

Low Emission Bus Scheme Certificate

Customer:	Alexander Dennis Ltd.				
Customer Address:	Dennis Way, Guildford, Surrey, GU1 1AF				
Test Purpose:	LEB Testing			DYNAMOMETER SETTINGS	
Vehicle Manufacturer:	Alexander Dennis Ltd.	Unladen weight (kg)	12060.0	Test Weight	14515 kg
Vehicle Type & Number:	ADL E400H, G445	Gross Weight (kg)	18000.0	F°	43.42 N
Engine:	Cummins/BAE Euro VI Hybrid	Seated Capacity	70	F ¹	11.3621 N/kmh
Transmission:	Automatic	Passenger Capacity	87	F ²	-0.00552 N/kmh ²
Euro VI certificate Y/N	Manufacturer Certified	GVW Check	OK	F ³	0.0006470 N/kmh ³

Declared fuel, properties and source plus carbon conversion factors

Net Heating Value: Diesel	36.00	MJ / Litre	Fuel Provider	UK market standard
Well-to-Tank Factor: Diesel	15.42	g CO ₂ e / MJ	WTT evidence	UK GHG reporting factors 2016
Well-to-Tank Factor: Electricity	143.50	g CO ₂ e / MJ	Fuel Type	UK Pump Diesel, UK Grid Electricity

Emissions and Energy consumption results from approved test facility - Average 3 tests

Test Phase	HC (g/km)	CO (g/km)	NOx (g/km)	PM (g/km)	CO ₂ (g/km)	CH ₄ (g/km)*	N ₂ O (g/km)*	Fuel Consumption (l/100 km)	Fuel used over phase/cycle (litres)
Rural	0.010	0.015	0.043	N/A	588.5	0.000	0.079	22.22	1.636
Outer London	0.020	0.023	0.131	N/A	638.5	0.000	0.083	24.11	1.536
Inner London	0.034	0.040	0.103	N/A	914.1	0.000	0.104	34.52	0.852
MLTB Average	0.024	0.028	0.123	N/A	715.5	0.000	0.088	27.02	2.389
LUB Average	0.018	0.022	0.087	0.0032	657.8	0.000	0.084	24.84	4.025

Zero Emissions (Z.E.) Range: Energy consumption and charging efficiency



Total measured energy consumed on vehicle (kWh)	N/A	Distance in Z.E. mode (km)	N/A	Usable Battery Capacity (kWh)	N/A
Measured grid energy during charging (kWh)*	N/A	Charging efficiency (%)	N/A	Max Theoretical Z.E. Range (km)	N/A

Total Tank-to-Wheel GHG CO₂ equivalent

Test Phase	CO ₂ (g/km)	CH ₄ (g/km x 25)*	N ₂ O (g/km x 298)*	Fuel TTW** GHG (CO ₂ Equivalent g/km)
Rural	588.5	0.000	23.536	612.0
Outer London	638.5	0.000	24.597	663.1
Inner London	914.1	0.000	30.946	945.0
MLTB Average	715.5	0.000	26.370	741.8
LUB Average	657.8	0.000	25.083	682.8

Calculated total Well-to-Wheel GHG CO₂ equivalent emissions over test

Test Phase	Fuel Energy (MJ / km)	Fuel WTT*GHG Emissions (g CO ₂ e / km)	Electrical Energy (MJ / km)	Electricity WTT* GHG Emissions (g CO ₂ e / km)	Measured Fuel TTW** GHG Emissions (g CO ₂ e / km)	Total WTW*** GHG Emissions (g CO ₂ e / km)
Rural	8.00	123.3	N/A	N/A	612.0	735.3
Outer London	8.68	133.8	N/A	N/A	663.1	796.9
Inner London	12.43	191.6	N/A	N/A	945.0	1136.6
MLTB Average	9.73	150.0	N/A	N/A	741.8	891.8
LUB Average	8.94	137.9	N/A	N/A	682.8	820.7

Data Generated by (On behalf of Test facility):		Date: 23.03.2018	Data Approved by:		Date: 27.03.2018
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Low Emission Bus Certificate Summary

GHG Well-to-Wheel	820.7	g CO ₂ e / km
Euro V Average Diesel Equivalent	1299.5	g CO ₂ e / km
WTW GHG saving (compared with Euro V diesel equivalent)	478.8	g CO ₂ e / km
% WTW GHG saving (compared with Euro V diesel equivalent)	37%	g CO ₂ e / km
Zero Emission operating range (km)	N/A	km
WTW CO ₂ per passenger km (@ Max Pass Capacity)	9.4	g CO ₂ e/pass km
Approved as Low Emission Bus? (15% 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.

CO₂, N₂O and Fuel Consumption not adjusted for average NEC of -3.55% (Negative NEC signifies electrical energy harvested into the vehicle battery rather than being discharged).

Test Numbers: ML02017846 (20 March 2018), ML02017847 (20 March 2018), ML02017848 (20 March 2018).

Certificate approved by: On behalf of Bus manufacturer	Certificate Approved by: On behalf of LowCVP/DfT
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