VDE Test Report

Testing of UV-C germ reducing effect

Report No. ..	278203-TL4-1
VDE File No. ….	5017767-9999-0003/278203
Date of issue	2020-12-16
Laboratory.	**VDE** Testing and Certification Institute
Address.	Merianstrasse 28 63069 Offenbach/Main; Germany
Testing location / address	**VDE** Testing and Certification Institute Merianstrasse 28 63069 Offenbach/Main; Germany
Applicant's name	Osram GmbH; Parkring 33; 85748 Garching bei München; Germany
Applicant's address	Parkring 33; 85748 Garching bei München; Germany
Standard(s)	IEC 62471 DIN EN ISO 15858:2017
Test item description	UV-C disinfection device
Trade Mark	OSRAM
Type reference(s)	AirZing™ UV-C light purifier PRO 5040

Test sample condition :	☒	Non-damaged sample
	Remark:	
Sample entry date :	2020-11-09	
Date (s) of performance of tests :	2020-11-09 - 2020-11-27	

Tested by ..... :		
Name, Signature ..... :	Diana Carella (Authorization of test report)	
Function ..... :	Testing engineer	
Verified by ..... :		
Name, Signature ..... :	Dragana Zdravkovic-Stojanovic (Reviewer)	
Function ..... :	Technical Certification Officer	

Factory(ies) ..... :	

Possible test case verdicts:……..:	
Test case does not apply to the test object :	N/A (Not applicable)
Test object does meet the requirement..... :	P (Pass)
Test object does not meet the requirement:	F (Fail)

Final Verdict:	☒	**P**	☐	**F**
Remark ..... :				

Environmental conditions (if applicable)	Ambient temperature	Atmospheric pressure	Relative humidity
Rated values ..... :	15-35 °C	860-1060 hPa	30-60 %
Verified values ..... :		Range confirmed by: Deutscher Wetterdienst (Meteorological service)	

Measurement task and description of measurements

Ultraviolet radiation ranges from the lower region of visible light (400 nm) to the upper region of X-rays (10 nm). UV-C is the part of ultraviolet radiation with the shortest wavelength (100 to 280 nm).

UV-C light sources emit electromagnetic radiation of 185 and/or 254 nm and can have a germ-reducing effect. At 185 nm the light induces ozone production. Ozone itself has germ-reducing effects but might also lead to negative consequences such as irritation or carcinogenic effects. Therefore, light sources which emit wavelengths under 200 nm will be evaluated with “Fail”.

The time for a defined reduction of germs is evaluated by using the required UV-C dose for a certain reduction effect and the actual radiation dose of the light source. The radiation dose is measured with a radiometer between 200 and 270 nm.

Different germs show different sensitivities towards UV-C radiance. Therefore, the values for the minimum operation time of the product are shown in tables with the most common pathogens.

The products under test are supplied by an external power supply according to the voltage and frequency given on the marking plate.

Ambient temperature: 25 °C ± 1 K

Relative humidity: 60 %

The evaluated values for the minimum operation time of the UV-C air purifier do only apply to the region of the surface which is illuminated at a right angle.

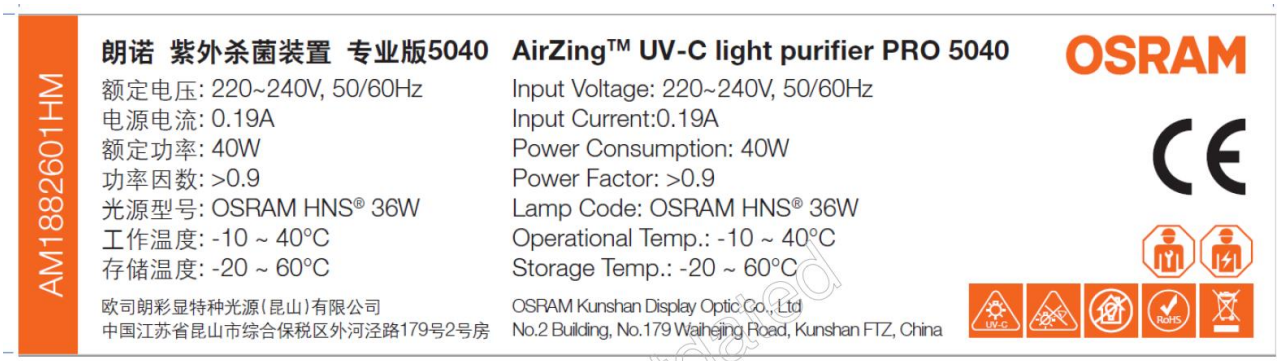
Specifications AirZingTM UV-C light purifier PRO 5040	
Rated voltage / Frequency	220-240 V / 50/60 Hz
Total power of the germicidal UV lamps	36 W
Number of lamps	1 pc.
Type of lamp / Type of lamp socket	PURITEC HNS 36W G13
Lamp life cycle (rated value)	Not specified.
UV-C-Peak	Not specified.
Flow rate	N/A
Dimensions	1363 mm x 54 mm x 78 mm
Weight	Not specified.

General product information

AirZingTM UV-C light purifier PRO 5040

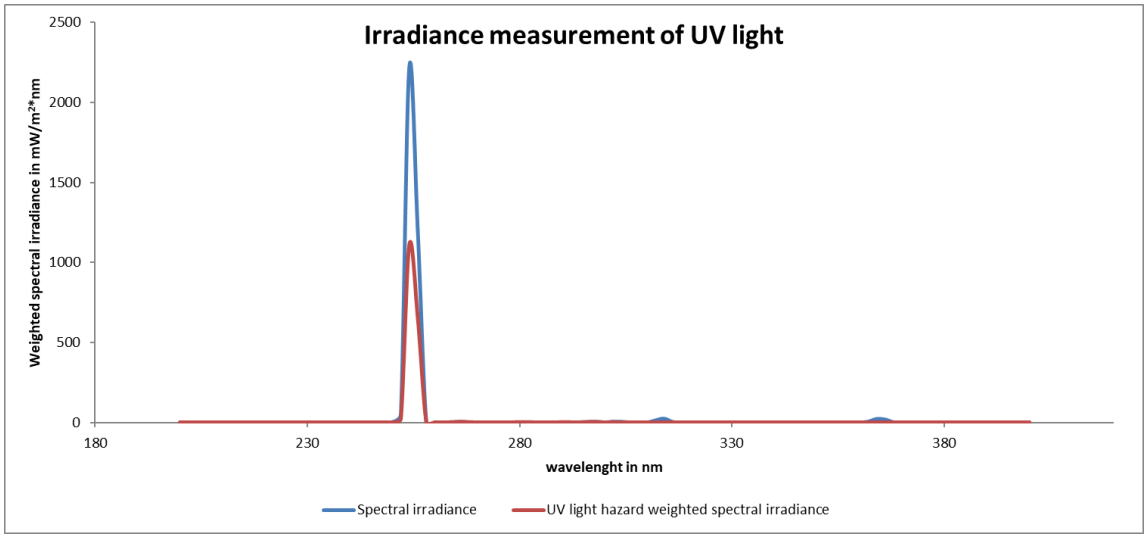
Photo documentation

Copy of marking plate



Measurement information AirZingTM UV-C light purifier PRO 5040	
Emitted wavelength (nm)	254
Risk group according to IEC 62471:2006	RG3
Irradiance (W/m²), distance 200 mm	3,6
Dose (Ws/m²), distance 200 mm, Reaction time 2s	0,72
Test voltage (V)	230
Test current (mA)	188
Test power (W)	42,2
Test frequency (Hz)	50
Ambient temperature (°C)	25
Relative humidity (%)	60

Spectral light distribution



Minimum operation time for 90,0 % germ-reducing (h)									
Distance to the surface in m	**0,5**	**1**	**1,5**	**2**	**2,5**	**3**	**3,5**	**4**	**5**
Bacteria, viruses									
Bacterium coli (in air)	0,01	0,02	0,03	0,05	0,08	0,12	0,17	0,22	0,34
Bacterium coli (in water)	0,03	0,10	0,23	0,42	0,65	0,94	1,27	1,66	2,60
Mycobacterium tuberculosis	0,05	0,19	0,43	0,77	1,20	1,73	2,36	3,08	4,81
Poliovirus	0,02	0,06	0,14	0,25	0,39	0,55	0,75	0,99	1,54
Infectus Hepatitis	0,03	0,11	0,25	0,45	0,70	1,00	1,37	1,79	2,79
Influenza	0,02	0,07	0,15	0,26	0,41	0,59	0,80	1,05	1,64
Pseudomonas aeruginosa	0,03	0,11	0,24	0,42	0,66	0,95	1,30	1,69	2,65
Pseudomonas fluorescens	0,02	0,07	0,15	0,27	0,42	0,61	0,83	1,08	1,68
Corona Virus SARS-Cov 2	**0,02**	**0,08**	**0,17**	**0,31**	**0,48**	**0,69**	**0,94**	**1,23**	**1,93**
Yeasts									
Baking yeast	0,02	0,08	0,17	0,30	0,47	0,68	0,92	1,20	1,88
Brewing yeast	0,02	0,06	0,14	0,25	0,40	0,57	0,78	1,02	1,59
Moulds									
Aspergillus amstelodami	0,32	1,28	2,89	5,14	8,03	11,56	--	--	--
Aspergillus niger	0,64	2,54	5,72	10,17	15,88	22,87	--	--	--
Cladosporium herbarum	0,29	1,16	2,60	4,62	7,22	10,40	--	--	--
Mucur mucedol	0,31	1,25	2,82	5,01	7,82	11,26	--	--	--
Rhizopus nigricans	0,53	2,14	4,81	8,55	13,36	19,23	--	--	--

Minimum operation time for 99,9 % germ-reducing (h)									
Distance to the surface in m	**0,5**	**1**	**1,5**	**2**	**2,5**	**3**	**3,5**	**4**	**5**
Bacteria, viruses									
Bacterium coli (in air)	0,01	0,04	0,09	0,16	0,25	0,36	0,50	0,65	1,01
Bacterium coli (in water)	0,08	0,31	0,70	1,25	1,95	2,81	3,82	4,99	7,80
Mycobacterium tuberculosis	0,14	0,58	1,30	2,31	3,61	5,20	7,08	9,24	14,44
Poliovirus	0,05	0,18	0,42	0,74	1,16	1,66	2,26	2,96	4,62
Infectus Hepatitis	0,08	0,33	0,75	1,34	2,09	3,01	4,10	5,36	8,37
Influenza	0,05	0,20	0,44	0,79	1,23	1,77	2,41	3,14	4,91
Pseudomonas aeruginosa	0,08	0,32	0,71	1,27	1,99	2,86	3,89	5,08	7,94
Pseudomonas fluorescens	0,05	0,20	0,45	0,81	1,26	1,82	2,48	3,23	5,05
Corona Virus SARS-Cov 2	**0,06**	**0,23**	**0,52**	**0,92**	**1,44**	**2,08**	**2,83**	**3,70**	**5,78**
Yeasts									
Baking yeast	0,06	0,23	0,51	0,90	1,41	2,03	2,76	3,60	5,63
Brewing yeast	0,05	0,19	0,43	0,76	1,19	1,72	2,33	3,05	4,76
Moulds									
Aspergillus amstelodami	0,96	3,85	8,67	--	--	--	--	--	--
Aspergillus niger	1,91	7,62	17,15	--	--	--	--	--	--
Cladosporium herbarum	0,87	3,47	7,80	--	--	--	--	--	--
Mucur mucedol	0,94	3,75	8,45	--	--	--	--	--	--
Rhizopus nigricans	1,60	6,41	14,42	--	--	--	--	--	--

Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
Irradiance measurement	Doublemonochromator* ID No.: 5120236	200 - 400 nm	calibrated before each measurement	N/A
Irradiance measurement	Bentham D7H diffuser (in conjunction with doublemonochromator ID No.: 5110524	200 - 400 nm	calibrated before each measurement	N/A
Electrical parameter	Yokogawa WT 310E ID No.: 1070219	Auto range	2019-08-19	2021-02-19

Traceability of photometric/spectral measurement results
The double-monochromator was calibrated with the irradiance standard (CL7) inventory number = 5110526. Calibration certificate number for CL7 calibration standard = 116-03907.

End of test report.