

| PROJECT         | CUSTOMER | VEHICLE        |
|-----------------|----------|----------------|
| Xtrapolis-PRASA | PRASA    | 218 – M4 – VFT |

RTR Vehicle Functional Static Testing TS218 M4 Report  
GIB0000006346



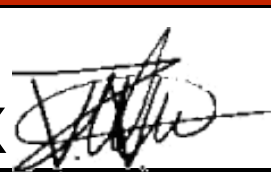
|           | CREATED       | VERIFIED       | APPROVED        | DISTRIBUTION                                                                                                                                                        |
|-----------|---------------|----------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name      | Vusumuzi ZULU | Sifiso LUKHELE | Kgomotso NKOANA | Confidentiality Category<br><i>Restricted</i> <i>Project</i> <i>Normal</i><br><input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| Date      | 24/04/2024    | 24/04/2024     | 24/04/2024      | Control Category<br><i>Controlled</i> <i>Not Controlled</i><br><input checked="" type="checkbox"/> <input type="checkbox"/>                                         |
| Signature |               |                |                 | Language<br><b>EN</b>                                                                                                                                               |

This report has been automatically generated from TES version 1

## Table of modifications

| Rev | Date       | Modifications Content | Writer        |
|-----|------------|-----------------------|---------------|
| A0  | 24/04/2024 | Creation              | Vusumuzi ZULU |

## Internal validations

|                 | Name            | Function            | Date       | Signature                                                                                                                        |
|-----------------|-----------------|---------------------|------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Creator</b>  | Vusumuzi ZULU   | EPU Manager         | 24/04/2024 | X <br>Vusumuzi ZULU<br>EPU Manager            |
| <b>Verifier</b> | Sifiso LUKHELE  | Serial Test Manager | 24/04/2024 | X <br>Sifiso LUKHELE<br>Serial Test Manager |
| <b>Approver</b> | Kgomotso NKOANA | Test Expert         | 24/04/2024 | X <br>Kgomotso NKOANA<br>Test Expert        |

## Execution Plan

|                   |            |
|-------------------|------------|
| <b>Start Date</b> | 17/04/2024 |
| <b>End Date</b>   | 17/04/2024 |

## Contents

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### Section 1 - Purpose / Objectives

### Section 3 - Energy Distribution

3.3 Instructions list

### Section 4 - Internal Lighting

4.3 Instructions list

### Section 5 - Train Ground Communication

5.3 Instructions list

### Section 6 - TCMS Network

6.3 Instructions list

### Section 7 - Cabin Control

7.3 Instructions list

### Section 8 - PACIS System

8.3 Instructions list

### Section 9 - Rescue Mode and Emergency Disconnection

9.3 Instructions list

### Section 10 - Service Brake

10.3 Instructions list

## Section 11 - Emergency Brake

11.3 Instructions list

## Section 12 - Holding and Parking Brake

12.3 Instructions list

## Section 13 - Air Condition

13.3 Instructions list

## Section 14 - Fire Protection

14.3 Instructions list

## Section 15 - Passenger Doors

15.3 Instructions list

## Section 16 - Traction and Electric Brake

16.3 Instructions list

## Section 17 - Vehicle Normalization

17.3 Instructions list

## Section 16 - Report summaries

16.2 Results status

16.3 Tools used



Serial Tests Report  
TS218 – M4 – VFT  
RTR Vehicle Functional Static Testing Report

Document Reference  
GIB0000006346  
Version: A0

Emission date  
24/04/2024

## Section 1 – Purpose / Objectives

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|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|
| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|

## Section 3 – Energy Distribution

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### 3.3 Instructions list

### 3.3.1 015\_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            |              | Sithembile Xulu - 416253 | M4      |
| 10002 | I    | Initial Conditions                                                                                |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10003 | I    | All the Circuit Breakers should be OPEN                                                           |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10004 | I    | Test bench should be connected but with no power supply                                           |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10005 | I    | NO 400Vac should be connected to the car                                                          |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10006 | A    | Close Circuit Breaker 15Q3 (Normal Line)                                                          |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10007 | I    | Voltage Isolation 110Vdc                                                                          |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10008 | I    | 230Vac and 400Vac Circuit breakers                                                                |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10009 | A    | Close Circuit Breaker 13Q1                                                                        |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10010 | A    | Close the circuit breaker 13Q3                                                                    |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10011 | I    | Normal and Permanent Power Supply                                                                 |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10012 | I    | 110Vdc Permanent Train Line<br>Apply 110Vdc on -93XT304_1 pin 4 to simulate Permanent Train Line  |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10013 | A    | Apply 110Vdc on the Normal Line using the external power supply                                   |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10014 | A    | Measure 110Vdc between 90XR50.X1/1 (+) and 90XR50.X2/1 (-) (intercar connector).<br>[Normal line] |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10015 | I    | Permanent Line Circuit Breakers                                                                   |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10016 | A    | Close Circuit Breaker 15Q4 for battery voltage above 80Vdc and close it(permanent Line)           |      | OK            |              | Sithembile Xulu - 416253 | M4      |

|       |   |                                                                                                                                               |  |    |  |                          |    |
|-------|---|-----------------------------------------------------------------------------------------------------------------------------------------------|--|----|--|--------------------------|----|
| 10017 | I | 230Vac Circuit Breakers                                                                                                                       |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10018 | A | Close Circuit Breaker 13Q2                                                                                                                    |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10019 | A | Close Circuit Breaker 13Q3                                                                                                                    |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10020 | I | 230Vac and 400Vac Voltage Supply                                                                                                              |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10021 | A | Apply 400Vac to the Vehicle, either on End1 or End2                                                                                           |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10022 | A | Perform a phase rotation measurement on Connector 90XR62 between phases U(X3),V(X2),W(X1) and ensure the rotation is in the correct direction |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10023 | R | Phase rotation between U,V,W is correct                                                                                                       |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10024 | A | Perform a phase rotation measurement on Connector 90XR52 between phases U(X1),V(X2),W(X3) and ensure the rotation is in the correct direction |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10025 | R | Phase rotation between U,V,W is correct                                                                                                       |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10026 | A | Check 230Vac between points L and N of socket -13XT1                                                                                          |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10027 | R | 230Vac present                                                                                                                                |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10028 | A | Check 230Vac between points L and N of socket -13XT2                                                                                          |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10029 | R | 230Vac present                                                                                                                                |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10030 | A | Remove connector 57XP1_10                                                                                                                     |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10031 | A | Remove connector 93XP150                                                                                                                      |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10032 | A | Close circuit breaker 34Q1 and 57Q1                                                                                                           |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10033 | A | Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 57XP1_10 (10.b1,10a2,10a1)                                                    |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10034 | R | 400Vac +- 5% tolerance is measured between all three phases of 57XP1_10                                                                       |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10035 | A | Check 400Vac +-5% tolerance between Phases (W,V,U) on connector 93XP150                                                                       |  | OK |  | Sithembile Xulu - 416253 | M4 |

|       |   |                                                                                                                                                     |  |    |  |                          |    |
|-------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|----|--|--------------------------|----|
|       |   | (E2,E3,E1)                                                                                                                                          |  |    |  |                          |    |
| 10036 | R | 400Vac +- 5% tolerance is measured between all three phases on connector 93XP150                                                                    |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10037 | A | Put back connector 57XP1_10                                                                                                                         |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10038 | A | Put back connector 93XP150                                                                                                                          |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10039 | A | Switch off the 400Vac power supply from the socket                                                                                                  |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10040 | I | Auxiliary Converters Command                                                                                                                        |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10041 | A | Battery Connection Train Lines<br>Measure continuity between<br>END 1 90XR14 pin 30<br>END 2 90XP24 pin 30                                          |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10042 | R | Both points are continuous                                                                                                                          |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10043 | A | Battery Disconnection Train Lines<br>Measure continuity between<br>END 1 90XR14 pin 31<br>END 2 90XP24 pin 31                                       |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10044 | R | Both points are continuous                                                                                                                          |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10045 | A | IES StatusTrain Lines<br>Measure continuity between<br>END 1 90XR15 pin 61<br>END 2 90XP25 pin 61 and<br>END 1 90XR15 pin 62<br>END 2 90XP25 pin 62 |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10046 | R | Both points are continuous                                                                                                                          |  | OK |  | Sithembile Xulu - 416253 | M4 |



Serial Tests Report  
TS218 – M4 – VFT  
RTR Vehicle Functional Static Testing Report

Document Reference  
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24/04/2024

## Section 4 – Internal Lighting

### 4.3 Instructions list

#### 4.3.1 052\_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=52)                                                                |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10002 | I    | Initial Conditions                                                                        |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10003 | I    | 110Vdc Normal line is ON                                                                  |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10004 | I    | Cleaning Lighting Command                                                                 |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10005 | A    | 110Vdc Permanent Train Line<br>Apply 110V on 93XT304_1 pin 4 to simulate permanent supply |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10006 | A    | Close Circuit Breaker 52Q3                                                                |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10007 | A    | Close Circuit Breaker 52Q4                                                                |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10008 | A    | Close Circuit Breaker 52Q5                                                                |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10009 | R    | All saloon emergency lights (low intensity) are OFF on all light modules (Left + Right).  |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10010 | A    | Turn Cleaning Staff Lights Switch 52S6 to ON position                                     |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10011 | R    | All saloon emergency lights (low intensity) are "ON" on all light modules (Left + Right). |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10012 | A    | Reset Circuit Breaker 52Q5 (Open and Close)                                               |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10013 | A    | Close Circuit Breaker 52Q1                                                                |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |

|       |   |                                                                                                 |  |    |  |                                  |    |
|-------|---|-------------------------------------------------------------------------------------------------|--|----|--|----------------------------------|----|
| 10014 | A | Close Circuit Breaker 52Q2                                                                      |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10015 | R | All saloon emergency lights (low intensity)<br>are "ON" on all light modules (Left +<br>Right). |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |

## Section 5 – Train Ground Communication

### 5.3 Instructions list

#### 5.3.1 062\_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            |              | Dilikani Ngubane - 526515 | M4      |
| 10002 | A    | ERTMS Bypass Train Lines<br>Check continuity between<br>END1 90XR14 pin 11<br>END2 90XP24 pin 11                                                      |                                                                                     | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10003 | R    | Both pins are continuous                                                                                                                              |                                                                                     | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10004 | A    | Emergency Brake ERTMS 1 Train Lines<br>Check continuity between<br>END1 90XR14 pin 18<br>END2 90XP24 pin 18                                           |                                                                                     | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10005 | R    | Both pins are continuous                                                                                                                              |                                                                                     | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10006 | I    | Emergency Brake ERTMS 2 Train Lines<br>Check continuity between<br>END1 90XR14 pin 20<br>END2 90XP24 pin 20                                           |                                                                                     | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10007 | R    | Both pins are continuous                                                                                                                              |                                                                                     | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10008 | I    | Eurobalise Antenna Cable                                                                                                                              |                                                                                     | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10009 | A    | Check continuity between [Inter-car (LOCAL: +END1; Connector -90XR10) and Inter-car (LOCAL: +END2; connector - 90XP20)] according to the image below. |  | OK            |              | Dilikani Ngubane - 526515 | M4      |



Serial Tests Report  
TS218 – M4 – VFT  
RTR Vehicle Functional Static Testing Report

Document Reference  
GIB0000006346  
Version: A0

Emission date  
24/04/2024

|       |   |                                                  |  |    |  |                           |    |
|-------|---|--------------------------------------------------|--|----|--|---------------------------|----|
| 10010 | R | Eurobalise Antenna cable is correctly configured |  | OK |  | Dilikani Ngubane - 526515 | M4 |
|-------|---|--------------------------------------------------|--|----|--|---------------------------|----|

**Section 6 – TCMS Network**

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**6.3 Instructions list**

### 6.3.1 025\_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 (SPP=25)                                                                           |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10002 | I    | Initial conditions                                                                              |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10003 | I    | Vehicle test bench should be configured as TC1:<br>1. TC1 Dataplugs<br>2. MCE switch set to TC1 |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10004 | A    | 110Vdc supply to the Normal Train line is ON                                                    |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10005 | I    | Power Supply to the Router Switches                                                             |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10006 | I    | Power supply to the 25A10 SWITCH ETHERNET (CRS1)                                                |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10007 | A    | Close Circuit Breaker 25Q10                                                                     |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10008 | R    | CRS1 25A10 is ON                                                                                |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10009 | I    | Power supply to the 25A11 SWITCH ETHERNET (CRS2)                                                |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10010 | A    | Close Circuit Breaker 25Q11                                                                     |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10011 | R    | CRS2 25A11 is ON                                                                                |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10012 | I    | Power supply to the 25A14 ETHERNET REPEATER (TBR)                                               |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10013 | A    | Close Circuit Breaker 25Q14                                                                     |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10014 | R    | TBR 25A14 is ON                                                                                 |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10015 | A    | Close Circuit Breaker 25Q6                                                                      |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10016 | A    | Close Circuit Breaker 25Q7                                                                      |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10017 | I    | Ethernet Loop                                                                                   |      | OK            |              | Sithembile Xulu - 416253 | M4      |

|       |   |                                                                                   |  |    |  |                          |    |
|-------|---|-----------------------------------------------------------------------------------|--|----|--|--------------------------|----|
| 10018 | A | For each CRS, check that the Ethernet Loop LEDs are flashing                      |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10019 | R | CRS1 has LEDs on ports X3 and X4 flashing                                         |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10020 | R | CRS2 has ONLY LED on port X4 flashing                                             |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10021 | R | Check on the Test Bench DDU that all Router Switches are available on the network |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10022 | I | Power Supply to the BRIOMS                                                        |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10023 | I | Power supply to the 25A6 BRIOM 40/10 ETH 6                                        |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10024 | R | BRIOM 25A6 is ON                                                                  |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10025 | A | Check visually that ground braid is connected to BRIOM                            |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10026 | I | Power supply to the 25A7 BRIOM 40/10 ETH 7                                        |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10027 | R | BRIOM 25A7 is ON                                                                  |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10028 | A | Check visually that ground braid is connected to BRIOM                            |  | OK |  | Sithembile Xulu - 416253 | M4 |

## Section 7 – Cabin Control

### 7.3 Instructions list

#### 7.3.1 020\_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            |              | Sithembile Xulu - 416253 | M4      |
| 10002 | I    | Train Lines                                                                                                 |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10003 | A    | Cab Selected On Train - Train Lines<br>Measure continuity between<br>END1 90XR14 pin 3<br>END2 90XP24 pin 3 |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10004 | R    | Both pins are continuous                                                                                    |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10005 | A    | Cab Active TC1 Train Lines<br>Measure continuity between<br>END1 90XR14 pin 4<br>END2 90XP24 pin 4          |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10006 | R    | Both pins are continuous                                                                                    |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10007 | A    | Cab Active TC2 Train Lines<br>Measure continuity between<br>END1 90XR14 pin 5<br>END2 90XP24 pin 5          |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10008 | R    | Both pins are continuous                                                                                    |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10009 | A    | Master Key TC1 Train Lines<br>Measure continuity between<br>END1 90XR14 pin 17<br>END2 90XP24 pin 17        |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10010 | R    | Both pins are continuous                                                                                    |      | OK            |              | Sithembile Xulu - 416253 | M4      |



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|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|
| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|

## Section 8 – PACIS System

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### 8.3 Instructions list

### 8.3.1 054\_PIS-PACIS System

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

| N°    | Type | Instruction                                    | File | Result status | Result value | Operator                  | Vehicle |
|-------|------|------------------------------------------------|------|---------------|--------------|---------------------------|---------|
| 10001 | I    | PACIS System Io (SPP=054)                      |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10002 | I    | Initial conditions                             |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10003 | I    | 110Vdc Normal line is connected and ON         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10004 | I    | Circuit Breakers                               |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10005 | A    | Close Circuit Breaker 54Q1                     |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10006 | A    | Close Circuit Breaker 54Q2                     |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10007 | A    | Close Circuit Breaker 54Q10                    |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10008 | A    | Close Circuit Breaker 54Q11                    |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10009 | A    | Close Circuit Breaker 55Q2                     |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10010 | A    | Close Circuit Breaker 55Q3                     |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10011 | R    | All 'Pacis System' circuit breakers are closed |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10012 | I    | Power Supply of Router Switches                |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10013 | I    | Ethernet Switch CRS1                           |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10014 | R    | CRS1 is ON                                     |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10015 | I    | Ethernet Switch CRS2                           |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10016 | R    | CRS2 is ON                                     |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10017 | I    | DPAI-1                                         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10018 | R    | DPAI-1 is ON                                   |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10019 | I    | DPAI-2                                         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10020 | R    | DPAI-2 is ON                                   |      | OK            |              | Dilikani Ngubane - 526515 | M4      |

|       |   |                                                                              |  |    |    |                           |    |
|-------|---|------------------------------------------------------------------------------|--|----|----|---------------------------|----|
| 10021 | I | Lateral Display 'LAT1'                                                       |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10022 | R | The PWR (power) LED is "ON" on the Lateral Display 'LAT1'.                   |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10023 | I | Lateral Display 'LAT2'                                                       |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10024 | R | The PWR (power) LED is "ON" on the Lateral Display 'LAT2'.                   |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10025 | I | Interior Display 'INT1'                                                      |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10026 | R | The PWR (power) LED is "ON" on the Interior Display 'INT1'.                  |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10027 | I | Interior Display 'INT2'                                                      |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10028 | R | The PWR (power) LED is "ON" on the Interior Display 'INT2' is ON.            |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10029 | I | Impedance of Loudspeaker                                                     |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10030 | I | Saloon Speakers Commanded by DPAI-1                                          |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10031 | A | Measure the impedance connector '54XP1_X4' between pins: z32(+) and z30 (-). |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10032 | R | Impedance<br>Result Max : x <= 32.00 (Ohm)                                   |  | OK | 30 | Dilikani Ngubane - 526515 | M4 |
| 10033 | I | Saloon Speakers Commanded by DPAI-2                                          |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10034 | A | Measure the impedance connector '54XP2_X4' between pins: z32(+) and z30 (-). |  | OK |    | Dilikani Ngubane - 526515 | M4 |
| 10035 | R | Impedance<br>Result Max : x <= 32.00 (Ohm)                                   |  | OK | 32 | Dilikani Ngubane - 526515 | M4 |



|                                                                                         |                                                    |                             |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|
| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|

## Section 9 – Rescue Mode and Emergency Disconnection

### 9.3 Instructions list

#### 9.3.1 027\_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            |              | Dilikani Ngubane - 526515 | M4      |
| 10002 | I    | Backup Mode                                                                                                       |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10003 | R    | Points are continuous                                                                                             |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10004 | A    | Check continuity on Timer 27D1 between points A4 and B3                                                           |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10005 | A    | Backup Mode Train Lines<br><br>Check continuity between<br>END1 90XR15 pin23<br>END2 90XP25 pin 23 and<br>27K1 A1 |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10006 | R    | All points are continuous                                                                                         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10007 | A    | Check continuity between 27K1 A2 and Ground                                                                       |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10008 | R    | The points are continuous                                                                                         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10009 | I    | Emergency Disconnection                                                                                           |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10010 | A    | Emergency Disconnection Train Lines<br><br>Check continuity between<br>END1 90XR15 pin24<br>END2 90XP25 pin 24    |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10011 | R    | All points are continuous                                                                                         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |



Serial Tests Report  
TS218 – M4 – VFT  
RTR Vehicle Functional Static Testing Report

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Version: A0

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24/04/2024

## 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            |              | Sithembile Xulu - 416253 | M4      |
| 10002 | I    | Initial Conditions                                                                                                                    |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10003 | I    | No air supply to the vehicle                                                                                                          |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10004 | I    | All brake panel cocks are in normal position (not isolated)                                                                           |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10005 | I    | 110Vdc Normal power supply should be connected to the vehicle and ON                                                                  |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10006 | I    | Follow the procedure in the document below to upload software onto the TBCU electronic.                                               |  | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10007 | I    | Power Supply                                                                                                                          |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10008 | A    | Remove the connector 10XR12_XCB2 from the propulsion box                                                                              |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10009 | A    | Close Circuit Breaker 33Q1, 33Q3 and 33Q5                                                                                             |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10010 | A    | Check the voltage on connector 10XR12_XCB2 between pins 4 (+) and 69 (-) ; 4(+) and 67(-); and 5(+) and 68(-)                         |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10011 | R    | Battery Voltage (above 80Vdc) is measured on connector 10XR12_XCB2 between pins 4 (+) and 69 (-) ; 4(+) and 67(-); and 5(+) and 68(-) |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10012 | A    | Open Circuit Breaker 33Q1 and 33Q3, Replace connector 10XR12_XCB2 on the propulsion box, and Close Circuit breaker                    |                                                                                     | OK            |              | Sithembile Xulu - 416253 | M4      |

|       |   |                                                                                                                         |  |    |  |                          |    |
|-------|---|-------------------------------------------------------------------------------------------------------------------------|--|----|--|--------------------------|----|
|       |   | 33Q1 and 33Q3                                                                                                           |  |    |  |                          |    |
| 10013 | A | Remove the connector -40XP2_C2_16 from pneumatic brake panel                                                            |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10014 | A | Close Circuit Breaker 40Q1                                                                                              |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10015 | A | Check the voltage on connector 40XP2_C2_16 between pins 13 (+) and 31 (-)                                               |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10016 | R | Battery Voltage (above 80Vdc) is measured on connector 40XP2_C2_16 between pins 13 (+) and 31 (-)                       |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10017 | A | Open Circuit Breaker 40Q1, Replace connector -40XP2_C2_16 on the pneumatic brake panel, and Close Circuit breaker -40Q1 |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10018 | R | The pneumatic brake panel 40A2 is ON                                                                                    |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10019 | I | Train Lines                                                                                                             |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10020 | A | EB Reduced Train Lines<br>Check continuity between<br>END1 90XR15 pin 60<br>END2 90XP25 pin 60                          |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10021 | R | Both points are continuous                                                                                              |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10022 | A | Brake Applied Train Lines<br>Check continuity between<br>END1 90XR15 pin 50<br>END2 90XP25 pin 50                       |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10023 | R | Both points are continuous                                                                                              |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10024 | A | Remote Isolation Train Lines<br>Check continuity between<br>END1 90XR15 pin 59<br>END2 90XP25 pin 59                    |  | OK |  | Sithembile Xulu - 416253 | M4 |
| 10025 | R | Both points are continuous                                                                                              |  | OK |  | Sithembile Xulu - 416253 | M4 |

## Section 11 – Emergency Brake

### 11.3 Instructions list

#### 11.3.1 044\_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            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10002 | I    | Initial Conditions                                                                                                 |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10003 | I    | No PEAs are activated                                                                                              |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10004 | I    | 110Vdc Normal power supply should be connected to the vehicle and ON                                               |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10005 | I    | Visual Inspection                                                                                                  |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10006 | A    | Physically and visually inspect all the Disk Break Units (DBU) and brake pads, to ensure they are securely fitted. |  | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10007 | R    | All the brake DBUs are correctly installed, and all the brake pads are correctly installed and locked.             |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10008 | A    | Check the piping installation                                                                                      |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10009 | R    | All the pipes are installed on the vehicle                                                                         |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10010 | A    | Check all the Passenger Emergency Alarm handles, and ensure they are connected to their respective connectors      |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10011 | R    | All the PEAs are installed and connected                                                                           |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10012 | I    | Train Lines                                                                                                        |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10013 | A    | Emergency Brake Loop Train Lines<br><br>Check continuity between<br>END1 90XR24 pin 8                              |                                                                                     | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |

|       |   |                                                                                                                     |  |    |  |                                   |    |
|-------|---|---------------------------------------------------------------------------------------------------------------------|--|----|--|-----------------------------------|----|
|       |   | END2 90XP34 pin 8                                                                                                   |  |    |  |                                   |    |
| 10014 | R | Both points are continuous                                                                                          |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10015 | A | Emergency Brake Loop Override Train Lines<br><br>Check continuity between<br>END1 90XR24 pin 9<br>END2 90XP34 pin 9 |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10016 | R | Both points are continuous                                                                                          |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10017 | I | Emergency Brake Train Line<br><br>Check continuity between<br>END1 90XR25 pin 67<br>END2 90XP35 pin 67              |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10018 | R | Both points are continuous                                                                                          |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10019 | A | PEA Loop OTDR Train Lines<br><br>Check continuity between<br>END1 90XR24 pin 10<br>END2 90XP34 pin 10               |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10020 | R | Both points are continuous                                                                                          |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |

## Section 12 – Holding and Parking Brake

---

### 12.3 Instructions list

### 12.3.1 045\_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            |              | Dilikani Ngubane - 526515 | M4      |
| 10002 | I    | Initial Conditions                                                                                                                           |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10003 | A    | Using the tools list on the side of your screen, record the serial number of the manometer that will be used during this test.               |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10004 | A    | Check that the pressure on Test point C2.11/1 is >5bar                                                                                       |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10005 | I    | Visual Inspection                                                                                                                            |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10006 | A    | Check the installation of the manual parking brake release components (lever + cable)                                                        |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10007 | R    | The lever is securely fixed (tight) and the cable is correctly attached to the bogie (there is no excess cable and all clamps are installed) |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10008 | I    | Circuit Breakers                                                                                                                             |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10009 | A    | Close Circuit Breaker 33Q3                                                                                                                   |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10010 | A    | Close Circuit Breaker 33Q5                                                                                                                   |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10011 | I    | Parking Brake Pressure Switch                                                                                                                |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10012 | R    | Read Defined Variable [TT]<br>(TBCU4)LI_PARK_BR_RELEASE = 1.0                                                                                |      | OK            | 1            | Dilikani Ngubane - 526515 | M4      |
| 10013 | R    | Read Defined Variable [TT]<br>(TBCU4)LI_BRAKE_STAT = 0.0                                                                                     |      | OK            | 0            | Dilikani Ngubane - 526515 | M4      |
| 10014 | R    | Read Defined Variable [TT]<br>(MPU1)tbcu4_parkbrakerelease = 1.0                                                                             |      | OK            | 1            | Dilikani Ngubane - 526515 | M4      |
| 10015 | R    | Read Defined Variable [TT]<br>(MPU1)tbcu4_li_pbrake_stat = 0.0                                                                               |      | OK            | 0            | Dilikani Ngubane - 526515 | M4      |

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

|       |   |                                                                  |  |    |   |                              |    |
|-------|---|------------------------------------------------------------------|--|----|---|------------------------------|----|
| 10031 | R | Read Defined Variable [TT]<br>(MPU1)li_pbk_m4parkbrakeisol = 0.0 |  | OK | 0 | Dilikani Ngubane -<br>526515 | M4 |
| 10032 | A | Position the Isolation cock C2.3.2 in<br>CLOSE position          |  | OK |   | Dilikani Ngubane -<br>526515 | M4 |
| 10033 | R | Read Defined Variable [TT]<br>(MPU1)li_pbk_m4parkbrakeisol = 1.0 |  | OK | 1 | Dilikani Ngubane -<br>526515 | M4 |
| 10034 | R | Read Defined Variable [TT]<br>(TBCU4)LI_BRAKE_STAT = 0.0         |  | OK | 0 | Dilikani Ngubane -<br>526515 | M4 |
| 10035 | R | Read Defined Variable [TT]<br>(MPU1)tbcu4_li_pbrake_stat = 0.0   |  | OK | 0 | Dilikani Ngubane -<br>526515 | M4 |
| 10036 | R | Read Defined Variable [TT]<br>(TBCU4)LI_PARK_BR_DC = 1.0         |  | OK | 1 | Dilikani Ngubane -<br>526515 | M4 |
| 10037 | R | Read Defined Variable [TT]<br>(MPU1)tbcu4_parkbrakeisoldc = 1.0  |  | OK | 1 | Dilikani Ngubane -<br>526515 | M4 |
| 10038 | A | Return the Isolation cock C2.3.2 to OPEN<br>position             |  | OK |   | Dilikani Ngubane -<br>526515 | M4 |



|                                                                                         |                                                    |                             |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|
| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|

## Section 13 – Air Condition

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### 13.3 Instructions list

### 13.3.1 057\_HVA-HVAC Air Condition

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            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10002 | I    | Power Supply                                                                         |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10003 | A    | Close Circuit Breaker 57Q2                                                           |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10004 | A    | Remove Connector 57XP1_5 from HVAC Panel                                             |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10005 | A    | Force [TT]<br>(MPU1)lo_hva_m4hvacinhibr1__1 = 0.0                                    |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10006 | A    | Force [TT]<br>(MPU1)lo_hva_m4hvacinhibr2__1 = 0.0                                    |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10007 | R    | Check battery voltage (above 80Vdc) between points 11 and 9 of the connector 57XP1_5 |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10008 | A    | Force [TT]<br>(MPU1)lo_hva_m4hvacinhibr2__1 = 1.0                                    |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10009 | R    | Check 0Vdc between points 11 and 9 of the connector 57XP1_5                          |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10010 | A    | Force [TT]<br>(MPU1)lo_hva_m4hvacinhibr1__1 = 1.0                                    |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10011 | R    | Check 0Vdc between points 11 and 9 of the connector 57XP1_5                          |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10012 | R    | Check 0Vdc between points 10 and 9 of the connector 57XP1_5                          |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10013 | A    | Force [TT]<br>(MPU1)lo_hva_m4hvacinhibr2__1 = 0.0                                    |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |
| 10014 | A    | Force [TT]                                                                           |      | OK            |              | Mbavhalelo<br>Funyufunyu - 484649 | M4      |

|       |   |                                                                                        |                                                                                     |    |  |                                   |    |
|-------|---|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|--|-----------------------------------|----|
|       |   | (MPU1)lo_hva_m4emergventil__1 = 1.0                                                    |                                                                                     |    |  |                                   |    |
| 10015 | R | Check 0Vdc between points 11 and 9 of the connector 57XP1_5                            |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10016 | R | Check battery voltage (above 80Vdc) between points 10 and 9 of the connector 57XP1_5   |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10017 | A | Release [TT]<br>(MPU1)lo_hva_m4emergventil__1                                          |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10018 | A | Release [TT]<br>(MPU1)lo_hva_m4hvacinhibr1__1                                          |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10019 | A | Release [TT]<br>(MPU1)lo_hva_m4hvacinhibr2__1                                          |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10020 | A | Put back the connector 57XP1_5 on the HVAC panel                                       |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10021 | I | HVAC Electronic Power Supply                                                           |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10022 | A | Close Circuit Breaker F1 on the HVAC Panel                                             |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10023 | A | Turn the control switch to AUTO position on the HVAC Panel                             |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10024 | R | The HVAC electronic is ON                                                              |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10025 | A | Open Circuit Breaker F1 on the HVAC Panel                                              |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10026 | R | The HVAC electronic is OFF                                                             |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10027 | A | Close Circuit Breaker F1 on the HVAC Panel                                             |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10028 | I | Software Upload                                                                        |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10029 | I | Follow the procedure in the document below to upload software onto the HVAC electronic |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10030 | A |                                                                                        |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10031 | A |                                                                                        |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10032 | I | Sensor's Grade                                                                         |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |

|       |   |                                                                                                                                                                                |                                                                                     |    |   |                                   |    |
|-------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|---|-----------------------------------|----|
| 10033 | I | Each temperature sensor has calibrated grade information. The sensor must be setup with this information.                                                                      |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10034 | 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 |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10035 | R | Sensor grade for HVAC Return Air (RAS) is:                                                                                                                                     |                                                                                     | OK | 6 | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10036 | R | Sensor grade for HVAC Duct Air (DAS) is:                                                                                                                                       |                                                                                     | OK | 5 | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10037 | R | Sensor grade for HVAC Fresh Air (FAS) is:                                                                                                                                      |                                                                                     | OK | 6 | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10038 | R | Sensor grade for HVAC Duct Air 2 (DAS2) is:                                                                                                                                    |                                                                                     | OK | 4 | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10039 | A | In the maintenance software, select the "Application settings" page and click the "Sensors" tab                                                                                |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10040 | A | Enter the data found on the label for each grade. Then, click "Save settings".                                                                                                 |  | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10041 | A | Open Circuit Breaker F1 on the HVAC Panel                                                                                                                                      |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10042 | I | Checking 400Vac                                                                                                                                                                |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10043 | A | Ensure that the 400Vac Shore Supply is connected to the vehicle, else connect it                                                                                               |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10044 | A | Close Circuit Breaker 57Q1                                                                                                                                                     |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10045 | A | Measure 400Vac (+-5%) in the Terminal Block next to the connector '57XP1_10.A' / '57XP1_10.B' on the HVAC Panel                                                                |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10046 | R | 400Vac (+-5%) measured                                                                                                                                                         |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10047 | A | On the HVAC Panel check 400Vac (+-5%) between points L1- Phase R, L2- Phase S, L3- Phase T                                                                                     |                                                                                     | OK |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10048 | 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 |   | Mbavhalelo<br>Funyufunyu - 484649 | M4 |

|       |   |                                                                                                                                                                                       |                                                                                     |    |  |                                   |    |
|-------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|--|-----------------------------------|----|
| 10049 | R | 400Vac (+-5%) is measured between each of the phases                                                                                                                                  |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10050 | R | The phase rotation is correct between all three phases                                                                                                                                |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10051 | I | Using the tools list on the side of your screen, log the details of the phasemeter used                                                                                               |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10052 | I | Saloon HVAC                                                                                                                                                                           |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10053 | 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 |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10054 | A | Close Circuit Breaker F1 on the HVAC Panel                                                                                                                                            |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10055 | R | HVAC unit turns ON and starts to work                                                                                                                                                 |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10056 | I | Reconnect the laptop to the HVAC maintenance software using HCU Finder                                                                                                                |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10057 | R | The Exhaust fans are Turned Off (Confirm on Forced tab that Actual exhauster speed is OFF)                                                                                            |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10058 | I | Forced Mode (Saloon HVAC)                                                                                                                                                             |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10059 | I | For the next sections, walk through the whole car and physically check (feel) that the HVAC is functioning as desired                                                                 |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10060 | I | In the maintenance software, select the 'Forced' tab, and use the "Required working mode" drop down box to force the following modes:                                                 |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10061 | I | Ventilation Mode                                                                                                                                                                      |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10062 | A | Force Ventilation mode on the Saloon HVAC                                                                                                                                             |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10063 | R | All saloon HVAC units work in Ventilation mode. Not heating/cooling                                                                                                                   |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10064 | R | The Exhaust fans are Turned OFF                                                                                                                                                       |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |

|       |   |                                                                                         |                                                                                     |    |  |                                   |    |
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| 10065 | I | Cooling Mode                                                                            |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10066 | A | Force Cooling mode on the Saloon HVAC                                                   |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10067 | R | All saloon HVAC units work in Cooling mode                                              |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10068 | R | The Exhaust fans are Turned OFF                                                         |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10069 | I | Heating Mode                                                                            |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10070 | A | Force Heating mode on the Saloon HVAC                                                   |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10071 | R | All saloon HVAC units work in Heating mode                                              |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10072 | R | The Exhaust fans are Turned OFF                                                         |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10073 | I | Automatic Mode                                                                          |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10074 | A | Force Self-Test on the Saloon HVAC                                                      |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10075 | R | All saloon HVAC units work according to the mode described in the "Actual working mode" |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10076 | R | The Exhaust fans are Turned OFF                                                         |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10077 | I | HVAC Faults                                                                             |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10078 | A | Open Circuit Breaker 57Q1                                                               |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10079 | R | All saloon HVAC units STOP working                                                      |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10080 | A | Close Circuit Breaker 57Q1                                                              |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10081 | R | All saloon HVAC units START working                                                     |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10082 | A | In the maintenance software, select the "Alarms / Warnings" tab                         |  | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10083 | A | Ensure there are no active faults on the HVAC                                           |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |
| 10084 | R | No active faults identified on the HVAC unit                                            |                                                                                     | OK |  | Mbavhalelo<br>Funyufunyu - 484649 | M4 |



|                                                                                         |                                                    |                             |
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| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
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| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
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## 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            |              | Sithembile Xulu - 416253 | M4      |
| 10002 | I    | Fire Detection Train Lines                                                                                              |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10003 | A    | Fire Detection Train Lines<br>Check continuity between<br>END1 90XR14 pin 21<br>END2 90XP24 pin 21                      |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10004 | R    | Both points are continuous                                                                                              |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10005 | I    | Continuity Test                                                                                                         |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10006 | I    | The following steps are continuity tests between the two points described in each step. Use a multimeter for this test. |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10007 | A    | From : [(local: +END1 -90XR13.B (pin 4))] to: [ -Inter-connector (local: +END2 - 90XP23.b pin 4)]                       |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10008 | A    | From : [(local: +END1 -90XR13.B (pin 5))] to: [ -Inter-connector (local: +END2 - 90XP23.b pin 5)]                       |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10009 | A    | From : [(local: +END1 -90XR13.A (pin 7))] to: [ -Inter-connector (local: +END2 - 90XP23.a pin 7)]                       |      | OK            |              | Sithembile Xulu - 416253 | M4      |
| 10010 | A    | From : [(local: +END1 -90XR13.A (pin 8))] to: [ -Inter-connector (local: +END2 - 90XP23.a pin 8)]                       |      | OK            |              | Sithembile Xulu - 416253 | M4      |



Serial Tests Report  
TS218 – M4 – VFT  
RTR Vehicle Functional Static Testing Report

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GIB0000006346  
Version: A0

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24/04/2024

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## Section 15 – Passenger Doors

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### 15.3 Instructions list

### 15.3.1 050\_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            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10002 | I    | Initial conditions                                            |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10003 | I    | 110Vdc Normal power supply is connected to the vehicle and ON |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10004 | I    | Circuit Breakers                                              |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10005 | A    | Close Circuit Breaker 50Q1                                    |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10006 | R    | DCU 1 is powered ON                                           |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10007 | R    | Check on the DDU that DCU1 is online                          |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10008 | A    | Close Circuit Breaker 50Q2                                    |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10009 | R    | DCU 2 is powered ON                                           |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10010 | R    | Check on the DDU that DCU2 is online                          |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10011 | A    | Close Circuit Breaker 50Q3                                    |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10012 | R    | DCU 3 is powered ON                                           |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10013 | R    | Check on the DDU that DCU3 is online                          |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10014 | A    | Close Circuit Breaker 50Q4                                    |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10015 | R    | DCU 4 is powered ON                                           |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10016 | R    | Check on the DDU that DCU4 is online                          |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10017 | A    | Close Circuit Breaker 50Q5                                    |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10018 | R    | DCU 5 is powered ON                                           |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10019 | R    | Check on the DDU that DCU5 is online                          |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |
| 10020 | A    | Close Circuit Breaker 50Q6                                    |      | OK            |              | Paseka Ditlhakanyane - 491468 | M4      |

|       |   |                                                                                                         |                                                                                   |    |  |                               |    |
|-------|---|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|--|-------------------------------|----|
| 10021 | R | DCU 6 is powered ON                                                                                     |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10022 | R | Check on the DDU that DCU6 is online                                                                    |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10023 | A | Close Circuit Breaker 50Q7                                                                              |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10024 | I | Car ID Code                                                                                             |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10025 | A | Using the DDU on the test bench, check that all the doors on M4 are available - as in the picture below |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10026 | R | All doors are available                                                                                 |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10027 | I | Train Lines and Safety Loop                                                                             |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10028 | A | ERTMS Auth Left Train Lines<br>Check continuity between<br>END1 90XR15 pin 44<br>END2 90XP25 pin 44     |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10029 | R | Both points are continuous                                                                              |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10030 | A | ERTMS Auth Right Train Lines<br>Check continuity between<br>END1 90XR15 pin 47<br>END2 90XP25 pin 47    |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10031 | R | Both points are continuous                                                                              |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10032 | A | Doors Open Train Lines<br>Check continuity between<br>END1 90XR15 pin 66<br>END2 90XP25 pin 66          |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10033 | R | Both points are continuous                                                                              |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10034 | A | Door Close Right Train Lines<br>Check continuity between<br>END1 90XR15 pin 78<br>END2 90XP25 pin 78    |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10035 | A | Both points are continuous                                                                              |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10036 | A | Door Close Left Train Lines<br>Check continuity between<br>END1 90XR15 pin 79                           |                                                                                   | OK |  | Paseka Ditlhakanyane - 491468 | M4 |

|       |   |                                                                                                       |  |    |  |                               |    |
|-------|---|-------------------------------------------------------------------------------------------------------|--|----|--|-------------------------------|----|
|       |   | END2 90XP25 pin 79                                                                                    |  |    |  |                               |    |
| 10037 | R | Both points are continuous                                                                            |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10038 | A | Door Auth Left Train Lines<br>Check continuity between<br>END1 90XR15 pin 85<br>END2 90XP25 pin 85    |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10039 | R | Both points are continuous                                                                            |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10040 | A | Door Auth Right Train Lines<br>Check continuity between<br>END1 90XR15 pin 84<br>END2 90XP25 pin 84   |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10041 | R | Both points are continuous                                                                            |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10042 | A | V<3km/h Train Lines<br>Check continuity between<br>END1 90XR15 pin 29<br>END2 90XP25 pin 29           |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10043 | R | Both points are continuous                                                                            |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10044 | A | Door Auth Left Train Lines<br>Check continuity between<br>END1 90XR15 pin 85<br>END2 90XP25 pin 85    |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10045 | R | Both points are continuous                                                                            |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10046 | A | Door Auth Right Train Lines<br>Check continuity between<br>END1 90XR15 pin 84<br>END2 90XP25 pin 84   |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10047 | R | Both points are continuous                                                                            |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10048 | A | Safety Doors Loop Train Lines<br>Check continuity between<br>END1 90XR15 pin 96<br>END2 90XP25 pin 96 |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |
| 10049 | R | Both points are continuous                                                                            |  | OK |  | Paseka Ditlhakanyane - 491468 | M4 |

|       |   |                                                                                                                                                            |  |    |      |                               |    |
|-------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|------|-------------------------------|----|
| 10050 | I | Left Side Doors                                                                                                                                            |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10051 | I | Door 1                                                                                                                                                     |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10052 | I | Use bridge pieces to apply voltage on the passenger door mechanism to simulate the following signals:<br>- Door Auth Left<br>- Door Open Left<br>- V<3km/h |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10053 | A | Apply bridge pieces on 50XP1_X11 between slot 2,3,4 and 15.                                                                                                |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10054 | A | Force [TT]<br>(MPU1)lo_dor_m4opendoorleft = 1.0                                                                                                            |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10055 | R | Check that the door opens in 3 sec (+1/-0)                                                                                                                 |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10056 | R | Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05]                                                 |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10057 | I | Door Opening Gap                                                                                                                                           |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10058 | A | Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)                                                             |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10059 | R | Door 1 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                       |  | OK | 1399 | Paseka Ditlhakanyane - 491468 | M4 |
| 10060 | A | Measure the opening gap of the door. (This measurement must be done at the top of the door)                                                                |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10061 | R | Door 1 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                       |  | OK | 1404 | Paseka Ditlhakanyane - 491468 | M4 |
| 10062 | A | Measure the opening gap of the door. (This measurement must be done in the middle of the door)                                                             |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10063 | R | Door 1 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                       |  | OK | 1400 | Paseka Ditlhakanyane - 491468 | M4 |
| 10064 | I | Door 3                                                                                                                                                     |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10065 | A | Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)                                                             |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |

|       |   |                                                                                                                                                                    |  |    |      |                                  |    |
|-------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|------|----------------------------------|----|
| 10066 | R | Door 3 gap<br>Result Min/Max : 1390<= x <= 1410<br>(mm)                                                                                                            |  | OK | 1399 | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10067 | A | Measure the opening gap of the door.<br>(This measurement must be done at the<br>top of the door)                                                                  |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10068 | R | Door 3 gap<br>Result Min/Max : 1390<= x <= 1410<br>(mm)                                                                                                            |  | OK | 1403 | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10069 | A | Measure the opening gap of the door.<br>(This measurement must be done in the<br>middle of the door)                                                               |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10070 | R | Door 3 gap<br>Result Min/Max : 1390<= x <= 1410<br>(mm)                                                                                                            |  | OK | 1401 | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10071 | I | Door 5                                                                                                                                                             |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10072 | I | Door Opening Gap                                                                                                                                                   |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10073 | A | Measure the opening gap of the door.<br>(This measurement must be done at the<br>BOTTOM of the door)                                                               |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10074 | R | Door 5 gap<br>Result Min/Max : 1390<= x <= 1410<br>(mm)                                                                                                            |  | OK | 1398 | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10075 | A | Measure the opening gap of the door.<br>(This measurement must be done at the<br>top of the door)                                                                  |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10076 | R | Door 5 gap<br>Result Min/Max : 1390<= x <= 1410<br>(mm)                                                                                                            |  | OK | 1404 | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10077 | A | Measure the opening gap of the door.<br>(This measurement must be done in the<br>middle of the door)                                                               |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10078 | R | Door 5 gap<br>Result Min/Max : 1390<= x <= 1410<br>(mm)                                                                                                            |  | OK | 1402 | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10079 | I | Right Side Doors                                                                                                                                                   |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10080 | I | Door 2                                                                                                                                                             |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10081 | A | Use bridge pieces to apply voltage on the<br>passenger door mechanism to simulate<br>the following signals:<br>- Door Auth Right<br>- Door Open Right<br>- V<3km/h |  | OK |      | Paseka Ditlhakanyane -<br>491468 | M4 |

|       |   |                                                                                                            |  |    |      |                               |    |
|-------|---|------------------------------------------------------------------------------------------------------------|--|----|------|-------------------------------|----|
| 10082 | A | Apply bridge pieces on 50XP2_X11 between slot 2,3,4 and 15.                                                |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10083 | A | Force [TT]<br>(MPU1)lo_dor_m4opendoorright = 1.0                                                           |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10084 | R | Check that the door opens in 3 sec (+1/-0)                                                                 |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10085 | R | Check that the GREEN leds on both sides of the door blink while the door opens [Safety Request: Prasa8-05] |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10086 | I | Door Opening Gap                                                                                           |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10087 | A | Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door).            |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10088 | R | Door 2 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                       |  | OK | 1398 | Paseka Ditlhakanyane - 491468 | M4 |
| 10089 | A | Measure the opening gap of the door. (This measurement must be done at the top of the door)                |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10090 | R | Door 2 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                       |  | OK | 1403 | Paseka Ditlhakanyane - 491468 | M4 |
| 10091 | A | Measure the opening gap of the door. (This measurement must be done in the middle of the door)             |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10092 | R | Door 2 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                       |  | OK | 1400 | Paseka Ditlhakanyane - 491468 | M4 |
| 10093 | I | Door 4                                                                                                     |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10094 | I | Door Opening Gap                                                                                           |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10095 | A | Measure the opening gap of the door. (This measurement must be done at the BOTTOM of the door)             |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10096 | R | Door 4 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                       |  | OK | 1397 | Paseka Ditlhakanyane - 491468 | M4 |
| 10097 | A | Measure the opening gap of the door. (This measurement must be done at the top of the door)                |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |

|       |   |                                                                                                                                                          |  |    |      |                               |    |
|-------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|------|-------------------------------|----|
| 10098 | R | Door 4 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                     |  | OK | 1399 | Paseka Ditlhakanyane - 491468 | M4 |
| 10099 | A | Measure the opening gap of the door.<br>(This measurement must be done in the middle of the door)                                                        |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10100 | R | Door 4 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                     |  | OK | 1398 | Paseka Ditlhakanyane - 491468 | M4 |
| 10101 | I | Door 6                                                                                                                                                   |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10102 | I | Door Opening Gap                                                                                                                                         |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10103 | A | Measure the opening gap of the door.<br>(This measurement must be done at the BOTTOM of the door)                                                        |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10104 | R | Door 6 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                     |  | OK | 1396 | Paseka Ditlhakanyane - 491468 | M4 |
| 10105 | A | Measure the opening gap of the door.<br>(This measurement must be done at the top of the door)                                                           |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10106 | R | Door 6 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                     |  | OK | 1400 | Paseka Ditlhakanyane - 491468 | M4 |
| 10107 | A | Measure the opening gap of the door.<br>(This measurement must be done in the middle of the door)                                                        |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10108 | R | Door 6 gap<br>Result Min/Max : 1390<= x <= 1410 (mm)                                                                                                     |  | OK | 1399 | Paseka Ditlhakanyane - 491468 | M4 |
| 10109 | I | Obstacle Detection                                                                                                                                       |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10110 | A | Position an obstacle on the floor in the centre of the door closing line for all the doors                                                               |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10111 | A | Remove the bridge piece on 50XP1_X11 pin 2                                                                                                               |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10112 | A | Remove the bridge piece on 50XP2_X11 pin 2                                                                                                               |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |
| 10113 | R | The doors will hit the obstacle, reopen and try to close again 3 times.<br>On the third attempt it will stop and stand ajar - free to be opened manually |  | OK |      | Paseka Ditlhakanyane - 491468 | M4 |

|       |   |                                                                                                           |  |    |  |                                  |    |
|-------|---|-----------------------------------------------------------------------------------------------------------|--|----|--|----------------------------------|----|
| 10114 | A | Safety Doors Loop Train Lines<br><br>Check continuity between<br>END1 90XR15 pin 96<br>END2 90XP25 pin 96 |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10115 | R | There is no continuity between the two<br>points                                                          |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10116 | A | Put back the bridge piece on 50XP1_X11<br>pin 2                                                           |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10117 | A | Put back the bridge piece on 50XP2_X11<br>pin 2                                                           |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10118 | R | The door opens fully                                                                                      |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10119 | A | Remove the obstacle                                                                                       |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10120 | A | Release [TT]<br>(MPU1)lo_dor_m4opendoorleft                                                               |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10121 | A | Release [TT]<br>(MPU1)lo_dor_m4opendoorright                                                              |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10122 | A | Remove the bridge pieces on connector<br>50XP1_X11                                                        |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |
| 10123 | A | Remove the bridge pieces on connector<br>50XP2_X11                                                        |  | OK |  | Paseka Ditlhakanyane -<br>491468 | M4 |



|                                                                                         |                                                    |                             |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|
| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|

## Section 16 – Traction and Electric Brake

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### 16.3 Instructions list

### 16.3.1 033\_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            |              | Dilikani Ngubane - 526515 | M4      |
| 10002 | I    | Circuit Breakers and Configuration                                                                  |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10003 | A    | Close Circuit Breaker 33Q2                                                                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10004 | A    | Close Circuit Breaker 33Q4                                                                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10005 | A    | Close Circuit Breaker 33Q5                                                                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10006 | I    | Circuit Breaker 33Q1 and 33Q3 must be Opened                                                        |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10007 | I    | 110Vdc Normal Traction EL Train Line<br>Apply bridge piece between<br>END2 90XP25 pin 49 and pin 42 |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10008 | A    | Close Circuit Breaker 33Q1                                                                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10009 | A    | Close Circuit Breaker 33Q3                                                                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10010 | R    | Read Defined Variable [TT]<br>(TBCU4)LI_CAR_ID4 = 1.0                                               |      | OK            | 1            | Dilikani Ngubane - 526515 | M4      |
| 10011 | I    | The TBCU should appear on TCMS<br>network on DDU screen                                             |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10012 | I    | Train Lines                                                                                         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10013 | A    | Forward Train Lines<br>Check continuity between<br>END1 90XR15 pin 25<br>END2 90XP25 pin 25         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10014 | R    | Both points are continuous                                                                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10015 | A    | Reverse Train Lines<br>Check continuity between<br>END1 90XR15 pin 30<br>END2 90XP25 pin 30         |      | OK            |              | Dilikani Ngubane - 526515 | M4      |

|       |   |                                                                                                                                  |                                                                                     |    |  |                           |    |
|-------|---|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----|--|---------------------------|----|
| 10016 | R | Both points are continuous                                                                                                       |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10017 | A | Traction Train Lines<br>Check continuity between<br>END1 90XR15 pin 31<br>END2 90XP25 pin 31                                     |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10018 | R | Both points are continuous                                                                                                       |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10019 | A | No Brake Train Lines<br>Check continuity between<br>END1 90XR15 pin 32<br>END2 90XP25 pin 32                                     |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10020 | R | Both points are continuous                                                                                                       |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10021 | A | Traction Interlock Bypass Train Lines<br>Check continuity between<br>END1 90XR14 pin 6<br>END2 90XP24 pin 6                      |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10022 | R | Both points are continuous                                                                                                       |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10023 | A | Traction Interlock Train Lines<br>Check continuity between<br>END1 90XR15 pin 41<br>END2 90XP25 pin 41 and<br>-10XP12_XCB2 pin 8 |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10024 | R | All pins are continuous                                                                                                          |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10025 | I | 110Vdc Normal Traction EL Train Line<br>Remove bridge piece on<br>END2 90XP25 pin 49 and pin 42                                  |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10026 | I | Coolant Liquid                                                                                                                   |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10027 | A | Check that the coolant level is at least 1/2 of the sight glass level indicator                                                  |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10028 | R | Coolant Liquid Level is OK                                                                                                       |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10029 | I | End of Test                                                                                                                      |                                                                                     | OK |  | Dilikani Ngubane - 526515 | M4 |



Serial Tests Report  
TS218 – M4 – VFT  
RTR Vehicle Functional Static Testing Report

Document Reference  
GIB0000006346  
Version: A0

Emission date  
24/04/2024

## Section 17 – Vehicle Normalization

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### 17.3 Instructions list

### 17.3.1 093\_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 | M4      |
| 10002 | I    | This inspection must be performed by the EPU/Acting EPU Manager on shift                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10003 | I    | The VFT procedures are all completed                                                              |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10004 | I    | Vehicle Normalization Check                                                                       |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10005 | R    | On LV3 all Circuit Breakers are installed and secured                                             |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10006 | R    | On LV3 all Dataplugs are installed, tightened and earth braids are fastened                       |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10007 | R    | On LV3 all Connectors are tightened                                                               |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10008 | R    | On LV3 there are no missing components, device, wiring or connectors.                             |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10009 | R    | On LV6 all Dataplugs are installed, tightened and earth braids are fastened                       |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10010 | R    | On LV6 all Connectors are tightened                                                               |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10011 | R    | On LV6 there are no missing components, device, wiring or connectors.                             |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10012 | R    | On HC Cubicle the Controller is installed and properly tightened and its connectors are tightened |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10013 | R    | All DCUs are properly installed and secured                                                       |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10014 | R    | All Internal Displays are properly installed and secured                                          |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10015 | R    | All Light Covers are properly installed                                                           |      | OK            |              | Dilikani Ngubane - 526515 | M4      |
| 10016 | R    | All Saloon Fire Detectors are properly installed and secured                                      |      | OK            |              | Dilikani Ngubane - 526515 | M4      |

|       |   |                                                                                            |  |    |  |                           |    |
|-------|---|--------------------------------------------------------------------------------------------|--|----|--|---------------------------|----|
| 10017 | R | All covers are normalised inside the car                                                   |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10018 | R | On the Underframe, TBCU Agate is installed and properly tightened                          |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10019 | R | On the Underframe, Speed Sensors are installed and properly tightened                      |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10020 | R | On the LVB, all Circuit Breakers are installed and properly tightened                      |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10021 | R | On the LVB, all Relays and Timers are installed and properly tightened                     |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10022 | R | On the LVB, BRIOMs are installed and properly tightened                                    |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10023 | R | On the LVB there are no missing components, device, wiring or connectors.                  |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10024 | R | On the Underframe, all Connectors are tightened                                            |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10025 | R | All underframe covers are normalised                                                       |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10026 | R | On END1 the Octopus cables are disconnected from the car and properly stored.              |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10027 | R | On END2 the Octopus cables are disconnected from the car and properly stored.              |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10028 | R | The Test Bench is switched OFF and the Octopus cables are disconnected and properly stored |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10029 | R | ALL P.Os of this car are closed                                                            |  | OK |  | Dilikani Ngubane - 526515 | M4 |
| 10030 | I | End Of Test                                                                                |  | OK |  | Dilikani Ngubane - 526515 | M4 |



|                                                                                         |                                                    |                             |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|
| Serial Tests Report<br>TS218 – M4 – VFT<br>RTR Vehicle Functional Static Testing Report | Document Reference<br>GIB0000006346<br>Version: A0 | Emission date<br>24/04/2024 |
|-----------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------|

## Section 16 – Report summaries

### 16.2 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         |            |               |
| PACIS System                            | X         |            |               |
| Internal Lighting                       | X         |            |               |
| Holding and Parking Brake               | X         |            |               |
| Fire Protection                         | X         |            |               |
| Energy Distribution                     | X         |            |               |
| Emergency Brake                         | X         |            |               |
| Cabin Control                           | X         |            |               |
| Air Condition                           | X         |            |               |

### 16.3 Tools used

| Function | Tool name  | Tool number | Next Calibration date |
|----------|------------|-------------|-----------------------|
| 015_NRG  | Phasemeter | Phasemeter  | 8/25/2024             |
| 040_SBK  | Manometer  | Manometer   | 7/31/2024             |
| 045_PBK  | Manometer  | Manometer   | 7/31/2024             |

| Vehicle | Equipment | Expected version | Version loaded |
|---------|-----------|------------------|----------------|
| M4      |           |                  |                |



Serial Tests Report  
TS218 – M4 – VFT  
RTR Vehicle Functional Static Testing Report

Document Reference  
GIB0000006346  
Version: A0

Emission date  
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