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Prepared By: Doris Beebe

Approved By: 

Accepted By: 

Acceptance Date: 3/25/09
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<th>8. Performing Organization Report Number</th>
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</table>
| Jack Stewart, Junior Systems Analyst  
Kenneth H. Yates, Safety Compliance Engineer | STF-DOT-09-138-004 |

<table>
<thead>
<tr>
<th>9. Performing Organization Name and Address</th>
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</table>
| U. S. DOT San Angelo Test Facility  
131 Comanche Trail, Building 3527  
Goodfellow AFB, Texas  76908 |

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| United States Department of Transportation  
National Highway Traffic Safety Administration  
Office of Vehicle Safety Compliance, NVS 220  
1200 New Jersey Avenue, SE  
Washington, DC  20590 | Final Test Report  
March 4 through March 17, 2009 |

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<td>Compliance tests were conducted on the subject 2009 Ford Edge SE four-door MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-138-03 for the determination of FMVSS 138 compliance. Test failures identified were as follows: NONE.</td>
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| Compliance Testing  
Safety Engineering  
FMVSS 138 |

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| National Highway Traffic Safety Administration  
Technical Information Services Division  
NPO-411, Room E12-100  
1200 New Jersey Avenue, S.E.  
Washington, DC  20590 |
| Email: tis@dot.gov  
FAX:  202-493-2833 |

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SECTION 1
INTRODUCTION

1.1 PURPOSE OF COMPLIANCE TEST

A 2009 Ford Edge SE four-door MPV was tested to determine if the vehicle was in compliance with the requirements of FMVSS 138. All tests were conducted in accordance with NHTSA/Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure TP-138-03 dated July 12, 2007.

1.2 TEST VEHICLE

The test vehicle was a 2009 Ford Edge SE four-door MPV. Nomenclatures applicable to the test vehicle are:

A. **Vehicle Identification Number**: 2FMDK36C89BA34371
B. **NHTSA Number**: C90203
C. **Manufacturer**: Ford Motor Company
D. **Manufacture Date**: 10/2008

1.3 TEST DATE

The test vehicle was tested during the time period March 4 through March 17, 2009.
SECTION 2
TEST PROCEDURE AND SUMMARY OF RESULTS

2.1 TEST PROCEDURE

Prior to test, the test vehicle was inspected for completeness, systems operability, and appropriate fuel and liquid levels, i.e. oil and coolant. The vehicle was then photographically documented as required by the NHTSA/OVSC Test Procedure. Tire sidewall information was recorded. The owner’s manual was reviewed, and pertinent tire and TPMS information were noted. Telltale’s symbol, color, location, and lamp function were checked.

Subsequent events included weighing the vehicle to establish the Unloaded Vehicle Weight (UVW) and the distribution of weight on the front and rear axles and each wheel position. The vehicle was loaded to its Lightly Loaded Vehicle Weight (LLVW) for three tire deflation scenarios. This LLVW included the weights of driver, one passenger, and test equipment. The vehicle was loaded to its Unloaded Vehicle Weight plus Vehicle Capacity Weight (VCW) for three additional tire deflation scenarios. The VCW included the weights of driver, one passenger, test equipment, ballast in the rear seat, and ballast in the rear cargo area. The vehicle is required to be loaded to its maximum capacity without exceeding either the Vehicle Capacity Weight or Gross Vehicle Weight Rating (GVWR). For determination of the telltale warning activation pressure, the recommended cold inflation pressure was identified from the vehicle placard.

The vehicle was instrumented with a Racelogic VBOX III 100 Hz GPS Data Logger and brake pedal trigger. The VBOX uses GPS to measure vehicle speed, time, and distance. Test data were recorded to a compact flash card. During the test, a stopwatch was used to determine the approximate “cumulative driving time” during each test phase. Cumulative driving time does not include time during the brake application or when the vehicle speed was below 50 km/h or above 100 km/h. Upon completion of a tire deflation scenario, graphs were generated by VBOX software showing vehicle speed versus time during the test procedures. The graphs furnish a second-by-second analysis of each calibration and low inflation pressure detection phase (as appropriate). The cumulative driving time was calculated by post-processing the VBOX graph data, and is reported in Section 3 (Test Data) as ‘Total Driving Time’.

The tire deflation test scenario consisted of four phases:

1. Calibration phase: Tires were set at vehicle placard cold inflation pressure and the vehicle was driven for at least twenty minutes of cumulative driving time between 50 and 100 km/h.
2. Detection phase: Immediately after calibration phase, the selected tire(s) were deflated to seven kPa (one psi) below the Telltale Warning Activation Pressure. After one minute, the inflation pressure(s) of only deflated tire(s) were rechecked and adjusted if necessary. The vehicle was started and driven to ensure that the low inflation pressure telltale illuminated.

3. Cool down phase: Vehicle was parked in the San Angelo Test Facility (SATF) open bay shielded from direct sunlight. Tires were allowed to cool down for a minimum of one hour. After cool down, the vehicle was started and the low tire pressure telltale was checked for re-illumination.

4. Extinguishment phase: Tires were adjusted to vehicle placard cold inflation pressure. The vehicle was started and driven to ensure that the low inflation pressure telltale extinguished.

Two malfunction scenarios were performed on the Ford Edge. The first scenario was performed with the vehicle loaded to its LLVW. The malfunction was simulated by placing the compact spare tire, with no TPMS sensor, on the right front wheel position. The second scenario was performed by removing a TPMS fuse.

2.2 SUMMARY OF RESULTS

Three tire deflation scenarios were performed on the test vehicle at LLVW:
   A. Right front
   B. Left rear and right rear
   C. Left front, left rear, right rear, and right front

Three tire deflation scenarios were performed on the test vehicle at UVW + VCW:
   D. Left rear
   E. Left front and right rear
   F. Left rear, right rear, and right front

The data indicate compliance of the test vehicle’s tire pressure monitoring system for the six tire deflation scenarios tested.

One malfunction detection scenario was performed on the test vehicle at LLVW:
   G. Spare tire without TPMS sensor was applied to right front wheel position.

One malfunction detection scenario was performed on the test vehicle at UVW + VCW:
   H. A TPMS fuse was removed.

In both scenarios, the vehicle’s combination malfunction telltale properly operated per the standard’s requirements.
SECTION 3
TEST DATA
**FMVSS No. 138 – TEST DATA SUMMARY**

- **TEST DATES:** March 4 – March 17, 2009  
  **LAB:** U. S. DOT San Angelo Test Facility
- **VIN:** 2FMDK36C89BA34371  
  **VEHICLE NHTSA NUMBER:** C90203
- **CERTIFICATION LABEL BUILD DATE:** 10/2008

### REQUIREMENTS | PASS/FAIL
--- | ---
**LOW TIRE PRESSURE WARNING TELLTALE**  
S138: S4.3.1 (a), (b); S4.3.3 (a), (b)
- **Mounting:** PASS
- **Symbol and color:** PASS
- **Check of lamp function:** PASS

**MALFUNCTION TELLTALE**  
S138: S4.4 (b) or (c)
- **Mounting:** PASS
- **Symbol and color:** PASS
- **Check of lamp function:** PASS

**LOW TIRE PRESSURE WARNING - OPERATIONAL PERFORMANCE**  
S138: S4.2, S4.3.1 (c), S4.3.2
- **Telltale illumination:** PASS

**MALFUNCTION INDICATOR – OPERATIONAL PERFORMANCE**  
S138: S4.4 (a)
- **Telltale illumination:** PASS

**TPMS WRITTEN INSTRUCTIONS**  
S138: S4.5
- **Image of telltales:** PASS
- **Verbatim statements:** PASS

### REMARKS: None
DATA SHEET 1 (Sheet 1 of 3)
TEST PREPARATION INFORMATION

TEST DATE: March 4, 2009
LAB: U. S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203
VIN: 2FMDK36C89BA34371

CERTIFICATION LABEL BUILD DATE: 10/2008
ENGINE: 3.5 liter 6 cylinder

MY/MAKE/MODEL/BODY STYLE: 2009 Ford Edge SE four-door MPV

TIRE CONDITIONING:
( X ) Tires used more than 100 km. Actual odometer reading: 267.3 km (166.1 mi)

VEHICLE ALIGNMENT AND WHEEL BALANCING:
Alignment checked: ( ) Front ( ) Rear ( X ) COTR waived
Wheels balanced: ( ) Front ( ) Rear ( X ) COTR waived

TPMS IDENTIFICATION:
TPMS MAKE/MODEL: Sensor: Siemens P/N 6F2T-1A150-Ax
Source: Manufacturer supplied information

TPMS TYPE: ( X ) Direct ( ) Indirect ( ) Other

Does TPMS require execution of a learning/calibration driving phase? ( )YES ( X )NO
Source: Manufacturer supplied information

Does TPMS have a manual reset control? ( )YES ( X )NO

TPMS MALFUNCTION INDICATOR TYPE:
( ) None ( ) Dedicated Telltale ( X ) Combination low tire pressure/malfunction telltale
DATA SHEET 1 (Sheet 2 of 3)
TEST PREPARATION INFORMATION

DESIGNATED TIRE SIZE(S) FROM VEHICLE LABELING AND OWNER’S MANUAL:

<table>
<thead>
<tr>
<th>Axle</th>
<th>Tire Size</th>
<th>Recommended Cold Inflation Pressure</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>P235/65R17</td>
<td>240 kPa (35 psi)</td>
<td>Vehicle placard</td>
</tr>
<tr>
<td>Rear</td>
<td>P235/65R17</td>
<td>240 kPa (35 psi)</td>
<td>Vehicle placard</td>
</tr>
</tbody>
</table>

INSTALLED TIRE DATA
Diagram - MPV Tire Labeling

Front and Rear Axles

Tire Size and Load Index / Speed Rating: P235/65R17 103T
Manufacturer/Tire Name: Hankook DynaPro AS
Sidewall Max Load Rating: 875 kg (1,929 lbs)
Max Inflation Pressure: 300 kPa (44 psi)
Sidewall Construction (number of plies and ply material): 2 polyester
Tread Construction (number of plies and ply material): 2 steel, 2 polyester, 1 nylon

Do all installed tires have the same sidewall information? (X)YES ( )NO
Are all installed tires the same as designated by the vehicle manufacturer on the vehicle placard? (X)YES ( )NO
Worksheet for Determining FMVSS No. 138 Telltale Warning Activation Pressure for Tires Installed on Vehicle

<table>
<thead>
<tr>
<th>Part</th>
<th>Front Axle</th>
<th>Rear Axle</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Recommended Inflation Pressure x .75</td>
<td>240 kPa x .75 = 180 kPa</td>
<td>240 kPa x .75 = 180 kPa</td>
</tr>
<tr>
<td>(B) Information from FMVSS 138 Table 1 below, Tire types are:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation pressure</td>
<td>( X ) P-metric-Standard load</td>
<td>( X ) P-metric-Standard load</td>
</tr>
<tr>
<td>Minimum activation pressures from Table 1</td>
<td>140 kPa (20 psi)</td>
<td>140 kPa (20 psi)</td>
</tr>
<tr>
<td>(C) Telltale Warning Activation Pressure is the higher of Part (A) or (B)</td>
<td>180 kPa (26 psi)</td>
<td>180 kPa (26 psi)</td>
</tr>
<tr>
<td>(D) Pressure at which to deflate tire(s) = (C) – 7 kPa</td>
<td>173 kPa (25 psi)</td>
<td>173 kPa (25 psi)</td>
</tr>
</tbody>
</table>

FMVSS 138 Table 1 - Low Tire Pressure Warning Telltale - Minimum Activation Pressure

<table>
<thead>
<tr>
<th>Tire Type</th>
<th>Maximum or Rated Inflation Pressure</th>
<th>Minimum Activation Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(kPa)</td>
<td>(psi)</td>
</tr>
<tr>
<td>P-metric -- Standard Load</td>
<td>240, 300, or 350</td>
<td>35, or 44, or 51</td>
</tr>
<tr>
<td></td>
<td>280 or 340</td>
<td>41 or 49</td>
</tr>
<tr>
<td>P-metric - Extra Load</td>
<td>Load Range C</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Load Range D</td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>Load Range E</td>
<td>550</td>
</tr>
</tbody>
</table>

REMARKS: None

RECORDED BY: Jack R. Stewart DATE: March 4, 2009
APPROVED BY: Kenneth H. Yates
DATA SHEET 2 (Sheet 1 of 2)
LOW TIRE PRESSURE WARNING AND MALFUNCTION TELLETALE

TEST DATE: March 4, 2009 LAB: U. S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

TPMS Low Tire Pressure Warning Telltale

Telltale is mounted inside the occupant compartment in front of and in clear view of the driver?

( X )YES ( )NO (fail)

TPMS Low Tire Pressure Warning Telltale Location: Between the speedometer and tachometer, above the odometer

Identify Telltale Symbol Used (check box above figure).

X

Note any words or additional symbols used: None

Telltale is part of a reconfigurable display? ( )YES ( X )NO

TPMS Malfunction Telltale

( ) None ( ) Dedicated stand-alone ( X ) Combined with low tire pressure telltale
DATA SHEET 2 (Sheet 2 of 2)
LOW TIRE PRESSURE WARNING AND MALFUNCTION TELLTALE

Check Telltale Lamp Functions:
COMBINATION LOW TIRE PRESSURE WARNING AND MALFUNCTION TELLTALE

Ignition locking system position when telltale illuminates:

- OFF/LOCK  
- Between OFF/LOCK and ON/RUN

- ON/RUN  
- X  Between ON/RUN and START

Is the telltale yellow in color?  ( X )YES  ( )NO (fail)

Time telltale remains illuminated  3  seconds.

Starter Interlocks:
Does vehicle have any starter, transmission or other interlocks that affect operation of the telltale lamp check function?  ( )YES  ( X )NO

Low Tire Pressure Warning and Malfunction Telltales (PASS/FAIL)  PASS

REMARKS:  None

RECORDED BY:  Jack R. Stewart  DATE:  March 4, 2009

APPROVED BY:  Kenneth H. Yates
DATA SHEET 3 (Sheet 1 of 22)
TPMS OPERATIONAL PERFORMANCE

TEST DATE: March 4, 2009
LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Time: Start: 9:02 am End: 11:24 am
Ambient Temperature: Start: 19.9°C (67.8°F) End: 22.8°C (73.0°F)
Odometer Reading: Start: 269.1 km (167.2 mi)
Fuel Level: Start: Full
Weather Conditions: Partly cloudy, light wind

Time vehicle remained with engine off and tires shielded from direct sunlight (1 hour minimum): 1:30 hours

PRE-TEST TIRE INFLATION PRESSURES AND TIRE/SURFACE TEMPERATURES:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test cold measurements after ambient soak: Inflation Pressure</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>19.8°C (67.6°F)</td>
<td>20.2°C (68.4°F)</td>
<td>20.4°C (68.7°F)</td>
<td>19.8°C (67.6°F)</td>
</tr>
</tbody>
</table>
VEHICLE WEIGHT:

Vehicle Ratings from Certification Label:

- GVWR: 2,422 kg (5,340 lbs)
- GAWR (front): 1,288 kg (2,840 lbs)
- GAWR (rear): 1,148 kg (2,530 lbs)

Vehicle Capacity Weight:

Vehicle Capacity Weight 412 kg (909 lbs)

Measured Unloaded Vehicle Weight:

<table>
<thead>
<tr>
<th>Location</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>558</td>
<td>1,231</td>
</tr>
<tr>
<td>LR</td>
<td>376</td>
<td>828</td>
</tr>
<tr>
<td>RF</td>
<td>538</td>
<td>1,187</td>
</tr>
<tr>
<td>RR</td>
<td>379</td>
<td>836</td>
</tr>
<tr>
<td>Front Axle</td>
<td>1,096</td>
<td>2,418</td>
</tr>
<tr>
<td>Rear Axle</td>
<td>755</td>
<td>1,664</td>
</tr>
<tr>
<td>Total Vehicle</td>
<td>1,851</td>
<td>4,082</td>
</tr>
</tbody>
</table>

Measured Test Weight: (X) LLVW (+50, -0 kg) ( ) UVW + VCW ( ) GVWR (+0, -50 kg)

<table>
<thead>
<tr>
<th>Location</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>615</td>
<td>1,355</td>
</tr>
<tr>
<td>LR</td>
<td>422</td>
<td>930</td>
</tr>
<tr>
<td>RF</td>
<td>594</td>
<td>1,310</td>
</tr>
<tr>
<td>RR</td>
<td>430</td>
<td>948</td>
</tr>
<tr>
<td>Front Axle</td>
<td>1,209</td>
<td>2,665</td>
</tr>
<tr>
<td>Rear Axle</td>
<td>852</td>
<td>1,878</td>
</tr>
<tr>
<td>Total Vehicle</td>
<td>2,061</td>
<td>4,543</td>
</tr>
</tbody>
</table>

Note: For scenarios A, B, C, and G, this total vehicle weight measures the vehicle loaded to Lightly Loaded Vehicle Weight (LLVW), 209 kg (461 lbs) of driver, passenger, and test equipment.
DATA SHEET 3 (Sheet 3 of 22)
TPMS OPERATIONAL PERFORMANCE

SCENARIO A – Right Front Tire Deflation at LLVW

TEST DATE: March 6, 2009  LAB: U. S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Note: See Data Sheet 3 (Sheet 2 of 22) for Test Weight.

TIRE INFLATION PRESSURES AND TIRE/SURFACE TEMPERATURES
BEFORE CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After loading vehicle to lightly loaded vehicle weight, positioning vehicle at selected test start point, and vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>19.3°C (66.7°F)</td>
<td>Vehicle cool down period:</td>
<td>overnight</td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>19.4°C (66.9°F)</td>
<td>19.4°C (66.9°F)</td>
<td>19.6°C (67.3°F)</td>
<td>19.2°C (66.6°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>19.6°C (67.3°F)</td>
<td>20.0°C (68.0°F)</td>
<td>19.8°C (67.6°F)</td>
<td>19.6°C (67.3°F)</td>
</tr>
</tbody>
</table>

SYSTEM CALIBRATION/LEARNING PHASE:

Time: Start: 15:09:09 UTC  End: 15:32:59 UTC
Trip Odometer Reading: Start: 316.6 km (196.7 mi)  End: 348.6 km (216.6 mi)
Ambient Temperature: Start: 19.3°C (66.7°F)  End: 19.3°C (66.7°F)
Roadway Temperature: Start: 20.4°C (68.7°F)  End: 20.2°C (68.4°F)

Driving in first direction:
Goodfellow Air Force Base (GAFB) north gate  Direction: see chart, page 60
10:07 minutes (stopwatch time)  15.8 km (9.8 mi) distance

Driving in opposite direction:
Starting point: US 87 crossover overpass  Direction: see chart, page 60
10:21 minutes (stopwatch time)  16.3 km (10.1 mi) distance

Max speed: 101.4 km/h (63.0 mph)
Total Driving Time: 20:08 minutes (VBox time)
DATA SHEET 3 (Sheet 4 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO A – Right Front Tire Deflation at LLVW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately, after vehicle is stopped, engine off:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>258.0 kPa</td>
<td>255.1 kPa</td>
<td>256.3 kPa</td>
<td>259.0 kPa</td>
</tr>
<tr>
<td>(37.4 psi)</td>
<td>(37.0 psi)</td>
<td>(37.2 psi)</td>
<td>(37.6 psi)</td>
<td></td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>26.6°C</td>
<td>25.6°C</td>
<td>25.4°C</td>
<td>27.4°C</td>
</tr>
<tr>
<td>(79.9°F)</td>
<td>(78.1°F)</td>
<td>(77.7°F)</td>
<td>(81.3°F)</td>
<td></td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>19.6°C</td>
<td>20.2°C</td>
<td>19.8°C</td>
<td>19.4°C</td>
</tr>
<tr>
<td>(67.3°F)</td>
<td>(68.4°F)</td>
<td>(67.6°F)</td>
<td>(66.9°F)</td>
<td></td>
</tr>
</tbody>
</table>

SYSTEM DETECTION PHASE:

LOCATION AND PRESSURE(S) OF DEFLATED TIRE(S):

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate Location of Tire(s) Deflated:</td>
<td></td>
<td></td>
<td></td>
<td>173.0 kPa</td>
</tr>
<tr>
<td>(   )LF (   )LR (   )RR ( X )RF</td>
<td></td>
<td></td>
<td></td>
<td>(25.1 psi)</td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TELLTALE ILLUMINATION:

Driving in first direction:

Starting point: San Angelo Test Facility shop  Direction: see chart, page 61

14:50 minutes (stopwatch time – non-cumulative)  16.9 km (10.5 mi) distance

Max speed: 98.6 km/hr (61.3 mph)

Total Driving Time: 10:17 minutes (VBox time)

TELLTALE ILLUMINATES WITHIN 20 MINUTES:  ( X )YES   (   )NO (fail)

After 5 minutes with the ignition locking system in the “Off” or “Lock” position, does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position?  ( X )YES   (   )NO (fail)

Deactivate the ignition locking system and then re-start the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position?  ( X )YES   (   )NO (fail)
DATA SHEET 3 (Sheet 5 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO A – Right Front Tire Deflation at LLVW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER TELTTALE ILLUMINATION:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>21.5°C (70.7°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle cool down period:</td>
<td>66 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>247.1 kPa (35.8 psi)</td>
<td>245.0 kPa (35.5 psi)</td>
<td>245.7 kPa (35.6 psi)</td>
<td>166.8 kPa (24.2 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>22.2°C (72.0°F)</td>
<td>22.2°C (72.0°F)</td>
<td>22.6°C (72.7°F)</td>
<td>22.6°C (72.7°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>20.4°C (68.7°F)</td>
<td>20.8°C (69.4°F)</td>
<td>20.8°C (69.4°F)</td>
<td>20.4°C (68.7°F)</td>
</tr>
</tbody>
</table>

After the cool down period of a minimum of one hour, restart the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? (X) YES ( ) NO (fail)

TELLTAL EXTINGUISHMENT:

RE-ADJUSTED TIRE INFLATION PRESSURES:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After illumination verification:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-adjusted Inflation Pressure:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
</tbody>
</table>

Is it necessary to drive the vehicle to extinguish the telltale? (X) YES ( ) NO

Starting point: San Angelo Test Facility shop

1:35 minutes (stopwatch time – non-cumulative) 0.2 km (0.1 mi) distance

TEST RESULTS

TPMS Performance Test Results (PASS/FAIL) PASS
Right front tire was deflated at LLVW.

REMARKS: None

RECORDED BY: Jack R. Stewart DATE: March 6, 2009
APPROVED BY: Kenneth H. Yates
DATA SHEET 3 (Sheet 6 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO B – Left Rear and Right Rear Tire Deflation at LLVW

TEST DATE: March 9, 2009 LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Note: See Data Sheet 3 (Sheet 2 of 22) for Test Weight.

TIRE INFLATION PRESSURES AND TIRE/SURFACE TEMPERATURES
BEFORE CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After loading vehicle to lightly loaded vehicle weight, positioning vehicle at selected test start point, and vehicle cool down period:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>19.6°C (67.3°F)</td>
<td>Vehicle cool down period:</td>
<td>overnight</td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>19.8°C (67.6°F)</td>
<td>19.8°C (67.6°F)</td>
<td>19.6°C (67.3°F)</td>
<td>19.4°C (66.9°F)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>19.6°C (67.3°F)</td>
<td>20.0°C (68.0°F)</td>
<td>20.0°C (68.0°F)</td>
<td>19.6°C (67.3°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>19.6°C (67.3°F)</td>
<td>20.0°C (68.0°F)</td>
<td>20.0°C (68.0°F)</td>
<td>19.6°C (67.3°F)</td>
</tr>
</tbody>
</table>

SYSTEM CALIBRATION/LEARNING PHASE:

Time: Start: 14:19:22 UTC End: 14:43:52 UTC
Trip Odometer Reading: Start: 376.1 km (233.7 mi) End: 408.1 km (253.6 mi)
Ambient Temperature: Start: 19.7°C (67.5°F) End: 20.5°C (68.9°F)
Roadway Temperature: Start: 20.8°C (69.4°F) End: 21.2°C (70.2°F)

Driving in first direction:
Starting point: GAFB north gate Direction: see chart, page 62
10:05 minutes (stopwatch time) 15.8 km (9.8 mi) distance

Driving in opposite direction:
Starting point: US 87 crossover overpass Direction: see chart, page 62
10:15 minutes (stopwatch time) 16.3 km (10.1 mi) distance

Max speed: 99.3 km/h (61.7 mph)
Total Driving Time: 20:20 minutes (VBox time)
TPMS OPERATIONAL PERFORMANCE
SCENARIO B – Left Rear and Right Rear Tire Deflation at LLVW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>259.4 kPa (37.6 psi)</td>
<td>256.0 kPa (37.1 psi)</td>
<td>258.0 kPa (37.4 psi)</td>
<td>259.7 kPa (37.7 psi)</td>
</tr>
<tr>
<td></td>
<td>29.2°C (84.6°F)</td>
<td>26.8°C (80.2°F)</td>
<td>27.2°C (81.0°F)</td>
<td>28.6°C (83.5°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>19.6°C (67.3°F)</td>
<td>19.8°C (67.6°F)</td>
<td>19.8°C (67.6°F)</td>
<td>19.6°C (67.3°F)</td>
</tr>
</tbody>
</table>

SYSTEM DETECTION PHASE:

LOCATION AND PRESSURE(S) OF DEFLATED TIRE(S):

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate Location of Tire(s) Deflated:</td>
<td>173.0 kPa (25.1 psi)</td>
<td>173.0 kPa (25.1 psi)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TELLTALE ILLUMINATION:

Driving in first direction:

Starting point: San Angelo Test Facility shop
Direction: see chart, page 63
13:56 minutes (stopwatch time – non-cumulative)
16.1 km (10.0 mi) distance

Max speed: 100.8 km/hr (62.6 mph)
Total Driving Time: 10:18 minutes (VBox time)

TELLTALE ILLUMINATES WITHIN 20 MINUTES: (X) YES ( ) NO (fail)

After 5 minutes with the ignition locking system in the “Off” or “Lock” position, does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? (X) YES ( ) NO (fail)

Deactivate the ignition locking system and then re-start the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? (X) YES ( ) NO (fail)
**TPMS OPERATIONAL PERFORMANCE**

**SCENARIO B – Left Rear and Right Rear Tire Deflation at LLVW**

### TIRE INFLATION PRESSURES AND TEMPERATURES AFTER TELLTALE ILLUMINATION:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>22.8°C (73.0°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle cool down period:</td>
<td>66 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>247.6 kPa (35.9 psi)</td>
<td>167.0 kPa (24.2 psi)</td>
<td>166.4 kPa (24.1 psi)</td>
<td>248.0 kPa (36.0 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>23.0°C (73.4°F)</td>
<td>23.2°C (73.8°F)</td>
<td>23.2°C (73.8°F)</td>
<td>23.2°C (73.8°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>21.0°C (69.8°F)</td>
<td>21.2°C (70.2°F)</td>
<td>21.2°C (70.2°F)</td>
<td>20.8°C (69.4°F)</td>
</tr>
</tbody>
</table>

After the cool down period of a minimum of one hour, restart the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES (   )NO (fail)

### TELLTALE EXTINGUISHMENT:

### RE-ADJUSTED TIRE INFLATION PRESSURES:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After illumination verification:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-adjusted Inflation Pressure:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
</tbody>
</table>

Is it necessary to drive the vehicle to extinguish the telltale? ( X )YES (   )NO

Starting point: San Angelo Test Facility shop

1:40 minutes (stopwatch time – non-cumulative) 0.2 km (0.1 mi) distance

**TPMS Performance Test Results (PASS/FAIL)**

PASS

Left rear and right rear tires were deflated at LLVW.

**REMARKS:** None

**RECORDED BY:** Jack R. Stewart  
**DATE:** March 9, 2009

**APPROVED BY:** Kenneth H. Yates
DATA SHEET 3 (Sheet 9 of 22)
TPMS OPERATIONAL PERFORMANCE

SCENARIO C – Left Front, Left Rear, Right Rear, Right Front Tire Deflation at LLVW

TEST DATE: March 9, 2009 LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Note: See Data Sheet 3 (Sheet 2 of 22) for Test Weight.

TIRE INFLATION PRESSURES AND TIRE/SURFACE TEMPERATURES
BEFORE CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After loading vehicle to lightly loaded vehicle weight, positioning vehicle at selected test start point, and vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>24.2°C (75.6°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle cool down period:</td>
<td>68 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>23.4°C (74.1°F)</td>
<td>24.2°C (75.6°F)</td>
<td>23.8°C (74.8°F)</td>
<td>23.8°C (74.8°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>21.8°C (71.2°F)</td>
<td>22.2°C (72.0°F)</td>
<td>22.4°C (72.3°F)</td>
<td>21.6°C (70.9°F)</td>
</tr>
</tbody>
</table>

SYSTEM CALIBRATION/LEARNING PHASE:

Trip Odometer Reading: Start: 433.6 km (269.4 mi) End: 465.4 km (289.2 mi)
Ambient Temperature: Start: 24.4°C (75.9°F) End: 25.0°C (77.0°F)
Roadway Temperature: Start: 30.4°C (86.7°F) End: 30.6°C (87.1°F)

Driving in first direction:
Starting point: GAFB north gate Direction: see chart, page 64
10:09 minutes (stopwatch time) 15.8 km (9.8 mi) distance

Driving in opposite direction:
Starting point: US 87 crossover overpass Direction: see chart, page 64
10:22 minutes (stopwatch time) 16.1 km (10.0 mi) distance

Max speed: 98.6 km/h (61.3 mph)
Total Driving Time: 20:31 minutes (VBox time)
TPMS OPERATIONAL PERFORMANCE

SCENARIO C – Left Front, Left Rear, Right Rear, Right Front Tire Deflation at LLVW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately, after vehicle is stopped, engine off: Inflation Pressure</td>
<td>261.0 kPa (37.9 psi)</td>
<td>257.9 kPa (37.4 psi)</td>
<td>260.8 kPa (37.8 psi)</td>
<td>260.4 kPa (37.8 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>34.2°C (93.6°F)</td>
<td>32.2°C (90.0°F)</td>
<td>34.2°C (93.6°F)</td>
<td>33.6°C (92.5°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>22.2°C (72.0°F)</td>
<td>22.4°C (72.3°F)</td>
<td>22.6°C (72.7°F)</td>
<td>22.2°C (72.0°F)</td>
</tr>
</tbody>
</table>

SYSTEM DETECTION PHASE:

LOCATION AND PRESSURE(S) OF DEFLATED TIRE(S):

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate Location of Tire(s) Deflated:</td>
<td>173.0 kPa (25.1 psi)</td>
<td>173.0 kPa (25.1 psi)</td>
<td>173.0 kPa (25.1 psi)</td>
<td>173.0 kPa (25.1 psi)</td>
</tr>
</tbody>
</table>

TELLTALE ILLUMINATION:

Driving in first direction:

Starting point: San Angelo Test Facility shop  Direction: see chart, page 65

14:22 minutes (stopwatch time – non-cumulative)  16.3 km (10.1 mi) distance

Max speed: 96.4 km/hr (59.9 mph)

Total Driving Time: 10:18 minutes (VBox time)

TELLTALE ILLUMINATES WITHIN 20 MINUTES: ( X )YES (   )NO (fail)

After 5 minutes with the ignition locking system in the “Off” or “Lock” position, does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES (   )NO (fail)

Deactivate the ignition locking system and then re-start the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES (   )NO (fail)
DATA SHEET 3 (Sheet 11 of 22)
TPMS OPERATIONAL PERFORMANCE

SCENARIO C – Left Front, Left Rear, Right Rear, Right Front Tire Deflation at LLVW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER TELLTALE ILLUMINATION:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After vehicle cool down period:</td>
<td>165.2 kPa (24.0 psi)</td>
<td>166.3 kPa (24.1 psi)</td>
<td>164.8 kPa (23.9 psi)</td>
<td>166.0 kPa (24.1 psi)</td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>25.7°C (78.3°F)</td>
<td>Vehicle cool down period: 60 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>25.8°C (78.4°F)</td>
<td>26.4°C (79.5°F)</td>
<td>26.6°C (79.9°F)</td>
<td>26.6°C (79.9°F)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>22.4°C (72.3°F)</td>
<td>22.8°C (73.0°F)</td>
<td>23.2°C (73.8°F)</td>
<td>22.8°C (73.0°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>22.4°C (72.3°F)</td>
<td>22.8°C (73.0°F)</td>
<td>23.2°C (73.8°F)</td>
<td>22.8°C (73.0°F)</td>
</tr>
</tbody>
</table>

After the cool down period of a minimum of one hour, restart the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? (X) YES ( ) NO (fail)

TELLTALE EXTINGUISHMENT:
RE-ADJUSTED TIRE INFLATION PRESSURES:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After illumination verification:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Re-adjusted Inflation Pressure:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is it necessary to drive the vehicle to extinguish the telltale? (X) YES ( ) NO

Starting point: San Angelo Test Facility shop
1:29 minutes (stopwatch time – non-cumulative) 0.3 km (0.2 mi) distance

TEST RESULTS

TPMS Performance Test Results (PASS/FAIL) PASS

Left front, left rear, right rear, and right front tires were deflated at LLVW.

REMARKS: None

RECORDED BY: Jack R. Stewart DATE: March 9, 2009
APPROVED BY: Kenneth H. Yates
Test Date: March 10, 2009
Lab: U.S. DOT San Angelo Test Facility

Vehicle NHTSA Number: C90203

Time: Start: 10:38 am End: 1:40 pm

Ambient Temperature: Start: 23.3°C (73.9°F) End: 25.6°C (78.1°F)

Odometer Reading: Start: 490.2 km (304.6 mi)

Fuel Level: Start: Full

Weather Conditions: Overcast and calm

Time vehicle remained with engine off and tires shielded from direct sunlight: overnight

Pre-Test Tire Inflation Pressures and Tire/Surface Temperatures:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test cold measurements after ambient soak: Inflation Pressure</td>
<td>240.0 kPa  (34.8 psi)</td>
<td>240.0 kPa  (34.8 psi)</td>
<td>240.0 kPa  (34.8 psi)</td>
<td>240.0 kPa  (34.8 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>22.8°C     (73.0°F)</td>
<td>24.2°C     (75.6°F)</td>
<td>25.2°C     (77.4°F)</td>
<td>23.2°C     (73.8°F)</td>
</tr>
</tbody>
</table>
DATA SHEET 3 (Sheet 13 of 22)
TPMS OPERATIONAL PERFORMANCE

VEHICLE WEIGHT:

Vehicle Ratings from Certification Label:

- **GVWR:** 2,422 kg (5,340 lbs)
- **GAWR (front):** 1,288 kg (2,840 lbs)
- **GAWR (rear):** 1,148 kg (2,530 lbs)

Vehicle Capacity Weight:

- **Vehicle Capacity Weight:** 412 kg (909 lbs)

Measured Unloaded Vehicle Weight:

- **LF:** 560 kg (1,235 lbs)
- **LR:** 377 kg (831 lbs)
- **RF:** 541 kg (1,193 lbs)
- **RR:** 375 kg (826 lbs)
- **Front Axle:** 1,101 kg (2,428 lbs)
- **Rear Axle:** 752 kg (1,657 lbs)

Total Vehicle: 1,853 kg (4,085 lbs)

Measured Test Weight:

- **( ) LLVW (+50, -0 kg)**
- **( X ) UVW + VCW**
- **( ) GVWR (+0, -50 kg)**

- **LF:** 622 kg (1,372 lbs)
- **LR:** 518 kg (1,142 lbs)
- **RF:** 608 kg (1,341 lbs)
- **RR:** 517 kg (1,139 lbs)
- **Front Axle:** 1,230 kg (2,713 lbs) (≤ GAWR)
- **Rear Axle:** 1,035 kg (2,281 lbs) (≤ GAWR)

Total Vehicle: 2,265 kg (4,994 lbs) (not greater than GVWR)

Note: For scenarios D, E, and F, this Total Vehicle Weight measures the vehicle loaded to Unloaded Vehicle Weight (UVW) and Vehicle Capacity Weight (VCW), 412 kg (909 lbs) of driver, passenger, test equipment, and ballast.
DATA SHEET 3 (Sheet 14 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO D – Left Rear Tire Deflation at UVW + VCW

TEST DATE: March 16, 2009  LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Note: See Data Sheet 3 (Sheet 13 of 22) for Test Weight.

TIRE INFLATION PRESSURES AND TIRE/SURFACE TEMPERATURES BEFORE CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After loading vehicle to UVW + VCW, positioning vehicle at selected test start point, and vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>12.0°C (53.6°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle cool down period:</td>
<td>overnight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>12.6°C (54.7°F)</td>
<td>12.2°C (54.0°F)</td>
<td>12.2°C (54.0°F)</td>
<td>12.6°C (54.7°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>13.4°C (56.1°F)</td>
<td>13.4°C (56.1°F)</td>
<td>13.4°C (56.1°F)</td>
<td>13.4°C (56.1°F)</td>
</tr>
</tbody>
</table>

SYSTEM CALIBRATION/LEARNING PHASE:

Trip Odometer Reading: Start: 491.3 km (305.3 mi)  End: 523.4 km (325.2 mi)
Ambient Temperature: Start: 12.2°C (54.0°F)  End: 13.2°C (55.8°F)
Roadway Temperature: Start: 12.0°C (53.6°F)  End: 14.8°C (58.6°F)

Driving in first direction:
Starting point: GAFB north gate  Direction: see chart, page 66
10:09 minutes (stopwatch time)  15.8 km (9.8 mi) distance

Driving in opposite direction:
Starting point: US 87 crossover overpass  Direction: see chart, page 66
10:17 minutes (stopwatch time)  16.3 km (10.1 mi) distance

Max speed: 99.8 km/h (62.0 mph)
Total Driving Time: 20:30 minutes (VBox time)
DATA SHEET 3 (Sheet 15 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO D – Left Rear Tire Deflation at UVW + VCW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately, after vehicle is stopped, engine off:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>261.7 kPa (38.0 psi)</td>
<td>261.2 kPa (37.9 psi)</td>
<td>263.0 kPa (38.1 psi)</td>
<td>262.0 kPa (38.0 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>25.6°C (78.1°F)</td>
<td>23.8°C (74.8°F)</td>
<td>23.2°C (73.8°F)</td>
<td>23.8°C (74.8°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>13.4°C (56.1°F)</td>
<td>13.4°C (56.1°F)</td>
<td>13.2°C (55.8°F)</td>
<td>13.2°C (55.8°F)</td>
</tr>
</tbody>
</table>

SYSTEM DETECTION PHASE:

LOCATION AND PRESSURE(S) OF DEFLATED TIRE(S):

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate Location of Tire(s) Deflated:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( )LF ( X )LR ( )RR ( )RF Inflation Pressure</td>
<td>173.0 kPa (25.1 psi)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TELLTALE ILLUMINATION:

Driving in first direction:
- Starting point: San Angelo Test Facility shop
- Direction: see chart, page 67
- 14:49 minutes (stopwatch time – non-cumulative)
- 16.1 km (10.0 mi) distance
- Max speed: 99.4 km/hr (61.8 mph)
- Total Driving Time: 10:11 minutes (VBox time)

TELLTALE ILLUMINATES WITHIN 20 MINUTES: ( X )YES ( )NO (fail)

After 5 minutes with the ignition locking system in the “Off” or “Lock” position, does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES ( )NO (fail)

Deactivate the ignition locking system and then re-start the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES ( )NO (fail)
TPMS OPERATIONAL PERFORMANCE
SCENARIO D – Left Rear Tire Deflation at UVW + VCW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER TELLTALE ILLUMINATION:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature: 18.7°C (65.7°F)</td>
<td>Vehicle cool down period: 61 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>252.1 kPa (36.6 psi)</td>
<td>167.0 kPa (24.2 psi)</td>
<td>253.0 kPa (36.7 psi)</td>
<td>252.4 kPa (36.6 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>18.8°C (65.8°F)</td>
<td>17.6°C (63.7°F)</td>
<td>17.4°C (63.3°F)</td>
<td>17.6°C (63.7°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>15.0°C (59.0°F)</td>
<td>15.2°C (59.4°F)</td>
<td>15.0°C (59.0°F)</td>
<td>14.8°C (58.6°F)</td>
</tr>
</tbody>
</table>

After the cool down period of a minimum of one hour, restart the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? (X) YES ( ) NO (fail)

TELLTALE EXTINGUISHMENT:
RE-ADJUSTED TIRE INFLATION PRESSURES:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After illumination verification:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-adjusted Inflation Pressure:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
</tbody>
</table>

Is it necessary to drive the vehicle to extinguish the telltale? (X) YES ( ) NO

Starting point: San Angelo Test Facility shop
1:24 minutes (stopwatch time – non-cumulative) 0.3 km (0.2 mi) distance

TEST RESULTS
TPMS Performance Test Results (PASS/FAIL) PASS
Left rear tire was deflated at LLVW.

REMARKS: None

RECORDED BY: Jack R. Stewart DATE: March 16, 2009
APPROVED BY: Kenneth H. Yates
DATA SHEET 3 (Sheet 17 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO E – Left Front, Right Rear Tire Deflation at UVW + VCW

TEST DATE: March 16, 2009  LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Note: See Data Sheet 3 (Sheet 13 of 22) for Test Weight.

TIRE INFLATION PRESSURES AND TIRE/SURFACE TEMPERATURES
BEFORE CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After loading vehicle to UVW + VCW, positioning vehicle at selected test start point, and vehicle cool down period:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Ambient Temperature: 21.6°C (70.9°F)</td>
<td>17.6°C (63.7°F)</td>
<td>18.4°C (65.1°F)</td>
<td>18.8°C (65.8°F)</td>
<td>19.2°C (66.6°F)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>15.4°C (59.7°F)</td>
<td>15.6°C (60.1°F)</td>
<td>16.0°C (60.8°F)</td>
<td>15.2°C (59.4°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SYSTEM CALIBRATION/LEARNING PHASE:

Time: Start: 17:43:02 UTC  End: 18:07:13 UTC

Trip Odometer Reading: Start: 548.1 km (340.6 mi)  End: 580.0 km (360.4 mi)

Ambient Temperature: Start: 21.8°C (71.2°F)  End: 24.6°C (76.3°F)

Roadway Temperature: Start: 33.8°C (92.8°F)  End: 35.4°C (95.7°F)

Driving in first direction:

Starting point: GAFB north gate  Direction: see chart, page 68

10:09 minutes (stopwatch time)  15.8 km (9.8 mi) distance

Driving in opposite direction:

Starting point: US 87 crossover overpass  Direction: see chart, page 68

10:20 minutes (stopwatch time)  16.1 km (10.0 mi) distance

Max speed: 98.7 km/h (61.3 mph)

Total Driving Time: 20:29 minutes (VBox time)
DATA SHEET 3 (Sheet 18 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO E – Left Front, Right Rear Tire Deflation at UVW + VCW

TIRE INFLATION Pressures AND TEMPERATURES AFTER CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately, after vehicle is stopped, engine off: Inflation Pressure</td>
<td>265.8 kPa (38.6 psi)</td>
<td>265.6 kPa (38.5 psi)</td>
<td>269.2 kPa (39.0 psi)</td>
<td>266.1 kPa (38.6 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>32.2°C (90.0°F)</td>
<td>34.8°C (94.6°F)</td>
<td>33.6°C (92.5°F)</td>
<td>34.2°C (93.6°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>16.4°C (61.5°F)</td>
<td>16.8°C (62.2°F)</td>
<td>16.8°C (62.2°F)</td>
<td>16.6°C (61.9°F)</td>
</tr>
</tbody>
</table>

SYSTEM DETECTION PHASE:

LOCATION AND PRESSURE(S) OF DEFLATED TIRE(S):

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate Location of Tire(s) Deflated:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( X )LF ( )LR ( X )RR ( )RF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>173.0 kPa (25.1 psi)</td>
<td>173.0 kPa (25.1 psi)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TELLTALE ILLUMINATION:

Driving in first direction:

Starting point: San Angelo Test Facility shop
Direction: See chart, page 69

13:41 minutes (stopwatch time – non-cumulative) 15.9 km (9.9 mi) distance

Max speed: 100.4 km/hr (62.4 mph)
Total Driving Time: 10:09 minutes (VBox time)

TELLTALE ILLUMINATES WITHIN 20 MINUTES: ( X )YES ( )NO (fail)

After 5 minutes with the ignition locking system in the “Off” or “Lock” position, does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES ( )NO (fail)

Deactivate the ignition locking system and then re-start the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES ( )NO (fail)
DATA SHEET 3 (Sheet 19 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO E – Left Front, Right Rear Tire Deflation at UVW + VCW

TIRED INFLATION PRESSURES AND TEMPERATURES AFTER TELLTALE ILLUMINATION:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>26.2°C (79.2°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle cool down period:</td>
<td>60 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>163.5 kPa (23.7 psi)</td>
<td>249.5 kPa (36.2 psi)</td>
<td>161.9 kPa (23.5 psi)</td>
<td>250.0 kPa (36.3 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>23.4°C (74.1°F)</td>
<td>23.2°C (73.8°F)</td>
<td>23.6°C (74.5°F)</td>
<td>24.4°C (75.9°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>17.6°C (63.7°F)</td>
<td>17.8°C (64.0°F)</td>
<td>18.0°C (64.4°F)</td>
<td>17.4°C (63.3°F)</td>
</tr>
</tbody>
</table>

After the cool down period of a minimum of one hour, restart the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position? (X) YES ( ) NO (fail)

TELLTALE EXTINGUISHMENT:

RE-ADJUSTED TIRE INFLATION PRESSURES:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After illumination verification:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-adjusted Inflation Pressure:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
</tbody>
</table>

Is it necessary to drive the vehicle to extinguish the telltale? (X) YES ( ) NO

Starting point: San Angelo Test Facility shop

1:46 minutes (stopwatch time – non-cumulative) 0.3 km (0.2 mi) distance

TEST RESULTS

TPMS Performance Test Results (PASS/FAIL) PASS
Left front and right rear tires were deflated at UVW + VCW.

REMARKS: None

RECORDED BY: Jack R. Stewart DATE: March 16, 2009
APPROVED BY: Kenneth H. Yates
TEST DATE: March 17, 2009  LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Note: See Data Sheet 3 (Sheet 13 of 22) for Test Weight.

TIRE INFLATION PRESSURES AND TIRE/SURFACE TEMPERATURES
BEFORE CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After loading vehicle to UVW + VCW, positioning vehicle at selected test start point, and vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature: 14.4°C (57.9°F)</td>
<td>Vehicle cool down period: overnight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>15.6°C (60.1°F)</td>
<td>15.6°C (60.1°F)</td>
<td>15.6°C (60.1°F)</td>
<td>15.6°C (60.1°F)</td>
</tr>
<tr>
<td>San Ango Test Facility Shop Floor Temp</td>
<td>15.8°C (60.4°F)</td>
<td>15.8°C (60.4°F)</td>
<td>15.8°C (60.4°F)</td>
<td>15.8°C (60.4°F)</td>
</tr>
</tbody>
</table>

SYSTEM CALIBRATION/LEARNING PHASE:


Trip Odometer Reading: Start: 605.1 km (376.0 mi)  End: 637.1 km (395.9 mi)

Ambient Temperature: Start: 14.7°C (58.5°F)  End: 16.7°C (62.1°F)

Roadway Temperature: Start: 14.9°C (58.8°F)  End: 17.4°C (63.3°F)

Driving in first direction:
- Starting point: GAFB north gate  Direction: see chart, page 70
- 10:08 minutes (stopwatch time)  15.9 km (9.9 mi) distance

Driving in opposite direction:
- Starting point: US 87 crossover overpass  Direction: see chart, page 70
- 10:20 minutes (stopwatch time)  16.1 km (10.0 mi) distance

Max speed: 98.3 km/h (61.1 mph)

Total Driving Time: 20:29 minutes (VBox time)
### DATA SHEET 3 (Sheet 21 of 22)
TPMS OPERATIONAL PERFORMANCE
SCENARIO F – Left Rear, Right Rear, and Right Front
Tire Deflation at UVW +VCW

#### TIRE INFLATION PRESSURES AND TEMPERATURES AFTER CALIBRATION PHASE:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation Pressure</td>
<td>264.0 kPa (38.3 psi)</td>
<td>262.2 kPa (38.0 psi)</td>
<td>264.0 kPa (38.3 psi)</td>
<td>263.0 kPa (38.1 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>26.8°C (80.2°F)</td>
<td>26.6°C (79.9°F)</td>
<td>25.8°C (78.4°F)</td>
<td>26.4°C (79.5°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>15.0°C (59.0°F)</td>
<td>16.0°C (60.8°F)</td>
<td>15.4°C (59.7°F)</td>
<td>15.6°C (60.1°F)</td>
</tr>
</tbody>
</table>

#### SYSTEM DETECTION PHASE:

#### LOCATION AND PRESSURE(S) OF DEFlated TIRE(S):

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation Pressure</td>
<td>173.0 kPa (25.1 psi)</td>
<td>173.0 kPa (25.1 psi)</td>
<td>173.0 kPa (25.1 psi)</td>
<td></td>
</tr>
</tbody>
</table>

#### TELLTALE ILLUMINATION:

Driving in first direction:
- Starting point: San Angelo Test Facility shop
- Direction: see chart, page 71
- 13:57 minutes (stopwatch time – non-cumulative)
- Max speed: 96.8 km/hr (60.1 mph)
- Total Driving Time: 10:08 minutes (VBox time)

TELLTALE ILLUMINATES WITHIN 20 MINUTES: (X) YES ( ) NO (fail)
TPMS OPERATIONAL PERFORMANCE
SCENARIO F – Left Rear, Right Rear, and Right Front
Tire Deflation at UVW +VCW

TIRE INFLATION PRESSURES AND TEMPERATURES AFTER TELLTALE ILLUMINATION:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After vehicle cool down period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature:</td>
<td>22.5°C (72.5°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle cool down period:</td>
<td>60 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Pressure</td>
<td>252.8 kPa (36.7 psi)</td>
<td>166.6 kPa (24.2 psi)</td>
<td>166.1 kPa (24.1 psi)</td>
<td>168.2 kPa (24.4 psi)</td>
</tr>
<tr>
<td>Tire Sidewall Temp</td>
<td>21.2°C (70.2°F)</td>
<td>20.8°C (69.4°F)</td>
<td>21.8°C (71.2°F)</td>
<td>22.6°C (72.7°F)</td>
</tr>
<tr>
<td>San Angelo Test Facility Shop Floor Temp</td>
<td>17.8°C (64.0°F)</td>
<td>18.4°C (65.1°F)</td>
<td>18.4°C (65.1°F)</td>
<td>18.0°C (64.0°F)</td>
</tr>
</tbody>
</table>

After the cool down period of a minimum of one hour, restart the vehicle engine. Does the telltale re-illuminate and stay illuminated when the ignition locking system is activated to the “On” or “Run” position?  (X) YES  ( ) NO (fail)

TELLTALE EXTINCTION:
RE-ADJUSTED TIRE INFLATION PRESSURES:

<table>
<thead>
<tr>
<th>Execution Procedure</th>
<th>LF Tire</th>
<th>LR Tire</th>
<th>RR Tire</th>
<th>RF Tire</th>
</tr>
</thead>
<tbody>
<tr>
<td>After illumination verification:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-adjusted Inflation Pressure:</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
<td>240.0 kPa (34.8 psi)</td>
</tr>
</tbody>
</table>

Is it necessary to drive the vehicle to extinguish the telltale?  (X) YES  ( ) NO

Starting point: San Angelo Test Facility shop

1:32 minutes (stopwatch time – non-cumulative)  0.3 km (0.2 mi) distance

TEST RESULTS

TPMS Performance Test Results (PASS/FAIL)  PASS

Left rear, right rear, and right front tires were deflated at UVW +VCW.

REMARKS: None

RECORDED BY: Jack R. Stewart  DATE: March 17, 2009

APPROVED BY: Kenneth H. Yates
DATA SHEET 4 (Sheet 1 of 4)  
Scenario G – Malfunction Detection Test at LLVW

TEST DATE: March 5, 2009  
LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

<table>
<thead>
<tr>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start: 14:02:45 UTC</td>
</tr>
<tr>
<td>End: 14:24:01 UTC</td>
</tr>
</tbody>
</table>

| Trip Odometer Reading:    |
| Start: 269.4 km (167.4mi) |
| End: 299.5 km (186.1 mi)  |

| Ambient Temperature:      |
| Start: 15.5°C (59.9°F)    |
| End: 16.7°C (62.1°F)      |

| Roadway Temperature:      |
| Start: 14.2°C (57.6°F)    |
| End: 17.4°C (63.3°F)      |

| Fuel Level:               |
| Start: Full               |

Note: See Data Sheet 3 (Sheet 2 of 22) for Test Weight.

TPMS TYPE: ( X ) Direct  ( ) Indirect  ( ) Other  Describe: ________________________________

TPMS MALFUNCTION TELLTALE:  
( ) Dedicated stand-alone  ( X ) Combination low tire pressure warning/malfunction telltale

METHOD OF MALFUNCTION SIMULATION:  
Describe method of malfunction simulation: Spare tire without TPMS sensor was applied to right front at LLVW.

MALFUNCTION TELLTALE ILLUMINATION  
(after ignition locking system is activated to “On” (“Run”) position):

Combination Malfunction Telltale

Driving in first direction:
Starting point: San Angelo Test Facility shop  
Direction: see chart, page 72

21:28 minutes (stopwatch time – non-cumulative)  
30.1 km (18.7 mi) distance

Max speed: 99.6 km/h (61.9 mph)  
Total Driving Time: 16:52 minutes (VBox time)

COMBINATION MALFUNCTION TELLTALE ILLUMINATES (FLASHING AND ILLUMINATION SEQUENCE) WITHIN 20 MINUTES:  
( X ) YES  ( ) NO
Scenario G – Malfunction Detection Test at LLVW

After 5 minutes with the ignition locking system in the “Off” or “Lock” position, does the combination low tire pressure/malfunction telltale flash for a period of at least 60 seconds but no longer than 90 seconds, and then remain illuminated when the ignition locking system is activated to the “On” or “Run” position?  

( X )YES  (   )NO (fail)

- Time it takes before telltale starts flashing: 5 seconds
- Time telltale remains flashing: 75 seconds
- Time telltale remains illuminated: 60+ seconds (Verified for a minimum of 60 seconds)

Deactivate the ignition locking system and then re-start the vehicle engine. Does the telltale’s illumination sequence repeat when the ignition locking system is activated and the engine running?  

( X )YES  (   )NO (fail)

Extinguishment Phase:

Restore the TPMS to normal operation. Is it necessary to drive the vehicle to extinguish the telltale?  

( X )YES  (   )NO

Starting point: San Angelo Test Facility shop

0:40 minutes (stopwatch time – non-cumulative) 0.2 km (0.1 mi) distance

COMBINATION MALFUNCTION TELLTEALE EXTINGUISHED:  
(X )YES  (   )NO (FAIL)

TPMS MALFUNCTION PERFORMANCE TEST RESULTS (PASS/FAIL)  

PASS

Spare without TPMS sensor was applied to right front at LLVW.

REMARKS: None

RECORDED BY: Jack R. Stewart  DATE: March 5, 2009
APPROVED BY: Kenneth H. Yates
DATA SHEET 4 (Sheet 3 of 4)
Scenario H – Malfunction Detection Test

TEST DATE: March 17, 2009 LAB: U.S. DOT San Angelo Test Facility

VEHICLE NHTSA NUMBER: C90203

Time: Start: 1:28 pm End: 1:43 pm
Odometer Reading: Start: 661.1 km (410.8 mi) End: 661.1 km (410.8 mi)
Ambient Temperature: Start: 22.5°C (72.5°F) End: 22.5°C (72.5°F)
Roadway Temperature: Start: NA End: NA
Fuel Level: Start: Full

TPMS TYPE: (X) Direct ( ) Indirect ( ) Other Describe:

TPMS MALFUNCTION TELLTALE:
( ) Dedicated stand-alone (X) Combination low tire pressure warning/malfunction telltale

METHOD OF MALFUNCTION SIMULATION:
Describe method of malfunction simulation: A TPMS fuse was removed.

MALFUNCTION TELLTALE ILLUMINATION
(after ignition locking system is activated to “On” (“Run”) position):

Combination Malfunction Telltale
Illumination upon start-up - driving was not required.

COMBINATION MALFUNCTION TELLTALE ILLUMINATES (FLASHING AND ILLUMINATION SEQUENCE) WITHIN 20 MINUTES:
(X) YES ( ) NO
DATA SHEET 4 (Sheet 4 of 4)
Scenario H – Malfunction Detection Test

After 5 minutes with the ignition locking system in the “Off” or “Lock” position, does the combination low tire pressure/malfunction telltale flash for a period of at least 60 seconds but no longer than 90 seconds, and then remain illuminated when the ignition locking system is activated to the “On” or “Run” position? ( X )YES (   )NO (fail)

| Time it takes before telltale starts flashing | 3 seconds (lamp check) |
| Time telltale remains flashing | 73 seconds |
| Time telltale remains illuminated | 60+ seconds |
| (Verified for a minimum of 60 seconds) |

Deactivate the ignition locking system and then re-start the vehicle engine. Does the telltale’s illumination sequence repeat when the ignition locking system is activated and the engine running? ( X )YES (   )NO (fail)

Extinguishment Phase:

Restore the TPMS to normal operation. Is it necessary to drive the vehicle to extinguish the telltale? (   )YES ( X )NO

| COMBINATION MALFUNCTION TELLTALE EXTINGUISHED: |
| ( X )YES (   )NO (FAIL) |

TPMS MALFUNCTION PERFORMANCE TEST RESULTS (PASS/FAIL) PASS
A TPMS fuse was removed.

REMARKS: None

RECORDED BY: Jack R. Stewart DATE: March 17, 2009
APPROVED BY: Kenneth H. Yates
The following statement, in the English language, is provided verbatim in the Owner’s Manual. (X) YES ( ) NO

“Each tire, including the spare (if provided), should be checked monthly when cold and inflated to the inflation pressure recommended by the vehicle manufacturer on the vehicle placard or tire inflation pressure label. (If your vehicle has tires of a different size than the size indicated on the vehicle placard or tire inflation pressure label, you should determine the proper tire inflation pressure for those tires.)

As an added safety feature, your vehicle has been equipped with a tire pressure monitoring system (TPMS) that illuminates a low tire pressure telltale when one or more of your tires is significantly under-inflated. Accordingly, when the low tire pressure telltale illuminates, you should stop and check your tires as soon as possible, and inflate them to the proper pressure. Driving on a significantly under-inflated tire causes the tire to overheat and can lead to tire failure. Under-inflation also reduces fuel efficiency and tire tread life, and may affect the vehicle’s handling and stopping ability.

Please note that the TPMS is not a substitute for proper tire maintenance, and it is the driver’s responsibility to maintain correct tire pressure, even if under-inflation has not reached the level to trigger illumination of the TPMS low tire pressure telltale.”
As specified, the following sections, in the English language, are required verbatim in paragraph form in the Owner’s Manual:

The following statement is required for all vehicles certified to the standard starting on September 1, 2007 and for vehicles voluntarily equipped with a compliant TPMS MIL before that time.

"Your vehicle has also been equipped with a TPMS malfunction indicator to indicate when the system is not operating properly."

The above statement in the English language is provided verbatim in owner’s manual: (X)YES  ( )NO

For vehicles with a dedicated MIL telltale, add the following statement:

"The TPMS malfunction indicator is provided by a separate telltale, which displays the symbol “TPMS” when illuminated."

The above statement in the English language is provided verbatim in owner’s manual: ( )YES ( )NO (X)N/A

For vehicles with a combined low tire pressure/MIL telltale, add the following statement:

"The TPMS malfunction indicator is combined with the low tire pressure telltale. When the system detects a malfunction, the telltale will flash for approximately one minute and then remain continuously illuminated. This sequence will continue upon subsequent vehicle start-ups as long as the malfunction exists."

The above statement in the English language is provided verbatim in owner’s manual: (X)YES  ( )NO ( )N/A

The following statement is required for all vehicles certified to the standard starting on September 1, 2007 and for vehicles voluntarily equipped with a compliant TPMS MIL before that time.

"When the malfunction indicator is illuminated, the system may not be able to detect or signal low tire pressure as intended. TPMS malfunctions may occur for a variety of reasons, including the installation of replacement or alternate tires or wheels on the vehicle that prevent the TPMS from functioning properly. Always check the TPMS malfunction telltale after replacing one or more tires or wheels on your vehicle to ensure that the replacement or alternate tires and wheels allow the TPMS to continue to function properly."

The above statement in the English language is provided verbatim in owner’s manual: (X)YES  ( )NO

DATA INDICATES COMPLIANCE:  PASS/FAIL:  PASS
Does the Owner's Manual provide an image of the Low Tire Pressure Warning Telltale symbol (and an image of the TPMS Malfunction Telltale warning (“TPMS”), if a dedicated telltale is utilized for this function)?

( X )YES   ( )NO

Does the Owner's Manual include the following (allowable) information?

☑ Significance of the low tire pressure warning telltale illuminating

☑ A description of corrective action to be undertaken

☑ Whether the tire pressure monitoring system functions with the vehicle's spare tire (if provided)

☐ How to use a reset button, if one is provided

☑ The time for the TPMS telltale(s) to extinguish once the low tire pressure condition or the malfunction is corrected

REMARKS:  None

RECORDED BY:  Jack R. Stewart          DATE:   March 4, 2009

APPROVED BY:  Kenneth H. Yates
# SECTION 4
## TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

<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>Stopwatch</td>
<td>WESTCLOX QUARTZ STOPWATCH</td>
<td>NONE</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Ambient Temperature Gauge</td>
<td>FLUKE 50D K/J THERMOMETER</td>
<td>SERIAL # 80840101</td>
<td>3/10/2008</td>
<td>3/10/2009</td>
</tr>
<tr>
<td>Ambient Temperature Gauge</td>
<td>FLUKE 179 DIGITAL THERMOMETER*</td>
<td>SERIAL #84740316</td>
<td>2/12/2009</td>
<td>2/12/2010</td>
</tr>
<tr>
<td>Air Pressure Gauge</td>
<td>ASHCROFT GENERAL PURPOSE DIGITAL GAUGE</td>
<td>MODEL # D1005PS 02L 100 PSI SERIAL # 20017398-01</td>
<td>11/20/2008</td>
<td>11/20/2009</td>
</tr>
<tr>
<td>Floor Scales (Vehicle)</td>
<td>INTERCOMP SW DELUXE SCALES</td>
<td>PART # 100156 SERIAL # 27032382</td>
<td>8/5/2008</td>
<td>8/5/2009</td>
</tr>
<tr>
<td>Platform Scale (Ballast)</td>
<td>HOWE RICHARDSON</td>
<td>MODEL # 6401 SERIAL # 0181-5509-26</td>
<td>8/5/2008</td>
<td>8/5/2009</td>
</tr>
</tbody>
</table>

*This gauge used beginning March 10.*
SECTION 5
PHOTOGRAPHS
DATE: 10/08

FRONT GAWR: 2840LB
1288KG
P235/65R17
17x7.5J
AT 240 kPa/ 35 PSI COLD

REAR GAWR: 2530LB
1148KG
TIRES P235/65R17
RIMS 17x7.5J
AT 240 kPa/ 35 PSI COLD

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

VIN: 2FMDK36C89BA34371
TYPE: MPV

FIGURE 5.2
VEHICLE CERTIFICATION LABEL
**TIRE AND LOADING INFORMATION**

**SEATING CAPACITY**

<table>
<thead>
<tr>
<th></th>
<th>TOTAL: 5</th>
<th>FRONT: 2</th>
<th>REAR: 3</th>
</tr>
</thead>
</table>

The combined weight of occupants and cargo should never exceed: 412 kg or 909 lbs.

<table>
<thead>
<tr>
<th>TIRE</th>
<th>SIZE</th>
<th>COLD TIRE PRESSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONT</td>
<td>P235/65R17</td>
<td>240 KPA, 35 PSI</td>
</tr>
<tr>
<td>REAR</td>
<td>P235/65R17</td>
<td>240 KPA, 35 PSI</td>
</tr>
<tr>
<td>SPARE</td>
<td>T165/80D17</td>
<td>415 KPA, 60 PSI</td>
</tr>
</tbody>
</table>

SEE OWNERS MANUAL FOR ADDITIONAL INFORMATION

2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.3
VEHICLE PLACARD
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.4
TIRE SHOWING BRAND
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.5
TIRE SHOWING MODEL
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.7
TIRE SHOWING DOT SERIAL NUMBER
U.S.A. CANADA AUSTRALIA CODES ONLY

MAX. LOAD 875 kg (1929 LBS) AT
300 kPa (44 PSI) MAX. PRESS.
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.9
TIRE SHOWING SIDEWALL / TREAD CONSTRUCTION
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.10
RIM SHOWING TPMS SENSOR
FIGURE 5.11
RIM CONTOUR FOR FULL WIDTH OF CROSS SECTION
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.12
DISPLAY SHOWING COMBINATION LOW TIRE PRESSURE WARNING / TPMS MALFUNCTION WARNING TELLTALE
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO 138

FIGURE 5.13
TEST INSTRUMENTATION INSTALLED IN VEHICLE
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.14
VEHICLE REAR SEAT BALLAST
FOR UVW + VCW LOAD
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.15
REAR OF VEHICLE BALLAST FOR UVW + VCW LOAD
2009 FORD EDGE SE
NHTSA NO. C90203
FMVSS NO. 138

FIGURE 5.17
SPARE INSTALLED ON RIGHT FRONT
FOR MALFUNCTION DETECTION TEST
SECTION 6
TEST PLOTS
Scenario A: Right Front Tire at LLWV
Test Date: 3/6/09
Data File Time: 23:54 minutes
Cumulative Driving Time: 20:08 minutes
Start Point: GAFB North Gate

Calibration Phase:
Scenario A: Right Front Tire at LLVW
Test Date: 3/6/09
Data File Time: 14:25 minutes
Cumulative Driving Time: 10:17 minutes
Start Point: San Angelo Test Facility shop

Detection Phase:

2009 Ford Edge (C90203) RF Illumination LLVW

Log Rate : = 100.00 Hz
Scenario B: Left Rear, Right Rear Tires at LLVW
Test Date: 3/9/09
Data File Time: 24:42 minutes
Cumulative Driving Time: 20:20 minutes
Start Point: GAFB North Gate

Calibration Phase:
Scenario B: Left Rear, Right Rear Tires at LLVW
Test Date: 3/9/09
Data File Time: 14:12 minutes
Cumulative Driving Time: 10:18 minutes
Start Point: San Angelo Test Facility shop

Detection Phase:

2009 Ford Edge (C90203) LR, RR Illumination LLVW
Scenario C: Left Front, Left Rear, Right Rear, Right Front Tires at LLVW
Test Date: 3/9/09
Data File Time: 24:37 minutes
Cumulative Driving Time: 20:31 minutes
Start Point: GAFB North Gate

Calibration Phase:

2009 Ford Edge (C90203) LF, LR, RR, RF Calibration LLVW

Log Rate := 100.00 Hz

### Graph

- **Speed Trace**
- **Brake Triggers**
- **Svc Roads & Turnaround**
- **RT. 388 E**
- **Loop 306 S**
- **U.S. 87 W**
- **U.S. 87 E**
- **Loop 306 N**
- **RT. 388 W**

Kmh vs. secs graph showing driving and braking events.
Scenario C: Left Front, Left Rear, Right Rear, Right Front Tires at LLVW
Test Date: 3/9/09
Data File Time: 14:04 minutes
Cumulative Driving Time: 10:18 minutes
Start Point: San Angelo Test Facility shop

Detection Phase:

2009 Ford Edge (C90203) LF, LR, RR, RF Illumination LLW

Log Rate: 100.00 Hz

Speed Trace

Exit GAFB RT. 388 E Loop 306 S U.S. 87 W Svc Roads

Brake Triggers

Telltale Illumination
Scenario D: Left Rear Tire at UVW + VCW
Test Date: 3/16/09
Data File Time: 24:10 minutes
Cumulative Driving Time: 20:30 minutes
Start Point: GAFB North Gate

Calibration Phase:

2009 Ford Edge (C90203) LR Calibration UWW+VCW

Log Rate := 100.00 Hz
Scenario D: Left Rear Tire at UVW + VCW
Test Date: 3/16/09
Data File Time: 14:04 minutes
Cumulative Driving Time: 10:11 minutes
Start Point: San Angelo Test Facility shop

Detection Phase:
Scenario E: Left Front, Right Rear Tires at UVW + VCW
Test Date: 3/16/09
Data File Time: 24:18 minutes
Cumulative Driving Time: 20:29 minutes
Start Point: GAFB North Gate

Calibration Phase:
Scenario E: Left Front, Right Rear Tires at UVW + VCW
Test Date: 3/16/09
Data File Time: 14:04 minutes
Cumulative Driving Time: 10:09 minutes
Start Point: San Angelo Test Facility shop

Detection Phase:

2009 Ford Edge (C90203) LF, RR Illumination UVW+VCW
Scenario F: Left Rear, Right Rear, Right Front Tires at UVW + VCW
Test Date: 3/17/09
Data File Time: 24:18 minutes
Cumulative Driving Time: 20:29 minutes
Start Point: GAFB North Gate

Calibration Phase:

2009 Ford Edge (C90203) LR, RR, RF Calibration UVW+VCW

Log Rate := 100.00 Hz

Speed Trace

RT. 388 E  Loop 306 S  U.S. 87 W  U.S. 87 E  Loop 306 N  RT. 388 W

Brake Triggers

secs
Scenario F: Left Rear, Right Rear, Right Front Tires at UVW + VCW
Test Date: 3/17/09
Data File Time: 13:06 minutes
Cumulative Driving Time: 10:08 minutes
Start Point: San Angelo Test Facility shop

Detection Phase:

2009 Ford Edge (C90203) LR, RR, RF Illumination UVW+VCW
Scenario G Malfunction Illumination: Spare Tire without TPMS Sensor Applied to Right Front at LLVW.
Test Date: 3/5/09
Data File Time: 21:30 minutes
Cumulative Driving Time: 16:52 minutes
Start Point: San Angelo Test Facility shop
SECTION 7
OWNER’S MANUAL PAGES
Tires, Wheels and Loading

TIRE PRESSURE MONITORING SYSTEM (TPMS)

Each tire, including the spare (if provided), should be checked monthly when cold and inflated to the inflation pressure recommended by the vehicle manufacturer on the vehicle placard or tire inflation pressure label. If your vehicle has tires of a different size than the size indicated on the vehicle placard or tire inflation pressure label, you should determine the proper tire inflation pressure for those tires.

As an added safety feature, your vehicle has been equipped with a tire pressure monitoring system (TPMS) that illuminates a low tire pressure telltale when one or more of your tires is significantly under-inflated. Accordingly, when the low tire pressure telltale illuminates, you should stop and check your tires as soon as possible, and inflate them to the proper pressure. Driving on a significantly under-inflated tire causes the tire to overheat and can lead to tire failure. Under-inflation also reduces fuel efficiency and tire tread life, and may affect the vehicle's handling and stopping ability.

Please note that the TPMS is not a substitute for proper tire maintenance, and it is the driver's responsibility to maintain correct tire pressure, even if under-inflation has not reached the level to trigger illumination of the TPMS low tire pressure telltale.

Your vehicle has also been equipped with a TPMS malfunction indicator to indicate when the system is not operating properly. The TPMS malfunction indicator is combined with the low tire pressure telltale. When the system detects a malfunction, the telltale will flash for approximately one minute and then remain continuously illuminated. This sequence will continue upon subsequent vehicle start-ups as long as the malfunction exists.

When the malfunction indicator is illuminated, the system may not be able to detect or signal low tire pressure as intended. TPMS malfunctions may occur for a variety of reasons, including the installation of replacement or alternate tires or wheels on the vehicle that prevent the TPMS from functioning properly. Always check the TPMS malfunction telltale after replacing one or more tires or wheels on your vehicle to ensure that the replacement or alternate tires and wheels allow the TPMS to continue to function properly.

The Tire Pressure Monitoring System complies with part 15 of the FCC rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

**WARNING:** The Tire Pressure Monitoring System is NOT a substitute for manually checking tire pressure. The tire pressure should be checked periodically (at least monthly) using a tire gauge. See **Inflating your tires** in this chapter. Failure to properly maintain your tire pressure could increase the risk of tire failure, loss of control, vehicle rollover and personal injury.

Changing tires with TPMS

Each road tire is equipped with a tire pressure sensor fastened to the inside rim of the wheel. The pressure sensor is covered by the tire and is not visible unless the tire is removed. The pressure sensor is located opposite (180 degrees) from the valve stem. Care must be taken when changing the tire to avoid damaging the sensor. It is recommended that you always have your tires serviced by an authorized dealer.

The tire pressure should be checked periodically (at least monthly) using an accurate tire gauge, refer to **Inflating your tires** in this chapter.

Understanding your Tire Pressure Monitoring System (TPMS)

The Tire Pressure Monitoring System measures pressure in your four road tires and sends the tire pressure readings to your vehicle. The Low Tire Pressure Warning Lamp will turn ON if the tire pressure is significantly low. Once the light is illuminated, your tires are under inflated and need to be inflated to the manufacturer's recommended tire pressure. Even if the light turns ON and a short time later turns OFF, your tire pressure still needs to be checked. Visit www.checkmytires.org for additional information.
## Tires, Wheels and Loading

### When your temporary spare tire is installed
When one of your road tires needs to be replaced with the temporary spare, the TPMS system will continue to identify an issue to remind you that the damaged road wheel/tire needs to be repaired and put back on your vehicle.

To restore the full functionality of the Tire Pressure Monitoring System, have the damaged road wheel/tire repaired and remounted on your vehicle. For additional information, refer to *Changing tires with TPMS* in this section.

### When you believe your system is not operating properly
The main function of the Tire Pressure Monitoring System is to warn you when your tires need air. It can also warn you in the event the system is no longer capable of functioning as intended. Please refer to the following chart for information concerning your Tire Pressure Monitoring System:

<table>
<thead>
<tr>
<th>Low Tire Pressure Warning Light</th>
<th>Possible cause</th>
<th>Customer Action Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Warning Light</td>
<td>Tire(s) under-inflated</td>
<td>1. Check your tire pressure to ensure tires are properly inflated; refer to <em>Inflating your tires</em> in this chapter 2. After inflating your tires to the manufacturer’s recommended inflation pressure as shown on the Tire Label (located on the edge of driver’s door or the B-Pillar), the vehicle must be driven for at least two minutes over 20 mph (32 km/h) before the light will turn OFF.</td>
</tr>
<tr>
<td>Spare tire in use</td>
<td>Your temporary spare tire is in use. Repair the damaged road wheel/tire and reinstall it on the vehicle to restore system functionality. For a description on how the system functions, refer to <em>When your temporary spare tire is installed</em> in this section.</td>
<td></td>
</tr>
<tr>
<td>TPMS malfunction</td>
<td>If your tires are properly inflated and your spare tire is not in use and the light remains ON, contact your authorized dealer as soon as possible.</td>
<td></td>
</tr>
<tr>
<td>Flashing Warning Light</td>
<td>Spare tire in use</td>
<td>Your temporary spare tire is in use. Repair the damaged road wheel and re-mount it on the vehicle to restore system functionality. For a description on how the system functions under these conditions, refer to <em>When your temporary spare tire is installed</em> in this section.</td>
</tr>
<tr>
<td>TPMS malfunction</td>
<td>If your tires are properly inflated and your spare tire is not in use and the TPMS warning light still flashes, contact your authorized dealer as soon as possible.</td>
<td></td>
</tr>
</tbody>
</table>

### When Inflating your tires
When putting air into your tires (such as at a gas station or in your garage), the Tire Pressure Monitoring System may not respond immediately to the air added to your tires.

It may take up to two minutes of driving over 20 mph (32 km/h) for the light to turn OFF after you have filled your tires to the recommended inflation pressure.

### How temperature affects your tire pressure
The Tire Pressure Monitoring System (TPMS) monitors tire pressure in each pneumatic tire. While driving in a normal manner, a typical passenger tire inflation pressure may increase approximately 2 to 4 psi (14 to 28 kPa) from a cold start situation. If the vehicle is stationary over night with the outside temperature significantly lower than the daytime temperature, the tire pressure may decrease approximately 3 psi (20.7 kPa) for a drop of 30° F (16.6°C) in ambient temperature. This lower pressure value may be detected by the TPMS as being significantly lower than the recommended inflation pressure and activate the TPMS warning for low tire pressure. If the low tire pressure warning light is ON, visually check each tire to verify that no tire is flat. (If one or more tires are flat, repair as necessary.) Check air pressure in the road tires. If any tire is under-inflated, carefully drive the vehicle to the nearest location where air can be added to the tires. Inflate all the tires to the recommended inflation pressure.