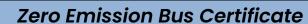
Zemo Partnership





Customer: Al	lexander De	nnis		DYNAMOMETER SETTINGS			
Customer Address: Tri	Trident House, 2, Voyager Park, Farnborough, GU14 6FF		Telematics Capability	Yes	Test Weight	16147	kg
Test Purpose: Ze	e: Zero Emission Bus Testing		Maximum Speed (km/h)	92 km/h	F° -252.36		N
Vehicle Manufacturer: Al	: Alexander Dennis Ltd		Seated Capacity	76	F ¹ -1.6070		N/kmh
Vehicle Model Name: Er	Enviro400 EV		Passenger Capacity	84	F ² 0.1517		N/kmh ²
Powertrain Technology Ba	wertrain Technology Battery Electric		Declared Unladen Weight (kg)	13663	Equivalent test passengers 38		passengers
Powetrain Configuration Direct Drive		Gross Weight (kg)	19450	Measured Unladen Weight 13565		kg	
Zero Emission Heating He	ng Heat Pump		GVW Check	OK	Number of conseuitve tests completed 4		Tests
	Battery Spe	cification	Charging and Refuelling	Capability	Hydrogen Specification		
Battery Manufactu	ırer	Impact	Plug Type	Dual CCS2/OppCharge	Fuel Cell Manufacturer		N/A
Battery Chemistr	Battery Chemistry NMC		Max Charge Capability (kW)	Up to 150kW/250 kW	Fuel Cell Power Rating (kW)		N/A
Battery Installed Capacity (kWh) 472		Charger Compatibility	DC	Hydrogen Storage Capacit	y (kg)	N/A	
Battery Usable Capacity (kWh)* 415		Charge time from 20-80% SOC**	1.5-2 hours	Hydrogen Storage Pressure (bar)		N/A	

** Based on manufacturer estimate * Recommended manufacturer guideline, subject to warranty

Declared fuel, properties and source plus carbon conversion factors									
Well-to-Tank Factor:	Electricity	72.65	g CO2e / MJ	Fuel Provider	UK market standard	WTT evidence	DBEIS Conversion 2022		
Well-to-Tank Factor:	Hydrogen	N/A	g CO2e / MJ	Capacity of Tanker (kg)	N/A	Fuel Type / Pathway	UK Grid Electricity		
Energy Density	Hydrogen	N/A	MJ/kg	Transport Distance of Hydrogen (km)	N/A	Energy Source	UK Grid		

Emissions and Energy consumption results from approved test facility - Average 4 tests										
Test Phase	HC (g/km)	CO (g/km)	NOx (g/km)	PM (g/km)	CO₂ (g/km)	CH₄ (g/km)*	N₂O (g/km)*	Total Energy Consumption (kWh)	Vehicle Energy Consumption (kWh/km)	Grid Electrical Energy Consumption (kWh/ 100km)
Outer Urban	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.71	0.72	74.78
Inner Urban	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.80	0.71	73.64
Rural	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.49	0.61	62.64
LBC Average	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.51	0.72	74.46
UK BUS Average	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.00	0.67	69.13

Zero Emissions (Z.E.) Range: Energy consumption and charging efficiency								
Test Charger Used	est Charger Used 38 kW Total measured energy consumed on vehicle (kWh) ¹ N/A* Max ZE Range at 100% SOC (km)							
Hydrogen Energy Over Test (kWh)	N/A	Measured grid energy during charging (kWh)	N/A*	Max ZE Range at 80% SOC (km)	496			
Hydrogen Delivered to Vehicle (kg)	N/A	Grid-to-Wheel efficiency (%) ²	97%	Test Distance Travelled (km)	72			

¹ Total measured energy may include energy used during the 23 minute warmup, this is needed for charge efficiency calculation.

One to wheel emidency represents the total energy losses between the grid and the wheels of the bus.									
Calculo	ated tot	Data Generated by (On behalf of Test facility):	Date:						
Test Phase	Fuel Energy (MJ /km)	Fuel WTT*GHG Emissions (g CO₂e / km)							
Outer Urban	N/A	N/A	2.69	195.59	Data Approved by:	Date:			
Inner Urban	N/A	N/A	2.65	192.59					
Rural	N/A	N/A	2.26	163.84					
LBC Average	N/A	N/A	2.68	194.75					
UK BUS Average	N/A	N/A	2.49	180.81					

Zero Emission Bus Certificate Summary								
Test Vehicle Average Euro VI Diesel Equivalent								
Greenhouse Gas Emissions: Well-to-Wheel	180.8	g CO2e / km	Average Diesel GHG Emissions Equivalent	1306	g CO2e / km			
WTW CO2 per passenger km (@ Max Pass Capacity) 2		g CO2e/pass km	WTW CO2 per passenger km (@ Max Pass Capacity)	15.6	g CO2e/pass km			
	Overa	l Zero Emissic	on Bus Performance					
WTW GHG saving	1125.5	g CO2e / km	Maximum Theoretical Zero Emission Range (km)		620.1			
% WTW GHG saving	86%	Vehicle Energy Consumption (kWh/ km)		0.67				
Approved as Zero Emission Bus? (50% GHG saving or more) YES								

* WTT : Well-to-Tank ** TTW: Tank-to-Wheel *** WTW : Well-to Wheel

COMMENTS: Emission results marked in red are below detection levels. LBC = London Bus Cycle - Inner & Outer Urban	Heating Requirement	Cell	Lower Saloon	Upper Saloon
phases of UKBC only. January 2024 - State of charge was 85% at the start of warmup. Total measured energy consumed, measured grid energy during charging and charging efficiency are all calculated over two iterations of UKBC procedure. All other results are recorded from 2nd iteration of UKBC procedure performed. September 2024 Update - Due to issues with charging	Target Temperatures ±2 (°C) :	10	17	17
procedure in original test, a charge event was subsequently carried out independently by UTAC, and approved by Zemo, to determine a representative charge efficiency.	Average Temperatures across testing (°C)	10.00	16.23	16.08
Tast Numbers: 20231220, 1701, 2vLIKBC, 20233120, 1855, 2vLIKBC				

Certificate approved by: Gary Chandler On behalf of Bus

30th September 2024 manufacturer



Certificate Approved by: Tim Griffen On behalf of DfT / Zemo Partnership 30th September 2024

