SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 110(INDICANT)
TIRED SELECTION AND RIMS

GENERAL MOTORS CORP.
2003 CHEVROLET MALIBU PASSENGER CAR
NHTSA NO. C30118

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

SEPTEMBER 16, 2003
FINAL REPORT

PREPARED FOR
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
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WASHINGTON, D.C. 20590
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   NHTSA No. C30118

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    May 21, 2003

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16. Abstract
   This test was conducted on the subject, 2003 Chevrolet Malibu passenger car in accordance
   with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-110-02
   (partial), to gather data relating to the normal load requirements specified in FMVSS 110.
   NHTSA’s Office of Safety Performance Standards requested this data to support the agency’s
   TREAD tire rulemaking efforts.

17. Key Words
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    FMVSS 110

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APPENDIX – Normal Load Occupation Distribution
SECTION 1

INTRODUCTION

1.0 PURPOSE OF INDICANT TEST

A 2003 Chevrolet Malibu passenger car was subjected to a FMVSS No. 110 (Indicant) test intended to gather data relating to the normal load requirements specified in FMVSS 110. NHTSA's Office of Safety Performance Standards requested this data to support the agency's TREAD tire rulemaking efforts.

1.1 TEST VEHICLE

The test vehicle was a 2003 Chevrolet Malibu passenger car. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1G1ND52J13M605499

B. NHTSA No.: C30118

C. Manufacturer: GENERAL MOTORS CORP

D. Manufacture Date: 10/02

1.2 TEST DATE

The test vehicle was subjected to testing on May 21, 2003.
SECTION 2

TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 TEST PROCEDURE

The vehicle was inspected, photographed and filled with fuel. It was then weighed to establish total curb weight and the weights of all wheels were measured and recorded. The vehicle was then ballasted to its normal load condition (refer to appendix) and the weights of all wheels were measured and recorded. Tire information labeling data and tire sidewall data were recorded.

This indicant test did not include any other requirements in FMVSS 110.

2.1 SUMMARY OF RESULTS

Test results are provided in Section 3.
SECTION 3
TEST DATA
VEHICLE MAKE/MODEL/BODY STYLE: 2003 CHEVROLET MALIBU PASSENGER CAR
VEHICLE NHTSA NO.: C30118  VIN: 1G1ND52J13M605499
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/21/03

REQUIREMENT

The vehicle is equipped with tires that meet the requirements of FMVSS 109 or FMVSS 119.

The vehicle normal load on the tire is not greater than the high speed performance test load specified in FMVSS 109 paragraph S5.5 or FMVSS 119 paragraph S7.4.

For passenger cars, the tire information placard is permanently affixed to the glove compartment door or equally accessible location; and displays the required information (FMVSS 110, S4.3).

For vehicles other than passenger cars, a combined certification/tire information label or separate tire information label is permanently affixed to either the hinge pillar, door-latch post or to the inward-facing surface of the door next to the driver's seating position (FMVSS 120, S5.3).

REMARKS:

RECORDED BY: M. A. O'Far DATE: 05/21/03
APPROVED BY: D. W. Han
**DATA SHEET 2**  
**TEST VEHICLE INFORMATION/RECEIVING INSPECTION**

**LABORATORY:** GENERAL TESTING LABORATORIES  
**DATE:** 05/21/03

**VEHICLE MODEL, YEAR/MAKE/MODEL/BODY STYLE:** 2003 CHEVROLET MALIBU

**MANUFACTURE DATE:** 10/02  
**NHTSA NO.:** C30118  
**BODY COLOR:** WHITE

**VIN:** 1G1ND52J13M605499  
**VEHICLE TYPE:** PASSENGER CAR

**GVWR:** 1829 kg (4033 lbs)  
**GAWR(Fr):** 1000 kg (2205 lbs)  
**GAWR(Rr):** 829 kg (1828 lbs)

**BELTED SEATING POSITIONS:** FRONT: 2  
**MID:** N/A  
**REAR:** 3  
**OTHER:** N/A

**ENGINE DATA:**  
6 Cylinders 3.1 Liters  
Cubic Inches

**TRANSMISSION DATA:**  
**X** Automatic  
**X** Manual  
**4** No. of Speeds

**FINAL DRIVE DATA:**  
**X** Rear Drive  
**X** Front Drive  
4 Wheel Drive

**INSTALLED TIRE DATA:**  
Size: P215/60R15  
**Mfr.:** FIRESTONE

CHECK APPROPRIATE BOXES FOR VEHICLE EQUIPMENT/MAKE SURE ALL OPTIONS ON WINDOW STICKER ARE LISTED:

<table>
<thead>
<tr>
<th></th>
<th>Traction Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Conditioning</td>
<td></td>
<td>Traction Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tinted Glass</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Steering</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Windows</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Door Locks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Seat(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Brakes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antilock Brake System</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ARE ALL OPTIONS LISTED ON "WINDOW STICKER" PRESENT ON THE TEST VEHICLE:  
(YES/NO) _______ Yes

**REMARKS:**

**RECORDED BY:**  
**DATE:** 05/21/03

**APPROVED BY:**
DATA SHEET 3
CURB WEIGHT WITH OPTIONS AND NORMAL LOAD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 CHEVROLET MALIBU PASSENGER CAR
VEHICLE NHTSA NO.: C30118 ; VIN: 1G1ND52J13M605499
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/21/03

Full Fluid Levels:
Fuel Full; Coolant Full; Other Fluids Full

Tire Pressure:
LF 200 KPA (29 psi) LR 180 KPA (26 psi)
RF 200 KPA (29 psi) RR 180 KPA (26 psi)

A. MEASURED CURB WEIGHT WITH INSTALLED OPTIONS AND ACCESSORIES

<table>
<thead>
<tr>
<th>Axle</th>
<th>KG (LB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>448 (987 LB)</td>
</tr>
<tr>
<td>RF</td>
<td>441 (972 LB)</td>
</tr>
<tr>
<td>LR</td>
<td>254 (559 LB)</td>
</tr>
<tr>
<td>RR</td>
<td>253 (558 LB)</td>
</tr>
<tr>
<td>Front Axle</td>
<td>889 (1959 LB)</td>
</tr>
<tr>
<td>Rear Axle</td>
<td>507 (1117 LB)</td>
</tr>
</tbody>
</table>

Total Vehicle 1395 KG (3076 LB)

B. MEASURED VEHICLE WEIGHT IN NORMAL LOAD CONDITION

1. Seating Capacity (from Tire Information Placard) = 5
   Seating Capacity (# of belted seating positions) = 5

2. Normal Load # of Occupants from Appendix
   Occupant Distribution: Front Seat- 2 Second Seat- 1
                          Third Seat - N/A Fourth Seat- N/A

3. Total Normal Occupant Load 204 KG (450 LB)
   (# of occupants x 68 KG per occupant)

4. Measured Normal Load on Each Wheel and Axles (Sum)
   LF 490 KG (1080 LB) LR 308 KG (680 LB)
   RF 493 KG (1086 LB) RR 308 KG (680 LB)
   Frt Axle 982 KG (2166 LB) Rr Axle 617 KG (1360 LB)

Total Vehicle 1599 KG (3526 LB)
DATA SHEET 3 – CONTINUED

(5) Calculated Vehicle Normal Load on the Tire
   Front Tires (measured front axle normal load/2) = 431 KG (983 LB)
   Rear Tires (measured front axle normal load/2) = 308 KG (680 LB)

(6) High Speed Test Load from (X) FMVSS 109 (S5.5), or ( ) FMVSS 119 (S7.4)

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Installed Tire Size</td>
<td>P215/60R15</td>
<td>P215/60R15</td>
</tr>
<tr>
<td>Max. Load Rating on Sidewall</td>
<td>640 KG(1411 LBS)</td>
<td>640 KG(1411 LBS)</td>
</tr>
<tr>
<td>Reduced Sidewall Load Rating (if applicable)*</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>High Speed Test Load (88% of sidewall max. load rating)</td>
<td>563 KG(1242 LBS)</td>
<td>563 KG(1242 LBS)</td>
</tr>
<tr>
<td>(b) Optional Tire Size(s)</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

* If a passenger car tire is installed or a multipurpose passenger vehicle (MPV), truck or bus, the tire's load rating shall be reduced by dividing by 1.10.

REMARKS: The Vehicle Normal Load on the Tire is not greater than the High Speed Test Load

RECORDED BY: [Signature]      DATE: 05/21/03

APPROVED BY: [Signature]
DATA SHEET 4  
TIRE INFORMATION LABEL OR PLACARD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 CHEVROLET MALIBU PASSENGER CAR  
VEHICLE NHTSA NO.: C30118  
VIN: 1G1ND52J13M605499  
LABORATORY: GENERAL TESTING LABORATORIES  
TEST DATE: 05/21/03

A. Vehicle Type from Certification Label: __Passenger Car__

B. Identify Vehicle Labeling:

Vehicle has a combined Certification Tire Information Label ( ) Yes (X) No  
Is Label Permanently Affixed: ( ) Yes ( ) No  
Label Location:  
Description of Label:

Vehicle has a separate Tire Information Label or Placard (X) Yes ( ) No  
Is Label Permanently Affixed: (X) Yes ( ) No  
Label Location: Inside Door Jam  
Description of Label: White/Black Sticker

C. Enter Information from Combined or Separate Tire Information Label/Placard

Vehicle Capacity Weight - 416 KG (917 LBS)

Designated Seating Capacity (DSC) - 5  
Expressed in—  
(1) Total No. of Occupants (X) Yes ( ) No  
(2) Terms of Occupants for Each Seat Location (X) Yes, ( ) No

Manufacturer's Recommended Tire Size and Cold Tire Inflation Pressure For Maximum Load Vehicle Weight:

P215/60R15  
FRONT - 200 kPa (29 psi)  
REAR - 150 kPa (21 psi)

Manufacturer's Recommended Tire Size and Cold Tire Inflation Pressure For Other Load Conditions: NONE

REMARKS:

RECORDED BY:  
DATE: 05/21/03

APPROVED BY:  

Signature
DATA SHEET 6
VEHICLE TIRE DATA

VEHICLE MAKE/MODEL/BODY STYLE: 2003 CHEVROLET MALIBU PASSENGER CAR
VEHICLE NHTSA NO.: C30118 ; VIN: 1G1ND52J13M605499
LABORATORY: GENERAL TESTING LABORATORIES
TEST DATE: 05/21/03

All tires on the vehicle are the same size: (Yes/No) Yes

INFORMATION FROM TIRE SIDEWALL:

Left Front Tire

Tire Size Designation P215/60R15
Tire Load Index/Speed Symbol 93T
Maximum Inflation Pressure 240 kPa (35 psi)
Maximum Load Rating 640 KG (1411 LBS.)
Mfr. Name or Brand & Code FIRESTONE AFFINITY
Tube or Tubeless TUBELESS
Treadwear/Traction/Temp. Grades 500/A/B
Sidewall (Plies & Composition) 1 PLY POLYESTER
Tread (Plies & Composition) 1 PLY POLYESTER, 2 PLY STEEL

Serial Number: Right Front - DOT-8XMW AAA 4002

Tire has “DOT” markings: (X) YES ( ) NO ( ) UNDETERMINED

REMARKS:

RECORDED BY: DATE: 05/21/03
APPROVED BY:
### 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>PAD SCALES</td>
<td>#1 199744LF</td>
<td>199744LF</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td></td>
<td>#2 199744RF</td>
<td>199744RF</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td></td>
<td>#3 199744LR</td>
<td>199744LR</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td></td>
<td>#4 199744RR</td>
<td>199744RR</td>
<td>06/02</td>
<td>06/20/03</td>
</tr>
<tr>
<td>PRESSURE GAGE</td>
<td>WESKLER</td>
<td>0-100</td>
<td>05/03</td>
<td>05/04</td>
</tr>
<tr>
<td>SURFACE LEVEL</td>
<td>GTL</td>
<td>N/A</td>
<td>BEFORE USE</td>
<td>BEFORE USE</td>
</tr>
</tbody>
</table>
SECTION 5
PHOTOGRAPHS
### APPENDIX

#### Table 1 – Occupant Loading and Distribution for Vehicle Normal Load for Various Designated Seating Capacities

<table>
<thead>
<tr>
<th>Designated Seating Capacities, numbers of Occupants</th>
<th>Vehicle normal load, number of occupants</th>
<th>Occupant distribution in a normally loaded vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 through 4</td>
<td>2</td>
<td>2 in front</td>
</tr>
<tr>
<td>5 through 10</td>
<td>3</td>
<td>2 in front, 1 in second seat</td>
</tr>
<tr>
<td>11 through 15</td>
<td>5</td>
<td>2 in front, 1 in second seat, 1 in third seat, 1 in fourth seat</td>
</tr>
<tr>
<td>16 through 22</td>
<td>7</td>
<td>2 in front, 2 in second seat, 2 in third seat, 1 in fourth seat</td>
</tr>
</tbody>
</table>

**NOTE:** For the indicative test each seat was adjusted to its full down and mid forward to aft position with the seat back adjusted to a 25° reclined angle. Each designated seat position was ballasted with 54 KG (120 LBS) in the seat and 14 KG (30 LBS) on the floor directly in front of the respective seat position.