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Prepared By: Debbie Messick
Approved By: Grant Farrand
Approval Date: 06/30/09

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:  
Acceptance Date:  

June 30, 2009
Compliance tests were conducted on the subject 2009 Hyundai Genesis Passenger Car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-104-08 for the determination of FMVSS 104 compliance. Test failures identified were as follows:

NONE
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SECTION 1
PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2009 Hyundai Genesis Passenger Car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 104 testing to determine if the vehicle was in compliance with the requirements of the standard. All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-104-08 dated 26 June 1996 and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-104-08A dated 4 April 1997.

1.1 The test vehicle was a 2009 Hyundai Genesis Passenger Car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: KMHGC46E89U025598

B. NHTSA No.: C90501

C. Manufacturer: HYUNDAI MOTOR COMPANY

D. Manufacture Date: JUN/20/08

E. Color: Silver

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 104 testing on May 19, 2009.
SECTION 2

COMPLIANCE TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 GENERAL

The 2009 Hyundai Genesis passenger car, NHTSA No. C90501 was subjected to FMVSS No. 104 tests on May 19, 2009. The selected portions of FMVSS No. 104 tests used were as amplified in the following subparagraphs. The test vehicle was positioned in the test system with three water spray nozzles suspended in line with the center of the longitudinal axis of the windshield and horizontal left/right center of the windshield to provide an even distribution of spray to the entire windshield. The height of the nozzles was approximately 22 inches above the glazing surface.

2.1 WIPER FREQUENCY TEST

The wiper frequency test was performed with the engine operating and with a minimum of 50 cubic inches per minute of water from the spray nozzles. The wiper frequency was measured at the low and high wiper speed settings with the engine operating at idle RPM and 2,000 RPM.

2.2 WIPED AREA TEST

The test was conducted with the windshield wiper system operating at the high speed setting, engine at idle RPM and the spray nozzles spraying water at a minimum of 50 cubic inches per minute. The wiper blade wipe pattern was outlined on the glazing surface and then transferred to a windshield pattern. The wiped area was determined for areas A, B and C from the windshield pattern.

2.3 CAPABILITY TEST

The windshield glazing surface was coated with a mixture of water and fine grade test dust. Within 15 seconds following application of the water-dust mixture, the windshield wiper and washing system was activated in the high speed mode for ten complete cycles. The vehicle’s engine was operating at idle RPM. The cleared areas of the windshield were marked on the inside windshield surface. After ten complete cycles the system was deactivated and the wiped area transferred to a windshield pattern.

The glazing surface was cleaned and dried. The water dust mixture was re-applied and the test repeated.

The windshield patterns were used subsequently to determine the cleared area percentages.

2.4 SUMMARY OF RESULTS

Based on the test performed, the test vehicle’s windshield wiping and washing system appears to meet the requirements of FMVSS 104.
3.0 TEST RESULTS

The following data sheets document the results of testing on the 2009 Hyundai Genesis.
SUMMARY OF DATA
FMVSS 104, WINDSHIELD WIPING AND WASHING SYSTEMS

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HYUNDAI GENESIS PASSENGER CAR
VEH. NHTSA NO: C90501; VIN: KMHGC46E89U025598
VEH. BUILD DATE: JUN/20/08 TEST DATE: MAY 19, 2009
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

WIPER TYPE: 2 SPEED ELECTRIC WITH DELAY
WASHER TYPE: HIGH PRESSURE ELECTRIC
WINDSHIELD AREAS: A = 1045 in² B = 727 in² C = 237 in²
MANUFACTURER’S WINDSHIELD PATTERN USED: Yes X No
ACCESSIBILITY:
(1) Washer Control Accessible: Yes X No
(2) Wiper Control Accessible: Yes X No
(3) Washer Reservoir Filler Accessible: Yes X No

DESCRIBE UNUSUAL FEATURES OF WIPING AND WASHING SYSTEMS:

PERFORMANCE:

<table>
<thead>
<tr>
<th>TEST</th>
<th>PASS</th>
<th>FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIPER FREQUENCY</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>WIPED AREA</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>WASHER CAPABILITY</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

RECORDED BY: G. FARRAND DATE: 05/19/09
APPROVED BY: D. MESSICK
FREQUENCY TEST DATA
FMVSS 104 – WINDSHIELD WIPER SYSTEM

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HYUNDAI GENESIS PASSENGER CAR
VEH. NHTSA NO: C90501; VIN: KMHGC46E89U025598
VEH. BUILD DATE: JUN/20/08 TEST DATE: MAY 19, 2009
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

Water Hardness: 7.0 grains/gallon (12 max.); Date Certified: 05/09

Water Spray Flow Rate: 75 in\(^3\)/min. (specified range = 50 to 100 in\(^3\)/min.)

Ambient Air Temp.: 79 \(\text{°F}\) (50-100\(\text{°F}\)); Water Temp.: 67 \(\text{°F}\) (100\(\text{°F}\) max.)

Manufacturer’s Recommended Engine Idle Speed: 650 rpm

RUN 1, MAXIMUM WIPER FREQUENCY TEST:

<table>
<thead>
<tr>
<th>TIME</th>
<th>ENGINE SPEED</th>
<th>TOTAL CYCLES</th>
<th>AVG. CYCLES/MIN. (45 MINIMUM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(^{st}) 3 minutes</td>
<td>650 (idle ± 50 rpm)</td>
<td>194</td>
<td>64.6</td>
</tr>
<tr>
<td>2(^{nd}) 3 minutes</td>
<td>2000 (2000 rpm ± 50 rpm)</td>
<td>192</td>
<td>64.0</td>
</tr>
</tbody>
</table>

Frequency at least 45 cycles/minute regardless of engine speed: Yes X No __

RUN 2, LOWER WIPER FREQUENCY TEST:

<table>
<thead>
<tr>
<th>TIME</th>
<th>ENGINE SPEED</th>
<th>TOTAL CYCLES</th>
<th>AVG. CYCLES/MIN. (20 MINIMUM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(^{st}) 3 minutes</td>
<td>650 (idle ± 50 rpm)</td>
<td>129</td>
<td>43.0</td>
</tr>
<tr>
<td>2(^{nd}) 3 minutes</td>
<td>2000 (2000 rpm ± 50 rpm)</td>
<td>130</td>
<td>43.3</td>
</tr>
</tbody>
</table>

Highest and lower frequency differ by at least 15 cycles/minute, and lower frequency is at least 20 cycles/minute regardless of engine speed: Yes X No __

REMARKS:

RECORDED BY: G. FARRAND DATE: 05/19/09
APPROVED BY: D. MESSICK
WIPED AREA TEST DATA
FMVSS 104 – WINDSHIELD WIPER SYSTEM

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HYUNDAI GENESIS PASSENGER CAR
VEH. NHTSA NO: C90501; VIN: KMHGC46E89U025598
VEH. BUILD DATE: JUN/20/08; TEST DATE: MAY 19, 2009
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

Air Temperature in test area = 83 °F (specified range of 50 to 100°F)
Air Velocity at windshield = .1 mph (specified range of 0 to 1 mph)
Engine speed = 650 rpm (manufacturer’s recommended idle ± 50 rpm)
Temperature of water spray = 75 °F (100°F maximum)
Water spray flow rate = 75 in³/min. (specified range of 50 to 100 in³/min.)
Windshield wiper frequency = 64 cycles/min. (45 cpm minimum)

TEST RESULTS:

<table>
<thead>
<tr>
<th>WINDSHIELD AREA</th>
<th>ACTUAL</th>
<th>REQUIRED</th>
<th>PASS</th>
<th>FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>94.3%</td>
<td>80%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>96.3%</td>
<td>94%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>100%</td>
<td>99%</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

REMARKS:

RECORDED BY: G. FARRAND DATE: 05/19/09
APPROVED BY: D. MESSICK
CAPABILITY TEST DATA
FMVSS 104 – WINDSHIELD WASHER SYSTEM

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HYUNDAI GENESIS PASSENGER CAR
VEH. NHTSA NO: C90501; VIN: KMHGC46E89U025598
VEH. BUILD DATE: JUN/20/08; TEST DATE: MAY 19, 2009
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE

Air Temperature in test area = 83 °F (specified range of 70 to 80°F)

Washer reservoir fluid temperature = 78 °F (specified range of 70 to 80°F)

Air Velocity at windshield = .1 mph (specified range of 0 to 1 mph)

Engine speed = 650 rpm (manufacturer’s recommended idle ± 50 rpm)

Number of windshield washer nozzles on the vehicle = 2

Windshield washer system activation coordinated with components of the wiper system:
Yes X No

TEST RESULTS:

<table>
<thead>
<tr>
<th>WINDSHIELD AREA</th>
<th>TEST 1</th>
<th>TEST 2</th>
<th>AVG</th>
<th>REQ'D*</th>
<th>PASS</th>
<th>FAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>95.3</td>
<td>95.3</td>
<td>95.3</td>
<td>75%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>97.1</td>
<td>97.1</td>
<td>97.1</td>
<td>75%</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>75%</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

*NOTE FOR REFERENCE ONLY: SAE 942b, revised Jul72, recommends capability to clear 80% of the total wash area and 90% of the wash area included in AREA C.

REMARKS:

RECORDED BY: G. FARRAND          DATE: 05/19/09
APPROVED BY: D MESSICK
## TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DESCRIPTION</th>
<th>MODEL/ SERIAL NO.</th>
<th>CAL. DATE</th>
<th>NEXT CAL. DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIMER</td>
<td>ACCU-SPLIT</td>
<td>ACT1</td>
<td>05/09</td>
<td>05/10</td>
</tr>
<tr>
<td>TEMPERATURE READOUT</td>
<td>FLUKE</td>
<td>7471026</td>
<td>JUN/20/08</td>
<td>10/09</td>
</tr>
<tr>
<td>TEMPERATURE RECORDER</td>
<td>FLUKE</td>
<td>7471026</td>
<td>JUN/20/08</td>
<td>10/09</td>
</tr>
<tr>
<td>SPRAY SYSTEM</td>
<td>GTL</td>
<td>N/A</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
<tr>
<td>ANEMOMETER</td>
<td>OMEGA</td>
<td>19353-56</td>
<td>06/08</td>
<td>06/09</td>
</tr>
<tr>
<td>CYCLE COUNTER</td>
<td>GTL</td>
<td>GTL</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
<tr>
<td>SOFT WATER</td>
<td>N/A</td>
<td>N/A</td>
<td>05/09</td>
<td>05/10</td>
</tr>
<tr>
<td>TACHOMETER</td>
<td>MONARCH</td>
<td>ACT-3</td>
<td>05/09</td>
<td>05/10</td>
</tr>
<tr>
<td>TEST DUST</td>
<td>AC</td>
<td>GM FINE</td>
<td>CALIBRATED</td>
<td>CALIBRATED BY VENDOR*</td>
</tr>
</tbody>
</table>

*AC Inspection #503, Batch #1943, Measured with particle size roller analyzer.
SECTION 5

PHOTOGRAPHS
FIGURE 5.1
LEFT SIDE VIEW OF VEHICLE
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 104

FIGURE 5.3
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE
FIGURE 5.4
¾ REAR VIEW FROM RIGHT SIDE VIEW OF VEHICLE
MANUFACTURED IN KOREA BY
HYUNDAI MOTOR COMPANY

JUN/20/08   GVWR 4850 lbs   PAINT AU
GAWR 2646 lbs   GAWR 2756 lbs   TRIM BR
FRONT   REAR

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S.A. FEDERAL
MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS
IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE

V.I.N   KMHGC46E89U025598
PASSenger CAR

2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 104

FIGURE 5.5
VEHICLE CERTIFICATION LABEL
<table>
<thead>
<tr>
<th>TIRE/PNEU</th>
<th>SIZE / DIMENSIONS</th>
<th>COLD TIRE PRESSURE / PRESSION DES PNEUS À FROID</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONT/AVANT</td>
<td>P225/55R17</td>
<td>230kPa, 33psi</td>
</tr>
<tr>
<td>REAR/ARRIERE</td>
<td>P225/55R17</td>
<td>230kPa, 33psi</td>
</tr>
<tr>
<td>SPARE/RECHANGE</td>
<td>T135/90D17</td>
<td>420kPa, 60psi</td>
</tr>
</tbody>
</table>

The combined weight of occupants and cargo should never exceed 390kg or 860lbs. Le poids total des occupants et des marchandises ne doit jamais dépasser 390kg ou 860lb.
FIGURE 5.7
INSTRUMENTATION AND EQUIPMENT SET-UP
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 104

FIGURE 5.9
WIPE AREA TEST PATTERN
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 104

FIGURE 5.10
CAPABILITY TEST #1 PRE-COATED WINDSHIELD
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 104

FIGURE 5.11
CAPABILITY TEST #1 IN PROGRESS
FIGURE 5.12
CAPABILITY TEST #2 PRE-COATED WINDSHIELD
SECTION 6
OWNER’S MANUAL INFORMATION
**WIPERS AND WASHERS**

**A : Wiper speed control**
- MIST – Single wipe
- OFF – Off
- INT – Intermittent wipe
  AUTO – AUTO control wipe (if equipped)
- LO – Low wiper speed
- HI – High wiper speed

**B : Intermittent or Auto control wiper time adjustment**

**C : Wash with brief wipes**

**NOTICE**

If there is heavy accumulation of snow or ice on the windshield, defrost the windshield for about 10 minutes, or until the snow and/or ice is removed before using the windshield wipers to ensure proper operation.

**NOTICE**
- When you operate the wipers, if your vehicle has a problem in any part of the wiper operation system, the wiper may operate in the LO mode regardless of the wiper switch position. In this case, have your vehicle checked by an authorized HYUNDAI dealer as soon as possible.
- When the ignition key is removed, the wiper blade sometimes may move slightly to be properly positioned for reducing the deterioration of the windshield wipers.

**Windshield wipers**
Operates as follows when the ignition switch is turned ON.
MIST : For a single wiping cycle, push the lever upward and release it with the lever in the OFF position. The wipers will operate continuously if the lever is pushed upward and held.
OFF : Wiper is not in operation
INT : Wiper operates intermittently at the same wiping intervals. Use this mode in a light rain or mist. To vary the speed setting, turn the speed control knob(1).
LO : Normal wiper speed
HI : Fast wiper speed
Auto control (if equipped)

The rain sensor located on the upper end of the windshield glass senses the amount of rainfall and controls the wiping cycle for the proper interval. The more it rains, the faster the wiper operates. When the rain stops, the wiper stops. To vary the speed setting, turn the speed control knob (1).

If the wiper switch is set in AUTO mode when the ignition switch is ON, the wiper will operate once to perform a self-check of the system. Set the wiper to OFF position when the wiper is not in use.

⚠️ CAUTION

When the ignition switch is ON and the windshield wiper switch is placed in the AUTO mode, use caution in the following situations to avoid any injury to the hands or other parts of the body:

- Do not touch the upper end of the windshield glass facing the rain sensor.
- Do not wipe the upper end of the windshield glass with a damp or wet cloth.
- Do not put pressure on the windshield glass.

⚠️ CAUTION

When washing the vehicle, set the wiper switch in the OFF position to stop the auto wiper operation. The wiper may operate and be damaged if the switch is set in the AUTO mode while washing the vehicle. Do not remove the sensor cover located on the upper end of the passenger side windshield glass. Damage to system parts could occur and may not be covered by your vehicle warranty. When starting the vehicle in winter, set the wiper switch in the OFF position. Otherwise, wipers may operate and ice may damage the windshield wiper blades. Always remove all snow and ice and defrost the windshield properly prior to operating the windshield wipers.
Windshield washers
In the OFF position, pull the lever gently toward you to spray washer fluid on the windshield and to run the wipers 1-3 cycles.
Use this function when the windshield is dirty.
The spray and wiper operation will continue until you release the lever.
If the washer does not work, check the washer fluid level. If the fluid level is not sufficient, you will need to add appropriate non-abrasive windshield washer fluid to the washer reservoir.
The reservoir filler neck is located in the front of the engine compartment on the passenger side.

⚠️ CAUTION
To prevent possible damage to the washer pump, do not operate the washer when the fluid reservoir is empty.

⚠️ WARNING
Do not use the washer in freezing temperatures without first warming the windshield with the defrosters; the washer solution could freeze on contact with the windshield and obscure your vision.

⚠️ CAUTION
- To prevent possible damage to the wipers or windshield, do not operate the wipers when the windshield is dry.
- To prevent damage to the wiper blades, do not use gasoline, kerosene, paint thinner, or other solvents on or near them.
- To prevent damage to the wiper arms and other components, do not attempt to move the wipers manually.