the cable is correctly attached to the bogie (there is no excess cable and all clamps are installed)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10008	I	Circuit Breakers		OK		Dilikani Ngubane 526515 21.11.2025	M4
10009	A	Close Circuit Breaker 33Q3		OK		Dilikani Ngubane 526515 21.11.2025	M4
10010	A	Close Circuit Breaker 33Q5		OK		Dilikani Ngubane 526515 21.11.2025	M4
10011	I	Parking Brake Pressure Switch		OK		Dilikani Ngubane 526515 21.11.2025	M4
10012	R	Read Defined Variable [TT] (TBCU4)LI_PARK_BR_RELEASE = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10013	R	Read Defined Variable [TT] (TBCU4)LI_BRAKE_STAT = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4
10014	R	Read Defined Variable [TT] (MPU1)tbcu4_parkbrakerelease = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10015	R	Read Defined Variable [TT] (MPU1)tbcu4_li_pbrake_stat = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4

10016	A	Parking Brake Applied Train Lines Check continuity between END1 90XR15 pin 77 END2 90XP25 pin 77		OK		Amanda Ntuli 526239 20.11.2025	M4
10017	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10018	A	Remote Parking Command Train Lines Check continuity between END1 90XR15 pin 68 END2 90XP25 pin 68		OK		Amanda Ntuli 526239 20.11.2025	M4
10019	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10020	I	Parking Brake Applied		OK		Dilikani Ngubane 526515 21.11.2025	M4
10021	I	For this section of the test, ensure that the pressure on test point C2.11/1 is ALWAYS BELOW 4.8 Bar. if it goes above, turn the Isolation cock C2.3.2 to CLOSE position to drain the air		OK		Dilikani Ngubane 526515 21.11.2025	M4
10022	A	Position the Isolation cock C2.3.2 in CLOSE position. Allow the parking brake air pressure to drain to below 4.5 Bar. Use the test point C2.11/1 to verify the air pressure <4.5 Bar		OK		Dilikani Ngubane 526515 21.11.2025	M4
10023	R	Pressure at test point C2.11/1 <4.5 Bar		OK		Dilikani Ngubane 526515 21.11.2025	M4
10024	R	Read Defined Variable [TT] (TBCU4)LI_PARK_BR_RELEASE = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4
10025	R	Read Defined Variable [TT] (MPU1)tbcu4_parkbrakerelease = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4
10026	A	Return the Isolation cock C2.3.2 to OPEN position		OK		Dilikani Ngubane 526515 21.11.2025	M4
10027	R	Read Defined Variable [TT] (TBCU4)LI_BRAKE_STAT = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10028	R	Read Defined Variable [TT] (MPU1)tbcu4_li_pbrake_stat = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10029	R	Read Defined Variable [TT] (TBCU4)LI_PARK_BR_DC = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4
10030	R	Read Defined Variable [TT] (MPU1)tbcu4_parkbrakeisoldc = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4
10031	R	Read Defined Variable [TT] (MPU1)li_pbk_m4parkbrakeisol = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4

10032	A	Position the Isolation cock C2.3.2 in CLOSE position		OK		Dilikani Ngubane 526515 21.11.2025	M4
10033	R	Read Defined Variable [TT] (MPU1)li_pbk_m4parkbrakeisol = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10034	R	Read Defined Variable [TT] (TBCU4)LI_BRAKE_STAT = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4
10035	R	Read Defined Variable [TT] (MPU1)tbcu4_li_pbrake_stat = 0.0		OK	0	Dilikani Ngubane 526515 21.11.2025	M4
10036	R	Read Defined Variable [TT] (TBCU4)LI_PARK_BR_DC = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10037	R	Read Defined Variable [TT] (MPU1)tbcu4_parkbrakeisoldc = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10038	A	Return the Isolation cock C2.3.2 to OPEN position		OK		Dilikani Ngubane 526515 21.11.2025	M4

Section 12 – Passenger Doors

12.1 Instructions list

12.1.1 Passenger Doors

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Passenger Doors (SPP=050)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10002	I	Initial conditions		OK		Mphato Mphahlele 480716 21.11.2025	M4
10003	I	110Vdc Normal power supply is connected to the vehicle and ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10004	I	Circuit Breakers		OK		Mphato Mphahlele 480716 21.11.2025	M4
10005	A	Close Circuit Breaker 50Q1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10006	R	DCU 1 is powered ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10007	R	Check on the DDU that DCU1 is online		OK		Mphato Mphahlele 480716 21.11.2025	M4
10008	A	Close Circuit Breaker 50Q2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10009	R	DCU 2 is powered ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10010	R	Check on the DDU that DCU2 is online		OK		Mphato Mphahlele 480716 21.11.2025	M4
10011	A	Close Circuit Breaker 50Q3		OK		Mphato Mphahlele 480716 21.11.2025	M4
10012	R	DCU 3 is powered ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10013	R	Check on the DDU that DCU3 is online		OK		Mphato Mphahlele 480716 21.11.2025	M4
10014	A	Close Circuit Breaker 50Q4		OK		Mphato Mphahlele 480716 21.11.2025	M4
10015	R	DCU 4 is powered ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10016	R	Check on the DDU that DCU4 is online		OK		Mphato Mphahlele 480716 21.11.2025	M4

10017	A	Close Circuit Breaker 50Q5		OK		Mphato Mphahlele 480716 21.11.2025	M4
10018	R	DCU 5 is powered ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10019	R	Check on the DDU that DCU5 is online		OK		Mphato Mphahlele 480716 21.11.2025	M4
10020	A	Close Circuit Breaker 50Q6		OK		Mphato Mphahlele 480716 21.11.2025	M4
10021	R	DCU 6 is powered ON		OK		Mphato Mphahlele 480716 21.11.2025	M4
10022	R	Check on the DDU that DCU6 is online		OK		Mphato Mphahlele 480716 21.11.2025	M4
10023	A	Close Circuit Breaker 50Q7		OK		Mphato Mphahlele 480716 21.11.2025	M4
10024	I	Car ID Code		OK		Mphato Mphahlele 480716 21.11.2025	M4
10025	A	Using the DDU on the test bench, check that all the doors on M4 are available - as in the picture below		OK		Mphato Mphahlele 480716 21.11.2025	M4
10026	R	All doors are available		OK		Mphato Mphahlele 480716 21.11.2025	M4
10027	I	Train Lines and Safety Loop		OK		Amanda Ntuli 526239 20.11.2025	M4
10028	A	ERTMS Auth Left Train Lines Check continuity between END1 90XR15 pin 44 END2 90XP25 pin 44		OK		Amanda Ntuli 526239 20.11.2025	M4
10029	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10030	A	ERTMS Auth Right Train Lines Check continuity between END1 90XR15 pin 47 END2 90XP25 pin 47		OK		Amanda Ntuli 526239 20.11.2025	M4
10031	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10032	A	Doors Open Train Lines Check continuity between END1 90XR15 pin 66 END2 90XP25 pin 66		OK		Amanda Ntuli 526239 20.11.2025	M4
10033	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4

10034	A	Door Close Right Train Lines Check continuity between END1 90XR15 pin 78 END2 90XP25 pin 78		OK		Amanda Ntuli 526239 20.11.2025	M4
10035	A	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10036	A	Door Close Left Train Lines Check continuity between END1 90XR15 pin 79 END2 90XP25 pin 79		OK		Amanda Ntuli 526239 20.11.2025	M4
10037	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10038	A	Door Auth Left Train Lines Check continuity between END1 90XR15 pin 85 END2 90XP25 pin 85		OK		Amanda Ntuli 526239 20.11.2025	M4
10039	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10040	A	Door Auth Right Train Lines Check continuity between END1 90XR15 pin 84 END2 90XP25 pin 84		OK		Amanda Ntuli 526239 20.11.2025	M4
10041	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10042	A	V<3km/h Train Lines Check continuity between END1 90XR15 pin 29 END2 90XP25 pin 29		OK		Amanda Ntuli 526239 20.11.2025	M4
10043	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10044	A	Door Auth Left Train Lines Check continuity between END1 90XR15 pin 85 END2 90XP25 pin 85		OK		Amanda Ntuli 526239 20.11.2025	M4
10045	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10046	A	Door Auth Right Train Lines Check continuity between END1 90XR15 pin 84 END2 90XP25 pin 84		OK		Amanda Ntuli 526239 20.11.2025	M4
10047	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4

10048	A	Safety Doors Loop Train Lines Check continuity between END1 90XR15 pin 96 END2 90XP25 pin 96		OK		Amanda Ntuli 526239 20.11.2025	M4
10049	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10050	I	Left Side Doors		OK		Mphato Mphahlele 480716 21.11.2025	M4
10051	A	Put the connector written M4 on 90XP15 End 2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10052	I	Door 1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10053	I	The below signals are now simulated: - Door Auth Right - Door Open Right - V<3km/h		OK		Mphato Mphahlele 480716 21.11.2025	M4
10054	A	Force [TT] (MPU1)lo_dor_m4opendoorleft = 1.0		OK		Mphato Mphahlele 480716 21.11.2025	M4
10055	R	Check that the door opens in 3 sec (+1/-0)		OK		Mlungisi Madela 529927 28.11.2025	M4
10056	R	Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05]		OK		Mphato Mphahlele 480716 21.11.2025	M4
10057	I	Door Opening Gap		OK		Mphato Mphahlele 480716 21.11.2025	M4
10058	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10059	R	Door 1 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1396	Mphato Mphahlele 480716 21.11.2025	M4
10060	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10061	R	Door 1 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1402	Mphato Mphahlele 480716 21.11.2025	M4
10062	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10063	R	Door 1 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1404	Mphato Mphahlele 480716 21.11.2025	M4
10064	I	Door 3		OK		Mlungisi Madela 529927 28.11.2025	M4

10065	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Mlungisi Madela 529927 28.11.2025	M4
10066	R	Door 3 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1393	Mlungisi Madela 529927 28.11.2025	M4
10067	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Mlungisi Madela 529927 28.11.2025	M4
10068	R	Door 3 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1405	Mlungisi Madela 529927 28.11.2025	M4
10069	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Mlungisi Madela 529927 28.11.2025	M4
10070	R	Door 3 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1402	Mlungisi Madela 529927 28.11.2025	M4
10071	I	Door 5		OK		Mlungisi Madela 529927 28.11.2025	M4
10072	I	Door Opening Gap		OK		Mphato Mphahlele 480716 21.11.2025	M4
10073	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10074	R	Door 5 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1400	Mphato Mphahlele 480716 21.11.2025	M4
10075	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10076	R	Door 5 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1404	Mphato Mphahlele 480716 21.11.2025	M4
10077	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10078	R	Door 5 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1408	Mphato Mphahlele 480716 21.11.2025	M4
10079	I	Right Side Doors		OK		Mphato Mphahlele 480716 21.11.2025	M4
10080	I	Keep the connector 90XP15 End 2.		OK		Mphato Mphahlele 480716 21.11.2025	M4
10081	I	Door 2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10082	A	The below signals remain simulated: - Door Auth Right - Door Open Right - V<3km/h		OK		Mphato Mphahlele 480716 21.11.2025	M4

10083	A	Force [TT] (MPU1)Io_dor_m4opendoorright = 1.0		OK		Mphato Mphahlele 480716 21.11.2025	M4
10084	R	Check that the door opens in 3 sec (+1/-0)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10085	R	Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05]		OK		Mphato Mphahlele 480716 21.11.2025	M4
10086	I	Door Opening Gap		OK		Mphato Mphahlele 480716 21.11.2025	M4
10087	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door).		OK		Mphato Mphahlele 480716 21.11.2025	M4
10088	R	Door 2 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1394	Mphato Mphahlele 480716 21.11.2025	M4
10089	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10090	R	Door 2 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1402	Mphato Mphahlele 480716 21.11.2025	M4
10091	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10092	R	Door 2 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1396	Mphato Mphahlele 480716 21.11.2025	M4
10093	I	Door 4		OK		Mphato Mphahlele 480716 21.11.2025	M4
10094	I	Door Opening Gap		OK		Mphato Mphahlele 480716 21.11.2025	M4
10095	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10096	R	Door 4 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1396	Mphato Mphahlele 480716 21.11.2025	M4
10097	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10098	R	Door 4 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1404	Mphato Mphahlele 480716 21.11.2025	M4
10099	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10100	R	Door 4 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1400	Mphato Mphahlele 480716 21.11.2025	M4

10101	I	Door 6		OK		Mphato Mphahlele 480716 21.11.2025	M4
10102	I	Door Opening Gap		OK		Mphato Mphahlele 480716 21.11.2025	M4
10103	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10104	R	Door 6 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1394	Mphato Mphahlele 480716 21.11.2025	M4
10105	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10106	R	Door 6 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1402	Mphato Mphahlele 480716 21.11.2025	M4
10107	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Mphato Mphahlele 480716 21.11.2025	M4
10108	R	Door 6 gapResult Min/Max : 1390<= x <= 1410 (mm)		OK	1398	Mphato Mphahlele 480716 21.11.2025	M4
10109	I	Obstacle Detection		OK		Mphato Mphahlele 480716 21.11.2025	M4
10110	A	Position an obstacle on the floor in the centre of the door closing line for all the doors		OK		Mphato Mphahlele 480716 21.11.2025	M4
10111	A	Force [TT] (MPU1)lo_dor_m4opendoorright = 0		OK		Mphato Mphahlele 480716 21.11.2025	M4
10112	A	Force [TT] (MPU1)lo_dor_m4opendoorleft = 0		OK		Mphato Mphahlele 480716 21.11.2025	M4
10113	R	The doors will hit the obstacle, reopen and try to close again 3 times. On the third attempt it will stop and stand ajar - free to be opened manually		OK		Mphato Mphahlele 480716 21.11.2025	M4
10114	A	Safety Doors Loop Train Lines Check continuity between END1 90XR15 pin 96 END2 90XP25 pin 96		OK		Mphato Mphahlele 480716 21.11.2025	M4
10115	R	There is no continuity between the two points		OK		Mphato Mphahlele 480716 21.11.2025	M4
10116	A	Force [TT] (MPU1)lo_dor_m4opendoorright = 1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10117	A	Force [TT] (MPU1)lo_dor_m4opendoorleft = 1		OK		Mphato Mphahlele 480716 21.11.2025	M4
10118	R	The door opens fully		OK		Mphato Mphahlele 480716	M4

						21.11.2025	
10119	A	Remove the obstacle		OK		Mphato Mphahlele 480716 21.11.2025	M4
10120	A	Release [TT] (MPU1)lo_dor_m4opendoorleft		OK		Mphato Mphahlele 480716 21.11.2025	M4
10121	A	Release [TT] (MPU1)lo_dor_m4opendoorright		OK		Mphato Mphahlele 480716 21.11.2025	M4
10122	A	Remove the connector on 90XP15 End 2		OK		Mphato Mphahlele 480716 21.11.2025	M4
10123	I	End of Test		OK		Mlungisi Madela 529927 28.11.2025	M4

Section 13 – HVAC Air Conditioning

13.1 Instructions list

13.1.1 HVAC_TK

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Air Conditioning (SPP=057)		NE			M4
10002	I	Initial conditions		NE			M4
10003	A	Car Should be Prepared		NE			M4
10004	I	Power Supply		NE			M4
10005	A	Close Circuit Breaker 57Q1		NE			M4
10006	A	Close Circuit Breaker 57Q2		NE			M4
10007	I	HVAC Electronic Power Supply		NE			M4
10008	A	Close Circuit Breaker F1 on the HVAC Panel		NE			M4
10009	I	The HVAC electronic is ON		NE			M4
10010	A	Turn the control switch to AUTO position on the HVAC Panel		NE			M4
10011	I	Software Upload		NE			M4
10012	I	Follow the procedure in the document below to upload software onto the HVAC electronic		NE			M4
10013	A			NE			M4
10014	I	Checking 400Vac		NE			M4
10015	A	Ensure that the 400Vac Shore Supply is connected to the vehicle, else connect it		NE			M4

10016	A	Disconnect connector 57XP4__X5 and use a multimeter to measure 400Vac between phases a1, a2 and b1		NE			M4
10017	R	400Vac (+-5%) measured		NE			M4
10018	A	On the same connector, with a phasemeter, check the correct Phase Rotation between points L1- Phase a1, L2- Phase a2 and L3- Phase b1.		NE			M4
10019	R	The phase rotation is correct between all three phases		NE			M4
10020	A	Normalize connector 57XP4__X5		NE			M4
10021	I	HVAC 50% restriction		NE			M4
10022	A	Force [TT] NRG_HvacM450Cmd = 0		NE			M4
10023	I	HVAC inhib		NE			M4
10024	A	Force [TT] (MPU1)Io_hva_m4hvacinhibr1___1 = 1		NE			M4
10025	A	Force [TT] (MPU1)Io_hva_m4hvacinhibr2___1 = 1		NE			M4
10026	R	HVAC unit turns ON and starts to work		NE			M4
10027	I	Emergency Ventilation		NE			M4
10028	A	Force [TT] (MPU1)Io_hva_m4emergventil___1 = 1		NE			M4
10029	I	All saloon HVAC units work in Ventilation mode. Not heating/cooling		NE			M4
10030	A	Connect the laptop to the HVAC maintenance software using HCU Finder and check the actual working mode of HVAC		NE			M4
10031	R	Release [TT] (MPU1)Io_hva_m4emergventil___1		NE			M4
10032	I	Forced Mode (Saloon HVAC)		NE			M4

10033	I	In the maintenance software, select the 'Forced' tab, and use the "Required working mode" drop down box to force the following modes:		NE			M4
10034	I	For the next sections, walk through the whole car and physically check (feel) that the HVAC is functioning as desired		NE			M4
10035	A	Force Ventilation mode on the Saloon HVAC		NE			M4
10036	I	Ventilation Mode		NE			M4
10037	R	All saloon HVAC units work in Ventilation mode. Not heating/cooling		NE			M4
10038	I	Cooling Mode		NE			M4
10039	A	Force Cooling mode on the Saloon HVAC		NE			M4
10040	R	All saloon HVAC units work in Cooling mode		NE			M4
10041	I	Heating Mode		NE			M4
10042	A	Force Heating mode on the Saloon HVAC		NE			M4
10043	R	All saloon HVAC units work in Heating mode		NE			M4
10044	I	Self-Test		NE			M4
10045	A	Force Self-Test on the Saloon HVAC		NE			M4
10046	R	All saloon HVAC units work according to the mode described in the "Actual working mode"		NE			M4
10047	R	The Exhaust fans are Turned OFF		NE			M4
10048	I	HVAC Faults		NE			M4
10049	A	In the maintenance software, select the "Alarms / Warnings" tab		NE			M4
10050	A	Ensure there are no active faults on the HVAC		NE			M4

10051	R	No active faults identified on the HVAC unit		NE			M4
10052	A	Release [TT] (MPU1)lo_hva_m4hvacinhibr1___1		NE			M4
10053	A	Release [TT] (MPU1)lo_hva_m4hvacinhibr2___1		NE			M4
10054	A	Release [TT] NRG_HvacM450Cmd		NE			M4
10055	I	End of Test		NE			M4

13.1.2 HVAC_SME

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	HVA_057 Air Conditioning		OK		Dilikani Ngubane 526515 21.11.2025	M4
10002	I	Initial conditions		OK		Dilikani Ngubane 526515 21.11.2025	M4
10003	A	Car Should be Prepared with CVS running and 400V ac available in the car		OK		Dilikani Ngubane 526515 21.11.2025	M4
10004	I	HVAC AC Power Supply		OK		Dilikani Ngubane 526515 21.11.2025	M4
10005	A	Close Circuit Breaker 13Q1 and 13Q5		OK		Dilikani Ngubane 526515 21.11.2025	M4
10006	A	Check on the DDU if the HVAC is offline		OK		Dilikani Ngubane 526515 21.11.2025	M4
10007	I	Checking 400Vac		OK		Dilikani Ngubane 526515 21.11.2025	M4
10008	A	Close Circuit Breaker 57Q1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10009	A	Disconnect connector 57XP4_X5 and Measure 400Vac between all 3 phases which are a1- phase L1, a2- Phase L2 and b1- phase L3 of connector 57XP4_X5		OK		Dilikani Ngubane 526515 21.11.2025	M4
10010	R	400Vac measured between all phases		OK		Dilikani Ngubane 526515 21.11.2025	M4
10011	A	On same connector 57XP4_X5, with a phasemeter, check the correct Phase Rotation between points a1- Phase L1, a2- Phase L2 and b1- Phase L3.		OK		Dilikani Ngubane 526515 21.11.2025	M4
10012	R	The phase rotation is correct between all three phases		OK		Dilikani Ngubane 526515 21.11.2025	M4
10013	A	Reconnect 57XP4_X5		OK		Dilikani Ngubane 526515 21.11.2025	M4
10014	I	HVAC controller power supply		OK		Dilikani Ngubane 526515 21.11.2025	M4
10015	A	Close Circuit Breaker 57Q2		OK		Dilikani Ngubane 526515 21.11.2025	M4

10016	A	Allow the HVAC to initialize and check on the DDU if the HVAC is online		OK		Dilikani Ngubane 526515 21.11.2025	M4
10017	R	HVAC unit is online and starts to work		OK		Dilikani Ngubane 526515 21.11.2025	M4
10018	I	HVAC inhib		OK		Dilikani Ngubane 526515 21.11.2025	M4
10019	A	Force [TT] (MPU1)lo_hva_m4hvacinhibr1__1 = 1.0		OK		Dilikani Ngubane 526515 21.11.2025	M4
10020	A	Force [TT] (MPU1)lo_hva_m4hvacinhibr2__1 = 1.0		OK		Dilikani Ngubane 526515 21.11.2025	M4
10021	I	HVAC 50% restriction		OK		Dilikani Ngubane 526515 21.11.2025	M4
10022	A	Force [TT] NRG_HvacM450Cmd = 0		OK		Dilikani Ngubane 526515 21.11.2025	M4
10023	I	Saloon HVAC		OK		Dilikani Ngubane 526515 21.11.2025	M4
10024	I	HVAC web portal		OK		Dilikani Ngubane 526515 21.11.2025	M4
10025	A	The attached document is a procedure on how to navigate around the maintenance software.		OK		Dilikani Ngubane 526515 21.11.2025	M4
10026	I	Connect the laptop to the HVAC maintenance software using web browser. Enter the following IP address on the web browser 10.136.xxx.32 xxx represents the train number Login: maint Password: maint		OK		Dilikani Ngubane 526515 21.11.2025	M4
10027	R	On status tab, Active mode is off for both cab and saloon		OK		Dilikani Ngubane 526515 21.11.2025	M4
10028	A	Go to Alarms tab and clear all the alarms for saloon and cabin		OK		Dilikani Ngubane 526515 21.11.2025	M4
10029	I	HVAC saloon		OK		Dilikani Ngubane 526515 21.11.2025	M4
10030	I	Full "Self-test" saloon		OK		Dilikani Ngubane 526515 21.11.2025	M4
10031	I	For the following tests make sure on the webHMI tab you change controller to be controlled by webHMI and not MPU		OK		Dilikani Ngubane 526515 21.11.2025	M4
10032	A	Before running the full test, please click on reset test to reset the previous results.		OK		Dilikani Ngubane 526515 21.11.2025	M4

10033	A	Select Full-Test on the Saloon HVAC		OK		Dilikani Ngubane 526515 21.11.2025	M4
10034	R	All saloon HVAC units work according to the mode described in the "ACTIVE MODE" on the status tab		OK		Dilikani Ngubane 526515 21.11.2025	M4
10035	R	When the test is complete, please check if the status is showing as "TEST PASS" and the test took 3 mins +/- 2 seconds for each mode.		OK		Dilikani Ngubane 526515 21.11.2025	M4
10036	I	Forced Mode (Saloon HVAC)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10037	I	During all tests Walk through the whole car and physically check (feel) that the HVAC is functioning as desired		OK		Dilikani Ngubane 526515 21.11.2025	M4
10038	I	Go to maintenance tab to force the following modes		OK		Dilikani Ngubane 526515 21.11.2025	M4
10039	I	Cooling Mode		OK		Dilikani Ngubane 526515 21.11.2025	M4
10040	A	Select forced Cooling mode on the Saloon HVAC and let it run for 5 mins		OK		Dilikani Ngubane 526515 21.11.2025	M4
10041	R	All HVAC units are cooling		OK		Dilikani Ngubane 526515 21.11.2025	M4
10042	I	Heating Mode		OK		Dilikani Ngubane 526515 21.11.2025	M4
10043	A	Select forced Heating mode on the Saloon HVAC and let it run for 5 mins		OK		Dilikani Ngubane 526515 21.11.2025	M4
10044	R	All HVAC units are heating		OK		Dilikani Ngubane 526515 21.11.2025	M4
10045	I	HVAC Faults		OK		Dilikani Ngubane 526515 21.11.2025	M4
10046	A	In the maintenance software, select the "Alarms" tab		OK		Dilikani Ngubane 526515 21.11.2025	M4
10047	A	Ensure there are no active faults on the HVAC for the Saloon. Use the highlighted drop down to navigate between saloon and cabin.		OK		Dilikani Ngubane 526515 21.11.2025	M4
10048	R	No active faults identified on the HVAC unit		OK		Dilikani Ngubane 526515 21.11.2025	M4
10049	A	Release [TT] (MPU1)lo_hva_m4hvacinhibr1__1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10050	A	Release [TT] (MPU1)lo_hva_m4hvacinhibr2__1		OK		Dilikani Ngubane 526515 21.11.2025	M4

10051	A	Release [TT] NRG_HvacM450Cmd		OK		Dilikani Ngubane 526515 21.11.2025	M4
10052	I	End of test		OK		Dilikani Ngubane 526515 21.11.2025	M4

Section 14 – Fire Protection

14.1 Instructions list

14.1.1 Fire Protection

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Fire Protection System (SPP=067)		OK		Amanda Ntuli 526239 20.11.2025	M4
10002	I	Fire Detection Train Lines		OK		Amanda Ntuli 526239 20.11.2025	M4
10003	A	Fire Detection Train Lines Check continuity between END1 90XR14 pin 21 END2 90XP24 pin 21		OK		Amanda Ntuli 526239 20.11.2025	M4
10004	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10005	I	Continuity Test		OK		Amanda Ntuli 526239 20.11.2025	M4
10006	I	The following steps are continuity tests between the two points described in each step. Use a multimeter for this test.		OK		Amanda Ntuli 526239 20.11.2025	M4
10007	A	From : [(local: +END1 -90XR13.B (pin 4))] to: [-Inter-connector (local: +END2 -90XP23.b pin 4)]		OK		Amanda Ntuli 526239 20.11.2025	M4
10008	A	From : [(local: +END1 -90XR13.B (pin 5))] to: [-Inter-connector (local: +END2 -90XP23.b pin 5)]		OK		Amanda Ntuli 526239 20.11.2025	M4
10009	A	From : [(local: +END1 -90XR13.A (pin 7))] to: [-Inter-connector (local: +END2 -90XP23.a pin 7)]		OK		Amanda Ntuli 526239 20.11.2025	M4
10010	A	From : [(local: +END1 -90XR13.A (pin 8))] to: [-Inter-connector (local: +END2 -90XP23.a pin 8)]		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 15 – Traction and Electric Brake

15.1 Instructions list

15.1.1 Traction and Electric Brake

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Traction and Electric Brake (SPP=033)		OK		Dilikani Ngubane 526515 21.11.2025	M4
10002	I	Circuit Breakers and Configuration		OK		Dilikani Ngubane 526515 21.11.2025	M4
10003	A	Close Circuit Breaker 33Q2		OK		Dilikani Ngubane 526515 21.11.2025	M4
10004	A	Close Circuit Breaker 33Q4		OK		Dilikani Ngubane 526515 21.11.2025	M4
10005	A	Close Circuit Breaker 33Q5		OK		Dilikani Ngubane 526515 21.11.2025	M4
10006	I	Circuit Breaker 33Q1 and 33Q3 must be Opened		OK		Dilikani Ngubane 526515 21.11.2025	M4
10007	A	110Vdc Normal Traction EL Train Line Connect the connector written M4 on 90XP15 End 2		OK		Dilikani Ngubane 526515 21.11.2025	M4
10008	A	Close Circuit Breaker 33Q1		OK		Dilikani Ngubane 526515 21.11.2025	M4
10009	A	Close Circuit Breaker 33Q3		OK		Dilikani Ngubane 526515 21.11.2025	M4
10010	R	Read Defined Variable [TT] (TBCU4)LI_CAR_ID4 = 1.0		OK	1	Dilikani Ngubane 526515 21.11.2025	M4
10011	I	The TBCU should appear on TCMS network on DDU screen		OK		Dilikani Ngubane 526515 21.11.2025	M4
10012	I	Train Lines		OK		Amanda Ntuli 526239 20.11.2025	M4
10013	A	Forward Train Lines Check continuity between END1 90XR15 pin 25 END2 90XP25 pin 25		OK		Amanda Ntuli 526239 20.11.2025	M4
10014	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10015	A	Reverse Train Lines Check continuity between		OK		Amanda Ntuli 526239 20.11.2025	M4

		END1 90XR15 pin 30 END2 90XP25 pin 30					
10016	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10017	A	Traction Train Lines Check continuity between END1 90XR15 pin 31 END2 90XP25 pin 31		OK		Amanda Ntuli 526239 20.11.2025	M4
10018	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10019	A	No Brake Train Lines Check continuity between END1 90XR15 pin 32 END2 90XP25 pin 32		OK		Amanda Ntuli 526239 20.11.2025	M4
10020	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10021	A	Traction Interlock Bypass Train Lines Check continuity between END1 90XR14 pin 6 END2 90XP24 pin 6		OK		Amanda Ntuli 526239 20.11.2025	M4
10022	R	Both points are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10023	A	Traction Interlock Train Lines Check continuity between END1 90XR15 pin 41 END2 90XP25 pin 41 and -10XP12_XCB2 pin 8		OK		Amanda Ntuli 526239 20.11.2025	M4
10024	R	All pins are continuous		OK		Amanda Ntuli 526239 20.11.2025	M4
10025	A	110Vdc Normal Traction EL Train Line Remove the connector from 90XP15 End 2		OK		Amanda Ntuli 526239 20.11.2025	M4
10026	I	Coolant Liquid		OK		Amanda Ntuli 526239 20.11.2025	M4
10027	A	Check that the coolant level is at least 1/2 of the sight glass level indicator ***[9-48-59-278432_277624_Coolant Level Check.pdf]***		OK		Amanda Ntuli 526239 20.11.2025	M4
10028	R	Coolant Liquid Level is OK		OK		Amanda Ntuli 526239 20.11.2025	M4
10029	I	End of Test		OK		Amanda Ntuli 526239 20.11.2025	M4

Section 16 – Vehicle Normalization

16.1 Instructions list

16.1.1 Vehicle Normalization

I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Initial Conditions		OK		Dilikani Ngubane 526515 24.11.2025	M4
10002	I	The VFT procedures are all completed		OK		Dilikani Ngubane 526515 24.11.2025	M4
10003	I	Vehicle Normalization Check		OK		Dilikani Ngubane 526515 24.11.2025	M4
10004	R	On LV3 all Circuit Breakers are installed and secured		OK		Dilikani Ngubane 526515 24.11.2025	M4
10005	R	On LV3 all Dataplugs are installed, tightened and earth braids are fastened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10006	R	On LV3 all Connectors are tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10007	R	On LV3 there are no missing components, device, wiring or connectors.		OK		Dilikani Ngubane 526515 24.11.2025	M4
10008	R	On LV6 all Dataplugs are installed, tightened and earth braids are fastened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10009	R	On LV6 all Connectors are tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10010	R	On LV6 there are no missing components, device, wiring or connectors.		OK		Dilikani Ngubane 526515 24.11.2025	M4
10011	R	On HC Cubicle the Controller is installed and properly tightened and its connectors are tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10012	R	All DCUs are properly installed and secured		OK		Dilikani Ngubane 526515 24.11.2025	M4
10013	R	All Internal Displays are properly installed and secured		OK		Dilikani Ngubane 526515 24.11.2025	M4
10014	R	All Light Covers are properly installed		OK		Dilikani Ngubane 526515 24.11.2025	M4
10015	R	All Saloon Fire Detectors are properly installed and secured		OK		Dilikani Ngubane 526515 24.11.2025	M4
10016	R	All covers are normalised inside the car		OK		Dilikani Ngubane 526515 24.11.2025	M4

10017	R	On the Underframe, TBCU Agate is installed and properly tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10018	R	On the Underframe, Speed Sensors are installed and properly tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10019	R	On the LVB, all Circuit Breakers are installed and properly tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10020	R	On the LVB, all Relays and Timers are installed and properly tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10021	R	On the LVB, BRIOMs are installed and properly tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10022	R	On the LVB there are no missing components, device, wiring or connectors.		OK		Dilikani Ngubane 526515 24.11.2025	M4
10023	R	On the Underframe, all Connectors are tightened		OK		Dilikani Ngubane 526515 24.11.2025	M4
10024	R	All underframe covers are normalised		OK		Dilikani Ngubane 526515 24.11.2025	M4
10025	R	On END1 the Octopus cables are disconnected from the car and properly stored.		OK		Dilikani Ngubane 526515 24.11.2025	M4
10026	R	On END2 the Octopus cables are disconnected from the car and properly stored.		OK		Dilikani Ngubane 526515 24.11.2025	M4
10027	R	The Test Bench is switched OFF and the Octopus cables are disconnected and properly stored		OK		Dilikani Ngubane 526515 24.11.2025	M4
10028	R	ALL P.Os of this car are closed		OK		Mlungisi Madela 529927 28.11.2025	M4
10029	I	End Of Test		OK		Mlungisi Madela 529927 28.11.2025	M4

Section 17 – Report summaries

17.1 Results status

Test Instruction Sheet	Compliant	Incomplete	Non-compliant
Energy Distribution	X		
TCMS Network	X		
Cabin Control	X		
Internal Lighting	X		
PACIS System	X		
Train Ground Communication	X		
Rescue Mode and Emergency Disconnection	X		
Emergency Brake	X		
Service Brake	X		
Holding and Parking Brake	X		
HVAC Air Conditioning	X		
Fire Protection	X		
Traction and Electric Brake	X		
Passenger Doors	X		
Vehicle Normalization	X		

17.2 Tools used

Function	Tool name	Tool number	Next Calibration date
015_NRG	Phasemeter	Phasemeter	11/30/2025
027_ERM	Multimeter	Multimeter 2	9/30/2026
033_TRC	Multimeter	Multimeter 4	9/30/2026
040_SBK	Manometer	Manometer	8/31/2026
045_PBK	Manometer	Manometer	8/31/2026
057_HVA_SME	Phasemeter	Phasemeter	11/30/2025

067_FSD	Multimeter	Multimeter 4	9/30/2026