

Document Reference GIB0000006207 Version: A0 Emission date 04/03/2024

PROJECT	CUSTOMER	VEHICLE
Xtrapolis-PRASA	PRASA	209 – M3 – VPT

# RTR Vehicle Pre-Testing TS209 M3 Report GIB0000006207



	CREATED	VERIFIED	APPROVED	DISTRIBUTION
Name	Tshegofatso SETSHOGWE	Nkululeko NDOVELA	Kgomotso NKOANA	Confidentiality Category  **Restricted Project Normal**
Date	04/03/2024	04/03/2024	04/03/2024	Control Category  Controlled Not Controlled
Signature				Language <b>EN</b>

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#### Table of modifications

Rev	Date	Modifications Content	Writer
Ao	04/03/2024	Creation	Tshegofatso SETSHOGWE

#### Internal validations

	Name	Function	Date	Signature
Creator	Tshegofatso SETSHOGWE	EPU Manager	04/03/2024	Tsh rgofatso SETSHOGWE EPU Manager
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#### **Execution Plan**

Start Date	25/02/2024
End Date	25/02/2024

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# Section 1 – Purpose / Objectives



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# Section 2 - Protective Bonding and Return Current

2.3 Instructions list

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#### 2.3.1 012\_PB-Protective Bonding and Return Current

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

N°	Туре	Instruction	File	Result status	Result value	Operator	Vehicle
10001	ı	Return Circuit: Car Body to Ground		ОК		Tshembhani Khosa - 446920	Мз
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		ок		Tshembhani Khosa - 446920	Мз
10003	А	Use the Tool List to record the serial number of the Ohmmeter that will be used in this test		ОК		Tshembhani Khosa - 446920	Мз
10004	А	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.		ОК		Tshembhani Khosa - 446920	Мз
10005	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		ОК		Tshembhani Khosa - 446920	Мз
10006	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		ОК		Tshembhani Khosa - 446920	Мз
10007	А	Visually identify and inspect that the earthing cables of the 1st and 2nd axle of the 1st and 2nd Bogie Frame are properly connected to the axle brushes	-	ОК		Tshembhani Khosa - 446920	Мз
10008	А	Disconnect from the axle box the earthing cable of the 1st and 2nd axle of the 1st and 2nd Bogie Frame of the M3 car		ОК		Tshembhani Khosa - 446920	Мз
10009	R	All the earthing cables of the M3 car are disconnected.		ОК		Tshembhani Khosa - 446920	Мз
10010	А	Connect the earthing cable of the 1st axle in the 1st Bogie Frame		ОК		Tshembhani Khosa - 446920	Мз



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10011	R	Only the earthing cable of the 1st axle of the 1st Bogie Frame is connected	ок		Tshembhani Khosa - 446920	Мз
10012	А	Using an ohmmeter measure the impedance between the car body to rail	ОК		Tshembhani Khosa - 446920	Мз
10013	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000567	Tshembhani Khosa - 446920	Мз
10014	А	Disconnect the earthing cable of the 1st axle of the 1st bogie frame	ок		Tshembhani Khosa - 446920	Мз
10015	R	Earthing cable disconnected	ОК		Tshembhani Khosa - 446920	Мз
10016	А	Connect the earthing cable of the 2nd axle in the 1st Bogie Frame	ОК		Tshembhani Khosa - 446920	Мз
10017	R	Only the earthing cable of the 2nd axle of the 1st Bogie Frame is connected	ОК		Tshembhani Khosa - 446920	Мз
10018	А	Using an ohmmeter measure the impedance between the car body to rail	ОК		Tshembhani Khosa - 446920	Мз
10019	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000678	Tshembhani Khosa - 446920	Мз
10020	R	Earthing cable disconnected	ОК		Tshembhani Khosa - 446920	Мз
10021	А	Disconnect the earthing cable of the 2nd axle of the 1st bogie frame	ОК		Tshembhani Khosa - 446920	Мз
10022	I	Earthing of Equipment on the Underframe	ОК		Tshembhani Khosa - 446920	Мз
10023	А	Connect the earthing cable of the 1st axle in the 2nd Bogie Frame	ок		Tshembhani Khosa - 446920	Мз
10024	R	Only the earthing cable of the 1st axle of the 2nd Bogie Frame is connected	ОК		Tshembhani Khosa - 446920	Мз
10025	А	Using an ohmmeter measure the impedance between the car body to rail	ОК		Tshembhani Khosa - 446920	Мз
10026	R	Impedance Result Max : x <= 0.05 (Ohm)	ок	0.000678	Tshembhani Khosa - 446920	Мз
10027	А	Disconnect the earthing cable of the 1st axle of the 2nd bogie frame	ок		Tshembhani Khosa - 446920	Мз
10028	R	Earthing cable disconnected	ОК		Tshembhani Khosa - 446920	Мз
10029	А	Connect the earthing cable of the 2nd axle in the 2nd Bogie Frame	ок		Tshembhani Khosa - 446920	Мз



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10030	R	Only the earthing cable of the 1st axle of the 2nd Bogie Frame is connected	ОК		Tshembhani Khosa - 446920	Мз
10031	Α	Using an ohmmeter measure the impedance between the car body to rail	ОК		Tshembhani Khosa - 446920	Мз
10032	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000657	Tshembhani Khosa - 446920	Мз
10033	Α	Reconnect all earthing cables of the 1st and 2nd axle of the 1st and 2nd Bogie Frame	ок		Tshembhani Khosa - 446920	Мз
10034	R	All earthing cables connected on the 1st and 2nd Bogie Frame	ОК		Tshembhani Khosa - 446920	Мз
10035	А	Visually inspect that the earthing cable connecting the Traction Inverter Case to M3 car body is properly connected and related bolts are correctly torqued.	ок		Tshembhani Khosa - 446920	Мз
10036	R	Traction Inverter Case visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз
10037	А	Using an ohmmeter measure the impedance between the Traction Inverter Case and the car body	ОК		Tshembhani Khosa - 446920	Мз
10038	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000675	Tshembhani Khosa - 446920	Мз
10039	А	Visually inspect that the earthing cable connecting the Line Inductor Case to M3 car body is properly connected and related bolts are correctly torqued.	ок		Tshembhani Khosa - 446920	Мз
10040	R	Line Inductor Case visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз
10041	А	Using an ohmmeter measure the impedance between the Line Inductor Case and the car body	ОК		Tshembhani Khosa - 446920	Мз
10042	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000675	Tshembhani Khosa - 446920	Мз
10043	А	Visually inspect that the earthing cable connecting the Traction Motors of the 1st and 2nd axle of the 1st Bogie Frame to the car body is properly connected and related bolts are correctly torqued	ОК		Tshembhani Khosa - 446920	Мз
10044	R	Traction Motors visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз

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10045	А	Using an ohmmeter measure the impedance between the Traction Motor of the 1st and 2nd axle of the 1st Bogie Frame and the car body	ОК		Tshembhani Khosa - 446920	Мз
10046	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000675	Tshembhani Khosa - 446920	Мз
10047	А	Visually inspect that the earthing cable connecting the Traction Motors of the 1st and 2nd axle of the 2nd Bogie Frame to the car body is properly connected and related bolts are correctly torqued	ОК		Tshembhani Khosa - 446920	Мз
10048	R	Traction Motors visually grounded and torque is correctly marked	ок		Tshembhani Khosa - 446920	Мз
10049	А	Using an ohmmeter measure the impedance between the Traction Motor of the 1st and 2nd axle of the 2nd Bogie Frame and the car body	ОК		Tshembhani Khosa - 446920	Мз
10050	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000675	Tshembhani Khosa - 446920	Мз
10051	I	Earthing of Interior Equipment	ОК		Tshembhani Khosa - 446920	Мз
10052	А	Visually inspect that the earthing cable connecting the LV3 cubicle, and the car body is properly connected and related bolts are correctly torqued	OK		Tshembhani Khosa - 446920	Мз
10053	R	LV3 cubicle visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз
10054	А	Using an ohmmeter measure the impedance between the LV3 cubicle and the car body	ОК		Tshembhani Khosa - 446920	Мз
10055	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000567	Tshembhani Khosa - 446920	Мз
10056	А	Visually inspect that the earthing cable connecting the LV6 cubicle, and the car body is properly connected and related bolts are correctly torqued	ОК		Tshembhani Khosa - 446920	Мз
10057	R	LV6 cubicle visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз
10058	А	Using an ohmmeter measure the impedance between the LV6 cubicle and the car body	ок		Tshembhani Khosa - 446920	Мз
10059	R	Impedance Result Max : x <= 0.05 (Ohm)	ок	0.000567	Tshembhani Khosa - 446920	Мз

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10060	1	Earthing of Equipment on the Roof	ОК		Tshembhani Khosa - 446920	Мз
10061	А	Visually inspect that the earthing cable connecting the 1st Braking Resistor Box to M3 car body is properly connected and related bolts are correctly torqued.	ОК		Tshembhani Khosa - 446920	Мз
10062	R	1st Braking Resistor Box visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз
10063	А	Using an ohmmeter measure the impedance between the 1st Braking Resistor Box and the car body	ОК		Tshembhani Khosa - 446920	Мз
10064	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000689	Tshembhani Khosa - 446920	Мз
10065	А	Visually inspect that the earthing cable connecting the Saloon HVAC to M3 car body is properly connected and related bolts are correctly torqued.	ОК		Tshembhani Khosa - 446920	Мз
10066	R	Saloon HVAC visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз
10067	А	Using an ohmmeter measure the impedance between the Saloon HVAC and the car body	ОК		Tshembhani Khosa - 446920	Мз
10068	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000675	Tshembhani Khosa - 446920	М3
10069	А	Visually inspect that the earthing cable connecting the 2nd Braking Resistor Box to M3 car body is properly connected and related bolts are correctly torqued.	ок		Tshembhani Khosa - 446920	Мз
10070	R	2nd Braking Resistor Box visually grounded and torque is correctly marked	ОК		Tshembhani Khosa - 446920	Мз
10071	А	Using an ohmmeter measure the impedance between the 1st Braking Resistor Box and the car body	ОК		Tshembhani Khosa - 446920	Мз
10072	R	Impedance Result Max : x <= 0.05 (Ohm)	ОК	0.000684	Tshembhani Khosa - 446920	Мз



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## **Section 3 – Traction Motors**

3.3 Instructions list



#### 3.3.1 011\_TRM-Traction Motors

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

N°	Туре	Instruction	File	Result status	Result value	Operator	Vehicle
10001	ı	Traction Motors (SPP = 11)		OK		Sithembile Xulu - 416253	Мз
10002	ı	Ensure all the CONNECTORS are fully ASSEMBLED before running a continuity test.		ОК		Sithembile Xulu - 416253	Мз
10003	ı	The following test is used to confirm the wiring of the traction motors.	*\$C*_= *\$C*	ОК		Sithembile Xulu - 416253	М3
10004	ı	SAFETY NOTICE: It is important to ensure that there is no 400Vac power supply on the vehicle.		ок		Sithembile Xulu - 416253	Мз
10005	А	Switch OFF the 400Vac power supply at the source and disconnect the supply cables from the vehicle		ОК		Sithembile Xulu - 416253	Мз
10006	R	There is no 400Vac available on the vehicle		ОК		Sithembile Xulu - 416253	Мз
10007	ı	Bogie 1 (MB1)		OK		Sithembile Xulu - 416253	Мз
10008	ı	Visual Inspection		OK		Sithembile Xulu - 416253	Мз
10009	А	For motor 1 and motor 2 connect 11XR1 and 11XR2 and visually inspect that the following cables are connected from - 11XR1 connector to -11M1 motor and - 11XR2 connector to -11M2 motor respectively. NOTE: the cable configuration should be straight, none should cross the other		ок		Sithembile Xulu - 416253	Мз
10010	ı	Motor 2		OK		Sithembile Xulu - 416253	Мз
10011	R	[ -11XR2 connector (local: UND - 11XP2_2.X1 pin 1)] connected to: [ - 11XT2 motor terminals (U) -11M2].		ОК		Sithembile Xulu - 416253	Мз
10012	А	Cable 11X2_2.X1 pin 1 is connected to 11XT2.		ок		Sithembile Xulu - 416253	Мз
10013	R	[ -11XR2 connector (local: UND - 11XP2_2.X2 pin 1)] connected to: [ -		OK		Sithembile Xulu - 416253	Мз



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		11XT2 motor terminals (V) -11M2].			
10014	R	[ -11XR2 connector (local: UND - 11XP2_2.X3 pin 1)] connected to: [ - 11XT2 motor terminals (W) -11M2].	ОК	Sithembile Xulu - 416253	Мз
10015	R	-11M2 Motor terminals PE connected to - 11GND2.	ОК	Sithembile Xulu - 416253	Мз
10016	I	Motor 1	ОК	Sithembile Xulu - 416253	Мз
10017	R	[ -11XR1 connector (local: UND - 11XP1_2.X1 pin 1)] connected to: [ - 11XT1 motor terminals (U) -11M1].	ОК	Sithembile Xulu - 416253	Мз
10018	R	[ -11XR1 connector (local: UND - 11XP1_2.X2 pin 1)] connected to: [ - 11XT1 motor terminals (V) -11M1].	ОК	Sithembile Xulu - 416253	Мз
10019	R	[ -11XR1 connector (local: UND - 11XP1_2.X3 pin 1)] connected to: [ - 11XT1 motor terminals (W) -11M1].	ОК	Sithembile Xulu - 416253	Мз
10020	R	-11M1 Motor terminals PE connected to - 11GND.	ОК	Sithembile Xulu - 416253	Мз
10021	I	Bogie 2 (MB2)	ОК	Sithembile Xulu - 416253	Мз
10022	I	Visual Inspection	ОК	Sithembile Xulu - 416253	Мз
10023	A	For motor 3 and motor 4 visually inspect that the following cables are connected from -11XR3 connector to -11M3 motor and -11XR4 connector to -11M4 motor respectively. NOTE: the cable configuration should be straight, none should cross the other	ОК	Sithembile Xulu - 416253	Мз
10024	I	Motor 3	ОК	Sithembile Xulu - 416253	Мз
10025	R	[ -11XR3 connector (local: UND - 11XP3_2.X1 pin 1)] connected to: [ - 11XT3 motor terminals (U) -11M3].	ОК	Sithembile Xulu - 416253	Мз
10026	R	[ -11XR3 connector (local: UND - 11XP3_2.X2 pin 1)] connected to: [ - 11XT3 motor terminals (V) -11M3].	ок	Sithembile Xulu - 416253	Мз
10027	R	[-11XR3 connector (local: UND - 11XP3_2.X3 pin 1)] connected to: [- 11XT3 motor terminals (W) -11M3].	ОК	Sithembile Xulu - 416253	Мз

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10028	R	-11M3 Motor terminals PE connected to - 11GND3.	ОК	Sithembile Xulu - 416253	Мз
10029	I	Motor 4	ОК	Sithembile Xulu - 416253	Мз
10030	R	[-11XR4 connector (local: UND - 11XP4_2.X1 pin 1)] connected to: [- 11XT4 motor terminals (U) -11M4].	ОК	Sithembile Xulu - 416253	Мз
10031	R	[ -11XR4 connector (local: UND - 11XP4_2.X2 pin 1)] connected to: [ - 11XT4 motor terminals (V) -11M4].	ОК	Sithembile Xulu - 416253	Мз
10032	R	[ -11XR4 connector (local: UND - 11XP4_2.X3 pin 1)] connected to: [ - 11XT4 motor terminals (W) -11M4].	ОК	Sithembile Xulu - 416253	Мз
10033	R	-11M4 Motor terminals PE connected to - 11GND.	ОК	Sithembile Xulu - 416253	Мз



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# Section 4 - Config

#### 4.3 Instructions list

#### 4.3.1 CONFIG-Vehicle Configuration

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

N°	Туре	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Configuration Checks		ок		Sithembile Xulu - 416253	Мз
10002	А	Check continuity on all pins of End 1 connector 90XP15 & 90XP14 to ground		ОК		Sithembile Xulu - 416253	Мз
10003	R	There is no continuity		ОК		Sithembile Xulu - 416253	Мз
10004	А	Check continuity on all pins of End 2 connector 90XP15 & 90XP14 to ground		ОК		Sithembile Xulu - 416253	Мз
10005	R	There is no continuity		ОК		Sithembile Xulu - 416253	Мз
10006	I	Smoke Detector Address Configuration		ОК		Sithembile Xulu - 416253	Мз
10007	А	Remove and configure the Smoke Detector 67A2 (+PA1) according to the figure attached	7 11 11 12 12 12 12 12 12 12 12 12 12 12	ОК		Sithembile Xulu - 416253	Мз
10008	А	Reconnect Smoke Detector 67A2		ОК		Sithembile Xulu - 416253	Мз
10009	А	Remove and configure the Smoke Detector 67A3 (+PA3) according to the figure attached	) 50c	ОК		Sithembile Xulu - 416253	Мз
10010	ı	Line Heat Detection		ОК		Sithembile Xulu - 416253	Мз
10011	R	Measure the resistance between point 1 and point 4 of the connector 67XP3_11 Result Min/Max : 550<= x<= 700 ()		ОК	550	Sithembile Xulu - 416253	Мз
10012	А	Reconnect Smoke Detector 67A3		ОК		Sithembile Xulu - 416253	Мз
10013	ı	OTDR LOOP		ок		Sithembile Xulu - 416253	Мз



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10014	ı	Check the continuity between the following points:	ок	Sithembile Xulu - 416253	Мз
10015	А	From: [ +IV1 (local +END2 Connector - 93XP23.b (pin1))] to: [local +END1 Connector - 90XR13.B(pin1)]	ок	Sithembile Xulu - 416253	Мз
10016	А	From: [ -IV1 (local +END2 Connector - 93XP23.b (pin2))] to: [local +END1 Connector - 90XR13.B(pin2)]	ок	Sithembile Xulu - 416253	Мз



# Section 5 - Reflectometry

#### **5.3 Instructions list**

# 5.3.1 025\_NET\_054\_PIS-Network Cabling Integrity

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

N°	Туре	Instruction	File	Result status	Result value	Operator	Vehicle
10001	I	Network Cabling Integrity Test		OK		Sithembile Xulu - 416253	Мз
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.		ОК		Sithembile Xulu - 416253	Мз
10003	I	The Cable Analyzer Module DSX-5000 will be used to validate cabling		ОК		Sithembile Xulu - 416253	Мз
10004	I	Register as a new Operator on the DSX- 5000. Check on the manual below on how to register as a new Operator	×	ОК		Sithembile Xulu - 416253	Мз
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. TSO21_M3_P01 for PACIS and TSO21_M3_T01 for TCMS.		ОК		Sithembile Xulu - 416253	Мз
10006	I	TCMS cabling		ОК		Sithembile Xulu - 416253	Мз
10007	Α	From: [25A10 CRS1 (Local: +LV3; Connector: 25XP10_X3)] to: [25A11 CRS2 (Local: +LV3; Connector: 25XP11_X4)] NOTE: Cable is crossed TSX_M3_T01		ок		Sithembile Xulu - 416253	Мз
10008	А	From: [25A10 Ethernet Switch (Local: +LV3; Connector: 25XP10_X4)] to: [ (Local: +END1; Connector: 90XP12.All)]  NOTE: Cable is straight TSX_M3_T02		ок		Sithembile Xulu - 416253	Мз



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10009	А	From: [25A14 TBR (Local: +LV3; Connector:25XP14_ETH0)] to: [Inter-car (Local: +END1; Connector: 90XP11.All)] NOTE: Cable is crossed TSX_M3_T03	ок	Sithembile Xulu - 416253	Мз
10010	А	From: [25A14 TBR (Local: +LV3; Connector: 25XP14_ETH1)] to: [Inter-car (Local: +END2; Connector: 90XP22.al)] NOTE: Cable is straight TSX_M3_T04	ОК	Sithembile Xulu - 416253	Мз
10011	A	From: [25A11 Ethernet Switch (Local: +LV3; Connector: 25XP11_X3)] to: [Inter- car (Local: +END2; Connector: 90XP22.all)] NOTE: Cable is crossed TSX_M3_T05	ОК	Sithembile Xulu - 416253	Мз
10012	А	From: [(Local: +END1; Connector: 90XR12.AI)] to: [Inter-car (Local: +END2; Connector: 90XP21.AI)]  NOTE: Cable is straight TSX_M3_T06	ОК	Sithembile Xulu - 416253	Мз
10013	А	From: [(Local: +END1; Connector: 90XR11.Al)] to: [Inter-car (Local: +END2; Connector: 90XP21.all)]  NOTE: Cable is straight TSX_M3_T07	ОК	Sithembile Xulu - 416253	Мз
10014	I	Pacis cabling	ОК	Sithembile Xulu - 416253	Мз
10015	А	From: [(Local: +END1; Connector: - 90XR11.Ell)] to: [Inter-car (Local: +END2; Connector: -90XP21.ell)]  NOTE: Cable is straight TSX_M3_P01	ОК	Sithembile Xulu - 416253	Мз
10016	A	From: [54A10 CRS1 (Local: +LV6; Connector: 54XP10_X7)] to: [ (Local: +END1; Connector: -90XR12.EII)] NOTE: Cable is crossed TSX_M3_P02	ОК	Sithembile Xulu - 416253	Мз
10017	А	From: [54A11 CRS2 (Local: +LV6; Connector: 54XP11_X8)] to: [ (Local: +END2; Connector: -90XP22.ell)]	ОК	Sithembile Xulu - 416253	Мз

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		NOTE: Cable is straight TSX_M3_P03			
10018	А	From: [54A11 CRS2 (Local: +LV6; Connector: 54XP11_X7)] to: [54A10 CRS1 (Local: +LV6; Connector: 54XP10_X8)] NOTE: Cable is crossed TSX_M3_P04	ОК	Sithembile Xulu - 416253	Мз
10019	А	All cables have been validated on M3	ОК	Sithembile Xulu - 416253	Мз
10020	R	Download all the results from Fluke and save them on PC with folder name "M3_TSxx"	ОК	Sithembile Xulu - 416253	Мз
10021	R		OK	Ntobeko Ndlovu - 421595	Мз



Document Reference GIB0000006207 Version: A0 Emission date 04/03/2024

## **Section 6 – Report summaries**

#### 6.2 Results status

Test Instruction Sheet	Compliant	Incomplete	Non-compliant
Traction Motors	X		
Reflectometry	Х		
Protective Bonding and Return Current	X		
Config	X		

Vehicle	Equipment	Expected version	Version loaded
Мз			