

| PROJECT         | CUSTOMER | VEHICLE         |
|-----------------|----------|-----------------|
| Xtrapolis-PRASA | PRASA    | 270 – TC1 – VPT |

RTR Vehicle Pre-Testing TS270 TC1 Report  
 GIB0000007852



|                  | CREATED             | VERIFIED       | APPROVED        | DISTRIBUTION  |
|------------------|---------------------|----------------|-----------------|---|
| <b>Name</b>      | Kealeboga MOCWAGOLE | 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"/> |
| <b>Date</b>      | 27/02/2025          | 27/02/2025     | 27/02/2025      | Control Category<br><i>Controlled</i> <i>Not Controlled</i><br><input checked="" type="checkbox"/> <input type="checkbox"/>   |
| <b>Signature</b> |                     |                |                 | Language<br><b>EN</b>   |

This report has been automatically generated from TES version 1

### Table of modifications

| Rev | Date       | Modifications Content | Writer              |
|-----|------------|-----------------------|---------------------|
| A0  | 27/02/2025 | Creation              | Kealeboga MOCWAGOLE |

### Internal validations

|                 | Name                | Function            | Date       | Signature  |
|-----------------|---------------------|---------------------|------------|--|
| <b>Creator</b>  | Kealeboga MOCWAGOLE | EPU Manager         | 27/02/2025 | X <br>Kealeboga MOCWAGOLE<br>EPU Manager      |
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| <b>Approver</b> | Kgomotso NKOANA     | Test Expert         | 27/02/2025 | X <br>Kgomotso NKOANA<br>Test Expert        |

### Execution Plan

|                   |            |
|-------------------|------------|
| <b>Start Date</b> | 18/02/2025 |
| <b>End Date</b>   | 18/02/2025 |

## Contents

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### Section 1 - Purpose / Objectives

### Section 2 - Protective Bonding

2.1 Instructions list

### Section 3 - Reflectometry

3.1 Instructions list

### Section 4 - Config

4.1 Instructions list

### Section 5 - Report summaries

5.1 Results status

5.2 Tools used

## Section 1 – Purpose / Objectives

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### 1. Protective Bonding

The objective of this procedure is to verify the return path of the current to the ground.

### 2. Reflectometry

The objective of this procedure is to verify the integrity of the ethernet cables.

### 3. Config

The objective of this procedure is to set up car ID for specific systems such as fire and to verify wiring to the speed sensors and OTDR.



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## Section 2 – Protective Bonding

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### 2.1 Instructions list

### 2.1.1 012-Protective Bonding and Return Current

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

| N°    | Type | Instruction   | File  | Result status | Result value | Operator                                 | Vehicle |
|-------|------|---|---|---------------|--------------|--|---------|
| 10001 | I    | Return Circuit: car body to Ground  |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10002 | I    | The purpose of this test is to confirm that the car body of each car in the train is connected to ground via the earthing brush which will ensure that current from the overhead wire is returned to the substation without damage to equipment or risk of electric shock |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10003 | A    | The Ohmmeter shall be off   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10004 | A    | Use the Tool List to record the serial number of the Ohmmeter that will be used for this test   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10005 | A    | Ensure that the current setpoint is 50A and voltage <50V (applicable for all impedance measurement) on the Ohmmeter device to be used for the test.   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10006 | I    | For all impedance measurements of the car body to ground the positive terminal shall be connected to the car body and the negative terminal to the rail   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10007 | I    | For all other impedance measurements, the positive terminal shall be connected to the tested subject and the negative terminal to the car body shell.   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10008 | A    | Visually identify and inspect that the earthing cables of the 1st axle of 1st bogie frame and the 2nd axle of 2nd bogie frame are properly connected to the axle brushes.   |  | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10009 | A    | Disconnect from the axle box the earthing cable of the 2nd axle of 2nd bogie frame  |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10010 | R    | Only the earthing cable of the 1st axle of the 1st bogie frame is connected   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10011 | A    | Measure the car body to ground impedance  |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |

|       |   |  |  |    |          |  |     |
|-------|---|--|--|----|----------|--|-----|
| 10012 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000498 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10013 | A | Disconnect the earthing cable of 1st axle of 1st bogie frame   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10014 | A | Connect the earthing cable of the 2nd axle of 2nd bogie frame  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10015 | R | Only the earthing cable of the 2nd axle of the 2nd bogie frame of TC1 car is connected   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10016 | A | Measure the car body to ground impedance   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10017 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000374 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10018 | A | Connect the earthing cable of the 1st axle of 1st bogie frame  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10019 | I | Earthing of Equipment on the Underframe  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10020 | A | Visually inspect that the earthing cable connecting the Auxiliary Converter Case to TC1 car body is properly connected and related bolts are correctly torqued |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10021 | R | Auxiliary Converter visually grounded and torque is correctly marked   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10022 | A | Measure the impedance between the Auxiliary Converter Case and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10023 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000483 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10024 | A | Visually inspect that the earthing cable connecting the Battery Box to the car body is properly connected and the related bolts are correctly torqued          |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10025 | R | Battery Box visually grounded and torque is correctly marked   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10026 | A | Measure the impedance between the Battery Box Case and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10027 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000391 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10028 | A | Visually inspect that the earthing cable connecting the Eurobalise Antenna to the  |  | OK |          | Sthabile Dlamini<br>418538               | TC1 |

|       |   |  |  |    |          |  |     |
|-------|---|--|--|----|----------|--|-----|
|       |   | car body is properly connected and the related bolts are correctly torqued   |  |    |          | 18.02.2025                               |     |
| 10029 | R | Eurobalise Antenna visually grounded and torque is correctly marked  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10030 | A | Measure the impedance between the Eurobalise Antenna and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10031 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000347 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10032 | A | Visually inspect that the earthing cable connecting the LVB/Brake Module to the car body is properly connected and the related bolts are correctly torqued |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10033 | R | LVB/Brake Module visually grounded and torque is correctly marked  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10034 | A | Measure the impedance between the LVB/Brake and the car body   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10035 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000312 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10036 | I | Earthing of Equipment on the Exterior  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10037 | I | Exterior Front   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10038 | A | Visually inspect that the earthing cable connecting the Front Coupler to the car body is properly connected and the related bolts are correctly torqued    |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10039 | R | Front Coupler visually grounded and torque is correctly marked   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10040 | A | Measure the impedance between the Front Coupler and the car body   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10041 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000458 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10042 | I | Earthing of Equipment on the Roof  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10043 | A | Visually inspect that the earthing cable connecting the Saloon HVAC to the car body is properly connected and the related bolts are correctly torqued      |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |

|       |   |  |  |    |          |  |     |
|-------|---|--|--|----|----------|--|-----|
| 10044 | R | Saloon HVAC visually grounded and torque is correctly marked   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10045 | A | Measure the impedance between the Saloon HVAC and the car body   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10046 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000371 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10047 | A | Visually inspect that the earthing cable connecting the Cab HVAC to the car body is properly connected and the related bolts are correctly torqued |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10048 | R | Cab HVAC visually grounded and torque is correctly marked  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10049 | A | Measure the impedance between the Cab HVAC and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10050 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000345 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10051 | I | Earthing of interior equipment   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10052 | I | Cabin  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10053 | A | Visually inspect that the earthing cable connecting LV1 cubicle to the car body is properly connected and the related bolts are correctly torqued  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10054 | R | LV1 visually grounded and torque is correctly marked   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10055 | A | Measure the impedance between the LV1 cubicle and the car body   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10056 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)  |  | OK | 0.000298 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10057 | A | Visually inspect that the earthing cable connecting LV2 cubicle to the car body is properly connected and the related bolts are correctly torqued  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10058 | R | LV2 visually grounded and torque is correctly marked   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10059 | A | Measure the impedance between the LV2 cubicle and the car body   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |

|       |   |   |  |    |          |  |     |
|-------|---|---|--|----|----------|--|-----|
| 10060 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)   |  | OK | 0.000354 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10061 | A | Visually inspect that the earthing cable connecting Under Desk Left cubicle to the car body is properly connected and the related bolts are correctly torqued   |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10062 | R | Under Desk Left cabinet visually grounded and torque is correctly marked  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10063 | A | Measure the impedance between the Under Desk Left cabinet and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10064 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)   |  | OK | 0.000265 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10065 | A | Visually inspect that the earthing cable connecting Under Desk Middle cabinet to the car body is properly connected and the related bolts are correctly torqued |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10066 | R | Under Desk Middle cabinet visually grounded and torque is correctly marked  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10067 | A | Measure the impedance between the Under Desk Middle cabinet and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10068 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)   |  | OK | 0.000267 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10069 | A | Measure the impedance between the Master Controller and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10070 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)   |  | OK | 0.000439 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10071 | A | Measure the impedance between the Foot Heater and the car body  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10072 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)   |  | OK | 0.000376 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10073 | I | Saloon  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10074 | A | Visually inspect that the earthing cable connecting LV7 cubicle to the car body is properly connected and the related bolts are correctly torqued               |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10075 | R | LV7 visually grounded and torque is correctly marked  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |

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| 10076 | A | Measure the impedance between the LV7 cubicle and the car body |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10077 | R | Impedance<br>Result Max : $x \leq 0.05$ (Ohm)                  |  | OK | 0.000211 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10078 | I | END OF TEST  |  | OK |          | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |



Serial Tests Report  
TS270 – TC1 – VPT  
RTR Vehicle Pre-Testing Report

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## Section 3 – Reflectometry

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### 3.1 Instructions list

### 3.1.1 025\_NET\_054\_PIS-Network Cabling Integrity Test

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

| N°    | Type | Instruction   | File  | Result status | Result value | Operator                                 | Vehicle |
|-------|------|---|---|---------------|--------------|--|---------|
| 10001 | I    | Network Cabling Integrity Test  |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10002 | I    | It is necessary to check the network cables to ensure that they have been installed correctly to improve the overall operation of the system.   |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10003 | I    | The Cable Analyzer Module DSX-5000 will be used to validate cabling   |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10004 | I    | Register as a new Operator on the DSX-5000. Check on the manual below on how to register as a new Operator.<br><a href="#">[14-48-12-308038_DSX 5000 User Manual.pdf]</a>                           |    | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10005 | I    | When saving the tests results for each line, it should be named by its trainset number (X) and the test code (Indicated in the test step). i.e. TS021_TC1_PO1 for PACIS and TS021_TC1_T01 for TCMS. |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10006 | I    | Use the pictures below for coupler test   |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10007 | I    | Front Coupler   |  | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10008 | I    | DB9 pin out   |  | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10009 | I    | TCMS cabling  |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10010 | A    | From: [25A15 Train Router Switch (Local: +LV1; Connector: 25XP15_ETH7)] to: [54A13 Train Router Switch (Local: +LV1; Connector: 54XP13_ETHCPU)]<br><br>NOTE: Cable is crossed<br>TSX_TC1_T01        |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |
| 10011 | A    | From: [25A15 Train Router Switch (Local: +LV1; Connector: 25XP15_ETH4)] to: [25A11 Ethernet Switch (CRS2) (Local: +LV1; Connector: 25XP11_X4)]<br><br>NOTE: Cable is crossed                        |   | OK            |              | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1     |

|       |   |  |  |    |  |  |     |
|-------|---|--|--|----|--|--|-----|
|       |   | TSX_TC1_T02  |  |    |  |  |     |
| 10012 | A | From: [25A11 Ethernet Switch (CRS2) (Local: +LV1; Connector: 25XP11_X3)] to: [25A12 Switch Ethernet (CRS3) (Local: +LV1; Connector: 25XP12_X4)]<br><br>NOTE: Cable is crossed<br>TSX_TC1_T03   |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10013 | A | From: [25A12 Ethernet Switch (Local: +LV1; Connector: 25XP12_X8)] to: [25A18 MAINTENANCE INTERFACE (Local: +LV1; Connector: 25XP18_ETH)]<br><br>NOTE: Cable is crossed<br>TSX_TC1_T04          |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10014 | A | From: [25A15 Train Router Switch (Local: +LV1; Connector: 25XP15_ETH1)] to: [25A14 Ethernet Repeater (TBR) (Local: +LV7; Connector: 25XP14_ETH0)]<br><br>NOTE: Cable is crossed<br>TSX_TC1_T05 |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10015 | A | From: [25A15 Train Router Switch (Local: +LV1; Connector: 25XP15_ETH5)] to: [25A10 Ethernet Switch (CRS1) (Local: +LV7; Connector: 25XP10_X3)]<br><br>NOTE: Cable is crossed<br>TSX_TC1_T06    |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10016 | A | From: [25A12 Switch Ethernet (CRS3) (Local: +LV1; Connector: 25XP12_X3)] to: [25A13 Switch Ethernet (CRS4) (Local: +LV7; Connector: 25XP13_X4)]<br><br>NOTE: Cable is crossed<br>TSX_TC1_T07   |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10017 | A | From: [25A15 Train Router Switch (Local: +LV1; Connector: 25XP15_ETH3)] to: [Inter-car (Local: +END2; 90XP11.all)]<br><br>NOTE: Cable is Straight<br>TSX_TC1_T08                               |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10018 | A | From: [25A10 Ethernet Switch (CRS1) (Local: +LV7; Connector: 25XP10_X4)] to: [Inter-car (Local: +END2; 90XP11.all)]<br><br>NOTE: Cable is Straight<br>TSX_TC1_T09                              |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10019 | A | From: [25A13 Ethernet Switch (Local: +LV7; Connector: 25XP13_X3)] to: [Inter-  |  | OK |  | Mphato Mphahlele<br>480716               | TC1 |

|       |   |  |  |    |  |  |     |
|-------|---|--|--|----|--|--|-----|
|       |   | car (Local: +END2; 90XP12.all))<br><br>NOTE: Cable is crossed<br>TSX_TC1_T10   |  |    |  | 18.02.2025                               |     |
| 10020 | A | From: [25A14 TBR (Local: +LV7;<br>Connector: 25XP14_ETH1)] to: [Inter-car<br>(Local: +END2; 90XP12.al)]<br><br>NOTE: Cable is Straight<br>TSX_TC1_T11  |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10021 | A | From: [25A15 Train Router Switch (Local:<br>+LV1; Connector: 25XP15_ETH0)] to:<br>[Coupler 041 (Local: CLP; Connector:<br>90XR120_LC14)]<br>TSX_TC1_T12<br><br>NOTE: Cable is crossed<br>NOTE: For this test, use the male coupler<br>connector provided. Please refer to the<br>picture above for the correct location of<br>connector.     |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10022 | A | From: [25A15 Train Router Switch (Local:<br>+LV1; Connector: 25XP15_ETH2)] to:<br>[Coupler 141 (Local: +CLP; Connector:<br>90XR120_RC14)]<br>TSX_TC1_T13<br><br>NOTE: Cable is Straight<br>NOTE: For this test use the female coupler<br>connector provided. Please refer to the<br>above picture for correct location for the<br>connector. |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10023 | A | From: [ UHF Ethernet Cable (63XP1_X4)<br>(Local: +LV2)] to: [ UHF Hand held<br>Ethernet Cable (Local: UDR - Under Driver<br>Right); (63XP2_X1)]<br>TSX_TC1_T14<br><br>NOTE: Cable is straight with 8 wires   |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10024 | I | Pacis cabling  |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10025 | A | From: [TRS 54A13 (Local: +LV1;<br>Connector: 54XP13_ETH7)] to: [Inter-car<br>(Local: +END2; 90XP12.ell)]<br><br>NOTE: Cable is straight<br>TSX_TC1_P01   |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10026 | A | From: [CRS1 54A10 (Local: +LV7;<br>Connector: 54XP10_X7)] to: [Inter-car<br>(Local: +END2; 90XP11.ell)]  |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |

|       |   |   |  |    |  |  |     |
|-------|---|---|--|----|--|--|-----|
|       |   | NOTE: Cable is crossed<br>TSX_TC1_P02   |  |    |  |  |     |
| 10027 | A | From: [54A13 TRS (Local: +LV1;<br>Connector: 54XP13_ETH6)] to: [54A10<br>CRS1 (Local: +LV7; Connector:<br>54XP10_X8)]<br><br>NOTE: Cable is crossed<br>TSX_TC1_P03  |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10028 | A | From: [54A42 RACK UMC (EBM) (Local:<br>+LV1;Connector: 54XP42_X2) to:<br>[Coupler 042 (Local: +CLP; Connector:<br>90XR120_LE12)]<br>TSX_TC1_P04<br><br>NOTE: Cable is crossed<br>NOTE: For this test, use the male coupler<br>connector and the DB9 connector<br>provided. Refer to the picture above for<br>the correct location of the connector.   |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10029 | A | From: [54A42 RACK UMC (EBM) (Local:<br>+LV1;Connector: 54XP42_X8) to:<br>[Coupler 142 (Local: +CLP; Connector:<br>90XR120_RE12)]<br>TSX_TC1_P05<br><br>NOTE: Cable is straight<br>NOTE: For this test use the female coupler<br>connector and the DB9 connector<br>provided. Refer to the picture above for<br>the correct location of the connector. |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10030 | A | All cables have been validated on TC1   |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |
| 10031 | R | Download all the results from Fluke and<br>save them on PC with folder name<br>"TC1_TSxx"   |  | OK |  | Ntobeko Ndlovu<br>421595<br>19.02.2025   | TC1 |
| 10032 | I | END OF TEST   |  | OK |  | Mphato Mphahlele<br>480716<br>18.02.2025 | TC1 |

## Section 4 – Config

### 4.1 Instructions list

#### 4.1.1 CONF-Car Configuration

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

| N°    | Type | Instruction  | File  | Result status | Result value | Operator                                 | Vehicle |
|-------|------|--|---|---------------|--------------|--|---------|
| 10001 | I    | Configuration Checks   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10002 | A    | Check continuity between 93XT104_1 pin 50 and Ground point                                   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10003 | R    | There is no continuity   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10004 | I    | If there is continuity above, the wire 19203LE is pinched on the compressor isolation cock.  |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10005 | A    | Check continuity on all pins of connector 90XP15 & 90XP14 to ground                          |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10006 | R    | There is no continuity except pin 62 of connector 90XP15                                     |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10007 | A    | Check continuity on all pins of the coupler to ground.                                       |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10008 | R    | There is no continuity   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10009 | I    | Smoke Detector Address Configuration   |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10010 | A    | Remove and configure the Smoke Detector 67A4 in the cabin, according to the figure attached. |  | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10011 | A    | Reconnect Smoke Detector 67A4  |   | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |
| 10012 | A    | Remove and configure the Smoke Detector 67A2 (+PA1) according to the figure attached.        |  | OK            |              | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1     |

|       |   |   |   |    |     |  |     |
|-------|---|---|---|----|-----|--|-----|
| 10013 | A | Reconnect Smoke Detector 67A2   |   | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10014 | A | Remove and configure the Smoke Detector 67A3 (+PA3) according to the figure attached.   |  | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10015 | R | Measure the resistance (LHD- Line Heat Detection from Static Converter Box) between point 1 and point 4 of the connector 67XP3_11.<br>Result Min/Max : 550<= x<= 700 (Ohms) |   | OK | 580 | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10016 | A | Reconnect Smoke Detector 67A3   |   | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10017 | I | OTDR LOOP   |   | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10018 | I | Check the continuity between the following points:  |   | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10019 | A | From: [61A2 Speed Indicator IN+ (local: +DD4)] to: [Local(+END2) Connector: - 90XP13.b pin1]  |   | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10020 | A | From: [61A2 Speed Indicator OUT- (local: +DD4)] to: [Local(+END2) Connector: - 90XP13.b pin 2]  |   | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |
| 10021 | I | END OF TEST   |   | OK |     | Sthabile Dlamini<br>418538<br>18.02.2025 | TC1 |

## Section 5 – Report summaries

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### 5.1 Results status

| Test Instruction Sheet | Compliant | Incomplete | Non-compliant |
|------------------------|-----------|------------|---------------|
| Reflectometry          | X         |            |               |
| Protective Bonding     | X         |            |               |
| Config                 | X         |            |               |

### 5.2 Tools used

| Function        | Tool name              | Tool number          | Next Calibration date |
|-----------------|------------------------|----------------------|-----------------------|
| 012             | Protective bonding     | Megger               | 8/25/2025             |
| 025_NET_054_PIS | Cable Analyser DSX5000 | Fluke machine_Gibela | 12/31/2025            |
| CONF            | Multimetro             | Multimeter 3         | 9/30/2025             |

| Vehicle | Equipment | Expected version | Version loaded |
|---------|-----------|------------------|----------------|
| TC1     |           |                  |                |