

Ultra Low Emission Bus Scheme Certificate

Customer:	Pelican Bus and Coach				
Customer Address:	Altofts Lane, Wakefield Europort, Castleford, WF10 5UB				
Test Purpose:	Ultra Low Emissions Bus Testing	DYNAMOMETER SETTINGS			
Vehicle Manufacturer:	Pelican Bus and Coach	Unladen weight (kg)	14395	Test Weight	15796 kg
Vehicle Type & Number:	Yutong - YK66 CBC	Gross Weight (kg)	19500	F ⁰	481.07 N
Engine:	Electric Motor	Seated Capacity	39	F ¹	-6.7900 N/kmh
Transmission:	N/A	Passenger Capacity	75	F ²	0.42029 N/kmh ²
Euro VI certificate Y/N	N/A	GVW Check	OK	F ³	-0.002120 N/kmh ³

Declared fuel, properties and source plus carbon conversion factors

Net Heating Value:	Diesel	N/A	MJ / Litre	Fuel Provider	UK market standard
Well-to-Tank Factor:	Diesel	N/A	g CO _{2e} / MJ	WTT evidence	DBEIS Carbon Conversion Factors 2019
Well-to-Tank Factor:	Electricity	87.77	g CO _{2e} / MJ	Fuel Type	UK Grid Electricity

Emissions and Energy consumption results from approved test facility - Average 4 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)*	Energy Consumption (kWh)	Electrical Energy Consumption (kWh/ 100km)
Outer Urban	0.000	0.000	0.000	0.000	0.000	0.000	0.000	10.41	191.29
Inner Urban	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.81	229.34
Rural	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.46	151.84
<i>LBC Average</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>15.22</i>	<i>201.88</i>
UKBC Average	0.000	0.000	0.000	0.0000	0.000	0.000	0.000	24.68	179.24

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

Total measured energy consumed on vehicle (kWh)**	108.94	Distance in Z.E. mode (km)	65.54	Usable Battery Capacity (kWh)	295.0
Measured grid energy during charging (kWh)	129.60	Charging efficiency (%)	84%	Max Theoretical Z.E. Range (km)	195.8

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)
Outer Urban	0.000	0.000	0.000	0.000
Inner Urban	0.000	0.000	0.000	0.000
Rural	0.000	0.000	0.000	0.000
<i>LBC Average</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>	<i>0.000</i>
UKBC Average	0.000	0.000	0.000	0.000

Calculated total Well-to-Wheel GHG CO₂ equivalent emissions over test

Test Phase	Fuel Energy (MJ / km)	Fuel WTT*GHG Emissions (g CO _{2e} / km)	Electrical Energy (MJ / km)	Electricity WTT* GHG Emissions (g CO _{2e} / km)	Measured Fuel TTW** GHG Emissions (g CO _{2e} / km)	Total WTW*** GHG Emissions (g CO _{2e} / km)
Outer Urban	N/A	N/A	6.89	604.44	0.00	604.44
Inner Urban	N/A	N/A	8.26	724.64	0.00	724.64
Rural	N/A	N/A	5.47	479.77	0.00	479.77
<i>LBC Average</i>	<i>N/A</i>	<i>N/A</i>	<i>7.27</i>	<i>637.87</i>	<i>0.00</i>	<i>637.87</i>
UKBC Average	N/A	N/A	6.45	566.35	0.00	566.35

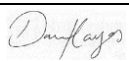
Data Generated by (On behalf of Test facility):	Date: 01.08.2019	Data Approved by:	Date: 01.08.2019
---	------------------	-------------------	------------------

Ultra Low Emission Bus Certificate Summary

GHG Well-to-Wheel	566.3	g CO _{2e} / km
Euro V Average Diesel Equivalent	1186.5	g CO _{2e} / km
WTW GHG saving (compared with Euro V diesel equivalent)	620.2	g CO _{2e} / km
% WTW GHG saving (compared with Euro V diesel equivalent)	52%	g CO _{2e} / km
Zero Emission operating range (km)	195.8	km
WTW CO ₂ per passenger km (@ Max Pass Capacity)	7.6	g CO _{2e} /pass km
Approved as Ultra Low Emission Bus? (30% 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.
******Total measured energy includes energy used during the 23 minute warmup, this is needed for charge efficiency calculation

Test Numbers:	ML02017776 (19-February-2018), ML02017777 (19-February-2018), ML02017778 (19-February-2018), ML02017779 (19-February-2018).		
Certificate approved by:	Certificate Approved by:	Daniel Hayes	
On behalf of Bus manufactur:	On behalf of LowCVP/DfT	29-Jul-19	