

Low Emission Bus Scheme Certificate

Customer:	Alexander Dennis Ltd				
Customer Address:	Plaxton, Cayton Low Road, Eastfield, Scarborough, YO11 3BY				
Test Purpose:	LEB Testing			DYNAMOMETER SETTINGS	
Vehicle Type & Manufacturer:	E200 48V Hybrid	Unladen weight (kg)	8151.0	INERTIA	9518 kg
Vehicle Number:	E281	Gross Weight (kg)	13200.0	F°	50.62 N
Engine:	Cummins	Max Seated Capacity	38	F ¹	2.08 N/kmh
Transmission:	Auto	Passenger Capacity	72	F ²	0.118 N/kmh ²
Euro VI certificate Y/N	Manufacturer Certified	OK		F ³	-0.00016 N/kmh ³
Net Heating Energy (MJ/Litre)	36	Fuel Provider:	N/A		
Well-to-Tank Factor: (g CO ₂ e/MJ)	15.42	WTT evidence	DECC Conversion Factors		
DECC Tank-to-Wheel Factor (g CO ₂ e/kg)	5.49	Fuel Type:	Pump Diesel		

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)
Rural	0.003	0.015	0.096	N/A	533.7	0.000	0.090	20.15
Outer London	0.008	0.029	0.070	N/A	616.1	0.000	0.107	23.26
Inner London	0.013	0.038	0.182	N/A	821.0	0.000	0.114	31.00
MLTB Average	0.009	0.031	0.102	N/A	673.4	0.000	0.109	25.42
LUB Average	0.006	0.024	0.099	0.0095	610.1	0.000	0.100	23.03

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)*	TTW GHG (CO ₂ e (g/km))
Rural	533.7	0.000	26.96	560.6
Outer London	616.1	0.000	31.81	647.9
Inner London	821.0	0.000	33.86	854.8
MLTB Average	673.4	0.000	32.38	705.7
LUB Average	610.1	0.000	29.92	640.0

Electric energy consumption and charge efficiency

Total measured energy consumed on vehicle (kWhr)	N/A	Distance covered km	N/A
Measured grid energy during charging kWhr	N/A	Charging efficiency	N/A

Well-to-Wheel GHG CO₂ equivalent

Test Phase	Fuel/energy used over cycle (litres/km)	Total Fuel Energy (MJ/km)	Calculated WTT* GHG Emissions (CO ₂ Equivalent g/km)	Calculated TTW** GHG Emissions (CO ₂ Equivalent g/km)	Calculated WTW*** GHG Emissions (CO ₂ Equivalent g/km)
Rural	0.201	7.25	111.9	560.6	672.5
Outer London	0.233	8.37	129.1	647.9	777.0
Inner London	0.310	11.16	172.1	854.8	1026.9
MLTB Average	0.254	9.15	141.1	705.7	846.9
LUB Average	0.230	8.29	127.9	640.0	767.9

Data Generated by (On behalf of Test facility) 	Date: 15/09/2016	Data Approved by: 	Date: 21/10/2016
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Low Emission Bus Certificate Summary

GHG Well-to-Wheel	767.9	g CO ₂ e / km
Euro V Average Diesel Equivalent	1158.2	g CO ₂ e / km
WTW GHG saving (compared to Euro V equivalent)	390.4	g CO₂e / km
% WTW GHG saving (compared to Euro V equivalent)	34%	g CO₂e / km
Zero Emission operating range (km)	N/A	km
WTW CO ₂ e per passenger km (@Max Pass Capacity)	10.66	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 - Wheel to Wheel

COMMENTS: * compound measured via Fourier Transfer Infra-Red (FTIR), Values in RED are below levels of detectability.
NEC <1% for all tests, No N₂O or CO₂ Emissions adjustments made.

Test Numbers: ML02015830 (14 September 2016), ML02015831 (14 September 2016), ML02015832 (14 September 2016).

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