

UNDERWRITERS LABORATORIES INC. CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared by UL LLC. It is normative for the applicable UL Product Certification Program(s); however, it is currently not part of the UL Standard(s) referenced below.

Product Category (CCN): ELBZ, ELBZ2, ELBZ3, AXUT3

Standard Number: UL 817

Standard Title: Standard for Cord Sets and Power-Supply Cords

Edition Date: March 11, 2015

Edition Number: 12

Section / Paragraph Reference: (New) 9.12.1 - 9.12.3 (New) Section 19A, 19A.1 - 19A.9

Subject: Adding requirements for testing of electronic circuitry

DECISION:

9.12.1 A polymeric material used as an enclosure or in contact with electrical components shall have a suitable relative thermal index rating in accordance with the Standard for Polymeric Materials – Short Term Property Evaluations, UL 746A, or the Standard for Polymeric Materials – Long Term Property Evaluations, UL 746B.

9.12.2 A printed wiring board shall comply with the Standard for Printed-Wiring Boards, UL 796, and have a minimum flammability rating of HB as determined by the applicable tests in the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94.

9.12.3 The temperature measured on a printed wiring board shall not exceed its maximum operating temperature when tested in accordance with the Temperature Test, 12.2, when corrected to 25°C (77°F) ambient temperature.

19A Tests for Electrical Components

19A.1 The breakdown of an electrical component as simulated by the test described in 19A.2 -19A.9 shall not result in the risk of injury to persons, or the risk of fire or electric shock as determined by the existence of any of the following conditions:

- a) Glowing, charring, or flaming of the cheesecloth or tissue paper specified in 19A.4;
- b) The opening of the 3 A fuse connected to ground specified in 19A.5;
- c) Emission of flame, sparks, or molten metal from the enclosure;
- d) Development of an opening in the overall enclosure that exposes live parts and increases the risk of electric shock (see 6.3); or
- e) Loss of structural integrity to such a degree that the equipment collapses or experiences displacement of parts that may:
 - 1) Lead to short-circuiting or grounding of live parts,
 - 2) Affect the function of any safety controls such as thermostats, overload protective devices, waterseals, or strain relief.

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A component located in the supplementary circuit in accordance with 9.8 or an optical isolator that complies with the requirements in the Standard for Optical Isolators, UL 1577 need not be subjected to this test.

19A.2 The malfunction of a component such as a diode, a transistor, a thyristor, an electrolytic capacitor, an integrated circuit, an optical isolator, or other electronic component which has not been determined to be reliable by a reliability investigation and which could result in a risk of fire or electric shock, are to be simulated. In order to simulate the malfunction of a component, the circuit between any two terminals of the component is to be opened and/or shorted. Only one of the two simulated fault conditions is to be imposed at one time. For a multi-terminal device, only two terminals are to be short-circuited at a time. Simulated circuits may be used, but if the tests performed on simulated circuits indicate likely damage to other parts of the product to the extent that the safety of the product may be affected, the test is to be repeated on the product.

19A.3 Each simulated fault condition is to be conducted on a separate unit unless it is agreeable to all those concerned that more than one test be conducted on the same unit.

19A.4 The unit is to be placed on a softwood surface covered with white tissue paper. A single layer of cheesecloth is to be draped loosely over the entire enclosure.

19A.5 Exposed dead-metal parts of the unit are to be connected to ground through a 3 A non-time-delay fuse.

19A.6 The unit is to be connected to a 60 Hz, 120 V supply source. The supply circuit is to have a minimum 20 A branch circuit overcurrent protection.

19A.7 The test is to be conducted for 7 hours or until at least one of the following results are observed:

- a) A risk of fire or electric shock develops.
- b) The branch-circuit overcurrent protection opens.
- c) The equipment protective device opens.
- d) Any other circuit component opens, or
- e) A minimum of one hour elapses, circuit conditions stabilize, and there is no further evidence of overheating of parts.

19A.8 With reference to of 19A.7(e), the overheating of parts may be detected by an indicator such as an odor, smoke, discoloration, cracking of materials, charring, flaming, glowing, arcing, changes in circuit current through the applied fault, or any similar phenomenon.

19A.9 If a fault condition is terminated by opening of a circuit component as specified in 19A.7(d), the test is to be conducted two more times using new components for each test.

RATIONALE FOR DECISION:

Due to end product demand, UL is being requested to evaluate electronic components in power supply cords and cord sets. The above requirements are being proposed for the evaluation of printed wiring boards and associated components housed within fittings and other enclosures.

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