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

GENERAL MOTORS CORP.
2004 CHEVROLET MALIBU, PASSENGER CAR
NHTSA NO. C40102

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

SEPTEMBER 14, 2004

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 8111 (NVS-220)
WASHINGTON, D.C. 20590
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Approved by: [Signature]
Approval Date: 9/14/04

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NHTSA No. C40102

5. Report Date September 14, 2004

6. Performing Organ. Code GTL

7. Author(s)
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Final Test Report
September 1, 2004


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16. Abstract
Compliance tests were conducted on the subject 2004 Chevrolet Malibu 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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SECTION 1
INTRODUCTION

1.0 PURPOSE OF COMPLIANCE TEST

A 2004 Chevrolet Malibu 4-door 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 2004 Chevrolet Malibu 4-door passenger car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1G1ZT52814F125082

B. NHTSA No.: C40102

C. Manufacturer: GENERAL MOTORS CORPORATION

D. Manufacture Date: 10/03

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 September 1, 2004.
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: 2004 CHEVROLET MALIBU PASSENGER CAR
VEH. NHTSA NO.: C40102; VIN: 1G1ZT52814F125082
VEH. BUILD DATE: 10/03; TEST DATE: SEPTEMBER 1, 2004
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  X No (Go to item 2)
   X (1) Label test vehicle with NHTSA Number
   X (2) Verify all options on the "window sticker" are present on the vehicle
   X (3) Verify tires and wheel rims are new and the same as listed
   X (4) Verify there are no dents or other interior or exterior flaws
   X (5) Verify the glove box contains an owner's manual, warranty document, consumer information, and extra keys
   X (6) Verify the vehicle is equipped with the proper fuel filler cap
   X (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
   X Yes  __ No

C. Verify there is a seat belt at each seating position
   X 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.
   X Yes  __ No

E. Curb Weight of Vehicle: 3261 LBS.

F. COMMENTS: (Explain any problems here)

RECORDED BY: [Signature] DATE: 09/01/04

APPROVED BY: [Signature]
DATA SHEET 2
PRETEST PREPARATION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET MALIBU PASSENGER CAR
VEH. NHTSA NO.: C40102; VIN: 1G1ZT52814F125082
VEH. BUILD DATE: 10/03; TEST DATE: SEPTEMBER 1, 2004
TEST LABORATORY: GENERAL TESTING LABS
OBSERVERS: G. FARRAND, J. LATANE

Prior to testing the following will be accomplished:

A. Check the manufacturers certification statement to determine if the vehicle should be tested with or without seats installed. X X

B. Remove all seats unless the vehicle has been certified with the seats installed. If the seats remain in the vehicle, they are to be adjusted per the COTR's instructions. X X

C. Close all windows X X

D. Lock All doors X X

E. State door tested LF RR

F. State the length of a horizontal line drawn on door through a point 5 inches vertically above lowest point of test door 42.2 27.5

G. State vertical distance from the lowest part of test door to bottom of loading device 5" 5"

H. State position of vertical centerline of loading device on the midpoint of line determined step F 21.1 13.25

I. Determine that the vertical axis of the loading device is perpendicular to the longitudinal and lateral axis of the test vehicle X X

J. Determine that the top of the loading device is above the door window opening but not touching any structure above the window opening X X

RECORDED BY: [Signature] DATE: 08/31/04
APPROVED BY: [Signature]
DATA SHEET 3
STATIC LOAD TEST - BACK-UP SYSTEM DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET MALIBU PASSENGER CAR
VEH. NHTSA NO.: C40102 ; VIN: 1G1ZT52814F125082
VEH. BUILD DATE: 10/03 ; TEST DATE: SEPTEMBER 1, 2004
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 #5246 (LEFT FRONT DOOR)

A. The initial crush resistance was ______ 3059 ______ lbs.

B. The intermediate crush resistance was ______ 5697 ______ lbs.

C. The peak crush resistance was ______ 11,495 lbs at ______ 12.003 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>
</tr>
</thead>
<tbody>
<tr>
<td>0 inches</td>
<td>0.0000</td>
<td>0</td>
</tr>
<tr>
<td>2 inches</td>
<td>0.0279</td>
<td>0</td>
</tr>
<tr>
<td>4 inches</td>
<td>0.1432</td>
<td>0</td>
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<tr>
<td>6 inches</td>
<td>0.1823</td>
<td>0</td>
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<tr>
<td>12 inches</td>
<td>0.6021</td>
<td>0</td>
</tr>
<tr>
<td>12.003 Inches (full travel)</td>
<td>0.6088</td>
<td>0</td>
</tr>
</tbody>
</table>

TEST #2 - GTL #5247 (RIGHT REAR DOOR)

A. The initial crush resistance was ______ 3674 ______ lbs.

B. The intermediate crush resistance was ______ 6211 ______ lbs.

C. The peak crush resistance was ______ 11,509 lbs at ______ 12.761 inches

D. The rate of loading was ______ .2"/sec ______
DATA SHEET 3 CONTINUED
STATIC LOAD TEST - BACK-UP SYSTEM DATA

The dial indicator and the inclinometer showed the following deflections.

<table>
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<th>DIAL INDICATOR</th>
<th>INCLINOMETER</th>
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</thead>
<tbody>
<tr>
<td>0 inches</td>
<td>0.0000</td>
<td>0</td>
</tr>
<tr>
<td>2 inches</td>
<td>0.0285</td>
<td>0</td>
</tr>
<tr>
<td>4 inches</td>
<td>0.0340</td>
<td>0</td>
</tr>
<tr>
<td>6 inches</td>
<td>0.0685</td>
<td>0</td>
</tr>
<tr>
<td>12 inches</td>
<td>0.4043</td>
<td>0</td>
</tr>
<tr>
<td>12.761 Inches (full travel)</td>
<td>0.4043</td>
<td>0</td>
</tr>
</tbody>
</table>

RECORDED BY: [Signature]                     DATE: 09/01/04

APPROVED BY: [Signature]
DATA SHEET 4
DATA REDUCTION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHEVROLET MALIBU PASSENGER CAR
VEH. NHTSA NO.: C40102 ; VIN: 1G1ZT52814F125082
VEH. BUILD DATE: 10/03 ; TEST DATE: SEPTEMBER 1, 2004
TEST LABORATORY: GENERAL TESTING LABS
OBSERVERS: G. FARRAND, J. LATANE

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 #5246 (LEFT FRONT DOOR)

A. The initial crush resistance was 3059 lbs.
B. The intermediate crush resistance was 5697 lbs.
C. The peak crush resistance was 11,495 lbs at 12.003 inches

The time versus displacement plot showed that - -

The rate of loading was .2"/sec

TEST #2 - GTL #5247 (RIGHT REAR DOOR)

A. The initial crush resistance was 3674 lbs.
B. The intermediate crush resistance was 6211 lbs.
C. The peak crush resistance was 11,509 lbs at 12.761 inches

The time versus displacement plot showed that - -

The rate of loading was .2"/sec

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

All data was the same.

RECORDED BY: DATE: 09/01/04
APPROVED BY: N. M. W

9
## SECTION 4

### TEST EQUIPMENT LIST

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<tr>
<th>EQUIPMENT</th>
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<td>220</td>
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<td>A/D INTERFACE</td>
<td>METRABYTE</td>
<td>DAS-16(F)</td>
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<td>EXP-RES</td>
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<td>544551B</td>
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<td>11/04</td>
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<td>02/04</td>
<td>02/05</td>
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<td>0001-2</td>
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SECTION 5
PHOTOGRAPHS
2004 CHEVROLET MALIBU
NHTSA NO. C40102
FMVSS NO. 214

FIGURE 5.5
¾ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE PRE-TEST
DATE
10/03

MFG BY GENERAL MOTORS CORP

GVWR
1914 KG
4221 LB

CAWR FR
1021 KG
2251 LB

CAWR RR
893 KG
1970 LB

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

1G1ZT52814F125082 TYPE: PASS CAR

2004 CHEVROLET MALIBU
NHTSA NO. C40102
FMVSS NO. 214

FIGURE 5.7
VEHICLE CERTIFICATION LABEL
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<th>Tire Size</th>
<th>Location</th>
<th>Inflation Pressure</th>
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<td>P205/60R15</td>
<td>Front</td>
<td>210 kPa, 30 PSI</td>
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<tr>
<td>P205/65R15</td>
<td>Rear</td>
<td>210 kPa, 30 PSI</td>
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<tr>
<td>T125/70D15</td>
<td>Spare</td>
<td>420 kPa, 60 PSI</td>
</tr>
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</table>
FIGURE 5.21
REAR VEHICLE TIE DOWN – TEST 2
SECTION 6

TEST DATA PLOTS
GTL 5246, NHTSA C40102.

214, Static Door Crush, Driver Door.
GTL 5246, NHTSA C40102.

214, Static Door Crush, Driver Door.
GTL 5247, NHTSA C40102.

214, Static Door Crush, Pass.Rear Door.