

REPORT NUMBER 114-GTL-09-001

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 114 THEFT PROTECTION

GENERAL MOTORS OF CANADA LTD.
2009 CHEVROLET IMPALA LS, PASSENGER CAR
NHTSA NO. C90100

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



APRIL 30, 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: _____

Approved By: _____

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:
Accepted By: *Vincent [Signature]*
Acceptance Date: 4/30/09

1. Report No. 114-GTL-09-001	2. Government Accession No. N/A	3. Recipient's Catalog No. N/A
4. Title and Subtitle Final Report of FMVSS 114 Compliance Testing of a 2009 CHEVROLET IMPALA LS PASSENGER CAR NHTSA No. C90100		5. Report Date April 30, 2009
		6. Performing Organ. Code GTL
7. Author(s) Grant Farrand, Project Engineer Debbie Messick, Project Manager		8. Performing Organ. Rep# GTL-DOT-09-114-001
9. Performing Organization Name and Address General Testing Laboratories, Inc. 1623 Leedstown Road Colonial Beach, Va 22443		10. Work Unit No. (TRAIS) N/A
		11. Contract or Grant No. DTNH22-06-C-00032
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Admin. Enforcement Office of Vehicle Safety Compliance (NVS-220) 1200 New Jersey Ave., S.E., Washington, DC 20590		13. Type of Report and Period Covered Final Test Report April 6, 2009
		14. Sponsoring Agency Code NVS-221
15. Supplementary Notes		
16. Abstract Compliance tests were conducted on the subject 2009 Chevrolet Impala LS 4-door passenger car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-114-03-Draft for the determination of FMVSS 114 compliance. Test failures identified were as follows: None		
17. Key Words Compliance Testing Safety Engineering FMVSS 114		18. Distribution Statement Copies of this report are available from NHTSA Technical Information Services (TIS) Room W45-212 (NPO-411) 1200 New Jersey Ave., S.E. Washington, DC 20590 Telephone No. (202) 366-4947
19. Security Classif. (of this report) UNCLASSIFIED	21. No. of Pages 25	22. Price
20. Security Classif. (of this page) UNCLASSIFIED		

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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF TEST

A model year 2009 Chevrolet Impala LS passenger car was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 114 testing to determine if the vehicle was in compliance with the requirements of the standard. FMVSS 114 specifies requirements to decrease the likelihood that a vehicle is stolen, or accidentally set in motion.

1.1 The test vehicle was a 2009 Chevrolet Impala LS Passenger Car. The vehicle was identified as follows:

A. Vehicle Identification Number: 2G1WB57K991103176

B. NHTSA No.: C90100

C. Manufacturer: GENERAL MOTORS OF CANADA LTD.

D. Manufacture Date: 07/08

E. Color: Dark Silver Metallic

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 114 testing on April 6, 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-114-03-Draft and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-114-03-Draft, "Theft Protection and Rollaway Prevention".

2.1 SUMMARY OF RESULTS

Test data indicate the FMVSS 114 requirements appear to have been satisfied. All test data resulting from the tests were recorded on test data sheets in Section 3.

SECTION 3

TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of FMVSS 114 testing on the 2009 Chevrolet Impala LS.

FMVSS 114, THEFT PROTECTION
DATA SHEET 1 continued

GEAR SELECTION CONTROL

Describe the gear selection control:

Shift Lever on the console between the front seats

Describe how the gear selection control is activated:

Fully apply brakes, then press shift lever button to move shift lever

Describe all of the selectable settings:

Park, Reverse, Neutral, 3rd Gear, 2nd Gear, 1st Gear

IMMOBILIZER

Is the vehicle equipped with an immobilizer YES _____ NO X _____

Describe the immobilizer device and how it prevents vehicle theft (if equipped):

OPTIONAL RELEASE DEVICES

Describe if the vehicle is equipped with optional release devices:

N/A

OPTIONAL RELEASE DEVICES:

Key Removal _____ Gear Selection Control _____ None X _____ Other _____

VEHICLE FLUIDS

Check all vehicle fluids and adjust to the proper levels for operation: Full

VEHICLE TIRE PLACARD INFORMATION

Vehicle Mfg. Recommended Tire Inflation Pressure

(kPa): Front 210 Rear 210

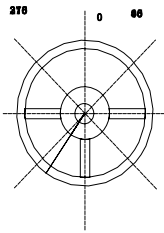
TIRE INFLATION PRESSURES:

Measured (kPa): LF 210 LR 210 RF 210 RR 210

WEIGHT

Vehicle Curb Weight(kg): 1602 Weight of Driver (kg): 91 (target = 91kg)

FMVSS 114, THEFT PROTECTION
DATA SHEET 2

REQUIREMENT S5.1.1	PASS	FAIL
Engine cannot be started without using the key <u> X </u> Yes <u> </u> No	X	
<p>With key removed, steering wheel locks: Yes: <u> X </u> No: <u> </u></p> <p>Identify locking position(s) on wheel using arrow(s)</p> <p>Clockwise: <u> 2 </u> (degrees) Counterclockwise: <u> 2 </u> (degrees)</p> <div style="text-align: right; margin-top: 20px;">  </div>		
<p>Key removal prevents forward self-mobility: Yes: <u> X </u> No: <u> </u></p> <p>If yes describe: Engine must be off to remove key, Engine cannot be started with key removed.</p>		
When key is removed from the starting system, starting of the engine or motor and either steering or self mobility is prevented. YES	X	

REMARKS:

FMVSS 114, THEFT PROTECTION
DATA SHEET 2 continued

REQUIREMENT S5.1.3	PASS	FAIL
<p>An audible warning is activated whenever the key is in any starting system position with the exception of "on" and "start" and the door closest to the driver's designated seating position is opened.</p> <p style="text-align: right;">Yes <u> X </u> No _____</p> <p>Identify ALL key/starting system position setting: <u>Lock/Off, Accessory, On/Run, Start</u></p>	X	

REQUIREMENT S5.1.4	PASS	FAIL
<p>With the vehicle engine or motor shut down and the transmission gear selection control in any position other than "park";</p> <p>The steering wheel can rotate without locking? Yes <u> X </u> No _____</p>	X	
<p>The vehicle is free to roll forward? Yes <u> X </u> No _____</p>	X	

REMARKS:

RECORDED BY: G. Farrand

DATE: 04/06/09

APPROVED BY: D. Messick

FMVSS 114, ROLLAWAY PREVENTION
DATA SHEET 3
(for vehicles equipped with transmission with a "park" position)

VEH. NHTSA NO.: C90100

TEST DATE: 04/06/09

REQUIREMENT S4.2.1(a)(2)	PASS	FAIL
<p>The starting system prevents key removal in ALL gear selection control positions except "park". Yes <u> X </u> No _____</p> <p>Can the gear selection control be placed between each gear selection position and will it remain there without assistance? Yes <u> X </u> No _____</p> <p>If yes, can the key be removed from the starting system? Yes _____ No <u> X </u></p> <p>If the key can be removed from the vehicle starting system when the gear selection control is not locked in "park", a mechanism shall exist which, upon key removal, the vehicle transmission or gear selection control shall become locked in "park" as the direct result of removing the key. If such a mechanism exists, describe the mechanism and its function:</p>	X	

REQUIREMENT S5.2.2	PASS	FAIL
<p>The gear selection control is locked in the "park" position when the key is removed from the starting system. Yes <u> X </u> No _____</p>	X	

REMARKS:

DATA SHEET 3 continued

REQUIREMENT S5.2.3	PASS	FAIL
<p><u>ELECTRICAL FAILURE (Battery Discharge)</u></p> <p>In the event of an electrical failure, key removal from the starting system when the transmission or gear selection control is not locked in “park” is permitted”. Yes_____ No <u>X</u></p> <p>The vehicle is equipped with an override device that permits key removal from the starting system when the transmission or gear selection control is not locked in “park”. Yes_____ No <u>X</u></p> <p>If yes, select the type of override device equipped: Opaque Cover_____ No Cover_____</p> <p>Describe the override device design and mode of activation (if equipped):</p>	X	
	X	
	N/A	
<p>FILL IN THE SECTION BELOW THAT APPLIES:</p> <p><u>VERRIDE WITH AN OPAQUE COVER:</u></p> <p>The opaque surface cover prevents sight of and use of override device. Yes_____ No_____</p> <p>The opaque surface cover can only be removed by using a screwdriver or other tool. Yes_____ No_____</p> <p>As a direct result of removing the key from starting system, the following is prevented: Steering_____ or Self-Mobility_____</p> <p><u>VERRIDE WITH NO COVER</u></p> <p>The override device requires the use of a tool to activate. Yes_____ No_____</p> <p>Simultaneous activation of the override device and removal of key from starting system is required. Yes_____ No_____</p> <p>As a direct result of removing the key from the starting system, the following is prevented: Steering_____ or Self-Mobility_____</p>	N/A	

REMARKS:

DATA SHEET 3 continued

REQUIREMENT S5.2.4	PASS	FAIL
<p><u>GEAR SELECTION CONTROL OVERRIDE DEVICE</u></p> <p>The vehicle is equipped with an override device that allows the user to move the gear selection control from “park” after the key has been removed from the starting system. Yes_____ No <u>X</u></p> <p>If yes, select the type of override device that is equipped: Override operated with a: Key_____ Opaque Cover_____ No Cover_____</p> <p>Describe the override device design and mode of activation (if equipped):</p> <p>FILL IN THE SECTION BELOW THAT APPLIES:</p> <p><u>OVERRIDE OPERATED WITH KEY:</u></p> <p>The key is required to operate the override device that allows the user to move the gear selection control from “park” after the key has been removed from the starting system. Yes_____ No_____</p> <p><u>OVERRIDE WITH AN OPAQUE COVER</u></p> <p>The opaque surface cover prevents sight of and use of override device. Yes_____ No_____</p> <p>The opaque surface cover can only be removed by using a screwdriver or other tool. Yes_____ No_____</p> <p>As a direct result of removing the key from the starting system, the following is prevented: Steering_____ or Self-Mobility_____</p> <p><u>OVERRIDE WITH NO COVER</u></p> <p>The override device requires the use of a tool to operate. Yes_____ No_____</p> <p>Simultaneous activation of the override device and removal of key from starting system is required. Yes_____ No_____</p> <p>As a direct result of removing the key from the starting system, the following is prevented: Steering_____ or Self-Mobility_____</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>	

REMARKS:

DATA SHEET 3 continued

REQUIREMENTS S5.2.5	PASS	FAIL
<p><u>VEHICLE FACING UPHILL ON 10% GRADE</u></p> <p>With the gear selection control in “park” measure movement of the vehicle down the slope upon releasing the service brake.</p> <p>Test grade: <u> 11 </u> % (9% to 15%) Measured movement: <u> 58 </u> mm (150mm maximum)</p> <p>NOTE: Repeat procedure if vehicle fails on grade in excess of 10%.</p> <p>Test grade: <u> </u> % (9% to 10%) Measured movement: <u> </u> mm (150 mm maximum)</p> <p><u>VEHICLE FACING DOWNHILL ON 10% GRADE</u></p> <p>With the gear selection control in “park” measure movement of the vehicle down the slope upon releasing the service brake.</p> <p>Test grade: <u> 11 </u> % (9% to 15%) Measured movement: <u> 64 </u> mm (150mm maximum)</p> <p>NOTE: Repeat procedure if vehicle fails on grade in excess of 10%.</p> <p>Test grade: <u> </u> % (9% to 10%) Measured movement: <u> </u> mm (150 mm maximum)</p>	<p style="text-align: center;">X</p> <p style="text-align: center;">X</p>	<p style="text-align: center;"><u>see note</u></p>

REMARKS:

DATA SHEET 3 continued

REQUIREMENTS S5.3	PASS	FAIL
<u>VEHICLE FACING UPHILL ON 10% GRADE</u>		
With the key in the "off" position, the transmission will shift out of "park" without the service brake being applied. Yes _____ No <u>X</u>	<u>X</u>	
With the key in the "acc" position, the transmission will shift out of "park" without the service brake being applied. Yes _____ No <u>X</u>	<u>X</u>	
With the key in the "on" position (engine off), the transmission will shift out of "park" without the service brake being applied. Yes _____ No <u>X</u>	<u>X</u>	
With the key in the "start" position, the transmission will shift out of "park" without the service brake being applied. Yes _____ No <u>X</u>	<u>X</u>	
With the key in the "other" position (please specify), the transmission will shift out of "park" without the service brake being applied. Yes _____ No _____	<u>N/A</u>	
Does the key stay between starting system positions without being held by operator? If so, please describe. Yes _____ No <u>X</u>	<u>X</u>	
Brake force readings (force required to allow the transmission to shift out of "park"):		
The vehicle is equipped with adjustable pedals: Yes _____ No <u>X</u>		
Fore Position:	Aft Position (if applicable)	
Reading 1 <u>21.8 N</u>	Reading 1 _____	
Reading 2 <u>20.5 N</u>	Reading 2 _____	
Reading 3 <u>20.5 N</u>	Reading 3 _____	
Reading 4 <u>21.4 N</u>	Reading 4 _____	
Reading 5 <u>21.1 N</u>	Reading 5 _____	
Avg. <u>21.1 N</u>	Avg. _____	
	<u>X</u>	

REMARKS:

RECORDED BY: G. FarrandDATE: 04/06/09APPROVED BY: D. Messick

SECTION 4
TEST EQUIPMENT LIST

ITEM	MFR	MODEL	S/N	CAL. PERIOD	DATE OF NEXT CALIB.	REMARKS
SLR DIGITAL CAMERA	NIKON	D50	N/A	N/A	N/A	
TIRE PRESSURE GAUGE	WESKLER	45-0/100	107	12 MO.	03/10	
INCLINOMETER	MITUTOYO	PRO 360	950-315	N/A	BEFORE USE	
STEEL TAPE	STANLEY	FAT MAX	33-890	12 MO.	03/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
WHEEL SCALES	INTERCOMP	SERIES 94	199744	12 MO.	04/10	
SPRING SCALE	CHATILLON	DPP-10	4729	12 MO.	04/10	

SECTION 5
PHOTOGRAPHS



2009 CHEVROLET IMPALA LS
NHTSA NO. C90100
FMVSS NO. 114

FIGURE 5.1
 $\frac{3}{4}$ FRONTAL VIEW FROM LEFT SIDE OF VEHICLE



2009 CHEVROLET IMPALA LS
NHTSA NO. C90100
FMVSS NO. 114

FIGURE 5.2
VEHICLE CERTIFICATION LABEL



TIRE AND LOADING INFORMATION

SEATING CAPACITY | TOTAL 5 | FRONT 2 | REAR 3

The combined weight of occupants and cargo should never exceed 428 kg or 944 lbs.

TIRE	ORIGINAL SIZE		COLD TIRE PRESSURE
FRONT	P225/60R16	S	210 kPa, 30 PSI
REAR	P225/60R16	S	210 kPa, 30 PSI
SPARE	T125/70D16	M	420 kPa, 60 PSI

SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION

2G1WB57K991103176

2009 CHEVROLET IMPALA LS
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FIGURE 5.3
VEHICLE TIRE INFORMATION LABEL



2009 CHEVROLET IMPALA LS
NHTSA NO. C90100
FMVSS NO. 114

FIGURE 5.4
CLOSE-UP VIEW OF IGNITION KEY



2009 CHEVROLET IMPALA LS
NHTSA NO. C90100
FMVSS NO. 114

FIGURE 5.5
STARTING SYSTEM CONTROL



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NHTSA NO. C90100
FMVSS NO. 114

FIGURE 5.6
TRANSMISSION GEAR SELECTION CONTROL



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NHTSA NO. C90100
FMVSS NO. 114

FIGURE 5.7
IDENTIFICATION OF TRANSMISSION SHIFT POSITIONS