

TP-110T-02  
August 31, 2007

U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LABORATORY TEST PROCEDURE

FOR

FMVSS 110

Tire Selection and Rims for Motor Vehicles  
With a GVWR of 4,536 Kilograms or Less  
(For Light Truck Type Vehicles Only)



ENFORCEMENT  
Office of Vehicle Safety Compliance  
Room 6111, NVS-220  
400 Seventh Street, SW  
Washington, DC 20590

OVSC LABORATORY TEST PROCEDURE NO. 110T  
TABLE OF CONTENTS

	PAGE
1. PURPOSE AND APPLICATION.....	1
2. GENERAL REQUIREMENTS.....	2
3. SECURITY .....	3
4. GOOD HOUSEKEEPING .....	3
5. TEST SCHEDULING AND MONITORING .....	3
6. TEST DATA DISPOSITION.....	4
7. GOVERNMENT FURNISHED PROPERTY (GFP).....	4
8. CALIBRATION OF TEST INSTRUMENTS.....	5
9. PHOTOGRAPHIC DOCUMENTATION.....	6
10. DEFINITIONS.....	7
11. PRETEST REQUIREMENTS .....	9
12. COMPLIANCE TEST EXECUTION.....	11
13. POST TEST REQUIREMENTS.....	18
14. REPORTS.....	19
14.1 MONTHLY STATUS REPORTS.....	19
14.2 APPARENT TEST FAILURE .....	19
14.3 FINAL TEST REPORTS .....	19
14.3.1 COPIES .....	19
14.3.2 REQUIREMENTS .....	20
14.3.3 FIRST THREE PAGES .....	20
14.3.4 TABLE OF CONTENTS .....	26
15. DATA SHEETS.....	27
16. FORMS .....	45

**REVISION CONTROL LOG  
FOR OVSC LABORATORY  
TEST PROCEDURES**

TP-110T  
**TIRE SELECTION AND RIMS  
(For Light Truck Type Vehicles Only)**

TEST PROCEDURE		FMVSS 110T		DESCRIPTION
REV. No.	DATE	AMENDMENT	EFFECTIVE DATE	
00	3/10/05	67FR69600 11/18/02	9/1/03	Final Rule
		68FR33655 6/5/03	9/1/04	Final Rule - response in part to petitions for reconsideration. <b>Effective date delayed.</b>
		68FR37981 6/26/03	9/1/04	Final Rule – correcting amendment.
		69FR31306 6/3/04	9/1/05	Final Rule - response in part to petitions for reconsideration.
		69FR51399 8/19/04	9/1/05	Correcting Amendment.
01	12/15/05	70FR14420 3/22/05	9/1/05	Final Rule – response to petitions for reconsideration – technical amendment.
02	8/14/07	71FR877 1/6/06	9/1/07	Final Rule – response to petitions for reconsideration. Certain performance requirements effective on 9/1/07.
03				
04				
05				
06				

## 1. PURPOSE AND APPLICATION

The Office of Vehicle Safety Compliance (OVSC) provides contractor laboratories with Laboratory Test Procedures as guidelines for obtaining compliance test data. The data are used to determine if a specific vehicle or item of motor vehicle equipment meets the minimum performance requirements of the subject Federal Motor Vehicle Safety Standard (FMVSS). The purpose of the OVSC Laboratory Test Procedures is to present a uniform testing and data recording format, and provide suggestions for the use of specific equipment and procedures. These Laboratory Test Procedures do not constitute an endorsement or recommendation for use of any product or method. If any contractor views any part of an OVSC Laboratory Test Procedure to be in conflict with a Federal Motor Vehicle Safety Standard (FMVSS) or observes deficiencies in a Laboratory Test Procedure, the contractor is required to advise the Contracting Officer's Technical Representative (COTR) and resolve the discrepancy prior to the start of compliance testing.

Every contractor is required to submit a detailed test procedure to the COTR before initiating the compliance test program. The procedure must include a step-by-step description of the methodology to be used. The contractor's test procedure shall contain a complete listing of test equipment with make and model number and a detailed check-off sheet. The list of test equipment shall include instrument accuracy and calibration dates. All equipment shall be calibrated in accordance with the manufacturer's instructions. There shall be no contradictions between the Laboratory Test Procedure and the contractor's in-house test procedure. Written approval of the in-house test procedures shall be obtained from the COTR before initiating the compliance test program. The OVSC Laboratory Test Procedures are not intended to limit or restrain a contractor from developing or utilizing any testing techniques or equipment which will assist in procuring the required compliance test data. However, the application of any such testing technique or equipment is subject to prior approval of the COTR.

**NOTE:** The OVSC Laboratory Test Procedures, prepared for the limited purpose of use by independent laboratories under contract to conduct compliance tests for the OVSC, are not rules, regulations or NHTSA interpretations regarding the meaning of a FMVSS. The Laboratory Test Procedures are not intended to limit the requirements of the applicable FMVSS(s). In some cases, the OVSC Laboratory Test Procedures do not include all of the various FMVSS minimum performance requirements. Recognizing applicable test tolerances, the Laboratory Test Procedures may specify test conditions that are less severe than the minimum requirements of the standard. In addition, the Laboratory Test Procedures may be modified by the OVSC at any time without notice, and the COTR may direct or authorize contractors to deviate from these procedures, as long as the tests are performed in a manner consistent with the standard itself and within the scope of the contract. Laboratory Test Procedures may not be relied upon to create any right or benefit in any person. Therefore, compliance of a vehicle or item of motor vehicle equipment is not necessarily guaranteed if the manufacturer limits its certification tests to those described in the OVSC Laboratory Test Procedures.

## 2. GENERAL REQUIREMENTS

**This Test Procedure applies only to Light Truck Type Vehicles (Multipurpose Passenger Vehicles, Buses and Trucks) with a Gross Vehicle Weight Rating (GVWR) of 4,536 kg or less and manufactured on or after September 1, 2007. This Laboratory Test Procedure is not intended for use in testing trailers, motorcycles or low speed vehicles.**

Applicable vehicles are to be equipped with tires that meet the requirements of FMVSS 139, New Pneumatic Radial Tires for Light Vehicles, and be equipped with rims that are listed by the manufacturer of the tires as suitable for use with those tires.

The sum of the maximum load ratings of tires fitted to an axle is required to be not less than the gross axle weight rating (GAWR) of the axle system as specified on the vehicle's certification label. If a passenger car tire is used, its load rating is reduced by dividing by 1.10 before calculating the sum.

For vehicles equipped with passenger car tires, the vehicle normal load on the tire is not to be greater than the value of 94 percent of the derated load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire. For vehicles equipped with LT tires, the vehicle normal load on the tire is not to be greater than the value of 94 percent of the load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire.

A single vehicle placard or a vehicle placard and a supplementary tire inflation pressure label must be affixed to each applicable vehicle.

Each rim is to be constructed according to the dimensions referred to in S4 of FMVSS 139 that is listed by the manufacturer of the tires for use with those tires and is to be capable of retaining a tire after a rapid loss of inflation pressure at 97 kilometers per hour. Vehicle rims are to be marked appropriately.

49 CFR 567, *Certification*, requires that the GVWR is not to be less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg times the vehicle's designated seating capacity. However, for school buses, the minimum occupant weight allowance is 54 kg.

49 CFR Part 575 – *Consumer Information Regulations*, sections 575.6(a)(4) and (5) require each vehicle owner's manual or other document to provide discussions or statements relating to vehicle labeling, tires and loading.

**Refer to TP-110P for testing passenger cars.**

## METRIC SYSTEM OF MEASUREMENT

As a general rule, use of the metric system of weights and measures is preferred. Performance parameters and test conditions in FMVSS are now specified in metric units. In this Laboratory Test Procedure metric values may be followed by English units only for reference (not necessarily equal). If test equipment is not available for direct measurement in metric units, the test laboratory calculates the exact metric equivalent by means of a conversion factor carried out to at least five significant digits before rounding consistent with the specified metric requirement. Metric units are to be used in the Final Test Reports.

### 3. SECURITY

The contractor will provide appropriate security measures to protect the OVSC test vehicles and parts during the entire compliance test program. The contractor is also financially responsible for any acts of theft and/or vandalism that occur during the storage of test vehicles. Security problems that arise are to be reported by telephone to the COTR and the Industrial Property Manager (IPM), Office of Contracts and Procurement, within two working days after the incident. A letter containing specific details of the security problem will be sent to the IPM (with copy to the COTR) within 4 working days. The contractor will protect and segregate all photographs and data that evolve from compliance testing. No information concerning the vehicle safety compliance test program may be released to anyone except the COTR, unless specifically authorized by the COTR or the COTR's Division Chief.

**NOTE:** NO INDIVIDUALS, OTHER THAN CONTRACTOR PERSONNEL DIRECTLY INVOLVED IN THE COMPLIANCE TESTING PROGRAM, ARE TO BE ALLOWED TO WITNESS ANY VEHICLE COMPLIANCE TEST UNLESS SPECIFICALLY AUTHORIZED BY THE COTR.

### 4. GOOD HOUSEKEEPING

Contractors will maintain the indoor compliance testing area, test fixtures and instrumentation in a neat and clean condition with test instruments arranged in an orderly manner consistent with good test laboratory housekeeping practices.

### 5. TEST SCHEDULING AND MONITORING

The contractor will submit a test schedule to the COTR prior to testing. Tests will be completed as required in the contract. Scheduling will be adjusted to permit sample motor vehicles to be tested to other FMVSS as may be required by the OVSC. All testing will be coordinated to allow monitoring by the COTR.

### 6. TEST DATA DISPOSITION

The contractor will make all vehicle preliminary compliance test data available to the COTR on location within four hours after the test. Final test data, including digital printouts and computer generated plots (if applicable), will be made available to the COTR within 5 working days. Additionally, the contractor will analyze the preliminary test results as directed by the COTR. All backup data sheets, strip charts, recordings, plots, technician's notes, etc., will be either sent to the COTR or destroyed at the conclusion of each delivery order, purchase order, etc.

## **7. GOVERNMENT FURNISHED PROPERTY (GFP)**

### **ACCEPTANCE OF TEST VEHICLE**

The contractor has the responsibility of accepting each test vehicle whether delivered by a new vehicle dealership or another vehicle transporter. In both instances, the contractor acts in the OVSC's behalf when signing an acceptance of the test vehicle delivery. When a vehicle is delivered, the contractor will check to verify the following:

- A. All options listed on the "window sticker" are present,
- B. Tires and wheels are new and the same as listed,
- C. There are no dents or other interior or exterior flaws,
- D. The vehicle has been properly prepared and is in running condition,
- E. Owner's manual, warranty document, consumer information, and extra set of keys are present, and
- F. Proper fuel filler cap is supplied on the test vehicle.

A Vehicle Condition form will be supplied to the contractor when the test vehicle is transferred from the new vehicle dealership or between test contracts. The contractor will complete a Vehicle Condition form for each vehicle and deliver it to the COTR with the Final Test Report or the report will NOT be accepted for payment.

### **NOTIFICATION OF COTR**

The COTR will be notified within 24 hours after a vehicle has been delivered. In addition, if any discrepancy or damage is found at the time of delivery, a copy of the Vehicle Condition form will be sent to the COTR immediately.

## **8. CALIBRATION OF TEST INSTRUMENTS**

Before the contractor initiates the safety compliance test program, a test instrumentation calibration system will be implemented and maintained in accordance with established calibration practices. The calibration system will include the following as a minimum:

- A. Standards for calibrating the measuring and test equipment will be stored and used under appropriate environmental conditions to assure their accuracy and stability.
- B. All measuring instruments and standards will be calibrated by the contractor, or a commercial facility, against a higher order standard at periodic intervals NOT TO EXCEED TWELVE (12) MONTHS! Records, showing the calibration traceability to the National Institute of Standards and Technology (NIST), will be maintained for all measuring and test equipment.
- C. All measuring and test equipment and measuring standards will be labeled with the following information:
  - (1) Date of calibration
  - (2) Date of next scheduled calibration
  - (3) Name of the technician who calibrated the equipment
- D. A written calibration procedure will be provided by the contractor which includes as a minimum the following information for all measurement and test equipment:
  - (1) Type of equipment, manufacturer, model number, etc.
  - (2) Measurement range
  - (3) Accuracy
  - (4) Calibration interval
  - (5) Type of standard used to calibrate the equipment (calibration traceability of the standard must be evident)
- E. Records of calibration for all test instrumentation will be kept by the

contractor in a manner which assures the maintenance of established calibration schedules. All such records will be readily available for inspection when requested by the COTR. The calibration procedure will be approved by the COTR before the test program commences.

Further guidance is provided in the International Standard ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment" and American National Standard ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment - General Requirements".

## **9. PHOTOGRAPHIC DOCUMENTATION**

Photographs for test reports will be 8 x 10 inches, and clearly illustrate the intended features. A tag, label, or placard identifying the test vehicle model, NHTSA number and date or item of equipment number and date will appear in each photograph and be legible. Each photograph will be labeled as to the subject matter. As a minimum, the following photographs will be included, as applicable.

- A. 3/4 frontal view from left side of vehicle
- B. 3/4 rear view from right side of vehicle
- C. Vehicle's Certification Label
- D. Vehicle Placard
- E. Tire Inflation Pressure Label
- F. Tire showing brand and model
- G. Tire showing size, load index and speed symbol
- H. Tire showing load rating and inflation pressure
- I. Tire showing serial number
- J. Rim markings
- K. Close-up of interior seating position simulated occupant ballast
- L. Close-up of interior cargo simulated ballast
- M. View of vehicle on weight scales
- N. Pertinent Owner's manual pages
- O. Close-up of all test failure areas and components

## **10. DEFINITIONS**

## CERTIFICATION LABEL

A label required to be affixed to every motor vehicle in accordance with Part 567, *Certification*.

## DOT SERIAL NUMBER

Serial number appearing on the sidewall of the tire near the rim required by FMVSS 109 or 119 which identifies the tire manufacturing plant, the tire size and type, and the week of manufacture.

EXAMPLE: DOT MAL9 ABC032.

## DOT SYMBOL

The letters "DOT" are part of the DOT serial number. This is the manufacturer's certification that the tire or rim meets or exceeds the requirements of FMVSS Nos. 110 and 139.

## GAWR

The Gross Axle Weight Rating (GAWR) means the value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces.

## GVWR

The Gross Vehicle Weight Rating (GVWR) means the value specified by the manufacturer as the loaded weight of a single vehicle.

## NORMAL OCCUPANT WEIGHT

68 kilograms times the number of Normal Load occupants as determined by the vehicle's Designated Seating Capacity (DSC) in the following table:

VEHICLE DSC NUMBER OF OCCUPANTS	VEHICLE NORMAL LOAD NUMBER OF OCCUPANTS
2 through 4	2
5 through 10	3
11 through 15	5
16 through 22	7

## 10. DEFINITIONS....continued

## OCCUPANT DISTRIBUTION

Distribution of normal load occupants as specified in the following table:

VEHICLE NORMAL LOAD NUMBER OF OCCUPANTS	OCCUPANT DISTRIBUTION
2	2 in Front
3	2 in Front and 1 in Second Seat
5	2 in Front, 1 in Second Seat, 1 in Third Seat, and 1 in Fourth Seat.
7	2 in Front, 2 in Second Seat, 2 in Third Seat, and 1 in Fourth Seat.

## RIM DIAMETER

Nominal diameter of the bead seat.

## RIM SIZE DESIGNATION

Rim diameter and width.

## RIM TYPE DESIGNATION

The industry or manufacturer's designation for a rim by style or code.

## RIM WIDTH

Nominal distance between rim flanges.

## UVW

The Unloaded Vehicle Weight (UVW) is the weight of a vehicle with maximum capacity of all fluids necessary for vehicle operation, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when they are not in use.

## VEHICLE CAPACITY WEIGHT

The rated cargo and luggage load plus 68 kilograms times the vehicle's Designated Seating Capacity (DSC).

## WEATHER SIDE

The surface area of the rim not covered by the inflated tire.

## 11. PRETEST REQUIREMENTS

### IN-HOUSE COMPLIANCE TEST PROCEDURE

Prior to conducting any compliance tests, contractors are required to submit a detailed in-house compliance test procedure and equipment list to the COTR which includes a step-by-step description of the methodology to be used and a detailed check-off list. Written approval will be obtained from the COTR before commencing testing so that all parties are in agreement. The contractor's test procedure will contain a complete listing of test equipment and a detailed check-off list. There will be no contradiction between the OVSC Laboratory Test Procedure and the contractor's in-house test procedure. The list of test equipment will include instrument accuracy and calibration dates.

### TEST DATA LOSS

A compliance test is not to be conducted unless all of the various test conditions specified in the applicable OVSC Laboratory Test Procedure have been met. Failure of a contractor to obtain the required test data and to maintain acceptable limits on test parameters in the manner outlined in the applicable OVSC Laboratory Test Procedure may require a retest at the expense of the contractor. The retest costs will include all costs associated with conducting the retest. The Contracting Officer of NHTSA is the only NHTSA official authorized to notify the contractor that a retest is required. The retest will be completed within two (2) weeks after receipt of notification by the Contracting Officer that a retest is required. If a retest is conducted, no test report is required for the original test.

### SUGGESTED TEST EQUIPMENT

- A. Data acquisition system to measure, calculate and provide a continuous recording of the time, velocity, distance, longitudinal acceleration and tire pressure of a vehicle (Racelogic Velocity Box model VBOX II DGPS or equivalent). The system should have the following target unit resolution and accuracy:

<u>Unit</u>	<u>Min. Range</u>	<u>Resolution</u>	<u>Accuracy</u>
Velocity	161 km/h	0.01 km/h	0.1 km/h full scale
Distance	1610 m	1 cm	0.05 %
Time	5 min	0.01 sec	0.001 sec
Long. Accel.	5 m/sec <sup>2</sup>	0.01 g	0.5 %
Pressure	700 kPa	7 kPa	7 kPa

- B. Platform scales to measure individual wheel, axle, and vehicle loads with a maximum graduation of 1 kg and accuracy of at least  $\pm 1$  % of the measured reading. Scales are to allow for individual wheel

**11. PRETEST REQUIREMENTS....Continued**

measurements to be taken while maintaining all tire/ground interfaces on a common horizontal plane. Individual platform scale pad range/capacity is to exceed individual vehicle wheel loads.

- C. Temperature gage to measure ambient temperature with a 0 to 45 °C range, accuracy of  $\pm 0.5^{\circ}\text{C}$  and a scale graduation of 1 degree.
- D. Tire pressure gage to measure static tire inflation pressure with a range of 700 kPa, accuracy of  $\pm 7$  kPa and with a maximum scale graduation of 7 kPa.
- E. Anemometer to measure wind speed. Ten m/s range with  $\pm 1$  m/s accuracy at 5 m/s and scale graduation of 1 m/s.
- F. Pressure Transducer to measure tire inflation pressure while test vehicle is in motion with a range of 700 kPa, accuracy of  $\pm 7$  kPa and with a maximum scale graduation of 7 kPa.
- G. Laser Level with Digital Protractor Inclinometer to measure road surface grade and for leveling weight scales during vehicle load analyses with 360 degree range and  $\pm 0.1$  degree accuracy and 0.1 degree resolution.
- H. Tape measure or ruler to measure rim dimensions with 1 m range and 1.0 mm scale graduation.
- I. Latest edition of approved Tire and Rim reference manual as identified in FMVSS No. 110.

**GENERAL TEST CONDITIONS**

- A. For the execution of this test the Maximum Loaded Vehicle Weight is the sum of the Unloaded Vehicle Weight and the Vehicle Capacity Weight. The Vehicle Normal Load Weight is the sum of the Unloaded Vehicle Weight and the Normal Occupant Weight.
- B. For loading of simulated occupant ballast each adjustable seat should be positioned to its mid forward-to-aft and mid up-to-down seat position adjustment ranges.
- C. Adult simulated occupant load ballast for each designated seating position is 68 kg (150 lb). 54 kg (120 lb) of ballast should be placed on the seat

and 14 kg (30 lb) should be placed on the floor directly in front of the respective seating position. Student simulated occupant load ballast for each designated seating position is 54 kg (120lb). Ballast for students should be placed as directed by the COTR.

- D. All measurements, weighing and dynamic portions of the test should be performed with ambient air temperatures between 0°C and 38°C.
- E. The deflated tire retention test should be performed on a straight, dry and paved surface with grades in any direction not exceeding 1 % and a wind velocity not exceeding 5 m/s.
- F. At the start of the deflated tire retention test the fuel tank should be at least 90 percent full.
- G. The driver and observer (if present) should be restrained with the vehicle by properly adjusted seat belt, head restraint, and any protective device included in the vehicle during the deflated tire retention test. Other protective devices are optional to the testing agent.

## 12. COMPLIANCE TEST EXECUTION

Personnel supervising and/or performing the compliance test program should be thoroughly familiar with the requirements, test conditions, and equipment for the test to be conducted. Testing will be accomplished as indicated below. Test personnel should make note of all discrepancies and deviations from the applicable FMVSS and the Laboratory Test Procedure.

### 12.1 TEST VEHICLE INFORMATION (Data Sheet 1)

Identify options, accessories, and equipment installed on the vehicle at the time of delivery. Record test vehicle information on data sheet 1.

### 12.2 VEHICLE TIRE IDENTIFICATION AND LOAD LIMITS (Data Sheet 2)

- A. Visually inspect all the tires on the vehicle including the spare tire. If all the tires are not the same make, model and size, explain under REMARKS, and contact COTR immediately.
- B. Record the tire sidewall information for the right front tire and the spare tire (if different). If the front axle tire size is different than the rear axle tire size also record the sidewall information for the left rear tire.

- C. Record the serial numbers from all vehicle tires.
- D. Verify that all tires are marked with "DOT" certifying compliance to applicable tire performance FMVSS.
- E. Record the GAWR for each axle from the vehicle's certification label. Multiply the number of tires on the axle times the maximum load rating found on the tire. If the vehicle is equipped with passenger car tires, the maximum load rating is reduced by dividing by 1.10. If the vehicle is equipped with dual tires, the maximum load rating for dual tires should be used.
- F. Determine and report as PASS or FAIL. Verify that the tires are marked with "DOT" and the sum of the tire maximum load ratings of the tires on each axle is equal to or greater than the respective axle's GAWR.

### 12.3 VEHICLE RIM IDENTIFICATION (Data Sheet 3)

- A. Remove the right front wheel from the vehicle. Also, remove the left rear wheel from the vehicle if the left rear wheel is a different size or model than the right front wheel.
- B. Remove each tire from its rim.
- C. Visually inspect each rim. Verify that each rim is marked with the following information. If the date is done by symbol, contact the COTR to obtain how the month, day, and year or the month and year are depicted by the symbol.

A designation which indicates the source of rims's published nominal dimensions, as follows:

- T - The Tire and Rim Association
- E - The European Tyre and Rim Technical Organization
- J - Japan Automobile Tire Manufacturers Association, Inc.
- L - ABPA (Brazil), a.k.a. Associacao Latino Americana De Pneus Aros.
- F - Tire and Rim Engineering Data Committee of South Africa (Tredco)
- D - Deutche Industrie Norm
- S - Scandinavian Tire and Rim Organization
- A - The Tyre and Rim Association of Australia
- I - Indian Tyre Technical Advisory Committee (ITTAC)
- R - Argentine Institute of Rationalization of Materials, a.k.a. Instituto Argentino de Racionalizacion de Materiales, (ARAM)
- N - Independent listing pursuant to S4.1 of FMVSS No. 139 or S5.1 of FMVSS No. 119

### Rim Size Designation.

EXAMPLE: 20 x 5.50 or 20 x 5.5

The Symbol DOT. Manufacturer's certification that rim complies with all applicable FMVSS.

### Manufacturer's Name, Trademark, or Symbol.

The month, day, and year **or** the month and year of manufacture, expressed either numerically or by use of a symbol.

EXAMPLE:

January 4, 1999 may be expressed as any of the following:

MO.-DAY-YEAR: 10499 (or) 104 (or) 99  
99 104

MO.-YEAR: 199 (or) 1 (or) 99  
99 1

Any manufacturer that elects to express the date of manufacture by means of a symbol is to notify NHTSA in writing.

- D. Identify if the lettering is impressed or embossed (stamped or raised) and if it is legible. Verify that all markings are a minimum of 3 millimeters in height.
- E. Verify that the source of the published dimensions, rim size and "DOT" markings appear on the weather side of the rim.
- F. Measure the rim width and diameter. Verify that the rim measured dimensions are the same as the rim stamped dimensions.
- G. Verify that installed rim size and contour at each wheel position is suitable for the corresponding installed tire by comparing rim dimensions stamped and/or measured with those indicated in the most recent tire and rim reference manual.
- H. Replace tire(s) on rim(s), balance, and return vehicle to pretest condition.
- I. Determine and report as Pass or Fail. Installed rims are to be suitable for installed tires and properly marked.

## 12.4 VEHICLE PLACARD AND TIRE INFLATION PRESSURE LABEL (Data Sheet 4)

- A. Record location of the vehicle certification label required by Part 567. Record locations of the FMVSS No. 110 required vehicle placard, and if provided, tire inflation pressure label. The certification label is to be affixed to the hinge pillar, door-latch post, or the door edge that meets the door-latch post, next to the driver's seating position. The vehicle placard, and if provided, the tire inflation pressure label is to be affixed to the driver's side B-pillar. For further labeling location guidelines refer to Part 567 and FMVSS No. 110.
- B. Compare the **Vehicle Placard** and, if provided, the **Tire Inflation Pressure Label** formats to the sample formats provided on data sheet 4 and verify that they are exactly the same and the text is in the English language. While comparing label formats review the labeling notes provided below the sample labels and note any discrepancies.
- C. Document the information provided on the vehicle placard and tire inflation pressure label including combined weight of occupants and cargo (vehicle capacity weight), seating capacity, tire size(s) and cold tire pressure(s).
- D. Compare the actual number of seating positions (belted positions) with the placard number of seating positions.
- E. Compare the vehicle installed tire size(s) with the tire size(s) labeled on the vehicle placard and, if provided the tire inflation pressure label.
- F. Verify that the labeled cold tire inflation pressures are equal to or less than the maximum tire inflation pressures marked on the sidewall of the installed tires.
- G. Document the tire size and rim size information provided on the certification label. Verify that the tire size(s) listed on the vehicle placard and, if provided the tire inflation pressure label are also listed on the certification label.
- H. Verify that the labeled rim(s) and tire size(s) documented in paragraph G are suitable for each other by referencing an approved tire and rim reference manual.
- I. Record the vehicle's GAWRs. Determine the tire load ratings for the labeled tires at the recommended inflation pressure by referring to the approved tire and rim reference manual. If the vehicle is labeled with passenger car tires, the load carrying capacity is reduced by dividing by 1.10. If the vehicle is

labeled with dual tires, the load capacity for dual tires should be used. Multiply the tire load rating times the number of tires on each axle. Verify that the sum of the load ratings for the tires on any axle is greater than or equal to the GAWR for that axle.

- J. Determine and report as Pass or Fail. The Vehicle Placard and, if provided, the Tire Inflation Pressure Label are to be located as required, permanent, legible, and contain the information specified in the format provided. The labeled tire inflation pressure is to be equal to or less than the installed tire's maximum sidewall inflation pressure. The certification label should provide an appropriate rim size designation for the vehicle placard or tire inflation pressure label specified tires. The sum of the load ratings for the labeled tires on an axle, at the recommended inflation pressure, is to be equal to or greater than the respective axle's GAWR.

#### 12.5 UNLOADED VEHICLE WEIGHT, NORMAL LOAD WEIGHT, MAXIMUM LOAD WEIGHT AND GVWR WEIGHT (Data Sheet 5)

49 CFR 567, *Certification*, requires that the Gross Vehicle Weight Rating (GVWR) is not to be less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg times the vehicle's designated seating capacity.

- A. Record certified GVWR, GAWRs, and tire load ratings at manufacturer recommended inflation pressure in the vehicle weight distribution table. If a passenger car tire is installed on a multipurpose vehicle (MPV), truck or bus, the tire's load rating is reduced by dividing by 1.10.
- B. Check all vehicle fluids and fill to manufacturer's recommended capacity.
- C. Adjust tire pressures of all tires to that appearing on the vehicle placard or tire inflation pressure label.
- D. Position appropriate scales on level surface in laboratory test area. Using a laser and digital protractor inclinometer (or equivalent) ensure leveling of scales front-to-back, side-to-side and corner-to-corner. Adjust scales to obtain tire/ground load measurements on a common horizontal plane.
- E. Weigh and record the vehicle's **Unloaded Vehicle Weight** including weight of each wheel position and calculate axle and vehicle weights.
- F. Determine the number of occupants and occupant distribution for vehicle normal load as specified in section 10, *Definitions*, of this test procedure. Calculate and record the total normal occupant load.
- G. Ballast the vehicle to simulate a normal occupant load by placing

appropriate ballast in each of the respective normal load seating positions. For proper seat adjustment and ballast placement refer to the general test conditions in section 11. Record the weight of each wheel position and calculate the **Vehicle Normal Load on the Axles**.

- H. Calculate and record the "Vehicle Normal Load on the Tire" and "Value of 94% of the Load Rating at the Vehicle Manufacturer's Recommended Cold Inflation Pressure" as instructed on the Data Sheet 5 (Section B (5) and (6)). Verify that the Vehicle Normal Load on the Tire for each axle is not greater than the Value of 94% of the Load Rating at the Vehicle Manufacturer's Recommended Cold Inflation Pressure.
- I. Record total seating capacity and occupant distribution from the vehicle placard. Calculate and record weight of full occupant load.
- J. Ballast the vehicle to simulate a full occupant load by placing appropriate ballast in each of the designated seating positions. For proper seat adjustment and ballast placement refer to the general test conditions in section 11. Record the weight of each wheel position and calculate the **Vehicle Weight with Full Occupant Load**. The full occupant load for a school bus is determined by using 68 kg for the driver and 54 kg for each student occupant.
- K. Calculate the vehicle's luggage/cargo load as instructed on Data Sheet 5 (Section D. (1)–(3)).
- L. Ballast the vehicle to simulate the luggage/cargo load calculated above. The ballast should be placed in the appropriate cargo loading area(s) and distributed uniformly fore/aft and side/side. If the vehicle has more than one cargo area (trunk, behind the rear seat, roof rack, etc.) consult the owner's manual and the COTR for further guidance concerning cargo placement. Record the weight of each wheel position and calculate the vehicle's **Maximum Load**.
- M. Verify that the tire load ratings, axle ratings (GAWR), and vehicle rating (GVWR) are not exceeded under any of the documented load conditions. If any of the above ratings are exceeded, indicate "YES" in the respective "Overload" column on Data Sheet 5 (2 of 2), and notify the COTR immediately.
- N. Determine and report as Pass or Fail. The GVWR is not to be less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg times the vehicle's designated seating capacity. However, for school buses, the minimum occupant weight allowance is 54 kg.

## 12.6 DEFLATED TIRE RETENTION (Data Sheet 6)

- A. Adjust tire pressure of all tires to the vehicle placard cold tire inflation pressure. Record final adjusted tire inflation pressures.
- B. Load vehicle to the maximum loaded vehicle weight and corresponding vehicle maximum load on each axle as obtained and recorded on Data Sheet 5 (Section D.(4)). of this test procedure. To obtain this load the vehicle is loaded with required test instrumentation, full fluids, a driver and simulated occupant/cargo ballast. Record weight by axle and wheel position.
- C. Secure all added items and ballast in vehicle.
- D. With the vehicle traveling in a straight line at 97 kmph (+ 0 kmph, - 2 kmph), simulate the rapid loss of inflation pressure in the left front tire through an opening at least equal to a 1.3 cm diameter hole.

Upon initial release of air, bring the vehicle to a stop using the most rapid constant deceleration rate attainable not exceeding  $2.5 \text{ m/sec}^2$  ( $8 \text{ ft/sec}^2$ ) with no wheel skid. Record vehicle speed, tire pressure, deceleration, stopping distance (distance traveled after initial release of air), distance of uncontrolled deviation from a straight line, and test conditions. Permanent, continuous recording is required for time, vehicle speed, tire pressure and deceleration rate.

- E. With the vehicle remaining in the stopped position, photographically record and verbally describe all separation of the tire bead from the rim flange on both inboard and outboard sides of the rim under test. Rotation of the wheel to permit access to upper inboard positions of the tire should be done after outboard and lower inboard information is recorded.
- F. Return the vehicle to pretest condition. Repeat Items A through E, using the right rear tire position (or other as directed).
- G. Determine and report a pass or fail for each wheel position tested. Each rim should be capable of retaining its respective tire during a rapid loss of inflation pressure at 97 kilometers per hour and until the vehicle can be stopped with a controlled braking application.

#### 12.7 OWNER'S MANUAL REQUIREMENTS (Data Sheet 6)

Review the vehicle owner's manual or other manufacturer provided document if an owner's manual is not provided, and verify that the information as specified on data sheet 6 is discussed and/or stated. The basis of these requirements is Part 575.6. Copy applicable pages of the owner's manual or other document for inclusion in the Final Test Report. Determine and report as Pass or Fail.

#### 13. POST TEST REQUIREMENTS

Remove all ballast from vehicle. Verify all data sheets have been completed and all photographs have been taken. Return vehicle to its pretest condition.

## 14. REPORTS

### 14.1. MONTHLY STATUS REPORTS

The contractor will submit a monthly Test Status Report and a Vehicle Status Report to the COTR. The Vehicle Status report will be submitted until all vehicles are disposed of. Samples of the required reports are found in the report forms section.

### 14.2. APPARENT NONCOMPLIANCE

Any indication of a test failure will be communicated by telephone to the COTR within 24 hours with written notification mailed within 48 hours (Saturdays and Sundays excluded). A Notice of Test Failure (see report forms section) with a copy of the particular compliance test data sheet(s) and preliminary data plot(s) will be included. In the event of a test failure, a post test calibration check of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration will be at the COTR's discretion and will be performed without additional costs to the OVSC.

### 14.3 FINAL TEST REPORTS

#### 14.3.1 COPIES

In the case of an apparent test failure, seven copies of the Final Test Report will be submitted to the COTR for acceptance within three weeks of test completion. The Final Test Report format to be used by all contractors can be found in the "Report Section".

Where there has been no indication of an apparent noncompliance, three copies of each Final Test Report will be submitted to the COTR for acceptance within three weeks of test completion. No payment of contractor's invoices for conducting compliance tests will be made prior to the Final Test Report acceptance by the COTR. Contractors are requested to NOT submit invoices before the COTR is provided with copies of the Final Test Report.

Contractors are required to submit the first Final Test Report in draft form within one week after the compliance test is conducted. The contractor and the COTR will then be able to discuss the details of both test conduct and report content early in the compliance test program.

Contractors are required to PROOF READ all Final Test Reports before submittal to the COTR. The OVSC will not act as a report quality control office

## 14. REPORTS...Continued

for contractors. Reports containing a significant number of errors will be returned to the contractor for correction, and a "hold" will be placed on invoice payment for the particular test.

### 14.3.2 REQUIREMENTS

The Final Test Report and associated documentation (including photographs) are relied upon as the chronicle of the compliance test. The Final Test Report will be released to the public domain after review and acceptance by the COTR. For these reasons, each final report will be a complete document capable of standing by itself. The contractor should use DETAILED descriptions of all compliance test events. Any events that are not directly associated with the standard but are of technical interest should also be included. The contractor should include as much DETAIL as possible in the report. Instructions for the preparation of the first three pages of the final test report are provided for standardization.

### 14.3.3 FIRST THREE PAGES

#### A. FRONT COVER

A heavy paperback cover (or transparency) will be provided for the protection of the final report. The information required on the cover is as follows:

(1) Final Report Number such as 110-ABC-0X-001, where –

110 is the FMVSS tested  
 ABC are the initials for the laboratory  
 0X is the Fiscal Year of the test program  
 001 is the Group Number (001 for the 1st test,  
 002 for the 2nd test, etc.)

(2) Final Report Title And Subtitle such as

SAFETY COMPLIANCE TESTING FOR FMVSS 110

Tire Selection and Rims

\*\*\*\*\*

ABC Motor Company  
 200X Saferider 4-door sedan  
 NHTSA No. CX0401

**14. REPORTS...Continued**

- (3) Contractor's Name and Address such as

COMPLIANCE TESTING LABORATORIES, INC.  
4335 West Dearborn Street  
Detroit, Michigan 48090-1234

**NOTE:** DOT SYMBOL WILL BE PLACED BETWEEN ITEMS (3) AND (4)

- (4) Date of Final Report completion
- (5) The words "FINAL REPORT"
- (6) The sponsoring agency's name and address as follows

U. S. DEPARTMENT OF TRANSPORTATION  
National Highway Traffic Safety Administration  
Enforcement  
Office of Vehicle Safety Compliance  
Mail Code: NVS-220  
1200 New Jersey Avenue, S.E.  
Washington, DC 20590

**14. REPORTS....Continued****B. FIRST PAGE AFTER FRONT COVER**

A disclaimer statement and an acceptance signature block for the COTR will be provided as follows:

This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By:

Approved By:

Approval Date:

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By:

Acceptance Date:

**14. REPORTS...Continued****C. SECOND PAGE AFTER FRONT COVER**

A completed Technical Report Documentation Page (Form DOT F1700.7) will be completed for those items that are applicable with the other spaces left blank. Sample data for the applicable block numbers of the title page follows.

**Block 1 — REPORT NUMBER**

110-ABC-0X-001

**Block 2 — GOVERNMENT ACCESSION NUMBER**

Leave blank

**Block 3 — RECIPIENT'S CATALOG NUMBER**

Leave blank

**Block 4 — TITLE AND SUBTITLE**

Final Report of FMVSS 110 Compliance Testing of 200X Saferider  
4-door sedan, NHTSA No. CX0401

**Block 5 — REPORT DATE**

March 1, 200X

**Block 6 — PERFORMING ORGANIZATION CODE**

ABC

**Block 7 — AUTHOR(S)**

John Smith, Project Manager  
Bill Doe, Project Engineer

**Block 8 — PERFORMING ORGANIZATION REPORT NUMBER**

ABC-DOT-XXX-001

**14. REPORTS...Continued**

## Block 9 — PERFORMING ORGANIZATION NAME AND ADDRESS

ABC Laboratories  
405 Main Street  
Detroit, MI 48070-1234

## Block 10 — WORK UNIT NUMBER

Leave blank

## Block 11 — CONTRACT OR GRANT NUMBER

DTNH22-0X-D-12345

## Block 12 — SPONSORING AGENCY NAME AND ADDRESS

United States Department of Transportation  
National Highway Traffic Safety Administration  
Office of Vehicle Safety Compliance  
1200 New Jersey Avenue, S.E.  
Washington, DC 20590

## Block 13 — TYPE OF REPORT AND PERIOD COVERED

Final Test Report  
Feb. 15 to Mar. 15, 200X

## Block 14 — SPONSORING AGENCY CODE

NVS-220

## Block 15 — SUPPLEMENTARY NOTES

Leave blank

**14. REPORTS...Continued**

## Block 16 — ABSTRACT

Compliance tests were conducted on the subject 200X Saferider 4-door sedan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-110T-0X for the determination of FMVSS 110 compliance. Test failures identified were as follows:

None

**NOTE:** Above wording will be shown with appropriate changes made for a particular compliance test. Any questions should be resolved with the COTR.

## Block 17 — KEY WORDS

Compliance Testing  
Safety Engineering  
FMVSS 110

## Block 18 — DISTRIBUTION STATEMENT

Copies of this report are available from —

National Highway Traffic Safety Administration  
Technical Information Services (NPO-411)  
1200 New Jersey Ave., S.E.  
Washington DC 20590

e-mail: [tis@dot.gov](mailto:tis@dot.gov)  
FAX: 202-493-2833

## Block 19 — SECURITY CLASSIFICATION OF REPORT

Unclassified

## Block 20 — SECURITY CLASSIFICATION OF PAGE

Unclassified

## Block 21 — NUMBER OF PAGES

Add appropriate number

**14. REPORTS...Continued**

Block 22 — PRICE

Leave blank

**14.3.4 TABLE OF CONTENTS**

Final test report Table of Contents will include the following:

Section 1 — Purpose of Compliance Test

Section 2 — Test Procedure and Discussion of Results

Section 3 — Test Data

Section 4 — Test Equipment List and Calibration Information

Section 5 — Photographs

Section 6 — Notice of Test Failure (if applicable)

**15. DATA SHEETS**

**DATA SUMMARY SHEET (1 of 2)**

VEHICLE MAKE/MODEL/BODY STYLE: \_\_\_\_\_

VEHICLE NHTSA NO.: \_\_\_\_\_ VIN: \_\_\_\_\_

VEHICLE TYPE: \_\_\_\_\_ DATE OF MANUFACTURE: \_\_\_\_\_

LABORATORY: \_\_\_\_\_

**LIGHT TRUCK TYPE VEHICLE REQUIREMENTS**

**PASS/FAIL**

**General** (Data Sheet 2)

The vehicle is equipped with tires that meet the requirements of S139. (S110, S4.1) \_\_\_\_\_

**Tire Load Limits** (Data Sheet 2)

The sum of the maximum load ratings of the tires fitted to an axle is not less than the gross axle weight rating (GAWR) of the axle system as specified on the certification label. When passenger car tires are installed, each tire's load rating is reduced by dividing it by 1.10 before determining the sum of the maximum load ratings of the tires fitted to an axle. (S110, S4.2.2.1, S4.2.2.2) \_\_\_\_\_

When passenger car tires are installed, the vehicle normal load on the tire is not greater than the value of 94 percent of the derated load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire. When LT tires are installed, the vehicle normal load on the tire is not greater than the value of 94 percent of the load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire. (S110, S4.2.2.3(a), (b)) \_\_\_\_\_

**Rims** (Data Sheets 3 and 6)

Each rim is constructed to the dimensions of a rim referred to in FMVSS 139 that is listed by the manufacturer of the tires as suitable for use with those tires. (S110, S4.4.1(a)) \_\_\_\_\_

Vehicle rims retain deflated tires during a controlled braking application. (S110, S4.4.1(b)) \_\_\_\_\_

Each rim is properly marked. (S110, S4.4.2) \_\_\_\_\_

15. DATA SHEETS....continued

DATA SUMMARY SHEET (2 of 2)

LIGHT TRUCK TYPE VEHICLE REQUIREMENTS

PASS/FAIL

Certification, Placard, and Tire Inflation Pressure Labels (Data Sheet 4)

The placard and tire inflation pressure label (if provided) are affixed and located correctly, and display the information and format required. (S110, S4.3) \_\_\_\_\_

The Part 567 certification label shows the size designation of the tires and rims appropriate for the vehicle including the tire size(s) listed on the vehicle placard and, if provided, tire inflation pressure label. (S110, S4.3.3) \_\_\_\_\_

No inflation pressure other than the maximum permissible inflation pressure is shown on the placard and, if any, tire inflation pressure label unless as required. (S110, S4.3.4) \_\_\_\_\_

Vehicle Weight Distribution (Data Sheet 5)

The Gross Vehicle Weight Rating (GVWR) is not less than the sum of the unloaded vehicle weight, rated cargo load, and 68 kg times the vehicle's designated seating capacity. However, for school buses, the minimum occupant weight allowance is 54 kg. (49 CFR 567, Certification) \_\_\_\_\_

Owner's Manual (Data Sheet 6)

Owner's manual or other document has discussion of Vehicle Placard, Loading and Tires. (575.6 (a)(4)) \_\_\_\_\_

Owner's manual includes exact statement relating to "Steps for Determining Correct Load Limits." (575.6(a)(5)) \_\_\_\_\_

RECORDED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

15. DATA SHEETS....continued

**DATA SHEET 1  
TEST VEHICLE INFORMATION**

VEHICLE MAKE/MODEL/BODY STYLE: \_\_\_\_\_

NHTSA No.: \_\_\_\_\_ TEST DATE: \_\_\_\_\_

VIN: \_\_\_\_\_ MANUFACTURE DATE: \_\_\_\_\_

GVWR: \_\_\_\_\_ KG FRONT GAWR: \_\_\_\_\_ KG REAR GAWR \_\_\_\_\_ KG

SEATING POSITIONS: FRONT \_\_\_\_\_ MID \_\_\_\_\_ REAR \_\_\_\_\_

ODOMETER READING AT START OF TEST: \_\_\_\_\_ Miles (Kilometers)

ENGINE DATA: \_\_\_\_\_ Cylinders \_\_\_\_\_ Liters \_\_\_\_\_ Cubic Inches

TRANSMISSION DATA: \_\_\_\_\_ Automatic \_\_\_\_\_ Manual \_\_\_\_\_ No. of Speeds

FINAL DRIVE DATA: \_\_\_\_\_ Rear Drive \_\_\_\_\_ Front Drive \_\_\_\_\_ 4 Wheel Drive

**CHECK APPROPRIATE BOXES FOR INSTALLED VEHICLE EQUIPMENT:**

<input type="checkbox"/>	Air Conditioning	<input type="checkbox"/>	Traction Control	<input type="checkbox"/>	Clock
<input type="checkbox"/>	Tinted Glass	<input type="checkbox"/>	Tachometer	<input type="checkbox"/>	Roof Rack
<input type="checkbox"/>	Power Steering	<input type="checkbox"/>	Cruise Control	<input type="checkbox"/>	Console
<input type="checkbox"/>	Power Windows	<input type="checkbox"/>	Rear Window Defroster	<input type="checkbox"/>	Driver Air Bag
<input type="checkbox"/>	Power Door Locks	<input type="checkbox"/>	Sun Roof or T-Top	<input type="checkbox"/>	Passenger Air Bag
<input type="checkbox"/>	Power Seat(s)	<input type="checkbox"/>	Tilt Steering Wheel	<input type="checkbox"/>	Side Curtain Air Bag(s)
<input type="checkbox"/>	Power Brakes	<input type="checkbox"/>	Stereo	<input type="checkbox"/>	Front Disc Brakes
<input type="checkbox"/>	Antilock Brake System	<input type="checkbox"/>	Telephone	<input type="checkbox"/>	Rear Disc Brakes
<input type="checkbox"/>	Navigation System	<input type="checkbox"/>	Trailer Hitch	<input type="checkbox"/>	Other -

REMARKS:

RECORDED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

## 15. DATA SHEETS....continued

**DATA SHEET 2 (1 of 2)**  
**VEHICLE TIRE IDENTIFICATION AND LOAD LIMITS**

VEHICLE MAKE/MODEL/BODY STYLE: \_\_\_\_\_

VEHICLE NHTSA NO. \_\_\_\_\_ VIN: \_\_\_\_\_

LABORATORY: \_\_\_\_\_ TEST DATE: \_\_\_\_\_

All tires on the vehicle (excluding the spare) are the same size: ( ) YES ( ) NO

Spare tire is the same size as all other tires: ( ) YES ( ) NO

<b>Tire Sidewall</b>	<b>Right Front</b>	<b>Left Rear</b> (If different)	<b>Spare Tire</b> (If different)
Manufacturer and Model	_____	_____	_____
Tire Size Designation	_____	_____	_____
Load Index/Speed Symbol	_____	_____	_____
Maximum Inflation Pressure	_____	_____	_____
Maximum Load Rating	_____	_____	_____
Tread/Traction/Temperature	_____	_____	_____
Tires Have "DOT" markings	_____	_____	_____

Serial Number: Right Front- \_\_\_\_\_ Left Front- \_\_\_\_\_

Right Rear- \_\_\_\_\_ Left Rear- \_\_\_\_\_

Spare- \_\_\_\_\_

15. DATA SHEETS....continued

**DATA SHEET 2 (2 of 2)  
VEHICLE TIRE IDENTIFICATION AND LOAD LIMITS**

<b>MOUNTED TIRE VS. AXLE RATING COMPARISON</b> (at sidewall maximum inflation pressure)		
	FRONT AXLE	REAR AXLE
A. GAWR (KG) from certification label		
B. Tire Maximum Load Rating from above (KG)		
C. Reduced Tire Load Rating if applicable (KG)*		
D. (Number of tires on axle) x (tire load rating, de-rated if appropriate)		
Is "D" equal to or greater than "A" ? (Yes/No)		

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

DATA INDICATES COMPLIANCE:

PASS/FAIL \_\_\_\_\_

REMARKS:

RECORDED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

## 15. DATA SHEETS....continued

**DATA SHEET 3**  
**VEHICLE RIM IDENTIFICATION**

VEHICLE MAKE/MODEL/BODY STYLE: \_\_\_\_\_  
 VEHICLE NHTSA NO. \_\_\_\_\_ VIN: \_\_\_\_\_  
 LABORATORY: \_\_\_\_\_ TEST DATE: \_\_\_\_\_

<b>RIM MARKINGS</b>	<b>RIGHT FRONT</b>	<b>LEFT REAR (if different)</b>
A. Source of published dimensions (letter designation)		
B. Rim size		
C. Does rim contain DOT symbol? (Yes/No)		
D. Manufacturer's name, symbol or trademark (copy format)		
E. Date of manufacture or symbol (copy format)		
Do items A-C appear on weather side of rim? (Yes/No)		
Letter height (not less than 3mm)		
Lettering (impressed or embossed)		
Are all rim markings legible? (Yes/No)		
Do all markings comply with requirements? (Yes/No)		

<b>RIM MEASUREMENTS</b>	<b>RIGHT FRONT</b>	<b>LEFT REAR (if different)</b>
Rim width (mm)		
Rim diameter (mm)		
Rim measurements same as rim markings? (Yes/No)		

Rims are suitable for tires on vehicle\* ( ) YES ( ) NO

\* Reference source used for tire/rim match verification: \_\_\_\_\_

DATA INDICATES COMPLIANCE: \_\_\_\_\_ PASS/FAIL \_\_\_\_\_  
 REMARKS: \_\_\_\_\_

RECORDED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

## 15. DATA SHEETS....continued

**DATA SHEET 4 (1 of 4)**  
**VEHICLE PLACARD, AND TIRE INFLATION PRESSURE LABEL**

VEHICLE MAKE/MODEL/BODY STYLE: \_\_\_\_\_  
 VEHICLE NHTSA NO. \_\_\_\_\_ VIN: \_\_\_\_\_  
 LABORATORY: \_\_\_\_\_ TEST DATE: \_\_\_\_\_

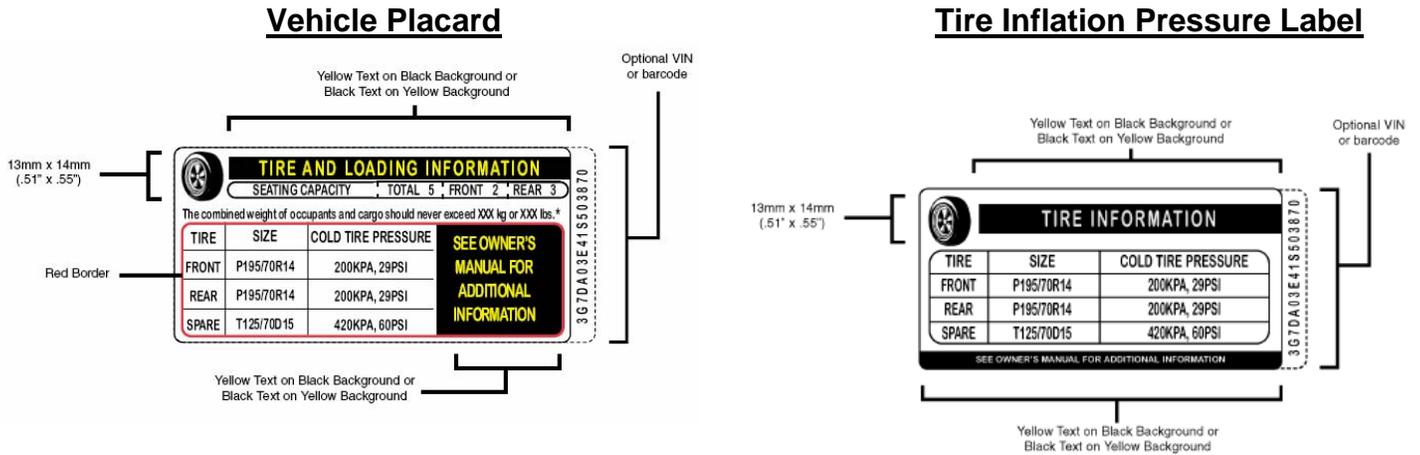
**Identification of Vehicle Labeling**

	(Yes/No)	Location	PASS/FAIL
1. Certification Label*	_____	_____	_____
2. Vehicle Placard*	_____	_____	_____
3. Tire Inflation Pressure Label*	_____	_____	_____

\* Labels are to be located as specified in section 12.4 of this test procedure.

15. DATA SHEETS....continued

**DATA SHEET 4 (2 of 4)**  
**VEHICLE PLACARD, AND TIRE INFLATION PRESSURE LABEL**



**FIGURE 1**  
**(70 FR 14425)**

**FIGURE 2**  
**(70 FR 14426)**

**Labeling Notes:**

1. Tire size and pressure can be omitted from the Vehicle Placard if same data is displayed on a Tire Inflation Pressure Label.
2. The Alphanumeric Identifier or Barcode, is optional. It can be located vertically, along the right edge or the left edge of the placard or the label, or horizontally, along the bottom edge of the placard or the label.
3. Tire size can include the tire load range identification symbol (“XL” or “reinforced”, “B”, “C”, “D”, “E”, or “F”), the load index number, and the speed rating symbol, located immediately to the right of the tire size designation.
4. The tire “SIZE” heading can be replaced with “ORIGINAL TIRE SIZE” or “ORIGINAL SIZE.”
5. The “SPARE” tire heading can be replaced with “SPARE TIRE.”
6. For full size spare tires, the recommended cold tire inflation pressure can be replaced with “SEE ABOVE”.
7. If no spare tire is provided, the word “NONE” is to replace the manufacturer’s cold tire inflation pressure.

**Vehicle Placard** has the exact color and format as specified in the above Figure 1 and text is in English language. ( ) YES ( ) NO

If no, explain \_\_\_\_\_

**Tire Inflation Pressure Label**, if provided, has the exact color and format as specified in the above Figure 2 and text is in English language. ( ) YES ( ) NO

If no, explain \_\_\_\_\_



## 15. DATA SHEETS....continued

## DATA SHEET 4 (4 of 4)

Is (Are) tire size(s) listed on the vehicle placard and/or tire inflation pressure label also listed on the certification label with suitable rim size? ( ) YES ( ) NO

LABELED TIRE CAPACITY AT SPECIFIED PRESSURE		
GVWR: _____ KG	FRONT AXLE	REAR AXLE
A. GAWR (KG) from certification label		
B. Tire load rating (KG) of labeled tire size at labeled inflation pressure *		
C. Reduced tire load rating if applicable**		
D. (No. of tires) x (Tire load rating de-rated if appropriate(KG))		
Is "D" equal to or greater than "A" ? (Yes/No)		

\* Reference source used for determining load rating: \_\_\_\_\_

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

DATA INDICATES COMPLIANCE: PASS/FAIL \_\_\_\_\_

REMARKS:

RECORDED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

## 15. DATA SHEETS....continued

**DATA SHEET 5 (1 of 4)**  
**CURB WEIGHT, NORMAL LOAD WEIGHT & MAXIMUM VEHICLE WEIGHT**

VEHICLE MAKE/MODEL/BODY STYLE: \_\_\_\_\_

VEHICLE NHTSA NO. \_\_\_\_\_ VIN: \_\_\_\_\_

LABORATORY: \_\_\_\_\_ TEST DATE: \_\_\_\_\_

Full Fluid Levels: Fuel \_\_\_\_\_ Coolant \_\_\_\_\_ Other Fluids \_\_\_\_\_ (specify)

Tire Pressures:    LF \_\_\_\_\_ KPA                      LR \_\_\_\_\_ KPA  
                           RF \_\_\_\_\_ KPA                      RR \_\_\_\_\_ KPA

**A. MEASURED CURB WEIGHT WITH INSTALLED OPTIONS AND ACCESSORIES**

LF \_\_\_\_\_ KG                      LR \_\_\_\_\_ KG  
 RF \_\_\_\_\_ KG                      RR \_\_\_\_\_ KG

Front Axle \_\_\_\_\_ KG              Rear Axle \_\_\_\_\_ KG

Total Vehicle \_\_\_\_\_ KG

**B. MEASURED VEHICLE NORMAL LOAD WEIGHT**

- (1) Seating Capacity from Vehicle Placard = \_\_\_\_\_
- (2) Normal Load Number of Occupants (from Table in Section 10) \_\_\_\_\_
- Occupant Distribution:    Front Seat- \_\_\_\_\_    Second Seat- \_\_\_\_\_  
    Third Seat- \_\_\_\_\_    Fourth Seat- \_\_\_\_\_
- (3) Total Normal Occupant Load \_\_\_\_\_ KG  
 [# of occupants x 68 KG per occupant]
- (4) Measured Normal Load on Axles
- LF \_\_\_\_\_ KG                      LR \_\_\_\_\_ KG  
 RF \_\_\_\_\_ KG                      RR \_\_\_\_\_ KG
- Front Axle \_\_\_\_\_ KG              Rear Axle \_\_\_\_\_ KG

15. DATA SHEETS....continued

**DATA SHEET 5 (2 of 4)**  
**CURB WEIGHT, NORMAL LOAD WEIGHT & MAXIMUM VEHICLE WEIGHT**

- (5) Calculated Vehicle Normal Load on the Tire  
 Front Tires [measured front axle normal load/2] = \_\_\_\_\_ KG  
 Rear Tires [measured rear axle normal load/2] = \_\_\_\_\_ KG

- (6) Value of 94 percent of the load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire

Vehicle Normal Load on the Tire should not be greater than the Value of 94% of the load rating at the vehicle manufacturer's recommended cold inflation pressure

<b>MEASURED NORMAL LOAD ON TIRE VS. VALUE OF 94% OF LOAD RATING FOR THAT TIRE AT SPECIFIED PRESSURE</b>		
	FRONT AXLE	REAR AXLE
A. Calculated Vehicle Normal Load on the Tire from (5)		
B. Tire load rating (KG) of installed tire size at recommended cold inflation pressure*		
C. Reduced tire load rating if applicable**		
D. 94% of tire load rating, de-rated if appropriate (KG)		
Is "D" equal to or greater than "A" ? (Yes/No)		

\* Reference source used for determining load rating: \_\_\_\_\_

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

## 15. DATA SHEETS....continued

## DATA SHEET 5 (3 of 4)

## C. MEASURED VEHICLE WEIGHT WITH FULL OCCUPANT LOAD

- (1) Seating Capacity from Placard:

Total \_\_\_\_\_ Front \_\_\_\_\_ Rear \_\_\_\_\_

- (2) Full Occupant Load \_\_\_\_\_ KG
- 
- [# of occupants x 68 KG per occupant]

- (3) Measured Vehicle Weight with Full Occupant Load

LF _____ KG	LR _____ KG
RF _____ KG	RR _____ KG

Front Axle \_\_\_\_\_ KG      Rear Axle \_\_\_\_\_ KG

Total Vehicle \_\_\_\_\_ KG

## D. MEASURED VEHICLE WEIGHT WITH MAXIMUM LOAD (PLACARD)

- (1) Vehicle Capacity Weight (from placard) \_\_\_\_\_ KG

- (2) Full Occupant Load (from C.(2) above) \_\_\_\_\_ KG

- (3) Luggage/Cargo Load (subtract (2) from (1)) \_\_\_\_\_ KG

- (4) Measured Vehicle Maximum Load on Axles

LF _____ KG	LR _____ KG
RF _____ KG	RR _____ KG

Front Axle \_\_\_\_\_ KG      Rear Axle \_\_\_\_\_ KG

Total Vehicle \_\_\_\_\_ KG

- (5) Calculated Vehicle Maximum Load on the Tire
- 
- Front Tires [measured front axle maximum load/2] = \_\_\_\_\_ KG
- 
- Rear Tires [measured rear axle maximum load/2] = \_\_\_\_\_ KG

## 15. DATA SHEETS....continued

**DATA SHEET 5 (4 of 4)**  
**WEIGHT DISTRIBUTION**

ITEM	Tire or Vehicle Rating* (KG)	Unloaded Vehicle Weight (KG)		Vehicle Weight with Full Occupant Load (KG)		Vehicle Maximum Weight with Occupants and Cargo (KG)	
		Measured	Overload	Measured	Overload	Measured	Overload
Left Front Tire							
Right Front Tire							
Front Axle (GAWR)							
Left Rear Tire							
Right Rear Tire							
Rear Axle (GAWR)							
Total Vehicle (GVWR)							

\* Vehicle and axle weight ratings (GVWR & GAWR) are located on the vehicle certification label. Vehicle tire load ratings are based upon the inflation pressure specified on the Vehicle Placard or Tire Inflation Pressure Label for each respective axle, as determined from the appropriate Tire and Rim reference manual. If a passenger car tire is installed on a multipurpose passenger vehicle (MPV), truck or bus, the tire's load rating is reduced by dividing by 1.10.

DATA INDICATES COMPLIANCE:

PASS/FAIL \_\_\_\_\_

REMARKS:

RECORDED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

## 15. DATA SHEETS....continued

**DATA SHEET 6 (1 of 2)**  
**DEFLATED TIRE RETENTION**

VEHICLE MAKE/MODEL/BODY STYLE:

\_\_\_\_\_

VEHICLE NHTSA NO. \_\_\_\_\_ VIN: \_\_\_\_\_

LABORATORY: \_\_\_\_\_ TEST DATE: \_\_\_\_\_

**Tire Pressures:**    LF \_\_\_\_\_ KPA                      LR \_\_\_\_\_ KPA  
                               RF \_\_\_\_\_ KPA                      RR \_\_\_\_\_ KPA

**Test Weight:**        LF \_\_\_\_\_ KG                      LR \_\_\_\_\_ KG  
                               RF \_\_\_\_\_ KG                      RR \_\_\_\_\_ KG  
                               Front Axle \_\_\_\_\_ KG    Rear Axle \_\_\_\_\_ KG

Total Vehicle \_\_\_\_\_ KG

**Retention Test Left Front:**

Odometer (START): \_\_\_\_\_ Fuel Level: \_\_\_\_\_

Ambient Temperature: \_\_\_\_\_ °C                      Wind Speed: \_\_\_\_\_ m/s

Vehicle Speed at time of blow-out: \_\_\_\_\_ kmph

Maximum Deceleration Rate: \_\_\_\_\_ m/sec<sup>2</sup>    Deflation Opening Size: \_\_\_\_\_ cm (dia.)

Stopping Distance (Distance traveled after initial release of air): \_\_\_\_\_ m

Distance of Uncontrolled Deviation from a straight line: \_\_\_\_\_ cm

Description of Bead Separation, Outboard:

\_\_\_\_\_

Description of Bead Separation, Inboard:

\_\_\_\_\_

Vehicle stopped with a controlled brake application (driver opinion):    ( ) YES    ( ) NO

Deflated tire retained on rim for duration of test:    ( ) YES    ( ) NO

15. DATA SHEETS....continued

**DATA SHEET 6 (2 of 2)  
DEFLATED TIRE RETENTION**

**Retention Test Right Rear:**

Odometer (START): \_\_\_\_\_ Fuel Level: \_\_\_\_\_

Ambient Temperature: \_\_\_\_\_ °C Wind Speed: \_\_\_\_\_ m/s

Vehicle Speed at time of blow-out: \_\_\_\_\_ kmph

Maximum Deceleration Rate: \_\_\_\_\_ m/sec<sup>2</sup> Deflation Opening Size: \_\_\_\_\_ cm (dia.)

Stopping Distance (Distance traveled after initial release of air): \_\_\_\_\_ m

Distance of Uncontrolled Deviation from a straight line: \_\_\_\_\_ cm

Description of Bead Separation, Outboard:

\_\_\_\_\_

Description of Bead Separation, Inboard:

\_\_\_\_\_

Vehicle stopped with a controlled brake application (driver opinion): ( ) YES ( ) NO

Deflated tire retained on rim for duration of test: ( ) YES ( ) NO

DATA INDICATES COMPLIANCE:		PASS/FAIL
LEFT FRONT	_____	_____
RIGHT REAR	_____	_____

REMARKS:

RECORDED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

15. DATA SHEETS....continued

**DATA SHEET 7 (1 of 2)  
OWNER'S MANUAL REQUIREMENTS**

VEHICLE MAKE/MODEL/BODY STYLE: \_\_\_\_\_

VEHICLE NHTSA NO. \_\_\_\_\_ VIN: \_\_\_\_\_

LABORATORY: \_\_\_\_\_ TEST DATE: \_\_\_\_\_

**Owner's Manual Discusses:**

Part 575.6(a) Paragraph	Required Discussion Topic	Discussed in Manual? (YES/NO)
(4)(i)	Tire labeling, including a description and explanation of each marking on the tires provided with the vehicle, and information about the location of the Tire Identification Number (TIN).	
(4)(ii)	(A) Description and explanation of recommended cold tire inflation pressure.	
	(B) Description and explanation of FMVSS 110 Vehicle Placard and Tire Inflation Pressure Label and their location(s).	
	(C) Description and explanation of adverse safety consequences of under-inflation including tire failure.	
	(D) Description and explanation for measuring and adjusting air pressure to achieve proper inflation.	
(4)(iii)	Glossary of tire terminology, including "cold tire pressure," maximum inflation pressure," and "recommended inflation pressure," and all non-technical terms defined in S3 of FMVSS 110 & 139.	
(4)(vi)	Tire care, including maintenance and safety practices.	
(4)(v)	(A) Description and explanation of locating and understanding load limit information, total load capacity, seating capacity, towing capacity, and cargo capacity.	
	(B) Description and explanation for calculating total and cargo load capacities with varying seating configurations including quantitative examples showing/illustrating how the vehicle's cargo and luggage capacity decreases as the combined number and size of occupants increases.	
	(C) Description and explanation for determining compatibility of tire and vehicle load capabilities.	
	(D) Description and explanation of adverse safety consequences of overloading on handling and stopping and on tires.	

15. DATA SHEETS....continued

DATA SHEET 7 (2 of 2)  
OWNER'S MANUAL REQUIREMENTS

The following verbatim statement, in the English language, is provided in the Owner's Manual. Reference Part 575.6(a)(5) YES ( ) NO ( )

Steps for Determining Correct Load Limit ---

- (1) Locate the statement "The combined weight of occupants and cargo should never exceed XXX kg or XXX lbs." on your vehicle's placard.
- (2) Determine the combined weight of the driver and passengers that will be riding in your vehicle.
- (3) Subtract the combined weight of the driver and passengers from XXX kg or XXX lbs.
- (4) The resulting figure equals the available amount of cargo and luggage load capacity. For example, if the "XXX" amount equals 1400lbs. and there will be five 150 lb passengers in your vehicle, the amount of available cargo and luggage load capacity is 650 lbs. (1400-750 (5x150) = 650 lbs.)
- (5) Determine the combined weight of the luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity calculated in Step 4.
- (6) If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult this manual to determine how this reduces the available cargo and luggage load capacity of your vehicle.

DATA INDICATES COMPLIANCE: PASS/FAIL \_\_\_\_\_

REMARKS:

RECORDED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

**16. FORMS**

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS NO.: 110 TEST DATE: \_\_\_\_\_

LABORATORY: \_\_\_\_\_

CONTRACT NO.: \_\_\_\_\_ DELV. ORDER NO.: \_\_\_\_\_

LABORATORY PROJECT ENGINEER'S NAME: \_\_\_\_\_

TEST SPECIMEN DESCRIPTION: \_\_\_\_\_

VEHICLE NHTSA NO.: \_\_\_\_\_ VIN: \_\_\_\_\_

MFR: \_\_\_\_\_

TEST FAILURE DESCRIPTION: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

FMVSS REQUIREMENT, PARAGRAPH S \_\_\_\_\_:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NOTIFICATION TO NHTSA (COTR): \_\_\_\_\_

DATE: \_\_\_\_\_ BY: \_\_\_\_\_

REMARKS:

## 16. FORMS...Continued

MONTHLY TEST STATUS REPORT  
FMVSS 110  
DATE OF REPORT:

NO.	VEHICLE NHTSA NO., MAKE & MODEL	COMPLIANCE TEST DATE	PASS/ FAIL	DATE REPORT SUBMITTED	DATE INVOICE SUBMITTED	INVOICE PAYMENT DATE
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

## 16. FORMS...Continued

MONTHLY VEHICLE STATUS REPORT  
FMVSS 110  
DATE OF REPORT:

NO.	VEHICLE NHTSA NO., MAKE & MODEL	DATE OF DELIVERY	ODOMETER READING	TEST COMPLETE DATE	VEHICLE SHIPMENT DATE	ODOMETER READING
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						