

Low Emission Bus Scheme Certificate

Customer:	Volvo Bus, Volvo Group UK Limited				
Customer Address:	Wedgnock Lane, Warwick, CV345YA				
Test Purpose:	LEB Testing			DYNAMOMETER SETTINGS	
Vehicle Type & Manufacturer:	Volvo B5LH (Simulated)	Unladen weight (kg)	11500.0	INERTIA	14261 kg
Vehicle Number:	YV3T1U225E1168218	Gross Weight (kg)	19000.0	F°	205.85 N
Engine:	Euro 6 Volvo D5K Hybrid	Max Seated Capacity	79	F ¹	0.7464 N/kmh
Transmission:	Auto	Passenger Capacity	95	F ²	0.16022 N/kmh ²
Euro VI certificate Y/N	Manufacturer Certified	GVW CHECK	OK	F ³	0.000057 N/kmh ³

Declared fuel, properties and source plus carbon conversion factors

Net Heating Value: Diesel	36.00	MJ / Litre	Fuel Provider:	N/A
Well-to-Tank Factor: Diesel	15.40	g CO ₂ e / MJ	WTT evidence	DECC Carbon Emission Factors
Well-to-Tank Factor:		g CO ₂ e / MJ	Fuel Type:	UK 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 Consumed (litres)	Fuel Consumption (l/100 km)
Rural	0.000	0.2389	0.0946	N/A	611.45	0.000	0.168	1.73	23.10
Outer London	0.000	0.3264	0.1173	N/A	664.47	0.000	0.154	1.63	25.11
Inner London	0.000	0.7996	0.2384	N/A	933.13	0.000	0.120	0.88	35.28
MLTB Average	0.000	0.4587	0.1514	N/A	740.11	0.000	0.145	3.36	27.98
LUB Average	0.000	0.3593	0.1254	0.00193	681.48	0.000	0.155	4.25	25.75

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	611.45	0.000	50.05	661.51
Outer London	664.47	0.000	46.01	710.48
Inner London	933.13	0.000	35.68	968.81
MLTB Average	740.11	0.000	43.12	783.23
LUB Total Average	681.48	0.000	46.26	727.74

Well-to-Wheel GHG CO₂ equivalent

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	8.32	128.06	N/A	N/A	661.51	789.56
Outer London	9.04	139.19	N/A	N/A	710.48	849.67
Inner London	12.70	195.57	N/A	N/A	968.81	1164.38
MLTB Average	10.07	155.10	N/A	N/A	783.23	938.32
LUB Total Average	9.27	142.76	N/A	N/A	727.74	870.49

Data Generated by (On behalf of Test facility):		Data Approved by:	28/01/2016
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Low Emission Bus Certificate Summary

GHG Well-to-Wheel	870.5	g CO ₂ e / km
Euro V Average Diesel Equivalent	1374.9	g CO ₂ e / km
WTW GHG saving (compared with Euro V diesel equivalent)	504.4	g CO ₂ e / km
% WTW GHG saving (compared with Euro V diesel equivalent)	37%	g CO ₂ e / km
Max Theoretical Zero Emission Operating Range (km)	N/A	km
WTW CO₂ per passenger km (@ Max Pass Capacity)	9.2	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: * compound measured via Fourier Transfer Infra-Red (FTIR), Values in RED are below levels of detectability.
 NEC Results: ML02015306= -1.8%, ML02015308= -2.19%, ML02015309= -2.37%.
 ** CO₂ & N₂O results NOT adjusted for NEC, as interpolation not possible. Updated 6 June 2016 with latest DECC carbon emission factors

Test Numbers: ML02015306 (13-Jan-16), ML02015308 (13-Jan-16), ML02015309 (13-Jan-16).

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