LowCVP Low Carbon Vehicle Partnership

Approved Test facility MILLBROOK

Low Emission Bus Scheme Certificate

Customer:	**BYD Europe B.V.**				
Customer Address:	**s-Gravelandseweg 256, 3125 BK, Schiedam, Netherlands**				
Test Purpose:	**LEB Energy Consumption Testing**			**DYNAMOMETER SETTINGS**	
Vehicle Manufacturer:	**BYD**	*Unladen weight (kg)*	12603.0	Test Weight	13868 kg
Vehicle Type & Number:	**BYD eBus**	*Gross Weight (kg)*	18700.0	F°	329.76 N
Engine:	**Electric Motor**	*Seated Capacity*	35	F^1	-6.7904 N/kmh
Transmission:	**N/A**	*Passenger Capacity*	***70***	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 CO2e / MJ	*WTT evidence*	**UK GHG reporting factors 2016**
Well-to-Tank Factor: ***Electricity***	**87.77**	g CO2e / MJ	*Fuel Type**	**UK Grid Electricity inc. WTT + T&D**

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_2O (g/km)*	Energy Consumption (KWhr)	Electrical Energy Consumption (kWh/ 100 km)
Rural	0.00	0.00	0.00	0.000	0.00	0.000	0.000	**5.52**	**81.8**
Outer London	0.00	0.00	0.00	0.000	0.00	0.000	0.000	**4.72**	**79.7**
Inner London	0.00	0.00	0.00	0.000	0.00	0.000	0.000	**2.21**	**95.9**
MLTB Average	0.00	0.00	0.00	0.0000	0.00	*0.000*	*0.000*	**6.92**	**84.2**
LUB Average	**0.00**	**0.00**	**0.00**	**0.0000**	**0.00**	**0.000**	**0.000**	**12.45**	**83.1**

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

Total measured energy consumed on vehicle (kWh)	***49.80***	**Distance in Z.E. mode (km)**	***65.10***	**Usable Battery Capacity (kWh)**	**345.0**
Measured grid energy during charging (kWh)	***54.13***	**Charging efficiency (%)**	***92%***	**Max Theoretical Z.E. Range (km)**	**451.0**

Total Tank-to-Wheel GHG CO_2 equivalent

Test Phase	CO_2 (g/km)	CH_4 (g/km x 25)*	N_2O (g/km x 298)*	Fuel TTW** GHG (CO2 Equivalent g/km)
Rural	0.00	0.000	0.00	0.00
Outer London	0.00	0.000	0.00	0.00
Inner London	0.00	0.000	0.00	0.00
MLTB	*0.00*	*0.000*	*0.00*	*0.00*
LUB Total Average	***0.00***	***0.000***	***0.00***	***0.00***

Calculated total Well-to-Wheel GHG CO_2 equvialent 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)
Rural	0.00	0.00	2.95	258.49	0.00	258.49
Outer London	0.00	0.00	2.87	251.75	0.00	251.75
Inner London	0.00	0.00	3.45	303.04	0.00	303.04
MLTB	0.00	0.00	3.03	266.10	0.00	266.10
LUB Total Average	**0.00**	**0.00**	**2.99**	**262.67**	**0.00**	**262.67**

Data Generated by (On behalf of Test facility): *Insert Date*	*Data Approved by:* *Insert Date*

Low Emission Bus Certificate Summary

GHG Well-to-Wheel	***262.7***	**g CO2e / km**
Euro V Average Diesel Equivalent	***1139.4***	**g CO2e / km**
WTW GHG saving (compared with Euro V diesel equvialent)	***876.7***	**g CO2e / km**
% WTW GHG saving (compared with Euro V diesel equvialent)	***77%***	**g CO2e / km**
Max Theoretical Zero Emission Operating Range (km)	***451.0***	**km**
WTW CO2 per passenger km (@ Max Pass Capacity)	**3.8**	**g CO2e/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. UK Grid Electricity WTT factor includes transmission and distribution loses (T&D) and well-to-tank emissions for generation and T&D. ǂBased on LEB Test Guidance notes for EV vehicles (4 x LUB Cycles as ZEC Vehicle). ǂǂ Value calculated based on Total energy used during testing and CLAIMED charging efficiency. ǂǂǂRange calculation assumed full operation from 100% to 0% with a linear reduction of 3.6% battery capacity per 16.3 km test cycle.

Test Numbers: ML02015809 (08-September-2016), ML02015810 (08-September-2016), ML02015811 (08-September-2016), ML02015812 (08-September-2016).

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