



Oberon's NEC Compliance Statement
and
Underwriters Laboratories (ULTM)
Considerations
for Oberon Products

Manufacturers' Statement of Compliance with NFPA 70, National Electric Code

Oberon's suspended ceiling and hard lid ceiling mounted enclosures are constructed entirely of non-flammable steel and aluminum in the above ceiling space. Therefore, they are compliant with the following NFPA 70 National Electric Code paragraphs, for wiring and equipment in Plenum Space:

300-21 Spread of Fire or Products of Combustion

300-22 Wiring in Ducts, Plenums and Other Air Handling Spaces, paragraphs (A), (B), (C), and (D)

For Compliance with 2011 *National Electric Code (NEC)*, ceiling enclosures should be supported according to the following paragraph:

300.11 Securing and Supporting.

(A) Secured in Place. Raceways, cable assemblies, boxes, cabinets, and fittings shall be securely fastened in place. Support wires that do not provide secure support shall not be permitted as the sole support. Support wires and associated fittings that provide secure support and that are installed in addition to the ceiling grid support wires shall be permitted as the sole support. Where independent support wires are used, they shall be secured at both ends. Cables and raceways shall not be supported by ceiling grids.



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Underwriters Laboratory (UL) Considerations when using Oberon's wireless enclosures

1. UL 50e Indoor/Outdoor NEMA Enclosures

UL 50e

Enclosures for Electrical Equipment, Environmental Conditions

1. Scope

1.1 This standard applies to enclosures for electrical equipment intended to be installed and used in non-hazardous locations in accordance with the Canadian Electrical Code, Part I, CSA C22.1, the provisions of the National Electrical Code, NFPA 70, and the provisions of Mexico's Electrical Installations, NOM-001-SEDE, as follows:

- a) Enclosures for indoor locations, Types 1, 2, 5, 12, 12K, and 13; and
- b) Enclosures for indoor or outdoor locations, Types 3, 3R, 3S, 4, 4X, 6, and 6P.

1.2 This standard covers additional environmental construction and performance requirements for enclosures. The general requirements for enclosures are contained in standard CSA C22.2 No. 94.1, UL 50, and NMX-J-235/1-ANCE (See Annex b, Ref. No. 10) or the end-use product standards that are to be used in conjunction with this standard.

1.3 This standard does not cover the requirements for protection of devices against conditions such as condensation, icing, corrosion, or contamination that may occur within the enclosure or that may enter via conduit or unsealed openings.

The "NEMA rating" of Oberon's products are from the UL 50e evaluation. Oberon's outdoor enclosures are UL 50e listed (file # E194432 and others). UL 50e listed products will state "UL Listed" or "UL 50e Listed" in the specification sheet. UL 50e listed products will have a UL label inside the product, and the model number label will indicate the NEMA type.

The following Oberon products are UL 50e listed: Models in the 102X-XX, where the "X" may be any alpha-numeric product indicator.

2. UL 50 Indoor only NEMA Type 1 Enclosures

UL 50

Enclosures for Electrical Equipment

1. Scope

1.1 These requirements cover electrical equipment enclosures for use in accordance with the National Electrical Code, NFPA 70.

1.2 Specific applications covered by this standard include cabinets and cutout boxes and junction and pull boxes.

UL 50 relates to the construction of electrical equipment enclosures per 2008 NEC, NFPA 70, Article 312.10. Many of Oberon's enclosures are designed to be compliant with NEC article 312.10. Many of Oberon's ceiling and wall enclosures are UL 50 listed (file # E249360). UL 50 listed products will state "UL Listed" or "UL 50 Listed" in the specification sheet. UL 50 listed products will have an orange UL label inside the product, and the model number label will indicate that it is a "Type 1 Enclosure".

The following Oberon products are UL 50 listed: Models in the 102X-XX, 103X-XX, and 105X-XX series, where the "X" may be any alpha-numeric product indicator.

3. UL 2416 INFORMATION TECHNOLOGY AND COMMUNICATIONS EQUIPMENT CABINET, ENCLOSURE AND RACK SYSTEMS

UL2416

1. Scope

1.1 This Outline of Investigation covers requirements for Audio/Video, Information and Communication Technology Equipment Cabinet, Enclosure and Rack Systems. For the purpose of this Outline, cabinet, enclosure and rack systems are all referred to as "enclosure systems".

1.2 Enclosure systems are not complete equipment but include components and sub-assemblies that are intended to power, protect, heat, cool or otherwise support information technology (IT), telecommunications, audio/video (A/V) and similar equipment that will be installed at a later time. They usually include mounting hardware, shelves or space for the installation of the additional equipment. These enclosure systems are intended to be used by manufacturers in the construction of complete A/V, IT and communications equipment, or by service providers and

other qualified installers for the installation of network infrastructure equipment or communications and multi-media systems equipment.

1.3 This Outline of Investigation assumes that the final installation of equipment into the enclosure system will be performed by qualified service personnel in accordance with the applicable installation instructions, installation practices and national installation codes. As appropriate, this equipment should be installed in accordance with ANSI/NFPA 70, National Electrical Code (NEC), and/or the applicable sections of ANSI/IEEE C2, National Electrical Safety Code (NESC). Equipment intended for installation in information technology equipment (computer) rooms should be installed in accordance with NFPA 75, Standard for the Protection of Information Technology Equipment.

1.4 Enclosure systems by their very nature are intended to house equipment that is not specified by the enclosure system manufacturer and whose construction and characteristics are largely unknown. As such, in some cases these requirements include additional or supplementary safeguards beyond those normally required by general equipment standards where the final configuration is well defined and risks can be reduced to an acceptable level by a thorough evaluation of the design and testing.

1.5 These requirements do not cover enclosures for modular data centers. Equipment of this type shall be investigated under the requirements in the Outline of Investigation for Modular Data Centers, UL 2755.

1.6 These requirements do not cover exhaust chimneys and other air management systems that connect to environmental air systems in buildings. Equipment of this type shall be investigated under the requirements in Standard for Heating and Cooling Equipment, UL 1995, and Outline of Investigation for Drop Out Ceilings Installed Beneath Sprinklers, UL 723S. Note: Environmental air systems include ducts specifically designed for environmental air and other spaces used for environmental air (plenums) that may not be specifically fabricated for environmental air-handling purposes but are used for air-handling purposes as a plenum. The space over a hung ceiling used for environmental air-handling purposes is an example of this type of other space.

1.7 It is the responsibility of the Authority Having Jurisdiction over the final installation to determine if the final configuration meets the necessary criteria for installation and use

Most of Oberon's products have been evaluated by UL and listed under UL 2416, (file # E348543). Some of the products are suitable for installation of AC power. UL 2416 listed products will state "UL Listed" or "UL 2416 Listed" in the specification sheet. UL 2416 listed products will have a white UL label inside the product, which states the following

- "Suitable for use in Other Environmental Air Space in Accordance with Section 300-22(C) of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, CSA C22.1."
- "Investigation of the enclosure system (or rack, or equipment cabinet, or the like) does not include investigation of any equipment or material contained therein."

The following Oberon products are UL 2416 listed: Models in the 105X-XX, 106X-XX, 107X-XX, and 109X-XX series, where the "X" may be any alpha-numeric product indicator. The 107X-XX series may be provided with a listed AC receptacle.

4. UL-94 Plastic Components in Oberon Enclosures

UL 94

Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

1 Scope

1.1 These requirements cover tests for flammability of plastic materials used for parts in devices and appliances. They are intended to serve as a preliminary indication of their acceptability with respect to flammability for a particular application.

UL 94 relates to flammability of plastics and non-metallic materials. Many of Oberon's enclosure products have minimal plastic content, and therefore, per UL, are not subject to test for flammability of plastic materials. Oberon's products which include a plastic insert use an impact resistant ABS/PVC cover that meets many industry flammability standards. The white ABS covers are recognized under the component program of Underwriter laboratories, Inc. with a classification of UL 94-5VA. The Clear polycarbonate covers are a classification of UL-94V0. UL has indicated that Oberon's 60950-1, NWIN listed products with UL94-5V plastic inserts are "*Suitable for use in Other Environmental Air Space in Accordance with Section 300-22(C) of the National Electrical Code*"

The following Oberon products with *plastic components* are suitable for use in air-handling space: Models in the 105X-XX, 107X-XX, and 109X-XX series, where the "X" may be any alpha-numeric product indicator. The 107X-XX series may be provided with a listed AC receptacle

Plastic antennas connected to enclosures should have a UL 94-VO listing. Oberon's "Z" series antennas have a UL 94-VO listing.

5. UL 2043 Heat and Visible Smoke Test

UL 2043

Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces

1 Scope

1.1 This is a fire test method for determining the fire performance response of discrete products (electrical equipment) intended to be installed in air handling spaces, such as above suspended ceilings. These products are subjected to an open flame ignition source and evaluated using a product calorimeter.

1.2 The purpose of this test is to determine the rate of heat release and the rate of smoke release of the burning product samples as they relate to the requirements for fire-resistant and low-smoke-producing characteristics in accordance with the provisions of the National Electric Code, NFPA 70.

1.3 This test method does not provide information on the performance of products in other fire or test conditions. This test does not investigate the toxicity of the products of combustion.

1.4 This test does not cover the constructional, electrical, or other performance requirements of the product.

Oberon's products are not "*electrical equipment*" and therefore are not covered by UL2043. However, since they are largely steel and aluminum, they meet the intent of UL2043.

Non-plenum rated equipment may be installed within Oberon enclosures in the plenum space per the 2011 National Electric Code, Paragraph

300.22 (C) (3) Equipment. *Electrical Equipment with a metal enclosure and associated wiring material suitable for the ambient temperature shall be permitted to be installed in such other spaces unless prohibited elsewhere in this Code.*

In order to simplify code compliance, it is desirable to use UL2043 Plenum rated equipment when available.

Oberon's model WC-AP-3500-X, specifically, has been tested to comply with UL 2043 Fire Test for heat and visible smoke release in plenum spaces; Intertek report #3121942SAT-002

6. UL 72 Fire resistance

UL 72

Tests for Fire Resistance of Record Protection Equipment

1 Scope

1.1 These requirements cover the test procedures applicable to the fire-resistance classification of record protection equipment intended to provide protection to one or more types of records when exposed to various durations of fire exposure.

Oberon's products are not "*record protection equipment*", and therefore are not covered by UL 72.

7. Fire Resistance Rating of a Ceiling Assembly

UL Design Number, relating to Fire Resistance Rating of Ceiling Assembly

The degree to which an entire ceiling assembly, not individual components, withstands fire and high temperatures (measured in hours). Specifically, it is an assembly's ability to prevent the spread of fire between spaces while maintaining structural integrity. The fire-resistance rating relates to the assembly and is published in the UL Fire Resistance Directory.

The ceiling system is designed by the architect for a fire resistance rating, per a UL Design Number (the UL Design Number should be known for a facility). The UL Design Number specifies, among other things, the maximum amount of Fixture Penetration (i.e, wireless and network enclosures) in (square ft. / 100 square ft.). The installer/code enforcement officer must insure that the fixture penetration area is not exceeded. There is *not* a UL listing for components (including wireless and network enclosures) that addresses fire resistance rating in a system.

Specific requirements for a UL Design Number can be obtained from

<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

8. Cabling

UL Type CL2P Cabling

Cable which is rated for class 2 circuits (low voltage as defined NEC article 745) in a plenum space.

Data cabling and RF Cabling used in plenum spaces must be plenum rated. Technically, because Oberon's ceiling enclosures are plenum rated enclosures, cables entirely within the enclosure, such as antenna jumpers, would not have to be plenum rated. However, because AHJ's are trained to look for, and reject, non-plenum rated cable in plenum spaces, it is recommended that only plenum rated cables be used within the enclosure. Since the cables within the enclosure are very short, the cost impact is minimal. Cables should be UL Type CL2P (Class 2 Plenum). The cable should say "UL Type CL2P" on its jacket.

CMP and CMR

CMP- Communications Multipurpose Plenum

CMR – Communications Multipurpose Riser

Data cable used in plenum or riser space should say on the jacket "CMP" or "CMR" respectively. Data cable used in Oberon enclosures in the plenum space should say "CMP" on the jacket.