

Consumer Product Safety Commission

§ 1211.5

§ 1211.2 Definition.

As used in this part 1211: *Residential garage door operator* means a vehicular door operator which:

- (a) Serves a residential building of one to four single family units;
- (b) Is rated 600 volts or less; and
- (c) Is intended to be employed in ordinary locations in accordance with the National Electrical Code, NFPA 70, 1999 edition. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the National Fire Protection Association, 1 Batterymarch Park, Quincy, Mass. 02269-9101, tel. 1-800-344-3555. Copies may be inspected at the Consumer Product Safety Commission, Office of the Secretary, 4330 East West Highway, Bethesda, Maryland or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

[57 FR 60455, Dec. 21, 1992, as amended at 62 FR 46667, Sept. 4, 1997; 65 FR 70657, Nov. 27, 2000]

§ 1211.3 Units of measurement.

If a value for measurement is followed by a value in other units, in parentheses, the second value may be only approximate. The first stated value is the requirement.

[57 FR 60455, Dec. 21, 1992, as amended at 65 FR 70657, Nov. 27, 2000]

§ 1211.4 General requirements for protection against risk of injury.

- (a) If an automatically reset protective device is employed, automatic restarting of a motor shall not result in a risk of injury to persons.
- (b) A residential garage door operator is considered to comply with the requirement in paragraph (a) of this section if some means is provided to prevent the motor from restarting when the protector closes.
- (c) An electronic or solid-state circuit that performs a back-up, limiting, or other function intended to reduce the risk of fire, electric shock, or injury to persons, including entrapment protection circuits, shall comply with the requirements in the Standard for Safety for Tests for Safety-Related Controls Employing Solid-State De-

vices, UL 991, second edition, dated June 23, 1995, including environmental and stress tests appropriate to the intended usage of the end-product. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, Telephone (800) 854-7179 or Global Engineering Documents, 7730 Carondelet Ave., Suite 470, Clayton, MO 63105, Telephone (800) 854-7179. Copies may be inspected at the Consumer Product Safety Commission, Office of the Secretary, 4330 East West Highway, Bethesda, Maryland or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

[57 FR 60455, Dec. 21, 1992, as amended at 62 FR 46667, Sept. 4, 1997; 65 FR 70657, Nov. 27, 2000]

§ 1211.5 General testing parameters.

(a) The following test parameters are to be used in the investigation of the circuit covered by §1211.4(c) for compliance with the Standard for Safety for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991, second edition, dated June 23, 1995, as incorporated by reference in paragraph (b)(3) of this section:

- (1) With regard to electrical supervision of critical components, an operator being inoperative with respect to downward movement of the door meets the criteria for trouble indication.
- (2) A field strength of 3 volts per meter is to be used for the Radiated EMI Test.
- (3) The Composite Operational and Cycling Test is to be used for 14 days at temperature extremes of minus 35 °Celsius (minus 31 °F) and 70 °C (158 °F).
- (4) Exposure Class H5 is to be used for the Humidity Test.
- (5) A vibration level of 5g is to be used for the Vibration Test.
- (6) When a Computational Investigation is conducted, λ_p shall not be greater than 6 failures/10⁶ hours for the entire system. For external secondary entrapment protection devices that are sold separately, λ_p shall not be greater than 0 failures/10⁶ hours. For internal

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secondary entrapment protection devices whether or not they are sold separately, λ_p shall not be greater than 0 failures/10⁶ hours. The operational test is conducted for 14 days. An external secondary entrapment protection device that is sold separately, and that has a λ_p greater than 0 failures/10⁶ hours meets the intent of the requirement when for the combination of the operator and the specified external secondary entrapment protection device λ_p does not exceed 6 failures/10⁶ hours. See § 1211.15(i) and (k).

(7) When the Demonstrated Method Test is conducted, the multiplier is to be based on the continuous usage level, and a minimum of 24 units for a minimum of 24 hours per unit are to be tested.

(8) The Endurance test is to be conducted concurrently with the Operational test. The control shall perform its intended function while being conditioned for fourteen days in an ambient air temperature of 60 °C (140 °F), or 10 °C (18 °F) greater than the operating temperature of the control, whichever is higher. During the test, the control is to be operated in a manner representing the opening and closing of the door at a rate of one open-close operation per minute.

(9) For the Electrical Fast Transient Burst Test, test level 3 is to be used for residential garage door operators.

(b) In the evaluation of entrapment protection circuits used in residential garage door operators, the critical condition flow chart shown in figure 1 shall be used:

(1) To conduct a failure-mode and effect analysis (FMEA);

(2) In investigating the performance during the Environmental Stress Tests; and

(3) During the Power Cycling Safety for Tests in accordance with the Standard for Safety for Tests for Safety-Related Controls Employing Solid-State Devices, UL 991, second edition, dated June 23, 1995. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112, Telephone (800) 854-7179 or Global Engineer-

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§ 1211.6 General entrapment protection requirements.

(a) A residential garage door operator system shall be provided with primary inherent entrapment protection that complies with the requirements as specified in § 1211.7.

(b) In addition to the primary inherent entrapment protection as required by paragraph (a) of this section, a residential garage door operator shall comply with one of the following:

(1) Shall be constructed to:

(i) Require constant pressure on a control to lower the door,

(ii) Reverse direction and open the door to the upmost position when constant pressure on a control is removed prior to operator reaching its lower limit, and

(iii) Limit a portable transmitter, when supplied, to function only to cause the operator to open the door;

(2) Shall be provided with a means for connection of an external secondary entrapment protection device as described in §§ 1211.8, 1211.10, and 1211.11; or

(3) Shall be provided with an inherent secondary entrapment protection device as described in §§ 1211.8, 1211.10, and 1211.12.

(c) A mechanical switch or a relay used in an entrapment protection circuit of an operator shall withstand 100,000 cycles of operation controlling a load no less severe (voltage, current, power factor, inrush and similar ratings) than it controls in the operator, and shall function normally upon completion of the test.

(d) In the event malfunction of a switch or relay (open or short) described in paragraph (c) of this section results in loss of any entrapment protection required by §§ 1211.7(a), 1211.7(f),