

Silicon Valley Air Expert Inc.

OZONE TEST REPORT

SCOPE OF WORK

Ozone Emissions Testing of Air Cleaner for Model: KJ200F-X3

REPORT NUMBER

191223007GZU -001

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SILICON VALLEY AIR EXPERT INC.

Report No.: 191223007GZU-001

Date: Apr. 29, 2020

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SECTION 1

SUMMARY

The representative sample(s) have been tested, investigated, and found to comply with the requirements of standards:

Electrostatic Air Cleaners, UL 867, Section 40, Fifth Edition, August 4, 2011 revision: AUGUST 7, 2018.

Electrostatic Air Cleaners, [CSA C22.2#187:2015 Ed.4+U1], Section 7.4

The equipment identified in this report has been found to meet the criteria for emittance of ozone not exceeding a concentration of 0.050 ppm. Furthermore, a second sample was not required to be tested, according to UL 867, as the first sample's maximum emissions were less than 0.030 ppm, which satisfies item a) in the Section 40.1.1.

This report completes our evaluation covered by Intertek Project Number 191223007GZU which has been authorized by Intertek quote number: QGZ191217095. 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 above signed.

OZONE EMISSIONS SUMMARY			
FAN SPEED	FILTER(S)	O3/VOLTAGE SETTING	C(t) _{max} [ppm]
L4	All	-	0.007
Sleep	All	-	0.009
Sleep	ESP	-	0.017

The maximum Time-Weighted-Average: 0.015 ppmv

Completed by:	Sylvia Xu/Sunny Zhou Engineer/Assistant Technical Manager	Reviewed by:	Jacob Langenbacher Engineer
Title:		Title:	
Signature:		Signature	
Date	Apr. 26, 2020	Date:	Apr. 29, 2020

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SECTION 2

INDEX

Section Names	PAGE
1: Summary/Signatures	2
2: Index/ Chamber Equipment Information	3
3: Unit under test information	4
4: Peak test	5
5: Max Test(s) Information	7
6: Appendices	10
7: Revisions	13

CHAMBER EQUIPMENT INFORMATION

TEST EQUIPMENT LIST

Instrument	Model	Intertek Ctrl #	Cal Due Date
Teledyne – Advanced Pollution Instrumentation Ozone Calibrator	T703	SA054-15	26-Mar-2020
Teledyne – Advanced Pollution Instrumentation Ozone Monitor	T400	SA054-16	*
Teledyne – Advanced Pollution Instrumentation Ozone Monitor	T400	SA054-13	*
Vaisala – Temperature & Humidity Transducer	H2120047	SA054-12	5-Jun-2020
QI XING HUA CHUANG – Mass flowmeter	D07-23FM	SA054-12-03	19-Jul-2020

* The T400 Ozone Monitor is calibrated using the T703 calibrator.

SECTION 3

UNIT UNDER TEST INFORMATION

MODEL INFORMATION			
Manufacturer:	Silicon Valley Air Expert Inc.	Pre-Filter:	Yes
Model Number:	KJ200F-X3	HEPA Filter:	No
Production/Prototype/Design	Prototype	ESP Filter:	Yes
Fan Speeds:	5	Carbon Filter:	Yes
O3/Voltage Settings:	NA	UV Light:	No
O3 Monitor:	NA	Ionizer:	Yes
Model Notes:	Brand Name: Airdog 5 Fan Speed: Sleep (Lowest), L1, L2, L3, and L4 (Highest). Pre-filter and carbon filter: (This product can work while these filters are removed). ESP filter: (This product cannot work while this filter is removed). Auto mode: (The fan speed of auto mode changes between that of mode L1 and L4). Ionizer is filter type.		

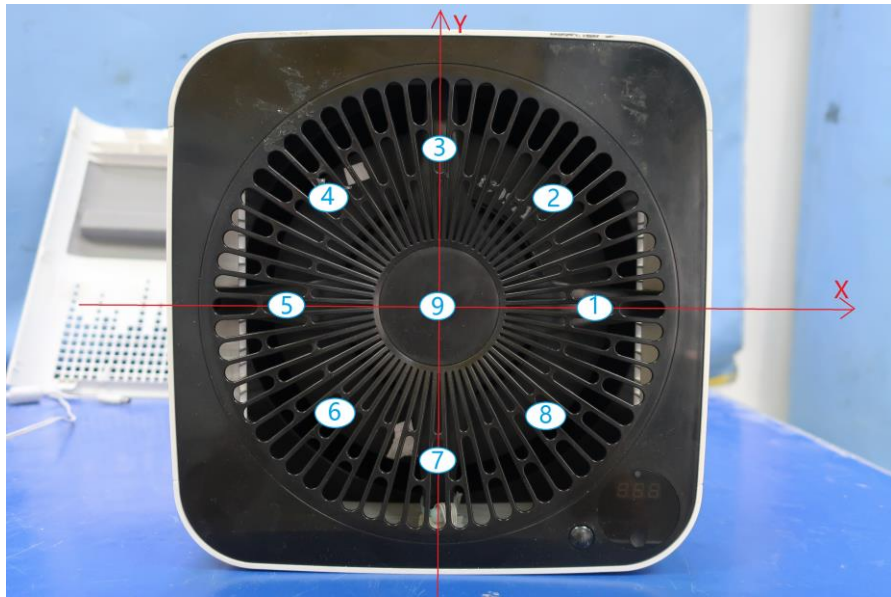
RUN-IN TEST			
FIRST SAMPLE			
Run-in Start:	Jan. 03, 2020 16:30	Run-in End:	Jan. 07, 2020, 15:35
Run-in Temperature:	25±5°C	Tracking Number	S191223007-002
Serial Number:	NA		
Sample Notes:			
SECOND SAMPLE			
Run-in Start:	NA	Run-in End:	NA
Run-in Temperature:	NA	Tracking Number	S191223007-001
Serial Number	NA		
Sample Notes:			

SECTION 4

PEAK OZONE TEST

GRILL AND AIR PERIPHERY DIMENSIONS			
		Date of Test:	Jan. 20, 2020 Jan. 22, 2020 Feb. 11, 2020
Grill:	OD: Ø230mm ID: Ø60mm	Air Periphery:	OD: Ø230mm
Estimated Grill Area:	Approx. 38700.5 mm ²	Est. Air Periphery Area:	Approx. 41526.5 mm ²
Notes:	Airflow can be measured at point 9.		

PEAK LOCATION			
Loc.	X	Y	
-	[mm]	[mm]	
1	74.7	0	
2	52.8	52.8	
3	0	74.7	
4	-52.8	52.8	
5	-74.7	0	
6	-52.8	-52.8	
7	0	-74.7	
8	52.8	-52.8	
9	0	0	
* Location measurements are coordinates in reference to the center point.			



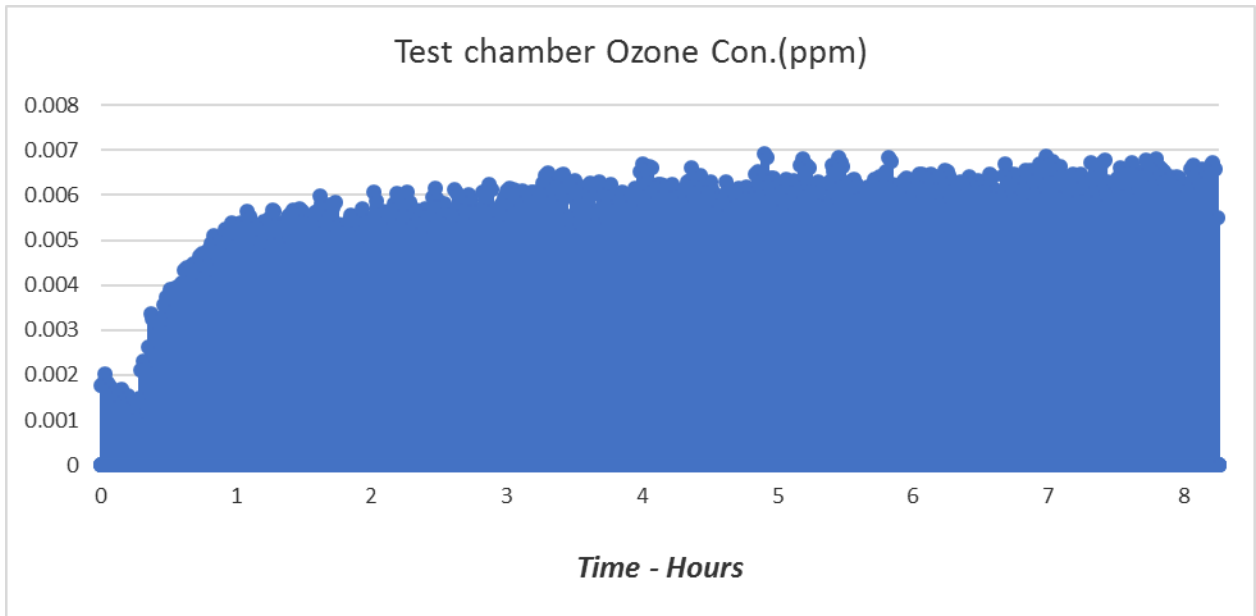
PEAK OZONE CONCENTRATIONS (ppm)				
Location	With Filter(s) (ESP/ Pre-/Carbon filter)		Without Filter(s) (With ESP)	
	L4	Sleep	L4	Sleep
1	0.0024	0.0055	-	0.0048
2	0.0025	0.0046	-	0.0056
3	0.0013	0.0027	-	0.0024
4	0.0021	0.0049	-	0.0061
5	0.0022	0.0036	-	0.0048
6	0.0019	0.0046	-	0.0072
7	0.0009	0.0030	-	0.0029
8	0.0016	0.0062	-	0.0047
9	0.0026	0.0051	-	0.0065

Note: Result is minus background.

SECTION 5

MAX OZONE TEST

START DATE OF TEST: 18- Feb -2020
 SAMPLE: S191223007-002
 FAN SPEED: L4 (Highest)
 FILTER(S): Pre-filter, ESP filter and carbon filter installed
 Ionizer on

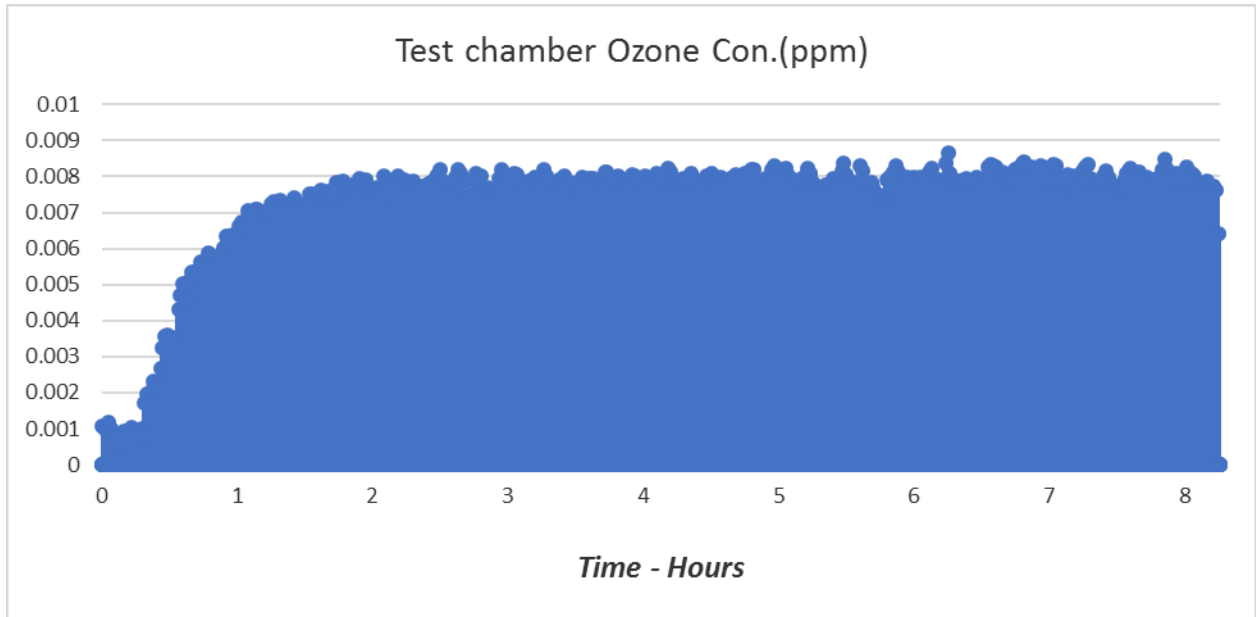


MAXIMUM OZONE TEST RESULTS							
	UL Ref.	Pass/Fail	Mean	Min	Max	Delta	Units
Background C(t) O3:	40.4.3	PASS	0.002	0.001	0.002	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.007	0.001	0.007	0.006	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.007	0.001	0.007	0.006	[ppm]
Chamber Temperature:	40.4.2	PASS	23.94	23.79	24.06	0.27	[degC]
Chamber Humidity:	40.4.2	PASS	49.77	47.01	50.61	3.61	[%RH]
Chamber Static Pressure:	-	PASS	5.01	2.80	8.40	5.60	[Pa]
Chamber Supply Air Flow:	-	-	34.00	33.93	34.04	0.11	[m3/h]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	40.4.6	8 hours					

NOTES: Peak Test Location 9.
 According to a) of 40.4.6, 24 hours testing is not needed.

MAX OZONE TEST

START DATE OF TEST: 20-Feb-2020
 SAMPLE: S191223007-002
 FAN SPEED: Sleep (Lowest)
 FILTER(S): Pre-filter, ESP filter and carbon filter installed
 Ionizer on

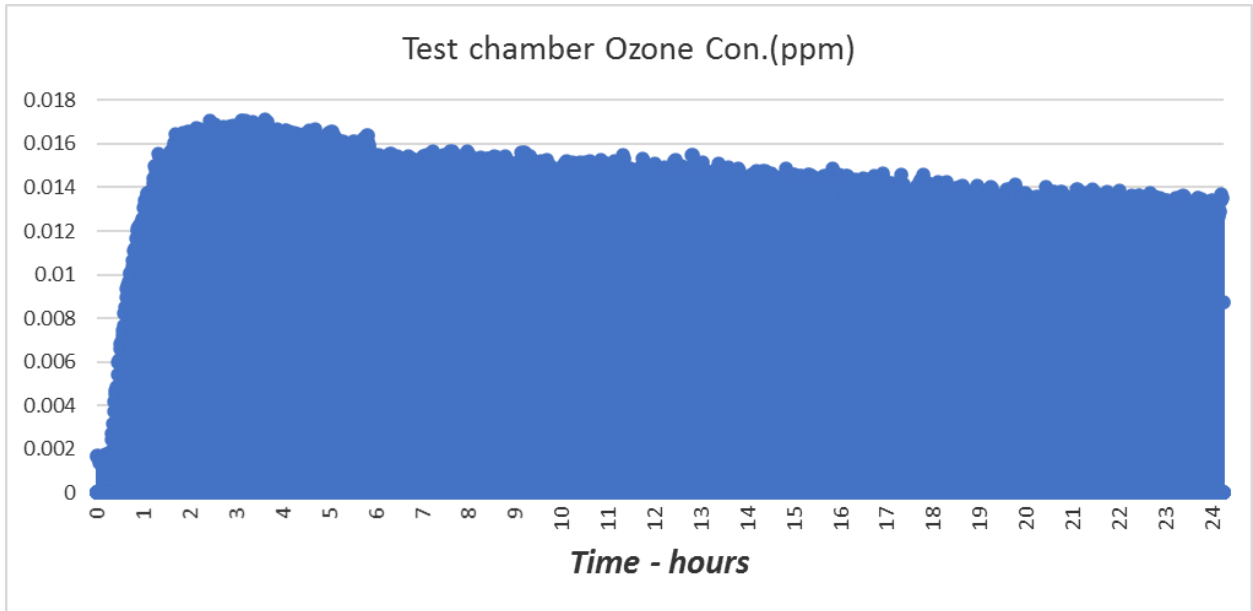


MAXIMUM OZONE TEST RESULTS							
	UL Ref.	Pass/Fail	Mean	Min	Max	Delta	Units
Background C(t) O3:	40.4.3	PASS	0.001	0.001	0.002	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.009	0.000	0.009	0.008	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.008	0.000	0.009	0.008	[ppm]
Chamber Temperature:	40.4.2	PASS	23.91	23.85	23.97	0.12	[degC]
Chamber Humidity:	40.4.2	PASS	50.78	50.62	50.95	0.34	[%RH]
Chamber Static Pressure:	-	PASS	5.01	2.70	7.70	5.00	[Pa]
Chamber Supply Air Flow:	-	-	34.00	33.94	34.02	0.08	[m3/h]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	40.4.6	8 hours					

NOTES: Peak Test Location 8.
 According to a) of 40.4.6, 24 hours testing is not needed.

MAX OZONE TEST

START DATE OF TEST: 17- Feb -2020
 SAMPLE: S191223007-002
 FAN SPEED: Sleep (Lowest)
 FILTER(S): ESP filter installed, Pre-filter and Carbon Filter removed
 Ionizer on



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	0.002	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.017	0.001	0.017	0.016	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.017	0.001	0.017	0.016	[ppm]
Chamber Temperature:	40.4.2	PASS	23.83	23.72	23.95	0.23	[degC]
Chamber Humidity:	40.4.2	PASS	50.37	49.28	50.96	1.68	[%RH]
Chamber Static Pressure:	-	PASS	5.00	2.40	7.00	4.60	[Pa]
Chamber Supply Air Flow:	-	-	34.00	33.93	34.04	0.11	[m3/h]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	40.4.6	24 hours					

NOTES: Peak Test Location 6.
 0 to 8-hour Time-Weighted-Average: 0.015ppmv
 8 to 16-hour Time-Weighted-Average: 0.015ppmv
 16 to 24-hour Time-Weighted-Average: 0.014ppmv

SECTION 6
APPENDIX

DATA FILES

TEST NAME	RAW DATA FILE
Half Life Test	RawData-half life-2020-02-11.xls
Half Life Test	RawData-half life-2020-02-19.xls
Max Ozone: L4 w/ Filter	RawData-Max-Filter-L4.xls
Max Ozone: Sleep w/ Filter	RawData-Max-Filter-Sleep.xls
Max Ozone: Sleep w/o Filter	RawData-Max-wo Filter- Sleep.xls

ATTACHMENT DOCUMENTS

DOCUMENT	SOFT-COPY FILE NAME
ARB Application	ARB Application.pdf
Chain of Custody: Sample 1	COC- S191223007-001&002.pdf
Chain of Custody: Sample 2	COC- S191223007-001&002.pdf

UUT PHOTOGRAPHS



No Nameplate

UUT

Nameplate

UUT PHOTOGRAPHS: PEAK TEST



Location 9

L4 w/ FILTER



Location 8

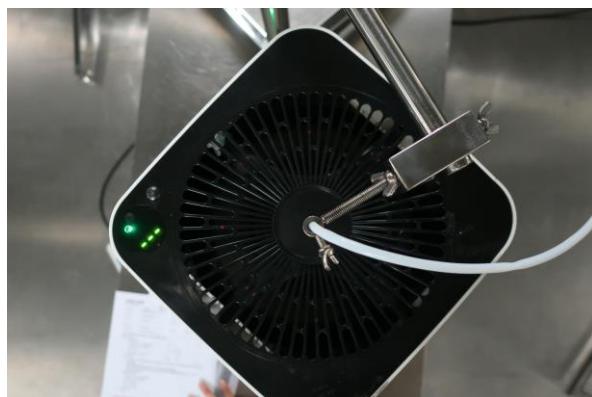
Sleep w/ FILTER



Location 6

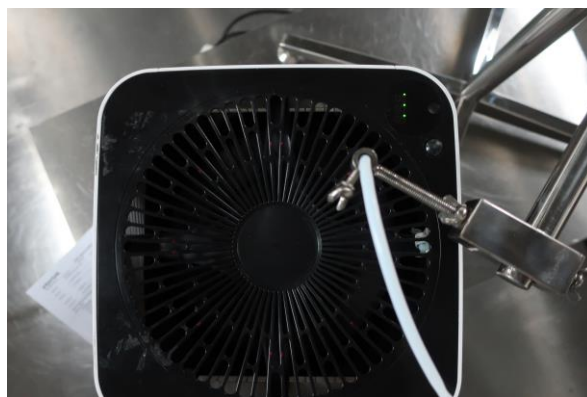
Sleep w/o FILTER

UUT PHOTOGRAPHS: MAX OZONE TESTS



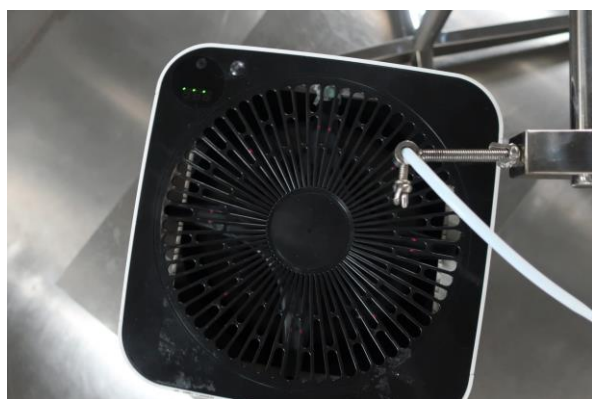
Location 9

L4 w/ FILTER



Location 8

Sleep w/ FILTER



Location 6

Sleep w/o FILTER (with ESP)

7.0 REVISION SUMMARY

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