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Order No. G103051457

Issued: 25 MAY 2017
Revised: None

Report Number: 103051457CRT-001
Model Number: LAIFSU2
ARB Number: NA

RENDERED TO:

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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 Intercompany Agreement, Dated 05 May 2017.
<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:	Sino Vantage Industrial LTD.	Pre-Filter:	No
Model Number:	LAIFSU2	HEPA Filter:	No
Production/Prototype/Design	Production	ESP Filter:	Yes
Fan Speeds:	NA	Carbon Filter:	No
O3/Voltage Settings:	--	UV Light:	No
O3 Monitor:	--	Ionizer:	Yes
Model Notes:	ESP filter is an aluminum cylinder. Model has no fan		

FIRST SAMPLE

Control Number:	CRT1704261045-001	Run-in Start:	5/1/2017 10:00
Serial Number:	NA	Run-in End:	5/3/2017 11:00
Manufacture Date:	NA	Run-in Temperature:	77 ± 4 degF
Receive Date:	4/26/2017		
Received Status:	OK		
Sample Notes:	Sample has no nameplate, serial number or manufacturing date		

SECOND SAMPLE

Control Number:	CRT1704261045-002	Run-in Start:	5/5/2017 11:00
Serial Number:	NA	Run-in End:	5/7/2017 11:00
Manufacture Date:	NA	Run-in Temperature:	77 ± 4 degF
Receive Date:	4/26/2017		
Received Status:	OK		
Sample Notes:	Sample has no nameplate, serial number or manufacturing date		



PEAK OZONE CONCENTRATIONS

Location	Unit 1		Unit 2					
	Filter	No Filter	Filter	No Filter				
1	0.0007	0.0031	0.0023	0.0029				
2	0.0007	0.0025	0.0007	0.0055				
3	0.0027	0.0056	0.0056	0.0008				
4	0.0020	0.0023	0.0062	0.0033				
5	0.0001	0.0016	0.0040	0.0016				
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

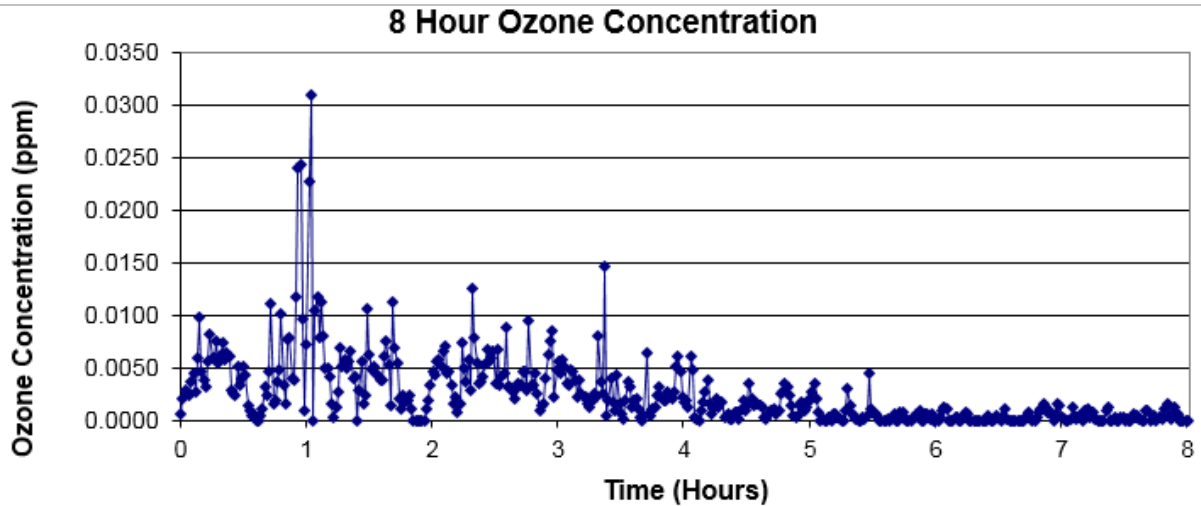
Notes: - Ozone Concentrations less background level; in units of PPM.
- Peak concentration for each iteration is in **BOLD**.



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3. Max Ozone Test Results

Start Date of Test:	5/4/2017
Sample:	1
Fan Speed:	NA
Filter(s):	Electrostatic Collector



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	0.002	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.002	0.000	0.031	0.031	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.002	0.000	0.015	0.015	[ppm]
Chamber Temperature:	40.4.2	PASS	78	78	78	0	[degF]
Chamber Humidity:	40.4.2	PASS	50	48	51	3	[%RH]
Chamber Static Pressure:	-	PASS	0.02	0.01	0.02	0.01	["H2O]
Chamber Supply Air Flow:	-	-	20	20	20	0	[SCFM]
Required to Test 2nd Sample:	40.1.1	YES					
Test Duration:	*40.4.6	8 hours					

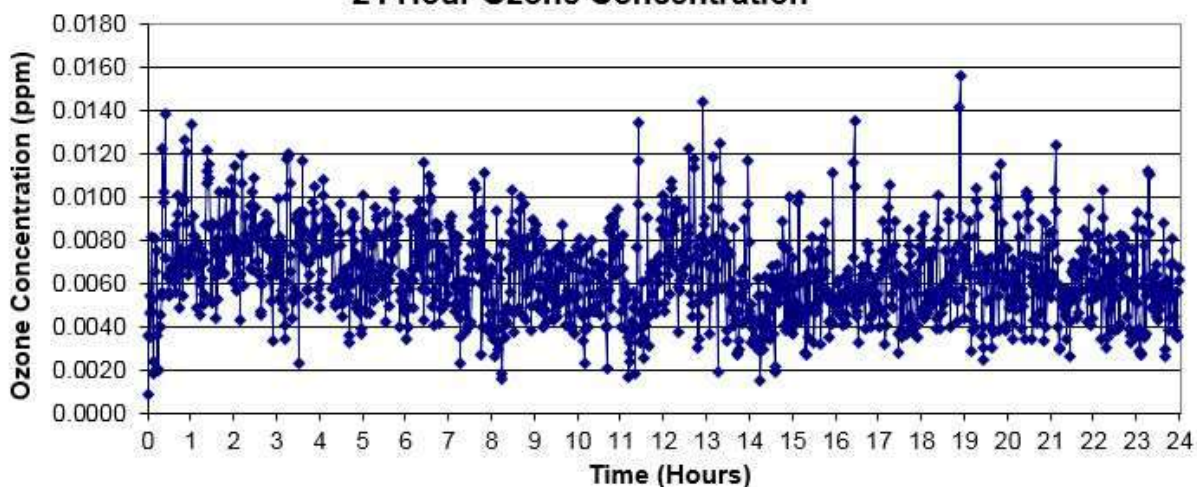
Notes:	Sample location #3
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Report No. 103051457CRT-001
 Issued: 25 MAY 2017
 Revised: None

Start Date of Test:	5/5/2017
Sample:	1
Fan Speed:	NA
Filter(s):	Electrostatic Collector removed

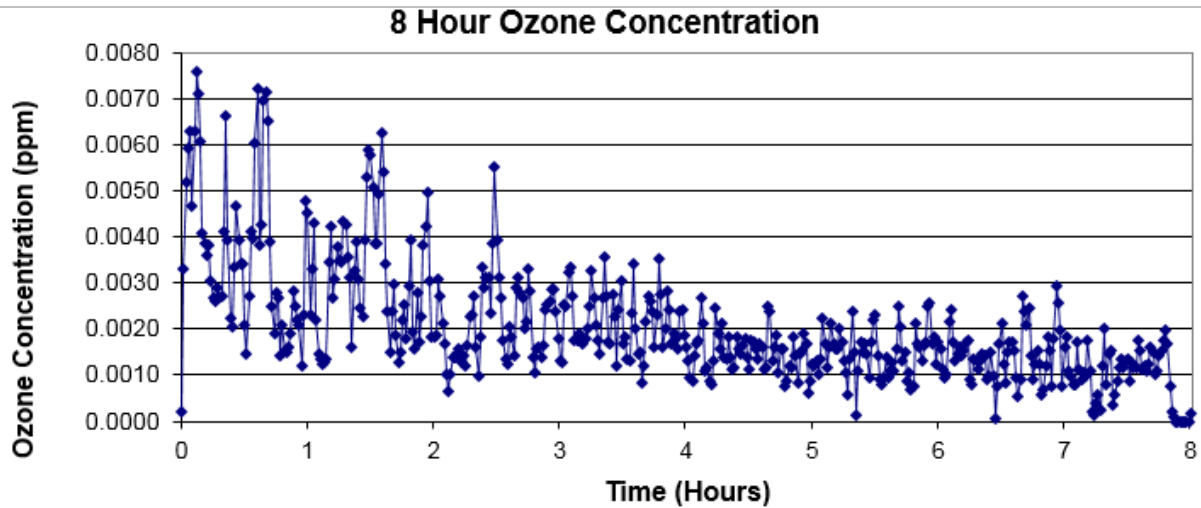
24 Hour Ozone Concentration



MAXIMUM OZONE TEST RESULTS							
	UL Ref.	Pass/Fail	Mean	Min	Max	Delta	Units
Background C(t) O3:	40.4.3	PASS	0.001	0.001	0.001	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.006	0.001	0.016	0.015	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.006	0.001	0.011	0.010	[ppm]
Chamber Temperature:	40.4.2	PASS	78	77	79	1	[degF]
Chamber Humidity:	40.4.2	PASS	50	49	51	2	[%RH]
Chamber Static Pressure:	-	PASS	0.02	0.01	0.03	0.02	[\"H2O]
Chamber Supply Air Flow:	-	-	20	20	20	0	[SCFM]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	*40.4.6	24 hours					

Notes:	Sample location #3
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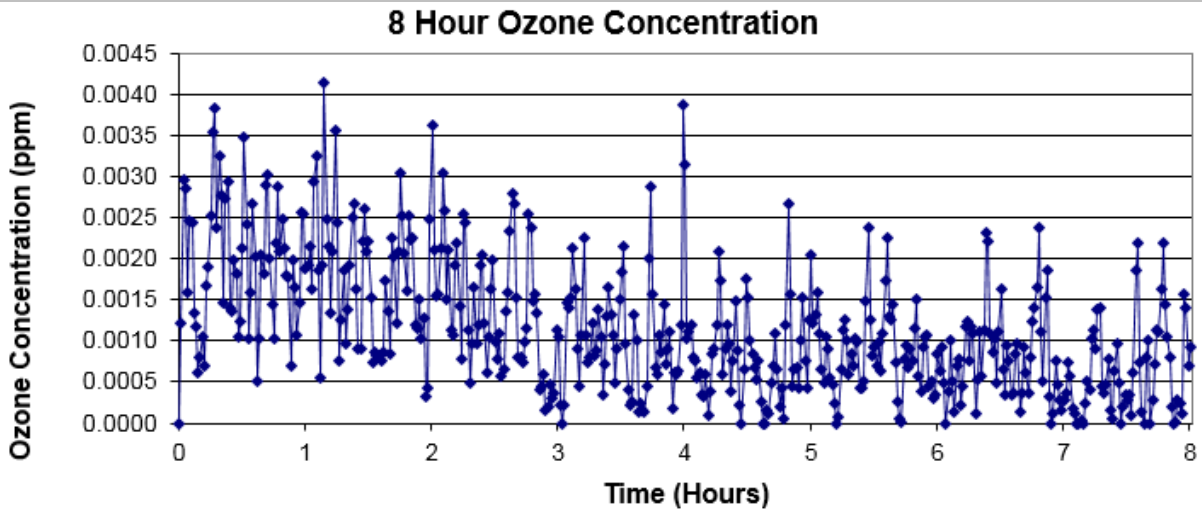
Start Date of Test:	5/9/2017
Sample:	2
Fan Speed:	NA
Filter(s):	Electrostatic Collector



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	0.002	0.000	0.008	0.008	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.002	0.000	0.006	0.006	[ppm]
Chamber Temperature:	40.4.2	PASS	77	77	78	1	[degF]
Chamber Humidity:	40.4.2	PASS	50	50	51	1	[%RH]
Chamber Static Pressure:	-	PASS	0.02	0.01	0.03	0.02	["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:	Sample Location #4
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Start Date of Test:	5/10/2017
Sample:	2
Fan Speed:	NA
Filter(s):	Electrostatic Collector removed



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	0.001	0.000	0.004	0.004	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.001	0.000	0.003	0.003	[ppm]
Chamber Temperature:	40.4.2	PASS	77	77	77	1	[degF]
Chamber Humidity:	40.4.2	PASS	50	49	51	2	[%RH]
Chamber Static Pressure:	-	PASS	0.02	0.01	0.03	0.02	["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:	Sample Location #2
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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	4-2-2018
Teledyne – Advanced Pollution Instrumentation Ozone Monitor	400E	O201	*
Vaisala – Temperature & Humidity Transducer	HMD-70Y	T1307	06-22-17

* 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.

The representative sample(s) have been tested, investigated, and found to comply with the requirements of the UL Standard 867 Section 40, criteria of emitting a maximum ozone concentration of less than 0.050 ppm. Furthermore a second sample was required to be tested as the first sample's maximum emissions were not less than 0.030 ppm to satisfy the exception in the Section 40.1.1.

This report completes our evaluation covered by Intertek Project No. G103051457. 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>			
Sample	Filter(s)	O3/Voltage Setting	C(t) _{max} [ppm]
Sample 1	YES	-	0.031
Sample 1	NO	-	0.016
Sample 2	YES	-	0.008
Sample 2	NO	-	0.004

Completed by:	Joseph Hartley	Reviewed by:	Michael Hudon
Title:	Technician III	Title:	Team Lead
Signature:		Signature	
Date	5/23/2017	Date:	5/25/2017

6. Appendix

DATA FILES

Test Name	Raw Data File
Model Half Life	2293 Half life ozonelog.csv
Model Half Life Sample 2	2297 Halflife ozonelog.csv
Max Ozone w/ Filter Sample 1	2294 max with filter.csv
Max Ozone w/o Filter Sample 1	2295 Max no filter.csv
Max Ozone w/ Filter Sample 2	2298 max with collector.csv
Max Ozone w/o Filter Sample 2	2299 max test without collector.csv

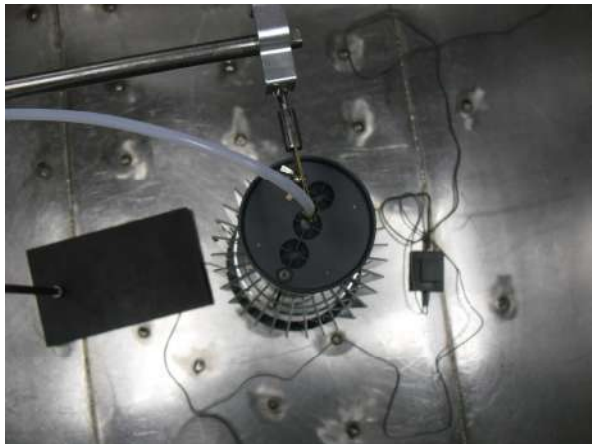
ATTACHMENT DOCUMENTS

Document	Soft-copy File Name
ARB Application	NA
Chain of Custody: Sample 1	COC_CRT1704261045-001,002.pdf
Chain of Custody: Sample 2	COC_CRT1704261045-001,002.pdf

UUT PHOTOGRAPHS

	<p style="text-align: center;">NA</p>
<p style="text-align: center;">UUT</p>	<p style="text-align: center;">Nameplate</p>

UUT PHOTOGRAPHS: PEAK TEST



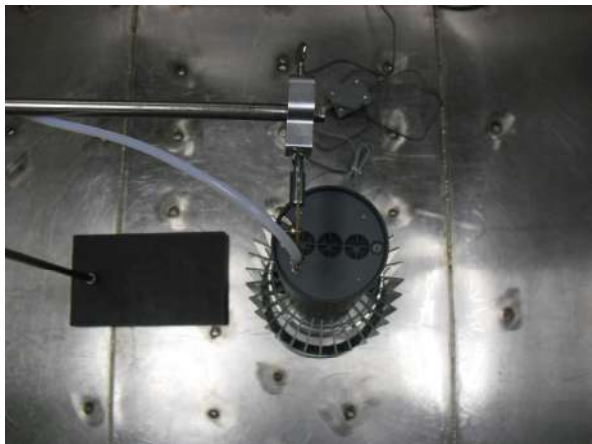
Sample Location #3

Sample 1 w/ Collector



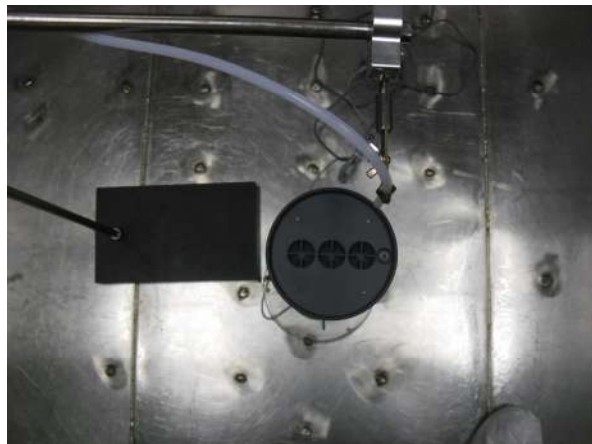
Sample Location #3

Sample 1 w/o collector



Sample Location #4

Sample 2 w/ Collector



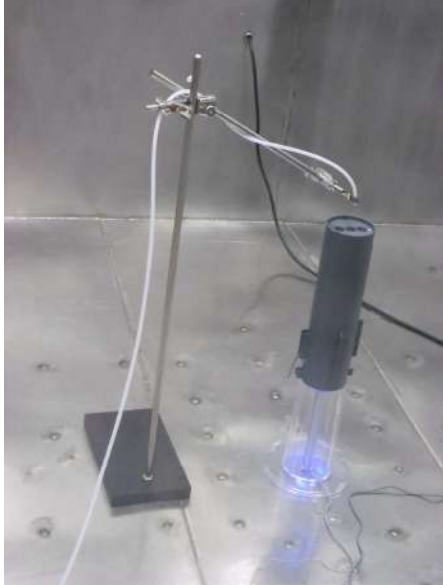
Sample Location #2

Sample 2 w/o Collector

UUT PHOTOGRAPHS: MAX OZONE TEST



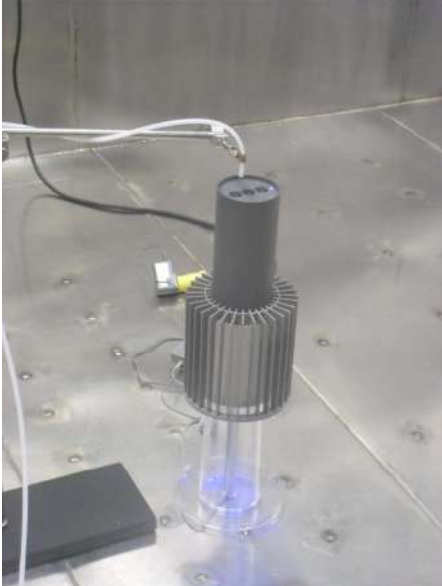
Sample Location #3



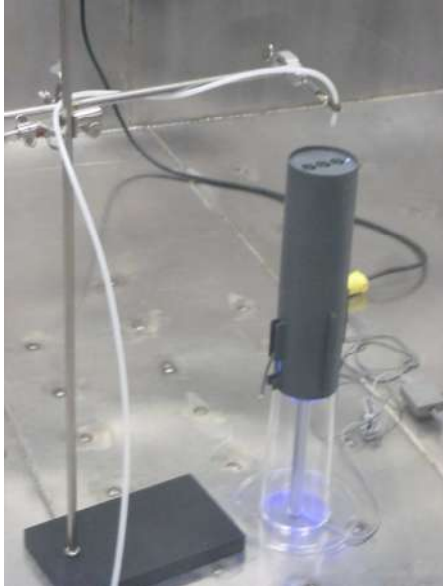
Sample Location #3

Sample 1 w/ Collector

Sample 1 w/o Collector



Sample Location #4



Sample Location #2

Sample 2 w/ Collector

Sample 2 w/o Collector



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