APPENDIX IV

UNDERWRITERS LABORATORIES CERTIFICATION REQUIREMENT DECISION

This Certification Requirement Decision is prepared and published by Underwriters Laboratories (UL). 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): AGGZ, OETX, EOKL
Standard Number: UL 867
Edition Date: October 9, 2000
Edition Number: 4
Section / Paragraph Reference: 37.2.2 a) 2)
Subject: Ozone Test - Chamber Airtightness

DECISION:

37.2.2 The following test chamber criteria shall be met:

a) The test chamber shall be sufficiently airtight to avoid uncontrolled air exchange. The chamber is considered sufficiently airtight if at least one of the following requirements is fulfilled:

1) the air leakage is less than 0.5 percent of the chamber volume per minute at an overpressure of 1000 Pa;

2) the air leakage is less than 5 percent of the supply airflow rate when investigated per the Airtightness - Pressurization or Tracer Gas Method of the Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products, ASTM D6670, static condition, at a pressure differential of 10 PA.

b) The test chamber shall have proper mixing verified via the mixing procedure of the Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products, ASTM D6670, Sections titled Air Distribution in the Chamber and Air-Mixing in a Chamber, and shall not create local airflow across the surface of the product under test exceeding 0.1 m/s.

c) The test chamber supply air system shall be equipped with sufficient carbon and HEPA media to remove particles, reactive VOCs, and ozone.

RATIONALE FOR DECISION:

When investigating the airtightness of a test chamber it is necessary that both the test method and pressure differential be specified. While the Pressurization method is the most widely and easily implemented method of verification, the Tracer Gas method is allowed interchangeably throughout most chamber test standards. Additionally, 10 PA was added as the pressure differential used during verification testing. This value is standard industry practice and is recommended in the Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products, ASTM D6670.

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Product Category (CCN): AGGZ, OETX, EOKL
Standard Number: UL 867
Edition Date: October 9, 2000
Edition Number: 4
Section / Paragraph Reference: 37.4.8 and 37A.5
Subject: Ozone Test - Test Conditions

DECISION:

37.4.5 A single ozone monitor sampling tube is to be positioned with the sample tube opening located 2 inches (50 mm) from the air outlet of the product and is to point directly into the air stream. Monitoring shall occur where ozone emissions are highest as determined by the Peak Ozone Emission Location Determination test of Section 37A.

37.4.7 If the filter cell or other high voltage component can be energized with any of its fans not functioning or with filters removed, the test described in 37.1 - 37.4.6 is to be repeated with the various components not operating or with filters removed.

37.4.8 If the appliance is provided with multiple fan speeds and/or ozone or high voltage output level settings ~~of operation~~, the test described in 37.1 - 37.4.6 is to be ~~repeated~~conducted ~~on~~at both the highest and lowest (non-zero) fan ~~each~~ speed while operating under the conditions that produce the highest ozone output level as determined under Section 37A.5. If the air cleaner is equipped with special features, such as ionizers or UV lamps, that can be activated independently, they shall be “on”. ~~For those appliances with continuous or near-continuous dial settings, tests shall be conducted at the minimum, middle, and maximum settings.~~

37A.5 The ozone emitted from the air cleaner shall be measured at each location defined in 37A.3 and 37A.4. The air cleaner shall be operated on both the highest and lowest (non-zero) fan speed if so equipped and each ozone or high voltage output level setting. For those appliances with four or more dial settings for fan speed and/or ozone or high voltage output, the appliance shall be operated at the minimum and maximum settings for fan speed and at the minimum, middle and maximum settings for the ozone or high voltage output. If the air cleaner is equipped with special features, such as ionizers or UV lamps, that can be activated independently, they shall be ″on″ for purposes of the test. The sampling probe shall be positioned at a measurement location and allowed to operate for a minimum of 2 minutes, longer if necessary for equipment specific measurement stabilization, before recording the peak ozone level. The measurement location and operating condition that produced the highest ozone reading in the air stream shall be identified for use during the Ozone Test, Section 37.

RATIONALE FOR DECISION:

When developing the new test method for measurement of ozone emissions, efforts were taken to effectively utilize test time within the test chamber. The peak ozone location determination test (Section 37A) was developed to identify the location of the highest ozone emissions for positioning of the probe, and the worst case operating conditions. This test measures ozone emissions under the range of operating speeds/output levels at various exhaust locations. The sampling probe location and mode of

operation determined to be “worst case” can then be utilized as the probe location and operating mode for chamber testing. As mechanical filters are expected to have a significant impact on ozone emissions, chamber testing with and without them in place continues to be required.

The requirement as currently described in UL 867 can be interpreted to require test iterations in greater numbers within the chamber when compared to the testing of Section 37A. This Certification Requirement Decision is intended to clarify the specific chamber test conditions that are required.

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Product Category (CCN): AGGZ, OETX, EOKL
Standard Number: UL 867
Edition Date: October 9, 2000
Edition Number: 4
Section / Paragraph Reference: 37A.1
Subject: Peak Ozone Location Determination Test - Room Dimensions

DECISION:

37A.1 The peak ozone location for monitoring shall be determined by testing the product in an open space with a minimum side dimension ~~in any direction~~ of 10 feet (3.0 m), and a minimum height dimension of 8 feet (2.4 m). The air cleaner shall be placed in the center of the test space as described in 37.4.4. ~~Lab~~ Room ventilation shall not create local airflow across the surface of the unit under test greater than 4 inches/s (0.1 m/s).

RATIONALE FOR DECISION:

When developing the test method for peak ozone location determination, efforts were taken to simulate the air flow environment of the ozone measurement test chamber as closely as possible. As currently written it is unclear if the minimum room dimension additionally refers to room height. As the previously stated intent was to align with the ozone measurement environment, the above clarification details that the room side dimensions for this test segment shall be at least 10 feet (3.0 m) and the room height shall be at least 8 feet (2.4 m).