

SURFACE VEHICLE RECOMMENDED PRACTICE

J2657™

DEC2019

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Superseding J2657 DEC2004

Tire Pressure Monitoring Systems for Light Duty Highway Vehicles

RATIONALE

Committee recommends to reaffirm. Method is relevant and in common use.

Foreword

The field of application of this document is as listed below:

- a. Light truck and passenger car tires
- b. Tubeless conventional and run-flat tires

Normal tire maintenance procedures must be followed regardless of whether a tire pressure monitoring system (TPMS) is used or not. Tire pressure adjustments must be performed even in the absence of any TPMS indication in order to have the optimum tire performance. A TPMS acts only as an aid to the driver detecting pressure changes during operation.

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1. Scope

To establish overall performance guidelines, test methods, and minimum performance levels for a TPMS. The system shall visually indicate the tire inflation pressure status. These guidelines include, but are not limited to:

- a. A test methodology for a device which monitors tire inflation, that is located in/on the tire/wheel environment.
- b. Recommended performance guidelines for a TPMS.

1.1 Rationale

Not Applicable.

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2. References

2.1 Applicable Documents

The following publications form a part of this recommended practice to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001, www.sae.org

SAE J551/1—Performance Levels and Methods of Measurements of Electromagnetic Radiation from Vehicles and Devices (60 Hz to 18 GHz)
SAE J1211—Recommended Environmental Practices for Electronic Equipment Design
SAE J1113/1—Electromagnetic Compatibility Measurement Procedures and limits for Components of Vehicles, Boats (up to 15 m), and Machines (Except Aircraft) (50 Hz to 18 GHz)
SAE J1113/2—Electromagnetic Compatibility Measurement Procedures and Limits for Vehicle Components (Except Aircraft)—Conducted Immunity, 30 Hz to 250 kHz—All Leads
SAE J1113/3—Conducted Immunity, 250 kHz to 5000 MHz, Direct Injection of Radio Frequency (RF) Power
SAE J1113/4—Immunity to Radiated Electromagnetic Fields—Bulk Current Injection (BCI) Method
SAE J1113/11—Immunity to Conducted Transients on Power Leads
SAE J1113/12—Electrical Interference by Conduction and Coupling—Coupling Clamp and Chattering Relay
SAE J1113/13—Electromagnetic Compatibility Measurement Procedure for Vehicle Components—Part 13—Immunity to Electrostatic Discharge
SAE J1113/21—Electromagnetic Compatibility Measurement Procedure for Vehicle Components—Part 21—Immunity to Electromagnetic Fields, 10 kHz to 18 GHz, Absorber-Lined Chamber
SAE J1113/22—Electromagnetic Compatibility Measurement Procedure for Vehicle Components—Part 22—Immunity to Radiated Magnetic Fields from Power Lines
SAE J1113/24—Immunity to Radiated Electromagnetic Fields; 10 kHz to 200 MHz—Crawford TEM Cell and 10 kHz to 5 GHz—Wideband TEM Cell
SAE J1113/25—Electromagnetic Compatibility Measurement Procedure for Vehicle Components—Immunity to Radiated Electromagnetic Fields, 10 kHz to 1000 MHz—Tri-Plate Line Method
SAE J1113/26—Electromagnetic Compatibility Measurement Procedure for Vehicle Components—Immunity to AC Power Line Electric Fields
SAE J1113/27—Electromagnetic Compatibility Measurements Procedure for Vehicle Components—Part 27—Immunity to Radiated Electromagnetic Fields
SAE J1113/42—Electromagnetic Compatibility—Component Test Procedure—Part 42—Conducted Transient Emissions
SAE J2402—Road Vehicles—Symbols for Controls, Indicators, and Tell-Tales

2.1.2 ASTM PUBLICATIONS

Available from American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA, 19428-2959, www.astm.org

ASTM B 117—Salt Spray (Fog) Testing

2.2 Related Publications

The following publications are provided for informational purposes only and are not required as part of this document. Unless otherwise specified, the latest issue of the publications shall apply.

2.2.1 TIRE AND RIM YEAR BOOK

Available from The TIRE and RIM ASSOCIATION, INC., 175 Montrose West Avenue, Suite 150, Copley, OH 44321, www.us-tra.org

2.2.2 ETRTO STANDARDS MANUAL

Available from European Tyre and Rim Technical Organization, Secretariat, Avenue Brugmann, 32/2, B.-1060 Bruxelles, www.agency.be/etrto

2.2.3 JATMA YEAR BOOK

Available from the Japanese Automobile Tire Manufacturers Association, Inc., No. 33 Mori Bldg. 8th Floor, 3-8-21 Toranomon, Minato-Ku, Tokyo, Japan 105-0001, www.jatma.or.jp

2.2.4 ISO PUBLICATIONS

Available from ANSI, 25 West 43rd Street, 4th Floor, New York, NY 10036-8002, www.iso.org

ISO 7000—Graphical symbols for use on equipment—Index and synopsis
ISO 2575—Road Vehicles—Symbols for controls, indicators and tell-tales

2.2.5 FEDERAL PUBLICATIONS

Available from Federal Communications Commission, 445 12th Street SW, Washington, DC 20554, www.fcc.gov

FCC Part 15

Available from the Federal Register, National Highway and Traffic Safety Administration, 400 Seventh Street, SW, Washington, DC 20590, www.nhtsa.dot.gov

Title 49 Code of Federal Regulations
FMVSS 138—Tire Pressure Monitoring Systems
FMVSS 101 S5.2.3—Controls and Displays
FMVSS 110—Tire Selection and Rims

3. Definitions

3.1 Conventional tire

All pneumatic tires not defined as run-flat.

3.2 Cold inflation pressure

Tire inflation pressure at the prevailing atmospheric temperature that does not include any tire inflation pressure build-up due to vehicle operation.

3.3 Functionality

Operation within the parameters as defined by the specification of the device under test.

3.4 Gross vehicle weight rating

The value specified by the vehicle manufacturer as the maximum loaded weight of a single vehicle.

3.5 Lightly loaded

Unloaded vehicle weight plus 180kg, including test driver and instrumentation.

3.6 Run-flat tire

A tire, which is capable of running a certain, limited distance under prescribed conditions in the event of a complete loss of inflation pressure. A run-flat tire is similar to a conventional tire in that it is inflated to the cold inflation pressure.

3.7 Test inflation pressure

The tire pressure at which the system is to be activated to indicate a low tire pressure condition on a vehicle.

3.8 Tire placard

A placard, permanently affixed to the vehicle as required by FMVSS110. The placard displays, among other information, the vehicle manufacturer's recommended cold tire inflation pressure.

3.9 Tire Pressure Monitoring System

A system that measures the tire inflation pressure or a parameter(s) that adequately correlates to tire inflation pressure.

3.10 Symbols and Abbreviations

DUT—Device Under Test
EMC—Electromagnetic Compatibility
IRI—International Roughness Index
p-p—Peak-to-peak
RF—Radio Frequency
TPMS—Tire Pressure Monitoring System