

Low Emission Bus Scheme Certificate *

Customer:	Switch Mobility				
Customer Address:	Hurricane Way, Sherburn Ind. Estate, Sherburn-in-Elmet				
Test Purpose:	LEB Testing	Unladen weight (kg)	6902	DYNAMOMETER SETTINGS	
Vehicle Manufacturer:	Switch Mobility Ltd **	Gross Weight (kg)	11300	Test Weight	8167 kg
Vehicle Type & Number:	Optare Solo (simulating 9.9m Variant)	Seated Capacity	35	F°	174.98 N
Engine:	Cummins Euro VI - 150HP Calibration	Passenger Capacity	51	F¹	-4.7462 N/kmh
Transmission:	Automatic	Simulated Pass Weight (kg)	1265.00	F²	0.30388 N/kmh²
Euro VI certificate Y/N	Manufacturer Certified	GVW & Test Weight Check	OK	F³	-0.002251 N/kmh³

Declared fuel, properties and source plus carbon conversion factors

Net Heating Value: Diesel	36.00	MJ / Litre	Fuel Provider	UK market standard	
Well-to-Tank Factor: Diesel	15.42	g CO ₂ e / MJ	WTT evidence	UK GHG reporting factors 2016	
Well-to-Tank Factor: Electricity	143.50	g CO ₂ e / MJ	Fuel Type	UK Pump Diesel, UK Grid Electricity	

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 (l/100 km)	Fuel used over cycle (litres)
Rural	0.001	0.009	0.089	N/A	508.2	0.000	0.033	19.19	1.42
Outer London	0.003	0.018	0.031	N/A	649.2	0.000	0.047	24.52	1.58
Inner London	0.008	0.023	0.232	N/A	958.1	0.000	0.064	36.18	0.89
MLTB Average	0.005	0.019	0.087	N/A	735.2	0.000	0.052	27.76	1.65
LUB Average	0.003	0.014	0.088	0.0031	632.5	0.000	0.043	23.88	3.90

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	508.2	0.000	9.805	518.0
Outer London	649.2	0.000	14.013	663.2
Inner London	958.1	0.000	18.995	977.1
MLTB Average	735.2	0.000	15.395	750.6
LUB Average	632.5	0.000	12.860	645.3

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	6.91	106.54	N/A	N/A	518.02	624.56
Outer London	8.83	136.10	N/A	N/A	663.23	799.34
Inner London	13.03	200.86	N/A	N/A	977.12	1177.98
MLTB Average	10.00	154.13	N/A	N/A	750.59	904.71
LUB Average	8.60	132.59	N/A	N/A	645.31	777.90

Data Generated by (On behalf of Test facility):	Date:	Data Approved by:	Date:
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Low Emission Bus Certificate Summary

GHG Well-to-Wheel	777.9	g CO ₂ e / km
Euro V Average Diesel Equivalent	960.4	g CO ₂ e / km
WTW GHG saving (compared with Euro V diesel equivalent)	182.5	g CO ₂ e / km
% WTW GHG saving (compared with Euro V diesel equivalent)	19%	g CO ₂ e / km
Zero Emission operating range (km)	N/A	km
WTW CO ₂ per passenger km (@ Max Pass Capacity)	15.3	g CO ₂ e/pass km
Certificate valid for seated capacity range of +/- 5	24-40 seats, 39-56 Total Passengers	Passengers
Approved as Low Emission Bus? (15% saving or more)	YES	

NOTE: WTT : Well-to-Tank TTW : Tank-to-Wheel WTW : Well-to-Wheel

COMMENTS: Emission results marked in red are below detection levels.

*Update Feb 2025: Certificate amended to accommodate shorter, lighter 8.5m and 7.9m variants of original test model.

** Optare Group Ltd now trades as Switch Mobility Ltd

***N₂O result is average of two tests (ML02016473_74) due to equipment failure during ML02016475

Test Numbers: ML02016473 (10 May 2017), ML02016474 (10 May 2017), ML02016475 (10 May 2017).

Certificate approved by:	Certificate Approved by:	Daniel Hayes	08/03/2019
On behalf of Bus manufacturer	On behalf of LowCVP/DFT	LowCVP	