

REPORT NUMBER 110(IND)-GTL-03-032

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

**TOYOTA MOTOR CORPORATION
2003 TOYOTA ECHO PASSENGER CAR
NHTSA NO. C35110**

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SEPTEMBER 25, 2003

FINAL REPORT

PREPARED FOR

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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16. Abstract This test was conducted on the subject, 2003 Toyota Echo passenger car in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-110-02 (partial), to gather data relating to the normal load requirements specified in FMVSS 110. NHTSA's Office of Safety Performance Standards requested this data to support the agency's TREAD tire rulemaking efforts.		
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SECTION 1

INTRODUCTION

1.0 PURPOSE OF INDICANT TEST

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

1.1 TEST VEHICLE

The test vehicle was a 2003 Toyota Echo. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: JTDAT123230288455

B. NHTSA No.: C35110

C. Manufacturer: TOYOTA MOTOR CORPORATION

D. Manufacture Date: 01/03

1.2 TEST DATE

The test vehicle was subjected to testing on June 11, 2003.

SECTION 2

TEST PROCEDURE AND SUMMARY OF RESULTS

2.0 TEST PROCEDURE

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

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

2.1 SUMMARY OF RESULTS

Test results are provided in Section 3.

SECTION 3

TEST DATA

DATA SHEET 1
SUMMARY

VEHICLE MAKE/MODEL/BODY STYLE: 2003 TOYOTA ECHO PASSENGER CAR

VEHICLE NHTSA NO.: C35110 ; VIN: JTDAT123230288455

LABORATORY: GENERAL TESTING LABORATORIES

TEST DATE: 06/11/03

<u>REQUIREMENT</u>	<u>YES/NO</u>
The vehicle is equipped with tires that meet the requirements of FMVSS 109 or FMVSS 119.	<u>YES</u>
The vehicle normal load on the tire is not greater than the high speed performance test load specified in FMVSS 109 paragraph S5.5 or FMVSS 119 paragraph S7.4.	<u>YES</u>
For passenger cars, the tire information placard is permanently affixed to the glove compartment door or equally accessible location; and displays the required information (FMVSS 110, S4.3).	<u>YES</u>
For vehicles other than passenger cars, a combined certification/ tire information label or separate tire information label is permanently affixed to either the hinge pillar, door-latch post or to the inward-facing surface of the door next to the driver's seating position (FMVSS 120, S5.3).	<u>N/A</u>

REMARKS:

RECORDED BY: *m. a. g. b.*

DATE: 06/11/03

APPROVED BY: *D. Messick*

DATA SHEET 2

TEST VEHICLE INFORMATION/RECEIVING INSPECTION

LABORATORY: GENERAL TESTING LABORATORIES DATE: 06/11/03

VEHICLE MODEL YEAR/MAKE/MODEL/BODY STYLE: 2003 TOYOTA ECHO

MANUFACTURE DATE: 01/03 NHTSA NO.: C35110 BODY COLOR: SILVER

VIN: JTDAT123230288455 VEHICLE TYPE: PASSENGER CAR

GVWR 1354 kg (2985 lbs) GAWR(Fr) 723 kg (1595 lbs) GAWR(Rr) 653 kg (1440 lbs)

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

ENGINE DATA: 4 Cylinders 1.5 Liters Cubic Inches

TRANSMISSION DATA: X Automatic Manual 4 No. of Speeds

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

INSTALLED TIRE DATA: Size - P185/60R15 Mfr. - GOODYEAR

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

<input checked="" type="checkbox"/>	Air Conditioning		Traction Control	<input checked="" type="checkbox"/>	Clock
	Tinted Glass		All Wheel Drive		Roof Rack
<input checked="" type="checkbox"/>	Power Steering		Cruise Control		Console
	Power Windows	<input checked="" type="checkbox"/>	Rear Window Defroster	<input checked="" type="checkbox"/>	Driver Air Bag
	Power Door Locks		Sun Roof or T-Top	<input checked="" type="checkbox"/>	Passenger Air Bag
	Power Seat(s)		Tachometer	<input checked="" type="checkbox"/>	Front Disc Brakes
<input checked="" type="checkbox"/>	Power Brakes	<input checked="" type="checkbox"/>	Tilt Steering Wheel		Rear Disc Brakes
	Antilock Brake System	<input checked="" type="checkbox"/>	AM/FM/CD		Other -

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

REMARKS:

RECORDED BY: M. A. Blum

DATE: 06/11/03

APPROVED BY: D. Messier

DATA SHEET 3
CURB WEIGHT WITH OPTIONS AND NORMAL LOAD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 TOYOTA ECHO PASSENGER CAR
 VEHICLE NHTSA NO.: C35110 ; VIN: JTDAT123230288455
 LABORATORY: GENERAL TESTING LABORATORIES
 TEST DATE: 06/11/03

Full Fluid Levels:

Fuel Full ; Coolant Full ; Other Fluids Full

Tire Pressure: LF 220 KPA (32 psi) LR 220 KPA (32 psi)
 RF 220 KPA (32 psi) RR 220 KPA (32 psi)

A. MEASURED CURB WEIGHT WITH INSTALLED OPTIONS AND ACCESSORIES

LF 317 KG (699 LB) LR 183 KG (404 LB)
 RF 293 KG (645 LB) RR 203 KG (447 LB)

Front Axle 610 KG (1344 LB) Rear Axle 386 KG (851 LB)

Total Vehicle 996 KG (2195 LB)

B. MEASURED VEHICLE WEIGHT IN NORMAL LOAD CONDITION

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

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

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

(4) Measured Normal Load on Each Wheel and Axles (Sum)

LF 363 KG (800 LB) LR 242 KG (533 LB)
 RF 335 KG (738 LB) RR 259 KG (570 LB)

Frt Axle 698 KG (1538 LB) Rr Axle 500 KG (1103 LB)

Total Vehicle 1198 KG (2641 LB)

DATA SHEET 3 – CONTINUED

- (5) Calculated Vehicle Normal Load on the Tire
 Front Tires (measured front axle normal load/2) = 349 KG (769 LB)
 Rear Tires (measured front axle normal load/2) = 250 KG (552 LB)
- (6) High Speed Test Load from (X) FMVSS 109 (S5.5), or () FMVSS 119 (S7.4)

	Front	Rear
(a) Installed Tire Size	<u>P185/60R15</u>	<u>P185/60R15</u>
Max. Load Rating on Sidewall	<u>500 KG(1102 LBS)</u>	<u>500 KG(1102 LBS)</u>
Reduced Sidewall Load Rating (if applicable)*	<u>N/A</u>	<u>N/A</u>
High Speed Test Load (88% of sidewall max. load rating)	<u>440 KG(970 LBS)</u>	<u>440 KG(970 LBS)</u>
(b) Optional Tire Size(s)	<u>P175/65R14</u>	<u>P175/65R14</u>
Max. Load Rating on Sidewall (From 2003 Tire & Rim Association Yearbook)	<u>462 KG(1019 LBS)</u>	<u>462 KG(1019 LBS)</u>
Reduced Sidewall Load Rating (if applicable)*	<u>N/A</u>	<u>N/A</u>
High Speed Test Load (88% of sidewall max. load rating)	<u>407 KG(897 LBS)</u>	<u>407 KG(897 LBS)</u>

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

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

RECORDED BY: M. D. G. A.

DATE: 06/11/03

APPROVED BY: R. M. M. A.

DATA SHEET 4
TIRE INFORMATION LABEL OR PLACARD

VEHICLE MAKE/MODEL/BODY STYLE: 2003 TOYOTA ECHO PASSENGER CAR
 VEHICLE NHTSA NO.: C35110 ; VIN: JTDAT123230288455
 LABORATORY: GENERAL TESTING LABORATORIES
 TEST DATE: 06/11/03

A. Vehicle Type from Certification Label: Passenger Car

B. Identify Vehicle Labeling:

Vehicle has a combined Certification Tire Information Label ☐ Yes ☒ No

Is Label Permanently Affixed: ☐ Yes ☐ No

Label Location: _____

Description of Label: _____

Vehicle has a separate Tire Information Label or Placard ☒ Yes ☐ No

Is Label Permanently Affixed: ☒ Yes ☐ No

Label Location: Glove Box

Description of Label: Vinyl

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

Vehicle Capacity Weight - 351 KG (775 LBS)

Designated Seating Capacity (DSC) - 5

Expressed In—

(1) Total No. of Occupants ☒ Yes ☐ No

(2) Terms of Occupants for Each Seat Location ☒ Yes ☐ No

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

P185/60R15

FRONT - 220 kPa (32 psi)

REAR - 220 kPa (32 psi)

P175/65R14

FRONT - 220 kPa (32 psi)

REAR - 220 kPa (32 psi)

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

REMARKS: _____

RECORDED BY: M. P. Blah

APPROVED BY: R. Messica

DATE: 06/11/03

DATA SHEET 5
VEHICLE TIRE DATA

VEHICLE MAKE/MODEL/BODY STYLE: 2003 TOYOTA ECHO PASSENGER CAR
 VEHICLE NHTSA NO.: C35110 ; VIN: JTDAT123230288455
 LABORATORY: GENERAL TESTING LABORATORIES
 TEST DATE: 06/11/03

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

INFORMATION FROM TIRE SIDEWALL:

Left Front Tire

Tire Size Designation	<u>P185/60R15</u>
Tire Load Index/Speed Symbol	<u>84T</u>
Maximum Inflation Pressure	<u>300 kPa (44 psi)</u>
Maximum Load Rating	<u>500 KG (1102 LBS.)</u>
Mfr. Name or Brand & Code	<u>GOODYEAR EAGLE</u>
Tube or Tubeless	<u>TUBELESS</u>
Treadwear/Traction/Temp. Grades	<u>300/A/B</u>
Sidewall (Plies & Composition)	<u>1 PLY POLYESTER</u>
Tread (Plies & Composition)	<u>1 PLY POLYESTER</u> <u>2 PLY STEEL</u>
Serial Number: Right Front -	<u>DOT EUCA 3KLR 0203</u>

Tire has "DOT" markings: (X) YES () NO () UNDETERMINED

REMARKS:

RECORDED BY: M. A. Gibson

DATE: 06/11/03

APPROVED BY: D. M. M. M. M.

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

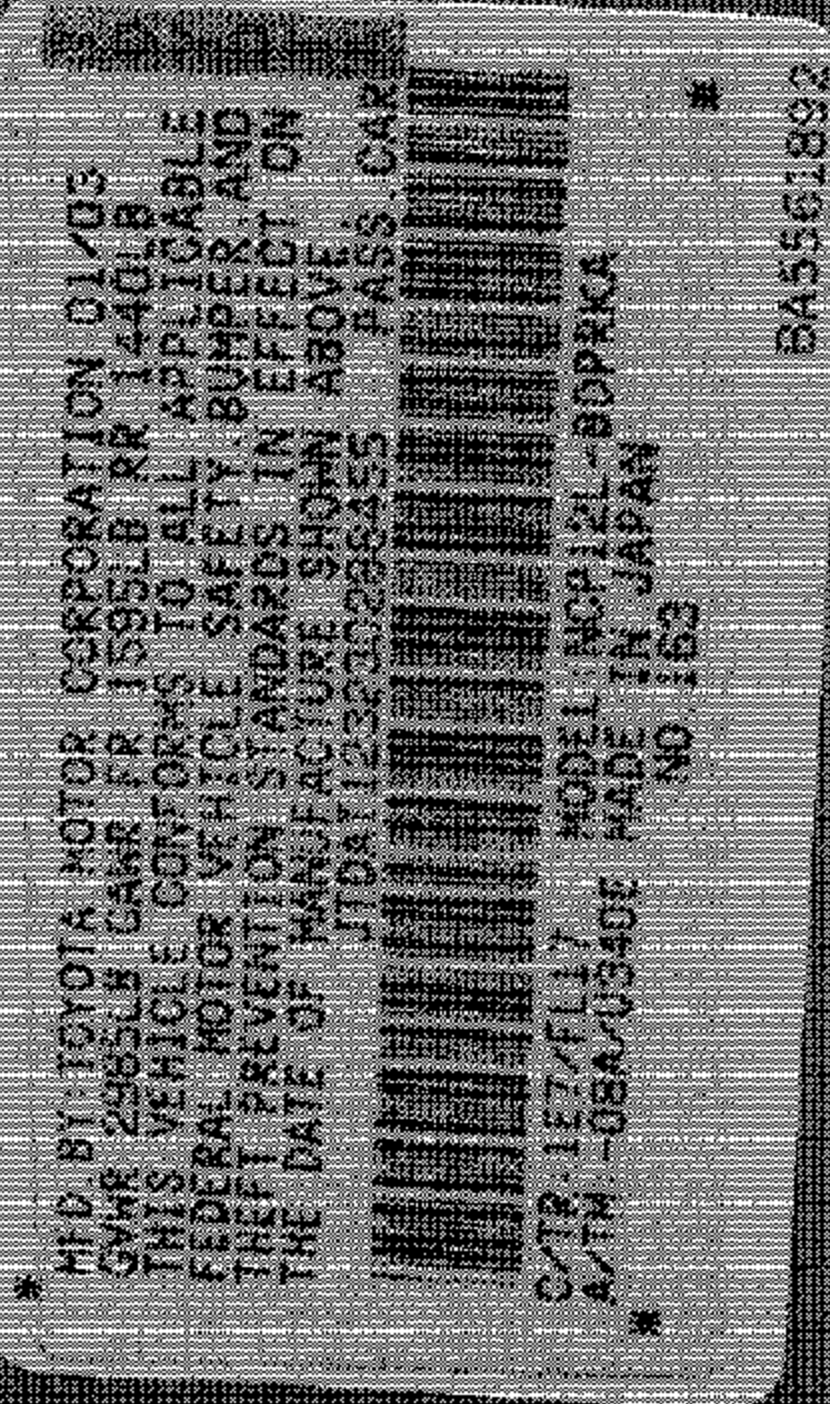
EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
PAD SCALES	#1 199744LF	199744LF	06/02	06/20/03
	#2 199744RF	199744RF	06/02	06/20/03
	#3 199744LR	199744LR	06/02	06/20/03
	#4 199744RR	19974RR	06/02	06/20/03
PRESSURE GAGE	WESKLER	0-100	05/03	05/04
SURFACE LEVEL	GTL	N/A	BEFORE USE	BEFORE USE

SECTION 5
PHOTOGRAPHS



FIGURE 5.1
¾ FRONTAL VIEW OF VEHICLE

2003 TOYOTA ECHO
NHTSA NO. C35110
FMVSS NO. 110 (INDICANT)



2003 TOYOTA ECHO
 NHTSA NO C35110
 FMVSS NO. 110 (INDICANT)

FIGURE 6.2
 VEHICLE'S CERTIFICATION LABEL



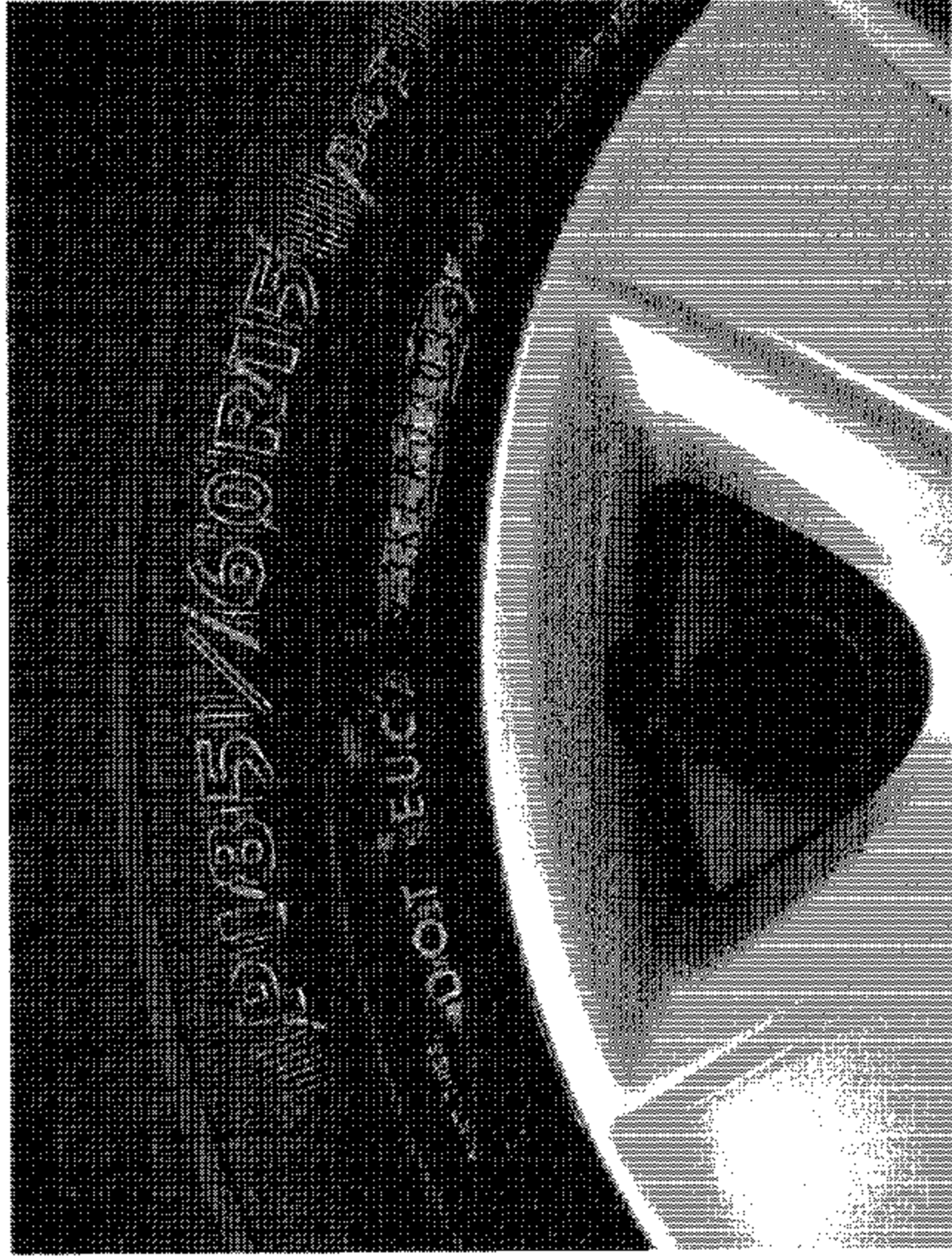
FIGURE 5.4
TIRE SHOWING BRAND

2003 TOYOTA ECHO
NHTSA NO. C35110
FMVSS NO. 110 (INDICANT)



2003 TOYOTA ECHO
NHTSA NO. C35110
FMVSS NO. 110 (INDICANT)

FIGURE 5.5
TIRE SHOWING MODEL, MAX LOAD RATING
AND MAX INFLATION



2003 TOYOTA ECHO
NHTSA NO. C35110
FMVSS NO. 110 (INDICANT)

FIGURE 5.8
TIRE SHOWING SIZE, LOAD INDEX, SPEED
SYMBOL AND SERIAL NUMBER



2003 TOYOTA ECHO
NHTSA NO. C35110
FMVSS NO. 110 (INDICANT)

FIGURE 5.7
VEHICLE BALLASTED TO SIMULATE NORMAL
LOAD CONDITION

APPENDIX

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

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

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