

Low Emission Bus Scheme Certificate

Customer:	MAN Truck & Bus UK Ltd				
Customer Address:	Frankland Road, Blagrove, Swindon, SN5 8YU				
Test Purpose:	LEB Testing	DYNAMOMETER SETTINGS			
Vehicle Manufacturer:	MAN	Unladen weight (kg)	12156.0	Test Weight	13693 kg
Vehicle Type & Number:	EcoCity; VIN:WMAA69ZZ3HC022970	Gross Weight (kg)	18000.0	F°	67.54 N
Engine:	MAN Euro VI	Seated Capacity	43	F ¹	4.1879 N/kmh
Transmission:	Automatic	Passenger Capacity	70	F ²	0.07999 N/kmh ²
Euro VI certificate Y/N	Manufacturer Certified	GVW Check	OK	F ³	0.000262 N/kmh ³

Declared fuel, properties and source plus carbon conversion factors

Net Heating Value: Bio-Methane	47.89	MJ / kg	Fuel Provider	UK market standard
Well-to-Tank Factor: Bio-Methane	10.00	g CO ₂ e / MJ	WTT evidence	UK GHG reporting factors 2016
Tank-to-Wheel Factor: Bio-Methane	5.49	g CO ₂ e / kg	Fuel Type	UK Bio-Methane

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 (kg/100 km)	Fuel used over cycle (kg/km)
Rural	0.028	0.262	0.498	N/A	918.5	0.008	0.000	33.50	0.335
Outer London	0.039	0.250	0.415	N/A	1239.0	0.009	0.000	45.18	0.452
Inner London	0.060	0.375	1.194	N/A	1766.3	0.020	0.000	64.41	0.644
MLTB Average	0.045	0.285	0.631	N/A	1385.3	0.000	0.000	50.51	0.505
LUB Average	0.037	0.275	0.571	0.0129	1174.7	0.010	0.000	42.84	0.428

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 e (g/km)	CH ₄ (g/km x 25)*	N ₂ O (g/km x 298)*	Fuel TTW** GHG (CO ₂ Equivalent g/km)
Rural	1.8	0.193	0.000	2.0
Outer London	2.5	0.220	0.000	2.7
Inner London	3.5	0.488	0.000	4.0
MLTB Average	2.8	0.000	0.000	2.8
LUB Average	2.4	0.249	0.000	2.6

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	16.04	160.4	N/A	N/A	2.0	162.5
Outer London	21.64	216.4	N/A	N/A	2.7	219.1
Inner London	30.84	308.4	N/A	N/A	4.0	312.5
MLTB Average	24.19	241.9	N/A	N/A	2.8	244.7
LUB Average	20.51	205.1	N/A	N/A	2.6	207.7

Data Generated by (On behalf of Test facility):		Date: 30.06.2017	Data Approved by:		Date: 03/07/2017
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Low Emission Bus Certificate Summary

GHG Well-to-Wheel	207.7	g CO ₂ e / km
Euro V Average Diesel Equivalent	1139.4	g CO ₂ e / km
WTW GHG saving (compared with Euro V diesel equivalent)	931.7	g CO ₂ e / km
% WTW GHG saving (compared with Euro V diesel equivalent)	82%	g CO ₂ e / km
Zero Emission operating range (km)	N/A	km
WTW CO ₂ per passenger km (@ Max Pass Capacity)	3.0	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.	
Bio-methane heating value, well-to-tank and tank-to-wheel factors are default values taken from LowCVP website	
<u>Test Numbers:</u> ML02016581 (29 June 2017), ML02016582 (29 June 2017), ML02016583 (29 June 2017).	
Certificate approved by: On behalf of Bus manufacturer	Certificate Approved by: On behalf of LowCVP/DfT