ESTD 1978

गणेश वैज्ञानिक अनुसन्धान संस्थापन

(भारत सरकार के साद्य तेल आयुक्त एवं दिल्ली सरकार के खाद्य मंत्रालय द्वारा अनुमोदित)

GANESH SCIENTIFIC RESEARCH FOUNDATION

(Approved Competent Laboratory by Government of India and Delhi Govt.)

TEST CERTIFICATE

ISSUED TO:Bhutani International Pvt Ltd ADDRESS: 295, Sant Nagar, East of Kailash New Delhi-110065(India)	Report No.: 13466 Date of Issue: 27.07.2020 Reference: Client's Letter Kind Attention: MR. DEBASISH SINHA Format TCF-GSRF/09/2019

SAMPLE PARTICULARS

Nature of Sample: UVC STERILIZER LAMP	Test Start: 20.07.2020
Brand name: SUPER	Test Completed: 25.07.2020
Product Model: UVCL 42	Samples Quantity: 1 Instruments
Sampling done by Manufacturer/Client	Date of sample receipt: 20.07.2020

Ganesh Scientific Research Foundation is member of International Ultraviolet Association (IUVA) https://iuva.org/ for supporting advancement in Testing and Analysis of UV-C Devices for UV Disinfection of Coronavirus/ Covid 19. Advancing the sciences, engineering & applications of ultraviolet technologies to enhance the quality of human life & to protect the environment.

INTERNATIONAL IUVA ULTRAVIOLET ASSOCIATION

रक्षा अनुसंधान एवं विकास संगठन
रक्षा मंत्रालय, भारत सरकार
DEFENCE RESEARCH & DEVELOPMENT ORGANISATION
Ministry of Defence, Government of India

The product is validated with our laboratory tech partner Progenbiolab Technologies Pvt. Ltd which is in association (Transfer of Technology) with DRDO for Production of Equipment for Combating of Covid 19.Find us at DRDO website https://drdo.gov.in/counter-covid-19-technologies

Other Guidelines - CDC's National Institute for Occupational Safety and Health (NIOSH).

Features –

-UV Sterilizer/Disinfection Tower/Lamp
-UV Irradiation to rupture COVID 19
-Smart and multiutility medical germicidal grade disinfection product for Home, Office, Restaurants, Hotels, Banks, Salons, Hospitals, Clinics etc.
-Safe and Easy to use
-Degree of Disinfection 99.99%
- Efficient & Instant Sterilization to Kill the Viruses, Germs, Bacteria & Pathogens
- Kills Up to 99.9% of Harmful Bacteria, Virus (including COVID19 Corona Virus), germs, allergens, and moulds.
-2 Powerful UVC lights of 21 W each
-254 nm UVC radiation
-UVC intensity of this device, is efficient to kill the microbes withapprox. 120mJ/cm2 at 1 meter.
-All used materials are tested to resist UVC

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	light -Auto disinfection timer 15,30,60 minutes (auto power cut after completion of programmed disinfection cycle) -Remote control distance 20 meters range. -Auto power cut off after cycle completion -Motion sensor-based powder cut off for safety -Programmed irradiation cycle time based on room size -Designed to give UVC radiation to all surfaces minimizing blind spots and shadow -Quartz glass tube lamp, high quality electronics driver mechanism -Power supply of 220V-240V -Total powder consumption 42W. -15 seconds delay start for safety - 3 timings(15/30/60 minutes) -Net Weight approx. 1.4 kgs Reference Methods used – ISO 15714:2019(EN) ISO 15858:2016(EN)

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CAN BE USED TO SANITIZE ANY SURFACE, INCLUDING:

- CONFERENCE HALLS
- HOTEL ROOMS
- GYMS AND SPAS
- DIAGNOSTIC CENTER
- HOSPITALS
- HOME AND OFFICES
- SHOPPING MALLS
- SCHOOLS AND COLLEGES
- CINEMA HALLS
- CLINICS
- OPERATION THEATRES
- SALOONS
- BEAUTY PARLOURS
- WORSHIP PLACES
- PUBLIC PLACES ETC.

S. No	Parameter	Results	Specifications
1	**A. Characteristics:**	**Complies**	**Ultra-Violet (UV-C) light eliminates virus, Germs, bacteria, fungus, molds etc. on the surfaces. Easy to operate Fitted withUVC tubes that enhance the sterilizing strength. Safety Switch to turn-off the light, Auto power cut after completion of programmed disinfection cycle Easy to operate Keeping your goods in a disinfectant environment**
	B. Specifications:	**Complies**	**On/ Off Manual Operation Mobile application control OPTIONAL Motion Detector UV Light Life Span up-to 10000 hours Dimension Approx. -530mm h,195 mm dia Weight approx. 1.4 Kg**

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2	Warning Signs	Complies	All potentially dangerous areas should be conspicuously labelled with warning signs e.g. "UV HAZARD-PROTECT EYES AND SKIN"
3	Performance of a UV Disinfection Device	Complies	Dose-response models, where UV-dose is measured Tests conducted in microbiology labs, where rate-of-kill is measured for various pathogens under tightly controlled conditions
4	Free of Toxins Environmentally friendly - no ozone emissions during or after use	Complies	Produces no ozone or other Secondary contaminants
5	Sterilizing Efficiency Testing Antimicrobial Efficacy Ultraviolet Light Exposure Dosage	Passed for Log 6Reduction up to 99.99% for killing microbes and viruses as per WHO requirements	The degree of inactivation by ultraviolet radiation is directly related to the UV dose applied. The UV dose is the product of UV intensity [I] (expressed as energy per unit surface area) and exposure time [T]. Therefore: DOSE = I x T This dose, sometimes referred to as fluence, is commonly expressed as millijoule per square centimetre (mJ/cm2). The units "J/m2" are used in most parts of the world except for North America, where "mJ/cm2" are used. The reduction of micro-organisms is classified using a logarithmic scale. A single log reduction is a 90% reduction of organisms. A two-log reduction is a 99.99% reduction of organisms, followed by a 6-log reduction (99.99%).
6	Cost Effective	Complies	The cost to run UV systems is very low. UV systems also require little maintenance and upkeep due to their simplistic nature. UV bulbs last thousands of hours at their peak output, limiting the need for routine consumable change out and maintenance.
7	Time of Disinfection	The Light is Capable to disinfect the surface from 60sec to 30mins seconds up to 99.99%	Disinfection times are fast, with a typical disinfection cycle lasting about 60 seconds to 30 mins. This allows for extremely fast turnover spaces being disinfected. Due to its simplicity, UV-C disinfection is extremely easy to understand. All surfaces within a certain distance, will observe an assured level ofdisinfection in a certain amount of time as long as the light is not blocked from shining on that surface. It becomes very easy to plan the use of a UV-C disinfection system

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			when the parameters and limitations are easily established and understood. There is no need to establish air flow patterns with UV-C as you would with a fogging system. Nor is there a need to isolate rooms from HVAC systems or seal doors. This, along with the lack of chemical mixture, makes the preparation time quick to setup and start a UV-C disinfection cycle.
8	Safety (Safe for Human Use)	The device is equipped with PIR sensors (motion sensor)	UV-C is classified as "reasonably anticipated to be a human carcinogen" by the National Toxicology Program. It presents a hazard to skin and eyes, so direct exposure to UV-C is always to be avoided. UV-C is blocked by a number of materials, including glass (but not quartz glass) and most clear plastics.
9	Residue Free Disinfection	Complies	UV-C provides residue free disinfection, so there is no concern over dangerous residues that need to be wiped down or neutralized after the disinfection occurs. The process is environmentally friendly in that there are no dangerous or toxic chemicals that require specialized storage or handling. Since no chemicals are added to the air/water, there are no process byproducts to be concerned with. The UV bulbs do not require special handling or disposal either, making the system a green alternative to chemical disinfectants.
10	High Efficiency and Applicability	Complies	UV systems use low-pressure, mercury-arc germicidal lamps which are designed to produce the highest amounts of UV radiation - where 90% of energy is typically generated at 254nm. This radiation is very close to the peak of the germicidal effectiveness curve of 265nm, the most lethal wavelength to microorganisms.
11	Suppressing CoV-2 Virus	Complies	Effectively inactivate the SARS-CoV-2 virus, responsible for COVID-19, if the virus is directly illuminated by UV-C at the effective dose level
12	Wavelength Test of 254 nm	Pass for UV Wavelength	The germicidal range of UV is within the

		Test	100-280nm wavelengths, known as UV-C, with the peak wavelength for germicidal activity being 254 nm. This range of UV light is absorbed by the DNA and RNA of microorganisms, which causes changes in the DNA and RNA structure, rendering the microorganisms incapable of replicating. A cell that can't reproduce is considered dead; since it is unable to multiply to infectious numbers within a host. This is why UV disinfection is sometimes called ultraviolet germicidal irradiation (UVGI)
13	UVC Light Specifications (Instrument)	Complies	UVC Light tube

Sterilizing Efficiency -

SI.NO	Effective on below as per the study of Microbiology carried out	Conclusion to be	Reference
1	Human Coronavirus (COVID19)	Absent	UV-C light effectively deactivates most viruses and germs on directly irradiated surfaces.Moreover, in laboratory testing, Signifies UV-C light sources inactivates 99% of SARS-CoV-2 virus on a surface with an exposure time of 6 seconds. Fluence (UV Dose) Required to Achieve Incremental Log Inactivation of Bacteria, Protozoa, Viruses and Algae Revised, updated and expanded by Adel Haji Malayeri, MadjidMohseni, Bill Cairns and James R. Bolton. With earlier contributions by Gabriel Chevrefils (2006) and Eric Caron (2006) With peer review by Benoit Barbeau, Harold Wright (1999) and Karl G. Linden. By the National Emerging Infectious Diseases Laboratories (NEIDL) at Boston University, which has been collected from a laboratory experiment conducted by Dr. Anthony Griffiths (Associate Professor of Microbiology at Boston University School of Medicine) and his team at the premises of the NEIDL (such data will be the subject of a forthcoming scientific publication by Boston University), shows that Signifies UV-C light sources irradiating the surface of a material inoculated with SARS-CoV-2 (the virus that causes
2	Feline Calicivirus	Absent	
3	Rotavirus	Absent	
4	Hepatitis A virus	Absent	
5	Adenovirus	Absent	
6	Norovirus	Absent	
7	Simian rotavirus	Absent	
8	Echovirus	Absent	
9	Canine parvovirus	Absent	

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10	Feline panleukopenia	Absent	the COVID-19 disease) at a UV-C dose of 5mJ/cm2 (exposure time 6 seconds) resulted in a 99% reduction of the SARS-CoV-2 virus present on that surface. This study determined that a UV-C dose of 22mJ/cm2 results in a reduction of 99.9999% of SARS-CoV-2 virus on that surface (exposure time 25 seconds)
11	Coxsackievirus	Absent	
12	Enterovirus Type D68	Absent	
13	Feline Calicivirus Strain II	Absent	
14	Feline Panleukopenia Virus	Absent	
15	Minute virus of mice	Absent	The COVID-19 virus (SARS-CoV-2) is so new, the scientific community doesn't yet have a specific deactivation dosage. However, we know the dosage values for comparable viruses in the same SARS virus family are 10-20 mJ/cm^2 using direct UVC light at a wavelength of 254nm; this dosage will achieve 99.9% disinfection (i.e., inactivation) under controlled lab conditions. In real-life, the virus is often hidden or shaded from direct UVC light, reducing UVC's effectiveness. To compensate, researchers are applying dosages of 1,000 - 3,000 mJ/cm^2 to ensure 99.9% deactivation, the current CDC disinfection goal (*see CDC's recently published guidelines, online*).
16	Rhinovirus Type 37	Absent	
17	Poliovirus	Absent	
18	Bacteria (ATCC equivalent)	Absent	
19	Bacteriophage (MS2)	Absent	

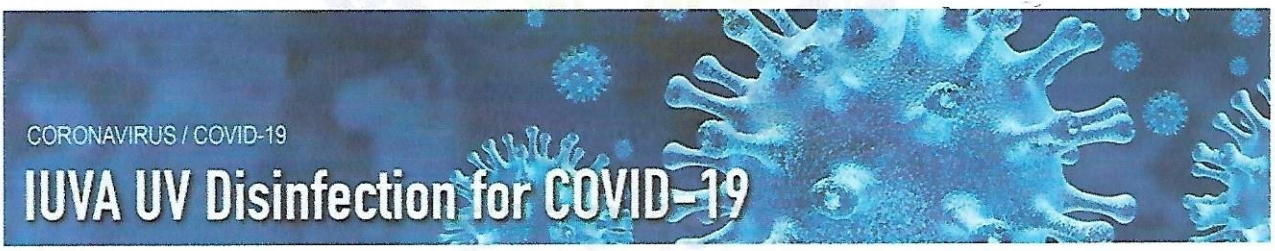
MICROBIOLOGY STUDY DONE ON:
Non-Porous Material
to perform the Antibacterial properties test in the submitted sample.Test instrument: Biochemical incubator

Test strains	Test Time	Parallel test	Sterilization rate (%)	Sterilization logarithm (KL)
Escherichia coli	60 SEC	1	92.10	1.10
		2	91.00	1.09
		3	92.51	1.12
		4	92.02	1.02
		Average value	>91.0	>1.10

ATCC	15 min	1	99.02	2.11
		2	99.03	2.02
		3	99.13	2.05
		4	99.00	1.99
		Averag e value	>99.0	>1.9
	30 min	1	99.14	2.06
		2	99.09	2.05
		3	99.12	2.05
		4	99.15	2.08
		Averag e value	>99.1	>2
	60 min	1	99.999	6.11
		2	99.999	6.12
		3	99.999	6.10
		4	99.999	6.11
		Averag e value	>99.99	>6.0

Test strains	Test Time	Parallel test	Sterilizati on rate (%)	Sterilizatio n logarithm (KL)
Staphyloco	60 SEC	1	90.22	1.03
		2	90.11	0.99
		3	90.08	0.99
		4	90.39	1.04
		Average value	>90.0	>0.99
		1	94.95	1.36
		2	95.15	1.32

ccus aureus ATCC	15 min	3	95.12	1.31
		4	95.04	1.31
		Average value	>95.0	>1.30
	30 min	1	98.85	1.96
		2	99.19	2.07
		3	98.77	1.89
		4	99.79	1.93
		Average value	>99.8	>1.9
	60 min	1	99.999	6.12
		2	99.999	6.04
		3	99.999	6.14
		4	99.999	6.13
		Average value	>99.99	>6.0



ANALYST

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AUTHORISED SIGNATORY

NOTE:

- Results # shows the performance tested under laboratory conditions for the submitted sample by the client, please note that the test may not reflect the reality of use.
- Laboratory is not responsible for safety of the users in any case, these results do not purport to address all of the safety concerns, if any associated with use of the product.
- Users are responsible to establish safety and determine the applicability of the instrument as per the regulatory requirements and uses.
- Methods* are mentioned for reference purposes, as laboratory have developed in-house methods to perform the tests
- Training – Personnel should be trained in correct and safe procedures of preparing, start-up, working.
- Direct exposure to UV-C is dangerous. UV-C disinfection luminaires must only be sold either directly by Signify or re-sold through qualified partners, and always installed by qualified professionals according to our stringent safety and legal requirements.
- UV-C products are not meant to be used in applications or activities which may cause and/or lead to death, personal injury and/or damage to the environment. Exposure to UV-C is dangerous.
- Instrument may be provided with physically integrated equipment or time safeguards, such as presence or motion detection sensors or timers, or otherwise to be installed with containment safeguards, to enable the safe operation of our products.
- Methods# are mentioned for reference purposes, as laboratory have developed in-house methods to perform the tests with use of kits.
- UV-C lamps present minimum risk when used by professionals who know how to use them. They must shield their eyes and skin to avoid light damage and severe injuries to the eyes and skin.
- We advise customers to exercise caution when selecting equipment.
- At this moment, none of our UV-C lamps are certified or approved under any applicable laws as a medical device and as such, Signify and/or any of its group companies do not currently intend for them to be used as medical devices anywhere in the world.
- Warnings and Safety: A lamp breaking is extremely unlikely to have any impact on your health. If a lamp breaks, ventilate the room for 30 minutes and remove the parts, preferably with gloves. Put them in a sealed plastic bag and take it to your local waste facilities for recycling.
- Do not use a vacuum cleaner. DANGER: Risk Group 3 Ultra Violet product. These lamps emit high power UV radiation that can cause severe injury to skin and eyes. Avoid eye and skin exposure to unshielded product. Use only in an enclosed environment which shields users from the radiation

Current Updates

- **Our laboratory (gsrf.co.in) tech partner Progenbiolab Technologies Pvt. Ltd which is in association (Transfer of Technology) with DRDO for Production of Equipment for Combating of Covid 19.Find us at DRDO website https://drdo.gov.in/counter-covid-19-technologies ,for any queries please call 9599974780**

Image of Instrument

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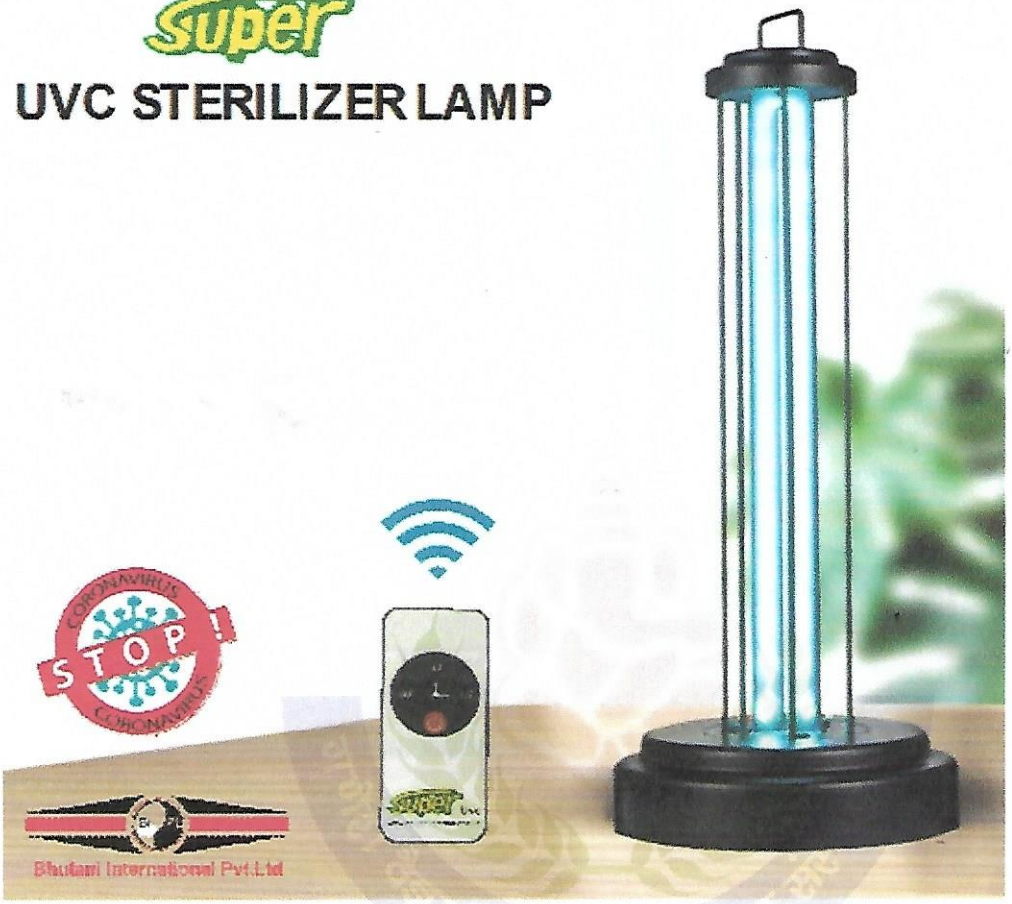
super

UVC STERILIZER LAMP



End of the Report (Total 11 pages)

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