

# Elfi Elektrofilter AB

## OZONE TEST REPORT

**SCOPE OF WORK**

Ozone Emissions Testing of Household Electrostatic Air Cleaners for Model: Elfi 155

**REPORT NUMBER**

103222910CRT-001

**ISSUE DATE**

18-Oct-2017

**PAGES**

13

**QUOTE NUMBER**

Qu-00818587

**DOCUMENT CONTROL NUMBER**

GFT-OP-10o (16-Oct-2017)

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## TEST REPORT FOR ELFI ELEKTROFILTER AB

Report No.:103222910CRT-001

Date: October 18, 2017

### SECTION 1

#### SUMMARY

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

*Electrostatic Air Cleaners, UL 867, Section 40, Fifth Edition, August 4, 2011 revision: September 16, 2016. Unit*

*IEC 60335-2-65 Clause 32.101, Household and similar electrical appliances – Safety –Part 2-65: Particular requirements for air-cleaning appliances.*

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 the exception in the Section 40.1.1.

This report completes our evaluation covered by Intertek Project Number G103222910 which has been authorized by Intertek quote number: Qu-00818587. 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) <sub>max</sub> [ppm]
High	YES	-	0.002
Low	YES	-	0.008
Low	NO	-	0.011

Completed by:	Joseph Hartley	Reviewed by:	Michael Hudon
Title:	Technician III	Title:	Engineering Team Lead
Signature:		Signature	
Date	10/9/2017	Date:	10/18/2017

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**CHAMBER EQUIPMENT INFORMATION**TEST EQUIPMENT LIST

Instrument	Model	Intertek Ctrl #	Cal Due Date
Teledyne – Advanced Pollution Instrumentation Ozone Calibrator	703E	O204	04-02-2018
Teledyne – Advanced Pollution Instrumentation Ozone Monitor	400E	O201	*
Vaisala – Temperature & Humidity Transducer	HMD-70Y	T1307	06-09-2018
Fluid Components International- Flow meter	ST75V	D713	08-16-2018

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

**SECTION 3**

**UNIT UNDER TEST INFORMATION**

<b>MODEL INFORMATION</b>			
Manufacturer:	Elfi Elektrofilter AB	Pre-Filter:	No
Model Number:	Elfi 155	HEPA Filter:	Yes
Production/Prototype/ Design	Prototype	ESP Filter:	No
Fan Speeds:	3	Carbon Filter:	No
O3/Voltage Settings:	Not Tested	UV Light:	No
O3 Monitor:	Not Applicable	Ionizer:	Yes
Model Notes:	The model for this project, per the customer communication is the ELFI 155. The nameplate on the Model tested is identified 150 but is a representative sample of the 155.		

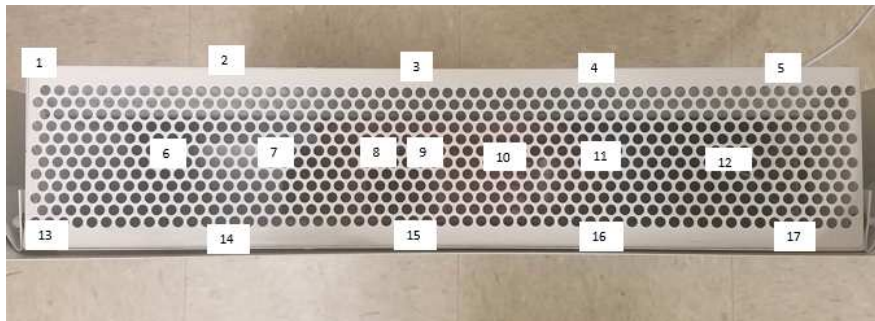
<b>RUN-IN TEST</b>			
<b>FIRST SAMPLE</b>			
Run-in Start:	9/29/2017 3:30 PM	Run-in End:	10/2/2017 8:45AM
Run-in Temperature:	77 ± 4 degF	Tracking Number	CRT1709281020-001
Serial Number:	2017.09.05-9		
Sample Notes:			
<b>SECOND SAMPLE</b>			
Run-in Start:	NA	Run-in End:	NA
Run-in Temperature:	NA	Tracking Number	CRT1709281020-002
Serial Number	NA		
Sample Notes:			

SECTION 4

PEAK OZONE TEST

GRILL AND AIR PERIPHERY DIMENSIONS			
		Date of Test:	10/2/2017
Grill Height:	3	Air Periphery Height:	4
Grill Width:	17.750	Air Periphery Width:	18.75
Estimated Grill Area:	53.250	Est. Air Periphery Area:	75
Notes:	Measurements are in Inches		

PEAK LOCATION			
Loc.	X	Y	
-	[inches]	[inches]	
1	-8.0	2.0	
2	-4.0	2.0	
3	0.0	2.0	
4	4.0	2.0	
5	8.0	2.0	
6	-5.375	0.0	
7	-3.0	0.0	
8	-0.375	0.0	
9	0.0	0.0	
10	1.875	0.0	
11	4.24	0.0	
12	6.375	0.0	
13	-8.0	-2.0	
14	-4.0	-2.0	
15	0.0	-2.0	
16	4.0	-2.0	
17	8.0	-2.0	
* Location measurements are coordinates in reference to the center point.			

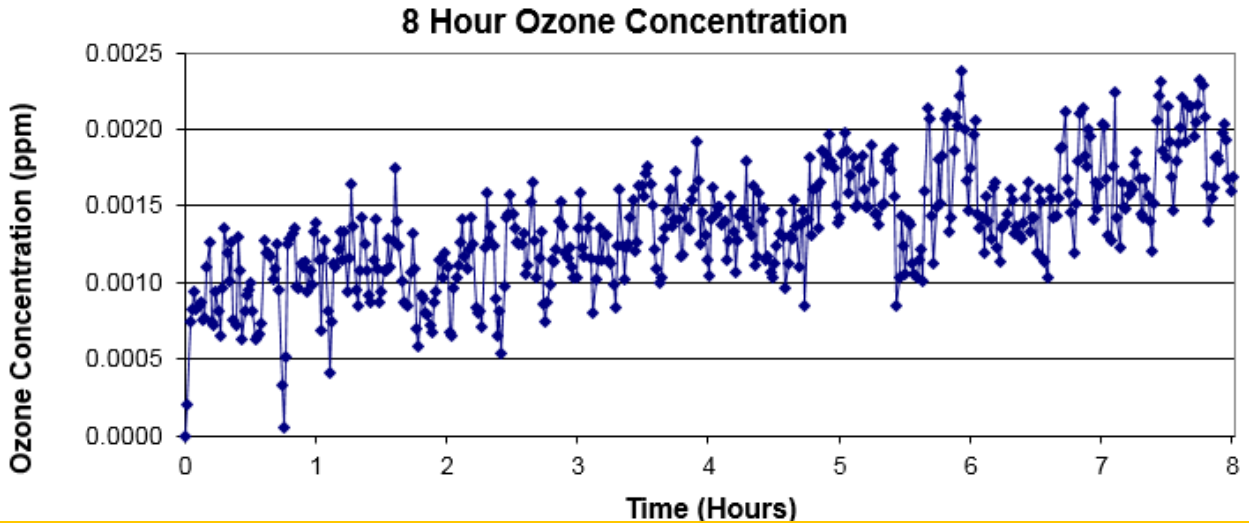


PEAK OZONE CONCENTRATIONS (ppb)				
Location	With Filter(s)		Without Filter(s)	
	Highest	Lowest	Lowest	
1	0.0010	0.0025	0.0015	
2	0.0011	0.0018	0.0013	
3	0.0007	0.0020	0.0009	
4	0.0003	0.0028	0.0013	
5	0.0007	0.0014	0.0010	
6	0.0007	0.0025	<b>0.0021</b>	
7	0.0007	0.0017	0.0019	
8	0.0010	0.0010	0.0013	
9	0.0002	0.0014	0.0012	
10	0.0008	0.0008	0.0019	
11	0.0005	0.0012	0.0017	
12	0.0009	<b>0.0036</b>	0.0016	
13	0.0004	0.0019	0.0011	
14	0.0007	0.0023	0.0013	
15	0.0009	0.0009	0.0005	
16	0.0001	0.0005	0.0002	
17	<b>0.0012</b>	0.0027	0.0016	

SECTION 5

MAX OZONE TEST

START DATE OF TEST: 10/2/2017  
 SAMPLE: First Sample  
 FAN SPEED: High  
 FILTER(S): HEPA Filter Installed

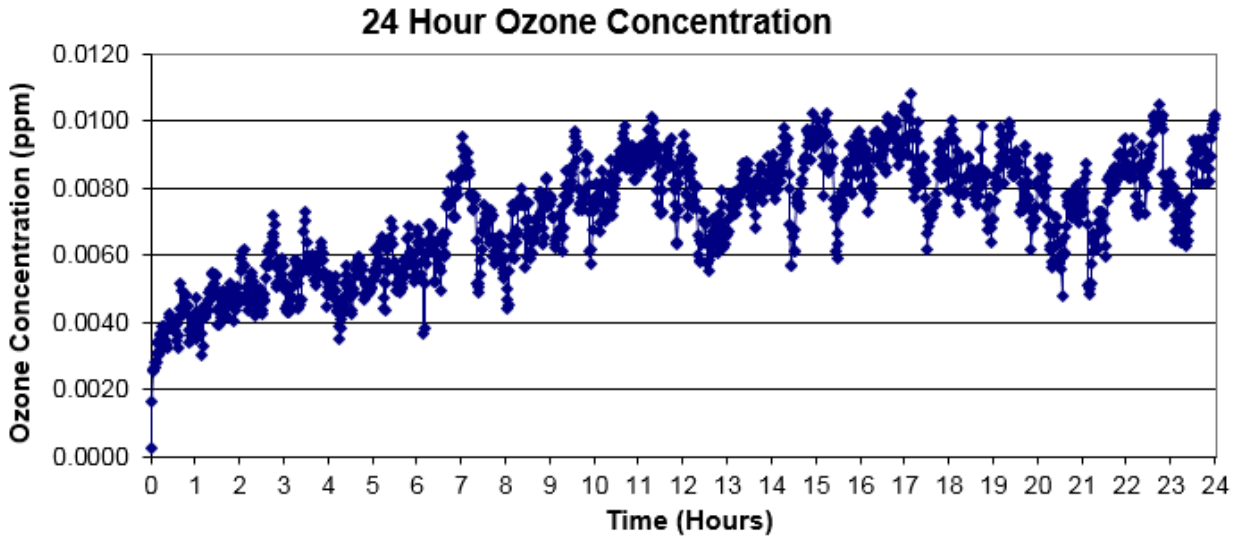


MAXIMUM OZONE TEST RESULTS							
	UL Ref.	Pass/Fail	Mean	Min	Max	Delta	Units
Background C(t) O3:	40.4.3	PASS	0.000	0.000	0.001	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.001	0.000	<b>0.002</b>	0.002	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.001	0.000	0.002	0.002	[ppm]
Chamber Temperature:	40.4.2	PASS	77	77	77	1	[degF]
Chamber Humidity:	40.4.2	PASS	47	47	48	1	[%RH]
Chamber Static Pressure:	-	PASS	0.02	0.02	0.04	0.03	["H2O]
Chamber Supply Air Flow:	-	-	20	19	20	0	[SCFM]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	*40.4.6	8 hours					

NOTES: Peak Test Location 17

MAX OZONE TEST

START DATE OF TEST: 10/6/2017  
 SAMPLE: First Sample  
 FAN SPEED: Low  
 FILTER(S): HEPA Filter Installed



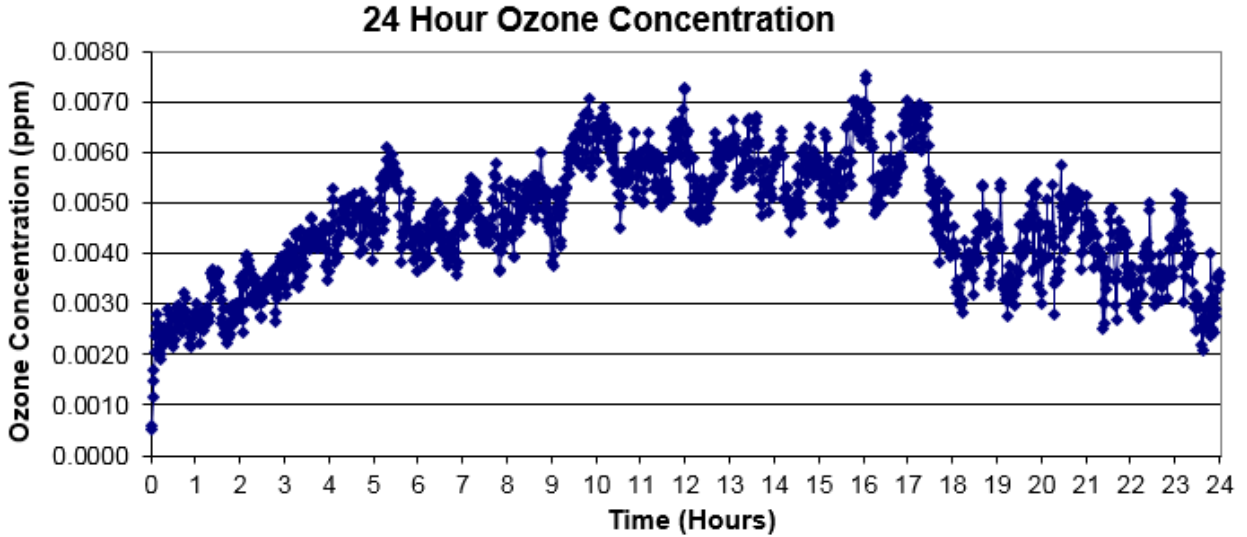
MAXIMUM OZONE TEST RESULTS							
	UL Ref.	Pass/Fail	Mean	Min	Max	Delta	Units
Background C(t) O3:	40.4.3	PASS	0.001	0.001	0.001	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.007	0.000	<b>0.011</b>	0.011	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.007	0.001	0.010	0.009	[ppm]
Chamber Temperature:	40.4.2	PASS	77	76	78	1	[degF]
Chamber Humidity:	40.4.2	PASS	49	48	51	2	[%RH]
Chamber Static Pressure:	-	PASS	0.02	-0.01	0.04	0.04	["H2O]
Chamber Supply Air Flow:	-	-	20	19	20	0	[SCFM]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	*40.4.6	24 hours					

NOTES: Peak Test Location 12



MAX OZONE TEST

START DATE OF TEST: 10/4/2017  
 SAMPLE: First Sample  
 FAN SPEED: Low  
 FILTER(S): HEPA Filter 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	0.005	0.001	<b>0.008</b>	0.007	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.005	0.001	0.007	0.007	[ppm]
Chamber Temperature:	40.4.2	PASS	77	77	78	1	[degF]
Chamber Humidity:	40.4.2	PASS	49	48	50	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: Peak Test Location 6

**SECTION 6**

**APPENDIX**

**DATA FILES**

TEST NAME	RAW DATA FILE
Model Half Life	2357 Halflife.xls
Max Ozone: High Speed w/ Filter	2358 Max high with Filter.xls
Max Ozone: Low Speed w/ Filter	2361 MAX Low with Filter.xls
Max Ozone: Low Speed w/o Filter	2360 Max Low without Filter.xls

**ATTACHMENT DOCUMENTS**

DOCUMENT	SOFT-COPY FILE NAME
ARB Application	NA
Chain of Custody: Sample 1	COC_CRT1709281020-001,002.pdf
Chain of Custody: Sample 2	COC_CRT1709281020-001,002.pdf

**UUT PHOTOGRAPHS**



UUT



**Wood's ELFI 155 SAMPLE**

Sample nr: 2017.10.06 - 17

Model: ELFI 155  
 Input Voltage: 12V DC  
 Power Consumption Aircleaner: 4-18W  
 Power Consumption Adapter: 2W

ELFI Elektrofilter AB  
 +46 322 63 30 60  
 www.elfi.se

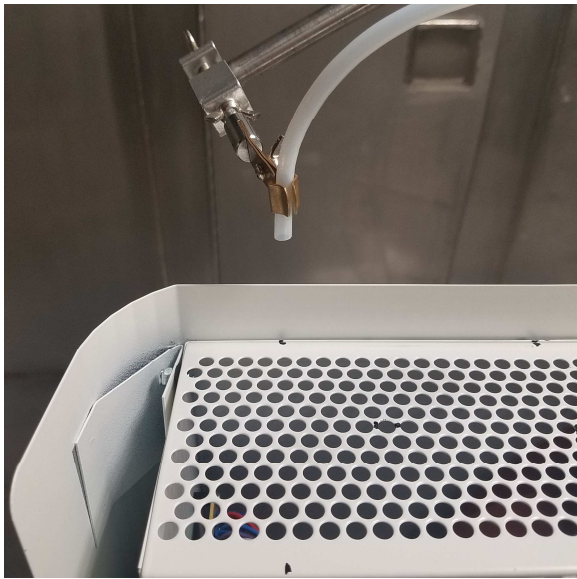


CAUTION HIGH VOLTAGE

Made in Sweden

Nameplate on sample and production example

UUT PHOTOGRAPHS: PEAK TEST



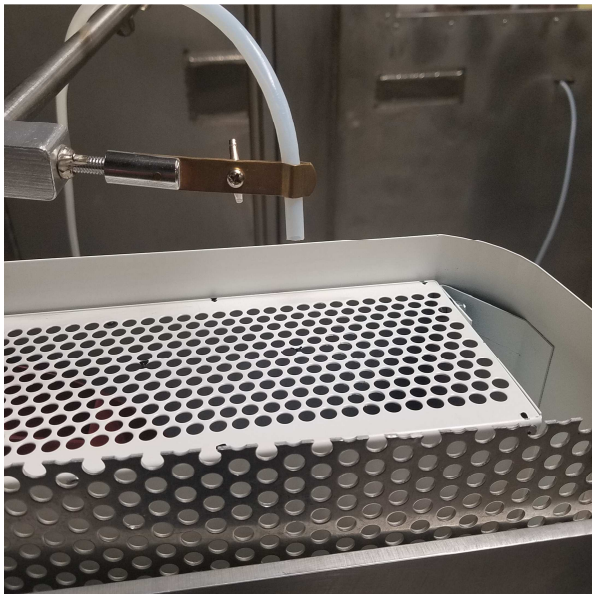
Location 17

HIGH SPEED w/ FILTER



Location 12

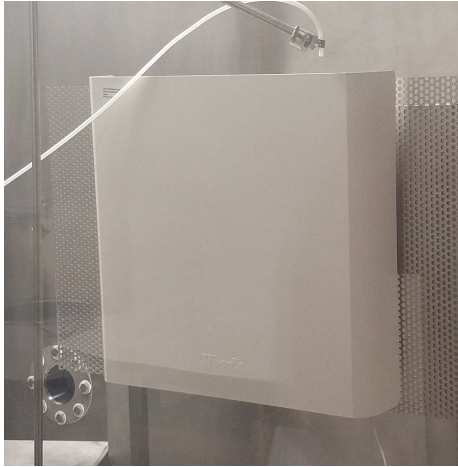
LOW SPEED w/ FILTER



Location 6

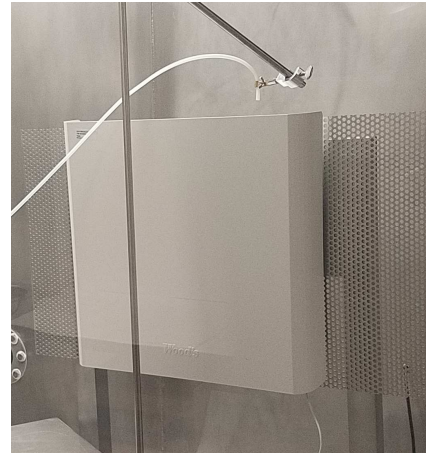
LOW SPEED w/o FILTER

UUT PHOTOGRAPHS: MAX OZONE TESTS



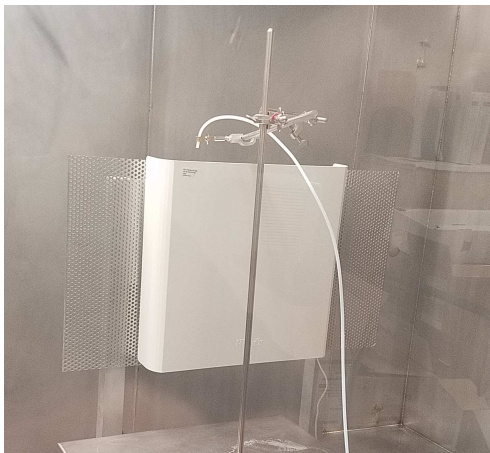
Location 17

HIGH SPEED w/ FILTER



Location 12

LOW SPEED w/ FILTER



Location 6

LOW SPEED w/o FILTER

