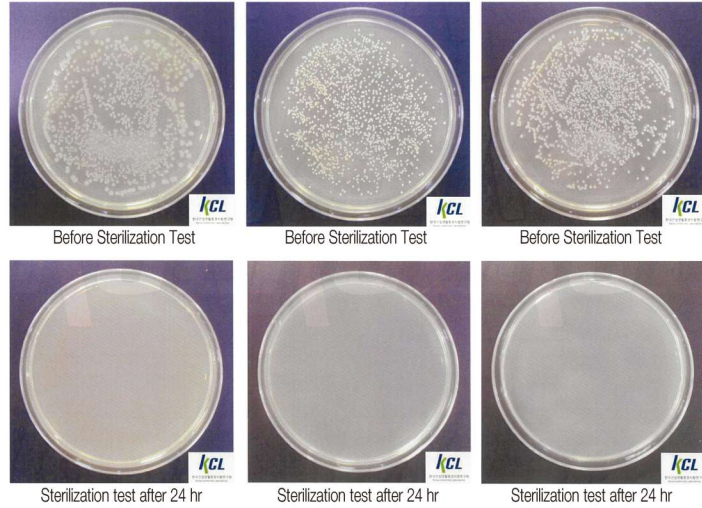
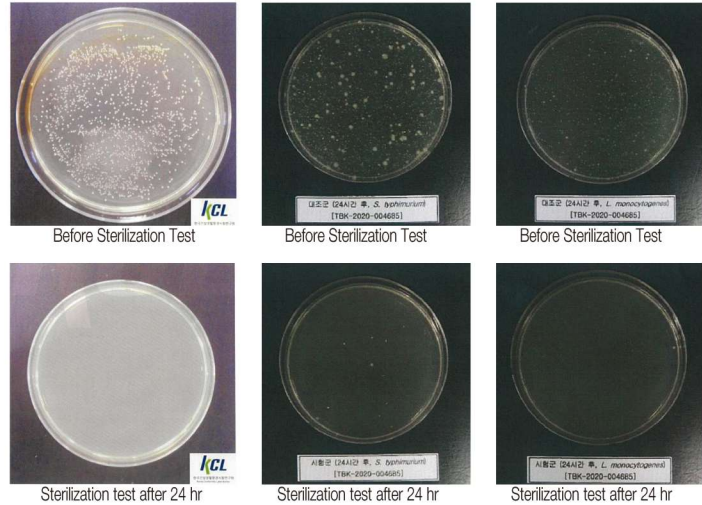


Korea Conformity Laboratories(KCL) /
Korea Testing & Research Institute(KTR) Results

Escherichia coli Staphylococcus aureus Klebsiella pneumoniae
 · Distance between lighting and test strains :1m · Distance between lighting and test strains :1m · Distance between lighting and test strains :1m
 · Concentrate after 24hr · Concentrate after 24hr · Concentrate after 24hr



MRSA(Staphylococcus aureus subsp.) S. typhimurium L. monocytogenes
 · Distance between lighting and test strains :1m · Distance between lighting and test strains :1m · Distance between lighting and test strains :1m
 · Concentrate after 24hr · Concentrate after 24hr · Concentrate after 24hr



* Material (glass, plastic, metal) which is hard to penetrate for germs will have shorter time for sterilizations.
 Sterilization duration varies by surface materials.

KR Biotech Co., Ltd.
Institute of Infectious Disease Control

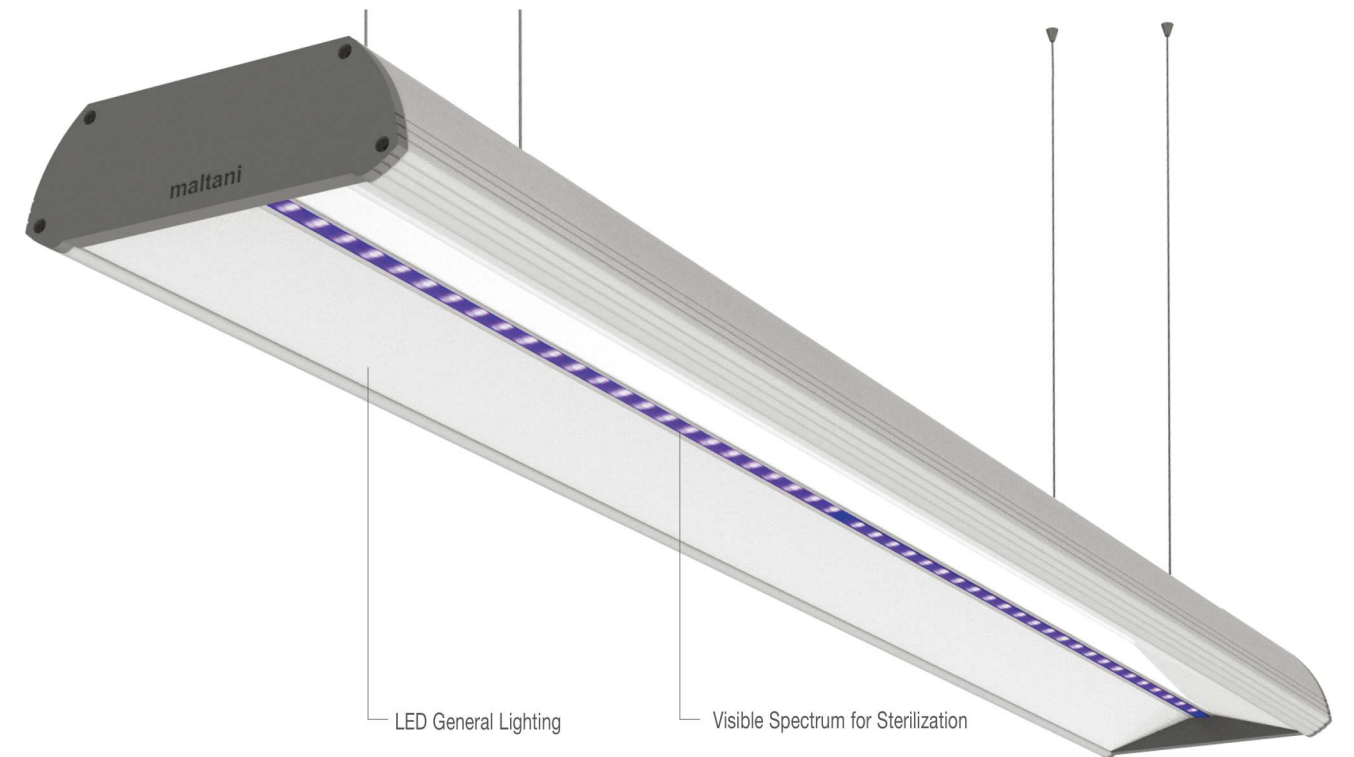
COVID-19 Sterilization Test Report

Test Report					
Personnel			Tel. No.		
Client	Affiliation MALTANI Corp.		E-mail		
Address Maltani B/D, Yeoksam-Ro, Gangnam-Gu, Seoul 06196, Korea					
Request	Virucidal Activity Test by LED Irradiation				
Product	CLEAN SERIES MODULE				
Purpose of Use on the Product	Sterilization				
Test Virus	COVID-19 (SARS-CoV-2)	Cell Line	Vero E6		
Test No.	KR-2009-042-MTN01-C	Test Period	2020.09.04-09.11		
Reaction Time	30 min, 60 min, 90 min	Titration	CPE		
Test Temperature	Room Temperature (Approx. 20°C)	Tester	Hansam Cho		
Test Result					
Product Name	Virus Titer TCID ₅₀	Distance	Treatment time	Virus Reduction Rate	
				(log)	(%)
CLEAN SERIES MODULE	6.81x10 ⁶	20 cm	30 min	2.42	99.62%
			60 min	≥4.42	≥99.99%
			90 min	≥4.00	≥99.99%
Result: As a result of the sterilization test for COVID-19 (SARS-CoV-2) by LED (405nm) generated in the CLEAN SERIES MODULE of MALTANI Corp., it showed more than 99.99% virucidal effect in 60 minutes treatment at a distance of 20cm.					
September 17, 2020					
Test Manager: Young Bong Kim					
KR BIOTECH Co., Ltd.					
<small>* This test report is a result limited to the sample and sample name provided by the client and does not guarantee the quality on the overall product. * This report cannot be used for PR, advertising and litigation purposes, and use of this report other for its original purpose is prohibited.</small>					

99.99%
of
COVID-19 Virus
has been eliminated.

CLEAN LINEAR

Office lighting with the visible spectrum for Sterilization



Sterilization INCLUDING COVID-19

by Maltani's Sterilization Lighting

By just turning on the light, germs are sterilized and prevented from growth.

Protection from harmful germs in surroundings.

Violds new sterilization system which is also used in NASA's International Space Station is used in Maltani's Visible Sterilization Lighting. Our lighting system is certified by IEC62471 test for "exempt" level of safe to human skin and eyes.

Maltani's Visible Sterilization Lighting can be installed in various locations



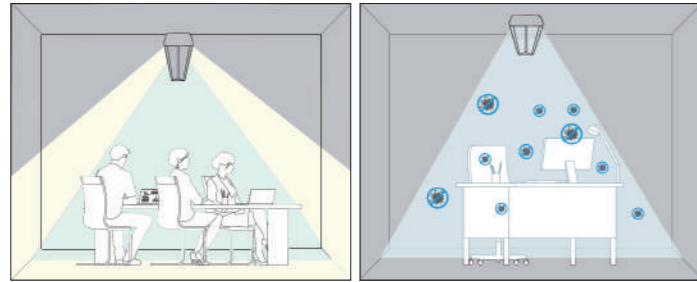
2F, 607-20, Yeoksam-dong, Gangnam-gu,
Seoul, Rep of KOREA

www.cleandedge.co.kr

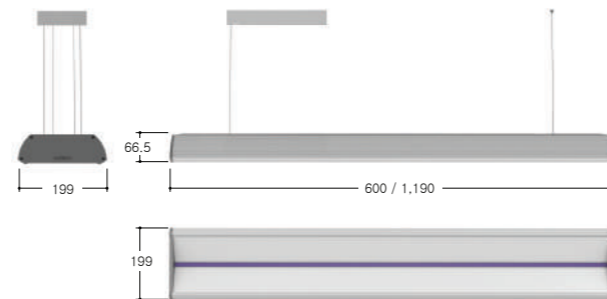
maltani

CLEAN LINEAR (Office lighting with the visible spectrum for Sterilization)

Healthy + Eco-Friendly

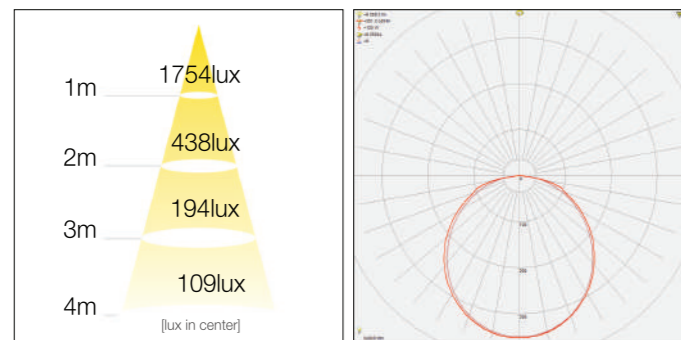


Size (mm)



Light Distribution

S-HLP6060-50-C001 / S-HLP6060-40-C001 / S-HLP6060-30-C001



Human Influence Test _ General Type

IEC 62471(Human Influence Test Result) : **No risk to human body**

- IEC National standards and standards coordinators in the fields of electricity, electronics, telecommunications, nuclear energy
- IEC 62471 Optical biological stability: Hazardous testing of the human body (eye, skin) of lighting equipment
Clean Edge measurement results : **Check exempt rating**
(Classification of grades : exempt / risk 1 / risk 2 / risk 3)

KILT IEC 62471 Clean Edge measurement results	
Page 4 of 17	Report No.: KILT2005-U03770
Test item particulars	
Tested lamp	<input checked="" type="checkbox"/> continuous wave lamps <input type="checkbox"/> pulsed lamps
Tested lamp system	
Lamp classification group	<input checked="" type="checkbox"/> exempt <input type="checkbox"/> risk 1 <input type="checkbox"/> risk 2 <input type="checkbox"/> risk 3
Lamp cap	N/A
Bulb	LED
Rated of the lamp	200-250 V~, 50/60 Hz, 114 W
Furthermore marking on the lamp	N/A
Seasoning of lamps according IEC standard	N/A
Used measurement instrument	Double monochromator
Temperature by measurement	(25 ± 3 °C)
Information for safety use	N/A
Possible test case verdicts:	
- test case does not apply to the test object	: N/A
- test object does meet the requirement	: P (Pass)
- test object does not meet the requirement	: F (Fail)
Testing:	
Date of receipt of test item	: 2020-05-15
Date (s) of performance of tests	: 2020-05-18

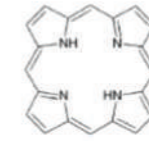
Products Spec.

Model NO.	Power (W)	Luminous Flux (lm)	CCT (K)	CRI (Ra)	Size (mm)	Weight (kg)	Input Voltage (VAC/Hz)
S-HLP6060-50-C001	60W + 60W (2ch or 1ch)	5,320	5,000	≥ 80	L1,190 × W199 × H66.5	7	AC 200-250 50/60
S-HLP6060-40-C001	60W + 60W (2ch or 1ch)	5,320	4,000	≥ 80	L1,190 × W199 × H66.5	7	AC 200-250 50/60
S-HLP6060-30-C001	60W + 60W (2ch or 1ch)	5,320	3,000	≥ 80	L1,190 × W199 × H66.5	7	AC 200-250 50/60
S-HLP3030-50-C001	30W + 30W (2ch or 1ch)	2,660	5,000	≥ 80	L600 × W199 × H66.5	4	AC 200-250 50/60
S-HLP3030-40-C001	30W + 30W (2ch or 1ch)	2,660	4,000	≥ 80	L600 × W199 × H66.5	4	AC 200-250 50/60
S-HLP3030-30-C001	30W + 30W (2ch or 1ch)	2,660	3,000	≥ 80	L600 × W199 × H66.5	4	AC 200-250 50/60

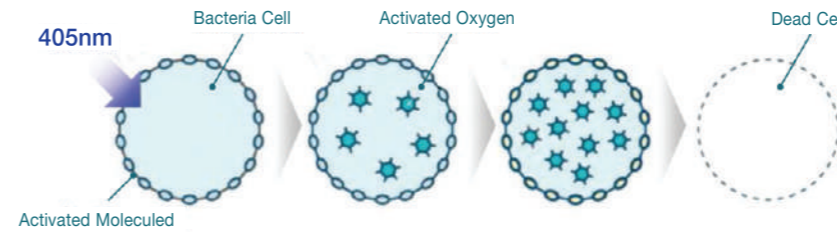
CLEAN EDGE _ Visible spectrum hygiene sterilization mechanism

Visual Light Sterilization Principle

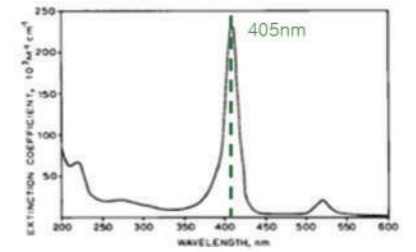
- Porphyrin reaction decomposition(405nm)
When irradiating 405 nm of porphyrin reaction, it destroys cells by producing "porphyrin extract" → Reactive oxygen species



* Porphyrin:
405nm reactant present in bacteria



<Porphyrin Absorption Curve>

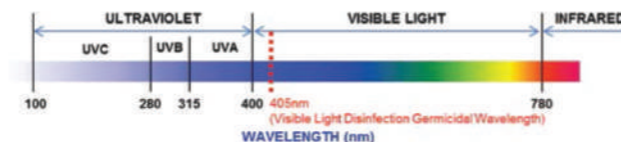


* Source : A journal published by Johnson Matthey Plc.

How to sterilize with Visual Spectrum(405nm) vs UV

Categorization	UVC (100~280nm)	UVB (280~315nm)	UVA (315~400nm)	Visible Light (405nm)
Feature	<ul style="list-style-type: none"> • Sterilization is done in short duration • Bacterial and Virus are burnt to death • Lighting Source can't be exposed directly to the users(Applicable space and structure will have limitations) • Eyes and skin can be damaged. Short wavelength (253nm) can destroy DNA and causes cancer 	<ul style="list-style-type: none"> • Direct Sterilization is possible • Lighting source can't be directly exposed • Can damage eyes and skin (has the characteristics of short wavelength. When exposed, DNA is destroyed and can cause cancer) 	<ul style="list-style-type: none"> • Lighting source can't be directly exposed • Can damage eyes and skin • This spectrum does not directly sterilize 	<ul style="list-style-type: none"> • None contact Sterilization • 405nm light will react Porphyrin to decompose. Decomposition will increase with the amount of elimination with time • Sterilization is proportional to the time of investigation
Human Influence	When exposed, DNA is destroyed and can cause cancer			Human Influence Free

Visible light contactless sterilization



Spectral comparison (sunlight vs. sterilization module)

