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Order No. G102575091

Issued: 23 JUN 2016
Revised: None

Report Number: 102575091CRT-001
Model Number: NV800
ARB Number: NA

RENDERED TO:

Mr. Felipe Soberon
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4700 Falls of Neuse Road, Suite 355
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| | |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Report Scope:</u> | Ozone Emissions Testing of Household Electrostatic Air Cleaners. |
| <u>Limitation Statement:</u> | The test data and results contained in this report are provided for client information and evaluation. No conclusions are drawn by Intertek. |
| <u>Authorization:</u> | The tests were authorized by signed quote # Qu-00688143, dated 5/5/2016. |
| <u>Standard Used:</u> | UL Standard for Safety for Electrostatic Air Cleaners, UL 867, Section 40, Ozone Test, Fifth Edition, August 4, 2011 with revisions to and including August 23, 2013. |
| <u>Report Content:</u> | <ol style="list-style-type: none"> 1. Unit Under Test 2. Peak Ozone Test Results 3. Max Ozone Test Results 4. Chamber Equipment 5. Summary/Signatures 6. Appendix 7. Revision Summary |



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1. Unit Under Test Information

MODEL

| | | | |
|---------------------------------|-------------------|----------------|-----|
| Manufacturer: | Novaerus US, Inc. | Pre-Filter: | Yes |
| Model Number: | NV800 | HEPA Filter: | No |
| Production/Prototype/ Design | Production | ESP Filter: | No |
| Fan Speeds: | 2 | Carbon Filter: | No |
| O3/Voltage Settings: | -- | UV Light: | No |
| O3 Monitor: | -- | Ionization: | Yes |
| Model Notes: | | | |

FIRST SAMPLE

| | | | |
|-------------------|----------------------------|---------------------|-----------------|
| Control Number: | CRT1605091555-002 | Run-in Start: | 5/13/2016 12:20 |
| Serial Number: | EG1R2301902804/160 0106 | Run-in End: | 5/16/2016 08:30 |
| Manufacture Date: | | Run-in Temperature: | 77 ± 4 degF |
| Receive Date: | 5/9/2016 | | |
| Received Status: | OK | | |
| Sample Notes: | | | |

SECOND SAMPLE

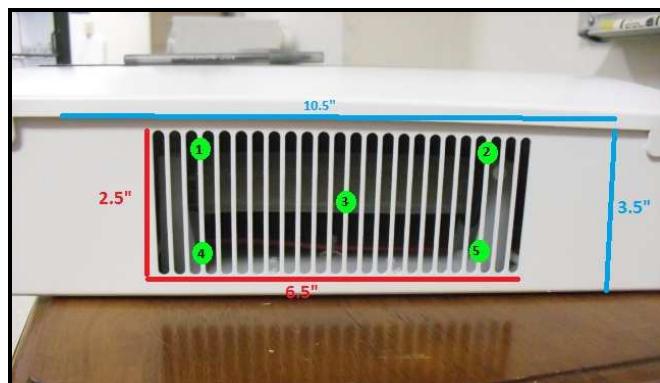
| | | | |
|-------------------|----|---------------------|-------------|
| Control Number: | NA | Run-in Start: | NA |
| Serial Number: | NA | Run-in End: | NA |
| Manufacture Date: | NA | Run-in Temperature: | 77 ± 4 degF |
| Receive Date: | NA | | |
| Received Status: | NA | | |
| Sample Notes: | | | |

2. Peak Ozone Test Results

GRILL AND AIR PERIPHERY DIMENSIONS

| | | | |
|-----------------------|----------------------------------------------------------------------------------------------|--------------------------|---------------------|
| | | Date of Test: | 6/13/2016 |
| Grill Height: | 2 ea. 2.5" | Air Periphery Height: | 2 ea. 3.5" |
| Grill Width: | 2 ea. 6.5" | Air Periphery Width: | 2 ea. 10.5" |
| Estimated Grill Area: | 2 ea. 16.25 sq. in. | Est. Air Periphery Area: | 2 ea. 36.75 sq. in. |
| Notes: | Two identical grills and air peripheries on the unit. Model was peak tested at 230V, 50Hz | | |

PEAK LOCATIONS



LEFT SIDE



RIGHT SIDE

| Loc. | X | Y |
|------|----------|----------|
| - | [inches] | [inches] |
| 1 | -2.5 | 1.0 |
| 2 | 2.5 | 1.0 |
| 3 | 0.0 | 0.0 |
| 4 | -2.5 | -1.0 |
| 5 | 2.5 | -1.0 |
| 6 | -2.5 | 1.0 |
| 7 | 2.5 | 1.0 |
| 8 | 0.0 | 0.0 |
| 9 | -2.5 | -1.0 |
| 10 | 2.5 | -1.0 |
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* Location measurements are coordinates in reference to the center point.



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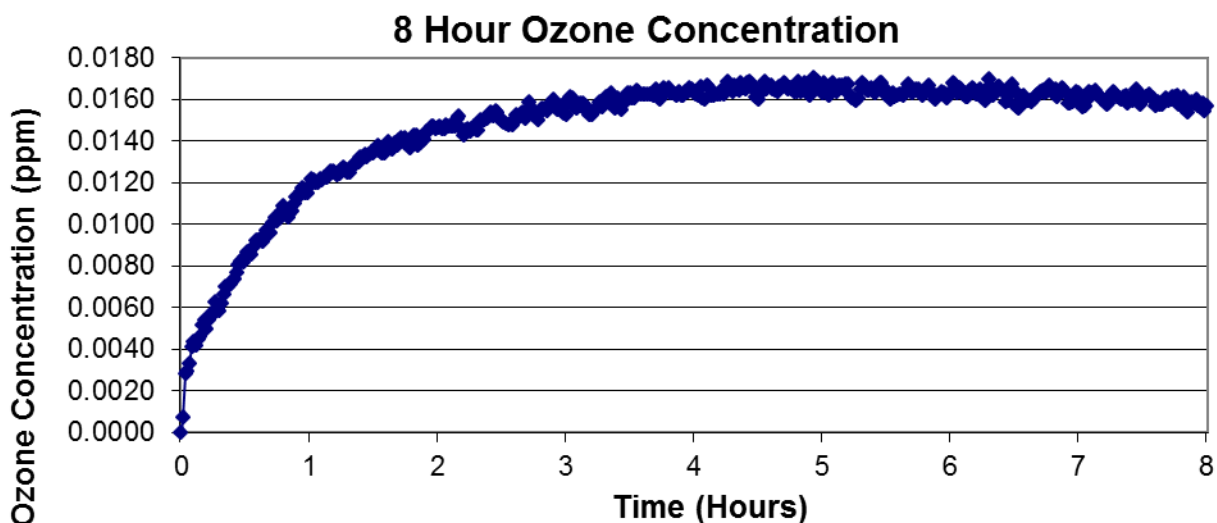
PEAK OZONE CONCENTRATIONS

| Location | With Filter(s) | | Without Filter(s) | | | | | |
|----------|----------------|---------------|-------------------|--------|---------|--------|---------|--------|
| | Highest | Lowest | Highest | Lowest | Highest | Lowest | Highest | Lowest |
| 1 | 0.0069 | 0.0081 | | | | | | |
| 2 | 0.0014 | 0.0012 | | | | | | |
| 3 | 0.0042 | 0.0039 | | | | | | |
| 4 | 0.0060 | 0.0082 | | | | | | |
| 5 | 0.0019 | 0.0022 | | | | | | |
| 6 | 0.0016 | 0.0024 | | | | | | |
| 7 | 0.0012 | 0.0018 | | | | | | |
| 8 | 0.0025 | 0.0016 | | | | | | |
| 9 | 0.0050 | 0.0068 | | | | | | |
| 10 | 0.0012 | 0.0014 | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |

Notes: - Ozone Concentrations less background level; in units of PPM.
- Peak concentration for each iteration is in **BOLD**.

3. Max Ozone Test Results

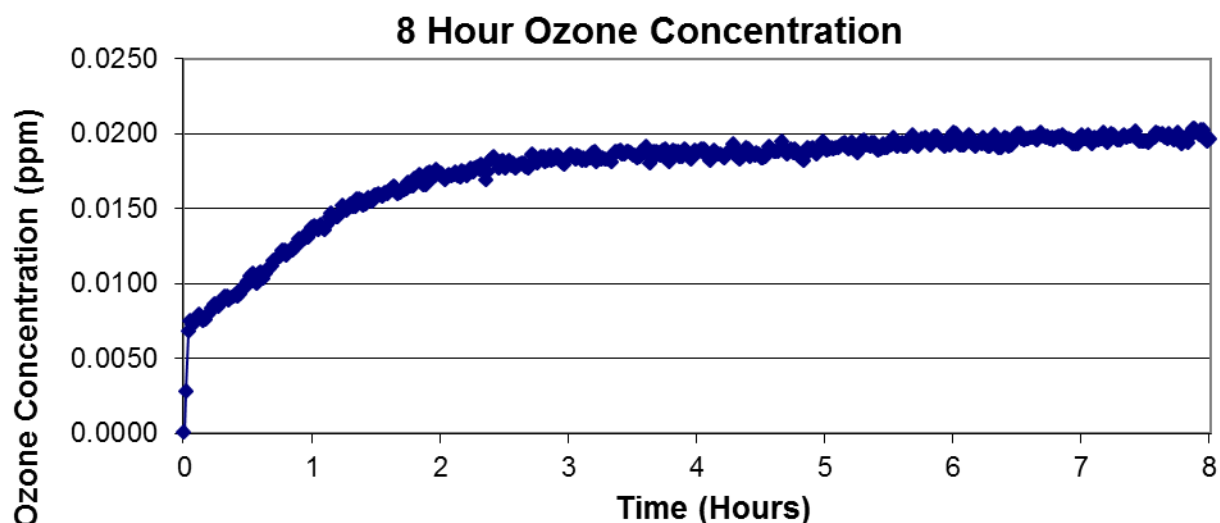
| | |
|---------------------|----------------------|
| Start Date of Test: | 6/14/2016 |
| Sample: | CRT1605091555-002 |
| Fan Speed: | High Fan Speed |
| Filter(s): | Pre-Filter Installed |



| MAXIMUM OZONE TEST RESULTS | | | | | | | |
|------------------------------|---------|-----------|-------|-------|--------------|-------|--------|
| | UL Ref. | Pass/Fail | Mean | Min | Max | Delta | Units |
| Background C(t) O3: | 40.4.3 | PASS | 0.001 | 0.000 | 0.001 | 0.001 | [ppm] |
| Test 1min C(t) O3: | 40.1.2 | PASS | 0.015 | 0.000 | 0.017 | 0.017 | [ppm] |
| Test 5min C(t) O3: | 40.1.2 | PASS | 0.015 | 0.001 | 0.017 | 0.016 | [ppm] |
| Chamber Temperature: | 40.4.2 | PASS | 77 | 76 | 78 | 1 | [degF] |
| Chamber Humidity: | 40.4.2 | PASS | 49 | 49 | 51 | 2 | [%RH] |
| Chamber Static Pressure: | - | PASS | 0.02 | 0.02 | 0.03 | 0.01 | ["H2O] |
| Chamber Supply Air Flow: | - | - | 20 | 20 | 20 | 0 | [SCFM] |
| Required to Test 2nd Sample: | 40.1.1 | NO | | | | | |
| Test Duration: | *40.4.6 | 8 hours | | | | | |

| | |
|--------|---------------------------------------------------|
| Notes: | Test Location 1 Model was tested at 230V, 50Hz |
|--------|---------------------------------------------------|

| | |
|---------------------|----------------------|
| Start Date of Test: | 6/15/2016 |
| Sample: | CRT1605091555-002 |
| Fan Speed: | Low Fan Speed |
| Filter(s): | Pre-Filter Installed |



| MAXIMUM OZONE TEST RESULTS | | | | | | | |
|------------------------------|---------|-----------|-------|-------|--------------|-------|--------|
| | UL Ref. | Pass/Fail | Mean | Min | Max | Delta | Units |
| Background C(t) O3: | 40.4.3 | PASS | 0.001 | 0.000 | 0.001 | 0.001 | [ppm] |
| Test 1min C(t) O3: | 40.1.2 | PASS | 0.017 | 0.000 | 0.020 | 0.020 | [ppm] |
| Test 5min C(t) O3: | 40.1.2 | PASS | 0.017 | 0.000 | 0.020 | 0.020 | [ppm] |
| Chamber Temperature: | 40.4.2 | PASS | 77 | 76 | 77 | 1 | [degF] |
| Chamber Humidity: | 40.4.2 | PASS | 50 | 50 | 51 | 1 | [%RH] |
| Chamber Static Pressure: | - | PASS | 0.02 | 0.01 | 0.03 | 0.01 | ["H2O] |
| Chamber Supply Air Flow: | - | - | 20 | 20 | 20 | 0 | [SCFM] |
| Required to Test 2nd Sample: | 40.1.1 | NO | | | | | |
| Test Duration: | *40.4.6 | 8 hours | | | | | |

| | |
|--------|---------------------------------------------------|
| Notes: | Test Location 4 Model was tested at 230V, 50Hz |
|--------|---------------------------------------------------|



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4. Chamber Equipment Information

Test Equipment List

| Instrument | Model | Intertek Ctrl # | Cal Due Date |
|----------------------------------------------------------------|---------|-----------------|--------------|
| Teledyne – Advanced Pollution Instrumentation Ozone Calibrator | 703E | O204 | 11-22-2016 |
| Teledyne – Advanced Pollution Instrumentation Ozone Monitor | 400E | O201 | * |
| Teledyne – Advanced Pollution Instrumentation Ozone Monitor | 400E | O202 | * |
| Vaisala – Temperature & Humidity Transducer | HMD-70Y | T1307 | 06-22-2017 |
| | | | |

* The 400E Ozone Monitor is calibrated using the 703E calibrator.



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5. Summary/Signatures


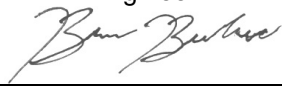
The test sample(s) documented in this report were tested in accordance to the standard(s) referenced in the first page of this report. Results from this test are for Client informational purposes only.

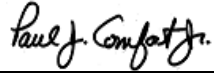
This product was not evaluated to the full specifications of UL Standard 867 Section 40. No evaluation was performed on the model with the Pre-Filter removed.

This report completes our evaluation covered by Intertek Project No. G102575091. If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the undersigned.

Please note; this Report does not represent authorization for the use of any Intertek certification marks.

| <u>OZONE EMISSIONS SUMMARY</u> | | | |
|--------------------------------|-----------|--------------------|---------------------------|
| Fan Speed | Filter(s) | O3/Voltage Setting | C(t) _{max} [ppm] |
| High | YES | - | 0.017 |
| Low | YES | - | 0.020 |

| | | | |
|-------------------------|-------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------|
| Completed by: Title: | Hamilton Gray Engineer | Reviewed by: Title: | Brian Bielawa Engineer |
| Signature: |  | Signature |  |
| Date | 06/16/2016 | Date: | 06/23/16 |

| | |
|----------------------------|-------------------------------------------------------------------------------------|
| Pre-Reviewed by: Title: | Paul J. Comfort Jr. Technician Team Lead |
| Signature |  |
| Date: | 06/21/2016 |

6. Appendix

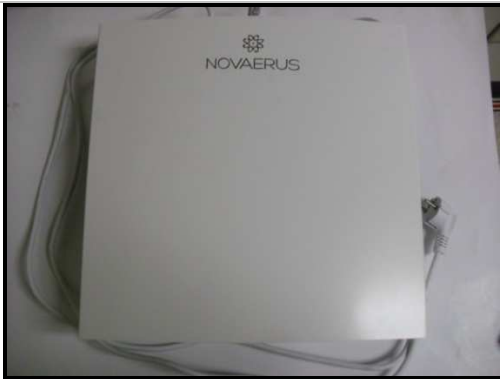
DATA FILES

| Test Name | Raw Data File |
|---------------------------------|----------------------------|
| Model Half Life | 2145_Halflife_ozonelog.csv |
| Max Ozone: High Speed w/ Filter | 2146_HI_NV800_ozonelog.csv |
| Max Ozone: Low Speed w/ Filter | 2147_LO_NV800_ozonelog.csv |

ATTACHMENT DOCUMENTS

| Document | Soft-copy File Name |
|----------------------------|---------------------------|
| Chain of Custody: Sample 1 | COC_CRT1605091555-002.pdf |

UUT PHOTOGRAPHS



NV800



NV800 Nameplate



NV800 Removable Pre-Filter

UUT PHOTOGRAPHS: PEAK TEST



High Speed w/ Filter



Low Speed w/ Filter

UUT PHOTOGRAPHS: MAX OZONE TEST



High Speed w/ Filter



Low Speed w/ Filter



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| 7.0 Revision Summary | | | |
|----------------------------|------------------------------|---------|-----------------------|
| Date/ Proj # Site ID | Project Handler/ Reviewer | Section | Description of Change |
| | | | None |
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