SAFETY COMPLIANCE TESTING FOR FMVSS NO. 214S
SIDE IMPACT PROTECTION (STATIC)

HYUNDAI MOTOR COMPANY
2009 HYUNDAI GENESIS, PASSENGER CAR
NHTSA NO. C90501

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443

August 12, 2009

FINAL REPORT

PREPARED FOR
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
1200 NEW JERSEY AVE., SE
WASHINGTON, D.C. 20590
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Prepared By: Debbie Messick
Approved By: Grant Farrand
Approval Date: 08/12/09

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: James A. Jones
Acceptance Date: ________________
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-214S-05 for the determination of FMVSS 214 compliance. Test failures identified were as follows:

NONE
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<td>5.35</td>
<td></td>
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<tr>
<td>5.36</td>
<td></td>
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<tr>
<td>6</td>
<td>48</td>
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</table>
SECTION 1
INTRODUCTION

1.0 PURPOSE OF COMPLIANCE TEST

A 2009 Hyundai Genesis passenger car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 214 testing to determine if the vehicle was in compliance with the requirements of the standard. FMVSS No. 214 establishes requirements for the side doors of a Motor Vehicle to minimize the safety hazard caused by intrusion into the passenger compartment as a result of a side impact accident.

1.1 TEST VEHICLE

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

The vehicle’s front and rear seating systems were removed for this test. All vehicle windows were closed and all doors were locked for this test.

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 214 testing on August 4, 2009.
SECTION 2
TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 TEST PROCEDURE

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-214S-05 dated 14 September 1993 and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-214S-05, "Static – Side Impact Protection".

Each vehicle shall be able to meet the requirements of either, at the manufacturer's option, 2.1 or 2.2 when any of its side doors that can be used for occupant egress are tested.

2.1 OPTION ONE

With any seats that may affect load upon or deflection of the side of the vehicle removed from the vehicle, each vehicle must be able to meet the requirements of 2.1.1 through 2.1.3.

2.1.1 INITIAL CRUSH RESISTANCE

The initial crush resistance shall not be less than 2,250 pounds.

2.1.2 INTERMEDIATE CRUSH RESISTANCE

The intermediate crush resistance shall not be less than 3,500 pounds.

2.1.3 PEAK CRUSH RESISTANCE

The peak crush resistance shall not be less than two times the curb weight of the vehicle or 7,000 pounds, whichever is less.

2.2 OPTION TWO

With seats installed in the vehicle, and located in any horizontal or vertical position to which they can be adjusted and at any seat back angle to which they can be adjusted, each vehicle must be able to meet the requirements of 2.2.1 through 2.2.3.

2.2.1 INITIAL CRUSH RESISTANCE

The initial crush resistance shall not be less than 2,250 pounds.

2.2.2 INTERMEDIATE CRUSH RESISTANCE

The intermediate crush resistance shall not be less than 4,375 pounds.
SECTION 2 CONTINUED

2.2.3 PEAK CRUSH RESISTANCE

The peak crush resistance shall not be less than three and one half times the curb weight of the vehicle or 12,000 pounds, whichever is less.
SECTION 3
COMPLIANCE TEST DATA
DATA SHEET 1
TEST VEHICLE RECEIVING-INSPECTION

VEH. MOD YR/MAKE/MODEL/BODY: 2009 HYUNDAI GENESIS PASSENGER CAR
VEH. BUILD DATE: JUN/20/08; TEST DATE: AUGUST 4, 2009
TEST LABORATORY: GENERAL TESTING LABS
OBSERVERS: G. FARRAND, J. LATANE

A. First compliance test by laboratory for this vehicle is the static FMVSS 214 test.

☐ Yes   ☒ No (Go to item 2)

☒ (1) Label test vehicle with NHTSA Number

☒ (2) Verify all options on the "window sticker" are present on the vehicle

☒ (3) Verify tires and wheel rims are new and the same as listed

☒ (4) Verify there are no dents or other interior or exterior flaws

☒ (5) Verify the glove box contains an owner's manual, warranty document, consumer information, and extra keys

☒ (6) Verify the vehicle is equipped with the proper fuel filler cap

☒ (7) If the vehicle has been delivered from the dealer, verify the vehicle has been properly prepared and is in running condition

B. Verify seat adjusters are working

☒ Yes   ☐ No

C. Verify there is a seat belt at each seating position

☒ Yes   ☐ No

D. Without disturbing the integrity of each seat belt and anchorage, verify that each seat belt is attached to the anchorage. For seat belts that are attached to the seat, also verify the seats are attached to the seat anchors and the seat anchors are attached to the vehicle.

☒ Yes   ☐ No

E. Curb Weight of Vehicle: 3737 LBS. (1695 KG)

F. COMMENTS: (Explain any problems here)

RECORDED BY: G. FARRAND DATE: 08/04/09
APPROVED BY: D. MESSICK
DATA SHEET 2
PRETEST PREPARATION

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: AUGUST 4, 2009
TEST LABORATORY: GENERAL TESTING LABS
OBSERVERS: G. FARRAND, J. LATANE

Prior to testing the following will be accomplished:

<table>
<thead>
<tr>
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<th>2</th>
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<tbody>
<tr>
<td>A.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>C.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>D.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>E.</td>
<td>LF</td>
<td>RR</td>
</tr>
<tr>
<td>F.</td>
<td>44.5</td>
<td>28.1</td>
</tr>
<tr>
<td>G.</td>
<td>5&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>H.</td>
<td>22.3</td>
<td>14.1</td>
</tr>
<tr>
<td>I.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>J.</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

RECORDED BY: G. FARRAND DATE: 08/04/09
APPROVED BY: D. MESSICK
DATA SHEET 3
STATIC LOAD TEST - BACK-UP SYSTEM DATA

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: AUGUST 4, 2009
TEST LABORATORY: GENERAL TESTING LABS
OBSERVERS: G. FARRAND, J. LATANE

RESULTS: Plots of load versus displacement and time versus displacement obtained from the back-up data (attach plots to data sheet) showed that:

TEST #1 - GTL #6277 (LEFT FRONT DOOR)
A. The initial crush resistance was _____ 3354 ___ lbs.
B. The intermediate crush resistance was _____ 5917 ___ lbs.
C. The peak crush resistance was _____ 11,128 ___ lbs at ___ 12.2 ___ inches
D. The rate of loading was _____ .2"/sec _____

The dial indicator and the inclinometer showed the following deflections.

<table>
<thead>
<tr>
<th>LOADING DEVICE TRAVEL</th>
<th>DIAL INDICATOR</th>
<th>INCLINOMETER</th>
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<tbody>
<tr>
<td>0 inches</td>
<td>0.0000</td>
<td>0</td>
</tr>
<tr>
<td>2 inches</td>
<td>0.03</td>
<td>0</td>
</tr>
<tr>
<td>4 inches</td>
<td>0.07</td>
<td>0</td>
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<tr>
<td>6 inches</td>
<td>0.12</td>
<td>0</td>
</tr>
<tr>
<td>12 inches</td>
<td>0.25</td>
<td>0</td>
</tr>
<tr>
<td>12.2 inches (full travel)</td>
<td>0.25</td>
<td>0</td>
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<tr>
<td>0 inches (removal)</td>
<td>0.05</td>
<td>0</td>
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</table>

TEST #2 - GTL #6278 (RIGHT REAR DOOR)
A. The initial crush resistance was _____ 4296 ___ lbs.
B. The intermediate crush resistance was _____ 6754 ___ lbs.
C. The peak crush resistance was _____ 13,755 ___ lbs at ___ 12.2 ___ inches
D. The rate of loading was _____ .2"/sec _____
The dial indicator and the inclinometer showed the following deflections.

<table>
<thead>
<tr>
<th>LOADING DEVICE TRAVEL</th>
<th>DIAL INDICATOR</th>
<th>INCLINOMETER</th>
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<td>2 inches</td>
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<td>6 inches</td>
<td>0.12</td>
<td>0</td>
</tr>
<tr>
<td>12 inches</td>
<td>0.24</td>
<td>0</td>
</tr>
<tr>
<td>12.2 inches (full travel)</td>
<td>0.24</td>
<td>0</td>
</tr>
<tr>
<td>0 inches (removal)</td>
<td>0.05</td>
<td>0</td>
</tr>
</tbody>
</table>

RECORDED BY: G. FARRAND  DATE: 08/04/09
APPROVED BY: D. MESSICK
Data from the primary data systems will be analyzed and the plots attached to the data sheet.

RESULTS - The load versus displacement plot showed that - -

**TEST #1** - GTL #6277 (LEFT FRONT DOOR)

A. The initial crush resistance was $3354$ lbs.
B. The intermediate crush resistance was $5917$ lbs.
C. The peak crush resistance was $11,128$ lbs at $12.2$ inches

The time versus displacement plot showed that - -

The rate of loading was $0.2$/sec

**TEST #2** - GTL #6278 (RIGHT REAR DOOR)

A. The initial crush resistance was $4296$ lbs.
B. The intermediate crush resistance was $6754$ lbs.
C. The peak crush resistance was $13,755$ lbs at $12.2$ inches

The time versus displacement plot showed that - -

The rate of loading was $0.2$/sec

Comparison of the ABOVE DATA with the BACKUP DATA indicates the following - -

Primary and Backup data agree.

RECORDED BY: G. FARRAND DATE: 08/04/09
APPROVED BY: D. MESSICK
<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>DESCRIPTION</th>
<th>MODEL/ SERIAL NO.</th>
<th>CAL. DATE</th>
<th>NEXT CAL. DATE</th>
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<tr>
<td>COMPUTER</td>
<td>AT&amp;T</td>
<td>486DX266</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>TEST FIXTURE</td>
<td>GTL 214</td>
<td>214</td>
<td>N/A</td>
<td>N/A</td>
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<td>A/D INTERFACE</td>
<td>METRABYTE</td>
<td>DAS-16(F)</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
<tr>
<td>SCALES</td>
<td>INTERCOMP</td>
<td>199744</td>
<td>04/09</td>
<td>04/10</td>
</tr>
<tr>
<td>SIGNAL CONDITIONER</td>
<td>METRABYTE</td>
<td>EXP-RES</td>
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<td>BEFORE USE</td>
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<tr>
<td>LOAD CELL</td>
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<td>18550</td>
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<td>LINEAR POT.</td>
<td>WALDALE</td>
<td>123456A 123456B</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
<tr>
<td>INCLINOMETER</td>
<td>STARRETT</td>
<td>360/002</td>
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<td>BEFORE USE</td>
</tr>
<tr>
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<td>MIOTO</td>
<td>0001-2</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
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SECTION 5

PHOTOGRAPHS
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.4
REAR VIEW OF VEHICLE PRE-TEST
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.6
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE
PRE-TEST
MANUFACTURED IN KOREA BY

HYUNDAI MOTOR COMPANY

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

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

FIGURE 5.7
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/ ARRIÈRE</td>
<td>P225/55R17</td>
<td>230kPa, 33psi</td>
</tr>
<tr>
<td>SPARE/ DE 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.
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.15
LOAD DEVICE AGAINST DOOR – PRE-TEST 1
FIGURE 5.17
INCLINOMETER AT MAX LOAD – TEST 1
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.18
DIAL INDICATOR AT MAX LOAD – TEST 1
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.21
REAR VEHICLE TIE DOWN – TEST 2
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.22
FRONT VEHICLE TIE DOWN – TEST 2
FIGURE 5.23
INCLINOMETER PRE-TEST 2
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.24
DIAL INDICATOR – PRE-TEST 2
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.26
LOAD DEVICE AGAINST DOOR @ MAX LOAD – TEST 2
FIGURE 5.27
INCLINOMETER AT MAX LOAD – TEST 2

2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214
FIGURE 5.28
DIAL INDICATOR AT MAX LOAD – TEST 2
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.29
POST TEST DOOR OUTSIDE – TEST 2
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.30
POST TEST DOOR INSIDE – TEST 2
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.31
FRONT VIEW OF VEHICLE POST TEST
2009 HYUNDAI GENESIS
NHTSA NO. C90501
FMVSS NO. 214

FIGURE 5.32
LEFT SIDE VIEW OF VEHICLE POST TEST
FIGURE 5.35
¼ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE
POST TEST
FIGURE 5.36
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE POST
TEST
SECTION 6

TEST DATA PLOTS