

## Low Emission Bus Scheme Certificate

<b>Customer:</b> Alexander Dennis Ltd	
<b>Customer Address:</b> Plaxton, Cayton Low Road, Eastfield, Scarborough, YO11 3BY	
<b>Test Purpose:</b> LEB Energy Consumption Testing - ESTIMATED****	
<b>DYNAMOMETER SETTINGS</b>	
<b>Vehicle Manufacturer:</b> ADL/BYD	Unladen weight (kg) 12266.0
<b>Vehicle Type &amp; Number:</b> ADL E200 E.V.	Gross Weight (kg) 18600.0
<b>Engine:</b> Electric Hub Motors	Seated Capacity 21
<b>Transmission:</b> N/A	Passenger Capacity 90
<b>Euro VI certificate Y/N</b> N/A	GVW CHECK OK
	Test Weight 13868 kg
	F <sup>0</sup> 329.76 N
	F <sup>1</sup> -6.7904 N/kmh
	F <sup>2</sup> 0.42029 N/kmh <sup>2</sup>
	F <sup>3</sup> -0.002120 N/kmh <sup>3</sup>

### Declared fuel, properties and source plus carbon conversion factors

<b>Net Heating Value:</b> Diesel	N/A	MJ / Litre	Fuel Provider	UK market standard
<b>Well-to-Tank Factor:</b> Diesel	N/A	g CO2e / MJ	WTT evidence	UK GHG reporting factors 2016
<b>Well-to-Tank Factor:</b> Electricity	143.50	g CO2e / MJ	Fuel Type*	UK Grid Electricity inc. WTT + T&D

### 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 <sub>2</sub> (g/km)	CH <sub>4</sub> (g/km)*	N <sub>2</sub> O (g/km)*	Energy Consumption (KWhr)	Electrical Energy Consumption (kWh/ 100 km)
Rural	0.00	0.00	0.00	0.000	0.00	0.000	0.000	5.52	81.8
Outer London	0.00	0.00	0.00	0.000	0.00	0.000	0.000	4.72	79.7
Inner London	0.00	0.00	0.00	0.000	0.00	0.000	0.000	2.21	95.9
<b>MLTB Average</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0000</b>	<b>0.00</b>	<b>0.000</b>	<b>0.000</b>	<b>6.92</b>	<b>84.2</b>
<b>LUB Average</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.0000</b>	<b>0.00</b>	<b>0.000</b>	<b>0.000</b>	<b>12.45</b>	<b>83.1</b>

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

Total measured energy consumed on vehicle (kWh)	49.80	Distance in Z.E. mode (km)	65.10	Usable Battery Capacity (kWh)	324.0
Measured grid energy during charging (kWh)	54.13	Charging efficiency (%)	92%	Max Theoretical Z.E. Range (km)	423.5

### Total Tank-to-Wheel GHG CO<sub>2</sub> equivalent

Test Phase	CO <sub>2</sub> (g/km)	CH <sub>4</sub> (g/km x 25)*	N <sub>2</sub> O (g/km x 298)*	Fuel TTW** GHG (CO <sub>2</sub> Equivalent g/km)
Rural	0.00	0.000	0.00	0.00
Outer London	0.00	0.000	0.00	0.00
Inner London	0.00	0.000	0.00	0.00
<b>MLTB</b>	<b>0.00</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>
<b>LUB Total Average</b>	<b>0.00</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>

### Calculated total Well-to-Wheel GHG CO<sub>2</sub> equivalent emissions over test

Test Phase	Fuel Energy (MJ /km)	Fuel WTT*GHG Emissions (g CO <sub>2</sub> e / km)	Electrical Energy (MJ / km)	Electricity WTT* GHG Emissions (g CO <sub>2</sub> e / km)	Measured Fuel TTW** GHG Emissions (g CO <sub>2</sub> e / km)	Total WTW*** GHG Emissions (g CO <sub>2</sub> e / km)
Rural	0.00	0.00	2.95	422.61	0.00	422.61
Outer London	0.00	0.00	2.87	411.60	0.00	411.60
Inner London	0.00	0.00	3.45	495.45	0.00	495.45
<b>MLTB</b>	<b>0.00</b>	<b>0.00</b>	<b>3.03</b>	<b>435.07</b>	<b>0.00</b>	<b>435.07</b>
<b>LUB Total Average</b>	<b>0.00</b>	<b>0.00</b>	<b>2.99</b>	<b>429.45</b>	<b>0.00</b>	<b>429.45</b>

Data Generated by (On behalf of Test facility):	29 Sept 2016	Data Approved by:	29 Sept 2016
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### Low Emission Bus Certificate Summary

GHG Well-to-Wheel	<b>429.5</b>	g CO <sub>2</sub> e / km
Euro V Average Diesel Equivalent	<b>1327.8</b>	g CO <sub>2</sub> e / km
WTW GHG saving (compared with Euro V diesel equivalent)	<b>898.3</b>	g CO <sub>2</sub> e / km
% WTW GHG saving (compared with Euro V diesel equivalent)	<b>68%</b>	g CO <sub>2</sub> e / km
Max Theoretical Zero Emission Operating Range (km)	<b>423.5</b>	km
WTW CO <sub>2</sub> per passenger km (@ Max Pass Capacity)	<b>4.8</b>	g CO <sub>2</sub> e/pass km
<b>Approved as Low Emission Bus? (15% saving or more)</b>		<b>YES</b>

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

**COMMENTS:** THESE RESULTS AND VALUES HAVE NOT BEEN PRODUCED BY THIS VEHICLE. THEY ARE TAKEN FROM A SIMILAR VEHICLE WITH A SLIGHTLY LARGER ENERGY CAPACITY AND HEAVIER TEST INERTIA, VEHICLE ENERGY CONSUMPTION ASSUMED TO BE AT LEAST EQUAL OR BETTER THAN THIS VEHICLE. UK Grid Electricity WTT factor includes transmission and distribution losses (T&D) and well-to-tank emissions for generation and T&D. \*Based on LEB Test Guidance notes for EV vehicles (4 x LUB Cycles as ZEC Vehicle). \* Value calculated based on Total energy used during testing and CLAIMED charging efficiency. \*\*Range calculation assumed full operation from 100% to 0% with a linear reduction of 3.6% battery capacity per 16.3 km test cycle.

**Test Numbers:** ML02015809 (08-September-2016), ML02015810 (08-September-2016), ML02015811 (08-September-2016), ML02015812 (08-September-2016).

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