PROJECT	CUSTOMER	VEHICLE
Xtrapolis-PRASA	**PRASA**	**263 – M1 – VFT**

RTR Vehicle Functional Static Testing TS263 M1 Report

GIB0000007730

	CREATED	VERIFIED	APPROVED	DISTRIBUTION
Name	Kealeboga MOCWAGOLE	Sifiso LUKHELE	Kgomotso NKOANA	Confidentiality Category *Restricted* ☐ *Project* ☐ *Normal* ☑
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Table of modifications

Rev	Date	Modifications Content	Writer
A0	17/01/2025	Creation	Kealeboga MOCWAGOLE

Internal validations

	Name	Function	Date	Signature
Creator	Kealeboga MOCWAGOLE	EPU Manager	17/01/2025	X Kealeboga MOCWAGOLE EPU Manager
Verifier	Sifiso LUKHELE	Serial Test Manager	17/01/2025	X Sifiso LUKHELE Serial Test Manager
Approver	Kgomotso NKOANA	Test Expert	17/01/2025	X Kgomotso NKOANA Test Expert

Execution Plan

Start Date	06/12/2024
End Date	06/12/2024

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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. Pantograph

The objective of this procedure is to ensure the correct control and operation of the pantograph.

8. 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

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.

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Section 2 – Energy Distribution

2.2 Instructions list

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2.2.1 015_NRG-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		Carol Gumede - 425280	M1
10002	I	Initial Conditions		OK		Carol Gumede - 425280	M1
10003	I	All the Circuit Breakers should be OPEN		OK		Carol Gumede - 425280	M1
10004	I	Test bench should be connected with no active output voltage		OK		Carol Gumede - 425280	M1
10005	I	NO 400Vac should be connected to the car		OK		Carol Gumede - 425280	M1
10006	I	110Vdc Circuit Breaker		OK		Carol Gumede - 425280	M1
10007	A	Close Circuit Breaker 15Q3 (Normal Line)		OK		Carol Gumede - 425280	M1
10008	I	230Vac and 400Vac Circuit breakers		OK		Carol Gumede - 425280	M1
10009	A	Close Circuit Breaker 13Q1		OK		Carol Gumede - 425280	M1
10010	I	Normal and Permanent Power Supply		OK		Carol Gumede - 425280	M1
10011	I	110Vdc Permanent Train Line Dev1/40 = END1 90XP24 pin 29 Dev5/40 = END2 90XP34 pin 29		OK		Carol Gumede - 425280	M1
10012	A	Force [NI] Dev1/40 = 1.0		OK		Carol Gumede - 425280	M1
10013	R	Read Defined Variable [NI] Dev5/40 = 1.0		OK	1	Carol Gumede - 425280	M1
10014	A	Apply 110Vdc on the Normal Line using the external power supply		OK		Carol Gumede - 425280	M1
10015	A	Measure 110Vdc between 90XR50.X1/1 (+) and 90XR50.X2/1 (-) (intercar connector). [Normal line]		OK		Carol Gumede - 425280	M1
10016	I	Permanent Line Circuit Breakers		OK		Carol Gumede - 425280	M1
10017	A	Check for battery voltage (above 80Vdc) on Circuit Breaker 15Q4 and close it (permanent Line)		OK		Carol Gumede - 425280	M1
10018	I	230Vac Circuit Breakers		OK		Carol Gumede - 425280	M1

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10019	A	Close Circuit Breaker 13Q2		OK		Carol Gumede - 425280	M1
10020	A	Close Circuit Breaker 13Q3		OK		Carol Gumede - 425280	M1
10021	I	230Vac and 400Vac Voltage Supply		OK		Carol Gumede - 425280	M1
10022	A	Apply 400Vac to the Vehicle on End 1 or End 2		OK		Carol Gumede - 425280	M1
10023	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		Carol Gumede - 425280	M1
10024	R	Phase rotation between U,V,W is correct		OK		Carol Gumede - 425280	M1
10025	A	Perform a phase rotation measurement on Connector 90XR52_1 between phases U(X1),V(X2),W(X3) and ensure the rotation is in the correct direction		OK		Carol Gumede - 425280	M1
10026	R	Phase rotation between U,V,W is correct		OK		Carol Gumede - 425280	M1
10027	A	Check 230Vac between points L and N of socket -13XT1		OK		Carol Gumede - 425280	M1
10028	R	230Vac present		OK		Carol Gumede - 425280	M1
10029	A	Check 230Vac between points L and N of socket -13XT2		OK		Carol Gumede - 425280	M1
10030	R	230Vac present		OK		Carol Gumede - 425280	M1
10031	A	Remove the connector 57XP1_10		OK		Carol Gumede - 425280	M1
10032	A	Remove the connector 93XP150		OK		Carol Gumede - 425280	M1
10033	A	Close the circuit breaker 34Q1 and 57Q1		OK		Carol Gumede - 425280	M1
10034	A	Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 57XP1_10 (10b1,10a2,10a1)		OK		Carol Gumede - 425280	M1
10035	R	400Vac +- 5% tolerance is measured between all three phases on connector 93XP150 (E2,E3,E1)		OK		Carol Gumede - 425280	M1
10036	A	Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 93XP150		OK		Carol Gumede - 425280	M1
10037	R	400Vac +- 5% tolerance is measured between all three phases on circuit breaker 57Q1		OK		Carol Gumede - 425280	M1

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10038	A	Put back the connector 57XP1_10		OK		Carol Gumede - 425280	M1
10039	A	Put back the connector 93XP150		OK		Carol Gumede - 425280	M1
10040	I	Auxiliary Converters Command		OK		Carol Gumede - 425280	M1
10041	I	Battery Connection Train Lines Dev1/79 = END 1 90XR24 pin 30 Dev5/79 = END 2 90XP34 pin 30		OK		Carol Gumede - 425280	M1
10042	A	Force [NI] Dev1/79 = 1.0		OK		Carol Gumede - 425280	M1
10043	R	Read Defined Variable [NI] Dev5/79 = 1.0		OK	1	Carol Gumede - 425280	M1
10044	A	Force [NI] Dev1/79 = 0.0		OK		Carol Gumede - 425280	M1
10045	R	Read Defined Variable [NI] Dev5/79 = 0.0		OK	0	Carol Gumede - 425280	M1
10046	I	Battery Disconnection Train Lines Dev1/75 = END 1 90XR24 pin 31 Dev5/75 = END 2 90XP34 pin 31		OK		Carol Gumede - 425280	M1
10047	A	Force [NI] Dev1/75 = 1.0		OK		Carol Gumede - 425280	M1
10048	R	Read Defined Variable [NI] Dev5/75 = 1.0		OK	1	Carol Gumede - 425280	M1
10049	A	Force [NI] Dev1/75 = 0.0		OK		Carol Gumede - 425280	M1
10050	R	Read Defined Variable [NI] Dev5/75 = 0.0		OK	0	Carol Gumede - 425280	M1
10051	I	IES StatusTrain Lines Dev1/86 = END 1 90XR25 pin 61 Dev2/87 = END 1 90XR25 pin 62		OK		Carol Gumede - 425280	M1
10052	A	Force [NI] Dev1/86 = 1.0		OK		Carol Gumede - 425280	M1
10053	R	Read Defined Variable [NI] Dev2/87 = 1.0		OK	1	Carol Gumede - 425280	M1
10054	A	Force [NI] Dev1/86 = 0.0		OK		Carol Gumede - 425280	M1
10055	R	Read Defined Variable [NI] Dev2/87 = 0.0		OK	0	Carol Gumede - 425280	M1
10056	I	Switch off the 400Vac power supply at the socket		OK		Carol Gumede - 425280	M1

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Section 3 – TCMS Network

3.2 Instructions list

3.2.1 025_NET-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 I0 (SPP=25)		OK		Carol Gumede - 425280	M1
10002	I	Initial conditions		OK		Carol Gumede - 425280	M1
10003	I	Vehicle test bench should be configured as TC1: 1. TC1 Dataplugs 2. MCE switch set to TC1		OK		Carol Gumede - 425280	M1
10004	R	On DDU TCMS screen the TC1 cab is in BLUE colour		OK		Carol Gumede - 425280	M1
10005	I	Power Supply to the Router Switches		OK		Carol Gumede - 425280	M1
10006	I	Power supply to the 25A10 SWITCH ETHERNET (CRS1)		OK		Carol Gumede - 425280	M1
10007	A	Close Circuit Breaker 25Q10		OK		Carol Gumede - 425280	M1
10008	R	CRS1 25A10 is ON		OK		Carol Gumede - 425280	M1
10009	I	Power supply to the 25A11 SWITCH ETHERNET (CRS2)		OK		Carol Gumede - 425280	M1
10010	A	Close Circuit Breaker 25Q11		OK		Carol Gumede - 425280	M1
10011	R	CRS2 25A11 is ON		OK		Carol Gumede - 425280	M1
10012	I	Power supply to the 25A14 ETHERNET REPEATER (TBR)		OK		Carol Gumede - 425280	M1
10013	A	Close Circuit Breaker 25Q14		OK		Carol Gumede - 425280	M1
10014	R	TBR 25A14 is ON		OK		Carol Gumede - 425280	M1
10015	A	Close Circuit Breaker 25Q6		OK		Carol Gumede - 425280	M1

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10016	A	Close Circuit Breaker 25Q7		OK		Carol Gumede - 425280	M1
10017	I	Ethernet Loop		OK		Carol Gumede - 425280	M1
10018	A	For each CRS, check that the Ethernet Loop LEDs are flashing		OK		Carol Gumede - 425280	M1
10019	R	CRS1 has LEDs on ports X3 and X4 flashing		OK		Carol Gumede - 425280	M1
10020	R	CRS2 has ONLY LED on port X4 flashing		OK		Carol Gumede - 425280	M1
10021	R	Check on the Test Bench DDU that all Router Switches are available on the network		OK		Carol Gumede - 425280	M1
10022	I	Power Supply to the BRIOMS		OK		Carol Gumede - 425280	M1
10023	I	Power supply to the 25A6 BRIOM 40/10 ETH 6		OK		Carol Gumede - 425280	M1
10024	R	BRIOM 25A6 is ON		OK		Carol Gumede - 425280	M1
10025	A	Check visually that ground braid is connected to BRIOM		OK		Carol Gumede - 425280	M1
10026	I	Power supply to the 25A7 BRIOM 40/10 ETH 7		OK		Carol Gumede - 425280	M1
10027	R	BRIOM 25A7 is ON		OK		Carol Gumede - 425280	M1

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Section 4 – Cabin Control

4.2 Instructions list

4.2.1 020_CAB-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		Goitsemodimo Kgatitswe - 526511	M1
10002	I	Train Lines		OK		Goitsemodimo Kgatitswe - 526511	M1
10003	I	Cab Selected on Train Lines Dev1/1 = END1 90XR24 pin 3 Dev5/1 = END2 90XP34 pin 3		OK		Goitsemodimo Kgatitswe - 526511	M1
10004	A	Force [NI] Dev1/1 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10005	R	Read Defined Variable [NI] Dev5/1 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10006	A	Force [NI] Dev1/1 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10007	R	Read Defined Variable [NI] Dev5/1 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10008	I	Cab Active TC1 Train Lines Dev1/2 = END1 90XR24 pin 4 Dev5/2 = END2 90XP34 pin 4		OK		Goitsemodimo Kgatitswe - 526511	M1
10009	A	Force [NI] Dev1/2 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10010	R	Read Defined Variable [NI] Dev5/2 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10011	A	Force [NI] Dev1/2 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10012	R	Read Defined Variable [NI] Dev5/2 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10013	I	Master Key TC1 Train Lines Dev1/73 = END1 90XR24 pin 17 Dev5/73 = END2 90XP34 pin 14		OK		Goitsemodimo Kgatitswe - 526511	M1
10014	A	Force [NI] Dev1/73 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10015	R	Read Defined Variable [NI] Dev5/73 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10016	A	Force [NI] Dev1/73 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1

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10017	R	Read Defined Variable [NI] Dev5/73 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1

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Section 5 – Internal Lighting

5.2 Instructions list

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5.2.1 052_LGT-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=052)		OK		Sicelo Mtolo - 525130	M1
10002	I	Initial Conditions		OK		Sicelo Mtolo - 525130	M1
10003	I	The 110Vdc Normal line is ON		OK		Sicelo Mtolo - 525130	M1
10004	I	Cleaning Lighting Command		OK		Sicelo Mtolo - 525130	M1
10005	I	110Vdc Permanent Train Line Dev1/40 = END1 90XR24 pin 29		OK		Sicelo Mtolo - 525130	M1
10006	A	Force [NI] Dev1/40 = 1.0		OK		Sicelo Mtolo - 525130	M1
10007	A	Close Circuit Breaker 52Q5		OK		Sicelo Mtolo - 525130	M1
10008	A	Close Circuit Breaker 52Q3		OK		Sicelo Mtolo - 525130	M1
10009	A	Close Circuit Breaker 52Q4		OK		Sicelo Mtolo - 525130	M1
10010	I	Lighting 33% Train Line Dev1/8 = END1 90XR25 pin 27		OK		Sicelo Mtolo - 525130	M1
10011	A	Force [NI] Dev1/8 = 1.0		OK		Sicelo Mtolo - 525130	M1
10012	R	The saloon RIGHT side emergency lights (low intensity) are ON on all light modules		OK		Sicelo Mtolo - 525130	M1
10013	R	The saloon LEFT side emergency lights (low intensity) are ON on all light modules		OK		Sicelo Mtolo - 525130	M1
10014	I	Lighting 33% Train Line Dev5/8 = END2 90XP35 pin 27		OK		Sicelo Mtolo - 525130	M1
10015	R	Read Defined Variable [NI] Dev5/8 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10016	I	Lighting 33% Train Line Dev1/8 = END1 90XR25 pin 27		OK		Sicelo Mtolo - 525130	M1
10017	A	Force [NI] Dev1/8 = 0.0		OK		Sicelo Mtolo - 525130	M1
10018	I	Lighting 33% Train Line Dev5/8 = END2 90XP35 pin 27		OK		Sicelo Mtolo - 525130	M1
10019	R	Read Defined Variable [NI] Dev5/8 = 0.0		OK	0	Sicelo Mtolo - 525130	M1

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10020	R	All saloon emergency lights (low intensity) are OFF on all light modules (Left+Right)		OK		Sicelo Mtolo - 525130	M1
10021	A	Turn Cleaning Staff Lights Switch 52S6 to ON position		OK		Sicelo Mtolo - 525130	M1
10022	I	Lighting 33% Train Line Dev5/8 = END2 90XP35 pin 27		OK		Sicelo Mtolo - 525130	M1
10023	R	Read Defined Variable [NI] Dev5/8 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10024	R	All saloon emergency lights (low intensity) are ON on all light modules (Left+Right)		OK		Sicelo Mtolo - 525130	M1
10025	A	Reset Circuit Breaker 52Q5 (Open and Close)		OK		Sicelo Mtolo - 525130	M1
10026	R	Read Defined Variable [NI] Dev5/8 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10027	I	Main Lighting Command		OK		Sicelo Mtolo - 525130	M1
10028	A	Close Circuit Breaker 52Q1		OK		Sicelo Mtolo - 525130	M1
10029	A	Close Circuit Breaker 52Q2		OK		Sicelo Mtolo - 525130	M1
10030	R	All saloon emergency lights (low intensity) are ON on all light modules (Left+Right)		OK		Sicelo Mtolo - 525130	M1
10031	I	Lighting 33% Train Line Dev5/8 = END2 90XP25 pin 27		OK		Sicelo Mtolo - 525130	M1
10032	R	Read Defined Variable [NI] Dev5/8 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10033	I	Main Lighting Command Train Line Dev1/32 = END1 90XR25 pin 26		OK		Sicelo Mtolo - 525130	M1
10034	A	Force [NI] Dev1/32 = 1.0		OK		Sicelo Mtolo - 525130	M1
10035	I	Main Lighting Command Train Line Dev5/24 = END2 90XP35 pin 26		OK		Sicelo Mtolo - 525130	M1
10036	R	Read Defined Variable [NI] Dev5/24 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10037	R	The saloon LEFT side main lighting (high intensity) is ON on all light modules		OK		Sicelo Mtolo - 525130	M1
10038	R	The saloon RIGHT side main lighting (high intensity) is ON on all light modules		OK		Sicelo Mtolo - 525130	M1
10039	I	Main Lighting Command Train Line Dev1/32 = END1 90XR25 pin 26		OK		Sicelo Mtolo - 525130	M1
10040	A	Force [NI] Dev1/32 = 0.0		OK		Sicelo Mtolo - 525130	M1

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10041	R	All saloon emergency lights (low intensity) are ON on all light modules (Left+Right)		OK		Sicelo Mtolo - 525130	M1

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Section 6 – Train-Ground Communication

6.2 Instructions list

6.2.1 062_ETS-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		Carol Gumede - 425280	M1
10002	I	ERTMS Bypass Train Lines Dev1/33 = END1 90XR24 pin 11 Dev5/37 = END2 90XP34 pin 11		OK		Carol Gumede - 425280	M1
10003	A	Force [NI] Dev1/33 = 1.0		OK		Carol Gumede - 425280	M1
10004	R	Read Defined Variable [NI] Dev5/37 = 1.0		OK	1	Carol Gumede - 425280	M1
10005	A	Force [NI] Dev1/33 = 0.0		OK		Carol Gumede - 425280	M1
10006	R	Read Defined Variable [NI] Dev5/37 = 0.0		OK	0	Carol Gumede - 425280	M1
10007	I	Emergency Brake ERTMS 1 Train Lines Dev1/88 = END1 90XR24 pin 18 Dev5/88 = END2 90XP34 pin 18		OK		Carol Gumede - 425280	M1
10008	A	Force [NI] Dev1/88 = 1.0		OK		Carol Gumede - 425280	M1
10009	R	Read Defined Variable [NI] Dev5/88 = 1.0		OK	1	Carol Gumede - 425280	M1
10010	A	Force [NI] Dev1/88 = 0.0		OK		Carol Gumede - 425280	M1
10011	R	Read Defined Variable [NI] Dev5/88 = 0.0		OK	0	Carol Gumede - 425280	M1
10012	I	Emergency Brake ERTMS 2 Train Lines Dev1/80 = END1 90XR24 pin 20 Dev5/80 = END2 90XP34 pin 20		OK		Carol Gumede - 425280	M1
10013	A	Force [NI] Dev1/80 = 1.0		OK		Carol Gumede - 425280	M1
10014	R	Read Defined Variable [NI] Dev5/80 = 1.0		OK	1	Carol Gumede - 425280	M1

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10015	A	Force [NI] Dev1/80 = 0		OK		Carol Gumede - 425280	M1
10016	R	Read Defined Variable [NI] Dev5/80 = 0		OK	0	Carol Gumede - 425280	M1
10017	I	Wheel Sensor Continuity Test		OK		Carol Gumede - 425280	M1
10018	I	Use the multimeter to test the continuity		OK		Carol Gumede - 425280	M1
10019	A	Check continuity between [62B1 WHEEL SENSOR (Local:+MB2; Connector 62XP1_1) and Intercar(Local:+END2; connector 90XP33.c)]		OK		Carol Gumede - 425280	M1
10020	R	There is a continuity between: pin B & pin 2, pin A & pin 1, pin C & pin 7, pin D & pin 8		OK		Carol Gumede - 425280	M1
10021	R	There is a continuity between: pin F & pin 4, pin E & pin 3, pin G & pin 9, pin H & pin 10		OK		Carol Gumede - 425280	M1
10022	R	There is a continuity between: pin L & pin 6, pin K & pin 5, pin M & pin 11, pin N & pin 12		OK		Carol Gumede - 425280	M1
10023	I	Eurobalise Antenna Cable		OK		Carol Gumede - 425280	M1
10024	A	Check continuity between [Intercar(LOCAL: +END1; Connector -90XR20) and Intercar (LOCAL:+END2; connector -90XP30)] according to the image below		OK		Carol Gumede - 425280	M1
10025	R	Eurobalise Antenna cable is correctly configured		OK		Carol Gumede - 425280	M1

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6.2.2 064_COM-Train-Ground Communication

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

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Train-Ground Communication (SPP=064)		OK		Siphesihle Mchunu - 491465	M1
10002	A	Using the tool list on the side of your screen, note the serial number of the antenna cable tester used in this procedure		OK		Carol Gumede - 425280	M1
10003	I	Antenna cable tester Calibration		OK		Carol Gumede - 425280	M1
10004	I	PERFORM THIS CALIBRATION BEFORE TESTING EACH CABLE		OK		Carol Gumede - 425280	M1
10005	A	Select "preset", then Set the test frequency by selecting "FREQ/DIST" then setting the start and stop frequency, select "calibrate", then "Full 1-port" then Calibrate the Antenna cable tester using the 0.5m extension cable and the T-calibration unit.		OK		Carol Gumede - 425280	M1
10006	I	GSM Cable		OK		Carol Gumede - 425280	M1
10007	A	Ensure the frequency range is 876MHz - 961.34MHz; Connect the GSM cable of the Netbox to the measuring cable and note the resulting waveform		OK		Carol Gumede - 425280	M1
10008	R	The maximum peak of the waveform is Result Max : x <= 2.13 ()		OK	2.13	Carol Gumede - 425280	M1
10009	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ GSM1		OK		Carol Gumede - 425280	M1
10010	A	Recalibrate the tester. Ensure the frequency range is 1.71GHz - 1.88Ghz; Connect the GSM cable of the Netbox to the measuring cable and note the resulting waveform		OK		Carol Gumede - 425280	M1
10011	R	The maximum peak of the waveform is Result Max : x <= 2.13 ()		OK	1.18	Carol Gumede - 425280	M1
10012	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ GSM2		OK		Carol Gumede - 425280	M1
10013	I	GPS Cable		OK		Carol Gumede - 425280	M1

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10014	A	Recalibrate the tester. Ensure the frequency range is 1200MHz - 1600MHz; Connect the GPS cable of the Netbox to the measuring cable and note the resulting waveform		OK		Carol Gumede - 425280	M1
10015	A	On the cable tester, select "MEAS" and select F1 "Distance to Fault"		OK		Carol Gumede - 425280	M1
10016	I	Ensure that the resulting waveform is such as in the picture on the right. The peak of the graph should be at a point >8m; before that, the graph should be flat. Maximum value before the peak should be 1.2		OK		Carol Gumede - 425280	M1
10017	R	The maximum peak of the waveform is Result Max : x <= 1.2 ()		OK	1.01	Carol Gumede - 425280	M1
10018	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ GPS		OK		Carol Gumede - 425280	M1
10019	I	Wifi Cable		OK		Carol Gumede - 425280	M1
10020	A	Recalibrate the tester. Ensure the frequency range is 1710MHz - 2700MHz; Connect the WiFi cable of the Netbox to the measuring cable and note the resulting waveform		OK		Carol Gumede - 425280	M1
10021	R	The maximum peak of the waveform is Result Max : x <= 2.45 ()		OK	1.05	Carol Gumede - 425280	M1
10022	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ WiFi1		OK		Carol Gumede - 425280	M1
10023	A	Recalibrate the tester. Ensure the frequency range is 4.9GHz - 5.935GHz;		OK		Carol Gumede - 425280	M1
10024	R	The maximum peak of the waveform is Result Max : x <= 2.45 ()		OK	1.48	Carol Gumede - 425280	M1
10025	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ WiFi2		OK		Carol Gumede - 425280	M1
10026	A	Close Circuit Breaker 64Q1		OK		Carol Gumede - 425280	M1
10027	R	Check that the Netbox turns ON		OK		Carol Gumede - 425280	M1

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Section 7 – Pantograph

7.2 Instructions list

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7.2.1 021_PNT-Pantograph

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

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Pantograph (SPP = 021)		OK		Siphesihle Mchunu - 491465	M1
10002	I	There should be no air in the main pipe		OK		Siphesihle Mchunu - 491465	M1
10003	R	Measure 0 Bar at point K2.8 using the pressure gauge		OK		Siphesihle Mchunu - 491465	M1
10004	A	Ensure that the pantograph isolation valve K2.5 is normalised (not isolated)		OK		Siphesihle Mchunu - 491465	M1
10005	I	Initial Conditions		OK		Siphesihle Mchunu - 491465	M1
10006	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10007	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10008	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10009	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10010	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxpressswitchr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10011	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxpressswitchr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10012	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10013	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10014	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10015	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10016	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1

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10017	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10018	I	Auxiliary Compressor		OK		Siphesihle Mchunu - 491465	M1
10019	A	Close Circuit Breaker 21Q1		OK		Siphesihle Mchunu - 491465	M1
10020	A	Close Circuit Breaker 21Q2		OK		Siphesihle Mchunu - 491465	M1
10021	A	Close Circuit Breaker 21Q3		OK		Siphesihle Mchunu - 491465	M1
10022	R	The Auxiliary compressor 21M1 turns ON		OK		Siphesihle Mchunu - 491465	M1
10023	R	Read Defined Variable [TT] (MPU1)lo_pnt_m1startauxiliarcompr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10024	R	Read Defined Variable [TT] (MPU1)lo_pnt_m1startauxiliarcompr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10025	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10026	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10027	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Siphesihle Mchunu - 491465	M1
10028	A	Allow the pressure to rise. Using the pressure gauge, check that the pressure at point K2.8 > 3.8Bar. (VERIFY BEFORE MOVING TO THE NEXT STEP)		OK		Siphesihle Mchunu - 491465	M1
10029	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10030	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10031	R	The pantograph is raised		OK		Siphesihle Mchunu - 491465	M1
10032	A	Allow the pressure to rise. Using the pressure gauge, check that the pressure at point K2.8 is between 6 - 7Bar. (VERIFY BEFORE MOVING TO THE NEXT STEP)		OK		Siphesihle Mchunu - 491465	M1
10033	R	The Auxiliary compressor 21M1 turns OFF		OK		Siphesihle Mchunu - 491465	M1
10034	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1

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10035	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10036	A	Turn the pantograph isolation valve K2.5 to isolated position		OK		Siphesihle Mchunu - 491465	M1
10037	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10038	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10039	A	Force [TT] (MPU1)lo_pnt_m1startauxiliarcompr1 = 0.0		OK		Siphesihle Mchunu - 491465	M1
10040	A	Force [TT] (MPU1)lo_pnt_m1startauxiliarcompr2 = 0.0		OK		Siphesihle Mchunu - 491465	M1
10041	A	Drain the air by putting the isolation valve K2.5 in half way position		OK		Siphesihle Mchunu - 491465	M1
10042	R	Using the pressure gauge, check that the Pantograph drops at 3.3 Bar.		OK		Siphesihle Mchunu - 491465	M1
10043	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10044	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10045	A	Turn the pantograph isolation valve K2.5 to normal position		OK		Siphesihle Mchunu - 491465	M1
10046	A	Release [TT] (MPU1)lo_pnt_m1startauxiliarcompr1		OK		Siphesihle Mchunu - 491465	M1
10047	A	Release [TT] (MPU1)lo_pnt_m1startauxiliarcompr2		OK		Siphesihle Mchunu - 491465	M1
10048	R	The Auxiliary compressor 21M1 turns ON		OK		Siphesihle Mchunu - 491465	M1
10049	A	Allow the pressure to rise. Using the pressure gauge, check that the pressure at point K2.8 is between 6 - 7Bar. (VERIFY BEFORE MOVING TO THE NEXT STEP)		OK		Siphesihle Mchunu - 491465	M1
10050	R	The Auxiliary compressor 21M1 turns OFF		OK		Siphesihle Mchunu - 491465	M1
10051	I	Isolation and Earthing		OK		Siphesihle Mchunu - 491465	M1
10052	A	In the HV Box , check that all the Green Keys are present.		OK		Siphesihle Mchunu - 491465	M1

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10053	A	In the HV Box , set the HVB1 valve to Isolated position - to isolate the pantograph		OK		Siphesihle Mchunu - 491465	M1
10054	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10055	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10056	A	Turn the Earthing Switch to grounded position		OK		Siphesihle Mchunu - 491465	M1
10057	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10058	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10059	A	Turn the Earthing Switch to back to Normal position		OK		Siphesihle Mchunu - 491465	M1
10060	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10061	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10062	A	Set the HVB1 valve to Normal position		OK		Siphesihle Mchunu - 491465	M1
10063	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr1 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10064	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr2 = 1.0		OK	1	Siphesihle Mchunu - 491465	M1
10065	A	Normalize the HV box and remove all spare/duplicate keys (green/yellow/blue)		OK		Siphesihle Mchunu - 491465	M1
10066	I	Pantograph Mechanical Test		OK		Siphesihle Mchunu - 491465	M1
10067	I	Housed Height Measurement, Pantograph Over-Height Measurement, Automatic Drop Device and Control Force Test		OK		Siphesihle Mchunu - 491465	M1
10068	I	Initial Conditions		OK		Siphesihle Mchunu - 491465	M1
10069	I	There should be no air in the main pipe		OK		Siphesihle Mchunu - 491465	M1
10070	R	Measure 0 Bar at point K2.8 using the pressure gauge		OK		Siphesihle Mchunu - 491465	M1
10071	A	Ensure that the pantograph isolation valve K2.5 is normalised (not isolated)		OK		Siphesihle Mchunu - 491465	M1

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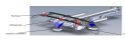
10072	I	Housed Height Measurement		OK		Siphesihle Mchunu - 491465	M1
10073	I	The purpose of this test is to ensure that the housed height of the pantograph complies with the specified dimensions The train must be positioned on a levelled track without any overhead catenary		OK		Siphesihle Mchunu - 491465	M1
10074	A	Measure the perpendicular height (using a measuring tape and ruler extended from points A, B and C of the pantohead) of the pantograph on natural housed position (between the roof of the train and the pantograph collector head at points A, B, C)		OK		Siphesihle Mchunu - 491465	M1
10075	A	Ensure that no part of the pantograph is higher than 486mm above the roof		OK		Siphesihle Mchunu - 491465	M1
10076	R	A Result Max : x <= 486 (mm)		OK	483	Siphesihle Mchunu - 491465	M1
10077	R	B Result Max : x <= 486 (mm)		OK	484	Siphesihle Mchunu - 491465	M1
10078	R	C Result Max : x <= 486 (mm)		OK	483	Siphesihle Mchunu - 491465	M1
10079	A	Check that the centre of the pantograph head corresponds with the track centreline in the housed position (Use marked ruler to compare)		OK		Siphesihle Mchunu - 491465	M1
10080	R	Pantograph aligned with the track centreline in housed position		OK		Siphesihle Mchunu - 491465	M1
10081	I	Automatic Drop Device		OK		Siphesihle Mchunu - 491465	M1
10082	I	The purpose of this test is to verify the correct operation of the automatic drop device (ADD) and will be performed by simulating the activation of the ADD pressure switch.		OK		Siphesihle Mchunu - 491465	M1
10083	A	Tie a cable on pantograph head collector		OK		Siphesihle Mchunu - 491465	M1
10084	A	Close Circuit Breaker 21Q3		OK		Siphesihle Mchunu - 491465	M1
10085	A	Close Circuit Breaker 21Q1		OK		Siphesihle Mchunu - 491465	M1
10086	A	Close Circuit Breaker 21Q2		OK		Siphesihle Mchunu - 491465	M1
10087	R	The Auxiliary compressor 21M1 turns ON		OK		Siphesihle Mchunu - 491465	M1

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10088	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Siphesihle Mchunu - 491465	M1
10089	I	Allow the pressure to rise, and the pantograph to raise		OK		Siphesihle Mchunu - 491465	M1
10090	R	The pantograph is raised		OK		Siphesihle Mchunu - 491465	M1
10091	A	Activate the ADD manually on the roof by operating the bleeding screw (PT3) on the pan head to simulate a loss of air supply		OK		Siphesihle Mchunu - 491465	M1
10092	R	The pressure of the test point PT12 drops to 0 bar		OK		Siphesihle Mchunu - 491465	M1
10093	A	On the roof, close the bleeding screw (PT3) to reset the ADD		OK		Siphesihle Mchunu - 491465	M1
10094	R	Fault reset and equipment normalized		OK		Siphesihle Mchunu - 491465	M1
10095	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Siphesihle Mchunu - 491465	M1
10096	R	Pantograph is lowered		OK		Siphesihle Mchunu - 491465	M1
10097	I	Pantograph Over-Height Measurement		OK		Siphesihle Mchunu - 491465	M1
10098	I	The purpose of the next test is to verify that the pantograph over-height detection and auto dropping functions are calibrated and work correctly. This test simulates the condition when a pantograph is incorrectly raised in an area without any overhead line		OK		Siphesihle Mchunu - 491465	M1
10099	I	You will be required to time the rising and dropping of the pantograph using a stopwatch. measure the time from the moment the pantograph starts to rise until the pantograph reaches maximum raised position; then time from the moment the pantograph starts dropping at overheight detection till it reaches housed position		OK		Siphesihle Mchunu - 491465	M1
10100	A	Use the rope to hook the pantograph and place the marked ruler perpendicular to the roof of the car. See the picture attached.		OK		Siphesihle Mchunu - 491465	M1
10101	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Siphesihle Mchunu - 491465	M1
10102	A	Whilst holding the end of the rope, allow the pressure to rise, and the pantograph to rise until it reaches the maximum		OK		Siphesihle Mchunu - 491465	M1

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		height marked on the ruler.					
10103	R	Rising time Result Max : x <= 10 (S)		OK	7	Siphesihle Mchunu - 491465	M1
10104	A	By adjusting the rope, ensure that the Pantograph Panhead is aligned with the marking on the ruler.		OK		Siphesihle Mchunu - 491465	M1
10105	A	Adjust the Over-height valve such that when the panto goes above the marking on the ruler, the overheight must be detected.		OK		Siphesihle Mchunu - 491465	M1
10106	R	The over-height valve is adjusted correctly.		OK		Siphesihle Mchunu - 491465	M1
10107	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Siphesihle Mchunu - 491465	M1
10108	R	Pantograph is lowered		OK		Siphesihle Mchunu - 491465	M1
10109	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10110	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10111	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Siphesihle Mchunu - 491465	M1
10112	A	Allow the pantograph to rise freely until it reaches overheight.		OK		Siphesihle Mchunu - 491465	M1
10113	R	Overheight is detected immediately after passing the marked area on the ruler and pantograph begins to drop		OK		Siphesihle Mchunu - 491465	M1
10114	R	Lowering time Result Max : x <= 7 (S)		OK	4	Siphesihle Mchunu - 491465	M1
10115	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Siphesihle Mchunu - 491465	M1
10116	A	Reset over-height valve (PT2) on the roof		OK		Siphesihle Mchunu - 491465	M1
10117	R	Equipment normalized. (Only after resetting the PT2 valve, can the pantograph be raised)		OK		Siphesihle Mchunu - 491465	M1
10118	I	Control Force Test		OK		Siphesihle Mchunu - 491465	M1
10119	I	The purpose of this test is to ensure that the pantograph maintains an acceptable force against the catenary wire over all operating heights		OK		Siphesihle Mchunu - 491465	M1

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10120	A	Attach the dynamometer to the pantograph's head collector		OK		Siphesihle Mchunu - 491465	M1
10121	A	Raise the pantograph and measure the static force when the pantograph begins to rise after pulling the dynamometer up (lifting force on housed position)		OK		Siphesihle Mchunu - 491465	M1
10122	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Siphesihle Mchunu - 491465	M1
10123	I	Allow the pressure to rise, and the pantograph to raise		OK		Siphesihle Mchunu - 491465	M1
10124	R	The pantograph is raised		OK		Siphesihle Mchunu - 491465	M1
10125	R	F>150N		OK		Siphesihle Mchunu - 491465	M1
10126	A	Attach the 8.5kg (one 7.5kg and one 1kg) dead weight to the pantohead to apply a 85N force whilst the panto is in the raised position.		OK		Siphesihle Mchunu - 491465	M1
10127	R	The pantographs should remain in the neutral position		OK		Siphesihle Mchunu - 491465	M1
10128	A	Check that the centre of the pantograph head corresponds with the track centreline on maximum raised position		OK		Siphesihle Mchunu - 491465	M1
10129	R	Pantograph aligned with the track centreline in maximum raised position (Use marked ruler to compare)		OK		Siphesihle Mchunu - 491465	M1
10130	A	Remove 1kg dead weight		OK		Siphesihle Mchunu - 491465	M1
10131	R	Pantograph continues to rise to over height condition		OK		Siphesihle Mchunu - 491465	M1
10132	A	Remove the dynamometer and dead weights from the pantograph's head-collector		OK		Siphesihle Mchunu - 491465	M1
10133	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Siphesihle Mchunu - 491465	M1
10134	R	Pantograph is lowered		OK		Siphesihle Mchunu - 491465	M1
10135	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1
10136	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Siphesihle Mchunu - 491465	M1

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Section 8 – Rescue Mode and Emergency Disconnection

8.2 Instructions list

8.2.1 027_ERM-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		Carol Gumede - 425280	M1
10002	I	Initial Conditions		OK		Carol Gumede - 425280	M1
10003	I	110Vdc Normal power supply is connected to the vehicle, and switched ON		OK		Carol Gumede - 425280	M1
10004	I	Backup Mode Train Lines Dev1/29 = END1 90XR15 pin23 Dev5/33 = END2 90XP25 pin 23		OK		Carol Gumede - 425280	M1
10005	A	Force [NI] Dev1/29 = 1.0		OK		Carol Gumede - 425280	M1
10006	R	Read Defined Variable [NI] Dev5/33 = 1.0		OK	1	Carol Gumede - 425280	M1
10007	R	Relay 27K1 is Energised		OK		Carol Gumede - 425280	M1
10008	R	Relay 27K2 is De-energised		OK		Carol Gumede - 425280	M1
10009	A	Timer 30.0 S		OK		Carol Gumede - 425280	M1
10010	R	Relay 27K2 is De-energised		OK		Carol Gumede - 425280	M1
10011	A	Timer 30.0 S		OK		Carol Gumede - 425280	M1
10012	R	Relay 27K2 is energised		OK		Carol Gumede - 425280	M1
10013	I	Backup Mode Train Lines Dev1/29 = END1 90XR25 pin23 Dev5/33 = END2 90XP35 pin 23		OK		Carol Gumede - 425280	M1
10014	A	Force [NI] Dev1/29 = 0.0		OK		Carol Gumede - 425280	M1
10015	R	Read Defined Variable [NI] Dev5/33 = 0.0		OK	0	Carol Gumede - 425280	M1

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10016	R	Relay 27K1 is De-energised		OK		Carol Gumede - 425280	M1
10017	R	Relay 27K2 is De-energised		OK		Carol Gumede - 425280	M1
10018	I	Emergency Disconnection		OK		Carol Gumede - 425280	M1
10019	I	Emergency Disconnection Train Lines Dev1/30 = END1 90XR25 pin24 Dev5/34 = END2 90XP35 pin 24		OK		Carol Gumede - 425280	M1
10020	A	Force [NI] Dev1/30 = 1.0		OK		Carol Gumede - 425280	M1
10021	R	Read Defined Variable [NI] Dev5/34 = 1.0		OK	1	Carol Gumede - 425280	M1
10022	R	Relay 27K5 is Energised		OK		Carol Gumede - 425280	M1
10023	I	Emergency Disconnection Train Lines Dev1/30 = END1 90XR25 pin24 Dev5/34 = END2 90XP35 pin 24		OK		Carol Gumede - 425280	M1
10024	A	Force [NI] Dev1/30 = 0.0		OK		Carol Gumede - 425280	M1
10025	R	Read Defined Variable [NI] Dev5/34 = 0.0		OK	0	Carol Gumede - 425280	M1
10026	R	Relay 27K5 is De-energised		OK		Carol Gumede - 425280	M1

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Section 9 – Emergency Brake

9.2 Instructions list

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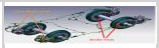
9.2.1 044_UBK-Emergency Brake

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		Sicelo Mtolo - 525130	M1
10002	I	Initial Conditions		OK		Sicelo Mtolo - 525130	M1
10003	I	No PEAs are activated		OK		Sicelo Mtolo - 525130	M1
10004	I	110Vdc Normal power supply should be connected to the vehicle and ON		OK		Sicelo Mtolo - 525130	M1
10005	I	Visual Inspection		OK		Sicelo Mtolo - 525130	M1
10006	A	Physically and visually inspect all the Disk Break Units (DBU) and brake pads, to ensure they are securely fitted		OK		Sicelo Mtolo - 525130	M1
10007	R	All the brake DBUs are correctly installed and all the brake pads are correctly installed and locked		OK		Sicelo Mtolo - 525130	M1
10008	A	Check the piping installation		OK		Sicelo Mtolo - 525130	M1
10009	R	All the pipes are installed on the vehicle		OK		Sicelo Mtolo - 525130	M1
10010	A	Check all the Passenger Emergency Alarm handles, and ensure they are connected to their respective connectors		OK		Sicelo Mtolo - 525130	M1
10011	R	All the PEAs are installed and connected		OK		Sicelo Mtolo - 525130	M1
10012	I	Train Lines		OK		Sicelo Mtolo - 525130	M1
10013	I	Emergency Brake Loop Train Lines Dev1/5 = END1 90XR24 pin 8 Dev5/5 = END2 90XP34 pin 8		OK		Sicelo Mtolo - 525130	M1
10014	A	Force [NI] Dev1/5 = 1.0		OK		Sicelo Mtolo - 525130	M1
10015	R	Read Defined Variable [NI] Dev5/5 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10016	A	Force [NI] Dev1/5 = 0.0		OK		Sicelo Mtolo - 525130	M1
10017	R	Read Defined Variable [NI] Dev5/5 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10018	I	Emergency Brake Loop Override Train Lines Dev1/6 = END1 90XR24 pin 9		OK		Sicelo Mtolo - 525130	M1

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		Dev5/6 = END2 90XP34 pin 9					
10019	A	Force [NI] Dev1/6 = 1.0		OK		Sicelo Mtolo - 525130	M1
10020	R	Read Defined Variable [NI] Dev5/6 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10021	A	Force [NI] Dev1/6 = 0.0		OK		Sicelo Mtolo - 525130	M1
10022	R	Read Defined Variable [NI] Dev5/6 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10023	I	Emergency Brake Train Line Train Lines Dev1/50 = END1 90XR25 pin 67 Dev5/61 = END2 90XP35 pin 67		OK		Sicelo Mtolo - 525130	M1
10024	A	Force [NI] Dev1/50 = 1.0		OK		Sicelo Mtolo - 525130	M1
10025	R	Read Defined Variable [NI] Dev5/61 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10026	A	Force [NI] Dev1/50 = 0.0		OK		Sicelo Mtolo - 525130	M1
10027	R	Read Defined Variable [NI] Dev5/61 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10028	I	PEA Loop OTDR Train Lines Dev1/7 = END1 90XR24 pin 10 Dev5/7 = END2 90XP34 pin 10		OK		Sicelo Mtolo - 525130	M1
10029	A	Force [NI] Dev1/7 = 1.0		OK		Sicelo Mtolo - 525130	M1
10030	R	Read Defined Variable [NI] Dev5/7 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10031	A	Force [NI] Dev1/7 = 0.0		OK		Sicelo Mtolo - 525130	M1
10032	R	Read Defined Variable [NI] Dev5/7 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10033	I	PEA Reset		OK		Sicelo Mtolo - 525130	M1
10034	A	Check continuity on Timer Relay 44D1 between points A1 and B1		OK		Sicelo Mtolo - 525130	M1
10035	R	The points are continuous		OK		Sicelo Mtolo - 525130	M1
10036	A	Check continuity on Timer Relay 44D1 between points A4, B3 and C4		OK		Sicelo Mtolo - 525130	M1
10037	R	All three points are continuous		OK		Sicelo Mtolo - 525130	M1
10038	A	Close Circuit Breaker 44Q1		OK		Sicelo Mtolo - 525130	M1
10039	I	PEA Loop Train Lines Dev1/58 = END1 90XR25 pin 95 Dev5/62 = END2 90XP35 pin 95		OK		Sicelo Mtolo - 525130	M1
10040	A	Force [NI] Dev1/58 = 1.0		OK		Sicelo Mtolo - 525130	M1

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10041	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10042	A	Force [NI] Dev1/58 = 0.0		OK		Sicelo Mtolo - 525130	M1
10043	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10044	A	Force [NI] Dev1/58 = 1.0		OK		Sicelo Mtolo - 525130	M1
10045	A	Activate the PEA on door 5 (44S15)		OK		Sicelo Mtolo - 525130	M1
10046	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10047	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10048	A	Reset the PEA using square key		OK		Sicelo Mtolo - 525130	M1
10049	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10050	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10051	A	Activate the PEA on door 3 (44S13)		OK		Sicelo Mtolo - 525130	M1
10052	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10053	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10054	A	Reset the PEA using square key		OK		Sicelo Mtolo - 525130	M1
10055	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10056	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10057	A	Activate the PEA on door 1 (44S11)		OK		Sicelo Mtolo - 525130	M1
10058	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10059	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10060	A	Reset the PEA using square key		OK		Sicelo Mtolo - 525130	M1
10061	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1

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10062	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10063	A	Activate the PEA on door 2 (44S12)		OK		Sicelo Mtolo - 525130	M1
10064	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10065	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10066	A	Reset the PEA using square key		OK		Sicelo Mtolo - 525130	M1
10067	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10068	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10069	A	Activate the PEA on door 4 (44S14)		OK		Sicelo Mtolo - 525130	M1
10070	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10071	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10072	A	Reset the PEA using square key		OK		Sicelo Mtolo - 525130	M1
10073	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10074	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10075	A	Activate the PEA on door 6 (44S16)		OK		Sicelo Mtolo - 525130	M1
10076	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10077	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10078	A	Reset the PEA using square key		OK		Sicelo Mtolo - 525130	M1
10079	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Sicelo Mtolo - 525130	M1
10080	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10081	I	PEA Loop Train Lines Dev1/58 = END1 90XR15 pin 95		OK		Sicelo Mtolo - 525130	M1

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10082	A	Force [NI] Dev1/58 = 0.0		OK		Sicelo Mtolo - 525130	M1

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Section 10 – Service Brake

10.2 Instructions list

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10.2.1 040_SBK-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		Goitsemodimo Kgatitswe - 526511	M1
10002	I	Initial Conditions		OK		Goitsemodimo Kgatitswe - 526511	M1
10003	I	No air supply to the vehicle		OK		Goitsemodimo Kgatitswe - 526511	M1
10004	I	All BPM cocks are in normal position (not isolated)		OK		Goitsemodimo Kgatitswe - 526511	M1
10005	I	110Vdc Normal power supply should be connected to the vehicle and ON		OK		Goitsemodimo Kgatitswe - 526511	M1
10006	I	Follow the procedure in the document below to upload software onto the TBCU electronic ***[11-40-49-281074_ TBCU Software Upload.pdf]***		OK		Goitsemodimo Kgatitswe - 526511	M1
10007	I	Power Supply		OK		Goitsemodimo Kgatitswe - 526511	M1
10008	A	Remove the connector 10XR12_XCB2 from the propulsion box		OK		Goitsemodimo Kgatitswe - 526511	M1
10009	A	Close Circuit Breaker 33Q1, 33Q3 and 33Q5		OK		Goitsemodimo Kgatitswe - 526511	M1
10010	A	Check the voltage on connector 10XR12_XCB2 between pins 4 (+) and 69 (-) ; 4(+) and 67(-); and 5(+) and 68(-)		OK		Goitsemodimo Kgatitswe - 526511	M1
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		Goitsemodimo Kgatitswe - 526511	M1
10012	A	Open Circuit Breaker 33Q1 and 33Q3, Replace connector 10XR12_XCB2 on the propulsion box, and Close Circuit breaker 33Q1 and 33Q3		OK		Goitsemodimo Kgatitswe - 526511	M1
10013	A	Remove the connector -40XP2_C2_16 from pneumatic BPM		OK		Goitsemodimo Kgatitswe - 526511	M1
10014	A	Close Circuit Breaker 40Q1		OK		Goitsemodimo Kgatitswe - 526511	M1
10015	A	Check the voltage on connector 40XP2_C2_16 between pins 13 (+) and		OK		Goitsemodimo Kgatitswe - 526511	M1

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		31 (-)					
10016	R	Battery voltage (above 80Vdc) is measured on connector 40XP2__C2__16 between pins 13 (+) and 31 (-)		OK		Goitsemodimo Kgatitswe - 526511	M1
10017	A	Open Circuit Breaker 40Q1, Replace connector -40XP2__C2__16 on the pneumatic BPM, and Close Circuit breaker -40Q1		OK		Goitsemodimo Kgatitswe - 526511	M1
10018	R	The pneumatic BPM 40A2 is ON		OK		Goitsemodimo Kgatitswe - 526511	M1
10019	I	Brake Air Supply and Brake Application		OK		Goitsemodimo Kgatitswe - 526511	M1
10020	I	EB Reduced Train Lines Dev2/85 = END1 90XR25 pin 60 Dev5/51 = END2 90XP35 pin 60		OK		Goitsemodimo Kgatitswe - 526511	M1
10021	R	Read Defined Variable [NI] Dev2/85 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10022	R	Read Defined Variable [NI] Dev5/51 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10023	I	Brake Applied Train Lines Dev2/83 = END1 90XR25 pin 50 Dev5/49 = END2 90XP35 pin 50		OK		Goitsemodimo Kgatitswe - 526511	M1
10024	R	Read Defined Variable [NI] Dev2/83 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10025	R	Read Defined Variable [NI] Dev5/49 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10026	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr1 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10027	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr2 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10028	R	Read Defined Variable [TT] (TBCU1)LI_BRPS_NOK = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10029	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_NOT_APPLED = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10030	A	Close/Isolate the Isolation cock F2.1/3		OK		Goitsemodimo Kgatitswe - 526511	M1
10031	A	Open the Isolation cock F2.2/3		OK		Goitsemodimo Kgatitswe - 526511	M1
10032	A	Connect the air supply to the vehicle main pipe coupling flexible hose F3/5, and switch the supply ON		OK		Goitsemodimo Kgatitswe - 526511	M1

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10033	I	Take note of any air leaks in the pipes or valves		OK		Goitsemodimo Kgatitswe - 526511	M1
10034	A	Allow the pressure to go above 6 bar. The pressure can be checked at the BRTP test point		OK		Goitsemodimo Kgatitswe - 526511	M1
10035	R	BRTP pressure is measured >=6 Bar		OK		Goitsemodimo Kgatitswe - 526511	M1
10036	I	Brake Applied Train Lines Dev2/83 = END1 90XR25 pin 50 Dev5/49 = END2 90XP35 pin 50		OK		Goitsemodimo Kgatitswe - 526511	M1
10037	R	Read Defined Variable [NI] Dev2/83 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10038	R	Read Defined Variable [NI] Dev5/49 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10039	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr1 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10040	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr2 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10041	R	Read Defined Variable [TT] (TBCU1)LI_BRPS_NOK = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10042	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_NOT_APPLED = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10043	I	Remote Isolation		OK		Goitsemodimo Kgatitswe - 526511	M1
10044	I	Remote Isolation Train Lines Dev1/84 = END1 90XR25 pin 59 Dev5/50 = END2 90XP35 pin 59		OK		Goitsemodimo Kgatitswe - 526511	M1
10045	A	Force [NI] Dev1/84 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10046	R	Read Defined Variable [NI] Dev5/50 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10047	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_ISO = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10048	A	Force [TT] (MPU1)lo_sbk_m1isobrake = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10049	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_ISO = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10050	I	Remote Isolation Train Lines Dev5/50 = END2 90XP35 pin 59		OK		Goitsemodimo Kgatitswe - 526511	M1
10051	R	Read Defined Variable [NI] Dev5/50 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1

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10052	A	Release [TT] (MPU1)lo_sbk_m1isobrake		OK		Goitsemodimo Kgatitswe - 526511	M1
10053	R	Read Defined Variable [NI] Dev5/50 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10054	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_ISO = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10055	I	Remote Isolation Train Lines Dev1/84 = END1 90XR25 pin 59		OK		Goitsemodimo Kgatitswe - 526511	M1
10056	A	Force [NI] Dev1/84 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10057	I	Manual Isolation		OK		Goitsemodimo Kgatitswe - 526511	M1
10058	I	EB Reduced Train Lines Dev2/85 = END1 90XR25 pin 60 Dev5/51 = END2 90XP35 pin 60		OK		Goitsemodimo Kgatitswe - 526511	M1
10059	R	Read Defined Variable [NI] Dev2/85 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10060	R	Read Defined Variable [NI] Dev5/51 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10061	R	Read Defined Variable [TT] (MPU1)li_sbk_m1servicebrakedc = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10062	R	Read Defined Variable [TT] (TBCU1)Li_ServiceBrakeDC = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10063	A	Close the Isolation cock C2.3.1		OK		Goitsemodimo Kgatitswe - 526511	M1
10064	I	EB Reduced Train Lines Dev2/85 = END1 90XR25 pin 60 Dev5/51 = END2 90XP35 pin 60		OK		Goitsemodimo Kgatitswe - 526511	M1
10065	R	Read Defined Variable [NI] Dev2/85 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10066	R	Read Defined Variable [NI] Dev5/51 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10067	R	Read Defined Variable [TT] (MPU1)li_sbk_m1servicebrakedc = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10068	R	Read Defined Variable [TT] (TBCU1)Li_ServiceBrakeDC = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10069	A	Re-open the Isolation cock C2.3.1		OK		Goitsemodimo Kgatitswe - 526511	M1
10070	R	Read Defined Variable [TT] (MPU1)li_sbk_m1servicebrakedc = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10071	I	Switch OFF 400V before reading the bcufault variable		OK		Goitsemodimo Kgatitswe - 526511	M1

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10072	R	Read Defined Variable [TT] (MPU1)li_sbk_m1bcufault = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10073	A	Force [TT] (TBCU1)LO_BRK_FLT = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10074	R	Read Defined Variable [TT] (MPU1)li_sbk_m1bcufault = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10075	A	Release [TT] (TBCU1)LO_BRK_FLT		OK		Goitsemodimo Kgatitswe - 526511	M1

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Section 11 – Holding and Parking Brake

11.2 Instructions list

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11.2.1 045_PBK-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		Goitsemodimo Kgatitswe - 526511	M1
10002	I	Initial Conditions		OK		Goitsemodimo Kgatitswe - 526511	M1
10003	I	Using the tools list on the side of your screen, record the serial number of the manometer that will be used in this test		OK		Goitsemodimo Kgatitswe - 526511	M1
10004	I	Check that the pressure on Test point C2.11/1 is >5bar		OK		Goitsemodimo Kgatitswe - 526511	M1
10005	I	Visual Inspection		OK		Goitsemodimo Kgatitswe - 526511	M1
10006	A	Check the installation of the manual parking brake release components (lever + cable)		OK		Goitsemodimo Kgatitswe - 526511	M1
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		Goitsemodimo Kgatitswe - 526511	M1
10008	I	Circuit Breakers		OK		Goitsemodimo Kgatitswe - 526511	M1
10009	I	Circuit Breaker 33Q3 and 33Q5 should be closed		OK		Goitsemodimo Kgatitswe - 526511	M1
10010	I	Parking Brake Pressure Switch		OK		Goitsemodimo Kgatitswe - 526511	M1
10011	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_RELEASE = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10012	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_STAT = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10013	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakerelease = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10014	R	Read Defined Variable [TT] (MPU1)tbcu1_li_pbrake_stat = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10015	I	Parking Brake Applied Train Lines Dev2/52 = END1 90XR25 pin 77 Dev5/58 = END2 90XP35 pin 77		OK		Goitsemodimo Kgatitswe - 526511	M1
10016	R	Read Defined Variable [NI] Dev2/52 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1

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10017	R	Read Defined Variable [NI] Dev5/58 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10018	I	Parking Brake Applied		OK		Goitsemodimo Kgatitswe - 526511	M1
10019	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		Goitsemodimo Kgatitswe - 526511	M1
10020	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		Goitsemodimo Kgatitswe - 526511	M1
10021	R	Pressure at test point C2.11/1 <4.5 Bar		OK		Goitsemodimo Kgatitswe - 526511	M1
10022	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_RELEASE = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10023	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakerelease = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10024	A	Return the Isolation cock C2.3.2 to OPEN position		OK		Goitsemodimo Kgatitswe - 526511	M1
10025	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_STAT = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10026	R	Read Defined Variable [TT] (MPU1)tbcu1_li_pbrake_stat = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10027	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_DC = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10028	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakeisoldc = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10029	R	Read Defined Variable [TT] (MPU1)li_pbk_m1parkbrakeisol = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10030	I	Parking Brake Applied Train Lines Dev2/52 = END1 90XR25 pin 77 Dev5/58 = END2 90XP35 pin 77		OK		Goitsemodimo Kgatitswe - 526511	M1
10031	R	Read Defined Variable [NI] Dev2/52 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10032	R	Read Defined Variable [NI] Dev5/58 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10033	A	Position the Isolation cock C2.3.2 in CLOSE position		OK		Goitsemodimo Kgatitswe - 526511	M1
10034	R	Read Defined Variable [TT] (MPU1)li_pbk_m1parkbrakeisol = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1

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10035	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_STAT = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10036	R	Read Defined Variable [TT] (MPU1)tbcu1_li_pbrake_stat = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10037	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_DC = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10038	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakeisoldc = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10039	I	Parking Brake Applied Train Lines Dev2/52 = END1 90XR25 pin 77 Dev5/58 = END2 90XP35 pin 77		OK		Goitsemodimo Kgatitswe - 526511	M1
10040	R	Read Defined Variable [NI] Dev2/52 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10041	R	Read Defined Variable [NI] Dev5/58 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10042	A	Return the Isolation cock C2.3.2 to OPEN position		OK		Goitsemodimo Kgatitswe - 526511	M1
10043	I	Remote Parking Brake Command		OK		Goitsemodimo Kgatitswe - 526511	M1
10044	I	Remote Parking Brake Command Train Lines Dev1/51 = END1 90XR25 pin 68 Dev5/57 = END2 90XP35 pin 68		OK		Goitsemodimo Kgatitswe - 526511	M1
10045	A	Force [NI] Dev1/51 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10046	R	Read Defined Variable [NI] Dev5/57 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10047	R	Confirm that the parking brake is applied, and air is released from electro valve C2.5		OK		Goitsemodimo Kgatitswe - 526511	M1
10048	I	Remote Parking Brake Command Train Lines Dev1/51 = END1 90XR25 pin 68 Dev5/57 = END2 90XP35 pin 68		OK		Goitsemodimo Kgatitswe - 526511	M1
10049	A	Force [NI] Dev1/51 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10050	R	Read Defined Variable [NI] Dev5/57 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10051	R	Confirm that electro valve C2.5 has stopped emitting air		OK		Goitsemodimo Kgatitswe - 526511	M1

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Section 12 – Passenger Doors

12.2 Instructions list

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12.2.1 050_DOR-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		Sicelo Mtolo - 525130	M1
10002	I	Initial conditions		OK		Sicelo Mtolo - 525130	M1
10003	I	110Vdc Normal power supply is connected to the vehicle and ON		OK		Sicelo Mtolo - 525130	M1
10004	I	Ensure that the TCMS network is functional		OK		Sicelo Mtolo - 525130	M1
10005	I	Circuit Breakers		OK		Sicelo Mtolo - 525130	M1
10006	A	Close Circuit Breaker 50Q1		OK		Sicelo Mtolo - 525130	M1
10007	R	DCU 1 is powered ON		OK		Sicelo Mtolo - 525130	M1
10008	R	Check on the DDU that DCU1 is online		OK		Sicelo Mtolo - 525130	M1
10009	A	Close Circuit Breaker 50Q2		OK		Sicelo Mtolo - 525130	M1
10010	R	DCU 2 is powered ON		OK		Sicelo Mtolo - 525130	M1
10011	R	Check on the DDU that DCU2 is online		OK		Sicelo Mtolo - 525130	M1
10012	A	Close Circuit Breaker 50Q3		OK		Sicelo Mtolo - 525130	M1
10013	R	DCU 3 is powered ON		OK		Sicelo Mtolo - 525130	M1
10014	R	Check on the DDU that DCU3 is online		OK		Sicelo Mtolo - 525130	M1
10015	A	Close Circuit Breaker 50Q4		OK		Sicelo Mtolo - 525130	M1
10016	R	DCU 4 is powered ON		OK		Sicelo Mtolo - 525130	M1
10017	R	Check on the DDU that DCU4 is online		OK		Sicelo Mtolo - 525130	M1
10018	A	Close Circuit Breaker 50Q5		OK		Sicelo Mtolo - 525130	M1
10019	R	DCU 5 is powered ON		OK		Sicelo Mtolo - 525130	M1
10020	R	Check on the DDU that DCU5 is online		OK		Sicelo Mtolo - 525130	M1
10021	A	Close Circuit Breaker 50Q6		OK		Sicelo Mtolo - 525130	M1

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10022	R	DCU 6 is powered ON		OK		Sicelo Mtolo - 525130	M1
10023	R	Check on the DDU that DCU6 is online		OK		Sicelo Mtolo - 525130	M1
10024	A	Close Circuit Breaker 50Q7		OK		Sicelo Mtolo - 525130	M1
10025	I	Car ID Code		OK		Sicelo Mtolo - 525130	M1
10026	A	Using the DDU on the test bench, check that all the doors on M1 are available - as in the picture attached.		OK		Sicelo Mtolo - 525130	M1
10027	R	All doors are available		OK		Sicelo Mtolo - 525130	M1
10028	I	Door Open and Close - Safety Loop		OK		Sicelo Mtolo - 525130	M1
10029	I	ERTMS Auth Left Train Lines Dev1/81 = END1 90XR25 pin 44 Dev5/86 = END2 90XP35 pin 44		OK		Sicelo Mtolo - 525130	M1
10030	A	Force [NI] Dev1/81 = 1.0		OK		Sicelo Mtolo - 525130	M1
10031	R	Read Defined Variable [NI] Dev5/86 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10032	A	Force [NI] Dev1/81 = 0.0		OK		Sicelo Mtolo - 525130	M1
10033	R	Read Defined Variable [NI] Dev5/86 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10034	I	ERTMS Auth RightTrain Lines Dev1/82 = END1 90XR25 pin 47 Dev5/87 = END2 90XP35 pin 47		OK		Sicelo Mtolo - 525130	M1
10035	A	Force [NI] Dev1/82 = 1.0		OK		Sicelo Mtolo - 525130	M1
10036	R	Read Defined Variable [NI] Dev5/87 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10037	A	Force [NI] Dev1/82 = 0.0		OK		Sicelo Mtolo - 525130	M1
10038	R	Read Defined Variable [NI] Dev5/87 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10039	I	Doors Open Train Lines Dev1/49 = END1 90XR25 pin 66 Dev5/55 = END2 90XP35 pin 66		OK		Sicelo Mtolo - 525130	M1
10040	A	Force [NI] Dev1/49 = 1.0		OK		Sicelo Mtolo - 525130	M1
10041	R	Read Defined Variable [NI] Dev5/55 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10042	A	Force [NI] Dev1/49 = 0.0		OK		Sicelo Mtolo - 525130	M1
10043	R	Read Defined Variable [NI] Dev5/55 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10044	I	Door Close Right Train Lines Dev1/53 = END1 90XR25 pin 78		OK		Sicelo Mtolo - 525130	M1

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		Dev5/59 = END2 90XP35 pin 78					
10045	A	Force [NI] Dev1/53 = 1.0		OK		Sicelo Mtolo - 525130	M1
10046	R	Read Defined Variable [NI] Dev5/59 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10047	A	Force [NI] Dev1/53 = 0.0		OK		Sicelo Mtolo - 525130	M1
10048	R	Read Defined Variable [NI] Dev5/59 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10049	I	Door Close Left Train Lines Dev1/54 = END1 90XR25 pin 79 Dev5/60 = END2 90XP35 pin 79		OK		Sicelo Mtolo - 525130	M1
10050	A	Force [NI] Dev1/54 = 1.0		OK		Sicelo Mtolo - 525130	M1
10051	R	Read Defined Variable [NI] Dev5/60 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10052	A	Force [NI] Dev1/54 = 0.0		OK		Sicelo Mtolo - 525130	M1
10053	R	Read Defined Variable [NI] Dev5/60 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10054	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85 Dev5/64 = END2 90XP35 pin 85		OK		Sicelo Mtolo - 525130	M1
10055	A	Force [NI] Dev1/56 = 1.0		OK		Sicelo Mtolo - 525130	M1
10056	R	Read Defined Variable [NI] Dev5/64 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10057	I	Door Auth Right Train Lines Dev1/55 = END1 90XR25 pin 84 Dev5/61 = END2 90XP35 pin 84		OK		Sicelo Mtolo - 525130	M1
10058	A	Force [NI] Dev1/64 = 1.0		OK		Sicelo Mtolo - 525130	M1
10059	R	Read Defined Variable [NI] Dev5/56 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10060	I	V<3km/h Train Lines Dev1/35 = END1 90XR25 pin 29 Dev5/39 = END2 90XP35 pin 29		OK		Sicelo Mtolo - 525130	M1
10061	A	Force [NI] Dev1/35 = 1.0		OK		Sicelo Mtolo - 525130	M1
10062	R	Read Defined Variable [NI] Dev5/39 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10063	A	Force [TT] (MPU1)Io_dor_m1opendoorleft = 1.0		OK		Sicelo Mtolo - 525130	M1
10064	A	Force [TT] (MPU1)Io_dor_m1opendoorright = 1.0		OK		Sicelo Mtolo - 525130	M1
10065	R	Check that ALL doors are OPEN		OK		Sicelo Mtolo - 525130	M1

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10066	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85 Dev5/64 = END2 90XP35 pin 85		OK		Sicelo Mtolo - 525130	M1
10067	A	Force [NI] Dev1/56 = 0.0		OK		Sicelo Mtolo - 525130	M1
10068	R	Read Defined Variable [NI] Dev5/64 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10069	I	Door Auth Right Train Lines Dev1/64 = END1 90XR25 pin 84 Dev5/56 = END2 90XP35 pin 84		OK		Sicelo Mtolo - 525130	M1
10070	A	Force [NI] Dev1/64 = 0.0		OK		Sicelo Mtolo - 525130	M1
10071	R	Read Defined Variable [NI] Dev5/56 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10072	R	Check that ALL doors are CLOSED		OK		Sicelo Mtolo - 525130	M1
10073	I	Safety Doors Loop Train Lines Dev1/59 = END1 90XR25 pin 96 Dev5/89 = END2 90XP35 pin 96		OK		Sicelo Mtolo - 525130	M1
10074	A	Force [NI] Dev1/59 = 1.0		OK		Sicelo Mtolo - 525130	M1
10075	R	Read Defined Variable [NI] Dev5/89 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10076	I	Left Side Doors		OK		Sicelo Mtolo - 525130	M1
10077	I	Door 1		OK		Sicelo Mtolo - 525130	M1
10078	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85		OK		Sicelo Mtolo - 525130	M1
10079	A	Force [NI] Dev1/56 = 1.0		OK		Sicelo Mtolo - 525130	M1
10080	R	Check if ALL Left doors opens in 3 sec (+1/-0)		OK		Sicelo Mtolo - 525130	M1
10081	R	Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05]		OK		Sicelo Mtolo - 525130	M1
10082	I	Door Opening Gap		OK		Sicelo Mtolo - 525130	M1
10083	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Sicelo Mtolo - 525130	M1
10084	R	Door 1 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1392	Sicelo Mtolo - 525130	M1
10085	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Sicelo Mtolo - 525130	M1

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10086	R	Door 1 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1401	Sicelo Mtolo - 525130	M1
10087	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Sicelo Mtolo - 525130	M1
10088	R	Door 1 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1397	Sicelo Mtolo - 525130	M1
10089	I	Door 3		OK		Sicelo Mtolo - 525130	M1
10090	I	Door Opening Gap		OK		Sicelo Mtolo - 525130	M1
10091	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Sicelo Mtolo - 525130	M1
10092	R	Door 3 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1394	Sicelo Mtolo - 525130	M1
10093	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Sicelo Mtolo - 525130	M1
10094	R	Door 3 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1400	Sicelo Mtolo - 525130	M1
10095	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Sicelo Mtolo - 525130	M1
10096	R	Door 3 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1398	Sicelo Mtolo - 525130	M1
10097	I	Door 5		OK		Sicelo Mtolo - 525130	M1
10098	I	Door Opening Gap		OK		Sicelo Mtolo - 525130	M1
10099	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Sicelo Mtolo - 525130	M1
10100	R	Door 5 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1392	Sicelo Mtolo - 525130	M1
10101	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Sicelo Mtolo - 525130	M1
10102	R	Door 5 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1404	Sicelo Mtolo - 525130	M1
10103	A	Measure the opening gap of the door. (This measurement must be done in the		OK		Sicelo Mtolo - 525130	M1

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		middle of the door).					
10104	R	Door 5 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1396	Sicelo Mtolo - 525130	M1
10105	I	Door Auth Left Train Lines Dev1/56 = END1 90XR15 pin 85		OK		Sicelo Mtolo - 525130	M1
10106	A	Force [NI] Dev1/56 = 0.0		OK		Sicelo Mtolo - 525130	M1
10107	R	Check if ALL Left doors closes in 3 sec (+1/-0)		OK		Sicelo Mtolo - 525130	M1
10108	R	Check that the RED leds on both sides of the door blink while the door closes [Safety Request: Prasa8-05]		OK		Sicelo Mtolo - 525130	M1
10109	I	Safety Doors Loop Train Lines Dev5/89 = END2 90XP35 pin 96		OK		Sicelo Mtolo - 525130	M1
10110	R	Read Defined Variable [NI] Dev5/89 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10111	I	Right Side Doors		OK		Sicelo Mtolo - 525130	M1
10112	I	Door 2		OK		Sicelo Mtolo - 525130	M1
10113	I	Door Auth Right Train Lines Dev1/64 = END1 90XR25 pin 84		OK		Sicelo Mtolo - 525130	M1
10114	A	Force [NI] Dev1/64 = 1.0		OK		Sicelo Mtolo - 525130	M1
10115	R	Check if ALL Left doors opens in 3 sec (+1/-0)		OK		Sicelo Mtolo - 525130	M1
10116	R	Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05]		OK		Sicelo Mtolo - 525130	M1
10117	I	Door Opening Gap		OK		Sicelo Mtolo - 525130	M1
10118	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Sicelo Mtolo - 525130	M1
10119	R	Door 2 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1393	Sicelo Mtolo - 525130	M1
10120	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Sicelo Mtolo - 525130	M1
10121	R	Door 2 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1401	Sicelo Mtolo - 525130	M1

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10122	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Sicelo Mtolo - 525130	M1
10123	R	Door 2 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1397	Sicelo Mtolo - 525130	M1
10124	I	Door 4		OK		Sicelo Mtolo - 525130	M1
10125	I	Door Opening Gap		OK		Sicelo Mtolo - 525130	M1
10126	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Sicelo Mtolo - 525130	M1
10127	R	Door 4 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1395	Sicelo Mtolo - 525130	M1
10128	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Sicelo Mtolo - 525130	M1
10129	R	Door 4 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1405	Sicelo Mtolo - 525130	M1
10130	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Sicelo Mtolo - 525130	M1
10131	R	Door 4 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1400	Sicelo Mtolo - 525130	M1
10132	I	Door 6		OK		Sicelo Mtolo - 525130	M1
10133	I	Door Opening Gap		OK		Sicelo Mtolo - 525130	M1
10134	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Sicelo Mtolo - 525130	M1
10135	R	Door 6 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1398	Sicelo Mtolo - 525130	M1
10136	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Sicelo Mtolo - 525130	M1
10137	R	Door 6 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1408	Sicelo Mtolo - 525130	M1
10138	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Sicelo Mtolo - 525130	M1

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10139	R	Door 6 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1404	Sicelo Mtolo - 525130	M1
10140	I	Obstacle Detection		OK		Sicelo Mtolo - 525130	M1
10141	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85		OK		Sicelo Mtolo - 525130	M1
10142	A	Force [NI] Dev1/56 = 1.0		OK		Sicelo Mtolo - 525130	M1
10143	R	Check if ALL Left doors opens in 3 sec (+1/-0)		OK		Sicelo Mtolo - 525130	M1
10144	R	Position an obstacle on the floor in the centre of each and every door closing line		OK		Sicelo Mtolo - 525130	M1
10145	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Sicelo Mtolo - 525130	M1
10146	A	Force [NI] Dev1/64 = 0.0		OK		Sicelo Mtolo - 525130	M1
10147	A	Force [NI] Dev1/56 = 0.0		OK		Sicelo Mtolo - 525130	M1
10148	R	All doors will hit the obstacles, reopen and try to close again 3 times. On the third attempt ALL doors will stop and stand adjar - free to be opened manually		OK		Sicelo Mtolo - 525130	M1
10149	I	Safety Doors Loop Train Lines Dev5/89 = END2 90XP35 pin 96		OK		Sicelo Mtolo - 525130	M1
10150	R	Read Defined Variable [NI] Dev5/89 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10151	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Sicelo Mtolo - 525130	M1
10152	A	Force [NI] Dev1/64 = 1.0		OK		Sicelo Mtolo - 525130	M1
10153	A	Force [NI] Dev1/56 = 1.0		OK		Sicelo Mtolo - 525130	M1
10154	R	ALL doors opens fully		OK		Sicelo Mtolo - 525130	M1
10155	A	Remove the obstacles		OK		Sicelo Mtolo - 525130	M1
10156	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Sicelo Mtolo - 525130	M1
10157	A	Force [NI] Dev1/64 = 0.0		OK		Sicelo Mtolo - 525130	M1
10158	A	Force [NI] Dev1/56 = 0.0		OK		Sicelo Mtolo - 525130	M1

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10159	R	Check that ALL doors closes in 3 sec (+1/-0)		OK		Sicelo Mtolo - 525130	M1
10160	R	Check that the RED leds on both sides of the door blink while the door closes [Safety Request: Prasa8-05]		OK		Sicelo Mtolo - 525130	M1
10161	I	Safety Doors Loop Train Lines Dev5/89 = END2 90XP35 pin 96		OK		Sicelo Mtolo - 525130	M1
10162	R	Read Defined Variable [NI] Dev5/89 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10163	I	Speed Detection		OK		Sicelo Mtolo - 525130	M1
10164	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Sicelo Mtolo - 525130	M1
10165	A	Force [NI] Dev1/64 = 1.0		OK		Sicelo Mtolo - 525130	M1
10166	A	Force [NI] Dev1/56 = 1.0		OK		Sicelo Mtolo - 525130	M1
10167	R	All doors open		OK		Sicelo Mtolo - 525130	M1
10168	I	V>5km/h Train Lines Dev1/34 = END1 90XR25 pin 28 Dev5/38 = END2 90XP35 pin 28		OK		Sicelo Mtolo - 525130	M1
10169	A	Force [NI] Dev1/34 = 1.0		OK		Sicelo Mtolo - 525130	M1
10170	R	Read Defined Variable [NI] Dev5/38 = 1.0		OK	1	Ntobeko Ndlovu - 421595	M1
10171	R	All doors close due to the invalid state of the DCU		OK		Sicelo Mtolo - 525130	M1
10172	A	Release [TT] (MPU1)lo_dor_m1opendoorleft		OK		Sicelo Mtolo - 525130	M1
10173	A	Release [TT] (MPU1)lo_dor_m1opendoorright		OK		Sicelo Mtolo - 525130	M1
10174	I	V>5km/h Train Lines Dev1/34 = END1 90XR25 pin 28 Dev5/38 = END2 90XP35 pin 28		OK		Sicelo Mtolo - 525130	M1
10175	A	Force [NI] Dev1/34 = 0.0		OK		Sicelo Mtolo - 525130	M1
10176	R	Read Defined Variable [NI] Dev5/38 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10177	I	V<3km/h Train Lines Dev1/35 = END1 90XR25 pin 29		OK		Sicelo Mtolo - 525130	M1
10178	A	Force [NI] Dev1/35 = 0.0		OK		Sicelo Mtolo - 525130	M1

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10179	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Sicelo Mtolo - 525130	M1
10180	A	Force [NI] Dev1/64 = 0.0		OK		Sicelo Mtolo - 525130	M1
10181	A	Force [NI] Dev1/56 = 0.0		OK		Sicelo Mtolo - 525130	M1
10182	I	Safety Doors Loop Train Lines Dev1/59 = END1 90XR25 pin 96		OK		Sicelo Mtolo - 525130	M1
10183	A	Force [NI] Dev1/59 = 0.0		OK		Sicelo Mtolo - 525130	M1

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Section 13 – HVAC Air Conditioning

13.2 Instructions list

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13.2.2 057_HVA_SME-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		NE			M1
10002	I	Initial conditions		NE			M1
10003	A	Car Should be Prepared with CVS running and 400V ac available in the car		NE			M1
10004	I	HVAC AC Power Supply		NE			M1
10005	A	Close Circuit Breaker 13Q1 and 13Q5		NE			M1
10006	A	Check on the DDU if the HVAC is offline		NE			M1
10007	I	Checking 400Vac		NE			M1
10008	A	Close Circuit Breaker 57Q1		NE			M1
10009	A	Disconnect connector 57XP4_X5 and use a multimeter to check 400Vac between each phases a1, a2 and b1		NE			M1
10010	R	400Vac measured between all phases		NE			M1
10011	A	On the same connector 57XP4_X5, with a phasemeter, check the phase rotation of all 3 phases which are a1- phase L1, a2- Phase L2 and b1- phase L3		NE			M1
10012	R	The phase rotation is correct between all three phases		NE			M1
10013	A	Normalize connector 57XP4_X5.		NE			M1
10014	I	HVAC controller power supply		NE			M1
10015	A	Close Circuit Breaker 57Q2		NE			M1
10016	A	Allow the HVAC to initialize and check on the DDU if the HVAC is online		NE			M1
10017	R	HVAC unit turns ON and starts to work		NE			M1
10018	I	HVAC inhib		NE			M1

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10019	A	Force [TT] (MPU1)Io_hva_m1hvacinhibr1___1 = 1		NE			M1
10020	A	Force [TT] (MPU1)Io_hva_m1hvacinhibr2___1 = 1		NE			M1
10021	I	50% HVAC restriction		NE			M1
10022	A	Force [TT] NRG_HvacM150Cmd = 0		NE			M1
10023	I	saloon HVAC		NE			M1
10024	I	HVAC web portal		NE			M1
10025	I	The attached document is a procedure on how to navigate around the maintenance software		NE			M1
10026	I	Connect the laptop to the HVAC maintenance software using web browser. Enter the following IP address on the web browser 10.136.xxx30 xxx represents the train number Login: maint Password: maint		NE			M1
10027	I	Full "Self test" saloon		NE			M1
10028	R	On status tab, Active mode is off for both cab and saloon		NE			M1
10029	A	Go to Alarms tab and clear all the alarms for saloon and cabin		NE			M1
10030	I	For the following tests make sure on the webHMI tab you change contoller to be controlled by webHMI and not MPU		NE			M1
10031	A	Before running the full test, please click on reset test to reset the previous results.		NE			M1
10032	A	Select Full-Test on the Saloon HVAC		NE			M1
10033	R	All saloon HVAC units work according to the mode described in the "ACTIVE MODE" on the status tab		NE			M1
10034	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.		NE			M1
10035	I	Forced Mode (Saloon HVAC)		NE			M1

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10036	I	During all tests Walk through the whole car and physically check (feel) that the HVAC is functioning as desired		NE			M1
10037	I	Go to maintenance tab to force the following modes		NE			M1
10038	I	Cooling Mode		NE			M1
10039	A	Select forced Cooling mode on the Saloon HVAC and let it run for 5 mins		NE			M1
10040	R	All HVAC units are cooling		NE			M1
10041	I	Heating Mode		NE			M1
10042	A	Select forced Heating mode on the Saloon HVAC and let it run for 5 mins		NE			M1
10043	R	All HVAC units are heating		NE			M1
10044	I	HVAC Faults		NE			M1
10045	A	In the maintenance software, select the "Alarms" tab		NE			M1
10046	A	Ensure there are no active faults on the HVAC for Cabin and Saloon. Use the highlighted drop down to navigate between saloon and cabin.		NE			M1
10047	R	No active faults identified on the HVAC unit		NE			M1
10048	A	Release [TT] (MPU1)lo_hva_m1hvacinhibr1__1		NE			M1
10049	A	Release [TT] (MPU1)lo_hva_m1hvacinhibr2__1		NE			M1
10050	A	Release [TT] NRG_HvacM150Cmd		NE			M1
10051	R	Cabin HVAC turned OFF		NE			M1
10052	I	End of test		NE			M1

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13.2.1 057_HVA-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)		OK		Carol Gumede - 425280	M1
10002	I	Initial conditions		OK		Carol Gumede - 425280	M1
10003	A	Car Should be Prepared		OK		Carol Gumede - 425280	M1
10004	I	Power Supply		OK		Carol Gumede - 425280	M1
10005	A	Close Circuit Breaker 57Q1		OK		Carol Gumede - 425280	M1
10006	A	Close Circuit Breaker 57Q2		OK		Carol Gumede - 425280	M1
10007	I	HVAC Electronic Power Supply		OK		Carol Gumede - 425280	M1
10008	A	Close Circuit Breaker F1 on the HVAC Panel		OK		Carol Gumede - 425280	M1
10009	I	The HVAC electronic is ON		OK		Carol Gumede - 425280	M1
10010	A	Turn the control switch to AUTO position on the HVAC Panel		OK		Carol Gumede - 425280	M1
10011	I	Software Upload		OK		Carol Gumede - 425280	M1
10012	I	Follow the procedure in the document below to upload software onto the HVAC electronic		OK		Carol Gumede - 425280	M1
10013	A			OK		Carol Gumede - 425280	M1
10014	I	Checking 400Vac		OK		Carol Gumede - 425280	M1
10015	A	Ensure that the 400Vac Shore Supply is connected to the vehicle, else connect it		OK		Carol Gumede - 425280	M1
10016	A	Disconnect connector 57XP4_X5 and use a multimeter to measure 400Vac between phases a1, a2 and b1		OK		Carol Gumede - 425280	M1
10017	R	400Vac (+-5%) measured		OK		Carol Gumede - 425280	M1
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.		OK		Carol Gumede - 425280	M1

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10019	R	The phase rotation is correct between all three phases		OK		Carol Gumede - 425280	M1
10020	A	Normalize connector 57XP4_X5		OK		Carol Gumede - 425280	M1
10021	I	HVAC 50% restriction		OK		Carol Gumede - 425280	M1
10022	A	Force [TT] NRG_HvacM150Cmd = 0		OK		Carol Gumede - 425280	M1
10023	I	HVAC inhib		OK		Carol Gumede - 425280	M1
10024	A	Force [TT] (MPU1)lo_hva_m1hvacinhibr1___1 = 1		OK		Carol Gumede - 425280	M1
10025	A	Force [TT] (MPU1)lo_hva_m1hvacinhibr2___1 = 1		OK		Carol Gumede - 425280	M1
10026	R	HVAC unit turns ON and starts to work		OK		Carol Gumede - 425280	M1
10027	I	Emergency Ventilation		OK		Carol Gumede - 425280	M1
10028	A	Force [TT] (MPU1)lo_hva_m1emergventil___1 = 1		OK		Carol Gumede - 425280	M1
10029	I	All saloon HVAC units work in Ventilation mode. Not heating/cooling		OK		Carol Gumede - 425280	M1
10030	A	Connect the laptop to the HVAC maintenance software using HCU Finder and check the actual working mode of HVAC		OK		Carol Gumede - 425280	M1
10031	R	Release [TT] (MPU1)lo_hva_m1emergventil___1		OK	1	Carol Gumede - 425280	M1
10032	I	Forced Mode (Saloon HVAC)		OK		Carol Gumede - 425280	M1
10033	I	In the maintenance software, select the 'Forced' tab, and use the "Required working mode" drop down box to force the following modes:		OK		Carol Gumede - 425280	M1
10034	I	For the next sections, walk through the whole car and physically check (feel) that the HVAC is functioning as desired		OK		Carol Gumede - 425280	M1
10035	A	Force Ventilation mode on the Saloon HVAC		OK		Carol Gumede - 425280	M1
10036	I	Ventilation Mode		OK		Carol Gumede - 425280	M1
10037	R	All saloon HVAC units work in Ventilation mode. Not heating/cooling		OK		Carol Gumede - 425280	M1

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10038	I	Cooling Mode		OK		Carol Gumede - 425280	M1
10039	A	Force Cooling mode on the Saloon HVAC		OK		Carol Gumede - 425280	M1
10040	R	All saloon HVAC units work in Cooling mode		OK		Carol Gumede - 425280	M1
10041	I	Heating Mode		OK		Carol Gumede - 425280	M1
10042	A	Force Heating mode on the Saloon HVAC		OK		Carol Gumede - 425280	M1
10043	R	All saloon HVAC units work in Heating mode		OK		Carol Gumede - 425280	M1
10044	I	Self-Test		OK		Carol Gumede - 425280	M1
10045	A	Force Self-Test on the Saloon HVAC		OK		Carol Gumede - 425280	M1
10046	R	All saloon HVAC units work according to the mode described in the "Actual working mode"		OK		Carol Gumede - 425280	M1
10047	R	The Exhaust fans are Turned OFF		OK		Carol Gumede - 425280	M1
10048	I	HVAC Faults		OK		Carol Gumede - 425280	M1
10049	A	In the maintenance software, select the "Alarms / Warnings" tab		OK		Carol Gumede - 425280	M1
10050	A	Ensure there are no active faults on the HVAC		OK		Carol Gumede - 425280	M1
10051	R	No active faults identified on the HVAC unit		OK		Carol Gumede - 425280	M1
10052	A	Release [TT] (MPU1)lo_hva_m1hvacinhibr1___1		OK		Carol Gumede - 425280	M1
10053	A	Release [TT] (MPU1)lo_hva_m1hvacinhibr2___1		OK		Carol Gumede - 425280	M1
10054	A	Release [TT] NRG_HvacM150Cmd		OK		Carol Gumede - 425280	M1
10055	I	End of Test		OK		Carol Gumede - 425280	M1

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Section 14 – Fire protection

14.2 Instructions list

14.2.1 067_FSD-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		Sicelo Mtolo - 525130	M1
10002	I	Fire Detection Train Lines		OK		Sicelo Mtolo - 525130	M1
10003	I	Fire Detection Train Lines Dev1/76 = END1 90XR24 pin 21 Dev5/76 = END2 90XP34 pin 21		OK		Sicelo Mtolo - 525130	M1
10004	A	Force [NI] Dev1/76 = 1.0		OK		Sicelo Mtolo - 525130	M1
10005	R	Read Defined Variable [NI] Dev5/76 = 1.0		OK	1	Sicelo Mtolo - 525130	M1
10006	A	Force [NI] Dev1/76 = 0.0		OK		Sicelo Mtolo - 525130	M1
10007	R	Read Defined Variable [NI] Dev5/76 = 0.0		OK	0	Sicelo Mtolo - 525130	M1
10008	I	Continuity Test		OK		Sicelo Mtolo - 525130	M1
10009	I	The following steps are continuity tests between the two points described in each step. Use a multimeter for this test.		OK		Sicelo Mtolo - 525130	M1
10010	A	From : [(local: +END1 -90XR23.B (pin 4))] to: [-Inter-connector (local: +END2 -90XP33.a pin 7)]		OK		Sicelo Mtolo - 525130	M1
10011	A	From : [(local: +END1 -90XR23.B (pin 5))] to: [-Inter-connector (local: +END2 -90XP33.a pin 8)]		OK		Sicelo Mtolo - 525130	M1
10012	A	From : [(local: +END1 -90XR23.A (pin 7))] to: [-Inter-connector (local: +END2 -90XP33.b pin 4)]		OK		Sicelo Mtolo - 525130	M1

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10013	A	From : [(local: +END1 -90XR23.A (pin 8))] to: [-Inter-connector (local: +END2 -90XP33.b pin 5)]		OK		Sicelo Mtolo - 525130	M1

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Section 15 – Traction and Electric Brake

15.2 Instructions list

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15.2.1 033_TRC-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		Goitsemodimo Kgatitswe - 526511	M1
10002	I	Circuit Breakers and Configuration		OK		Goitsemodimo Kgatitswe - 526511	M1
10003	A	Close Circuit Breaker 33Q1		OK		Goitsemodimo Kgatitswe - 526511	M1
10004	A	Close Circuit Breaker 33Q2		OK		Goitsemodimo Kgatitswe - 526511	M1
10005	A	Close Circuit Breaker 33Q3		OK		Goitsemodimo Kgatitswe - 526511	M1
10006	A	Close Circuit Breaker 33Q4		OK		Goitsemodimo Kgatitswe - 526511	M1
10007	A	Close Circuit Breaker 33Q5		OK		Goitsemodimo Kgatitswe - 526511	M1
10008	R	Read Defined Variable [TT] (TBCU1)LI_CAR_ID1 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10009	I	Train Lines		OK		Goitsemodimo Kgatitswe - 526511	M1
10010	I	110Vdc Normal Traction EL Train Lines Dev 1/66 = END1 90XP25 pin 49 Dev 2/65 = END1 90XP35 pin 42		OK		Goitsemodimo Kgatitswe - 526511	M1
10011	A	Force [NI] Dev1/66 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10012	R	Read Defined Variable [NI] Dev2/65 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10013	A	Force [NI] Dev1/66 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10014	R	Read Defined Variable [NI] Dev2/65 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10015	I	Forward Train Lines: Dev1/31 : END1 90XR25 pin 25 Dev5/78 : END2 90XP35 pin 30		OK		Goitsemodimo Kgatitswe - 526511	M1
10016	A	Force [NI] Dev1/31 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10017	R	Read Defined Variable [TT] (TBCU1)LI_FORWARD = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10018	R	Read Defined Variable [NI] Dev5/78 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10019	I	Forward Train Lines: Dev1/31 : END1 90XR25 pin 25 Dev5/78 : END2 90XP35 pin 30		OK		Goitsemodimo Kgatitswe - 526511	M1

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10020	A	Force [NI] Dev1/31 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10021	R	Read Defined Variable [TT] (TBCU1)LI_FORWARD = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10022	R	Read Defined Variable [NI] Dev5/78 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10023	I	Reverse Train Lines: Dev1/36 : END1 90XR25 pin 30 Dev5/35 : END2 90XP35 pin 25		OK		Goitsemodimo Kgatitswe - 526511	M1
10024	A	Force [NI] Dev1/36 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10025	R	Read Defined Variable [TT] (TBCU1)LI_REVERSE = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10026	R	Read Defined Variable [NI] Dev5/35 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10027	I	Reverse Train Lines: Dev1/36 : END1 90XR25 pin 30 Dev5/35 : END2 90XP35 pin 25		OK		Goitsemodimo Kgatitswe - 526511	M1
10028	A	Force [NI] Dev1/36 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10029	R	Read Defined Variable [TT] (TBCU1)LI_REVERSE = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10030	R	Read Defined Variable [NI] Dev5/35 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10031	I	Traction Train Lines: Dev1/37 : END1 90XR25 pin 31 Dev5/81 : END2 90XP35 pin 31		OK		Goitsemodimo Kgatitswe - 526511	M1
10032	A	Force [NI] Dev1/37 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10033	R	Read Defined Variable [TT] (TBCU1)LI_TRACTION = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10034	R	Read Defined Variable [NI] Dev5/81 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10035	I	Traction Train Lines: Dev1/37 : END1 90XR25 pin 31 Dev5/81 : END2 90XP35 pin 31		OK		Goitsemodimo Kgatitswe - 526511	M1
10036	A	Force [NI] Dev1/37 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10037	R	Read Defined Variable [TT] (TBCU1)LI_TRACTION = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10038	R	Read Defined Variable [NI] Dev5/81 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10039	I	No Brake Train Lines: Dev1/38 : END1 90XR25 pin 32 Dev5/82 : END2 90XP35 pin 32		OK		Goitsemodimo Kgatitswe - 526511	M1

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10040	A	Force [NI] Dev1/38 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10041	R	Read Defined Variable [TT] (TBCU1)LI_NOBRAKE = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10042	R	Read Defined Variable [NI] Dev5/82 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10043	I	No Brake Train Lines: Dev1/38 : END1 90XR25 pin 32 Dev5/82 : END2 90XP35 pin 32		OK		Goitsemodimo Kgatitswe - 526511	M1
10044	A	Force [NI] Dev1/38 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10045	R	Read Defined Variable [TT] (TBCU1)LI_NOBRAKE = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10046	R	Read Defined Variable [NI] Dev5/82 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10047	I	Traction Interlock Bypass Train Lines Dev1/4 : END1 90XR24 pin 6 Dev5/4 : END2 90XP34 pin 6		OK		Goitsemodimo Kgatitswe - 526511	M1
10048	A	Force [NI] Dev1/4 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10049	R	Read Defined Variable [NI] Dev5/4 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10050	A	Force [NI] Dev1/4 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10051	R	Read Defined Variable [NI] Dev5/4 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10052	I	Traction Interlock Train Lines Dev1/39 : END1 90XR25 pin 41 Dev5/83 : END2 90XP35 pin 41		OK		Goitsemodimo Kgatitswe - 526511	M1
10053	A	Force [NI] Dev1/39 = 1.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10054	R	Read Defined Variable [TT] (TBCU1)LI_NOT_INHIB = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10055	R	Read Defined Variable [NI] Dev5/83 = 1.0		OK	1	Goitsemodimo Kgatitswe - 526511	M1
10056	I	Traction Interlock Train Lines Dev1/39 : END1 90XR25 pin 41 Dev5/83 : END2 90XP35 pin 41		OK		Goitsemodimo Kgatitswe - 526511	M1
10057	A	Force [NI] Dev1/39 = 0.0		OK		Goitsemodimo Kgatitswe - 526511	M1
10058	R	Read Defined Variable [TT] (TBCU1)LI_NOT_INHIB = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10059	R	Read Defined Variable [NI] Dev5/83 = 0.0		OK	0	Goitsemodimo Kgatitswe - 526511	M1
10060	I	Coolant Liquid		OK		Goitsemodimo Kgatitswe - 526511	M1

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10061	A	Check that the coolant level is atleast 1/2 of the sight glass level indicator ***[9-30-44-281075_ Coolant Level Check.pdf]***		OK		Goitsemodimo Kgatitswe - 526511	M1
10062	R	Coolant Liquid Level is OK		OK		Goitsemodimo Kgatitswe - 526511	M1
10063	I	End of Test		OK		Goitsemodimo Kgatitswe - 526511	M1

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Section 16 – Vehicle Normalization

16.2 Instructions list

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16.2.1 NORM-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		Carol Gumede - 425280	M1
10002	I	The VFT procedures are all completed		OK		Carol Gumede - 425280	M1
10003	I	Vehicle Normalization Check		OK		Carol Gumede - 425280	M1
10004	R	On LV3 all Circuit Breakers are installed and secured		OK		Carol Gumede - 425280	M1
10005	R	On LV3 all Dataplugs are installed, tightened and earth braids are fastened		OK		Carol Gumede - 425280	M1
10006	R	On LV3 all Connectors are tightened		OK		Carol Gumede - 425280	M1
10007	R	On LV3 there are no missing components, device, wiring or connectors.		OK		Carol Gumede - 425280	M1
10008	A	ON LV3, make sure that both bolts on 93XT300 terminal 4 are tightened and torque marked.		OK		Carol Gumede - 425280	M1
10009	R	On LV6 all Dataplugs are installed, tightened and earth braids are fastened		OK		Carol Gumede - 425280	M1
10010	R	On LV6 all Connectors are tightened		OK		Carol Gumede - 425280	M1
10011	R	On LV6 there are no missing components, device, wiring or connectors.		OK		Carol Gumede - 425280	M1
10012	R	On HC Cubicle the Controller is installed and properly tightened and its connectors are tightened		OK		Carol Gumede - 425280	M1
10013	R	All DCUs are properly installed and secured		OK		Carol Gumede - 425280	M1
10014	R	All Internal Displays are properly installed and secured		OK		Carol Gumede - 425280	M1
10015	R	All Light Covers are properly installed		OK		Carol Gumede - 425280	M1
10016	R	All Saloon Fire Detectors are properly installed and secured		OK		Carol Gumede - 425280	M1
10017	R	All covers are normalised inside the car		OK		Carol Gumede - 425280	M1

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10018	R	On the Underframe, TBCU Agate is installed and properly tightened		OK		Carol Gumede - 425280	M1
10019	R	On the Underframe, Auxiliary Compressor cover is normalized		OK		Carol Gumede - 425280	M1
10020	R	On the Underframe, Panto panel cover is normalized		OK		Carol Gumede - 425280	M1
10021	R	On the Underframe, Speed Sensors are installed and properly tightened		OK		Carol Gumede - 425280	M1
10022	R	On the LVB, all Circuit Breakers are installed and properly tightened		OK		Carol Gumede - 425280	M1
10023	R	On the LVB, all Relays and Timers are installed and properly tightened		OK		Carol Gumede - 425280	M1
10024	R	On the LVB, BRIOMs are installed and properly tightened		OK		Carol Gumede - 425280	M1
10025	R	On the LVB there are no missing components, device, wiring or connectors.		OK		Carol Gumede - 425280	M1
10026	R	On the Underframe, all Connectors are tightened		OK		Carol Gumede - 425280	M1
10027	R	All underframe covers are normalised		OK		Carol Gumede - 425280	M1
10028	R	On END1 the Octopus cables are disconnected from the car and properly stored.		OK		Carol Gumede - 425280	M1
10029	R	On END2 the Octopus cables are disconnected from the car and properly stored.		OK		Carol Gumede - 425280	M1
10030	R	On the roof, there is no Strap connected to the Pantograph		OK		Carol Gumede - 425280	M1
10031	R	The Test Bench is switched OFF and the Octopus cables are disconnected and properly stored		OK		Carol Gumede - 425280	M1
10032	R	ALL P.Os of this car are closed		OK		Mphato Mphahlele - 480716	M1

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Section 17 – PACIS Network

17.2 Instructions list

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17.2.1 054_PIS-PACIS Network

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

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	PACIS System (SPP=054)		OK		Siphesihle Mchunu - 491465	M1
10002	I	Initial conditions		OK		Siphesihle Mchunu - 491465	M1
10003	I	110Vdc Normal line is connected and ON		OK		Siphesihle Mchunu - 491465	M1
10004	I	Circuit Breakers		OK		Siphesihle Mchunu - 491465	M1
10005	A	Close Circuit Breaker 54Q1		OK		Siphesihle Mchunu - 491465	M1
10006	A	Close Circuit Breaker 54Q2		OK		Siphesihle Mchunu - 491465	M1
10007	A	Close Circuit Breaker 54Q10		OK		Siphesihle Mchunu - 491465	M1
10008	A	Close Circuit Breaker 54Q11		OK		Siphesihle Mchunu - 491465	M1
10009	A	Close Circuit Breaker 55Q2		OK		Siphesihle Mchunu - 491465	M1
10010	A	Close Circuit Breaker 55Q3		OK		Siphesihle Mchunu - 491465	M1
10011	R	All 'Pacis System' circuit breakers are closed		OK		Siphesihle Mchunu - 491465	M1
10012	I	Power Supply of Router Switches		OK		Siphesihle Mchunu - 491465	M1
10013	I	Ethernet Switch CRS1		OK		Siphesihle Mchunu - 491465	M1
10014	R	CRS1 is ON		OK		Siphesihle Mchunu - 491465	M1
10015	I	Ethernet Switch CRS2		OK		Siphesihle Mchunu - 491465	M1
10016	R	CRS2 is ON		OK		Siphesihle Mchunu - 491465	M1
10017	I	DPAI-1		OK		Siphesihle Mchunu - 491465	M1
10018	R	DPAI-1 is ON		OK		Siphesihle Mchunu - 491465	M1
10019	I	DPAI-2		OK		Siphesihle Mchunu - 491465	M1
10020	R	DPAI-2 is ON		OK		Siphesihle Mchunu - 491465	M1
10021	I	Lateral Display 'LAT1'		OK		Siphesihle Mchunu - 491465	M1

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10022	R	The PWR (power) LED is ON on the Lateral Display 'LAT1'		OK		Siphesihle Mchunu - 491465	M1
10023	I	Lateral Display 'LAT2'		OK		Siphesihle Mchunu - 491465	M1
10024	R	The PWR (power) LED is ON on the Lateral Display 'LAT2'		OK		Siphesihle Mchunu - 491465	M1
10025	I	Interior Display 'INT1'		OK		Siphesihle Mchunu - 491465	M1
10026	R	The PWR (power) LED is ON on the Interior Display 'INT1'		OK		Siphesihle Mchunu - 491465	M1
10027	I	Interior Display 'INT2'		OK		Siphesihle Mchunu - 491465	M1
10028	R	The PWR (power) LED is ON on the Interior Display 'INT2'		OK		Siphesihle Mchunu - 491465	M1
10029	I	Impedance of Loudspeaker		OK		Siphesihle Mchunu - 491465	M1
10030	I	Saloon Speakers Commanded by DPAI-1		OK		Siphesihle Mchunu - 491465	M1
10031	A	Measure the impedance connector '54XP1_X4' between pins:z32(+) and z30 (-)		OK		Siphesihle Mchunu - 491465	M1
10032	R	Impedance Result Max : x <= 32 (Ohm)		OK	31.4	Siphesihle Mchunu - 491465	M1
10033	I	Saloon Speakers Commanded by DPAI-2		OK		Siphesihle Mchunu - 491465	M1
10034	A	Measure the impedance connector '54XP2_X4' between pins:z32(+) and z30 (-)		OK		Siphesihle Mchunu - 491465	M1
10035	R	Impedance Result Max : x <= 32 (Ohm)		OK	31.7	Siphesihle Mchunu - 491465	M1

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Section 18 – Report summaries

18.1 Results status

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

18.2 Tools used

Function	Tool name	Tool number	Next Calibration date
015_NRG	NPhasemètre	Phasemeter	9/30/2025
021_PNT	Manometro	Manometer	8/30/2025
040_SBK	Manometro	Manometer	8/30/2025
045_PBK	Manometro	Manometer	8/30/2025
057_HVA	NPhasemètre	Phasemeter	9/30/2025
062_ETS	Multimetro	Multimeter 2	9/30/2025

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064_COM	N	Radio Analyser	11/10/2025
067_FSD	Multimetro	Meter 1	8/31/2025

Vehicle	Equipment	Expected version	Version loaded
M1			

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