

No.: WJ CA7180A2E/2003-5369

Test Report

Emissions Comparison Test

Fuel Consumption Comparison Test

Retest after 9000 km using original baseline from Dec 1-4 test series

Testing Sample: Passenger Car

Brand: Hongqi

Model: CA7180A2E

Client: Beijing Marr Green Plus Environment Technology Limited

Test Type: Commission

Beijing Automobile Research Institute

Test Report

Test Center

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Name of Testing Sample	Passenger Car	Brand	Hongqi																												
Model of Testing Sample	CA7180A2E	Manufacturing Date	Oct. 2002																												
Client	Beijing Marr Green Plus Environment Technology Limited																														
Manufacturer	China FAW Passenger Cars Co. Ltd.																														
Test Venue	Beijing Automobile Research Institute																														
Test Type	Commission	Commission Date	Feb.12, 2004																												
Quantity of Product	1	Mandator	Fung Qinghua																												
Test Basis	<ol style="list-style-type: none"> GB 18352.2-2001 Limited Value & Test Method of Light Vehicle Emissions GB/T 3845-93 Emissions Test Method of Gasoline Vehicle at Idle e Speed DB11/044-1999 Emissions Standard of Gasoline Vehicle at Twin-Idle-Speed GB/T 12545.1-2001 Motor Vehicle Fuel Consumption Test Method 																														
Test Items	<ol style="list-style-type: none"> Emissions Comparison Test of Light Vehicle Fuel Consumption Comparison Test of Passengers Car 																														
Test Results	<p>The emissions and the fuel consumption before and after adding the additive Green Plus into the car CA7180A2E (After adding Green Plus, the car is driven 5-10km and then is tested).</p> <p style="text-align: center;">Comparison Test Result of Emissions</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Emissions</th> <th>CO g/km</th> <th>HC g/km</th> <th>NOx g/km</th> <th>CO2 g/km</th> </tr> </thead> <tbody> <tr> <td>Average of Original Car</td> <td>4.740</td> <td>0.638</td> <td>0.740</td> <td>227.68</td> </tr> <tr> <td>Average of Original Car + Green Plus</td> <td>3.332</td> <td>0.460</td> <td>0.531</td> <td>204.76</td> </tr> <tr> <td>Change Rate</td> <td>29.70%</td> <td>27.9%</td> <td>28.2%</td> <td>10%</td> </tr> </tbody> </table> <p style="text-align: center;">Comparison Test Result of Fuel Consumption</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Average of Original Car (L/100km)</th> <th>Average of Original Car + Green Plus (L/100km)</th> <th>Change Rate %</th> </tr> </thead> <tbody> <tr> <td>11.406</td> <td>10.670</td> <td>6.45%</td> </tr> </tbody> </table> <p style="text-align: right;">Issuing Date: March.3, 2004</p>					Emissions	CO g/km	HC g/km	NOx g/km	CO2 g/km	Average of Original Car	4.740	0.638	0.740	227.68	Average of Original Car + Green Plus	3.332	0.460	0.531	204.76	Change Rate	29.70%	27.9%	28.2%	10%	Average of Original Car (L/100km)	Average of Original Car + Green Plus (L/100km)	Change Rate %	11.406	10.670	6.45%
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Remarks	No remark																														

Approved by: Jiang Sheng

Verified by: Xiao Yaping

Tested by: Zhao Yang

Appendix

1. Summary

1.1 Test Basis

- 1.1.1 GB 18352.2-2001 Limited Value & Test Method of Light Vehicle Emissions
- 1.1.2 GB/T 3845-93 Emissions Test Method of Gasoline Vehicle at Idle Speed
- 1.1.3 DB11/044-1999 Emissions Standard of Gasoline Vehicle at Twin-Idle-Speed
- 1.1.4 GB/T 12545.1-2001 Motor Vehicle Fuel Consumption Test Method

1.2 Test Object

Entrusted by Beijing Marr Green Plus Environment Technology Limited, emission and fuel consumption of the provided light car CA7180A2E are tested before and after adding the additive Green Plus (After adding Green Plus, the testing car is driven 5-10km and then is tested).

1.3 Test Products

The products to be tested are a car and the additive Green Plus (Chart 1)

Chart 1 Detail Record of the Testing Sample

No. of the Test Car		2003-5369
Reference Weight kg		CA7180A2E
Equivalent Inertia kg/lb		1400
VIN		1360/2998
Manufacturer of the Car		China FAW Passenger Cars Co. Ltd.
Transmission		Hand movement, 5 gears
Tire Pressure of Driving Wheel kpa	Specified Number	200
	Adjusting Number	300
Engine		Multipoint Electronic Spay, Closed Loop
Engine Model		CA4GE/74
Serial No. of Engine		00046178
Manufacturer of Engine		China FAW Passenger Cars Co. Ltd.
Rated Power kw		70
Output L		1.8
Quantities of Cylinders		4
Model of Oxygen Sensor		5WP5003
Manufacturer of Oxygen Sensor		China FAW - Passenger Cars Co. Ltd.
Model of ECU		Yes (Model No. unfound)
Manufacturer of ECU		-----
Catalytic Reactor Model		Yes (Model No. unfound)
Manufacturer of Catalytic Reactor		-----
Mode of Carbon Pot I		Yes (Model No. unfound)
Manufacturer of Carbon Pot		-----
Crankcase Ventilation System		Closed Cycle
Fuel		Octane 93#
Odometer Reading km		55830
Other Clarifier		Additive Green Plus

1.4 Test Date: Feb.13, 2004

1.4 Inspector: Zhao Yang, Cao Hui from BARI

2. Test Conditions

2.1 Atmospheric Environment

2.1.1 Laboratory Environment Conditions (Chart 2)

Chart 2 Laboratory Environment Conditions

No. of the Vehicle	2004-5369 Original Vehicle	2004-5369 Original Vehicle	2004-5369 Original Vehicle +Additive-	2004-5369 Original Vehicle +Additive-
Barometric Pressure kPa	102.1	102.5	102.2	102.1
Dry-bulb Temperature	23.4	21.4	24.9	24.0
Wet-bulb Temperature	14.1	12.8	14.8	14.6
Relative Humidity %	35	36	33	35

3. Test Equipment

Chart 3 The Main Test Equipment

Equipment	Model	Percent of Accuracy	Manufacturer
Dynamometer	ECE-50	5%	CLAYTON
Exhaust Gas Instrument	8000 B	1%	ANACON
CFV	8000 C	0.3 %	ANACON
General Measuring Instrument	DZM2-3	0.4m/s	Changchun Meteorological Plant
Advanced Digital Piming Analyzer	4165	± 0.5%	American Kalequip Co. Ltd.
Emission Analysis Meter at Idle Speed	488	2% (repeatability error)	Italian Parma Co. Ltd.

4. Test Result

4.1 Vehicle Gliding Resistance Set-up

4.1.1 Gliding Test Result on Dynamometer

The absorption P=7.0 kw (80km/h) recommended in GB 18352.2-2001 is accepted in Gliding Test Result on Dynamometer

4.2 Comparison Test Result of Vehicle Emissions at Idle Speed

Chart 4 Comparison Test Results of Vehicle Emissions at Idle Speed

	CO %		HC ppm	
R/min	800	2000	800	2000
Original Vehicle	<0.05	<0.05	<10	<10
Original Vehicle+additive	<0.05	<0.05	<10	<10

4.3 Comparison Test Result of Automobile Emission

Chart 5 Comparison Test Result of Automobile Emission

		CO g/km	HC g/km	NOx g/km	CO2 g/km
Baseline	First Test	5.249	0.729	0.817	216.97
	Second Test	4.231	0.548	0.663	238.40
	Average	4.740	0.638	0.740	227.685
Treated by Additive	First Test	3.332	0.460	0.531	204.766
	Second Test				
	Average	3.332	0.460	0.531	204.766
Change Rate		29.70%	27.9%	28.2%	10%

4.4 Comparison Test Result of Automobile Fuel Consumption

Chart 6 Comparison Test Result of Automobile Fuel Consumption

		Fuel Consumption (L/100km)
Baseline	First Test	11.371
	Second Test	11.441
	Average	11.406
Treated by Additive	First Test	10.670
	Second Test	
	Average	10.670
Change Rate		6.45%