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The following material resulting from the investigation under the above numbers is enclosed.

Issue Date	Vol	Sec	Pages	Revised Date
	1		Revised Authorization Page(s)	2017/11/20
	1		Index Page(s)	
2017/10/31	1	1	Description Page(s)	

Resending revised Report/Procedure material to correct Issue Date for Documents of Project 4787673266.

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Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

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NBK File

UL INSPECTION CENTER 812

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

ACCESSORIES, AIR-DUCT MOUNTED
(ABQK,ABQK7)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

Applicant: 1613910 (Party Site)
IONAER INTERNATIONAL INC
4848 E Cactus Rd 505-103
Scottsdale AZ 85254

Listee/Classified Co.: 1613910 (Party Site)
SAME AS APPLICANT

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party and any applicable Service Terms. The UL Contracting Party for Follow-Up Services is listed on addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

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UL LLC has signed below solely in its capacity as the accredited entity to indicate that this Follow-Up Service Procedure is in compliance with the accreditation requirements.

Bruce A. Mahrenholz
Director
North American Certification Program

LOCATION

1823640 (Party Site)
IONaer International
2021 W. Adobe Drive
Phoenix AZ 85027

Factory ID: None

UL Contracting Party for above site is: UL LLC

Models	Section	Report Date
Duct-Mounted Ionizing Air Cleaner, Models Ionaer 7000	1	**2017-10-31**

DESCRIPTION

PRODUCT COVERED:

USL, CNL - Duct-Mounted Ionizing Air Cleaner, Models Ionaer 7000.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

This equipment has been investigated from the standpoint of electrical, fire and casualty hazards only. Physiological nor health effects, beneficial or otherwise associated with the use of this product and its ability to aid in disinfection of environmental air have not been investigated by UL.

USL indicates investigation to the US standard for Heating and Cooling equipment UL 1995, and the US standard for Electrostatic Air Cleaners UL 867.

CNL indicates investigation to the Canadian standard for Heating and Cooling Equipment CSA C22.2 No. 236And the Canadian Standard for Electrostatic Air Cleaners, CSA C22.2 no. 187.

ELECTRICAL RATINGS:

120VAC, 0.25A, 60Hz
GENERAL CHARACTER AND USAGE:
The units described by this report are air ionization type devices intended for duct mounting in air conditioning plenum or duct systems in home and commercial facilities. The main purpose of the unit is for air purification and odor neutralization. The products include a High voltage power supply connected to an ionizing tube mounted to end up in the air stream. These units are cord connected and intended for indoor use only.
CONSTRUCTION DETAILS:

Nameplate Markings -

Each product is permanently and legibly marked on the outer enclosure by a Recognized(PGDQ2) or Recognized(PGJI2) adhesive label(s) suitable for the mounting surface with the following information:

1. The manufacturer's name or file number and Model designation.

2. Electrical ratings including voltage, current and frequency.

3. Date code or similar marking identifying at least the year and quarter of manufacture.
The month and year as the date code: 032017 as an example for March 2017.

4. Disclaimer Wording - "The health aspects associated with the use of this product and its ability to aid in disinfection of environmental air have not been investigated by UL LLC.". Located on the product and in the instruction manual.

Cautionary Markings- Printed on the same marking materials as the unit nameplate markings.

"CAUTION," And "WARNING" shall be in letters not less than 1/8 inch (3.2 mm) high. The remainder of the marking shall be in letters not less than 1/16 inch (1.6 mm) high.

The following Cautionary markings are required:

"Caution – High Voltage".

"WARNING: Risk Of Electric Shock. Can Cause Injury Or Death: Disconnect All Remote Electric Power Supplies Before Servicing".

Installation Instructions -

Installation Instructions shall be provided with each product and shall include the following wording grouped under the heading Safety Instructions:

> **"Caution: This product shall not be installed behind a suspended floor/ceiling or a structural wall, ceiling, or floor."**
> **"Caution: This product is suitable for mounting to duct of metallic construction only. Installation must be such that the structural integrity of the ducting is not compromised."**

Additionally the Installation instructions shall include the following wording:

> **Use Temperature - Maximum Ambient temperature in which unit shall be used: 180 degree F/ 82.2°C**

OUTER ENCLOSURE; MODEL Ionaer 7000, Figure 1 and 2

1. **Enclosure – Bent aluminum sheet metal approximately 0.08″ thick. Overall dimensions shown in ILL. 1.**

2. **Door - Bent aluminum sheet metal approximately 0.08″ thick. Fixed to the enclosure with a piano hinge spot welded to the door and enclosure. The door and enclosure are tied together by a green wire for grounding purposes.**

3. **Supply Cord Set - Listed (ELBZ) UL/CUL Type SJT min. no 18AWG, terminated in a molded 15A, 250V mounted plug. Between 6 and 10 feet long.**

4. **HVAC Relay Connector – Part of the low voltage, energy limiting communication circuit. A 4 pin Molex connector is used on the front of the unit. This unit is designed to generate ions only when the duct circulating fan is on. This connector receives a 24VDC signal to operate the duct fan.**

5. **Keyed Lock – This unit utilizes a keyed latch to provide protection against accessing the machine compartment.**

6. **LED indicators – 4 low voltage LED lights are located on the front panel door of the unit to indicate unit status. A status light diagnostic chart can be found in Ill. 2 within the unit manual.**

7. **Antenna – Unit utilizes a 2.4GHz antenna used to relay unit information to an outside source. (This unit has not been evaluated for EMC compatibility)**

8. **Media Filter – A steel mesh filter containing carbon granules is fitted around the ionizing assembly. This carbon filter is meant to limit the amount of ozone reaching downstream of the system. The filter is held in place by four stand-offs that are secured to the enclosure by bolts. A molded plastic end cap keeps the filter from sliding laterally and vertically out of place.**

IONIZING TUBE ASSEMBLY; MODEL Ionaer 7000, Figure 3 and 4

1. **Ionizer Tube – Glass tube 38mm x 200mm containing a perforated stainless steel sheet that is connected to the high voltage supply via a conducting coupler.**

2. **Mesh Screen – a stainless steel mesh screen is cut and wrapped around the Ionizer tube. A metal arm makes contact with the mesh screen which is connected to a ground pin on the PCB.**

3. **Plastic Coupler – R/C (QMFC2/8) Chi Mei Corp. PA-765. Approximately 1.75″ in diameter and 1/8″ thickness, rated 94-5V. The ionizer tube is attached to a plastic coupler that has a threaded connection in the base. The plastic coupler can be attached to the plastic base and high voltage current can be sent to the ionizer tube.**

4. **Plastic Base - R/C (QMFC2/8) Chi Mei Corp. PA-765 min. 5VA rated. Plastic base is 5″ x 5″ and approx. 5/16″ thick. The plastic base allows the ionizer tube and plastic coupler to be secured to the final assembly. High voltage connection is passed over the plastic base with stainless steel conductors and reaches the ionizer tube through a threaded connection.**

5. **End Cap - R/C (QMFC2/8) Chi Mei Corp. PA-765 min. 5VA rated. 3.25″ x 3.25″ and 0.25″ thick. This end cap is secured to the plastic base by metal standoffs and holds the media filter in place.**

   Engineering Note – All plastics in the Ionizing tube assembly tested per High Voltage Insulated Material Test.

INSIDE MACHINE COMPARTMENT; MODEL Ionaer 7000, Figure 5

This product utilizes a PCB that controls the ionizing function, powers the fan, displays unit status via LEDs and provides an on/off door switch. The Ionizing Tube assembly as described on page 4 is meant to be serviceable when the unit door is open. Four bolts secure the Ionizing Tube assembly to the frame of the Ionaer 7000 unit. A small DC muffin fan is secured to the Ionizing Tube assembly to provide circulation in the filter assembly.

1. **Circuit Board – R/C (ZPMV2) E321638, ETeknet ETK-1 PCB rated 94V-0, 130°C. Secured within the housing by standoffs. The measures 3 5/8″ in. wide by 5 7/8″ in. long. See Ill 2 for control board wiring diagram. Board is grounded by a bolt through the enclosure. Consists of the following high voltage components:**

   a. **Inlet Voltage Regulators – R/C (QQGQ2) E183223. PCB has 2 Mean Well SELV Switching Mode Power Supplies, Model IRM-20-12 rated 100-240Vac, 50/60hz input, 12Vdc, 1.8A, 21.6VA output, converts the line power into 12V 1.8A, and Model IRM-05-3.3 rated 100-240Vac, 50/60hz input, 3.3Vdc, 1.25A, 4.125VA output, converts into 3.3V 1.25A.**

   b. **Filter – R/C Epcos filter rated 250V 0.5A.**

   See Ill 3 for a full component list for this board.

2. **DC Fan Motor – R/C (GPWV2/8) Delta Electronics Inc. model QFR0812SH, thermally protected rated 12VDC, 0.50A. Fan is secured to the Ionizing Tube Assembly by 4 bolts. Wiring to the fan is routed to the control board and is held in place by tie downs to protect the wires from stress when opening and closing the door.**

3. **Appliance Inlet – This unit utilizes a R/C (AYVZ2/8) Schurter AG model 6200-23 grounding type attachment plug rated 250V, 10A that the power supply cord connects too. The attachment plug is secured to the enclosure by screws and the output leads connect to the circuit board by wires. The grounding lead is wired directly to the PCB board directly to a grounding stud.**

4. **Step Up Transformer – This transformer is rated 12VDC input, 6000V output. This transformer is driven by a pulse wave created by the circuit board. The transformer is mounted to the inside door of the unit adjacent to the PCB by a bolt. The output of this transformer is wired to the Ionizing Tube Assembly by means of a snap connector which allows it to generate ions to distribute to the airstream. See Figure 6 and Illustration 4. Consists of the following components:**

   a. **Magnet Wire – R/C (OBMW2/8) Shanghai Zhong Dian Enamelled Wire Co LTD Model UEW.**
   b. **Plastic Case Resin (acts as bobbin) – R/C (QMFZ2/8) BASF SE model B4406 G6 (o) Q113(1) rated for 23kV/mm minimum 94V-0 rated.**
   c. **Molded Case - R/C (QMFZ2/8) BASF SE model B4406 G6 (o) Q798**

   Engineering Note – This transformer acts like an ignition coil and requires a high frequency pulse to properly function.

Figures and Illustrations

Figure 1	**Front view of unit**
Figure 2	**Back view of unit**
Figure 3	**View of unit with filter off**
Figure 4	**Ionizing Tube Assembly**
Figure 5	**Inside view**
Figure 6	**Transformer and PCB**
Illustration 1	**Product Manual**
Illustration 2	**PCB wire diagram**
Illustration 3	**Component list**
Illustration 4	**Transformer spec sheet**