

BREATHE DIFFERENT



Reports & Certificates

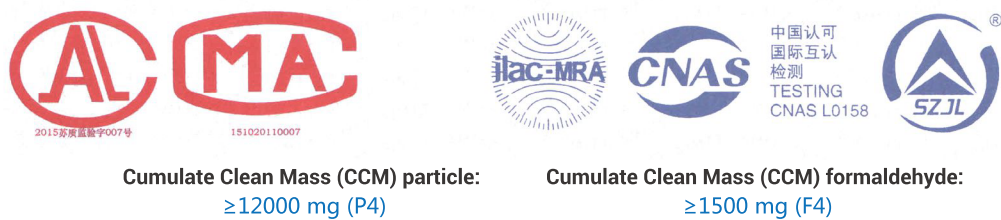
Airdog X8



Silicon Valley Air Expert Inc.

Professional Lab Tests and Certificates

Data from Professional Testing Institutions



Catalogue

- Test Report(Elimination Ratio of Particulates, Total Bacteria Counts, Formaldehyde)-SGS
- Test Report(Removal Rate of H3N2)-Guangdong Detection Center of Microbiology
- Test Report(CADR, Cleaning Energy Efficiency, Noise)-Vkan Certification & Testing Co., Ltd.
- Test Report(CCM)-Suzhou Metrology and Testing Institute
- Test Report(Purification Efficiency of Particulate Matter down to 14.6nm)-National Center of Quality Supervision and Inspection and Testing for Air Conditioning Equipment
- ETL-Intertek
- Test Report(Ozone Emission)-Intertek
- Test Report(Oxynitride Emission)-Suzhou Metrology and Testing Institute
- ISO-9001
- ISO14001
- Test Report(Rate of Coliphage phi X174 Removal)-HygCen Germany GmbH
- EXPERT OPINION
- Test Report(Rate of Coliphage phi X174 Removal)-HygCen Germany GmbH
- EXPERT OPINION

Test Report

No. : CY/2019/90196

Date : 2019/10/18

Page : 1 of 4

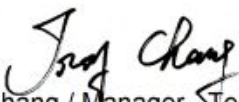
SILICON VALLEY AIR EXPERT

2100 WALSH AVE., STE B1, SANTA CLARA, CA, 95050, USA

The following samples was/were submitted and identified by/on behalf of the applicant as :

Sample Submitted By : SILICON VALLEY AIR EXPERT
 Sample Description : AIR PURIFIER
 Style/Item No. : KJ800F-X8
 Manufacturer/Vendor : ANHUI BEIANG AIR TECH LTD.
 Country of Origin : CHINA
 Sample Receiving Date : 2019/09/12
 Testing Period : 2019/09/12 to 2019/10/17

Test Result(s) : Please refer to following pages.


 Troy Chang / Manager - Tech
 Signed for and behalf of
 SGS TAIWAN LTD.
 Chemical Laboratory - Taipei



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Test Report

No. : CY/2019/90196

Date : 2019/10/18

Page : 2 of 4

SILICON VALLEY AIR EXPERT

2100 WALSH AVE., STE B1, SANTA CLARA, CA, 95050, USA

Test Result(s)

PART NAME No.1 : AIR PURIFIER

Test Item and Method : Performance Test

Experiment test :

1. The product was set up in a 2.9m×1.4m×1.9m of test chamber as the client requested.
2. Analyzing the Total Bacteria Counts in air before and after processing an hour later.

Control test :

1. The test procedure was as same as experiment without putting the product.

In order to understand the performance of product in suppression effect of Total Bacteria Counts.

Test Result :

Test Item	Unit	Control test	Experiment test	Elimination ratio(%)
Total Bacteria Counts	CFU/m ³	4111	<6	>99.9

Test Report

No. : CY/2019/90196

Date : 2019/10/18

Page : 3 of 4

SILICON VALLEY AIR EXPERT

2100 WALSH AVE., STE B1, SANTA CLARA, CA, 95050, USA

Test Item and Method : Performance Test

Experiment test :

1. The product was set up in a 2.9m×1.4m×1.9m of test chamber as the client requested.
2. The Particulates were injected in the 2.9m×1.4m×1.9m chamber and made sure the PM_{2.5} concentration be mixed and stabilized by the detector.
3. Monitoring the concentration of PM_{2.5} in air before turning on the product and after processing an hour later.

Control test :

1. The test procedure was as same as experiment without putting the product, in order to understand the performance of the product in suppression effect of PM_{2.5}.

Test Result :

Test Item	Unit	Control test	Experiment test	Elimination ratio(%)
Fine Suspended Particulates(PM _{2.5})	µg/m ³	1140	<1	>99.9

Test Item and Method : Performance Test

Experiment test :

1. The product was set up in a 2.9m*1.4m*1.9m of test chamber.
2. The test odor gas (individually by Formaldehyde odor) was injected in the 2.9m*1.4m*1.9m test chamber.
3. Monitor the odor concentration by gas detector while the concentration were mixed and stabilized.
4. To analyze the Formaldehyde in air before turning on the product and after processing 1 hour later.

Control test :

1. The test procedure was as same as experiment without turning on the product, in order to understand the performance of the product in suppression effect of Formaldehyde.

Test Result :

Test Item	Unit	Control test	Experiment test	Elimination ratio(%)
Formaldehyde	ppm	0.789	<0.001	>99.9

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Test Report

No. : CY/2019/90196

Date : 2019/10/18

Page : 4 of 4

SILICON VALLEY AIR EXPERT

2100 WALSH AVE., STE B1, SANTA CLARA, CA, 95050, USA

* The tested sample / part is marked by an arrow if it's shown on the photo. *

CY/2019/90196



** End of Report **

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广微测
Gmicro Testing

GUANGDONG DETECTION CENTER OF MICROBIOLOGY

REPORT FOR ANALYSIS

Report №. 2019FM17442R01

Name of Sample Airdog X8 Air Purifier

Applicant Suzhou BeiAng Air Tech Ltd.

Test Type Entrustment Test

Address: Building 66, No.100 Central Xian Lie Road, Guangzhou, China

Postcode: 510070

Tel: (020)87137666

Fax: (020)87137668

Website: www.gddcm.com



GUANGDONG DETECTION CENTER OF MICROBIOLOGY

REPORT FOR ANALYSIS



Report No.:2019FM17442R01 Verification Code: 53784160

Name of Sample	Airdog X8 Air Purifier	Test Type	Entrustment Test
Applicant	Suzhou BeiAng Air Tech Ltd.	Address	No.188 xincheng Road, SIP, Suzhou, Jiangsu, China
Sample Source	Submitted for Testing by the Applicant	Sample Quantity	One Sample Submitted
Spec and Lot No of Sample	KJ800F-X8	State and Characteristic	Household appliances
Sample Received Date	2019-12-03	Completion Date	2019-12-17
Test Standard and Method	Refer to Technical Standard for Disinfection (2002 Ministry of Health P.R.China)-2.1.3		
Item Tested	Identification test of aerosolized virus elimination effect		
Test Conclusion	The test data of the sample(s) is attached to the page(s) of this report. Issue Date: 2019-12-19 (Official Seal) 检验检测专用章		
Remarks	KJ800F-X8/A8		

Editor:

陈颖婷

Verifier:

孙延丽

Approver:

张保



GUANGDONG DETECTION CENTER OF MICROBIOLOGY

ANALYSIS AND TEST RESULT

Report No.: 2019FM17442R01

Action Time	Virus and host cell	Data point	Aerosolized virus concentration in the test chamber (TCID ₅₀ /m ³)	Removal rate (%)
1h	H3N2 Influenza virus FM4.01 Host cell: MDCK	Before test	2.44×10 ⁶	
		After test	<97.3	99.99

Note: The natural decay of the microorganisms in the air has been eliminated.

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分析
专用

Remarks	1. The experiment was performed in a 10m ³ test chamber 2. Working state: Press L5 (the speed) to test.
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Report №.: 2019FM17442R01

Notice Items

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6. Any dispute of the report must be raised to the testing body within 15 days after the report is received, exceeding which the dispute will not be accepted.
7. For the tested sample(s) submitted by the applicant, the sample information in the test report is provided by the applicant and the laboratory is not responsible for its authenticity.
8. This test report is for reference only to the applicant and does not have a proof of effect for others.





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国际互认
检测
TESTING
CNAS L0095

Page 1 of 11 Pages
No.: WTS2021-11192

TEST REPORT

NAME OF SAMPLE Air Purifier

CLIENT BeiAng Air Tech Ltd.

CLASSIFICATION OF TEST Commission Test

Vkan Certification & Testing Co., Ltd.



TEST REPORT

No: WTS2021-11192

Page 2 of 11 Pages

Name of product: Air Purifier	Trade mark: —
Type/Model: KJ800F-X8	Sample status: —
Commissioned by: BeiAng Air Tech Ltd.	Manufacturer: BeiAng Air Tech Ltd.
Commissioner address: No.175, Songbei Road, SIP, Suzhou City, Jiangsu Province, China	Manufacturer Address: No.175, Songbei Road, SIP, Suzhou City, Jiangsu Province, China
Production Unit: —	Sampling base: —
Production Unit Address: —	Sampled by: —
Quantity of sample: 1	Sampling at(place): —
Sample identification:1-1	Means of sampling: —
Means of receiving:Submitted by the client	Sampling date: —
Classification of test:Commission Test	Test Item: —
Receiving date: 2021-06-04	Completing date: 2021-06-11
Tested according to: GB/T 18801-2015 《Air cleaner》	
Test conclusion: According to the requirements of the client ,according to standard GB/T 18801-2015 the Standby power、Solid particulate clean air delivery rate(CADR)、Formaldehyde clean air delivery rate(CADR)、Solid particulate cleaning energy efficiency、Formaldehyde cleaning energy efficiency and Noise is tested on the sample. Please refer the test data to the table below.  Seal of CVC Date of issue:2021.6.11	

Approved by: Yang Xianfei

Reviewed by: Xu Laichun

Tested by: Lin Bin

Yang Xianfei

Xu Laichun

Lin Bin

Description and illustration of the sample:

—

Description of the sampling procedure:

—

Description of the deviation from the standard, if any:

—

Remarks:

—

第 3 页 共 11 页
检

Sample photo



Product specifications

Model	KJ800F-X8	Ozone	<=10ppb
Usable area	80m²	Noise	<=63dB(A)
CADR particulate	800m³/h	Rated power	110W
CADR formaldehyde	200m³/h	Rated voltage	220V~
Energy efficiency （particulate）	High efficiency	Rated voltage	50Hz
Weight	19.7kg	Dimensions (m)	0.76H*0.38L*0.38W
Executive standard：GB/T 18801-2015			

GB/T 18801-2015			
Clause	Test items and test requirements	Test results	Verdict
5	Technical Requirements		
5.2	The standby power should not larger than 2.0W	See attached table	P
5.3	The experimental CADR of the solid particulate and gas contaminant should not less than the 90% times the nominal value of the air cleaner	See attached table	P
5.5	Cleaning energy efficiency		
5.5.1	The experimental Cleaning energy efficiency of the solid particulate and gas contaminant should not less than the 90% times the nominal value of the air cleaner	See attached table	P
5.5.2	The Cleaning energy efficiency of the target contaminant should at least be the certified grade according to table 1 and table 2.	See attached table	P
5.6	Noise		
5.6.1	The noise value corresponding to the measured value of the CADR when the cleaner is working shall be in accordance with the provisions of Table 3	See attached table	P
5.6.2	The permissible difference between the measured value and the nominal value of the noise generated by the cleaner shall be less than +3dB	See attached table	P

Table 1 Test results table

Clause	Test items		Unit	experimental	Nominal value	limited value	Verdict
5.2	Standby Power		W	1.4	—	≤2.0	P
5.3	Clean air delivery rate (CADR)	solid particulate	m³ /h	889.6	800	≥90% times nominal value	P
		formaldehyde		219.0	200		P
5.5	Cleaning energy efficiency η	solid particulate	m³ /(h.W)	7.59	High efficiency class	≥90% times nominal value	P
		formaldehyde		1.87	—	≥90% times nominal value	N



Clause	Test items	Unit	experimental	Nominal value	limited value		Verdict
5.6	Noise	dB(A)	62.4	≤ 63	CADR max ≤ 150	≤ 55	/
					$150 < \text{CADR max} \leq 300$	≤ 61	/
					$300 < \text{CADR max} \leq 450$	≤ 66	/
					CADR max > 450	≤ 70	P
					allowance should not greater than +3dB(A)		P

Table 2-1 Solid particulate clean air delivery rate(CADR)

Serial number	Natural attenuation		Total attenuation		curve
	Point of time/min	concentration/(个/L)	Point of time/min	concentration/(个/L)	
1	0	10214949	0	12287203	Natural attenuation curve
2	2	10152696	1	8778895	
3	4	10094355	2	5361895	
4	6	10027400	3	3180911	
5	8	9949013	4	1917905	
6	10	9893930	5	1194084	
7	12	9846836	6	740412	
8	14	9813727	7	453661	
9	16	9769068	8	255885	
10	18	9680208	9	166927	
11	20	9656969	10	85281	
Attenuation coefficient/min ⁻¹	0.002833		0.497054		Total attenuation curve
R ²	0.993		0.998		
	Nominal value		Measured value		
CADR/(m ³ /h)	800		889.6		
input power/W	110		117.2		
Cleaning energy efficiency/m ³ /(W·h)	High efficiency class		7.59/ High efficiency class		

Test description:

- Test gear: Max gear
- Test chamber: 30m³
- Cleaning energy efficiency:

Purification efficiency level	Cleaning energy efficiency η _{颗粒物} /(m ³ /(W·h))
High efficiency class	η≥5.00
Qualified grade	2.00≤η≤5.00

Table 2-2 Formaldehyde clean air delivery rate(CADR)

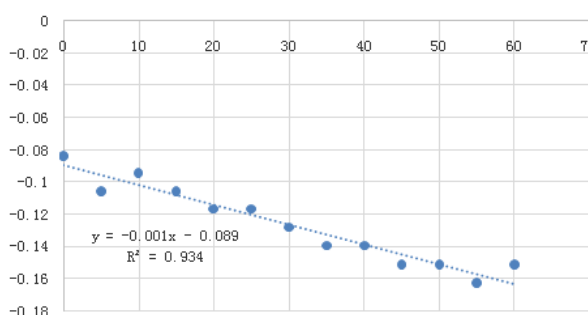
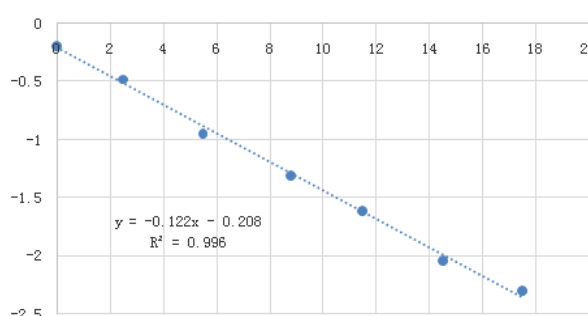
Serial number	Natural attenuation		Total attenuation		curve
	Point of time/ min	concentration /(mg/m³)	Point of time/ min	concentration /(mg/m³)	
1	0	0.92	0	0.83	Natural attenuation curve 
2	5	0.90	2.5	0.62	
3	10	0.91	5.5	0.39	
4	15	0.9	8.5	0.27	
5	20	0.89	11.5	0.20	
6	25	0.89	14.5	0.13	
7	30	0.88	17.5	0.10	
8	35	0.87	—	—	
9	40	0.87	—	—	
10	45	0.86	—	—	
11	50	0.86	—	—	
12	55	0.85	—	—	
13	60	0.86	—	—	
Attenuation coefficient/min ⁻¹	0.001232		0.122901		Total attenuation curve 
R ²	0.935		0.997		
	Nominal value		Measured value		
CADR/(m³/h)	200		219.0		
input power/W	110		117.2		
Cleaning energy efficiency/m³/(W·h)	--/--		1.87/ High efficiency class		
Test description:					
1. Test gear: Max gear					
2. Test chamber: 30m ³					
3. Cleaning energy efficiency:					
Purification efficiency level			Cleaning energy efficiency η _{甲醛} /(m³/(W·h))		
High efficiency class			η≥1.00		
Qualified grade			0.50≤η<1.00		

Table 3 Noise Test

Point method	Type of Utensil		Envelope surface	Number of points	This use (√)
	Floor Standing / table standing	The length of each side shall not exceed 0.7m	Hemispherica l surface	Ten	
		Either side grows larger than the other 0.7m	Rectangular hexahedron	Nine	√
	Wall mounted type		Rectangular hexahedron	Six	
Test description	Test voltage: 220 V		Test frequency: 50 Hz		
	Ambient temperature: 59.8 %		Atmospheric pressure: 101.39 kPa		
	Ambient humidity: 23.7 °C		Background noise level: 16.6 dB(A)		
	Working condition: Max gear		Check run time: 30min		
Test results	Lp= 48.9 dB(A) $L_w=l_p+10lg(\frac{S}{S_0})= 62.4 \text{ dB(A)}$				

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Address: No.3, Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, China

电 话(Tel): 020 32293888

传 真(Fax): 020 32293889

邮政编码(Post Code): 510663

E-mail: office@cvc.org.cn

<http://www.cvc.org.cn>



170010110145



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检测
TESTING
CNAS L0793

Test Report

产品名称: 空气净化器

检验类别: 委托检验

受检单位: _____

委托单位: 苏州贝昂科技有限公司

中国家用电器检测所

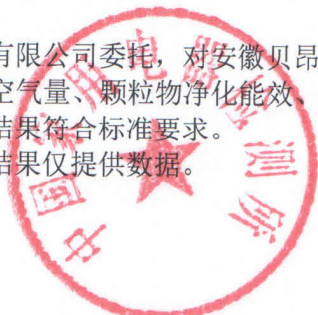


中国家用电器检测所

检 验 报 告

报告编号: WCK-17-50819

共 12 页 第 2 页

产品名称	空气净化器	型号规格	KJ800F-X8 800m³/h
商 标	贝昂	样品数量	1 台
抽样地点	——	样品等级	——
抽样基数	——	检验类别	委托检验
样品来源	送样	样品编号	1700-29492-1
生产单位名称	安徽贝昂科技有限公司	生产单位地址	——
受检单位名称	——	受检单位地址	——
委托单位名称	Suzhou BeiAng Air Tech Ltd.	委托单位地址	——
检验依据	GB/T 18801-2015 《空气净化器》		
检验结论: 受苏州贝昂科技有限公司委托, 对安徽贝昂科技有限公司生产的“贝昂”牌 KJ800F-X8 型空气净化器进行颗粒物洁净空气量、颗粒物净化能效、甲醛洁净空气量、甲醛净化能效和噪声项目的检验。 噪声项目的检验结果符合标准要求。 其他项目的检验结果仅提供数据。 (以下空白)  (本报告中委托方对样品和相关资料的真实性负责, 检测机构仅对检验数据的准确性负责。) 签发日期: 2018 年 1 月 8 日			
主检: 焦晓兰		审核: 张 斌	批准: 鲁 书 国

说明或照片

样品的照片 (样品的标志、总体外观、受控零部件等照片):

产品名称: 贝昂空气净化器

产品型号: KJ800F-X8

额定电压: 220V~

额定频率: 50Hz

额定功率: 110W

产品编号:



由“贝昂”商标持有人苏州贝昂科技有限公司授权出品

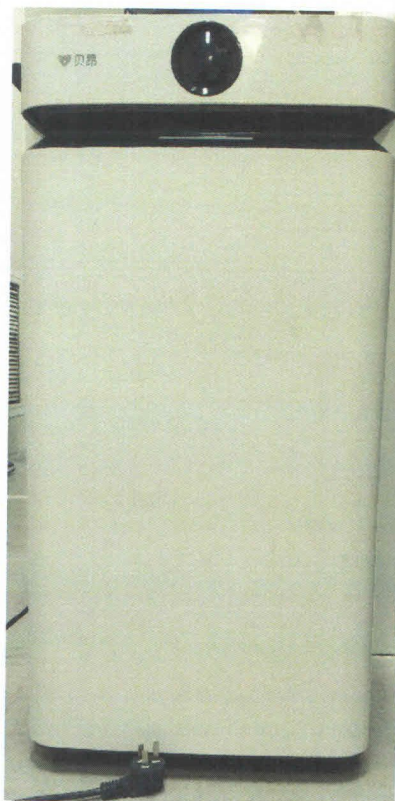
制造商: 苏州贝昂科技有限公司 地址: 苏州工业园区新城路188号

客服热线: 400-002-6776 网址: www.beiangtech.com

生产厂: 安徽贝昂科技有限公司 地址: 芜湖市三山区峨溪路15号

说明或照片

样品的照片 (样品的标志、总体外观、受控零部件等照片):



KJ800F-X8



KJ800F-X8

共 12 页 第 6 页

GB/T 18801-2015									
条款	试验项目及试验要求					测试结果-说明			判定
	试验项目		单位	限定值	standard value	test result	等级		
5.1	有害物质释放量	臭氧浓度（24h）		%	$\leq 5 \times 10^{-6}$		——		——
		臭氧浓度（出风口 5cm 处）		mg/m ³	≤ 0.10		——		——
		紫外线强度（装置周边 30cm 处）		μW/cm ²	≤ 5		——		——
		TVOC 浓度（出风口 20cm 处）		mg/m ³	≤ 0.15		——		——
		PM ₁₀ 浓度（出风口 20cm 处）		mg/m ³	≤ 0.07		——		——
5.2	待机功率			W	≤ 2.0	——	——		——
5.3	Clean Air Delivery Rate	particle		m ³ /h	$\geq 90\%$ of standard value	800	1031.4		——
		formaldehyde				400	537.9		——
5.4	累积净化量 CCM	颗粒物		mg	≥ 3000	——	——	——	——
				——	与标称区间一致	——			——
		甲醛		mg	≥ 300	——	——	——	——
				——	与标称区间一致	——			——
5.5	Clean Energy Efficiency	particle		m ³ /(h·W)	$\geq$ 标称值的 90%	——	8.876	High Efficient Level	——
					≥ 2.00				——
		formaldehyde		m ³ /(h·W)	$\geq$ 标称值的 90%	——	4.629	High Efficient Level	——
					≥ 0.50				——
5.6	Noise			dB(A)	见检验说明表 3	63	61.3		qualified
					与标称值的差 ≤ 3				合格
5.7	微生物去除	抗菌率	大肠埃希氏菌	%	$\geq 90\%$		——		——
			金黄色葡萄球菌				——		——
		防霉等级		——	1 级或 0 级		——		——
		除菌率	白色葡萄球菌	%	$\geq 50\%$		——		——
附录 F	适用面积（颗粒物）			m ²		——	——		
附录 G	净化寿命	颗粒物		月		——	——		
		甲醛				——	——		



2015苏质监检字007号

151020110007



中国认可
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检测
TESTING
CNAS L0158



检测报告

Test Report

报告编号:
Report No.



100002480

产品名称
Sample Name

空气净化器

委托单位
Client

苏州贝昂科技有限公司

生产单位
Manufacturer

检测类别
Test Type

委托检测

江苏省洁净设备计量质量监督检验中心

Jiangsu Calibration and Supervision and Inspection Center of Clean Equipment

苏州市计量测试研究所

Suzhou Institute of Measurement and Testing Technology



2015苏质监监字007号



151020110007

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检测
TESTING
CNAS L0158

苏州市计量测试研究所

Suzhou Institute of Measurement and Testing

检测报告 Test Report

共6页第1页 Page No:6-1



100002480

样品名称 Sample Name	Air Cleaner		合同书编号 Contract No.	9007625	
型号规格 Specifications	KJ800F-A8 / KJ800F-X8		商标 Brand	贝昂	
任务来源 Being Tested from	客户委托		检测类别 Test Type	委托检测	
委托单位\地址\电话 Client\Add.\Tel.	Suzhou BeiAng Air Tech Ltd.		苏州工业园区金芳路11号	—\15062379517	
生产单位\地址\电话 Manufacture\Add.\T	—		—	—	
样品状态 Sample Description	符合检测要求 Meet Test Requirements		生产日期\出厂编号 Production Date\Serial No.	—\—	
样品到达日期 Samples Arrival date	2017-10-10	检验日期 Test date	2017-10-11~2017-10-31	样品数量 Sample quantities	1
检测地址 Test Add.	苏州市计量测试研究所·苏州市工业园区娄阳路6号 Suzhou Institute of Measurement and Testing·6 Louyang Road Suzhou Industrial Park				
检测和判定依据 Test Standard and Methods	GB/T 18801-2015《空气净化器》				
检测结论 Test Conclusion	—				
备注 Note	—				
主检: Editor	陈恩坤		审核: Inspector	史亚坤	
签发日期: Signature date	2017-11-08		批准: Approval	史亚坤	
			Suzhou Institute of Measurement and Testing (检测专用章) Stamp of Testing		



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检测报告 Test Report

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序号 No.	检验项目	技术要求 Technical Requirements	单位 Unit	检测结果 Result	单项判定 Single Conclusion
1	Cumulate Clean Mass (particle)	$P1\ 3000 \leq M_{\text{particle}} < 5000;$ $P2\ 5000 \leq M_{\text{particle}} < 8000;$ $P3\ 8000 \leq M_{\text{particle}} < 12000;$ $P4\ 12000 \leq M_{\text{particle}} \leq \text{Standard:P4}$	mg	P4	qualified
2	Cumulate Clean Mass (Formaldehyde)	$F1\ 300 \leq M_{\text{formaldehyde}} < 600;$ $F2\ 600 \leq M_{\text{formaldehyde}} < 1000;$ $F3\ 1000 \leq M_{\text{formaldehyde}} < 1500;$ $F4\ 1500 \leq M_{\text{formaldehyde}} \leq \text{Standard:F4}$	mg	F4	qualified

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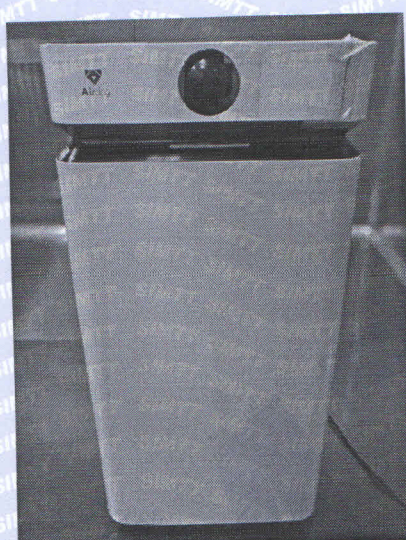
苏州市计量测试研究所

检测报告 Test Report

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100002480

9. 样品照片 (样品的标志、总体外观等照片)



产品名称: 贝昂空气净化器

产品型号: KJ800F-A8

额定电压: 220V~

额定频率: 50Hz

额定功率: 110W

产品编号:



由“贝昂”商标持有人苏州贝昂科技有限公司授权出品
 制造商: 苏州贝昂科技有限公司 地址: 苏州工业园区新城路188号
 客服热线: 400-002-6776 网址: www.beiangtech.com
 生产厂: 安徽贝昂科技有限公司 地址: 芜湖市三山区峨溪路15号

产品规格参数

型 号	KJ800F-A8	臭 氧 (ppb)	≤10 (安全标准≤50)
CADR _{颗粒物} (m³/h)	780	噪 声 (dB(A))	≤63
CADR _{气态} (m³/h)	320	额定功率 (W)	110
CCM _{颗粒物} /CCM _{气态}	P4/F4 ^{±1}	额定电压	220V~
净化能效等级 _{颗粒物}	高效级	额定频率	50Hz
净化能效等级 _{气态}	高效级	重 量 (kg)	19.7
机器尺寸 (m)	0.76 (H) * 0.38 (L) * 0.38 (W)		

以上参数执行标准为空气净化器国家标准GB/T 18801-2015及家用电器安全标准GB 4706.1-2005/GB 4706.45-2008。
 以上参数在额定电压/频率、温度25℃/湿度50%时测得。
 CCM_{颗粒物}是在试验条件下,以特定的粉尘颗粒浓度为采样物测得得出的,并以GB/T 18801-2015附录D规定的程序进行。
 CCM_{气态}是在试验条件下,以单一的气态污染物为目标物测得得出的,并以GB/T 18801-2015附录D规定的程序进行。

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检验检测报告

Test Report

报告编号:



100005837

产品名称
Product Name

空气净化器
Air purifier

生产单位
Manufacture

苏州贝昂科技有限公司
BeiAng AIR Tech Ltd

销售/使用单位
Sale/User

委托单位
Consigner

苏州贝昂科技有限公司
BeiAng AIR Tech Ltd

检验类别
Test Type

委托检测
Entrustment test

国家空气净化产品及气体检测仪器质量
监督检验中心 (江苏)

National Air Cleaner & Gas detect Production Quality Supervision
and Inspection Center (Jiangsu)



国家空气净化产品及气体检测仪器质量监督检验中心(江苏)

National Air Cleaner & Gas detect Production Quality Supervision and Inspection Center(Jiangsu)

检验检测报告 Test Report



100005837

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产品名称 Product Name	空气净化器 Air purifier				
规格型号 Specifications	KJ800F-X8	注册商标 Brand	—		
生产日期/批号 Production Date/Batch No.	—	抽查批次号 Batch Number	—		
检验检测类别 Test Type	委托检测	任务来源/委托书号 Being Tested from/Task No.	企业委托 Commercial Source/106632		
委托单位名称/地址 Client/Add	BeiAng Air Tech Ltd/No.175, Songbei Road, SIP, Suzhou City, Jiangsu Province, China				
销售企业名称/地址/联系电话/邮编 Sales/Add./Tel./P.C.	—/—/—/—				
生产企业名称/地址/联系电话/邮编 Manufacturer/Add./Tel./P.C.	BeiAng Air Tech Ltd/No.175, Songbei Road, SIP, Suzhou City, Jiangsu Province, China/—/—				
抽样日期 Sampling Date	—	抽样人员 Sampling Staff	—	样品数量 Sample Quantity	1
抽样基数 (产品进货/库存数) Sample Batch	—	样品等级 Grade	—	样品到达日期 Arrival Date	2021-04-09
样品接收状态 Sample Description	符合检验检测要求 Meet requirements		检验检测日期 Test Date	2021-05-07~2021-05-07	
备样量及封存地点 Sealing Address	—/—				
检验检测地点 Test Address	苏州市计量测试院·苏州工业园区娄阳路6号 Suzhou Institute of Metrology·6 Louyang Road Suzhou Industrial Park				
检验检测与判定依据 Test Standard and Methods	委托方指定检测方案 The client specifies the test plan				
检验检测结论 Test Conclusion	参见检验检测结果页 See the results pages  (承检机构公章或检验检测专用章) Stamp of Testing 签发日期: 2021-05-11 Signature date				
备注Note	—				

批准:
Approved by

万龙

审核:
Reviewed by

汪华

主检:
Tested by

吴振一



国家空气净化产品及气体检测仪器质量监督检验中心(江苏)
检验检测结果 Test Result

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➤ 颗粒物净化效率检测方案

Test Scheme for Fractional Efficiency of Partical Matter

1、自衰减测试

Natural decay efficiency test

1.1 将样品置于 30m³ 环境测试仓内, 样品调节至额定工作状态, 检验运作正常后, 关闭样品;

Place the sample in 30m³ environmental test chamber. Adjust the sample to the rated working state, and then switch off the sample when it works normally;

1.2 开启温湿度控制装置, 使仓内温度达到 (25±2) °C, 相对湿度达到 (50±10) %

Turn on the temperature and humidity control device to make the temperature in the bin reach (25±2) °C. The relative humidity is (50±10) %

1.3 使用环境空气作为颗粒物尘源, 开启循环风扇, 使用 TSI 扫描电迁移率粒径谱仪(SMPS-3938) 进行自衰减测试。仪器设置 64 通道, 每 2 分钟, 记录 14.6nm、51.4nm、101.8nm 通道颗粒物浓度, 连续记录 15 次, 30 分钟。

The ambient air was used as the dust source, the circulating fan was turned on, and the TSI scanning electromigration particle size spectrometer (SMPS-3938) was used for self attenuation test. The instrument was set with 64 channels, and the particle concentrations of 14.6nm, 51.4nm and 101.8nm channels were recorded every 2 minutes for 15 consecutive times for 30 minutes.

1.4 依据测试结果, 求得颗粒物 (14.6nm、51.4nm、101.8nm) 自衰减率;

According to the results, calculate the natural decay efficiency of particulate matter (14.6nm, 51.4nm, 101.8nm)

1.5 自衰减计算公式:

Calculation formula of natural decay efficiency:

$$\eta = \frac{c_0 - c_t}{c_0}$$

式中:

In the formula

η —颗粒物自衰减率, %

Natural attenuation efficiency of particulate matter, %

c_0 —t=0 时, 室内未开启样品, 颗粒物浓度, P/cm³

The initial concentration of required particle size the very beginning, P/cm³

c_t —在时间为 t 时, 室内未开启样品, 颗粒物浓度, P/cm³

The concentration of required particle size at time t, P/cm³

2、颗粒物净化效率测试

Particulate matter fractional efficiency

2.1 按照 1.1~1.2 步骤进行试验;

Follow steps 1.1~1.2



国家空气净化产品及气体检测仪器质量监督检验中心(江苏)

检验检测结果 Test Result

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2.2 使用环境空气作为颗粒物尘源,开启循环风扇,使用 TSI 扫描电迁移率粒径谱仪(SMPS-3938)进行测试。仪器设置 64 通道,测试 14.6nm、51.4nm、101.8nm 通道颗粒物初始浓度,开启样品至最高档位,每 2 分钟记录 14.6nm、51.4nm、101.8nm 通道颗粒物浓度,连续测试 15 次,30 分钟。

The ambient air was used as the dust source, the circulating fan was turned on, and the TSI scanning electromigration particle size spectrometer (SMPS-3938) was used to test. The instrument is set with 64 channels to test the initial concentration of particulate matter in 14.6nm, 51.4nm and 101.8nm channels, turn on the sample to the highest gear, record the concentration of particulate matter in 14.6nm, 51.4nm and 101.8nm channels every 2 minutes, and continuously test for 15 times for 30 minutes.

2.3 依据测试结果,求得样品去除颗粒物(14.6nm、51.4nm、101.8nm)的净化效率;

According to the results, calculate the fractional efficiency of particulate matter(14.6nm、51.4nm、101.8nm) for sample;

2.4 颗粒物净化效率计算公式:

Calculation formula for fractional efficiency of particulate matter

$$\eta' = \frac{c'_0 - c'_t}{c'_t}$$

式中:

In the formula

η' —颗粒物净化效率, %

Fractional efficiency of particulate matter for sample, %

c'_0 —t=0 时,室内未开启样品,颗粒物初始浓度, P/cm³

The initial concentration of required particle size the very beginning, P/cm³

c'_t —在时间为 t 时,室内开启样品,颗粒物浓度, P/cm³

The concentration of required particle size when the sample operates for t minutes, P/cm³

备注:整个检测过程中在样品出风口放置 2 层金属网,且金属网做接地处理

Note: during the whole testing process, two layers of metal mesh are placed at the air outlet of the sample, and the metal mesh is grounded

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检验检测结果 Test Result

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序号 No.	检验检测项目 Tested Items	检验检测结果 Test Results						
1	自衰减率 Natural Decay Efficiency	时间点 (min) Time	粒子浓度(P/cm ³) Particulate Concentration			自衰减率		
		14.6nm	51.4nm	101.8nm	14.6nm	51.4nm	101.8nm	
		0	4010	2440	7440	—	—	—
		2	4010	2610	7040	0.0%	-7.0%	5.4%
		4	3810	2300	7610	5.0%	5.7%	-2.3%
		6	2470	1640	7380	38.4%	32.8%	0.8%
		8	2900	1840	7000	27.7%	24.6%	5.9%
		10	3010	1860	7700	24.9%	23.8%	-3.5%
		12	3800	2150	6490	5.2%	11.9%	12.8%
		14	2900	1850	6730	27.7%	24.2%	9.5%
		16	2760	1730	7370	31.2%	29.1%	0.9%
		18	2990	1750	6800	25.4%	28.3%	8.6%
		20	1640	1500	7880	59.1%	38.5%	-5.9%
		22	2440	1580	6370	39.2%	35.2%	14.4%
		24	2390	1540	6510	40.4%	36.9%	12.5%
		26	1140	1690	5940	71.6%	30.7%	20.2%
28	2230	1640	6110	44.4%	32.8%	17.9%		
30	1500	1320	6050	62.6%	45.9%	18.7%		
2	颗粒物净化效率 Particulate Matter Fractional Efficiency	时间点 (min) Time	粒子浓度(P/cm ³) Particulate Concentration			净化效率		
		14.6nm	51.4nm	101.8nm	14.6nm	51.4nm	101.8nm	
		0	5600	2260	2540	—	—	—
		2	2740	838.5	1250	51.1%	62.9%	50.8%
		4	1380	382.4	627.7	75.4%	83.1%	75.3%
		6	1480	222	284	73.6%	90.2%	88.8%
		8	539.5	159.3	156.2	90.4%	93.0%	93.9%
		10	1250	127.5	76.6	77.7%	94.4%	97.0%
		12	619.9	0	51.1	88.9%	100.0%	98.0%
		14	341.7	31.9	0	93.9%	98.6%	100.0%
		16	246.3	31.9	25.5	95.6%	98.6%	99.0%
		18	227.8	0	0	95.9%	100.0%	100.0%
		20	341.7	0	0	93.9%	100.0%	100.0%
		22	0	0	0	100.0%	100.0%	100.0%
		24	0	0	0	100.0%	100.0%	100.0%
		26	0	0	0	100.0%	100.0%	100.0%
28	0	0	0	100.0%	100.0%	100.0%		
30	0	0	0	100.0%	100.0%	100.0%		



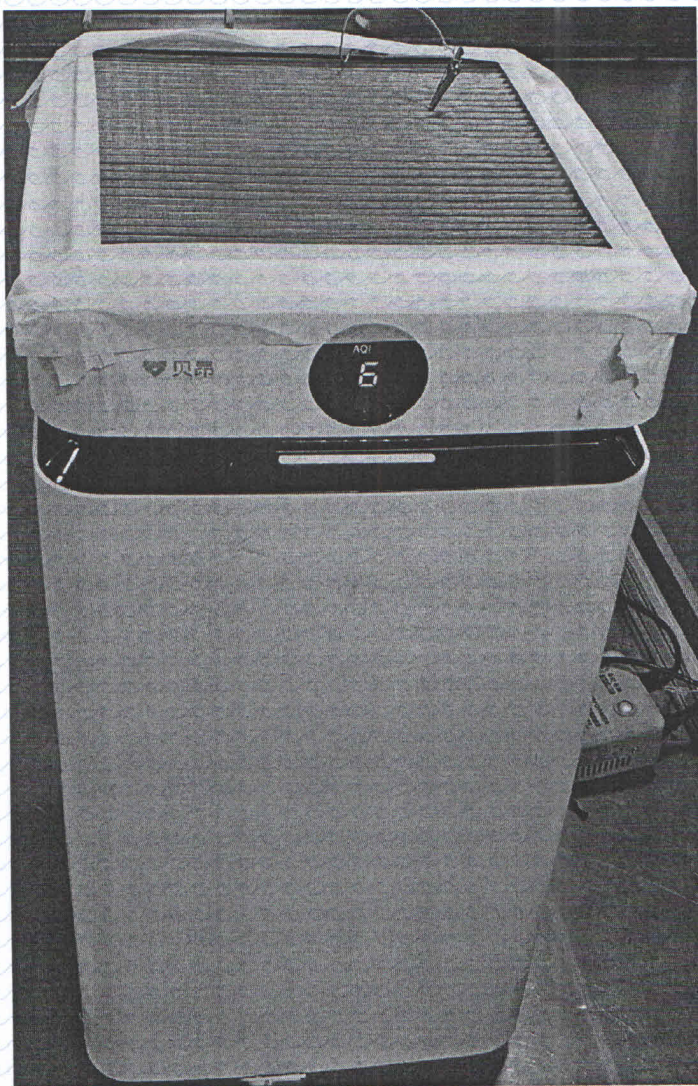
国家空气净化产品及气体检测仪器质量监督检验中心(江苏)
检验检测结果 Test Result

100005837

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➤ 样品照片

The photo of the sample



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注 意 事 项

Notice

1、检验检测报告无承检机构公章或检验检测专用章无效。

The test report is invalid without inspection organization stamp or special seal for test report on it.

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Test report is invalid with any alter.

5、对本报告如有异议，请于收到报告之日起十五天内提出。

Different opinions about this report should be reported to the test department within 15 days from the date of receiving the test report.

6、本检验检测报告仅对本次被测的样品负责。

For entrusted tests the responsibilities are undertaken for the delivered samples only.

地址：苏州市工业园区娄阳路 6 号 邮编：215121

ADD: 6 Louyang Road Suzhou Industrial Park, Postcode: 215121

监督电话 (Complaint TEL): 0512—65230843

业务电话 (Business TEL): 0512—65234770

传真 (FAX): 0512—65230844

网址 (Web): www.szjl.com.cn

检验检测机构 E-mail: szjl@szjl.com.cn

苏州工业园区娄阳路6号

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

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Applicant:	Silicon Valley Air Expert	Manufacturer:	Anhui BeiAng Air Tech Ltd.
Address:	2051 Junction Avenue, San Jose, CA 95164	Address:	No.15, Exi Rd., San Shan District, Wuhu, Anhui
Country:	USA	Country:	China
Party Authorized To Apply Mark:	Same as Manufacturer		
Report Issuing Office:	Intertek Testing Services Shanghai Limited		
Control Number:	<u>5011468</u>	Authorized by:	 for L. Matthew Snyder, Certification Manager



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Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

Standard(s):	Electrostatic Air Cleaners [UL 867:2011 Ed.5+R:07Aug2018]
	Electrostatic Air Cleaners [CSA C22.2#187:2020 Ed.5]
Product:	Air Purifier
Brand Name:	Airdog
Models:	KJ800F-X8

Silicon Valley Air Expert.

OZONE TEST REPORT

SCOPE OF WORK

Ozone Emissions Testing of Air Purifier for Model: KJ800F-X8

REPORT NUMBER

201029108GZU-001

ISSUE DATE

17-July-2021

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14

QUOTE NUMBER

QGZ201013032 & QGZ210408107

DOCUMENT CONTROL NUMBER

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

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SILICON VALLEY AIR EXPERT.

Report No.: 201029108GZU-001

Date: July 17, 2021

Contact Name: Yan Zhang

Address: 2051 Junction Ave #212, San Jose, CA 95131, USA

Phone: 408-912-1798

Email: info@airdogusa.com

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#187:2020 Ed.5], 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.

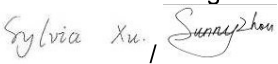
This report completes our evaluation covered by Intertek Project Number 201029108GZU which has been authorized by Intertek quote number: QGZ201013032 & QGZ210408107. If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the above signed.

OZONE EMISSIONS SUMMARY

FAN SPEED	FILTER(S)	O3/VOLTAGE SETTING	C(t) _{max} [ppm]
800 (Highest)	Pre-filter, ESP filter and carbon filter	-	0.004
Sleep (Lowest)	Pre-filter, ESP filter and carbon filter	-	0.007
Sleep (Lowest)	Pre-filter and carbon filter	-	0.001
Sleep (Lowest)	ESP Filter		0.022
The maximum Time-Weighted-Average: 0.021 ppmv			

Completed by: Sylvia Xu/Sunny Zhou
Engineer/Assistant

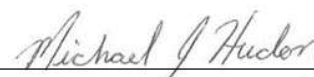
Title: Technical Manager

Signature: 

Date: July 17, 2021

Reviewed by: Michael Hudon
Sr. Project Engineer

Title:

Signature: 

Date: 20 August 2021

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SECTION 2

INDEX

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3: Unit under test information	4
4: Peak test	5
5: Max Test(s) Information	7
6: Appendices	11
7: Revisions	14

CHAMBER EQUIPMENT INFORMATION

TEST EQUIPMENT LIST

Instrument	Model	Intertek Ctrl #	Cal Due Date
Teledyne – Advanced Pollution Instrumentation Ozone Calibrator	T703	SA054-14	17-Dec-2021
Teledyne – Advanced Pollution Instrumentation Ozone Monitor	T400	SA054-17	*
Teledyne – Advanced Pollution Instrumentation Ozone Monitor	T400	SA054-13	*
Vaisala – Temperature & Humidity Transducer	H2120047	SA054-12	3-Jun-2022
QI XING HUA CHUANG – Mass flowmeter	D07-23FM	SA054-12-03	8-Jul-2022

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

SECTION 3

UNIT UNDER TEST INFORMATION

MODEL INFORMATION			
Manufacturer:	Silicon Valley Air Expert	Pre-Filter:	Yes
Model Number:	KJ800F-X8	HEPA Filter:	No
Production/Prototype/Design	Prototype	ESP Filter:	Yes
Fan Speeds:	6	Carbon Filter:	Yes
O3/Voltage Settings:	NA	UV Light:	No
O3 Monitor:	NA	Ionizer:	Yes
Model Notes:	Brand Name: Airdog 6 Fan Speed: Sleep (Lowest), 300, 500, 600, 700 and 800 (Highest) Two Pre-filters and ESP filter: (This product can work while these filters are removed). Carbon filter: (This product can work while this filter is removed with the interlock being bypassed) Ionizer is filter type. Auto mode: (The fan speed of auto mode changes between that of mode 300 and 800).		

RUN-IN TEST			
FIRST SAMPLE			
Run-in Start:	June 24, 2021 15:00	Run-in End:	June 26, 2021 15:00
Run-in Temperature:	25±5°C	Tracking Number	S201029108-001
Serial Number:	NA		
Sample Notes:			
SECOND SAMPLE			
Run-in Start:	NA	Run-in End:	NA
Run-in Temperature:	NA	Tracking Number	S201029108-002
Serial Number	NA		
Sample Notes:			

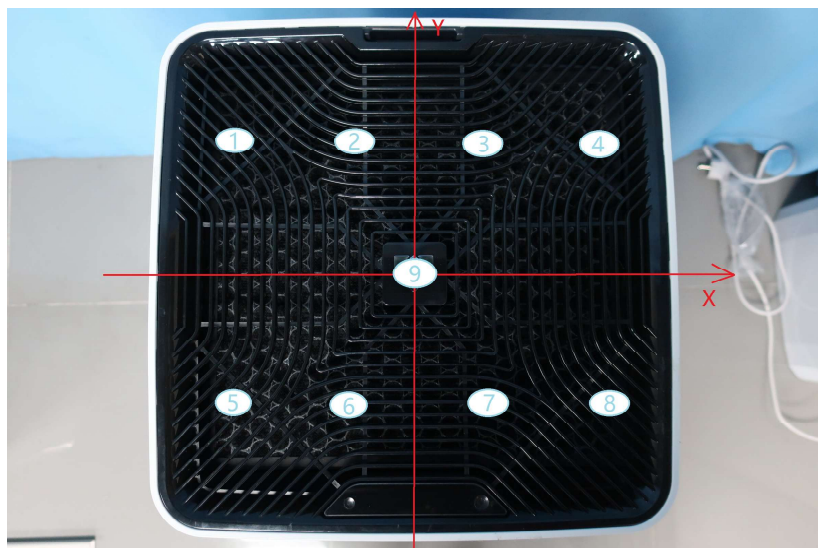
SECTION 4

PEAK OZONE TEST

GRILL AND AIR PERIPHERY DIMENSIONS

		Date of Test:	June. 29, 2021 July. 01, 2021
Grill:	Length: 380mm Width: 380mm	Air Periphery:	Length: 380mm Width: 380mm
Estimated Grill Area:	Area: 144,400 mm ²	Est. Air Periphery Area:	Area: 144,400 mm ²
Notes:			

PEAK LOCATION



Loc.	X	Y
-	[mm]	[mm]
1	-142.5	95
2	-47.5	95
3	47.5	95
4	142.5	95
5	-142.5	-95
6	-47.5	-95
7	47.5	-95
8	142.5	-95
9	0	0
* Location measurements are coordinates in reference to the center point.		

PEAK OZONE CONCENTRATIONS (ppm)						
Location	With Filter(s)		Without ESP Filter(s) (With Pre-filter/Carbon Filter)		Without Pre-filter/Carbon Filter(s) (With ESP)	
	800 (Highest)	Sleep (Lowest)	800 (Highest)	Sleep (Lowest)	800 (Highest)	Sleep (Lowest)
1	0.0011	0.0026	-	0.0003	-	0.0021
2	0.0008	0.0027	-	0.0005	-	0.0021
3	0.0006	0.0027	-	0.0002	-	0.0026
4	0.0007	0.0028	-	0.0002	-	0.0023
5	0.0003	0.0004	-	0.0006	-	0.0012
6	0.0004	0.0007	-	0.0001	-	0.0011
7	0.0010	0.0008	-	0.0002	-	0.0017
8	0.0007	0.0008	-	0.0013	-	0.0013
9	0.0007	0.0013	-	0.0001	-	0.0018

Note: Result is minus background.

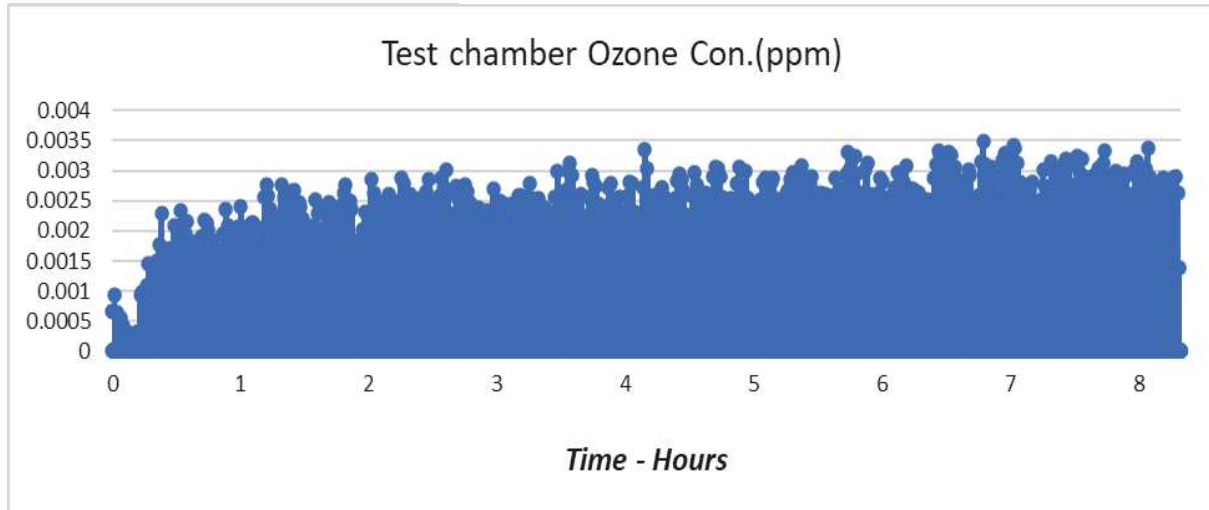
SECTION 5

MAX OZONE TEST

START DATE OF TEST: 01- July -2021

SAMPLE: S201029108-001

FAN SPEED: 800 (Highest)

FILTER(S): Pre-filter, ESP filter and carbon filter installed
Ionizer on

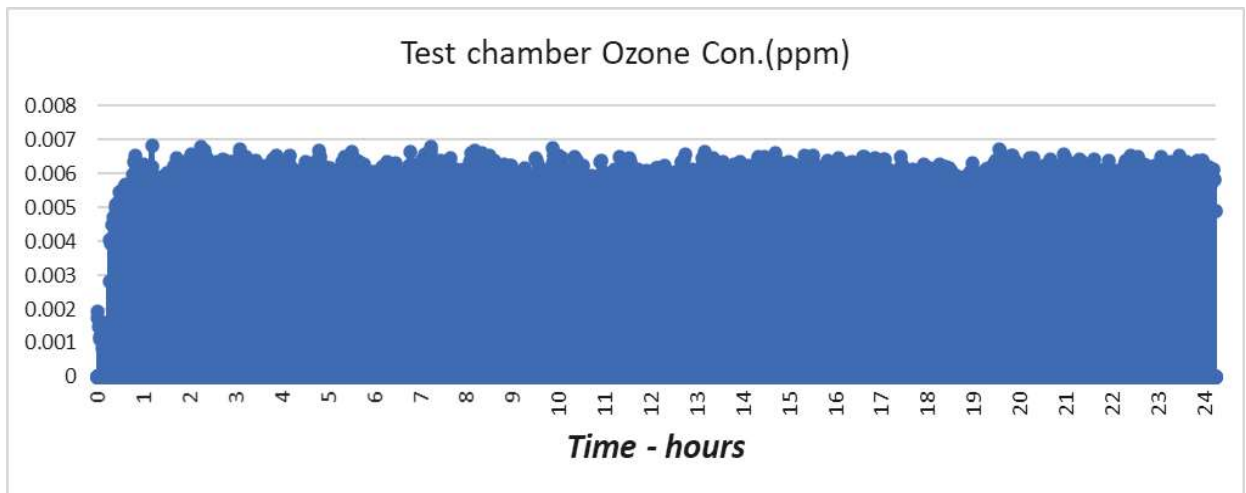
MAXIMUM OZONE TEST RESULTS							
	UL Ref.	Pass/Fail	Mean	Min	Max	Delta	Units
Background C(t) O3:	40.4.3	PASS	0.000	0.000	0.001	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.003	0.001	0.004	0.003	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.003	0.001	0.004	0.003	[ppm]
Chamber Temperature:	40.4.2	PASS	24.03	23.63	24.47	0.84	[degC]
Chamber Humidity:	40.4.2	PASS	52.87	51.37	54.58	3.21	[%RH]
Chamber Static Pressure:	-	PASS	4.99	4.50	5.80	1.30	[Pa]
Chamber Supply Air Flow:	-	-	34.00	33.98	34.02	0.04	[m3/h]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	40.4.6	8 hours					

NOTES: Peak Test Location 1.

According to a) of 40.4.6, 24 hours testing is not needed.

MAX OZONE TEST

START DATE OF TEST: 02-July-2021
 SAMPLE: S201029108-001
 FAN SPEED: Sleep (Lowest)
 FILTER(S): Pre-filter, ESP 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	0.002	[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	23.77	23.37	24.20	0.83	[degC]
Chamber Humidity:	40.4.2	PASS	52.82	51.51	53.85	2.34	[%RH]
Chamber Static Pressure:	-	PASS	4.99	4.00	6.50	2.50	[Pa]
Chamber Supply Air Flow:	-	-	34.00	33.96	34.02	0.06	[m3/h]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	40.4.6	24 hours					

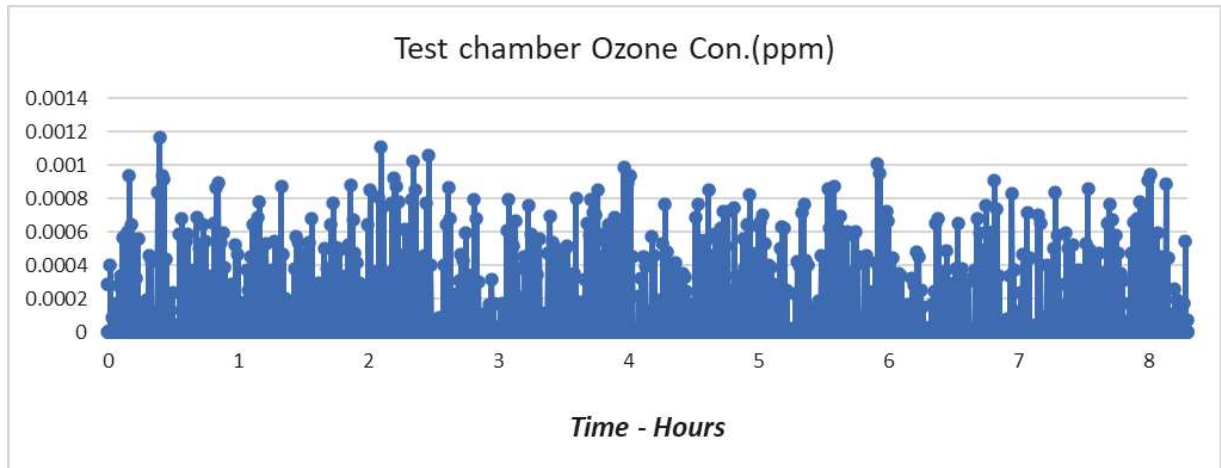
NOTES: Peak Test Location 4.

MAX OZONE TEST

START DATE OF TEST: 05-July-2021

SAMPLE: S201029108-001

FAN SPEED: Sleep (Lowest)

FILTER(S): Pre-filter and carbon filter installed and ESP removed
Ionizer on

MAXIMUM OZONE TEST RESULTS							
	UL Ref.	Pass/Fail	Mean	Min	Max	Delta	Units
Background C(t) O3:	40.4.3	PASS	0.000	0.000	0.001	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.001	0.000	0.001	0.001	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.001	0.000	0.001	0.001	[ppm]
Chamber Temperature:	40.4.2	PASS	23.72	23.31	24.16	0.85	[degC]
Chamber Humidity:	40.4.2	PASS	53.27	52.04	54.35	2.31	[%RH]
Chamber Static Pressure:	-	PASS	4.99	4.60	5.50	0.90	[Pa]
Chamber Supply Air Flow:	-	-	34.00	33.98	34.02	0.04	[m3/h]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	40.4.6	8 hours					

NOTES: Peak Test Location 8.

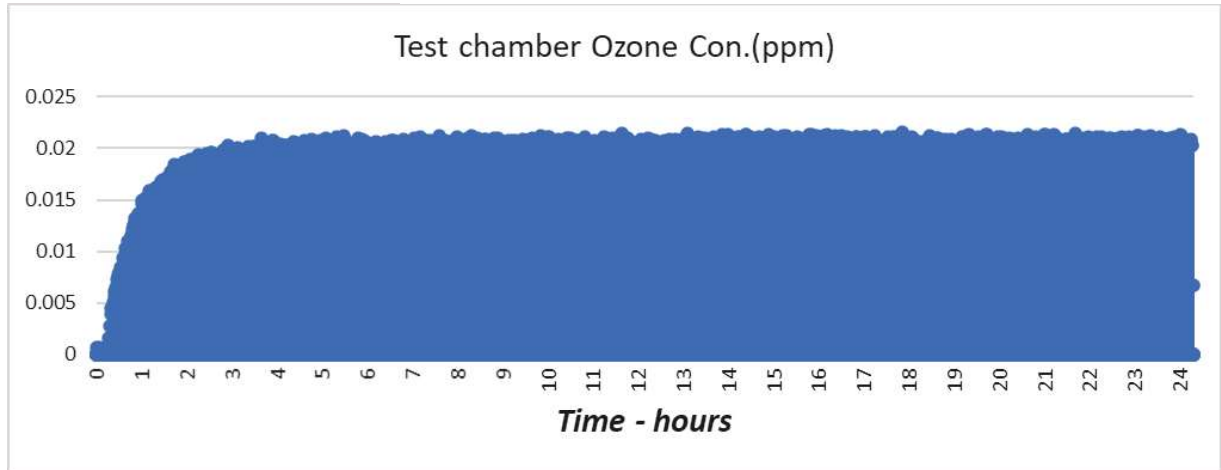
According to a) of 40.4.6, 24 hours testing is not needed.

MAX OZONE TEST

START DATE OF TEST: 03-July-2021

SAMPLE: S201029108-001

FAN SPEED: Sleep (Lowest)

FILTER(S): ESP 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	0.000	0.000	0.001	0.001	[ppm]
Test 1min C(t) O3:	40.1.2	PASS	0.022	0.002	0.022	0.020	[ppm]
Test 5min C(t) O3:	40.1.2	PASS	0.021	0.002	0.022	0.020	[ppm]
Chamber Temperature:	40.4.2	PASS	23.75	23.36	24.18	0.81	[degC]
Chamber Humidity:	40.4.2	PASS	52.83	51.52	53.93	2.41	[%RH]
Chamber Static Pressure:	-	PASS	4.99	4.10	5.80	1.70	[Pa]
Chamber Supply Air Flow:	-	-	34.00	33.97	34.02	0.05	[m3/h]
Required to Test 2nd Sample:	40.1.1	NO					
Test Duration:	40.4.6	24 hours					

NOTES: Peak Test Location 3.

0 to 8-hour Time-Weighted-Average: 0.019 ppmv

8 to 16-hour Time-Weighted-Average: 0.021 ppmv

16 to 24-hour Time-Weighted-Average: 0.021 ppmv

SECTION 6**APPENDIX****DATA FILES**

TEST NAME	RAW DATA FILE
Half Life Test	RawData-Halflife-2021-06-29.xls
Max Ozone: 800 w/ Filter	RawData-Max-Filter-800.xls
Max Ozone: Sleep w/ Filter	RawData-Max-Filter-Sleep.xls
Max Ozone: Sleep w/o ESP Filter	RawData-Max-wo ESP 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-S201029108-001&S201029108-002.pdf
Chain of Custody: Sample 2	COC-S201029108-001&S201029108-002.pdf

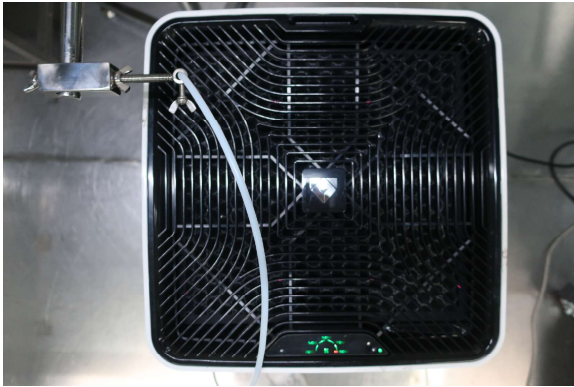
UUT PHOTOGRAPHS

UUT

No Nameplate

Nameplate

UUT PHOTOGRAPHS: PEAK TEST



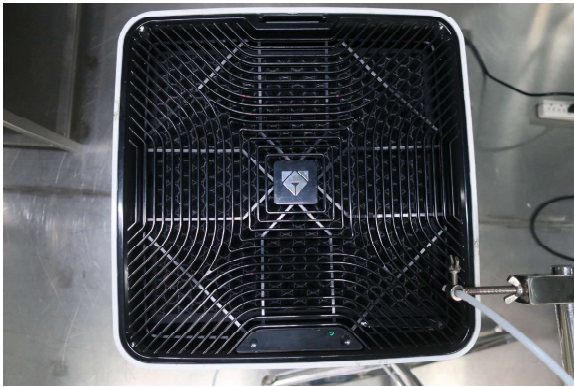
Location 1

800 w/ FILTER



Location 4

Sleep w/ FILTER



Location 8

Sleep w/o ESP FILTER



Location 3

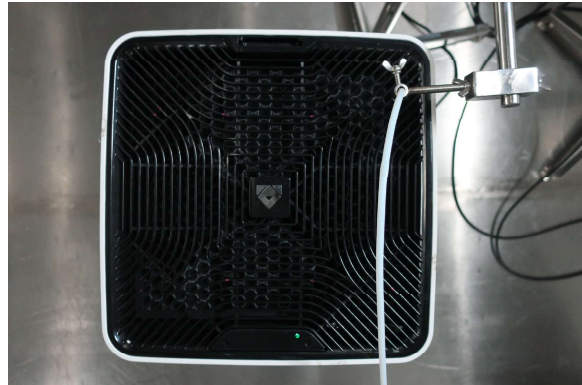
Sleep w/o FILTER

UUT PHOTOGRAPHS: MAX OZONE TESTS



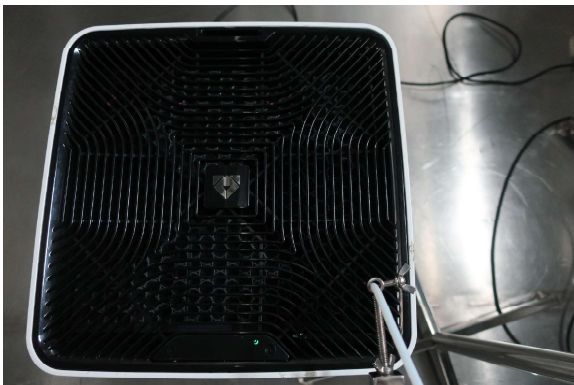
Location 1

800 w/ FILTER



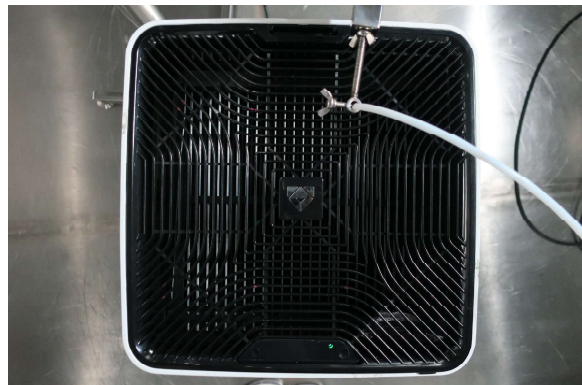
Location 4

Sleep w/ FILTER



Location 8

Sleep w/o ESP FILTER



Location 3

Sleep w/o FILTER

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



Test Report

Report No:



100006691

Product Name

Air purifier

Manufacturer

Sales

Client

BeiAng Air Tech Ltd.

Test Type

Commission test

National Air Cleaner & Gas detect Production Quality Inspection Center (Jiangsu)



苏州市计量测试院

Suzhou Institute of Metrology

检验检测报告 Test Report

共2页第1页 Page No:2-1



100006691

产品名称 Product Name	空气净化器				
规格型号 Specifications	KJ800F-X8		注册商标 Brand	—	
生产日期/批号 Production Date/Batch No.	—		抽查批次号 Batch Number	—	
检验检测类别 Test Type	委托检测		任务来源/委托书号 Being Tested from/Task No.	Commercial Source/107327	
委托单位名称/地址 Client/Add	苏州贝昂科技有限公司 BeiAng Air Tech Ltd./苏州工业园区淞北路175号 Building 1, No. 175 North Song Road, Suzhou Industrial Park				
销售企业名称/地址/联系电话/邮编 Sales/Add./Tel./P.C.	—/—/—/—				
生产企业名称/地址/联系电话/邮编 Manufacturer/Add./Tel./P.C.	—/—/—/—				
抽样日期 Sampling Date	—	抽样人员 Sampling Staff	—	样品数量 Sample Quantity	1
抽样基数 (产品进货/库存数) Sample Batch	—	样品等级 Grade	—	样品到达日期 Arrival Date	2022-01-06
样品接收状态 Sample Description	符合检验要求		检验检测日期 Test Date	2022-01-10~2022-01-14	
备样量及封存地点 Sealing Address	—/—				
检验检测地点 Test Address	No. 6 louyang Road, Suzhou Industrial Park				
检验检测与判定依据 Test Standard and Methods	clients delegation				
检验检测结论 Test Conclusion	— (承检机构公章或检验检测专用章) Stamp of Testing 签发日期: 2022-01-18 Signature date				
备注Note	—				

批准: 厉龙
Approved by审核: 韦思译
Reviewed by主检: 晖亮
Tested by



Suzhou Metrology and Testing Institute

Test Result

100006691

Page No:2-2

No.	Test Items	Unit	Technical Requirements	Result	Single Conclusion
1	NO	ppb	—	0.2	Measured Data
2	NO ₂	ppb	—	0.2	Measured Data
Remarks		Sample at 5cm of air outlet			

Blank Below



注 意 事 项

Notice

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6、本检验检测报告仅对本次被测的样品负责。

For entrusted tests the responsibilities are undertaken for the delivered samples only.

地址：苏州市工业园区娄阳路6号 邮编：215121

ADD: 6 Louyang Road Suzhou Industrial Park, Postcode: 215121

监督电话 (Complaint TEL) : 0512—65230843

业务电话 (Business TEL) : 0512—65234770

传真 (FAX) : 0512—65230844

网址 (Web) : www.szjl.com.cn

检验检测机构 E-mail: szjl@szjl.com.cn



QUALITY MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 04621Q15401R3M

We hereby certify that the organization:
BEIANG AIR TECH LTD.

Unified social credit code: 913205946933721487

is in conformity with Quality Management System Standard:
GB/T19001-2016 / ISO9001:2015

The certificate is valid to the following product(s)/service:
**Research & Development and Assembling of Air
Purifiers; Sales of Home Appliances**

Registration Address/ Physical Address: Building 1, No. 175, Songbei Road, Suzhou
Industrial Park, Jiangsu Province, P. R. China

Date of Issue: 2021-07-22

Date of Expiry: 2024-07-21

Date of Initial Issue: 2012-08-23

Issued By



中国认可
国际互认
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MANAGEMENT SYSTEM
CNAS C046-M



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or search the website of certification body: www.hicchina.com.cn.
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the certificate shall only be valid when used in conjunction with the Notice Letter of
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audit report can obtain from HIC website: www.hicchina.com.cn.

Beijing Head International Certification Co., Ltd.

Address: Room 701, Building 7, No. 19, Beiyuan East Road, Chaoyang District, Beijing, P.R. China (100012)

ISO 9001



ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 04621E11915R3M

We hereby certify that the organization:
BEIANG AIR TECH LTD.

Unified social credit code: 913205946933721487

is in conformity with Environmental Management System Standard:
GB/T24001-2016 / ISO14001:2015

The certificate is valid to the following product(s)/service:
**Research & Development and Assembling of Air
Purifiers; Sales of Home Appliances and Related
Management Activities**

Registration Address/ Physical Address: Building 1, No. 175, Songbei Road, Suzhou
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Date of Initial Issue: 2012-09-20



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Beijing Head International Certification Co., Ltd.

Address: Room 701, Building 7, No. 19, Beiyuan East Road, Chaoyang District, Beijing, P.R. China (100012)

ISO14001

DENTDEAL Produkt & Service GmbH
Alte Straße 68
94034 Passau

2021-09-07

PRÜFBERICHT / TESTREPORT

Proben-Nr. / <i>sample id number</i> :	SN 32758	More detailed description see next pages
Prüfprodukt / <i>test sample</i> :	Airdog X8; S/N: BAKGF88A043167	
Prüfungsnummer / <i>test number</i> :	2021-2379, 2021-2381	
Auftraggeber / <i>client</i> :	DENTDEAL Produkt & Service GmbH	
Hersteller / <i>manufacturer</i> :	keine Angaben / <i>no information</i>	
Auftragsdatum / <i>date of order</i> :	2021-07-14	
Prüfzeitraum / <i>test period</i> :	2021-08-30 - 2021-08-31 (Coliphage <i>phi</i> X174, Wirksamkeitstest / <i>efficacy test</i>)	
Prüfmethode / <i>test method</i> :	Wirksamkeit einer Raumlufthdekontamination in Bezug auf eine Keimreduktion von aerosolisierten Keimen in der Raumlufth / <i>Efficacy of a room air decontamination in relation to a microorganism reduction of aerosolized microorganisms in the room air</i>	
	Umgebungsuntersuchung / <i>Environmental investigation</i> (SOP 11-001)	
	Kultivierung von Bakteriophagen / <i>Cultivation of bacteriophages</i> (SOP 05-022)	
Information / <i>information</i> :	-	

Identifizierung der Probe / identification of the sample

Proben Nr. / <i>sample number</i> :	SN 32758
Prüfprodukt / <i>test sample</i> :	Airdog X8
Gerätenummer / <i>device no.</i> :	S/N: BAKGF88A043167
Lieferdatum / <i>date of delivery</i> :	2021-07-19
Vernebler / <i>nebulizer</i> :	Präzisionsvernebler Typ Typhoon (Ausbringung Prüfkeimsuspension) / <i>precision nebulizer type Typhoon (fogging of suspension of the test microorganisms)</i>
Prüfkeim / <i>test microorganism</i> :	Coliphage phi X174
Information / <i>information</i> :	-
Bestimmungsgemäße Anwendungsart gemäß Herstellerangaben / <i>intended use according to the manufacturer</i> :	Dekontamination von Raumluft mittels Ionisations-Elektrode, Plattensammler und unterstützender Wirkung verschiedener Filter (Luftfilter and Aktiv-Kohle Filter) / <i>Decontamination of room air by means of a ionization electrodes, record collector and the supportive effect of filters (air filter and activated carbon filter)</i>

Foto des Prüfproduktes /
picture of the test sample:



Abb. 1 / *fig. 1*: Airdog X8

Bestandteile des Prüfgerätes Airdog X8 / Components of the test device Airdog X8

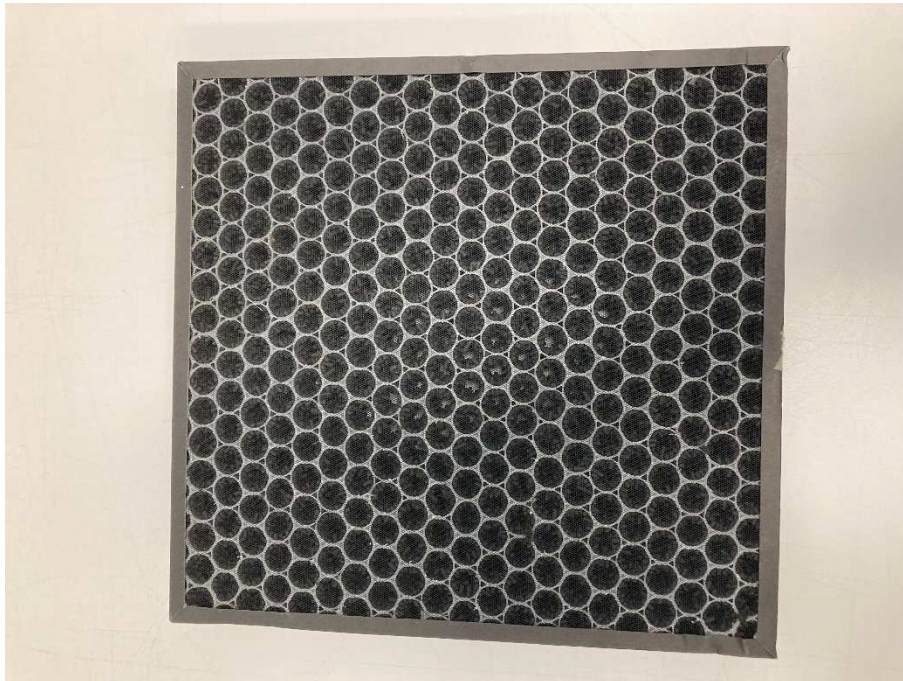


Abb. 2 / fig. 2: Aktiv-Kohle Filter / *activated carbon filter*



Abb. 3 / fig. 3: Plattensammler / *plate collector*



Abb. 4 / fig. 4: Ionisations-Elektrode / *ionization electrode*



Abb. 5 / fig. 5: Luftsensord / *air sensor*

Übersicht über den Prüfaufbau / overview of the test setup



Abb. 6 / fig. 6: Prüfprodukt Airdog X8 (S/N: BAKGF88A043167) während der Testphase / test sample Airdog X8 (S/N: BAKGF88A043167) during the test phase



Abb. 7 / fig. 7: Präzisionsvernebler Typ Typhoon zur Ausbringung des Aerosols / *precision nebulizer type Typhoon for fogging of the aerosols*

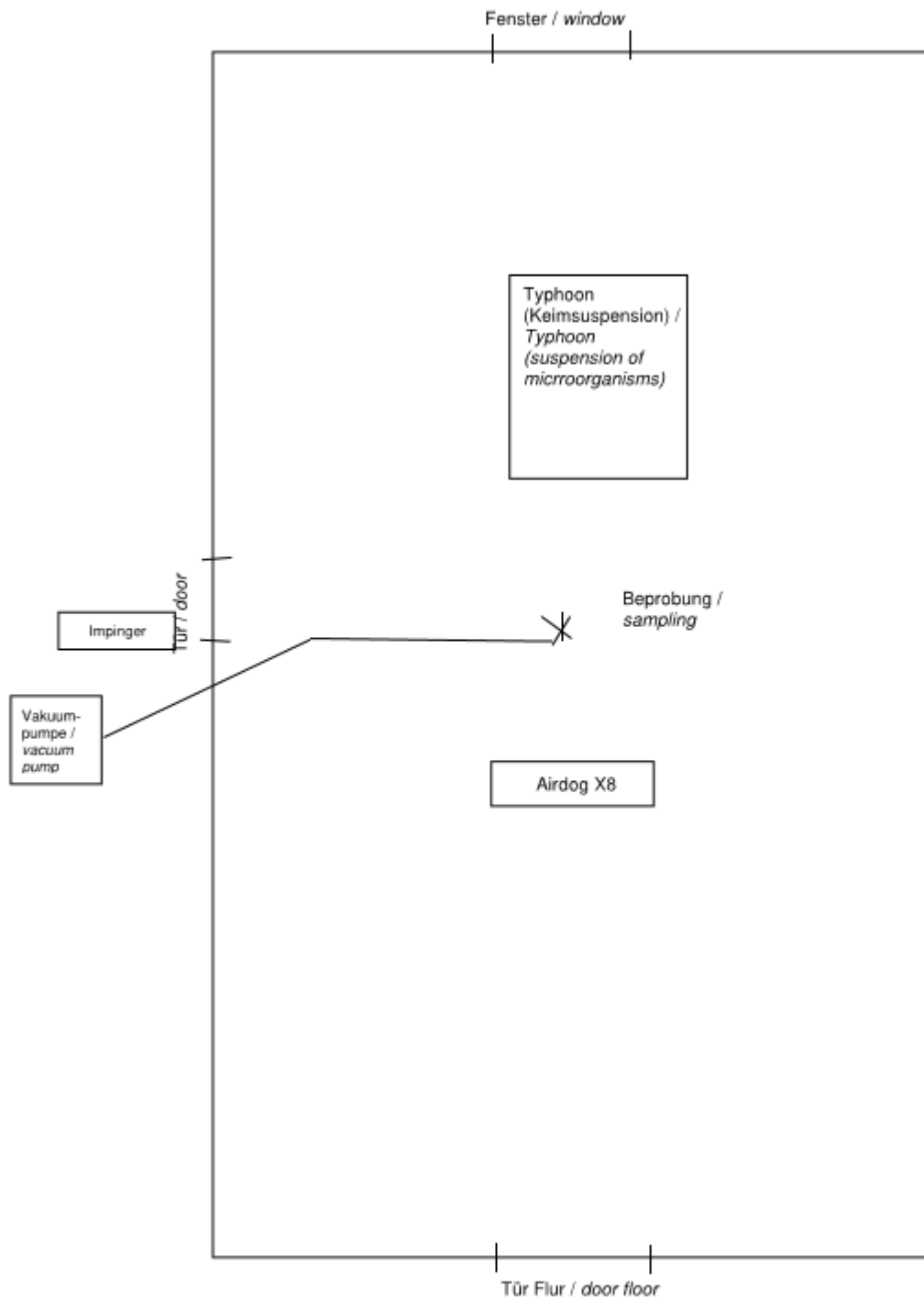


Abb. 8 / fig. 8: Skizze des Prüfaufbaues (Impinger verbunden mit Vakuumpumpe, vom Impinger führt eine Ableitung zum Beprobungspunkt in Prüfraum. Für jeden Beprobungszeitpunkt wurde ein neuer Impinger mit eigener Ableitung verwendet) /
 Sketch of the test setup (impinger connected to a vacuum pump, a derivation leads from the impinger to the sampling point in the test room. A new impinger with its own derivation was used for each sampling time)

Prüfverfahrensbeschreibung / description of the test method

Prüfmethode / *test method*: Wirksamkeit einer Raumluftdekontamination in Bezug auf eine Keimreduktion von aerosolisierten Keimen in der durch das Gerät geleiteten Luft / *Efficacy of a room air decontamination in relation to a microorganism reduction of aerosolized microorganisms in the air passed through the device.*

Testmaterialbehandlung / *sample processing*: Die Prüfung erfolgte im Anlieferungszustand / *sample(s) were tested as delivered*

Prüfumfang / *scope of testing*: Der Prüfraum mit einem Rauminhalt von 75m³ wurde mit dem Gerät Airdog X8 auf niedrigster Stufe betrieben (300m³/h). Anschließend erfolgte mit einem Präzisionsvernebler Typhoon die Verneblung des Prüfkeims (Coliphage *phi X174* (Microviridae, einzelsträngige DNA, 27 Nanometer Capsid-Durchmesser, unbehüllt). Es wurden 750ml Keimsuspension binnen 25 Minuten ausgebracht.

Anschließend erfolgt die Bestimmung der Keimkonzentration in der Luft zum Zeitpunkt T0.

In dieser Anordnung kann eine direkte Wirkung des Testgerätes auf das später ausgebrachte Keimaerosol beurteilt werden.

Nach der Einbringung des Keimaerosols in den Prüfraum wurde die Konzentration der Prüfkeime mittels Impinger Methode verfolgt.

Als Referenz dienten Experimente bei denen Coliphage *phi X174* auf gleiche Weise ausgebracht wurde wie im Wirksamkeitsexperiment selber. Das Testgerät Airdog X8 wurde für das Referenzexperiment nicht verwendet.

Anschließend wurden in beiden Experimenten die Keimzahlen der Prüfkeime mittels Impinger Methode in der austretenden Luft bestimmt.

Mit diesem Impinger-System kann die Keimzahl pro Volumen Luft bestimmt werden. Zur besseren Vergleichbarkeit der Ergebnisse werden die für die Impinger-Sammelflüssigkeit ermittelten Keimgehalte pro ml für das jeweilige Volumen berechnet, das während der Probenahme durch den Impinger gesaugt wurde, was zu einem Keimgehalt pro m³ Luft führt.

Berechnung: PFU/ml x 20ml (Volumen der Impingerflüssigkeit) / Probenvolumen [l] (eingestellt auf 125l pro 10 Minuten Beprobungszeit) x 1000 [l] (Berechnung für einen m³)

Der sterile Impinger wurde mit 20ml Sammelflüssigkeit gefüllt, die aus 0,2% Gelatine, 3,0% Trypton-Soja-Bouillon (TSB), 0,15% Kaliumphosphat (wasserfrei) und 0,1ml (0,01%) Silikonemulsion M Antischaummittel 30, rein bei einem pH von 7,3 besteht.

Die Verwendung eines solchen nährstoffreichen Mediums ist vorteilhaft für die Kultivierung geschädigter Mikroorganismen von gesundheitlicher Relevanz. Ein Anstieg des Keimgehaltes ist basierend auf früheren Erfahrungen während des Messzeitraums für die hier verwendeten Keime nicht zu befürchten. Die Kultivierung einer Subkultur wurde direkt nach der Probenahme begonnen.

Pro Messung (10 min) wurden 125l Luft pro Impinger von einer Vakuumpumpe angesaugt. Die notwendige Einstellung der Pumpe wurde mit einem Durchflussmesser vorgenommen.

Die Proben wurden mittels Silikonschläuchen aus dem umschlossenen Raum gesaugt.

Nach Beendigung der Probenahmezeit (je Probe 10 Minuten) wurden die in der Impingerlösung enthaltenen Keime kultiviert.

Bakteriophagen wurden entsprechend SOP 05-022 bearbeitet und als „Plaque Forming Units“ (PFU) bestimmt.

Die Ergebnisse der Bestimmung des Gehalts an plaquebildenden Einheiten (PFU) in der Raumluft mittels Impinger Methode sind in den nachstehenden Tabellen gezeigt. /

The test room with a volume of 75m³ was operated with the device Airdog X8 at the lowest level (300m³ / h).

The test germ (Coliphage phi X174 (Microviridae, single-stranded DNA, 27 nanometer capsid diameter, uncovered) was then nebulized with a precision nebulizer Typhoon. 750ml of germ suspension were applied within 25 minutes.

The germ concentration in the air is then determined at time T0

In this arrangement, a direct effect of the test device on the germ aerosol that is applied later can be assessed.

After the germ aerosol had been introduced into the test room, the concentration of the test germs was monitored using the impinger method

Experiments in which Coliphage phi X174 was applied in the same way as in the efficacy experiment itself served as reference. The Airdog X8 test device was not used for the reference experiment.

In both experiments, the germ count of the test germs was then determined in the exiting air using the impinger method

With this impinger system, the number of germs per volume of air can be determined. For better comparability of the results, the germ content per ml determined for the impinger collection liquid is calculated for the respective volume that was sucked through the impinger during sampling, which leads to a germ content per m³ air.

Calculation: PFU/ml x 20ml (volume of the impinger liquid) / sample volume [l] (set to 125l per 10 minutes of sampling time) x 1000 [l] (calculation for one m³)

The sterile impinger was filled with 20ml of collecting liquid consisting of 0.2% gelatin, 3.0% tryptone soy broth (TSB), 0.15% potassium phosphate (anhydrous) and 0.1ml (0.01%) Silicone emulsion M antifoam agent 30, pure at a pH of 7.3.

The use of such a nutrient-rich medium is advantageous for the cultivation of damaged microorganisms of health relevance. Based on previous experience, an increase in the germ content is not to be feared for the germs used here during the measurement period. The cultivation of a subculture was started immediately after the sampling.

For each measurement (10min) 125l of air per impinger were sucked in by a vacuum pump. The necessary setting of the pump was made with a flow meter.

The samples were sucked out of the foil-enclosed space on the outlet side of the device using silicone hoses.

After the end of the sampling time (10 minutes per sample), the germs contained in the impinger solution were cultivated.

Bacteriophages were processed according to SOP 05-022 and identified as "Plaque Forming Units" (PFU). The results of the determination of the content of plaque-forming units (PFU) in room air using the impinger method are shown in the tables below.

Prüfanforderung /
test requirement:

Reduktion der Keimzahl im Vergleich zum Referenzversuch für Bakteriophagen. / Reduction of the number of germs in comparison to the reference experiment for bacteriophages.

**Testergebnisse zur Messung aerogener Desinfektionsverfahren /
results of the measuring airborne disinfection processes**

Prüfzeitraum / <i>test period</i> :	2021-08-30 - 2021-08-31 (Coliphage <i>phi</i> X174, Wirksamkeitstest / <i>efficacy test</i>)
Prüfprodukt / <i>test sample</i> :	Airdog X8; S/N: BAKGF88A043167
Prüfphage / <i>test phage</i> :	Coliphage <i>phi</i> X174
Bakterienwirt / <i>bacterial host</i> :	<i>Escherichia coli</i> ATCC 13706
Sammelflüssigkeit / <i>bulk liquid</i> :	0,2% Gelantine, 3,0% Tryptone-Soja-Bouillon, 0,15% Kaliumphosphat und 0,01% Silikonemulsion M Antischaumittel 30 / <i>0.2% gelatin, 3.0% tryptone soy broth, 0.15% potassium phosphate and 0.01% silicone emulsion M antifoam 30</i>
Volumen der Sammel­flüssigkeit / <i>volume of the bulk liquid</i> :	20ml
Selektivagar / <i>selective agar</i> :	CSA CaCl ₂ / TSA CaCl ₂
Herstellung der Keimsuspension / <i>preparation of the microorganism suspension</i> :	Herstellung der Keimsuspension gemäß SOP 05-022. / <i>Preparation of the microorganism suspension according to SOP 05-022.</i>
Prüfsuspension zur Kontamination / <i>test suspension for contamination</i> :	Die Phagensuspension von Coliphage <i>phi</i> X174 mit einer Anfangskonzentration von 10 ⁹ /ml wurde auf eine Konzentration von 10 ⁶ /ml mit Wasser standardisierter Härte (WSH) verdünnt. / <i>The phage suspension of coliphage phi X174 with an initial concentration of 10⁹/ml was diluted to a concentration of 10⁶/ml with Water of standardized hardness (WSH).</i>
Kontaminationsmethode / <i>contamination method</i> :	Die 750ml Phagensuspension mit der Konzentration von 10 ⁶ pro ml wurde 25 Minuten lang vernebelt, um die Bakteriophagen in der gesamten Raumluft des Prüfraumes zu verteilen. / <i>The 750ml phage suspension with a concentration of 10⁶ per ml was fogged for about 25 minutes in order to distribute the bacteriophages throughout the room air in the test room.</i>
Beprobungszeit / <i>sampling time</i> :	10min je Beprobungszeitpunkt / <i>10min per sampling time point</i>

Zeit nach der Keimsuspensionsverneblung /
*time after the microorganism suspension
 nebulization:*

T0, 10, 20, 30, 60 und / *and* 120 Minuten / *minutes*

Prüfbedingungen / *test conditions:*

21°C ± 2°C Versuchstemperatur / *test temperature*
 57% rel. Luftfeuchte / *57% rel. humidity*

Parameter-Temperatur, rel. Luftfeuchte und
 H₂O₂-Konzentration wurden mit Geräten der
 Fa. Dräger aufgezeichnet. Das Volumen des
 Prüfraumes beträgt 75m³ /

*Parameter temperature, rel. humidity and
 H₂O₂-concentration were recorded with devices from
 Fa. Dräger. The volume of the test room is 75m³.*

Kultivierung der Sammellösung /
cultivation of the bulk solution:

1ml und 0,1ml und die Verdünnungen 10⁻¹ und 10⁻²
 der Sammelflüssigkeit wurden untersucht. Dafür
 wurde zu Teil 1 Sammelflüssigkeit 3 Teilen
 Bakteriensuspension und Teil 1 0,05ml CaCl₂
 gegeben. Nach 10min Einwirkzeit wurde die Probe
 mit vorgewärmten Overlay Agar gemischt und auf
 CSA CaCl₂ Agar überschichtet. /

*1ml and 0.1ml and the 10⁻¹ and 10⁻² dilutions of the
 bulk fluid were examined. For this purpose, 3 parts
 bacterial suspension and part 1 0.05ml CaCl₂ were
 added to part 1 of the collecting liquid. After a contact
 time of 10min, the sample was mixed with preheated
 overlay agar and overlaid on TSA CaCl₂ agar.*

Inkubation / *incubation:*

Kultivierung auf CSA CaCl₂ bei 36±1°C. Nach 4-6h
 wurden Plaques ausgezählt. /

*Cultivation on TSA CaCl₂ at 36±1°C. After 4-6h
 plaques were counted.*

Berechnung / *calculation:*

Berechnung des Reduktionsfaktors (RF) / *calculation
 of the reduction factor (RF)*

$RF = \lg_{PFU/m^3 \text{ luft}}[lg] \text{ (Referenzkontrolle)} - \lg_{PFU/m^3 \text{ luft}}[lg] \text{ (Test)}$

$RF = \lg_{PFU/m^3 \text{ air}}[lg] \text{ (reference control)} - \lg_{PFU/m^3 \text{ air}}[lg] \text{ (test)}$

Prüfergebnisse / test results

A. Referenztest / reference test

Prüfphage / test phage:

Coliphage *phi X174*

Keimsuspension / microorganism suspension

Prüfkeim / test microorganism	Medium / medium	PFU/ml / PFU/ml	PFU/ml [lg] / PFU/ml [lg]
Coliphage <i>phi X174</i>	CSA / TSA CaCl ₂	7.40x10 ⁷	7.87

Ergebnisse der Messung bei dem Referenzversuch / results of the measurement in the reference test

Zeit / time (min)	Medium / medium	PFU/ml / PFU/ml	PFU/m ³ Luft* / PFU/m ³ air*	PFU/m ³ Luft*[lg] / PFU/m ³ air [lg]
T0	CSA / TSA CaCl ₂	6.10x10 ⁵	9.76x10 ⁷	7.98
10	CSA / TSA CaCl ₂	4.40x10 ⁵	7.04x10 ⁷	7.85
20	CSA / TSA CaCl ₂	4.00x10 ⁵	6.40x10 ⁷	7.81
30	CSA / TSA CaCl ₂	3.80x10 ⁵	6.08x10 ⁷	7.78
60	CSA / TSA CaCl ₂	2.60x10 ⁵	4.16x10 ⁷	7.62
120	CSA / TSA CaCl ₂	2.10x10 ⁴	3.36x10 ⁶	6.53

Legende / legend:

PFU / PFU: Plaque forming Units / plaque forming units

* Berechnung / calculation: PFU / ml x 20 ml / Probenvolumen [l] x 1000 [l] / PFU / ml x 20 ml / sample volume [l] x 1000 [l]. Die Berechnung der PFU/m³ basiert auf einem Probenvolumen von 20ml im Impinger und der Probenahmezeit des jeweiligen Versuchsaufbaus (für 10min beträgt das Probenvolumen 125l) / the calculation of the PFU/m³ is based on a sample volume of 20ml in the impinger and the sampling time of the respective test setup (for 10min the sample volume is 125l)

Prüfergebnisse / test results

B. Wirksamkeitstest / efficacy test

Prüfphage / test phage:

Coliphage phi X174

Keimsuspension / microorganism suspension

Prüfkeim / test microorganism	Medium / medium	PFU/ml / PFU/ml	PFU/ml [lg] / PFU/ml [lg]
Coliphage phi X174	CSA / TSA CaCl ₂	6.10x10 ⁷	7.78

Ergebnisse der Messung bei dem Wirksamkeitsversuch / results of the measurement in the efficacy test

Zeit / time (min)	Medium / medium	PFU/ml / PFU/ml	PFU/m ³ Luft* / PFU/m ³ air*	PFU/m ³ Luft*[lg] / PFU/m ³ air [lg]
T0	CSA / TSA CaCl ₂	3.90x10 ⁵	6.24x10 ⁷	7.79
10	CSA / TSA CaCl ₂	7.70x10 ⁴	1.23x10 ⁷	7.09
20	CSA / TSA CaCl ₂	3.50x10 ⁴	5.60x10 ⁶	6.75
30	CSA / TSA CaCl ₂	8.70x10 ³	1.39x10 ⁶	6.14
60	CSA / TSA CaCl ₂	1.05x10 ²	1.68x10 ⁴	4.23
120	CSA / TSA CaCl ₂	<1**	<160**	<2.20**

A. Resultierende Reduktionsraten / resulting reduction factors

Prüfphage / test phage:

Coliphage phi X174

Berechnung der Reduktionsfaktoren / calculation of the reduction factors

Zeit / time (min)	PFU/m ³ Luft*[lg] (REF) / PFU/m ³ air* [lg] (REF)	PFU/m ³ Luft*[lg] (Test) / PFU/m ³ air* [lg] (test)	Reduktionsfaktor (RF) / reduction factor (RF)
T0	7.98	7.79	0.20
10	7.85	7.09	0.76
20	7.81	6.75	1.06
30	7.78	6.14	1.64
60	7.62	4.23	3.39
120	6.53	<2.20**	>4.33

Legende / legend:

PFU / PFU: Plaque forming Units / plaque forming units

* Berechnung / calculation: PFU/ml x 20ml / Probenvolumen [l] x 1000 [l] / PFU/ml x 20ml / sample volume [l] x 1000 [l]. Die Berechnung der PFU/m³ basiert auf einem Probenvolumen von 20ml im Impinger und der Probenahmezeit des jeweiligen Versuchsaufbaus (für 10min beträgt das Probenvolumen 125l) / the calculation of the PFU/m³ is based on a sample volume of 20ml in the impinger and the sampling time of the respective test setup (for 10min the sample volume is 125l)

** Nachweisgrenze 160 PFU/m³ Luft. Die Berechnung basiert auf 1 PFU pro 0.1 ml in 20ml Impinger Lösung / 125l Luft x m³ / detection limit 160 PFU/m³ air. The calculation is based on 1 PFU per 0.1ml in 20ml of the impinge solution / 125l air x m³

Bei vorlegen eines desinfizierenden Agens in die Luft bevor das Keimaerosol eingebracht wird erfolgt bereits während der Ausbringphase des Keimaerosols eine Reduktion der Prüfkeime in der Raumluft / If a disinfecting agent is introduced into the air before the microorganism aerosol is introduced, the test microorganisms in the room air are already reduced during the application phase of the microorganism aerosol.

REF Referenz Test / reference test

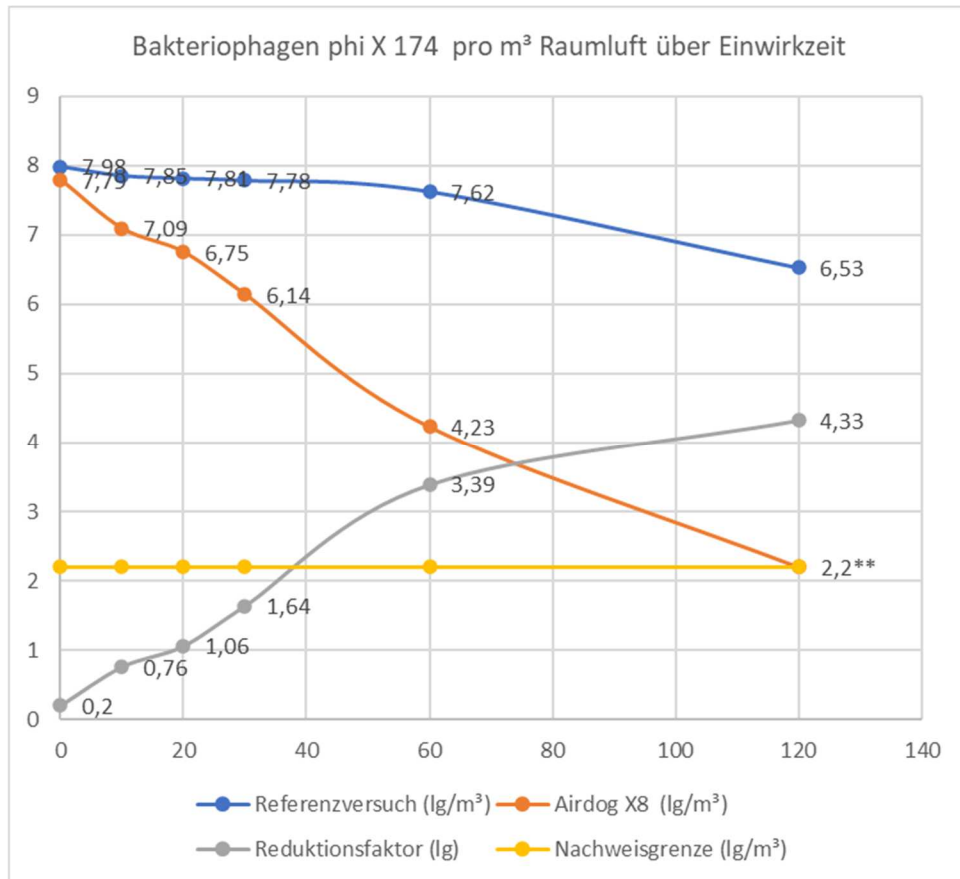


Abb. 9 / fig. 9: Entwicklung der Keimkonzentration von *Coliphage phi X174* pro m³ Raumluft über die Versuchszeit für Referenzversuch (blau) und Test der Wirksamkeit (orange) / *Development of the germ concentration of Coliphage phi X174 per m³ room air over the test time for reference test (blue) and efficacy test (orange)*

**Abweichungen /
deviations:**

Beobachtete Abweichungen der geltenden Norm und Verfahren /
observed deviations from applicable standard and procedure:

keine / *none*

**Schlussfolgerung /
conclusion:**

Die Ausbringung der Phagensuspension wurde mit einem Präzisionsvernebler Typhoon der Prüfmikroorganismus Coliphage *phi X174* in einem Prüfraum von 75m³ als Aerosol eingebracht.

Die Keimkonzentration in der Raumluft wurde mittels Impinger Methode zu den Zeitpunkten T0 (direkt nach der Verneblung der gesamten Menge an Prüfmikroorganismen), 10, 20, 30, 60 und 120 Minuten bestimmt.

Als Vergleichsexperiment diente ein Versuchsdurchlauf ohne Anwendung des Airdog X8. Die Phagensuspension wurde sowohl im Referenzversuch als auch im Wirksamkeitstest auf dieselbe Weise vernebelt. Die Beprobung erfolgte auf dieselbe Weise.

Die Entwicklung der Keimgehalte der Luft wurde anschließend verglichen und daraus zu den unterschiedlichen Zeitpunkten Reduktionsraten bestimmt.

Wirksamkeit gegen Coliphage *phi X174*

Im Referenztest ohne den Betrieb des Airdog X8 konnte nach 120 Minuten, nach Ende der Aerosolisierung des Prüfkeimes der Coliphage *phi X174* mit einer Keimkonzentration von 6,53 lg/m³ aus der Luft reisoliert werden.

Die höchste erreichte Reduktionsrate gegenüber der Referenz lag für den Prüfkeim Coliphage *phi X174* nach 60 Minuten bei 3,39 lg. Nach 120 Minuten waren durch Erreichen der Nachweisgrenze in der beprobten Luft keine Prüfkeime mehr nachweisbar. /

The phage suspension was applied with a precision nebulizer Typhoon of the test microorganism Coliphage phi X174 in a test room of 75m³ as an aerosol.

The germ concentration in the room air was determined by means of the impinger method at times T0 (immediately after the entire amount of test microorganisms was fogged), 10, 20, 30, 60 and 120 minutes.

A test run without using the Airdog X8 served as a comparative experiment. The phage suspension was nebulized in the same way both in the reference experiment and in the efficacy test. The sampling was carried out in the same way.

The development of the germ content in the air was then compared and from this, reduction rates were determined at the different points in time.

Efficacy against Coliphage phi X174

In the reference test without the preconditioning and operation of the Airdog X8, the Coliphage phi X174 with a germ concentration of 6.53 lg/m³ could be re-isolated from the air after 120 minutes after the end of the aerosolization of the test germ.

The highest reduction rate achieved compared to the reference was for the test bacteria Coliphage phi X174 after 60 minutes at 3.39 lg. After 120 minutes, when the detection limit was reached in the sampled air, no more test germs could be detected.

Archivierung / archiving:

Eine Ausfertigung des Berichtes wird zusammen mit den Rohdaten im Archiv des Auftragnehmers aufbewahrt. / *A copy of the test report will be kept together with the raw data in the contractor's archive.*

Hinweis / note:

Die Prüfergebnisse beziehen sich ausschließlich auf die genannten Prüfprodukte. Auszugsweise Wiedergabe dieses Berichtes nur mit schriftlicher Genehmigung der HygCen Germany GmbH. / *The test results refer only to the named test samples. Reproduction of any part of this report requires the written permission of HygCen Germany GmbH.*

Schwerin, 2021-09-07



Dr. med. univ. S. Werner
Head of Scientific-Technical Affairs
Microbiological Test Methods

Schwerin, 2021-09-07



S. Fehrmann
Division Manager
Hygiene Technology

DENTDEAL Produkt & Service GmbH
Alte Straße 68
94034 Passau

c/o
HygCen Germany GmbH
Bornhövedstrasse 78
19055 Schwerin

Phone: +49 (0) 385 5682 65
Email: info@hygcen.de
Web: www.hygcen.de

2021-09-10

Effectiveness of a room air disinfection process Airdog X8 in terms of a germ reduction of aerosolized germs in the room air

EXPERT OPINION

In August 2021, tests were carried out on the device type Airdog X8 with ionic Airdog filter plate technology on the effectiveness of the room air disinfection process were carried out in the test laboratory Hygcen Germany GmbH (test report 2021-2379, 2021-2381; SN 32758 dated 2021-09-07).

Efficacy was tested against bacteriophages (as a surrogate for viral efficacy). The following test set-up was used:

A suspension containing Coliphage *phi X174* (Microviridae, single-stranded DNA, 27 nanometer capsid diameter, uncoated) was nebulized using a precision nebulizer type Typhoon. The present results with respect to the coliphage *phi X174* suggest a similar efficacy of the method against other viruses (at least enveloped viruses, incl. coronaviruses).

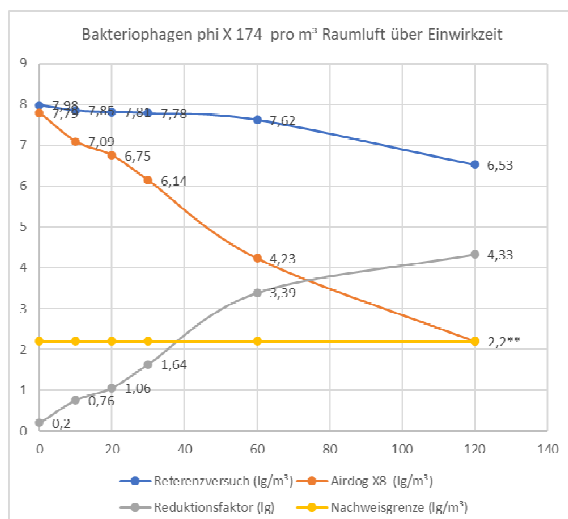
Coliphages *phi X174* were determined to be 7.79lg/ml in the germination solution to be nebulized.

In a reference experiment in which the germ suspension was applied without operating the Airdog X8 device under test and then reisolated in room air over a period of two hours, >7.98lg/m³ of coliphage *phi X174* could be reisolated from the air immediately after completion of the nebulization of the germ aerosol. The experimental setup for the actual efficacy test was such that the test room of 75m³ was operated with the Airdog X8 device during application of the bacteriophages at the highest possible air turnover rate (level 1000 m³/h). A Typhoon precision nebulizer was then used to deliver the phage aerosol into the test chamber.

The development of the germ concentration in the air was investigated by means of impinger method at different times after completion of nebulization of the corresponding test germ. For this purpose, air samples of the room air were passed through the impingers at an air flow rate of 125l per 10 minutes for a sampling period of 10 minutes. The liquid contained in the impingers was then quantitatively analyzed for the presence of the test germ. After completion of the nebulization of the germ aerosol, sampling was performed immediately afterwards (T0), after 10, 20, 30, 60 and 120 minutes. These measurements were carried out under the same ambient conditions (63% rel. humidity and 20°C) for both the reference test and the actual efficacy test.

time	control experiment [PfU/m ³ air [lg]]	effectiveness test [PfU/m ³ air [lg]]	reduction factor
T0	7.98	7.79	0.20
10	7.85	7.09	0.76
20	7.81	6.75	1.06
30	7.78	6.14	1.64
60	7.62	4.23	3.39
120	6.53	<2.20**	>4.33

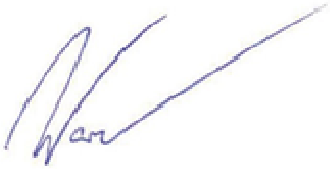
** For the values marked with **, no more test germs were detected in the samples during operation of the Airdog X8. Over the duration of the test, the amount of germs that can be detected in the air decreases (for example, due to drying effects and sinking onto the surfaces) and thus also the detectable reduction rates in relation to this.



Summary and evaluation

After 120 minutes, no more bacteriophages Coliphage *phi X174* could be detected in the room air. The highest reduction rate for the tested device Airdog X8 has been determined under the tested conditions (humidity at the start of the introduction of the aerosol 63% rel. humidity, 20°C, 75m³ room volume, setting of the device to an air turnover rate of 1000m³/h) after one hour with >3.39lg stages.

The present results, with respect to coliphage *phi X174*, also suggest an efficacy of the procedure against other viruses (at least enveloped viruses, including coronaviruses). Thus, when the method is used, effective germ reduction can be achieved directly in the air.

A handwritten signature in blue ink, appearing to read 'Werner', with a long, sweeping horizontal stroke extending to the right.

Dr. med. univ. S. Werner

DENTDEAL Produkt & Service GmbH
Alte Straße 68
94034 Passau

2021-09-07

PRÜFBERICHT / TESTREPORT

Proben-Nr. / <i>sample id number</i> :	SN 32758	More detailed description see next pages
Prüfprodukt / <i>test sample</i> :	Airdog X8; S/N: BAKGF88A043056	
Prüfungsnummer / <i>test number</i> :	2021-2379, 2021-2380	
Auftraggeber / <i>client</i> :	DENTDEAL Produkt & Service GmbH	
Hersteller / <i>manufacturer</i> :	keine Angaben / <i>no information</i>	
Auftragsdatum / <i>date of order</i> :	2021-07-14	
Prüfzeitraum / <i>test period</i> :	2021-08-30 - 2021-08-31 (Coliphage <i>phi</i> X174, Wirksamkeitstest / <i>efficacy test</i>)	
Prüfmethode / <i>test method</i> :	Wirksamkeit einer Raumlufddekontamination in Bezug auf eine Keimreduktion von aerosolisierten Keimen in der Raumluf / <i>Efficacy of a room air decontamination in relation to a microorganism reduction of aerosolized microorganisms in the room air</i>	
	Umgebungsuntersuchung / <i>Environmental investigation</i> (SOP 11-001)	
	Kultivierung von Bakteriophagen / <i>Cultivation of bacteriophages</i> (SOP 05-022)	
Information / <i>information</i> :	-	

Identifizierung der Probe / identification of the sample

Proben Nr. / <i>sample number</i> :	SN 32758
Prüfprodukt / <i>test sample</i> :	Airdog X8
Gerätenummer / <i>device no.</i> :	S/N: BAKGF88A043056
Lieferdatum / <i>date of delivery</i> :	2021-07-19
Vernebler / <i>nebulizer</i> :	Präzisionsvernebler Boga W-Fun S-Nr. 13 (Ausbringung Prüfkeimsuspension / <i>fogging of suspension of the test microorganisms</i>)
Prüfkeim / <i>test microorganism</i> :	Coliphage <i>phi X174</i>
Information / <i>information</i> :	-
Bestimmungsgemäße Anwendungsart gemäß Herstellerangaben / <i>intended use according to the manufacturer</i> :	Dekontamination von Raumluft mittels Ionisations-Elektrode, Plattensammler und unterstützender Wirkung verschiedener Filter (Luftfilter and Aktiv-Kohle Filter) / <i>Decontamination of room air by means of a ionization electrodes, record collector and the supportive effect of filters (air filter and activated carbon filter)</i>

Foto des Prüfproduktes /
picture of the test sample:



Abb. 1 / *fig. 1*: Airdog X8

Bestandteile des Prüfgerätes Airdog X8 / Components of the test device Airdog X8

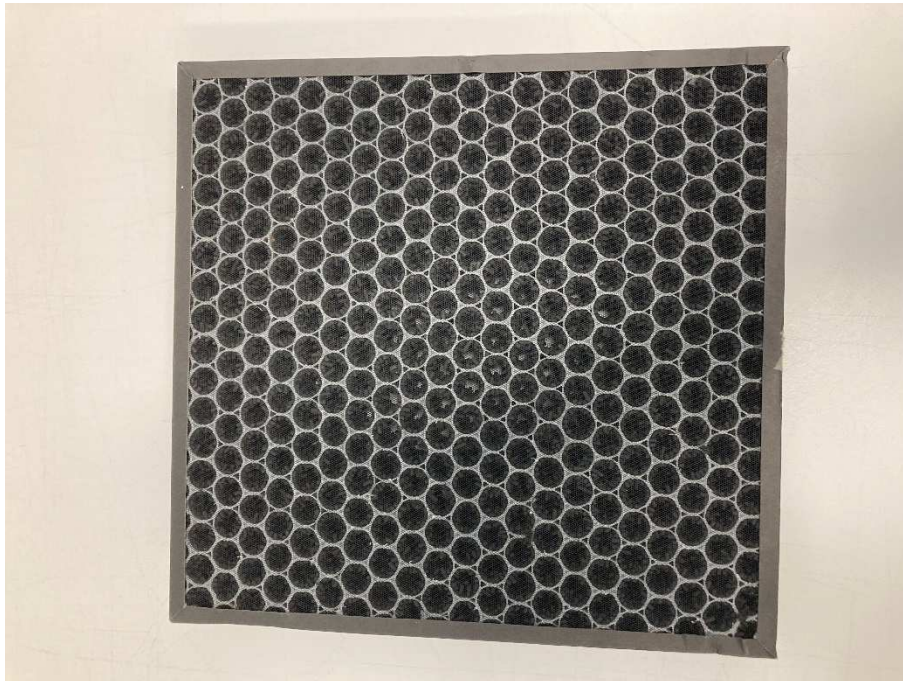


Abb. 2 / fig. 2: Aktiv-Kohle Filter / *activated carbon filter*



Abb. 3 / fig. 3: Plattensammler / *plate collector*



Abb. 4 / fig. 4: Ionisations-Elektrode / *ionization electrode*

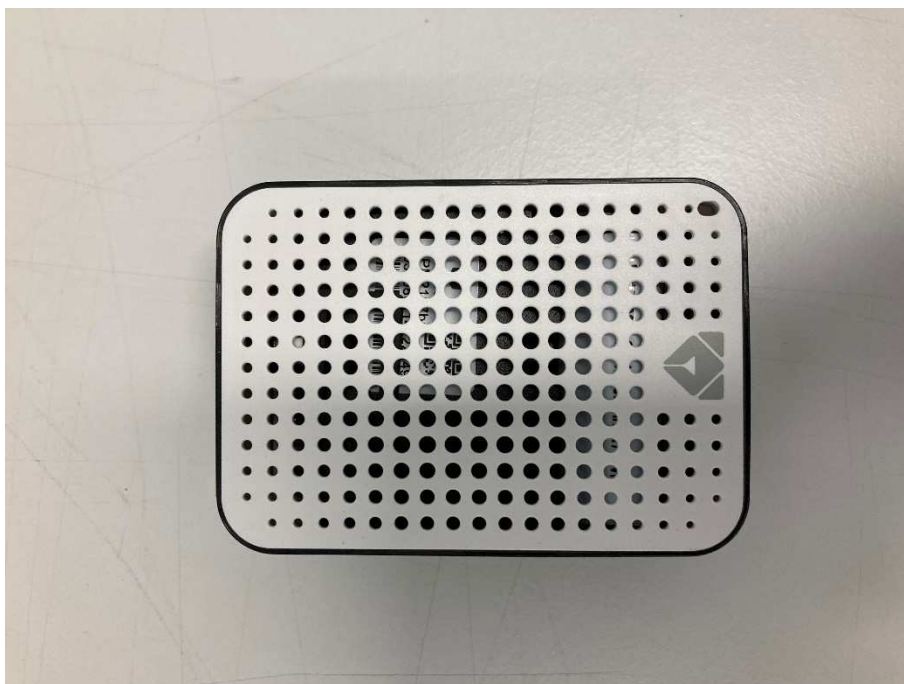


Abb. 5 / fig. 5: Luftsensor / *air sensor*

Übersicht über den Prüfaufbau / overview of the test setup



Abb. 6 / fig. 6: Prüfprodukt während der Vernebelungsphase (Prüfprodukt links, Einlass und Auslassseite durch Kunststoffolie getrennt; rechte Seite Präzisionsvernebler verbunden mit der Einlassseite des Airdog X8; S/N: BAKGF88A043056 /
Test product during the nebulization phase (test product on the left, inlet and outlet side separated by plastic film; right side precision nebulizer connected to the inlet side of the Airdog X8; S/N: BAKGF88A043056

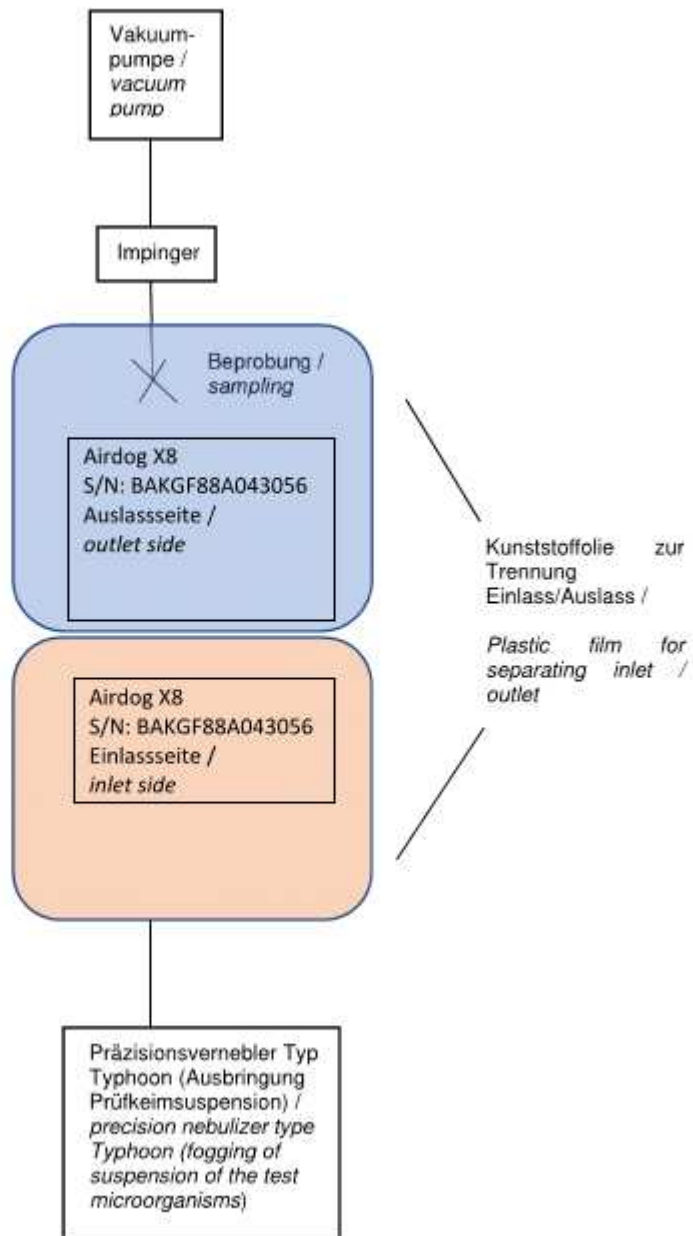


Abb. 7 / fig. 7: Skizze des Prüfaufbaues (Impinger verbunden mit Vakuumpumpe, vom Impinger führt eine Ableitung zum Beprobungspunkt der Auslassseite.) /
 Sketch of the test setup (impinger connected to a vacuum pump, a derivation leads from the impinger to the sampling point of the outlet side.)

Prüfverfahrensbeschreibung / description of the test method

Prüfmethode / <i>test method:</i>	Wirksamkeit einer Raumlufthdekontamination in Bezug auf eine Keimreduktion von aerosolisierten Keimen in der durch das Gerät geleiteten Luft / <i>Efficacy of a room air decontamination in relation to a microorganism reduction of aerosolized microorganisms in the air passed through the device.</i>
Testmaterialbehandlung / <i>sample processing:</i>	Einlassseite und Auslassseite des Gerätes wurden mit Folie voneinander separiert / <i>The inlet side and outlet side of the device were separated from one another with foil.</i>
Prüfumfang / <i>scope of testing:</i>	Mithilfe eines Präzisionsverneblers Typ Boga W-Fun wurde der Prüfkeim Coliphage <i>phi X174</i> (Microviridae, einzelsträngige DNA, 27 Nanometer Capsid-Durchmesser, unbehüllt) mittels Ultraschall vernebelt und der Einlassseite des Gerätes zugeleitet. Die Ausbringung erfolgte dabei mit der höchsten möglichen Ausbringgeschwindigkeit von 310ml pro Stunde. Es wurden ca. 50ml Keimsuspension binnen 10 Minuten Beprobungszeit ausgebracht. Das zu prüfende Gerät wurde für die Prüfung auf niedrigster Stufe betrieben (300m³/h). Die aus dem Gerät austretende Luft wurde anschließend über 10 Minuten mittels Impinger Methode beprobt. Als Referenz dienten Experimente bei denen Coliphage <i>phi X174</i> auf gleiche Weise ausgebracht wurde wie im Wirksamkeitsexperiment selber. Die Vorfilter, Ionisationselektrode, der Plattensammler und der Aktiv-Kohle Filter des Testgerätes wurden für das Referenzexperiment aus dem Gerät entfernt. Anschließend wurden in beiden Experimenten die Keimzahlen der Prüfkeime mittels Impinger Methode in der austretenden Luft bestimmt. Mit diesem Impinger-System kann die Keimzahl pro Volumen Luft bestimmt werden. Zur besseren Vergleichbarkeit der Ergebnisse werden die für die Impinger-Sammelflüssigkeit ermittelten Keimgehalte pro ml für das jeweilige Volumen berechnet, das während der Probenahme durch den Impinger gesaugt wurde, was zu einem Keimgehalt pro m³ Luft führt. Berechnung: $\text{PFU/ml} \times 20\text{ml (Volumen der Impingerflüssigkeit)} / \text{Probenvolumen [l]} \text{ (eingestellt auf 125l pro 10 Minuten Beprobungszeit)} \times 1000 \text{ [l]} \text{ (Berechnung für einen m}^3\text{)}$ Der sterile Impinger wurde mit 20ml Sammelflüssigkeit gefüllt, die aus 0,2% Gelatine, 3,0% Trypton-Soja-Bouillon (TSB), 0,15% Kaliumphosphat (wasserfrei) und 0,1ml (0,01%) Silikonemulsion M Antischaummittel 30, rein bei einem pH von 7,3 besteht.

Die Verwendung eines solchen nährstoffreichen Mediums ist vorteilhaft für die Kultivierung geschädigter Mikroorganismen von gesundheitlicher Relevanz. Ein Anstieg des Keimgehaltes ist basierend auf früheren Erfahrungen während des Messzeitraums für die hier verwendeten Keime nicht zu befürchten. Die Kultivierung einer Subkultur wurde direkt nach der Probenahme begonnen.

Pro Messung (10min) wurden 125 Liter Luft pro Impinger von einer Vakuumpumpe angesaugt. Die notwendige Einstellung der Pumpe wurde mit einem Durchflussmesser vorgenommen.

Die Proben wurden mittels Silikonschläuchen aus dem mit Folie umschlossenen Raum der Auslassseite des Gerätes gesaugt.

Nach Beendigung der Probenahmezeit (je Probe 10 Minuten) wurden die in der Impingerlösung enthaltenen Keime kultiviert.

Bakteriophagen wurden entsprechend SOP 05-022 bearbeitet und als „Plaque Forming Units“ (PFU) bestimmt.

Die Ergebnisse der Bestimmung des Gehalts an plaquebildenden Einheiten (PFU) in der Raumluft mittels Impinger Methode sind in den nachstehenden Tabellen gezeigt. /

Using a precision nebulizer type Boga W-Fun, the test germ Coliphage phi X174 (Microviridae, single-stranded DNA, 27 nanometer capsid diameter, uncovered) was nebulized using ultrasound and fed to the inlet side of the device. The application was carried out with the highest possible application speed of 310ml per hour. 20ml of germ suspension were applied within 10 minutes of sampling time.

The device to be tested was operated at the lowest level (300m³/h) for the test. The air emerging from the device was then sampled for 10 minutes using the impinger method.

Experiments in which Coliphage phi X174 was applied in the same way as in the effectiveness experiment itself served as reference. The pre-filter, ionization electrode, plate collector and activated carbon filter of the test device were removed for the reference experiment

In both experiments, the germ count of the test germs was then determined in the exiting air using the impinger method.

With this impinger system, the number of germs per volume of air can be determined. For better comparability of the results, the germ content per ml determined for the impinger collection liquid is calculated for the respective volume that was sucked through the impinger during sampling, which leads to a germ content per m³ air.

Calculation: PFU/ml x 20ml (volume of the impinger liquid) / sample volume [l] (set to 125l per 10 minutes of sampling time) x 1000 [l] (calculation for one m³)

The sterile impinger was filled with 20ml of collecting liquid consisting of 0.2% gelatin, 3.0% tryptone soy broth (TSB), 0.15% potassium phosphate (anhydrous) and 0.1ml (0.01%) Silicone emulsion M antifoam agent 30, pure at a pH of 7.3.

The use of such a nutrient-rich medium is advantageous for the cultivation of damaged microorganisms of health relevance. Based on previous experience, an increase in the germ content is not to be feared for the germs used here during the measurement period. The cultivation of a subculture was started immediately after the sampling.

For each measurement (10 min) 125 liters of air per impinger were sucked in by a vacuum pump. The necessary setting of the pump was made with a flow meter.

The samples were sucked out of the foil-enclosed space on the outlet side of the device using silicone hoses.

After the end of the sampling time (10 minutes per sample), the germs contained in the impinger solution were cultivated.

Bacteriophages were processed according to SOP 05-022 and identified as "Plaque Forming Units" (PFU). The results of the determination of the content of plaque-forming units (PFU) in room air using the impinger method are shown in the tables below.

Prüfsetups / test setups:

*Airdog X8 **ohne** Filter, Ionisations-Elektrode, Plattensammler und Aktiv-Kohle Filter (Referenztest) / Airdog X8 **without** filter ionization electrode, plate collector and activated carbon filter filter (reference test)*
*Airdog X8 **mit** Filter, Ionisations-Elektrode, Plattensammler und Aktiv-Kohle Filter / Airdog X8 **with** filter ionization electrode, plate collector and activated carbon filter*

Ausschlüsse, Abweichungen / exclusions, deviations:

keine / none

Zusätzliche Informationen / additional informations:

Die verschiedenen Setups wurden jeweils dreimal repliziert (drei Messungen pro Setup). / The different setups were replicated three times each (three measurements per setup).

Prüfanforderung / test requirement:

Reduktion der Keimzahl im Vergleich zum Referenzversuch für Bakteriophagen. / Reduction of the number of germs in comparison to the reference experiment for bacteriophages.

**Testergebnisse zur Messung aerogener Desinfektionsverfahren /
results of the measuring airborne disinfection processes**

Prüfzeitraum / <i>test period</i> :	2021-08-30 - 2021-08-31 (Coliphage <i>phi</i> X174, Wirksamkeitstest / <i>efficacy test</i>)
Prüfprodukt / <i>test sample</i> :	Airdog X8; S/N: BAKGF88A043056
Prüfphage / <i>test phage</i> :	Coliphage <i>phi</i> X174
Bakterienwirt / <i>bacterial host</i> :	<i>Escherichia coli</i> ATCC 13706
Sammelflüssigkeit / <i>bulk liquid</i> :	0,2% Gelantine, 3,0% Tryptone-Soja-Bouillon, 0,15% Kaliumphosphat und 0,01% Silikonemulsion M Antischaumittel 30 / 0.2% <i>gelatin</i> , 3.0% <i>tryphone soy broth</i> , 0.15% <i>potassium phosphate</i> and 0.01% <i>silicone emulsion M antifoam 30</i>
Volumen der Sammel­flüssigkeit / <i>volume of the bulk liquid</i> :	20ml
Selektivagar / <i>selective agar</i> :	CSA CaCl ₂ / TSA CaCl ₂
Herstellung der Keimsuspension / <i>preparation of the microorganism suspension</i> :	Herstellung der Keimsuspension gemäß SOP 05-022. / <i>preparation of the microorganism suspension according to SOP 05-022.</i>
Prüfsuspension zur Kontamination / <i>test suspension for contamination</i> :	Die Phagensuspension von Coliphage <i>phi</i> X174 mit einer Anfangskonzentration von 10 ⁹ /ml wurde auf eine Konzentration von 10 ⁶ /ml mit VE-Wasser verdünnt. / <i>The phage suspension of coliphage phi X174 with an initial concentration of 10⁹/ml was diluted to a concentration of 10⁶/ml with VE-water.</i>
Kontaminationsmethode / <i>contamination method</i> :	Die 50ml Phagensuspension mit der Konzentration von 10 ⁶ wurden 10 Minuten lang vernebelt und der Einlassseite des Gerätes während der Beprobungszeit zugeleitet / <i>The 50 ml phage suspension with a concentration of 10⁶ was nebulized for 10 minutes and fed to the inlet side of the device during the sampling period.</i>
Beprobungszeit / <i>sampling time</i> :	10 Minuten / <i>minutes</i>
Zeit nach der Keimsuspensionsverneblung / <i>time after the microorganism suspension nebulization</i> :	Direkte Durchleitung / <i>direct pass through</i>

Prüfbedingungen / *test conditions:*

20°C ± 2°C Versuchstemperatur / *test temperature*
63% rel. Luftfeuchte / *63% rel. humidity*

Kultivierung der Sammellösung /
cultivation of the bulk solution:

1ml und 0,1ml und die Verdünnungen 10^{-1} und 10^{-2} der Sammelflüssigkeit wurden untersucht. Dafür wurde zu Teil 1 Sammelflüssigkeit 3 Teilen Bakteriensuspension und Teil 1 0,05ml CaCl_2 gegeben. Nach 10min Einwirkzeit wurde die Probe mit vorgewärmten Overlay Agar gemischt und auf CSA CaCl_2 Agar überschichtet. / *1ml and 0.1ml and the 10^{-1} and 10^{-2} dilutions of the bulk fluid were examined. For this purpose, 3 parts bacterial suspension and part 1 0.05ml CaCl_2 were added to part 1 of the collecting liquid. After a contact time of 10min, the sample was mixed with preheated overlay agar and overlaid on TSA CaCl_2 agar.*

Inkubation / *incubation:*

Kultivierung auf CSA CaCl_2 bei $36 \pm 1^\circ\text{C}$. Nach 4-6h wurden Plaques ausgezählt. / *Cultivation on TSA CaCl_2 at $36 \pm 1^\circ\text{C}$. After 4-6h plaques were counted.*

Berechnung / *calculation:*

Berechnung des Reduktionsfaktors (RF) / *calculation of the reduction factor (RF)*

$\text{RF} = \lg \text{PFU/m}^3 \text{ luft} [\lg] \text{ (Referenzkontrolle)} - \lg \text{PFU/m}^3 \text{ luft} [\lg] \text{ (Test)}$

$\text{RF} = \lg \text{PFU/m}^3 \text{ air} [\lg] \text{ (reference control)} - \lg \text{PFU/m}^3 \text{ air} [\lg] \text{ (test)}$

Prüfergebnisse / test results

A. Referenztest / reference test

Prüfphage / test phage:

Coliphage *phi X174*

Keimsuspension / microorganism suspension

Prüfkeim / test microorganism	Medium / medium	PFU/ml / PFU/ml	PFU/ml [lg] / PFU/ml [lg]
Coliphage <i>phi X174</i>	CSA / TSA CaCl ₂	2.64x10 ⁷	7.42

Ergebnisse der Messung bei dem Referenzversuch / results of the measurement in the reference test

Zeit / time (min)	Setup	Medium / medium	PFU/ml / PFU/ml	PFU/m ³ Luft* / PFU/m ³ air*	PFU/m ³ Luft*[lg] / PFU/m ³ air [lg]	Mittelwert / mean value	Reduktionsfaktor / reduction factor [lg]
10	ohne Filter, ohne Aktiv-Kohle ohne Ionisations-Elektrode, ohne Plattensammler/	CSA / TSA CaCl ₂	9.80x10 ⁴	1.57x10 ⁷	7.19	7.28	-
10	without filter, without activated carbon, without ionization		1.54x10 ⁵	2.46x10 ⁷	7.39		
10	electrode, without plate collector		1.12x10 ⁵	1.79x10 ⁷	7.25		

Legende / legend:

PFU / PFU: Plaque forming Units / plaque forming units

* Berechnung / calculation: PFU/ml x 20ml / Probenvolumen [l] x 1000 [l] / PFU/ml x 20ml / sample volume [l] x 1000 [l]. Die Berechnung der PFU/m³ basiert auf einem Probenvolumen von 20ml im Impinger und der Probenahmezeit des jeweiligen Versuchsaufbaus (für 10min beträgt das Probenvolumen 125l) / the calculation of the PFU/m³ is based on a sample volume of 20ml in the impinger and the sampling time of the respective test setup (for 10min the sample volume is 125l)

** Nachweisgrenze 160 PFU/m³ Luft. Die Berechnung basiert auf 1 PFU pro 1ml in 20ml Impinger Lösung / 125l Luft x m³ / detection limit 160 PFU/m³ air. The calculation is based on 1 PFU per 0.1ml in 20ml of the impinge solution / 125l air x m³

Prüfergebnisse / test results

B. Wirksamkeitstest / efficacy test

Prüfphage / test phage:

Coliphage *phi X174*

Keimsuspension / microorganism suspension

Prüfkeim / test microorganism	Medium / medium	PFU/ml / PFU/ml	PFU/ml [lg] / PFU/ml [lg]
Coliphage <i>phi X174</i>	CSA / TSA CaCl ₂	2.64x10 ⁷	7.42

Ergebnisse der Messung bei dem Wirksamkeitsversuch / results of the measurement in the efficacy test

Zeit / time (min)	Setup	Medium / medium	PFU/ml / PFU/ml	PFU/m ³ Luft* / PFU/m ³ air*	PFU/m ³ Luft*[lg] / PFU/m ³ air [lg]	Mittelwert / mean value	Reduktionsfaktor / reduction factor [lg]
10	mit Filter mit Aktiv-Kohle mit Ionisations-Elektrode mit Plattensammler/	CSA / TSA CaCl ₂	0.50x10 ²	8.00x10 ²	2.90	2.79	4.49
10	with filter with activated carbon filter with		0.12x10 ²	1.92x10 ³	3.28		
10	ionization electrode with plate collector		<1**	<160**	<2.20		

Legende / legend:

PFU / PFU: Plaque forming Units / plaque forming units

* Berechnung / calculation: PFU/ml x 20ml / Probenvolumen [l] x 1000 [l] / PFU/ml x 20ml / sample volume [l] x 1000 [l]. Die Berechnung der PFU/m³ basiert auf einem Probenvolumen von 20ml im Impinger und der Probenahmezeit des jeweiligen Versuchsaufbaus (für 10min beträgt das Probenvolumen 125l) / the calculation of the PFU/m³ is based on a sample volume of 20ml in the impinger and the sampling time of the respective test setup (for 10min the sample volume is 125l)

** Nachweisgrenze 160 PFU/m³ Luft. Die Berechnung basiert auf 1 PFU pro 1ml in 20ml Impinger Lösung / 125l Luft x m³ / detection limit 160 PFU/m³ air. The calculation is based on 1 PFU per 0.1ml in 20ml of the impinge solution / 125l air x m³

**Abweichungen /
deviations:**

Beobachtete Abweichungen der geltenden Norm und Verfahren /
observed deviations from applicable standard and procedure:

keine / *none*

**Schlussfolgerung /
conclusion:**

Wirksamkeit gegen Coliphage *phi X174*

Im Referenzversuch konnte nach Durchleitung von Keimaerosolen durch das Gerät ohne Wirkmechanismen (Filter, Aktiv-Kohle Filter, Ionisations-Elektrode, Plattensammler entfernt) eine Keimkonzentration 7,28 lg/m³ Luft reisoliert werden. Die Beprobungszeit betrug 10 Minuten, während der dem Gerät Keimaerosole des Prüfkeimes Coliphage *phi X174* zugeleitet wurden.

Im Vergleich dazu konnten in dem Wirksamkeitstest mit eingebautem Filter, Aktiv-Kohle Filter, Plattensammler und Ionisations-Elektrode eine Keimkonzentration von 2,79 lg/m³ nachgewiesen werden.

Unter Berücksichtigung der Nachweisgrenze von 2,20 lg Stufen pro m³ Luft lässt dies auf eine Reduktion des Prüfkeims um 4,49 lg/m³ schließen. /

Efficacy against Coliphage phi X174

In the reference experiment, germ aerosols were passed through the device without any mechanisms of action (filter, activated carbon filter, ionization electrode, plate collector removed).

A germ concentration of 7.28 lg/m³ air could be reisolated. The sampling time was 10 minutes, during which germ aerosols of the test germ Coliphage phi X174 were fed to the device.

In comparison a germ concentration of 2.79 lg/m³ could be detected in the efficacy test with built-in filter, activated carbon filter, plate collector and ionization electrode.

Taking into account the detection limit of 2.20 lg levels per m³ air, this suggests a reduction of the test germ by 4.49 lg/m³.

Archivierung / *archiving:*

Eine Ausfertigung des Berichtes wird zusammen mit den Rohdaten im Archiv des Auftragnehmers aufbewahrt. / *A copy of the test report will be kept together with the raw data in the contractor's archive.*

Hinweis / *note:*

Die Prüfergebnisse beziehen sich ausschließlich auf die genannten Prüfprodukte. Auszugsweise Wiedergabe dieses Berichtes nur mit schriftlicher Genehmigung der HygCen Germany GmbH. / *The test results refer only to the named test samples. Reproduction of any part of this report requires the written permission of HygCen Germany GmbH.*

Schwerin, 2021-09-07



Dr. med. univ. S. Werner
Head of Scientific-Technical Affairs
Microbiological Test Methods

Schwerin, 2021-09-07



S. Fehrmann
Division Manager
Hygiene Technology

DENTDEAL Produkt & Service GmbH
Alte Straße 68
94034 Passau

c/o
HygCen Germany GmbH
Bornhövedstrasse 78
19055 Schwerin

Phone: +49 (0) 385 5682 65
Email: info@hygcen.de
Web: www.hygcen.de

2021-09-10

Effectiveness of room air decontamination using Airdog X8 in terms of germ reduction of aerosolized germs

EXPERT OPINION

In August 2021, tests on devices type Airdog X8 for the effectiveness of decontamination of air exposed to germ aerosols were carried out in the test laboratory HygCen Germany GmbH. (test report 2021-2379, 2021-2380; SN 32758 from 2021-09-07).

Efficacy was tested against bacteriophages (as a surrogate for viral efficacy). The following test set-up was used for this purpose:

A suspension containing coliphage *phi X174* (Microviridae, single-stranded DNA, 27 nanometer capsid diameter, unsheathed) was aerosolized by ultrasonic technology using a Boga W-Fun type precision nebulizer. The present results with respect to the coliphage *phi X174* suggest a similar efficacy of the method against other viruses (at least enveloped viruses, incl. coronaviruses).

The experimental setup was such that this phage aerosol was introduced into the suction side of the Airdog X8.

The aerosol was then conveyed through the unit by means of the radial fan installed in the Airdog X8 and blown out again on the outlet side. For the test results presented here, the unit was operated at the lowest possible air conversion rate (300 m³/h stage).

This blown-out air was passed through liquid-filled sample tubes (impingers). In the process, the germs contained in the air dissolve in the impinger liquid. Air samples were passed through the impingers at an air flow rate of 125l per 10 minutes for a sampling period of 10 minutes. The liquid contained in the impingers was then quantitatively analyzed for the presence of the test germ. A test in which both the filter cassette installed on the instrument side and the plasma ionizer were removed served as a reference.

In this reference experiment, a microbial content of the (in this case untreated) aerosol of 6.05 lg levels per m³ of air passed through was determined in the blown-out air. Subsequently, this test was repeated several times under normal operating conditions of the Airdog X8 and the microbial content of the blown-out air now exposed to the active process was determined in exactly the same way.

The following table lists the different test setups with the corresponding determined germ concentrations in the blown-out air and the corresponding reduction rate:

Setup	Concentration of test germs in blown out air (lg PFU/m ³)*	Reduction factor compared to reference (lg)
Setup 1 without filter cartridge without plasma ionizer (reference test)	7.28	-
Setup 2 with filter cassette, with plasma ionizer	2.79	4.49

*Average value from three independent test runs per setup

Summary and evaluation

No more test germs could be detected in the air blown out of the unit, provided the filter cassette was operated in combination with the plasma ionizer.

During operation of the device, 4.49lg levels of the test germ could be eliminated from the air passed through for the effective method.

Statements on an even higher reduction rate, if available, were not possible for technical reasons due to the detection limit being reached. The statements on the efficacy refer exclusively to the tested conditions.



Dr. med. univ. S. Werner



Silicon Valley Air Expert Inc.

support@siliconvalleyairexperts.com

1-800-958-9609, 9am ~ 5pm PST, Weekdays

2051 Junction Avenue, San Jose, CA 95131