Test Report		Report Number :	ETC06-D- 0737
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Date :	6th June 2006		Page 1 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
Engine Capacity :	2986 cc		
Vehicle weight :	Gross 2.8 tones		Registration Number : LE5311

Vehicle Emission Tests

Customer Name : Department of Mechanical Engineering
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Attn : Ir K.K. Lo

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Test date : 6th June 2006		
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Test Report		Report Number :	ETC06-D- 0737
Test Report of 88/69/EC Emission Results			
Date :	6th June 2006		Page 2 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
Engine Capacity :	2986 cc		
Vehicle weight :	Gross 2.8 tones		Registration Number : LE5311

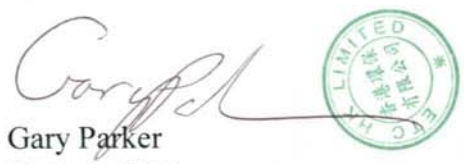
The above vehicle was tested hot one time without the Windex solution on the 23rd May 2006 and the vehicles odometer reading was 93463 km. The tests followed the 98/69/EC type 1 test procedure and the above vehicle was also tested again on the 6th June 2006, the results from these tests are reported below with a Odometer reading of 84916 km. On both occations a free acceleration smoke test was carried out after the emission test on chasssis dyno using Hartridge Smoke Units (HSU).

Measurement from a hot engine							
Result (g/km Grams per kilometer) g/km from the above mentioned vehicle.							
Test number	CO g/km	CO x 1.1 g/km	Nox g/km	HC g/km	HC + Nox g/km	PM g/km	HSU Smoke
23rd May 2006 Without Windex treatment	1.04009	1.144099	0.41329	0.04010	0.45339	0.04267	12.1
6th June 2006 After Windex treatment	0.62220	0.684420	0.32851	0.01948	0.34799	0.03265	8.0
Percentage reduction	**40.18**	**40.18**	**20.51**	**51.42**	**23.25**	**23.49**	**33.88**

The Limit for N2 Class as set by the 98/69/EC Regulation is as follows : CO: 0.74g/km, HC + Nox 0.46 g/km, PM 0.06 g/km

This report is invalid without a signature

Signed



Gary Parker
Technical Director
ETC HK Ltd.

Note: N2 Class = Unladen weight below 2840kg and GVW below 12000kg

This vehicle does not fall into the N2 class

Test Report		Report Number :	ETC06-D- 0737
Vehicle on Chassis Dynamometer Picture			
Date :	6th June 2006		Page 3 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
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Vehicle Registration Number : LE5311

Vehicle Exhaust Photographs

Front

Middle section

Rear Section

Test Report		Report Number :	ETC06-D- 0737
Equipment List			
Date :	6th June 2006		Page 4 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
Engine Capacity :	2986 cc		
Vehicle weight :	Gross 2.8 tones		Registration Number : LE5311

Description	Equipment List
HC Analyser	Signal 3000HM Analyser Heated Flame Ionization Detector (HFID)
Nox Analyser	Signal 4000VM Chemiluminesant Analyser Nitric Oxide (NOX)
CO Analyser	Signal 7000M NDIR Carbon Monoxide (CO)
CO_2 Analyser	Signal 7000M NDIR Carbon Dioxide (CO_2)
O_2 Analyser	Signal 8000M not used for regulation testing.
Gas divider	Signal 821
Nox efficiency tester	Signal Noxgen 3
Emission System controller	Signal Maxsys 900 Series 102 System Controller
Constant Volume Sampler (CVS) with CFV	Signal CVS with Changeable Critical Flow venturies capable of test both Diesel and Gasoline engines.
Chassis dynamometer	Superflow Chassis Dynamometer and CP Engineering control system which can be used for testing four wheel drive vehicles, two wheel drive and Motorcycles, Maximum axle weight 4200kg
Motorcycle Chassis Dyno	CP Engineering Motorcycle Chassis dynamometer
Cadet V12 Software	The CP Engineering software controls both the chassis dyno's the Signal emission system and drivers aid
Diesel Particulate paper weighing Scales	Sartorius Micro Balance, Contained with in an environment control room.

Test Report		Report Number :	ETC06-D- 0737
Raw Results of Emission			
Date :	6th June 2006		Page 5 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
Engine Capacity :	2986 cc		
Vehicle weight :	Gross 2.8 tones		Registration Number : LE5311

Raw Results of Emission test to 98/69/EC regulation

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PHASE 1 RESULTS

NOX Humidity Correction .96
Effective Phase Dilution Factor 17.28
Distance (km) 10.97

Gas	Sample	Ambient	Corrected	Mass	Mass/km
NOx ppm	12.21	0.24	11.98	4.53383	0.41329
CO ppm	49.20	2.01	47.31	11.40976	1.04009
CO2 %	0.77	0.03	0.74	2810.85293	256.23090
O2 %	0.00	0.00	0.00	0.00000	0.00000
THC ppm	6.83	3.34	3.68	0.43992	0.04010

Test Report		Report Number :	ETC06-D- 0737
Raw Results of Particulates			
Date :	6th June 2006		Page 6 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
Engine Capacity :	2986 cc		
Vehicle weight :	Gross 2.8 tones		Registration Number : LE5311

Raw Results of Particulate Mass to 98/69/EC regulation

Particulate Measurement

	Before Test mg	After Test mg	Total mg
Paper 1	320.573	320.896	0.323
Paper 2	323.377	323.498	0.121

0.444 Total mg

Pe 0.000444 Total g

192951 **Vmix** Volume through the system (Litres)

183 **Vep** Volume through the particulate papers (Litres)

10.97 **d** Total distance driven km

$$Mp = \frac{Vmix * Pe}{Vep \times d} = \frac{85.670244}{2007.51}$$

Mp Particulate Mass 0.0426749 g/km

Test Report		Report Number :	ETC06-D- 0737
Raw Results of Emission			
Date :	6th June 2006		Page 7 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
Engine Capacity :	2986 cc		
Vehicle weight :	Gross 2.8 tones		Registration Number : LE5311

Raw Results of Emission test to 98/69/EC regulation

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PHASE 1 RESULTS

NOX Humidity Correction .96
Effective Phase Dilution Factor 17.32
Distance (km) 10.98

Gas	Sample	Ambient	Corrected	Mass	Mass/km
NOx ppm	10.28	0.75	9.57	3.60705	0.32851
CO ppm	31.08	2.80	28.44	6.83179	0.62220
CO2 %	0.77	0.04	0.73	2763.79388	251.71165
O2 %	0.00	0.00	0.00	0.00000	0.00000
THC ppm	4.21	2.56	1.80	0.21384	0.01948

Test Report		Report Number :	ETC06-D- 0737
Raw Results of Particulates			
Date :	6th June 2006		Page 8 of 8
Vehicle Make :	Toyota		
Vehicele Model :	Hiace		Issue 1
Year :	2003		
Chassis Number :	JT721LHH206116484		
Engine Number :	5L-9814521		
Engine Capacity :	2986 cc		
Vehicle weight :	Gross 2.8 tones		Registration Number : LE5311

Raw Results of Particulate Mass to 98/69/EC regulation

Particulate Measurement

	Before Test mg	After Test mg	Total mg
Paper 1	324.902	325.205	0.303
Paper 2	323.324	323.368	0.044

0.347 Total mg

Pe 0.000347 Total g

192163 **Vmix** Volume through the system (Litres)

186 **Vep** Volume through the particulate papers (Litres)

10.98 **d** Total distance driven km

$$Mp = \frac{Vmix * Pe}{Vep \times d} = \frac{66.680561}{2042.28}$$

Mp Particulate Mass 0.0326501 g/km