PROJECT	CUSTOMER	VEHICLE
Xtrapolis-PRASA	**PRASA**	**TS226 – M1 – VFT**

RTR Vehicle Functional Static Testing TS226 M1 Report

GIB0000006530

	CREATED	VERIFIED	APPROVED	DISTRIBUTION
Name	Tshegofatso SETSHOGWE	Sifiso LUKHELE	Kgomotso NKOANA	Confidentiality Category *Restricted* ☐ *Project* ☐ *Normal* ☑
Date	06/06/2024	06/06/2024	06/06/2024	Control Category *Controlled* ☑ *Not Controlled* ☐
Signature				Language **EN**

This report has been automatically generated from TES version 1

Table of modifications

Rev	Date	Modifications Content	Writer
A0	06/06/2024	Creation	Tshegofatso SETSHOGWE

Internal validations

	Name	Function	Date	Signature
Creator	Tshegofatso SETSHOGWE	EPU Manager	06/06/2024	X Tshegofatso SETSHOGWE EPU Manager
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Execution Plan

Start Date	28/05/2024
End Date	29/05/2024

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Section 1 – Purpose / Objectives

Section 2 – Energy Distribution

2.3 Instructions list

2.3.1 015_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		Mvelo Mthembu - 425564	M1
10002	I	Initial Conditions		OK		Mvelo Mthembu - 425564	M1
10003	I	All the Circuit Breakers should be OPEN		OK		Mvelo Mthembu - 425564	M1
10004	I	Test bench should be connected with no active output voltage		OK		Mvelo Mthembu - 425564	M1
10005	I	NO 400Vac should be connected to the car		OK		Mvelo Mthembu - 425564	M1
10006	I	110Vdc Circuit Breaker		OK		Mvelo Mthembu - 425564	M1
10007	A	Close Circuit Breaker 15Q3 (Normal Line)		OK		Mvelo Mthembu - 425564	M1
10008	I	230Vac and 400Vac Circuit breakers		OK		Mvelo Mthembu - 425564	M1
10009	A	Close Circuit Breaker 13Q1		OK		Mvelo Mthembu - 425564	M1
10010	I	Normal and Permanent Power Supply		OK		Mvelo Mthembu - 425564	M1
10011	I	110Vdc Permanent Train Line Dev1/40 = END1 90XP24 pin 29 Dev5/40 = END2 90XP34 pin 29		OK		Mvelo Mthembu - 425564	M1
10012	A	Force [NI] Dev1/40 = 1.0		OK		Mvelo Mthembu - 425564	M1
10013	R	Read Defined Variable [NI] Dev5/40 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10014	A	Apply 110Vdc on the Normal Line using the external power supply		OK		Mvelo Mthembu - 425564	M1
10015	A	Measure 110Vdc between 90XR50.X1/1 (+) and 90XR50.X2/1 (-) (intercar connector). [Normal line]		OK		Mvelo Mthembu - 425564	M1
10016	I	Permanent Line Circuit Breakers		OK		Mvelo Mthembu - 425564	M1
10017	A	Check for battery voltage (above 80Vdc) on Circuit Breaker 15Q4 and close it (permanent Line)		OK		Mvelo Mthembu - 425564	M1
10018	I	230Vac Circuit Breakers		OK		Mvelo Mthembu - 425564	M1

10019	A	Close Circuit Breaker 13Q2		OK		Mvelo Mthembu - 425564	M1
10020	A	Close Circuit Breaker 13Q3		OK		Mvelo Mthembu - 425564	M1
10021	I	230Vac and 400Vac Voltage Supply		OK		Mvelo Mthembu - 425564	M1
10022	A	Apply 400Vac to the Vehicle on End 1 or End 2		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10024	R	Phase rotation between U,V,W is correct		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10026	R	Phase rotation between U,V,W is correct		OK		Mvelo Mthembu - 425564	M1
10027	A	Check 230Vac between points L and N of socket -13XT1		OK		Mvelo Mthembu - 425564	M1
10028	R	230Vac present		OK		Mvelo Mthembu - 425564	M1
10029	A	Check 230Vac between points L and N of socket -13XT2		OK		Mvelo Mthembu - 425564	M1
10030	R	230Vac present		OK		Mvelo Mthembu - 425564	M1
10031	A	Remove the connector 57XP1_10		OK		Mvelo Mthembu - 425564	M1
10032	A	Remove the connector 93XP150		OK		Mvelo Mthembu - 425564	M1
10033	A	Close the circuit breaker 34Q1 and 57Q1		OK		Mvelo Mthembu - 425564	M1
10034	A	Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 57XP1_10 (10b1,10a2,10a1)		OK		Mvelo Mthembu - 425564	M1
10035	R	400Vac +- 5% tolerance is measured between all three phases on connector 93XP150 (E2,E3,E1)		OK		Mvelo Mthembu - 425564	M1
10036	A	Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 93XP150		OK		Mvelo Mthembu - 425564	M1
10037	R	400Vac +- 5% tolerance is measured between all three phases on circuit breaker 57Q1		OK		Mvelo Mthembu - 425564	M1

10038	A	Put back the connector 57XP1_10		OK		Mvelo Mthembu - 425564	M1
10039	A	Put back the connector 93XP150		OK		Mvelo Mthembu - 425564	M1
10040	I	Auxiliary Converters Command		OK		Mvelo Mthembu - 425564	M1
10041	I	Battery Connection Train Lines Dev1/79 = END 1 90XR24 pin 30 Dev5/79 = END 2 90XP34 pin 30		OK		Mvelo Mthembu - 425564	M1
10042	A	Force [NI] Dev1/79 = 1.0		OK		Mvelo Mthembu - 425564	M1
10043	R	Read Defined Variable [NI] Dev5/79 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10044	A	Force [NI] Dev1/79 = 0.0		OK		Mvelo Mthembu - 425564	M1
10045	R	Read Defined Variable [NI] Dev5/79 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10046	I	Battery Disconnection Train Lines Dev1/75 = END 1 90XR24 pin 31 Dev5/75 = END 2 90XP34 pin 31		OK		Mvelo Mthembu - 425564	M1
10047	A	Force [NI] Dev1/75 = 1.0		OK		Mvelo Mthembu - 425564	M1
10048	R	Read Defined Variable [NI] Dev5/75 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10049	A	Force [NI] Dev1/75 = 0.0		OK		Mvelo Mthembu - 425564	M1
10050	R	Read Defined Variable [NI] Dev5/75 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10051	I	IES StatusTrain Lines Dev1/86 = END 1 90XR25 pin 61 Dev2/87 = END 1 90XR25 pin 62		OK		Mvelo Mthembu - 425564	M1
10052	A	Force [NI] Dev1/86 = 1.0		OK		Mvelo Mthembu - 425564	M1
10053	R	Read Defined Variable [NI] Dev2/87 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10054	A	Force [NI] Dev1/86 = 0.0		OK		Mvelo Mthembu - 425564	M1
10055	R	Read Defined Variable [NI] Dev2/87 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10056	I	Switch off the 400Vac power supply at the socket		OK		Mvelo Mthembu - 425564	M1

Section 3 – TCMS Network

3.3 Instructions list

3.3.1 025_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		Philemon Milani - 484650	M1
10002	I	Initial conditions		OK		Philemon Milani - 484650	M1
10003	I	Vehicle test bench should be configured as TC1: 1. TC1 Dataplugs 2. MCE switch set to TC1		OK		Philemon Milani - 484650	M1
10004	R	On DDU TCMS screen the TC1 cab is in BLUE colour		OK		Philemon Milani - 484650	M1
10005	I	Power Supply to the Router Switches		OK		Philemon Milani - 484650	M1
10006	I	Power supply to the 25A10 SWITCH ETHERNET (CRS1)		OK		Philemon Milani - 484650	M1
10007	A	Close Circuit Breaker 25Q10		OK		Philemon Milani - 484650	M1
10008	R	CRS1 25A10 is ON		OK		Philemon Milani - 484650	M1
10009	I	Power supply to the 25A11 SWITCH ETHERNET (CRS2)		OK		Philemon Milani - 484650	M1
10010	A	Close Circuit Breaker 25Q11		OK		Philemon Milani - 484650	M1
10011	R	CRS2 25A11 is ON		OK		Philemon Milani - 484650	M1
10012	I	Power supply to the 25A14 ETHERNET REPEATER (TBR)		OK		Philemon Milani - 484650	M1
10013	A	Close Circuit Breaker 25Q14		OK		Philemon Milani - 484650	M1
10014	R	TBR 25A14 is ON		OK		Philemon Milani - 484650	M1
10015	A	Close Circuit Breaker 25Q6		OK		Philemon Milani - 484650	M1

10016	A	Close Circuit Breaker 25Q7		OK		Philemon Milani - 484650	M1
10017	I	Ethernet Loop		OK		Philemon Milani - 484650	M1
10018	A	For each CRS, check that the Ethernet Loop LEDs are flashing		OK		Philemon Milani - 484650	M1
10019	R	CRS1 has LEDs on ports X3 and X4 flashing		OK		Philemon Milani - 484650	M1
10020	R	CRS2 has ONLY LED on port X4 flashing		OK		Philemon Milani - 484650	M1
10021	R	Check on the Test Bench DDU that all Router Switches are available on the network		OK		Philemon Milani - 484650	M1
10022	I	Power Supply to the BRIOMS		OK		Philemon Milani - 484650	M1
10023	I	Power supply to the 25A6 BRIOM 40/10 ETH 6		OK		Philemon Milani - 484650	M1
10024	R	BRIOM 25A6 is ON		OK		Philemon Milani - 484650	M1
10025	A	Check visually that ground braid is connected to BRIOM		OK		Philemon Milani - 484650	M1
10026	I	Power supply to the 25A7 BRIOM 40/10 ETH 7		OK		Philemon Milani - 484650	M1
10027	R	BRIOM 25A7 is ON		OK		Philemon Milani - 484650	M1

Section 4 – Cabin Control

4.3 Instructions list

4.3.1 020_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		Walter Sigudla - 486333	M1
10002	I	Train Lines		OK		Walter Sigudla - 486333	M1
10003	I	Cab Selected on Train Lines Dev1/1 = END1 90XR24 pin 3 Dev5/1 = END2 90XP34 pin 3		OK		Walter Sigudla - 486333	M1
10004	A	Force [NI] Dev1/1 = 1.0		OK		Walter Sigudla - 486333	M1
10005	R	Read Defined Variable [NI] Dev5/1 = 1.0		OK	1	Walter Sigudla - 486333	M1
10006	A	Force [NI] Dev1/1 = 0.0		OK		Walter Sigudla - 486333	M1
10007	R	Read Defined Variable [NI] Dev5/1 = 0.0		OK	0	Walter Sigudla - 486333	M1
10008	I	Cab Active TC1 Train Lines Dev1/2 = END1 90XR24 pin 4 Dev5/2 = END2 90XP34 pin 4		OK		Walter Sigudla - 486333	M1
10009	A	Force [NI] Dev1/2 = 1.0		OK		Walter Sigudla - 486333	M1
10010	R	Read Defined Variable [NI] Dev5/2 = 1.0		OK	1	Walter Sigudla - 486333	M1
10011	A	Force [NI] Dev1/2 = 0.0		OK		Walter Sigudla - 486333	M1
10012	R	Read Defined Variable [NI] Dev5/2 = 0.0		OK	0	Walter Sigudla - 486333	M1
10013	I	Master Key TC1 Train Lines Dev1/73 = END1 90XR24 pin 17 Dev5/73 = END2 90XP34 pin 14		OK		Walter Sigudla - 486333	M1
10014	A	Force [NI] Dev1/73 = 1.0		OK		Walter Sigudla - 486333	M1
10015	R	Read Defined Variable [NI] Dev5/73 = 1.0		OK	1	Walter Sigudla - 486333	M1
10016	A	Force [NI] Dev1/73 = 0.0		OK		Walter Sigudla - 486333	M1

10017	R	Read Defined Variable [NI] Dev5/73 = 0.0		OK	0	Walter Sigudla - 486333	M1

Section 5 – Internal Lighting

5.3 Instructions list

5.3.1 052_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		Walter Sigudla - 486333	M1
10002	I	Initial Conditions		OK		Walter Sigudla - 486333	M1
10003	I	The 110Vdc Normal line is ON		OK		Walter Sigudla - 486333	M1
10004	I	Cleaning Lighting Command		OK		Walter Sigudla - 486333	M1
10005	I	110Vdc Permanent Train Line Dev1/40 = END1 90XR24 pin 29		OK		Walter Sigudla - 486333	M1
10006	A	Force [NI] Dev1/40 = 1.0		OK		Walter Sigudla - 486333	M1
10007	A	Close Circuit Breaker 52Q5		OK		Walter Sigudla - 486333	M1
10008	A	Close Circuit Breaker 52Q3		OK		Walter Sigudla - 486333	M1
10009	A	Close Circuit Breaker 52Q4		OK		Walter Sigudla - 486333	M1
10010	I	Lighting 33% Train Line Dev1/8 = END1 90XR25 pin 27		OK		Walter Sigudla - 486333	M1
10011	A	Force [NI] Dev1/8 = 1.0		OK		Walter Sigudla - 486333	M1
10012	R	The saloon RIGHT side emergency lights (low intensity) are ON on all light modules		OK		Walter Sigudla - 486333	M1
10013	R	The saloon LEFT side emergency lights (low intensity) are ON on all light modules		OK		Walter Sigudla - 486333	M1
10014	I	Lighting 33% Train Line Dev5/8 = END2 90XP35 pin 27		OK		Walter Sigudla - 486333	M1
10015	R	Read Defined Variable [NI] Dev5/8 = 1.0		OK	1	Walter Sigudla - 486333	M1
10016	I	Lighting 33% Train Line Dev1/8 = END1 90XR25 pin 27		OK		Walter Sigudla - 486333	M1
10017	A	Force [NI] Dev1/8 = 0.0		OK		Walter Sigudla - 486333	M1
10018	I	Lighting 33% Train Line Dev5/8 = END2 90XP35 pin 27		OK		Walter Sigudla - 486333	M1
10019	R	Read Defined Variable [NI] Dev5/8 = 0.0		OK	0	Walter Sigudla - 486333	M1

10020	R	All saloon emergency lights (low intensity) are OFF on all light modules (Left+Right)		OK		Walter Sigudla - 486333	M1
10021	A	Turn Cleaning Staff Lights Switch 52S6 to ON position		OK		Walter Sigudla - 486333	M1
10022	I	Lighting 33% Train Line Dev5/8 = END2 90XP35 pin 27		OK		Walter Sigudla - 486333	M1
10023	R	Read Defined Variable [NI] Dev5/8 = 1.0		OK	1	Walter Sigudla - 486333	M1
10024	R	All saloon emergency lights (low intensity) are ON on all light modules (Left+Right)		OK		Walter Sigudla - 486333	M1
10025	A	Reset Circuit Breaker 52Q5 (Open and Close)		OK		Walter Sigudla - 486333	M1
10026	R	Read Defined Variable [NI] Dev5/8 = 0.0		OK	0	Walter Sigudla - 486333	M1
10027	I	Main Lighting Command		OK		Walter Sigudla - 486333	M1
10028	A	Close Circuit Breaker 52Q1		OK		Walter Sigudla - 486333	M1
10029	A	Close Circuit Breaker 52Q2		OK		Walter Sigudla - 486333	M1
10030	R	All saloon emergency lights (low intensity) are ON on all light modules (Left+Right)		OK		Walter Sigudla - 486333	M1
10031	I	Lighting 33% Train Line Dev5/8 = END2 90XP25 pin 27		OK		Walter Sigudla - 486333	M1
10032	R	Read Defined Variable [NI] Dev5/8 = 0.0		OK	0	Walter Sigudla - 486333	M1
10033	I	Main Lighting Command Train Line Dev1/32 = END1 90XR25 pin 26		OK		Walter Sigudla - 486333	M1
10034	A	Force [NI] Dev1/32 = 1.0		OK		Walter Sigudla - 486333	M1
10035	I	Main Lighting Command Train Line Dev5/24 = END2 90XP35 pin 26		OK		Walter Sigudla - 486333	M1
10036	R	Read Defined Variable [NI] Dev5/24 = 1.0		OK	1	Walter Sigudla - 486333	M1
10037	R	The saloon LEFT side main lighting (high intensity) is ON on all light modules		OK		Walter Sigudla - 486333	M1
10038	R	The saloon RIGHT side main lighting (high intensity) is ON on all light modules		OK		Walter Sigudla - 486333	M1
10039	I	Main Lighting Command Train Line Dev1/32 = END1 90XR25 pin 26		OK		Walter Sigudla - 486333	M1
10040	A	Force [NI] Dev1/32 = 0.0		OK		Walter Sigudla - 486333	M1

10041	R	All saloon emergency lights (low intensity) are ON on all light modules (Left+Right)		OK		Walter Sigudla - 486333	M1

Section 6 – Train-Ground Communication

6.3 Instructions list

6.3.2 064_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		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10003	I	Antenna cable tester Calibration		OK		Walter Sigudla - 486333	M1
10004	I	PERFORM THIS CALIBRATION BEFORE TESTING EACH CABLE		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10006	I	GSM Cable		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10008	R	The maximum peak of the waveform is Result Max : x <= 2.13 ()		OK	1.51	Walter Sigudla - 486333	M1
10009	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ GSM1		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1

10011	R	The maximum peak of the waveform is Result Max : x <= 2.13 ()		OK	1.17	Walter Sigudla - 486333	M1
10012	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ GSM2		OK		Walter Sigudla - 486333	M1
10013	I	GPS Cable		OK		Walter Sigudla - 486333	M1
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		Walter Sigudla - 486333	M1
10015	A	On the cable tester, select "MEAS" and select F1 "Distance to Fault"		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10017	R	The maximum peak of the waveform is Result Max : x <= 1.2 ()		OK	1	Walter Sigudla - 486333	M1
10018	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ GPS		OK		Walter Sigudla - 486333	M1
10019	I	Wifi Cable		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10021	R	The maximum peak of the waveform is Result Max : x <= 2.45 ()		OK	1.24	Walter Sigudla - 486333	M1
10022	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ WiFi1		OK		Walter Sigudla - 486333	M1
10023	A	Recalibrate the tester. Ensure the frequency range is 4.9GHz - 5.935GHz;		OK		Walter Sigudla - 486333	M1
10024	R	The maximum peak of the waveform is Result Max : x <= 2.45 ()		OK	1.56	Walter Sigudla - 486333	M1
10025	A	Save the waveform result with the following name: TS#(#-Train number)_NBX_ WiFi2		OK		Walter Sigudla - 486333	M1
10026	A	Close Circuit Breaker 64Q1		OK		Walter Sigudla - 486333	M1

10027	R	Check that the Netbox turns ON		OK		Walter Sigudla - 486333	M1

6.3.1 062_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		Philemon Milani - 484650	M1
10002	I	ERTMS Bypass Train Lines Dev1/33 = END1 90XR24 pin 11 Dev5/37 = END2 90XP34 pin 11		OK		Philemon Milani - 484650	M1
10003	A	Force [NI] Dev1/33 = 1.0		OK		Philemon Milani - 484650	M1
10004	R	Read Defined Variable [NI] Dev5/37 = 1.0		OK	1	Philemon Milani - 484650	M1
10005	A	Force [NI] Dev1/33 = 0.0		OK		Philemon Milani - 484650	M1
10006	R	Read Defined Variable [NI] Dev5/37 = 0.0		OK	0	Philemon Milani - 484650	M1
10007	I	Emergency Brake ERTMS 1 Train Lines Dev1/88 = END1 90XR24 pin 18 Dev5/88 = END2 90XP34 pin 18		OK		Philemon Milani - 484650	M1
10008	A	Force [NI] Dev1/88 = 1.0		OK		Philemon Milani - 484650	M1
10009	R	Read Defined Variable [NI] Dev5/88 = 1.0		OK	1	Philemon Milani - 484650	M1
10010	A	Force [NI] Dev1/88 = 0.0		OK		Philemon Milani - 484650	M1
10011	R	Read Defined Variable [NI] Dev5/88 = 0.0		OK	0	Philemon Milani - 484650	M1
10012	I	Emergency Brake ERTMS 2 Train Lines Dev1/80 = END1 90XR24 pin 20 Dev5/80 = END2 90XP34 pin 20		OK		Philemon Milani - 484650	M1
10013	A	Force [NI] Dev1/80 = 1.0		OK		Philemon Milani - 484650	M1
10014	R	Read Defined Variable [NI] Dev5/80 = 1.0		OK	1	Philemon Milani - 484650	M1
10015	A	Force [NI] Dev1/80 = 1.0		OK		Philemon Milani - 484650	M1
10016	I	Wheel Sensor Continuity Test		OK		Philemon Milani - 484650	M1
10017	I	Use the multimeter to test the continuity		OK		Philemon Milani - 484650	M1
10018	A	Check continuity between [62B1 WHEEL SENSOR (Local:+MB2; Connector 62XP1_1) and Intercar(Local:+END2;		OK		Philemon Milani - 484650	M1

		connector 90XP33.c)]					
10019	R	There is a continuity between: pin B & pin 2, pin A & pin 1, pin C & pin 7, pin D & pin 8		OK		Philemon Milani - 484650	M1
10020	R	There is a continuity between: pin F & pin 4, pin E & pin 3, pin G & pin 9, pin H & pin 10		OK		Philemon Milani - 484650	M1
10021	R	There is a continuity between: pin L & pin 6, pin K & pin 5, pin M & pin 11, pin N & pin 12		OK		Philemon Milani - 484650	M1
10022	I	Eurobalise Antenna Cable		OK		Philemon Milani - 484650	M1
10023	A	Check continuity between [Intercar(LOCAL: +END1; Connector - 90XR20) and Intercar (LOCAL:+END2; connector -90XP30)] according to the image below		OK		Philemon Milani - 484650	M1
10024	A			OK		Philemon Milani - 484650	M1
10025	R	Eurobalise Antenna cable is correctly configured		OK		Philemon Milani - 484650	M1

Section 7 – Pantograph

7.3 Instructions list

7.3.1 021_PNT-Pantograph

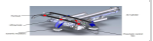
I - Information A - Action R - Result NE - Not Executed

N°	Type	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Pantograph (SPP = 021)		OK		Mvelo Mthembu - 425564	M1
10002	I	There should be no air in the main pipe		OK		Mvelo Mthembu - 425564	M1
10003	R	Measure 0 Bar at point K2.8 using the pressure gauge		OK		Mvelo Mthembu - 425564	M1
10004	A	Ensure that the pantograph isolation valve K2.5 is normalised (not isolated)		OK		Mvelo Mthembu - 425564	M1
10005	I	Initial Conditions		OK		Mvelo Mthembu - 425564	M1
10006	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10007	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10008	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10009	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10010	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxpressswitchr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10011	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxpressswitchr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10012	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10013	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10014	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10015	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10016	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1

10017	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10018	I	Auxiliary Compressor		OK		Mvelo Mthembu - 425564	M1
10019	A	Close Circuit Breaker 21Q1		OK		Mvelo Mthembu - 425564	M1
10020	A	Close Circuit Breaker 21Q2		OK		Mvelo Mthembu - 425564	M1
10021	A	Close Circuit Breaker 21Q3		OK		Mvelo Mthembu - 425564	M1
10022	R	The Auxiliary compressor 21M1 turns ON		OK		Mvelo Mthembu - 425564	M1
10023	R	Read Defined Variable [TT] (MPU1)lo_pnt_m1startauxiliarcompr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10024	R	Read Defined Variable [TT] (MPU1)lo_pnt_m1startauxiliarcompr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10025	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10026	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10027	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10029	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10030	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10031	R	The pantograph is raised		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10033	R	The Auxiliary compressor 21M1 turns OFF		OK		Mvelo Mthembu - 425564	M1
10034	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1

10035	R	Read Defined Variable [TT] (MPU1)li_pnt_m1auxcpcontactorr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10036	A	Turn the pantograph isolation valve K2.5 to isolated position		OK		Mvelo Mthembu - 425564	M1
10037	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10038	R	Read Defined Variable [TT] (MPU1)li_pnt_m1drainingcockr2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10039	A	Force [TT] (MPU1)lo_pnt_m1startauxiliarcompr1 = 0.0		OK		Mvelo Mthembu - 425564	M1
10040	A	Force [TT] (MPU1)lo_pnt_m1startauxiliarcompr2 = 0.0		OK		Mvelo Mthembu - 425564	M1
10041	A	Drain the air by putting the isolation valve K2.5 in half way position		OK		Mvelo Mthembu - 425564	M1
10042	R	Using the pressure gauge, check that the Pantograph drops at 3.3 Bar.		OK		Mvelo Mthembu - 425564	M1
10043	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10044	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10045	A	Turn the pantograph isolation valve K2.5 to normal position		OK		Mvelo Mthembu - 425564	M1
10046	A	Release [TT] (MPU1)lo_pnt_m1startauxiliarcompr1		OK		Mvelo Mthembu - 425564	M1
10047	A	Release [TT] (MPU1)lo_pnt_m1startauxiliarcompr2		OK		Mvelo Mthembu - 425564	M1
10048	R	The Auxiliary compressor 21M1 turns ON		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10050	R	The Auxiliary compressor 21M1 turns OFF		OK		Mvelo Mthembu - 425564	M1
10051	I	Isolation and Earthing		OK		Mvelo Mthembu - 425564	M1
10052	A	In the HV Box , check that all the Green Keys are present.		OK		Mvelo Mthembu - 425564	M1

10053	A	In the HV Box , set the HVB1 valve to Isolated position - to isolate the pantograph		OK		Mvelo Mthembu - 425564	M1
10054	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10055	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10056	A	Turn the Earthing Switch to grounded position		OK		Mvelo Mthembu - 425564	M1
10057	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10058	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10059	A	Turn the Earthing Switch to back to Normal position		OK		Mvelo Mthembu - 425564	M1
10060	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10061	R	Read Defined Variable [TT] (MPU1)li_pnt_m1earthpantor2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10062	A	Set the HVB1 valve to Normal position		OK		Mvelo Mthembu - 425564	M1
10063	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10064	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantoisolatedr2 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10065	A	Normalize the HV box and remove all spare/duplicate keys (green/yellow/blue)		OK		Mvelo Mthembu - 425564	M1
10066	I	Pantograph Mechanical Test		OK		Mvelo Mthembu - 425564	M1
10067	I	Housed Height Measurement, Pantograph Over-Height Measurement, Automatic Drop Device and Control Force Test		OK		Mvelo Mthembu - 425564	M1
10068	I	Initial Conditions		OK		Mvelo Mthembu - 425564	M1
10069	I	There should be no air in the main pipe		OK		Mvelo Mthembu - 425564	M1
10070	R	Measure 0 Bar at point K2.8 using the pressure gauge		OK		Mvelo Mthembu - 425564	M1
10071	A	Ensure that the pantograph isolation valve K2.5 is normalised (not isolated)		OK		Mvelo Mthembu - 425564	M1

10072	I	Housed Height Measurement		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10075	A	Ensure that no part of the pantograph is higher than 486mm above the roof		OK		Mvelo Mthembu - 425564	M1
10076	R	A Result Max : x <= 486 (mm)		OK	483	Mvelo Mthembu - 425564	M1
10077	R	B Result Max : x <= 486 (mm)		OK	484	Mvelo Mthembu - 425564	M1
10078	R	C Result Max : x <= 486 (mm)		OK	483	Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10080	R	Pantograph aligned with the track centreline in housed position		OK		Mvelo Mthembu - 425564	M1
10081	I	Automatic Drop Device		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10083	A	Tie a cable on pantograph head collector		OK		Mvelo Mthembu - 425564	M1
10084	A	Close Circuit Breaker 21Q3		OK		Mvelo Mthembu - 425564	M1
10085	A	Close Circuit Breaker 21Q1		OK		Mvelo Mthembu - 425564	M1
10086	A	Close Circuit Breaker 21Q2		OK		Mvelo Mthembu - 425564	M1
10087	R	The Auxiliary compressor 21M1 turns ON		OK		Mvelo Mthembu - 425564	M1

10088	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Mvelo Mthembu - 425564	M1
10089	I	Allow the pressure to rise, and the pantograph to raise		OK		Mvelo Mthembu - 425564	M1
10090	R	The pantograph is raised		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10092	R	The pressure of the test point PT12 drops to 0 bar		OK		Mvelo Mthembu - 425564	M1
10093	A	On the roof, close the bleeding screw (PT3) to reset the ADD		OK		Mvelo Mthembu - 425564	M1
10094	R	Fault reset and equipment normalized		OK		Mvelo Mthembu - 425564	M1
10095	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Mvelo Mthembu - 425564	M1
10096	R	Pantograph is lowered		OK		Mvelo Mthembu - 425564	M1
10097	I	Pantograph Over-Height Measurement		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10101	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1

		height marked on the ruler.					
10103	R	Rising time Result Max : x <= 10 (S)		OK	8	Mvelo Mthembu - 425564	M1
10104	A	By adjusting the rope, ensure that the Pantograph Panhead is aligned with the marking on the ruler.		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10106	R	The over-height valve is adjusted correctly.		OK		Mvelo Mthembu - 425564	M1
10107	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Mvelo Mthembu - 425564	M1
10108	R	Pantograph is lowered		OK		Mvelo Mthembu - 425564	M1
10109	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10110	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10111	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Mvelo Mthembu - 425564	M1
10112	A	Allow the pantograph to rise freely until it reaches overheight.		OK		Mvelo Mthembu - 425564	M1
10113	R	Overheight is detected immediately after passing the marked area on the ruler and pantograph begins to drop		OK		Mvelo Mthembu - 425564	M1
10114	R	Lowering time Result Max : x <= 7 (S)		OK	5	Mvelo Mthembu - 425564	M1
10115	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Mvelo Mthembu - 425564	M1
10116	A	Reset over-height valve (PT2) on the roof		OK		Mvelo Mthembu - 425564	M1
10117	R	Equipment normalized. (Only after resetting the PT2 valve, can the pantograph be raised)		OK		Mvelo Mthembu - 425564	M1
10118	I	Control Force Test		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1

10120	A	Attach the dynamometer to the pantograph's head collector		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10122	A	Force [TT] (MPU1)lo_pnt_m1raisepantor1 = 1.0		OK		Mvelo Mthembu - 425564	M1
10123	I	Allow the pressure to rise, and the pantograph to raise		OK		Mvelo Mthembu - 425564	M1
10124	R	The pantograph is raised		OK		Mvelo Mthembu - 425564	M1
10125	R	F>150N		OK		Mvelo Mthembu - 425564	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		Mvelo Mthembu - 425564	M1
10127	R	The pantographs should remain in the neutral position		OK		Mvelo Mthembu - 425564	M1
10128	A	Check that the centre of the pantograph head corresponds with the track centreline on maximum raised position		OK		Mvelo Mthembu - 425564	M1
10129	R	Pantograph aligned with the track centreline in maximum raised position (Use marked ruler to compare)		OK		Mvelo Mthembu - 425564	M1
10130	A	Remove 1kg dead weight		OK		Mvelo Mthembu - 425564	M1
10131	R	Pantograph continues to rise to over height condition		OK		Mvelo Mthembu - 425564	M1
10132	A	Remove the dynamometer and dead weights from the pantograph's head-collector		OK		Mvelo Mthembu - 425564	M1
10133	A	Release [TT] (MPU1)lo_pnt_m1raisepantor1		OK		Mvelo Mthembu - 425564	M1
10134	R	Pantograph is lowered		OK		Mvelo Mthembu - 425564	M1
10135	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr1 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10136	R	Read Defined Variable [TT] (MPU1)li_pnt_m1pantorisedr2 = 0.0		OK	0	Mvelo Mthembu - 425564	M1

Section 8 – Rescue Mode and Emergency Disconnection

8.3 Instructions list

8.3.1 027_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		Walter Sigudla - 486333	M1
10002	I	Initial Conditions		OK		Walter Sigudla - 486333	M1
10003	I	110Vdc Normal power supply is connected to the vehicle, and switched ON		OK		Walter Sigudla - 486333	M1
10004	I	Backup Mode Train Lines Dev1/29 = END1 90XR15 pin23 Dev5/33 = END2 90XP25 pin 23		OK		Walter Sigudla - 486333	M1
10005	A	Force [NI] Dev1/29 = 1.0		OK		Walter Sigudla - 486333	M1
10006	R	Read Defined Variable [NI] Dev5/33 = 1.0		OK	1	Walter Sigudla - 486333	M1
10007	R	Relay 27K1 is Energised		OK		Walter Sigudla - 486333	M1
10008	R	Relay 27K2 is De-energised		OK		Walter Sigudla - 486333	M1
10009	A	Timer 30.0 S		OK		Walter Sigudla - 486333	M1
10010	R	Relay 27K2 is De-energised		OK		Walter Sigudla - 486333	M1
10011	A	Timer 30.0 S		OK		Walter Sigudla - 486333	M1
10012	R	Relay 27K2 is energised		OK		Walter Sigudla - 486333	M1
10013	I	Backup Mode Train Lines Dev1/29 = END1 90XR25 pin23 Dev5/33 = END2 90XP35 pin 23		OK		Walter Sigudla - 486333	M1
10014	A	Force [NI] Dev1/29 = 0.0		OK		Walter Sigudla - 486333	M1
10015	R	Read Defined Variable [NI] Dev5/33 = 0.0		OK	0	Walter Sigudla - 486333	M1

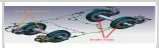
10016	R	Relay 27K1 is De-energised		OK		Walter Sigudla - 486333	M1
10017	R	Relay 27K2 is De-energised		OK		Walter Sigudla - 486333	M1
10018	I	Emergency Disconnection		OK		Walter Sigudla - 486333	M1
10019	I	Emergency Disconnection Train Lines Dev1/30 = END1 90XR25 pin24 Dev5/34 = END2 90XP35 pin 24		OK		Walter Sigudla - 486333	M1
10020	A	Force [NI] Dev1/30 = 1.0		OK		Walter Sigudla - 486333	M1
10021	R	Read Defined Variable [NI] Dev5/34 = 1.0		OK	1	Walter Sigudla - 486333	M1
10022	R	Relay 27K5 is Energised		OK		Walter Sigudla - 486333	M1
10023	I	Emergency Disconnection Train Lines Dev1/30 = END1 90XR25 pin24 Dev5/34 = END2 90XP35 pin 24		OK		Walter Sigudla - 486333	M1
10024	A	Force [NI] Dev1/30 = 0.0		OK		Walter Sigudla - 486333	M1
10025	R	Read Defined Variable [NI] Dev5/34 = 0.0		OK	0	Walter Sigudla - 486333	M1
10026	R	Relay 27K5 is De-energised		OK		Walter Sigudla - 486333	M1

Section 9 – Emergency Brake

9.3 Instructions list

9.3.1 044_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		Mvelo Mthembu - 425564	M1
10002	I	Initial Conditions		OK		Mvelo Mthembu - 425564	M1
10003	I	No PEAs are activated		OK		Mvelo Mthembu - 425564	M1
10004	I	110Vdc Normal power supply should be connected to the vehicle and ON		OK		Mvelo Mthembu - 425564	M1
10005	I	Visual Inspection		OK		Mvelo Mthembu - 425564	M1
10006	A	Physically and visually inspect all the Disk Break Units (DBU) and brake pads, to ensure they are securely fitted		OK		Mvelo Mthembu - 425564	M1
10007	R	All the brake DBUs are correctly installed and all the brake pads are correctly installed and locked		OK		Mvelo Mthembu - 425564	M1
10008	A	Check the piping installation		OK		Mvelo Mthembu - 425564	M1
10009	R	All the pipes are installed on the vehicle		OK		Mvelo Mthembu - 425564	M1
10010	A	Check all the Passenger Emergency Alarm handles, and ensure they are connected to their respective connectors		OK		Mvelo Mthembu - 425564	M1
10011	R	All the PEAs are installed and connected		OK		Mvelo Mthembu - 425564	M1
10012	I	Train Lines		OK		Mvelo Mthembu - 425564	M1
10013	I	Emergency Brake Loop Train Lines Dev1/5 = END1 90XR24 pin 8 Dev5/5 = END2 90XP34 pin 8		OK		Mvelo Mthembu - 425564	M1
10014	A	Force [NI] Dev1/5 = 1.0		OK		Mvelo Mthembu - 425564	M1
10015	R	Read Defined Variable [NI] Dev5/5 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10016	A	Force [NI] Dev1/5 = 0.0		OK		Mvelo Mthembu - 425564	M1
10017	R	Read Defined Variable [NI] Dev5/5 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10018	I	Emergency Brake Loop Override Train Lines Dev1/6 = END1 90XR24 pin 9		OK		Mvelo Mthembu - 425564	M1

		Dev5/6 = END2 90XP34 pin 9					
10019	A	Force [NI] Dev1/6 = 1.0		OK		Mvelo Mthembu - 425564	M1
10020	R	Read Defined Variable [NI] Dev5/6 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10021	A	Force [NI] Dev1/6 = 0.0		OK		Mvelo Mthembu - 425564	M1
10022	R	Read Defined Variable [NI] Dev5/6 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10023	I	Emergency Brake Train Line Train Lines Dev1/50 = END1 90XR25 pin 67 Dev5/61 = END2 90XP35 pin 67		OK		Mvelo Mthembu - 425564	M1
10024	A	Force [NI] Dev1/50 = 1.0		OK		Mvelo Mthembu - 425564	M1
10025	R	Read Defined Variable [NI] Dev5/61 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10026	A	Force [NI] Dev1/50 = 0.0		OK		Mvelo Mthembu - 425564	M1
10027	R	Read Defined Variable [NI] Dev5/61 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10028	I	PEA Loop OTDR Train Lines Dev1/7 = END1 90XR24 pin 10 Dev5/7 = END2 90XP34 pin 10		OK		Mvelo Mthembu - 425564	M1
10029	A	Force [NI] Dev1/7 = 1.0		OK		Mvelo Mthembu - 425564	M1
10030	R	Read Defined Variable [NI] Dev5/7 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10031	A	Force [NI] Dev1/7 = 0.0		OK		Mvelo Mthembu - 425564	M1
10032	R	Read Defined Variable [NI] Dev5/7 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10033	I	PEA Reset		OK		Mvelo Mthembu - 425564	M1
10034	A	Check continuity on Timer Relay 44D1 between points A1 and B1		OK		Mvelo Mthembu - 425564	M1
10035	R	The points are continuous		OK		Mvelo Mthembu - 425564	M1
10036	A	Check continuity on Timer Relay 44D1 between points A4, B3 and C4		OK		Mvelo Mthembu - 425564	M1
10037	R	All three points are continuous		OK		Mvelo Mthembu - 425564	M1
10038	A	Close Circuit Breaker 44Q1		OK		Mvelo Mthembu - 425564	M1
10039	I	PEA Loop Train Lines Dev1/58 = END1 90XR25 pin 95 Dev5/62 = END2 90XP35 pin 95		OK		Mvelo Mthembu - 425564	M1
10040	A	Force [NI] Dev1/58 = 1.0		OK		Mvelo Mthembu - 425564	M1

10041	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10042	A	Force [NI] Dev1/58 = 0.0		OK		Mvelo Mthembu - 425564	M1
10043	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10044	A	Force [NI] Dev1/58 = 1.0		OK		Mvelo Mthembu - 425564	M1
10045	A	Activate the PEA on door 5 (44S15)		OK		Mvelo Mthembu - 425564	M1
10046	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10047	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10048	A	Reset the PEA using square key		OK		Mvelo Mthembu - 425564	M1
10049	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10050	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10051	A	Activate the PEA on door 3 (44S13)		OK		Mvelo Mthembu - 425564	M1
10052	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10053	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10054	A	Reset the PEA using square key		OK		Mvelo Mthembu - 425564	M1
10055	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10056	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10057	A	Activate the PEA on door 1 (44S11)		OK		Mvelo Mthembu - 425564	M1
10058	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10059	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10060	A	Reset the PEA using square key		OK		Mvelo Mthembu - 425564	M1
10061	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1

10062	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10063	A	Activate the PEA on door 2 (44S12)		OK		Mvelo Mthembu - 425564	M1
10064	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10065	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10066	A	Reset the PEA using square key		OK		Mvelo Mthembu - 425564	M1
10067	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10068	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10069	A	Activate the PEA on door 4 (44S14)		OK		Mvelo Mthembu - 425564	M1
10070	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10071	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10072	A	Reset the PEA using square key		OK		Mvelo Mthembu - 425564	M1
10073	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10074	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10075	A	Activate the PEA on door 6 (44S16)		OK		Mvelo Mthembu - 425564	M1
10076	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10077	R	Read Defined Variable [NI] Dev5/62 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10078	A	Reset the PEA using square key		OK		Mvelo Mthembu - 425564	M1
10079	I	PEA Loop Train Lines Dev5/62 = END2 90XP25 pin 95		OK		Mvelo Mthembu - 425564	M1
10080	R	Read Defined Variable [NI] Dev5/62 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10081	I	PEA Loop Train Lines Dev1/58 = END1 90XR15 pin 95		OK		Mvelo Mthembu - 425564	M1

10082	A	Force [NI] Dev1/58 = 0.0		OK		Mvelo Mthembu - 425564	M1

Section 10 – Service Brake

10.3 Instructions list

10.3.1 040_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		Walter Sigudla - 486333	M1
10002	I	Initial Conditions		OK		Walter Sigudla - 486333	M1
10003	I	No air supply to the vehicle		OK		Walter Sigudla - 486333	M1
10004	I	All BPM cocks are in normal position (not isolated)		OK		Walter Sigudla - 486333	M1
10005	I	110Vdc Normal power supply should be connected to the vehicle and ON		OK		Walter Sigudla - 486333	M1
10006	I	Follow the procedure in the document below to upload software onto the TBCU electronic		OK		Walter Sigudla - 486333	M1
10007	I	Power Supply		OK		Walter Sigudla - 486333	M1
10008	A	Remove the connector 10XR12_XCB2 from the propulsion box		OK		Walter Sigudla - 486333	M1
10009	A	Close Circuit Breaker 33Q1, 33Q3 and 33Q5		OK		Walter Sigudla - 486333	M1
10010	A	Check the voltage on connector 10XR12_XCB2 between pins 4 (+) and 69 (-) ; 4(+) and 67(-); and 5(+) and 68(-)		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10013	A	Remove the connector -40XP2_C2_16 from pneumatic BPM		OK		Walter Sigudla - 486333	M1
10014	A	Close Circuit Breaker 40Q1		OK		Walter Sigudla - 486333	M1
10015	A	Check the voltage on connector 40XP2_C2_16 between pins 13 (+) and 31 (-)		OK		Walter Sigudla - 486333	M1

10016	R	Battery voltage (above 80Vdc) is measured on connector 40XP2_C2_16 between pins 13 (+) and 31 (-)		OK		Walter Sigudla - 486333	M1
10017	A	Open Circuit Breaker 40Q1, Replace connector -40XP2_C2_16 on the pneumatic BPM, and Close Circuit breaker -40Q1		OK		Walter Sigudla - 486333	M1
10018	R	The pneumatic BPM 40A2 is ON		OK		Walter Sigudla - 486333	M1
10019	I	Brake Air Supply and Brake Application		OK		Walter Sigudla - 486333	M1
10020	I	EB Reduced Train Lines Dev2/85 = END1 90XR25 pin 60 Dev5/51 = END2 90XP35 pin 60		OK		Walter Sigudla - 486333	M1
10021	R	Read Defined Variable [NI] Dev2/85 = 1.0		OK	1	Walter Sigudla - 486333	M1
10022	R	Read Defined Variable [NI] Dev5/51 = 1.0		OK	1	Walter Sigudla - 486333	M1
10023	I	Brake Applied Train Lines Dev2/83 = END1 90XR25 pin 50 Dev5/49 = END2 90XP35 pin 50		OK		Walter Sigudla - 486333	M1
10024	R	Read Defined Variable [NI] Dev2/83 = 0.0		OK	0	Walter Sigudla - 486333	M1
10025	R	Read Defined Variable [NI] Dev5/49 = 0.0		OK	0	Walter Sigudla - 486333	M1
10026	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr1 = 0.0		OK	0	Walter Sigudla - 486333	M1
10027	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr2 = 0.0		OK	0	Walter Sigudla - 486333	M1
10028	R	Read Defined Variable [TT] (TBCU1)LI_BRPS_NOK = 1.0		OK	1	Walter Sigudla - 486333	M1
10029	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_NOT_APPLED = 1.0		OK	1	Walter Sigudla - 486333	M1
10030	A	Close/Isolate the Isolation cock F2.1/3		OK		Walter Sigudla - 486333	M1
10031	A	Open the Isolation cock F2.2/3		OK		Walter Sigudla - 486333	M1
10032	A	Connect the air supply to the vehicle main pipe coupling flexible hose F3/5, and switch the supply ON		OK		Walter Sigudla - 486333	M1
10033	I	Take note of any air leaks in the pipes or valves		OK		Walter Sigudla - 486333	M1

10034	A	Allow the pressure to go above 6 bar. The pressure can be checked at the BRTP test point		OK		Walter Sigudla - 486333	M1
10035	R	BRTP pressure is measured >=6 Bar		OK		Walter Sigudla - 486333	M1
10036	I	Brake Applied Train Lines Dev2/83 = END1 90XR25 pin 50 Dev5/49 = END2 90XP35 pin 50		OK		Walter Sigudla - 486333	M1
10037	R	Read Defined Variable [NI] Dev2/83 = 1.0		OK	1	Walter Sigudla - 486333	M1
10038	R	Read Defined Variable [NI] Dev5/49 = 1.0		OK	1	Walter Sigudla - 486333	M1
10039	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr1 = 1.0		OK	1	Walter Sigudla - 486333	M1
10040	R	Read Defined Variable [TT] (MPU1)li_sbk_m1brakeairsuppokr2 = 1.0		OK	1	Walter Sigudla - 486333	M1
10041	R	Read Defined Variable [TT] (TBCU1)LI_BRPS_NOK = 0.0		OK	0	Walter Sigudla - 486333	M1
10042	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_NOT_APPLED = 0.0		OK	0	Walter Sigudla - 486333	M1
10043	I	Remote Isolation		OK		Walter Sigudla - 486333	M1
10044	I	Remote Isolation Train Lines Dev1/84 = END1 90XR25 pin 59 Dev5/50 = END2 90XP35 pin 59		OK		Walter Sigudla - 486333	M1
10045	A	Force [NI] Dev1/84 = 1.0		OK		Walter Sigudla - 486333	M1
10046	R	Read Defined Variable [NI] Dev5/50 = 1.0		OK	1	Walter Sigudla - 486333	M1
10047	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_ISO = 1.0		OK	1	Walter Sigudla - 486333	M1
10048	A	Force [TT] (MPU1)lo_sbk_m1isobrake = 1.0		OK		Walter Sigudla - 486333	M1
10049	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_ISO = 0.0		OK	0	Walter Sigudla - 486333	M1
10050	I	Remote Isolation Train Lines Dev5/50 = END2 90XP35 pin 59		OK		Walter Sigudla - 486333	M1
10051	R	Read Defined Variable [NI] Dev5/50 = 0.0		OK	0	Walter Sigudla - 486333	M1
10052	A	Release [TT] (MPU1)lo_sbk_m1isobrake		OK		Walter Sigudla - 486333	M1

10053	R	Read Defined Variable [NI] Dev5/50 = 1.0		OK	1	Walter Sigudla - 486333	M1
10054	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_ISO = 1.0		OK	1	Walter Sigudla - 486333	M1
10055	I	Remote Isolation Train Lines Dev1/84 = END1 90XR25 pin 59		OK		Walter Sigudla - 486333	M1
10056	A	Force [NI] Dev1/84 = 0.0		OK		Walter Sigudla - 486333	M1
10057	I	Manual Isolation		OK		Walter Sigudla - 486333	M1
10058	I	EB Reduced Train Lines Dev2/85 = END1 90XR25 pin 60 Dev5/51 = END2 90XP35 pin 60		OK		Walter Sigudla - 486333	M1
10059	R	Read Defined Variable [NI] Dev2/85 = 0.0		OK	0	Walter Sigudla - 486333	M1
10060	R	Read Defined Variable [NI] Dev5/51 = 0.0		OK	0	Walter Sigudla - 486333	M1
10061	R	Read Defined Variable [TT] (MPU1)li_sbk_m1servicebrakedc = 0.0		OK	0	Walter Sigudla - 486333	M1
10062	R	Read Defined Variable [TT] (TBCU1)Li_ServiceBrakeDC = 0.0		OK	0	Walter Sigudla - 486333	M1
10063	A	Close the Isolation cock C2.3.1		OK		Walter Sigudla - 486333	M1
10064	I	EB Reduced Train Lines Dev2/85 = END1 90XR25 pin 60 Dev5/51 = END2 90XP35 pin 60		OK		Walter Sigudla - 486333	M1
10065	R	Read Defined Variable [NI] Dev2/85 = 1.0		OK	1	Walter Sigudla - 486333	M1
10066	R	Read Defined Variable [NI] Dev5/51 = 1.0		OK	1	Walter Sigudla - 486333	M1
10067	R	Read Defined Variable [TT] (MPU1)li_sbk_m1servicebrakedc = 1.0		OK	1	Walter Sigudla - 486333	M1
10068	R	Read Defined Variable [TT] (TBCU1)Li_ServiceBrakeDC = 1.0		OK	1	Walter Sigudla - 486333	M1
10069	A	Re-open the Isolation cock C2.3.1		OK		Walter Sigudla - 486333	M1
10070	R	Read Defined Variable [TT] (MPU1)li_sbk_m1servicebrakedc = 0.0		OK	0	Walter Sigudla - 486333	M1
10071	I	Switch OFF 400V before reading the bcufault variable		OK		Walter Sigudla - 486333	M1
10072	R	Read Defined Variable [TT] (MPU1)li_sbk_m1bcufault = 0.0		OK	0	Walter Sigudla - 486333	M1

10073	A	Force [TT] (TBCU1)LO_BRK_FLT = 1.0		OK		Walter Sigudla - 486333	M1
10074	R	Read Defined Variable [TT] (MPU1)li_sbk_m1bcufault = 1.0		OK	1	Walter Sigudla - 486333	M1
10075	A	Release [TT] (TBCU1)LO_BRK_FLT		OK		Walter Sigudla - 486333	M1

Section 11 – Holding and Parking Brake

11.3 Instructions list

11.3.1 045_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		Walter Sigudla - 486333	M1
10002	I	Initial Conditions		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10004	I	Check that the pressure on Test point C2.11/1 is >5bar		OK		Walter Sigudla - 486333	M1
10005	I	Visual Inspection		OK		Walter Sigudla - 486333	M1
10006	A	Check the installation of the manual parking brake release components (lever + cable)		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10008	I	Circuit Breakers		OK		Walter Sigudla - 486333	M1
10009	I	Circuit Breaker 33Q3 and 33Q5 should be closed		OK		Walter Sigudla - 486333	M1
10010	I	Parking Brake Pressure Switch		OK		Walter Sigudla - 486333	M1
10011	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_RELEASE = 1.0		OK	1	Walter Sigudla - 486333	M1
10012	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_STAT = 0.0		OK	0	Walter Sigudla - 486333	M1
10013	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakerelease = 1.0		OK	1	Walter Sigudla - 486333	M1
10014	R	Read Defined Variable [TT] (MPU1)tbcu1_li_pbrake_stat = 0.0		OK	0	Walter Sigudla - 486333	M1
10015	I	Parking Brake Applied Train Lines Dev2/52 = END1 90XR25 pin 77 Dev5/58 = END2 90XP35 pin 77		OK		Walter Sigudla - 486333	M1
10016	R	Read Defined Variable [NI] Dev2/52 = 0.0		OK	0	Walter Sigudla - 486333	M1

10017	R	Read Defined Variable [NI] Dev5/58 = 0.0		OK	0	Walter Sigudla - 486333	M1
10018	I	Parking Brake Applied		OK		Walter Sigudla - 486333	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		Walter Sigudla - 486333	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		Walter Sigudla - 486333	M1
10021	R	Pressure at test point C2.11/1 <4.5 Bar		OK		Walter Sigudla - 486333	M1
10022	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_RELEASE = 0.0		OK	0	Walter Sigudla - 486333	M1
10023	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakerelease = 0.0		OK	0	Walter Sigudla - 486333	M1
10024	A	Return the Isolation cock C2.3.2 to OPEN position		OK		Walter Sigudla - 486333	M1
10025	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_STAT = 1.0		OK	1	Walter Sigudla - 486333	M1
10026	R	Read Defined Variable [TT] (MPU1)tbcu1_li_pbrake_stat = 1.0		OK	1	Walter Sigudla - 486333	M1
10027	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_DC = 0.0		OK	0	Walter Sigudla - 486333	M1
10028	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakeisoldc = 0.0		OK	0	Walter Sigudla - 486333	M1
10029	R	Read Defined Variable [TT] (MPU1)li_pbk_m1parkbrakeisol = 0.0		OK	0	Walter Sigudla - 486333	M1
10030	I	Parking Brake Applied Train Lines Dev2/52 = END1 90XR25 pin 77 Dev5/58 = END2 90XP35 pin 77		OK		Walter Sigudla - 486333	M1
10031	R	Read Defined Variable [NI] Dev2/52 = 1.0		OK	1	Walter Sigudla - 486333	M1
10032	R	Read Defined Variable [NI] Dev5/58 = 1.0		OK	1	Walter Sigudla - 486333	M1
10033	A	Position the Isolation cock C2.3.2 in CLOSE position		OK		Walter Sigudla - 486333	M1
10034	R	Read Defined Variable [TT] (MPU1)li_pbk_m1parkbrakeisol = 1.0		OK	1	Walter Sigudla - 486333	M1

10035	R	Read Defined Variable [TT] (TBCU1)LI_BRAKE_STAT = 0.0		OK	0	Walter Sigudla - 486333	M1
10036	R	Read Defined Variable [TT] (MPU1)tbcu1_li_pbrake_stat = 0.0		OK	0	Walter Sigudla - 486333	M1
10037	R	Read Defined Variable [TT] (TBCU1)LI_PARK_BR_DC = 1.0		OK	1	Walter Sigudla - 486333	M1
10038	R	Read Defined Variable [TT] (MPU1)TBCU1_parkbrakeisoldc = 1.0		OK	1	Walter Sigudla - 486333	M1
10039	I	Parking Brake Applied Train Lines Dev2/52 = END1 90XR25 pin 77 Dev5/58 = END2 90XP35 pin 77		OK		Walter Sigudla - 486333	M1
10040	R	Read Defined Variable [NI] Dev2/52 = 0.0		OK	0	Walter Sigudla - 486333	M1
10041	R	Read Defined Variable [NI] Dev5/58 = 0.0		OK	0	Walter Sigudla - 486333	M1
10042	A	Return the Isolation cock C2.3.2 to OPEN position		OK		Walter Sigudla - 486333	M1
10043	I	Remote Parking Brake Command		OK		Walter Sigudla - 486333	M1
10044	I	Remote Parking Brake Command Train Lines Dev1/51 = END1 90XR25 pin 68 Dev5/57 = END2 90XP35 pin 68		OK		Walter Sigudla - 486333	M1
10045	A	Force [NI] Dev1/51 = 1.0		OK		Walter Sigudla - 486333	M1
10046	R	Read Defined Variable [NI] Dev5/57 = 1.0		OK	1	Walter Sigudla - 486333	M1
10047	R	Confirm that the parking brake is applied, and air is released from electro valve C2.5		OK		Walter Sigudla - 486333	M1
10048	I	Remote Parking Brake Command Train Lines Dev1/51 = END1 90XR25 pin 68 Dev5/57 = END2 90XP35 pin 68		OK		Walter Sigudla - 486333	M1
10049	A	Force [NI] Dev1/51 = 0.0		OK		Walter Sigudla - 486333	M1
10050	R	Read Defined Variable [NI] Dev5/57 = 0.0		OK	0	Walter Sigudla - 486333	M1
10051	R	Confirm that electro valve C2.5 has stopped emitting air		OK		Walter Sigudla - 486333	M1

Section 12 – Passenger Doors

12.3 Instructions list

12.3.1 050_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		Philemon Milani - 484650	M1
10002	I	Initial conditions		OK		Philemon Milani - 484650	M1
10003	I	110Vdc Normal power supply is connected to the vehicle and ON		OK		Philemon Milani - 484650	M1
10004	I	Ensure that the TCMS network is functional		OK		Philemon Milani - 484650	M1
10005	I	Circuit Breakers		OK		Philemon Milani - 484650	M1
10006	A	Close Circuit Breaker 50Q1		OK		Philemon Milani - 484650	M1
10007	R	DCU 1 is powered ON		OK		Philemon Milani - 484650	M1
10008	R	Check on the DDU that DCU1 is online		OK		Philemon Milani - 484650	M1
10009	A	Close Circuit Breaker 50Q2		OK		Philemon Milani - 484650	M1
10010	R	DCU 2 is powered ON		OK		Philemon Milani - 484650	M1
10011	R	Check on the DDU that DCU2 is online		OK		Philemon Milani - 484650	M1
10012	A	Close Circuit Breaker 50Q3		OK		Philemon Milani - 484650	M1
10013	R	DCU 3 is powered ON		OK		Philemon Milani - 484650	M1
10014	R	Check on the DDU that DCU3 is online		OK		Philemon Milani - 484650	M1
10015	A	Close Circuit Breaker 50Q4		OK		Philemon Milani - 484650	M1
10016	R	DCU 4 is powered ON		OK		Philemon Milani - 484650	M1
10017	R	Check on the DDU that DCU4 is online		OK		Philemon Milani - 484650	M1
10018	A	Close Circuit Breaker 50Q5		OK		Philemon Milani - 484650	M1
10019	R	DCU 5 is powered ON		OK		Philemon Milani - 484650	M1
10020	R	Check on the DDU that DCU5 is online		OK		Philemon Milani - 484650	M1
10021	A	Close Circuit Breaker 50Q6		OK		Philemon Milani - 484650	M1

10022	R	DCU 6 is powered ON		OK		Philemon Milani - 484650	M1
10023	R	Check on the DDU that DCU6 is online		OK		Philemon Milani - 484650	M1
10024	A	Close Circuit Breaker 50Q7		OK		Philemon Milani - 484650	M1
10025	I	Car ID Code		OK		Philemon Milani - 484650	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		Philemon Milani - 484650	M1
10027	R	All doors are available		OK		Philemon Milani - 484650	M1
10028	I	Door Open and Close - Safety Loop		OK		Philemon Milani - 484650	M1
10029	I	ERTMS Auth Left Train Lines Dev1/81 = END1 90XR25 pin 44 Dev5/86 = END2 90XP35 pin 44		OK		Philemon Milani - 484650	M1
10030	A	Force [NI] Dev1/81 = 1.0		OK		Philemon Milani - 484650	M1
10031	R	Read Defined Variable [NI] Dev5/86 = 1.0		OK	1	Philemon Milani - 484650	M1
10032	A	Force [NI] Dev1/81 = 0.0		OK		Philemon Milani - 484650	M1
10033	R	Read Defined Variable [NI] Dev5/86 = 0.0		OK	0	Philemon Milani - 484650	M1
10034	I	ERTMS Auth RightTrain Lines Dev1/82 = END1 90XR25 pin 47 Dev5/87 = END2 90XP35 pin 47		OK		Philemon Milani - 484650	M1
10035	A	Force [NI] Dev1/82 = 1.0		OK		Philemon Milani - 484650	M1
10036	R	Read Defined Variable [NI] Dev5/87 = 1.0		OK	1	Philemon Milani - 484650	M1
10037	A	Force [NI] Dev1/82 = 0.0		OK		Philemon Milani - 484650	M1
10038	R	Read Defined Variable [NI] Dev5/87 = 0.0		OK	0	Philemon Milani - 484650	M1
10039	I	Doors Open Train Lines Dev1/49 = END1 90XR25 pin 66 Dev5/55 = END2 90XP35 pin 66		OK		Philemon Milani - 484650	M1
10040	A	Force [NI] Dev1/49 = 1.0		OK		Philemon Milani - 484650	M1
10041	R	Read Defined Variable [NI] Dev5/55 = 1.0		OK	1	Philemon Milani - 484650	M1
10042	A	Force [NI] Dev1/49 = 0.0		OK		Philemon Milani - 484650	M1
10043	R	Read Defined Variable [NI] Dev5/55 = 0.0		OK	0	Philemon Milani - 484650	M1
10044	I	Door Close Right Train Lines Dev1/53 = END1 90XR25 pin 78		OK		Philemon Milani - 484650	M1

		Dev5/59 = END2 90XP35 pin 78					
10045	A	Force [NI] Dev1/53 = 1.0		OK		Philemon Milani - 484650	M1
10046	R	Read Defined Variable [NI] Dev5/59 = 1.0		OK	1	Philemon Milani - 484650	M1
10047	A	Force [NI] Dev1/53 = 0.0		OK		Philemon Milani - 484650	M1
10048	R	Read Defined Variable [NI] Dev5/59 = 0.0		OK	0	Philemon Milani - 484650	M1
10049	I	Door Close Left Train Lines Dev1/54 = END1 90XR25 pin 79 Dev5/60 = END2 90XP35 pin 79		OK		Philemon Milani - 484650	M1
10050	A	Force [NI] Dev1/54 = 1.0		OK		Philemon Milani - 484650	M1
10051	R	Read Defined Variable [NI] Dev5/60 = 1.0		OK	1	Philemon Milani - 484650	M1
10052	A	Force [NI] Dev1/54 = 0.0		OK		Philemon Milani - 484650	M1
10053	R	Read Defined Variable [NI] Dev5/60 = 0.0		OK	0	Philemon Milani - 484650	M1
10054	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85 Dev5/64 = END2 90XP35 pin 85		OK		Philemon Milani - 484650	M1
10055	A	Force [NI] Dev1/56 = 1.0		OK		Philemon Milani - 484650	M1
10056	R	Read Defined Variable [NI] Dev5/64 = 1.0		OK	1	Philemon Milani - 484650	M1
10057	I	Door Auth Right Train Lines Dev1/55 = END1 90XR25 pin 84 Dev5/61 = END2 90XP35 pin 84		OK		Philemon Milani - 484650	M1
10058	A	Force [NI] Dev1/64 = 1.0		OK		Philemon Milani - 484650	M1
10059	R	Read Defined Variable [NI] Dev5/56 = 1.0		OK	1	Philemon Milani - 484650	M1
10060	I	V<3km/h Train Lines Dev1/35 = END1 90XR25 pin 29 Dev5/39 = END2 90XP35 pin 29		OK		Philemon Milani - 484650	M1
10061	A	Force [NI] Dev1/35 = 1.0		OK		Philemon Milani - 484650	M1
10062	R	Read Defined Variable [NI] Dev5/39 = 1.0		OK	1	Philemon Milani - 484650	M1
10063	A	Force [TT] (MPU1)lo_dor_m1opendoorleft = 1.0		OK		Philemon Milani - 484650	M1
10064	A	Force [TT] (MPU1)lo_dor_m1opendoorright = 1.0		OK		Philemon Milani - 484650	M1
10065	R	Check that ALL doors are OPEN		OK		Philemon Milani - 484650	M1

10066	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85 Dev5/64 = END2 90XP35 pin 85		OK		Philemon Milani - 484650	M1
10067	A	Force [NI] Dev1/56 = 0.0		OK		Philemon Milani - 484650	M1
10068	R	Read Defined Variable [NI] Dev5/64 = 0.0		OK	0	Philemon Milani - 484650	M1
10069	I	Door Auth Right Train Lines Dev1/64 = END1 90XR25 pin 84 Dev5/56 = END2 90XP35 pin 84		OK		Philemon Milani - 484650	M1
10070	A	Force [NI] Dev1/64 = 0.0		OK		Philemon Milani - 484650	M1
10071	R	Read Defined Variable [NI] Dev5/56 = 0.0		OK	0	Philemon Milani - 484650	M1
10072	R	Check that ALL doors are CLOSED		OK		Philemon Milani - 484650	M1
10073	I	Safety Doors Loop Train Lines Dev1/59 = END1 90XR25 pin 96 Dev5/89 = END2 90XP35 pin 96		OK		Philemon Milani - 484650	M1
10074	A	Force [NI] Dev1/59 = 1.0		OK		Philemon Milani - 484650	M1
10075	R	Read Defined Variable [NI] Dev5/89 = 1.0		OK	1	Philemon Milani - 484650	M1
10076	I	Left Side Doors		OK		Philemon Milani - 484650	M1
10077	I	Door 1		OK		Philemon Milani - 484650	M1
10078	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85		OK		Philemon Milani - 484650	M1
10079	A	Force [NI] Dev1/56 = 1.0		OK		Philemon Milani - 484650	M1
10080	R	Check if ALL Left doors opens in 3 sec (+1/-0)		OK		Philemon Milani - 484650	M1
10081	R	Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05]		OK		Philemon Milani - 484650	M1
10082	I	Door Opening Gap		OK		Philemon Milani - 484650	M1
10083	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Philemon Milani - 484650	M1
10084	R	Door 1 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1394	Philemon Milani - 484650	M1
10085	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Philemon Milani - 484650	M1

10086	R	Door 1 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1406	Philemon Milani - 484650	M1
10087	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Philemon Milani - 484650	M1
10088	R	Door 1 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1401	Philemon Milani - 484650	M1
10089	I	Door 3		OK		Philemon Milani - 484650	M1
10090	I	Door Opening Gap		OK		Philemon Milani - 484650	M1
10091	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Philemon Milani - 484650	M1
10092	R	Door 3 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1405	Tshegofatso Setshogwe - 404572	M1
10093	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Tshegofatso Setshogwe - 404572	M1
10094	R	Door 3 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1405	Tshegofatso Setshogwe - 404572	M1
10095	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Tshegofatso Setshogwe - 404572	M1
10096	R	Door 3 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1405	Tshegofatso Setshogwe - 404572	M1
10097	I	Door 5		OK		Tshegofatso Setshogwe - 404572	M1
10098	I	Door Opening Gap		OK		Philemon Milani - 484650	M1
10099	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Philemon Milani - 484650	M1
10100	R	Door 5 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1395	Philemon Milani - 484650	M1
10101	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Philemon Milani - 484650	M1
10102	R	Door 5 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1406	Philemon Milani - 484650	M1
10103	A	Measure the opening gap of the door. (This measurement must be done in the		OK		Philemon Milani - 484650	M1

		middle of the door).					
10104	R	Door 5 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1400	Philemon Milani - 484650	M1
10105	I	Door Auth Left Train Lines Dev1/56 = END1 90XR15 pin 85		OK		Philemon Milani - 484650	M1
10106	A	Force [NI] Dev1/56 = 0.0		OK		Philemon Milani - 484650	M1
10107	R	Check if ALL Left doors closes in 3 sec (+1/-0)		OK		Philemon Milani - 484650	M1
10108	R	Check that the RED leds on both sides of the door blink while the door closes [Safety Request: Prasa8-05]		OK		Philemon Milani - 484650	M1
10109	I	Safety Doors Loop Train Lines Dev5/89 = END2 90XP35 pin 96		OK		Philemon Milani - 484650	M1
10110	R	Read Defined Variable [NI] Dev5/89 = 1.0		OK	1	Philemon Milani - 484650	M1
10111	I	Right Side Doors		OK		Philemon Milani - 484650	M1
10112	I	Door 2		OK		Philemon Milani - 484650	M1
10113	I	Door Auth Right Train Lines Dev1/64 = END1 90XR25 pin 84		OK		Philemon Milani - 484650	M1
10114	A	Force [NI] Dev1/64 = 1.0		OK		Philemon Milani - 484650	M1
10115	R	Check if ALL Left doors opens in 3 sec (+1/-0)		OK		Philemon Milani - 484650	M1
10116	R	Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05]		OK		Philemon Milani - 484650	M1
10117	I	Door Opening Gap		OK		Philemon Milani - 484650	M1
10118	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Philemon Milani - 484650	M1
10119	R	Door 2 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1397	Philemon Milani - 484650	M1
10120	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Philemon Milani - 484650	M1
10121	R	Door 2 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1407	Philemon Milani - 484650	M1

10122	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Philemon Milani - 484650	M1
10123	R	Door 2 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1402	Philemon Milani - 484650	M1
10124	I	Door 4		OK		Philemon Milani - 484650	M1
10125	I	Door Opening Gap		OK		Philemon Milani - 484650	M1
10126	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Philemon Milani - 484650	M1
10127	R	Door 4 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1396	Philemon Milani - 484650	M1
10128	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Philemon Milani - 484650	M1
10129	R	Door 4 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1408	Philemon Milani - 484650	M1
10130	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Philemon Milani - 484650	M1
10131	R	Door 4 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1403	Philemon Milani - 484650	M1
10132	I	Door 6		OK		Philemon Milani - 484650	M1
10133	I	Door Opening Gap		OK		Philemon Milani - 484650	M1
10134	A	Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)		OK		Philemon Milani - 484650	M1
10135	R	Door 6 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1395	Philemon Milani - 484650	M1
10136	A	Measure the opening gap of the door. (This measurement must be done at the top of the door)		OK		Philemon Milani - 484650	M1
10137	R	Door 6 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1407	Philemon Milani - 484650	M1
10138	A	Measure the opening gap of the door. (This measurement must be done in the middle of the door)		OK		Philemon Milani - 484650	M1

10139	R	Door 6 gap Result Min/Max : 1390<= x <= 1410 (mm)		OK	1401	Philemon Milani - 484650	M1
10140	I	Obstacle Detection		OK		Philemon Milani - 484650	M1
10141	I	Door Auth Left Train Lines Dev1/56 = END1 90XR25 pin 85		OK		Philemon Milani - 484650	M1
10142	A	Force [NI] Dev1/56 = 1.0		OK		Philemon Milani - 484650	M1
10143	R	Check if ALL Left doors opens in 3 sec (+1/-0)		OK		Philemon Milani - 484650	M1
10144	R	Position an obstacle on the floor in the centre of each and every door closing line		OK		Philemon Milani - 484650	M1
10145	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Philemon Milani - 484650	M1
10146	A	Force [NI] Dev1/64 = 0.0		OK		Philemon Milani - 484650	M1
10147	A	Force [NI] Dev1/56 = 0.0		OK		Philemon Milani - 484650	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		Philemon Milani - 484650	M1
10149	I	Safety Doors Loop Train Lines Dev5/89 = END2 90XP35 pin 96		OK		Philemon Milani - 484650	M1
10150	R	Read Defined Variable [NI] Dev5/89 = 0.0		OK	0	Philemon Milani - 484650	M1
10151	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Philemon Milani - 484650	M1
10152	A	Force [NI] Dev1/64 = 1.0		OK		Philemon Milani - 484650	M1
10153	A	Force [NI] Dev1/56 = 1.0		OK		Philemon Milani - 484650	M1
10154	R	ALL doors opens fully		OK		Philemon Milani - 484650	M1
10155	A	Remove the obstacles		OK		Philemon Milani - 484650	M1
10156	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Philemon Milani - 484650	M1
10157	A	Force [NI] Dev1/64 = 0.0		OK		Philemon Milani - 484650	M1
10158	A	Force [NI] Dev1/56 = 0.0		OK		Philemon Milani - 484650	M1

10159	R	Check that ALL doors closes in 3 sec (+1/-0)		OK		Philemon Milani - 484650	M1
10160	R	Check that the RED leds on both sides of the door blink while the door closes [Safety Request: Prasa8-05]		OK		Philemon Milani - 484650	M1
10161	I	Safety Doors Loop Train Lines Dev5/89 = END2 90XP35 pin 96		OK		Philemon Milani - 484650	M1
10162	R	Read Defined Variable [NI] Dev5/89 = 1.0		OK	1	Philemon Milani - 484650	M1
10163	I	Speed Detection		OK		Philemon Milani - 484650	M1
10164	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Philemon Milani - 484650	M1
10165	A	Force [NI] Dev1/64 = 1.0		OK		Philemon Milani - 484650	M1
10166	A	Force [NI] Dev1/56 = 1.0		OK		Philemon Milani - 484650	M1
10167	R	All doors open		OK		Philemon Milani - 484650	M1
10168	I	V>5km/h Train Lines Dev1/34 = END1 90XR25 pin 28 Dev5/38 = END2 90XP35 pin 28		OK		Philemon Milani - 484650	M1
10169	A	Force [NI] Dev1/34 = 1.0		OK		Philemon Milani - 484650	M1
10170	R	Read Defined Variable [NI] Dev5/38 = 1.0		OK	1	Philemon Milani - 484650	M1
10171	R	All doors close due to the invalid state of the DCU		OK		Philemon Milani - 484650	M1
10172	A	Release [TT] (MPU1)lo_dor_m1opendoorleft		OK		Philemon Milani - 484650	M1
10173	A	Release [TT] (MPU1)lo_dor_m1opendoorright		OK		Philemon Milani - 484650	M1
10174	I	V>5km/h Train Lines Dev1/34 = END1 90XR25 pin 28 Dev5/38 = END2 90XP35 pin 28		OK		Philemon Milani - 484650	M1
10175	A	Force [NI] Dev1/34 = 0.0		OK		Philemon Milani - 484650	M1
10176	R	Read Defined Variable [NI] Dev5/38 = 0.0		OK	0	Philemon Milani - 484650	M1
10177	I	V<3km/h Train Lines Dev1/35 = END1 90XR25 pin 29		OK		Philemon Milani - 484650	M1
10178	A	Force [NI] Dev1/35 = 0.0		OK		Philemon Milani - 484650	M1

10179	I	Door Auth Train Lines Dev1/64 = END1 90XR25 pin 84 (Right) Dev1/56 = END1 90XR25 pin 85 (Left)		OK		Philemon Milani - 484650	M1
10180	A	Force [NI] Dev1/64 = 0.0		OK		Philemon Milani - 484650	M1
10181	A	Force [NI] Dev1/56 = 0.0		OK		Philemon Milani - 484650	M1
10182	I	Safety Doors Loop Train Lines Dev1/59 = END1 90XR25 pin 96		OK		Philemon Milani - 484650	M1
10183	A	Force [NI] Dev1/59 = 0.0		OK		Philemon Milani - 484650	M1

Section 13 – Air Conditioning

13.3 Instructions list

13.3.1 057_HVA-Air Conditioning

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		Mvelo Mthembu - 425564	M1
10002	I	Initial conditions		OK		Mvelo Mthembu - 425564	M1
10003	A	Car Should be Prepared		OK		Mvelo Mthembu - 425564	M1
10004	I	Power Supply		OK		Mvelo Mthembu - 425564	M1
10005	A	Remove Connector 57XP1_5 from HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10006	A	Close Circuit Breaker 57Q2		OK		Mvelo Mthembu - 425564	M1
10007	A	Force [TT] (MPU1)lo_hva_m1hvacinhibr1___1 = 0.0		OK		Mvelo Mthembu - 425564	M1
10008	A	Force [TT] (MPU1)lo_hva_m1hvacinhibr2___1 = 0.0		OK		Mvelo Mthembu - 425564	M1
10009	R	Check battery voltage (above 80Vdc) between points 11 and 9 of the connector 57XP1_5		OK		Mvelo Mthembu - 425564	M1
10010	A	Force [TT] (MPU1)lo_hva_m1hvacinhibr2___1 = 1.0		OK		Mvelo Mthembu - 425564	M1
10011	R	Check 0Vdc between points 11 and 9 of the connector 57XP1_5		OK		Mvelo Mthembu - 425564	M1
10012	A	Force [TT] (MPU1)lo_hva_m1hvacinhibr1___1 = 1.0		OK		Mvelo Mthembu - 425564	M1
10013	R	Check 0Vdc between points 11 and 9 of the connector 57XP1_5		OK		Mvelo Mthembu - 425564	M1
10014	R	Check 0Vdc between points 10 and 9 of the connector 57XP1_5		OK		Mvelo Mthembu - 425564	M1
10015	A	Force [TT] (MPU1)lo_hva_m1hvacinhibr2___1 = 0.0		OK		Mvelo Mthembu - 425564	M1

10016	A	Force [TT] (MPU1)lo_hva_m1emergventil___1 = 1.0		OK		Mvelo Mthembu - 425564	M1
10017	R	Check 0Vdc between points 11 and 9 of the connector 57XP1_5		OK		Mvelo Mthembu - 425564	M1
10018	R	Check battery voltage (above 80Vdc) between points 10 and 9 of the connector 57XP1_5		OK		Mvelo Mthembu - 425564	M1
10019	A	Release [TT] (MPU1)lo_hva_m1emergventil___1		OK		Mvelo Mthembu - 425564	M1
10020	A	Release [TT] (MPU1)lo_hva_m1hvacinhibr1___1		OK		Mvelo Mthembu - 425564	M1
10021	A	Release [TT] (MPU1)lo_hva_m1hvacinhibr2___1		OK		Mvelo Mthembu - 425564	M1
10022	A	Return back the connector 57XP1_5 on the HVAC panel		OK		Mvelo Mthembu - 425564	M1
10023	I	HVAC Electronic Power Supply		OK		Mvelo Mthembu - 425564	M1
10024	A	Close Circuit Breaker F1 on the HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10025	A	Turn the control switch to AUTO position on the HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10026	R	The HVAC electronic is ON		OK		Mvelo Mthembu - 425564	M1
10027	A	Open Circuit Breaker F1 on the HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10028	R	The HVAC electronic is OFF		OK		Mvelo Mthembu - 425564	M1
10029	A	Close Circuit Breaker F1 on the HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10030	I	Software Upload		OK		Mvelo Mthembu - 425564	M1
10031	I	Follow the procedure in the document below to upload software onto the HVAC electronic		OK		Mvelo Mthembu - 425564	M1
10032	A			OK		Mvelo Mthembu - 425564	M1
10033	A			OK		Mvelo Mthembu - 425564	M1
10034	I	Sensor's Grade		OK		Mvelo Mthembu - 425564	M1

10035	I	Each temperature sensor has calibrated grade information. The sensor must be setup with this information.		OK		Mvelo Mthembu - 425564	M1
10036	A	The label with sensor grade information is found inside the HVAC frame, near the filter. Inside the train, open the ceiling filter access, rotate a damper, and read the label.		OK		Mvelo Mthembu - 425564	M1
10037	R	Sensor grade for HVAC Return Air (RAS) is :		OK	2H	Mvelo Mthembu - 425564	M1
10038	R	Sensor grade for HVAC Duct Air (DAS) is :		OK	1H	Mvelo Mthembu - 425564	M1
10039	R	Sensor grade for HVAC Fresh Air (FAS) is :		OK	7L	Mvelo Mthembu - 425564	M1
10040	R	Sensor grade for HVAC Duct Air 2 (DAS2) is :		OK	4H	Mvelo Mthembu - 425564	M1
10041	A	In the maintenance software, select the "Application settings" page and click the "Sensors" tab		OK		Mvelo Mthembu - 425564	M1
10042	A	Enter the data found on the label for each grade. Then, click "Save settings"		OK		Mvelo Mthembu - 425564	M1
10043	A	Open Circuit Breaker F1 on the HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10044	I	Checking 400Vac		OK		Mvelo Mthembu - 425564	M1
10045	A	Ensure that the 400Vac Shore Supply is connected to the vehicle, else connect it		OK		Mvelo Mthembu - 425564	M1
10046	A	Close Circuit Breaker 57Q1		OK		Mvelo Mthembu - 425564	M1
10047	A	Measure 400Vac (+-5%) in the Terminal Block next to the connector '57XP1_10.A / '57XP1_10.B' on the HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10048	R	400Vac (+-5%) measured		OK		Mvelo Mthembu - 425564	M1
10049	A	On the HVAC Panel check 400Vac (+-5%) between points L1- Phase R, L2- Phase S, L3- Phase T		OK		Mvelo Mthembu - 425564	M1
10050	A	On the HVAC Panel, with a phasemeter, check the correct Phase Rotation between points L1- Phase R, L2- Phase S and L3- Phase T.		OK		Mvelo Mthembu - 425564	M1
10051	R	400Vac (+-5%) is measured between each of the phases		OK		Mvelo Mthembu - 425564	M1

10052	R	The phase rotation is correct between all three phases		OK		Mvelo Mthembu - 425564	M1
10053	I	Using the tools list on the side of your screen, log the details of the phasemeter used		OK		Mvelo Mthembu - 425564	M1
10054	I	Saloon HVAC		OK		Mvelo Mthembu - 425564	M1
10055	I	To force any mode on HVAC, please follow the manual below to open the communication channel with the HVAC. Connection should be through the HVAC Electronic Device in the HC cubicle		OK		Mvelo Mthembu - 425564	M1
10056	A			OK		Mvelo Mthembu - 425564	M1
10057	A	Close Circuit Breaker F1 on the HVAC Panel		OK		Mvelo Mthembu - 425564	M1
10058	R	HVAC unit turns ON and starts to work		OK		Mvelo Mthembu - 425564	M1
10059	I	Reconnect the laptop to the HVAC maintenance software using HCU Finder		OK		Mvelo Mthembu - 425564	M1
10060	R	The Exhaust fans are Turned Off (Confirm on Forced tab that Actual exhauster speed is OFF)		OK		Mvelo Mthembu - 425564	M1
10061	I	Forced Mode (Saloon HVAC)		OK		Mvelo Mthembu - 425564	M1
10062	I	For the next sections, walk through the whole car and physically check (feel) that the HVAC is functioning as desired		OK		Mvelo Mthembu - 425564	M1
10063	I	In the maintenance software, select the 'Forced' tab, and use the "Required working mode" drop down box to force the following modes:		OK		Mvelo Mthembu - 425564	M1
10064	I	Ventilation Mode		OK		Mvelo Mthembu - 425564	M1
10065	A	Force Ventilation mode on the Saloon HVAC		OK		Mvelo Mthembu - 425564	M1
10066	R	All saloon HVAC units work in Ventilation mode. Not heating/cooling		OK		Mvelo Mthembu - 425564	M1
10067	R	The Exhaust fans are Turned OFF		OK		Mvelo Mthembu - 425564	M1
10068	I	Cooling Mode		OK		Mvelo Mthembu - 425564	M1
10069	A	Force Cooling mode on the Saloon HVAC		OK		Mvelo Mthembu - 425564	M1

10070	R	All saloon HVAC units work in Cooling mode		OK		Mvelo Mthembu - 425564	M1
10071	R	The Exhaust fans are Turned OFF		OK		Mvelo Mthembu - 425564	M1
10072	I	Heating Mode		OK		Mvelo Mthembu - 425564	M1
10073	A	Force Heating mode on the Saloon HVAC		OK		Mvelo Mthembu - 425564	M1
10074	R	All saloon HVAC units work in Heating mode		OK		Mvelo Mthembu - 425564	M1
10075	R	The Exhaust fans are Turned OFF		OK		Mvelo Mthembu - 425564	M1
10076	I	Self-Test		OK		Mvelo Mthembu - 425564	M1
10077	A	Force Self-Test on the Saloon HVAC		OK		Mvelo Mthembu - 425564	M1
10078	R	All saloon HVAC units work according to the mode described in the "Actual working mode"		OK		Mvelo Mthembu - 425564	M1
10079	R	The Exhaust fans are Turned OFF		OK		Mvelo Mthembu - 425564	M1
10080	I	HVAC Faults		OK		Mvelo Mthembu - 425564	M1
10081	A	Open Circuit Breaker 57Q1		OK		Mvelo Mthembu - 425564	M1
10082	R	All saloon HVAC units STOP working		OK		Mvelo Mthembu - 425564	M1
10083	A	Close Circuit Breaker 57Q1		OK		Mvelo Mthembu - 425564	M1
10084	R	All saloon HVAC units START working		OK		Mvelo Mthembu - 425564	M1
10085	A	In the maintenance software, select the "Alarms / Warnings" tab		OK		Mvelo Mthembu - 425564	M1
10086	A	Ensure there are no active faults on the HVAC		OK		Mvelo Mthembu - 425564	M1
10087	R	No active faults identified on the HVAC unit		OK		Mvelo Mthembu - 425564	M1
10088	A	Reconnect HVAC ethernet cable and check on the DDU if HVAC is online.		OK		Mvelo Mthembu - 425564	M1

Section 14 – Fire protection

14.3 Instructions list

14.3.1 067_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		Mvelo Mthembu - 425564	M1
10002	I	Fire Detection Train Lines		OK		Mvelo Mthembu - 425564	M1
10003	I	Fire Detection Train Lines Dev1/76 = END1 90XR24 pin 21 Dev5/76 = END2 90XP34 pin 21		OK		Mvelo Mthembu - 425564	M1
10004	A	Force [NI] Dev1/76 = 1.0		OK		Mvelo Mthembu - 425564	M1
10005	R	Read Defined Variable [NI] Dev5/76 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10006	A	Force [NI] Dev1/76 = 0.0		OK		Mvelo Mthembu - 425564	M1
10007	R	Read Defined Variable [NI] Dev5/76 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10008	I	Continuity Test		OK		Mvelo Mthembu - 425564	M1
10009	I	The following steps are continuity tests between the two points described in each step. Use a multimeter for this test.		OK		Mvelo Mthembu - 425564	M1
10010	A	From : [(local: +END1 -90XR23.B (pin 4))] to: [-Inter-connector (local: +END2 -90XP33.a pin 7)]		OK		Mvelo Mthembu - 425564	M1
10011	A	From : [(local: +END1 -90XR23.B (pin 5))] to: [-Inter-connector (local: +END2 -90XP33.a pin 8)]		OK		Mvelo Mthembu - 425564	M1
10012	A	From : [(local: +END1 -90XR23.A (pin 7))] to: [-Inter-connector (local: +END2 -90XP33.b pin 4)]		OK		Mvelo Mthembu - 425564	M1

10013	A	From : [(local: +END1 -90XR23.A (pin 8))] to: [-Inter-connector (local: +END2 -90XP33.b pin 5)]		OK		Mvelo Mthembu - 425564	M1

Section 15 – Traction and Electric Brake

15.3 Instructions list

15.3.1 033_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		Mvelo Mthembu - 425564	M1
10002	I	Circuit Breakers and Configuration		OK		Mvelo Mthembu - 425564	M1
10003	A	Close Circuit Breaker 33Q1		OK		Mvelo Mthembu - 425564	M1
10004	A	Close Circuit Breaker 33Q2		OK		Mvelo Mthembu - 425564	M1
10005	A	Close Circuit Breaker 33Q3		OK		Mvelo Mthembu - 425564	M1
10006	A	Close Circuit Breaker 33Q4		OK		Mvelo Mthembu - 425564	M1
10007	A	Close Circuit Breaker 33Q5		OK		Mvelo Mthembu - 425564	M1
10008	R	Read Defined Variable [TT] (TBCU1)LI_CAR_ID1 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10009	I	Train Lines		OK		Mvelo Mthembu - 425564	M1
10010	I	110Vdc Normal Traction EL Train Lines Dev 1/66 = END1 90XP25 pin 49 Dev 2/65 = END1 90XP35 pin 42		OK		Mvelo Mthembu - 425564	M1
10011	A	Force [NI] Dev1/66 = 1.0		OK		Mlungisi Madela - 529927	M1
10012	R	Read Defined Variable [NI] Dev2/65 = 1.0		OK	1	Mlungisi Madela - 529927	M1
10013	A	Force [NI] Dev1/66 = 0.0		OK		Mlungisi Madela - 529927	M1
10014	R	Read Defined Variable [NI] Dev2/65 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10015	I	Forward Train Lines: Dev1/31 : END1 90XR25 pin 25 Dev5/78 : END2 90XP35 pin 30		OK		Mvelo Mthembu - 425564	M1
10016	A	Force [NI] Dev1/31 = 1.0		OK		Mvelo Mthembu - 425564	M1
10017	R	Read Defined Variable [TT] (TBCU1)LI_FORWARD = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10018	R	Read Defined Variable [NI] Dev5/78 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10019	I	Forward Train Lines: Dev1/31 : END1 90XR25 pin 25 Dev5/78 : END2 90XP35 pin 30		OK		Mvelo Mthembu - 425564	M1

10020	A	Force [NI] Dev1/31 = 0.0		OK		Mvelo Mthembu - 425564	M1
10021	R	Read Defined Variable [TT] (TBCU1)LI_FORWARD = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10022	R	Read Defined Variable [NI] Dev5/78 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10023	I	Reverse Train Lines: Dev1/36 : END1 90XR25 pin 30 Dev5/35 : END2 90XP35 pin 25		OK		Mvelo Mthembu - 425564	M1
10024	A	Force [NI] Dev1/36 = 1.0		OK		Mvelo Mthembu - 425564	M1
10025	R	Read Defined Variable [TT] (TBCU1)LI_REVERSE = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10026	R	Read Defined Variable [NI] Dev5/35 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10027	I	Reverse Train Lines: Dev1/36 : END1 90XR25 pin 30 Dev5/35 : END2 90XP35 pin 25		OK		Mvelo Mthembu - 425564	M1
10028	A	Force [NI] Dev1/36 = 0.0		OK		Mvelo Mthembu - 425564	M1
10029	R	Read Defined Variable [TT] (TBCU1)LI_REVERSE = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10030	R	Read Defined Variable [NI] Dev5/35 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10031	I	Traction Train Lines: Dev1/37 : END1 90XR25 pin 31 Dev5/81 : END2 90XP35 pin 31		OK		Mvelo Mthembu - 425564	M1
10032	A	Force [NI] Dev1/37 = 1.0		OK		Mvelo Mthembu - 425564	M1
10033	R	Read Defined Variable [TT] (TBCU1)LI_TRACTION = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10034	R	Read Defined Variable [NI] Dev5/81 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10035	I	Traction Train Lines: Dev1/37 : END1 90XR25 pin 31 Dev5/81 : END2 90XP35 pin 31		OK		Mvelo Mthembu - 425564	M1
10036	A	Force [NI] Dev1/37 = 0.0		OK		Mvelo Mthembu - 425564	M1
10037	R	Read Defined Variable [TT] (TBCU1)LI_TRACTION = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10038	R	Read Defined Variable [NI] Dev5/81 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10039	I	No Brake Train Lines: Dev1/38 : END1 90XR25 pin 32 Dev5/82 : END2 90XP35 pin 32		OK		Mvelo Mthembu - 425564	M1

10040	A	Force [NI] Dev1/38 = 1.0		OK		Mvelo Mthembu - 425564	M1
10041	R	Read Defined Variable [TT] (TBCU1)LI_NOBRAKE = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10042	R	Read Defined Variable [NI] Dev5/82 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10043	I	No Brake Train Lines: Dev1/38 : END1 90XR25 pin 32 Dev5/82 : END2 90XP35 pin 32		OK		Mvelo Mthembu - 425564	M1
10044	A	Force [NI] Dev1/38 = 0.0		OK		Mvelo Mthembu - 425564	M1
10045	R	Read Defined Variable [TT] (TBCU1)LI_NOBRAKE = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10046	R	Read Defined Variable [NI] Dev5/82 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10047	I	Traction Interlock Bypass Train Lines Dev1/4 : END1 90XR24 pin 6 Dev5/4 : END2 90XP34 pin 6		OK		Mvelo Mthembu - 425564	M1
10048	A	Force [NI] Dev1/4 = 1.0		OK		Mvelo Mthembu - 425564	M1
10049	R	Read Defined Variable [NI] Dev5/4 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10050	A	Force [NI] Dev1/4 = 0.0		OK		Mvelo Mthembu - 425564	M1
10051	R	Read Defined Variable [NI] Dev5/4 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10052	I	Traction Interlock Train Lines Dev1/39 : END1 90XR25 pin 41 Dev5/83 : END2 90XP35 pin 41		OK		Mvelo Mthembu - 425564	M1
10053	A	Force [NI] Dev1/39 = 1.0		OK		Mvelo Mthembu - 425564	M1
10054	R	Read Defined Variable [TT] (TBCU1)LI_NOT_INHIB = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10055	R	Read Defined Variable [NI] Dev5/83 = 1.0		OK	1	Mvelo Mthembu - 425564	M1
10056	I	Traction Interlock Train Lines Dev1/39 : END1 90XR25 pin 41 Dev5/83 : END2 90XP35 pin 41		OK		Mvelo Mthembu - 425564	M1
10057	A	Force [NI] Dev1/39 = 0.0		OK		Mvelo Mthembu - 425564	M1
10058	R	Read Defined Variable [TT] (TBCU1)LI_NOT_INHIB = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10059	R	Read Defined Variable [NI] Dev5/83 = 0.0		OK	0	Mvelo Mthembu - 425564	M1
10060	I	Coolant Liquid		OK		Mvelo Mthembu - 425564	M1

10061	A	Check that the coolant level is atleast 1/2 of the sight glass level indicator		OK		Mvelo Mthembu - 425564	M1
10062	R	Coolant Liquid Level is OK		OK		Mvelo Mthembu - 425564	M1
10063	I	End of Test		OK		Mvelo Mthembu - 425564	M1

Section 16 – Vehicle Normalization

16.3 Instructions list

16.3.1 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		Dilikani Ngubane - 526515	M1
10002	I	This inspection must be performed by the EPU/Acting EPU Manager on shift		OK		Dilikani Ngubane - 526515	M1
10003	I	The VFT procedures are all completed		OK		Dilikani Ngubane - 526515	M1
10004	I	Vehicle Normalization Check		OK		Dilikani Ngubane - 526515	M1
10005	R	On LV3 all Circuit Breakers are installed and secured		OK		Dilikani Ngubane - 526515	M1
10006	R	On LV3 all Dataplugs are installed, tightened and earth braids are fastened		OK		Dilikani Ngubane - 526515	M1
10007	R	On LV3 all Connectors are tightened		OK		Dilikani Ngubane - 526515	M1
10008	R	On LV3 there are no missing components, device, wiring or connectors.		OK		Dilikani Ngubane - 526515	M1
10009	R	On LV6 all Dataplugs are installed, tightened and earth braids are fastened		OK		Dilikani Ngubane - 526515	M1
10010	R	On LV6 all Connectors are tightened		OK		Dilikani Ngubane - 526515	M1
10011	R	On LV6 there are no missing components, device, wiring or connectors.		OK		Dilikani Ngubane - 526515	M1
10012	R	On HC Cubicle the Controller is installed and properly tightened and its connectors are tightened		OK		Dilikani Ngubane - 526515	M1
10013	R	All DCUs are properly installed and secured		OK		Dilikani Ngubane - 526515	M1
10014	R	All Internal Displays are properly installed and secured		OK		Dilikani Ngubane - 526515	M1
10015	R	All Light Covers are properly installed		OK		Dilikani Ngubane - 526515	M1
10016	R	All Saloon Fire Detectors are properly installed and secured		OK		Dilikani Ngubane - 526515	M1
10017	R	All covers are normalised inside the car		OK		Alleta Sekgololo - 417407	M1

10018	R	On the Underframe, TBCU Agate is installed and properly tightened		OK		Dilikani Ngubane - 526515	M1
10019	R	On the Underframe, Auxiliary Compressor cover is normalized		OK		Dilikani Ngubane - 526515	M1
10020	R	On the Underframe, Panto panel cover is normalized		OK		Dilikani Ngubane - 526515	M1
10021	R	On the Underframe, Speed Sensors are installed and properly tightened		OK		Dilikani Ngubane - 526515	M1
10022	R	On the LVB, all Circuit Breakers are installed and properly tightened		OK		Dilikani Ngubane - 526515	M1
10023	R	On the LVB, all Relays and Timers are installed and properly tightened		OK		Dilikani Ngubane - 526515	M1
10024	R	On the LVB, BRIOMs are installed and properly tightened		OK		Dilikani Ngubane - 526515	M1
10025	R	On the LVB there are no missing components, device, wiring or connectors.		OK		Dilikani Ngubane - 526515	M1
10026	R	On the Underframe, all Connectors are tightened		OK		Dilikani Ngubane - 526515	M1
10027	R	All underframe covers are normalised		OK		Dilikani Ngubane - 526515	M1
10028	R	On END1 the Octopus cables are disconnected from the car and properly stored.		OK		Dilikani Ngubane - 526515	M1
10029	R	On END2 the Octopus cables are disconnected from the car and properly stored.		OK		Dilikani Ngubane - 526515	M1
10030	R	On the roof, there is no Strap connected to the Pantograph		OK		Dilikani Ngubane - 526515	M1
10031	R	The Test Bench is switched OFF and the Octopus cables are disconnected and properly stored		OK		Dilikani Ngubane - 526515	M1
10032	R	ALL P.Os of this car are closed		OK		Alleta Sekgololo - 417407	M1

Section 17 – PACIS Network

17.3 Instructions list

17.3.1 054_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		Walter Sigudla - 486333	M1
10002	I	Initial conditions		OK		Walter Sigudla - 486333	M1
10003	I	110Vdc Normal line is connected and ON		OK		Walter Sigudla - 486333	M1
10004	I	Circuit Breakers		OK		Walter Sigudla - 486333	M1
10005	A	Close Circuit Breaker 54Q1		OK		Walter Sigudla - 486333	M1
10006	A	Close Circuit Breaker 54Q2		OK		Walter Sigudla - 486333	M1
10007	A	Close Circuit Breaker 54Q10		OK		Walter Sigudla - 486333	M1
10008	A	Close Circuit Breaker 54Q11		OK		Walter Sigudla - 486333	M1
10009	A	Close Circuit Breaker 55Q2		OK		Walter Sigudla - 486333	M1
10010	A	Close Circuit Breaker 55Q3		OK		Walter Sigudla - 486333	M1
10011	R	All 'Pacis System' circuit breakers are closed		OK		Walter Sigudla - 486333	M1
10012	I	Power Supply of Router Switches		OK		Walter Sigudla - 486333	M1
10013	I	Ethernet Switch CRS1		OK		Walter Sigudla - 486333	M1
10014	R	CRS1 is ON		OK		Walter Sigudla - 486333	M1
10015	I	Ethernet Switch CRS2		OK		Walter Sigudla - 486333	M1
10016	R	CRS2 is ON		OK		Walter Sigudla - 486333	M1
10017	I	DPAI-1		OK		Walter Sigudla - 486333	M1
10018	R	DPAI-1 is ON		OK		Walter Sigudla - 486333	M1
10019	I	DPAI-2		OK		Walter Sigudla - 486333	M1
10020	R	DPAI-2 is ON		OK		Walter Sigudla - 486333	M1
10021	I	Lateral Display 'LAT1'		OK		Walter Sigudla - 486333	M1

10022	R	The PWR (power) LED is ON on the Lateral Display 'LAT1'		OK		Walter Sigudla - 486333	M1
10023	I	Lateral Display 'LAT2'		OK		Walter Sigudla - 486333	M1
10024	R	The PWR (power) LED is ON on the Lateral Display 'LAT2'		OK		Walter Sigudla - 486333	M1
10025	I	Interior Display 'INT1'		OK		Walter Sigudla - 486333	M1
10026	R	The PWR (power) LED is ON on the Interior Display 'INT1'		OK		Walter Sigudla - 486333	M1
10027	I	Interior Display 'INT2'		OK		Walter Sigudla - 486333	M1
10028	R	The PWR (power) LED is ON on the Interior Display 'INT2'		OK		Walter Sigudla - 486333	M1
10029	I	Impedance of Loudspeaker		OK		Walter Sigudla - 486333	M1
10030	I	Saloon Speakers Commanded by DPAI-1		OK		Walter Sigudla - 486333	M1
10031	A	Measure the impedance connector '54XP1_X4' between pins:z32(+) and z30 (-)		OK		Walter Sigudla - 486333	M1
10032	R	Impedance Result Max : x <= 32 (Ohm)		OK	30.9	Walter Sigudla - 486333	M1
10033	I	Saloon Speakers Commanded by DPAI-2		OK		Walter Sigudla - 486333	M1
10034	A	Measure the impedance connector '54XP2_X4' between pins:z32(+) and z30 (-)		OK		Walter Sigudla - 486333	M1
10035	R	Impedance Result Max : x <= 32 (Ohm)		OK	31	Walter Sigudla - 486333	M1

Section 18 – Report summaries

18.2 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		
Holding and Parking Brake	X		
Fire protection	X		
Energy Distribution	X		
Emergency Brake	X		
Cabin Control	X		
Air Conditioning	X		

18.3 Tools used

Function	Tool name	Tool number	Next Calibration date
015_NRG	Phasemeter	Phasemeter	8/25/2024
021_PNT	Manometer	Manometer	7/31/2024
040_SBK	Manometer	Manometer	7/31/2024
045_PBK	Manometer	Manometer	7/31/2024
062_ETS	Multimeter	Multimeter 5	8/23/2024
064_COM	GSM-R - tester	Radio Analyser	8/23/2024

067_FSD	Multimeter	Multimeter 4	8/23/2024

Vehicle	Equipment	Expected version	Version loaded
M1			