

## Low Emission Bus Scheme Certificate

Customer:	Volvo Bus, Volvo Group UK Limited				
Customer Address:	Wedgnoek Lane, Warwick, CV345YA				
Test Purpose:	LEB Testing			<b>DYNAMOMETER SETTINGS</b>	
Vehicle Type & Manufacturer:	Volvo 7900	Unladen weight (kg)	12010.0	INERTIA	13258 kg
Vehicle Number:	YV3T1U225E1168218	Gross Weight (kg)	19000.0	F°	127.13 N
Engine:	Euro 6 Volvo D5K Hybrid	Max Seated Capacity	35	F <sup>1</sup>	0.7464 N/kmh
Transmission:	Auto	Passenger Capacity	84	F <sup>2</sup>	0.16022 N/kmh <sup>2</sup>
Euro VI certificate Y/N	Manufacturer Certified	<b>OK</b>		F <sup>3</sup>	0.000057 N/kmh <sup>3</sup>
Net Heating Energy (MJ/Litre)	36.0		Fuel Provider:	N/A	
Well-to Tank Factor: (g CO <sub>2</sub> e/MJ)	15.4		WTT evidence	DECC Carbon Emission Factors	
			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 <sub>2</sub> (g/km)**	CH <sub>4</sub> (g/km)*	N <sub>2</sub> O (g/km)**	Fuel Consumption (l/100 km)
Rural	0.000	0.0424	0.1626	N/A	580.46	0.000	0.152	21.92
Outer London	0.000	0.0490	0.2075	N/A	619.90	0.000	0.107	23.41
Inner London	0.000	0.1156	0.2194	N/A	860.64	0.000	0.089	32.50
MLTB Average	0.000	0.0676	0.2108	N/A	687.06	0.000	0.102	25.95
<b>LUB Average</b>	<b>0.000</b>	<b>0.0562</b>	<b>0.1890</b>	<b>0.00346</b>	<b>638.94</b>	<b>0.000</b>	<b>0.125</b>	<b>24.13</b>

### 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)*	TTW GHG (CO <sub>2</sub> e (g/km))
Rural	580.46	0.000	45.31	625.77
Outer London	619.90	0.000	31.98	651.88
Inner London	860.64	0.000	26.55	887.19
MLTB Average	687.06	0.000	30.46	717.52
<b>LUB Total Average</b>	<b>638.94</b>	<b>0.000</b>	<b>37.15</b>	<b>676.09</b>

### 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 CO<sub>2</sub> equivalent

Test Phase	Fuel/energy used over cycle (litres/km)	Total Fuel Energy (MJ/km)	Calculated WTT* GHG Emissions (CO <sub>2</sub> Equivalent g/km)	Calculated TTW** GHG Emissions (CO <sub>2</sub> Equivalent g/km)	Calculated WTW*** GHG Emissions (CO <sub>2</sub> Equivalent g/km)
Rural	0.219	7.89	121.66	625.77	747.43
Outer London	0.234	8.43	129.93	651.88	781.81
Inner London	0.325	11.70	180.41	887.19	1067.60
MLTB Average	0.259	9.34	144.05	717.52	861.57
<b>LUB Total Average</b>	<b>0.241</b>	<b>8.69</b>	<b>133.93</b>	<b>676.09</b>	<b>810.01</b>

Data Generated by (On behalf of Test facility):  Data Approved by: 25/02/2016

### Low Emission Bus Certificate Summary

GHG Well-to-Wheel	810.0	g CO <sub>2</sub> e / km
Euro V Average Diesel Equivalent	1271.3	g CO <sub>2</sub> e / km
<b>WTW GHG saving (compared to Euro V equivalent)</b>	<b>461.3</b>	<b>g CO<sub>2</sub>e / km</b>
% WTW GHG saving (compared to Euro V equivalent)	36%	g CO <sub>2</sub> e / km
<b>Zero Emission operating range (km)</b>	<b>N/A</b>	<b>km</b>
WTW CO <sub>2</sub> e per passenger km (@Max Pass Capacity)	9.64	g CO <sub>2</sub> e/pass km
Approved as Low Emission Bus? (15% saving or more)	<b>YES</b>	

\*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 Results: ML02015302= -2.75%, ML02015304= -2.99%, ML02015305= -2.49%. Updated 6 June 2016 with latest DECC carbon emission factors.  
\*\* CO<sub>2</sub> & N<sub>2</sub>O results NOT adjusted for NEC, as interpolation not possible

**Test Numbers:** ML02015302 (12-Jan-2016), ML02015304 (12-Jan-2016), ML02015305 (12-Jan-2016).

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