



# Do You Know

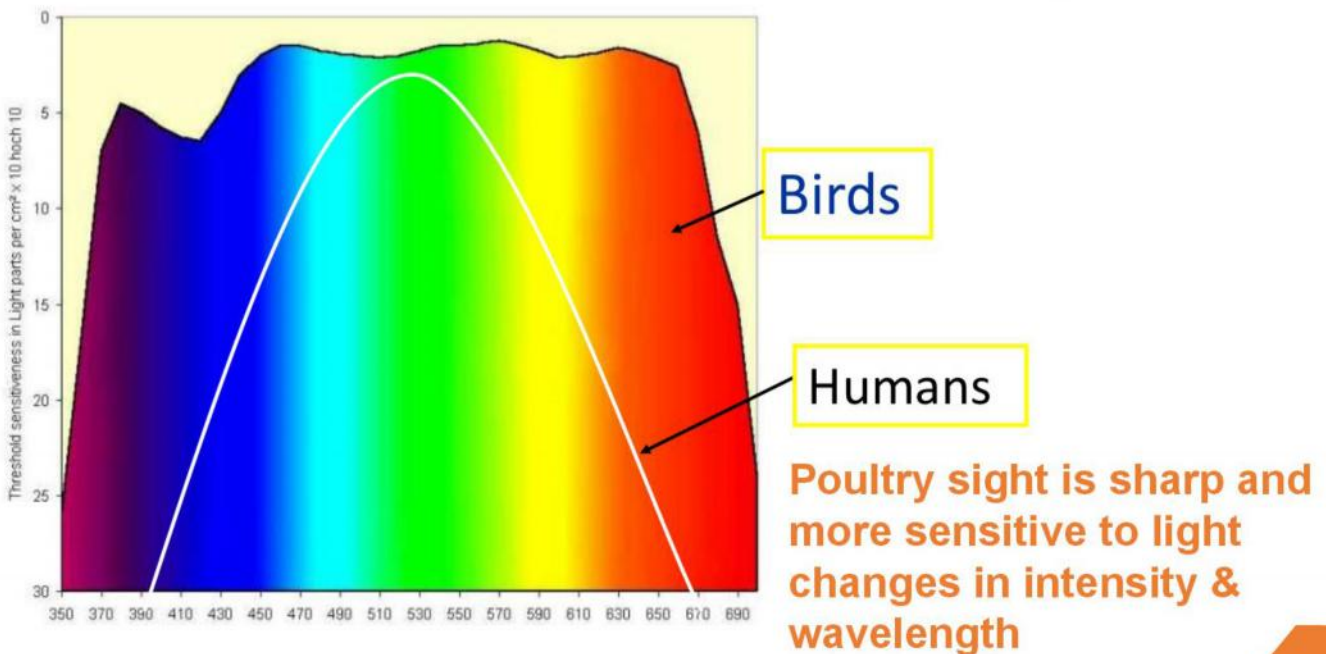
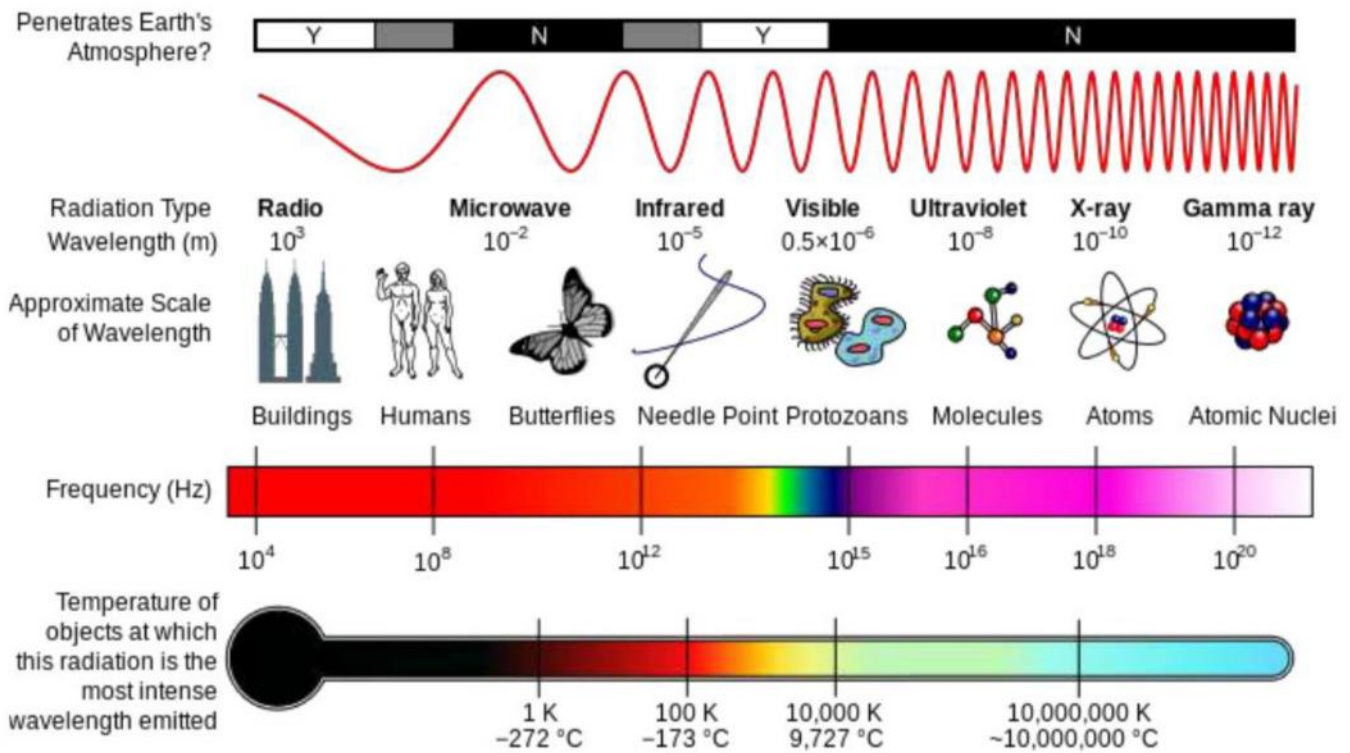
What kind of light should you use in your chicken



- ✓ Best Lighting Spectrum
- ✓ Best Structure Design
- ✓ Best Materials + Components
- ✓ Best Dimming Technology
- ✓ Best and Quickest Installation
- ✓ Best Control system

# What We have considered about the Light for poultry

- Portion of the Electromagnetic Spectrum
- Radiation
- Ultra Violet (UV)
- Visible
- Infra red (IR)
- Light Environment:
- Duration e.i., Photoperiod, Day length
- Luminance e.i., Intensity
- Wavelength e.i., Color



# Poultry biology

## 1. Retinal →

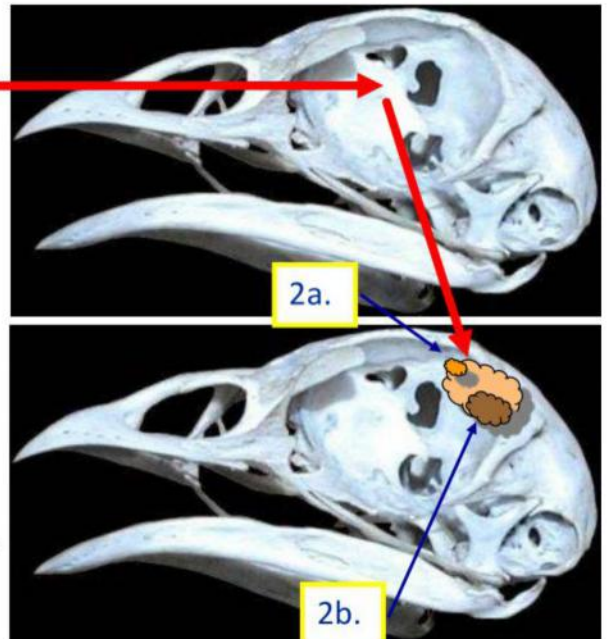
- Cone photoreceptors
- Visual perception
- Dopamine & UV-A ↔ melatonin

## 2a. Pineal → "Soul gland"

- Photoreceptors (>4 lux)
- Circadian clock: serotonin and melatonin

## 2b. Hypothalamic → Sexual Maturity

- Deep encephalic photoreceptor
- Sexual hormones



## Basic Physiological effects of light

### 1. Facilitate sight

- Food search
- Stimulate Internal Cycles
- Circadian- day length changes

### 2. Initiate and regulate hormone release

- Metabolic regulation: fat & muscle deposition
- Reproduction
- Calcium and phosphorus and bone formation

## Wavelength differences

### Ultraviolet A-B light

Vitamin D conversion, calcium and phosphorus metabolism, bone formation, immune system, blood pressure and circulation, muscle development

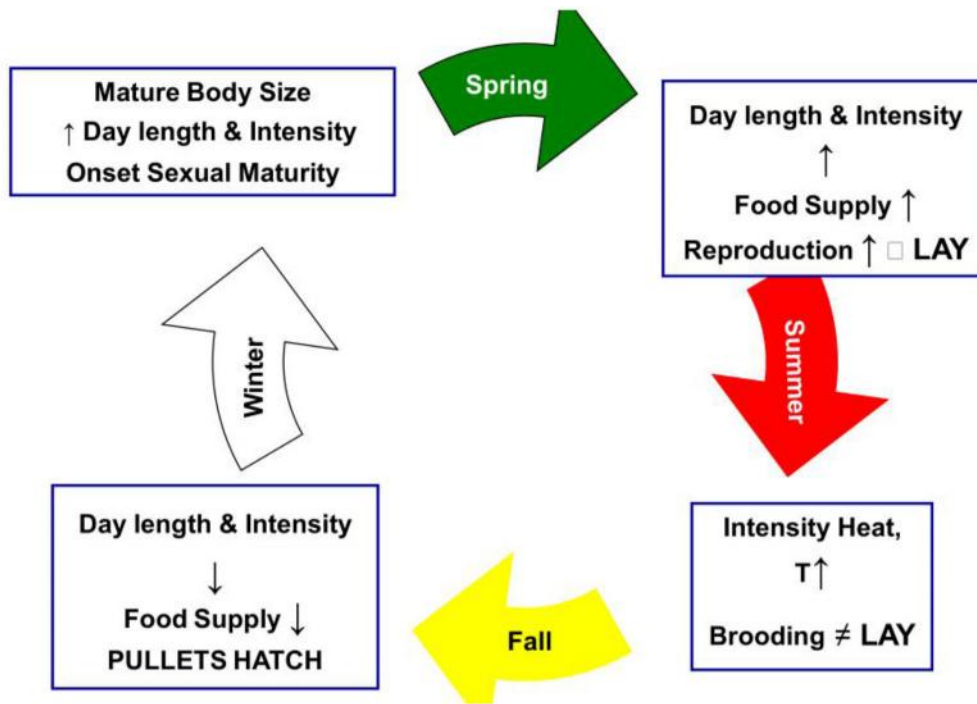
### Visual light

Birds have 4 types of single-cone photoreceptors and tetra-chromatic color vision. The 5th single-cone is luminance based for motion detection.

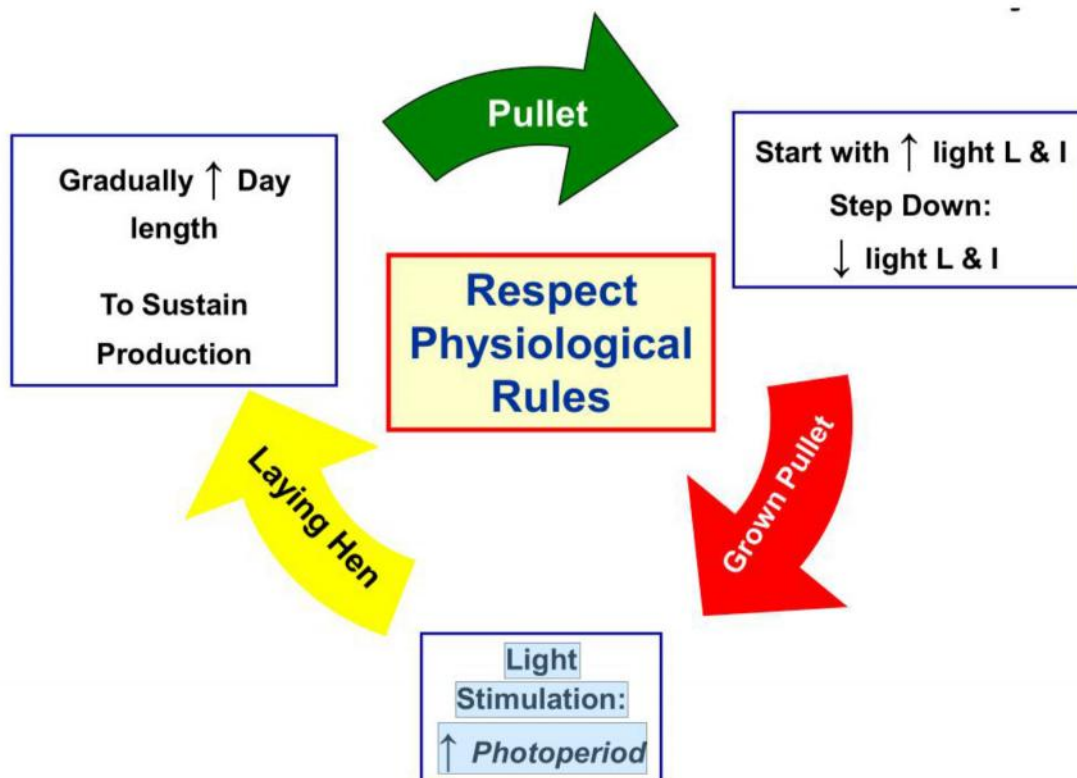
### Infrared light

Perceived as heat

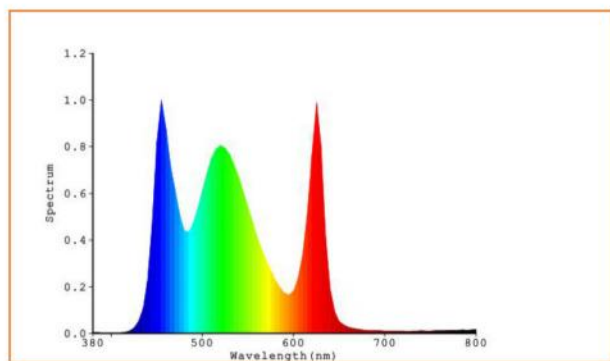
## "Light" is Responsible for Wild Bird's-Seasonality



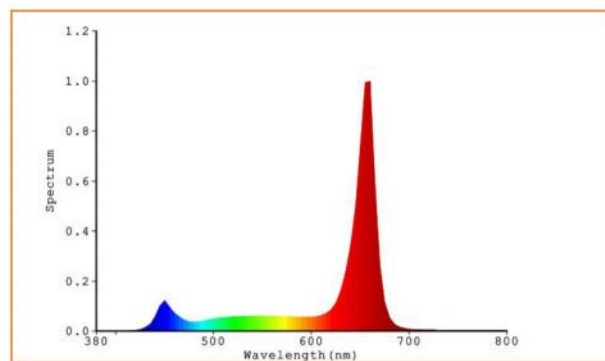
## LED light Mimics Nature to Trick Seasonality



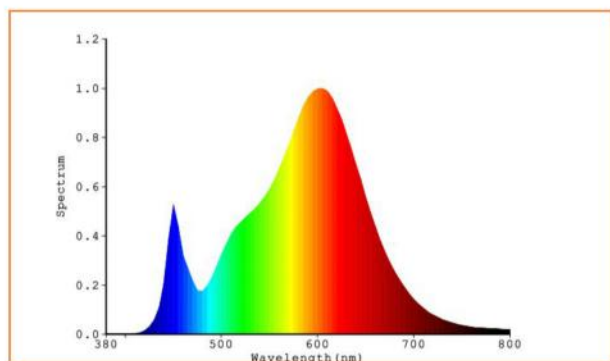
# What is the Best Lighting Spectrum for your poultry farm ?



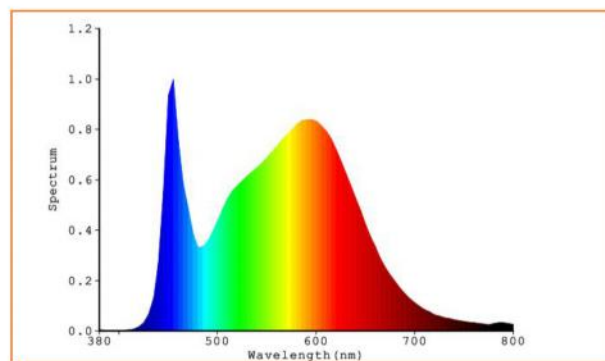
Broiler Friend / Full Spectrum



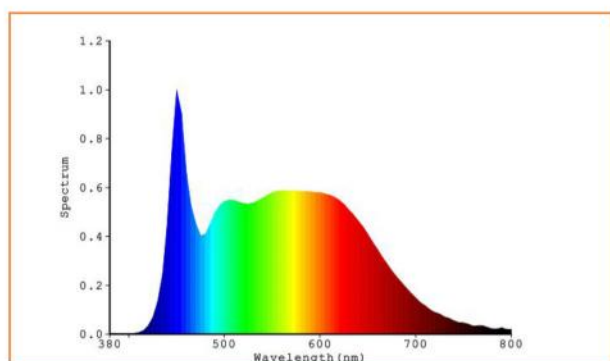
Layer Friend / Red enhance



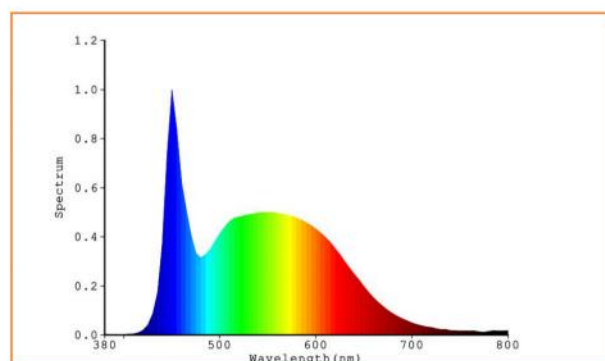
3000K



4000K



5000K



6500K

The new Variable Output Broiler Fixture is designed with productivity enhancing Broilers Friend LED lighting technology to provide the poultry grower the most advanced solution for 110V/230V poultry house lighting. Designed specifically for installation on metal drop ceilings, the Broilers Friend LED lighting technology designed to provide three distinct lighting profiles for improved broiler productivity and animal welfare:

Brood lighting- full spectrum with enhanced 440nm blue and 660nm red wavelengths

Grow-out lighting- full spectrum with predominant 440nm wavelengths

Moonlighting / Catch-lighting- monochromatic blue 440nm light

*LED technology does have limitations, especially in the harsh Dairy or chicken house Environment. Do you know what they are so you can choose the right design lighting for your application?*

## **How does it dissipate heat in the application it is installed.**

V-shape design -More space for LED + Driver heat transmission

We use two PCB in a V-shape aluminum heat sink . LED life-span will be much longer by offering enough space and heat sink



**We use**

192pcs Premium brightness 0.2w 2835LED on 120cm 18w

224pcs Premium brightness 0.2w 2835LED on 150cm 24w

320pcs Premium brightness 0.2w 2835LED on 180cm 30w

We only use 47%-53% of the LED power consumption , which can ensure a lower heat consumption , higher lighting efficiency and longer life-span



# Considering there will be Periodic cleaning in harsh Dairy or chicken house , **Waterproof is very important .**

Our Structural waterproofing design passed IP66 testing

Test of model:WP5E-T8-36W-D

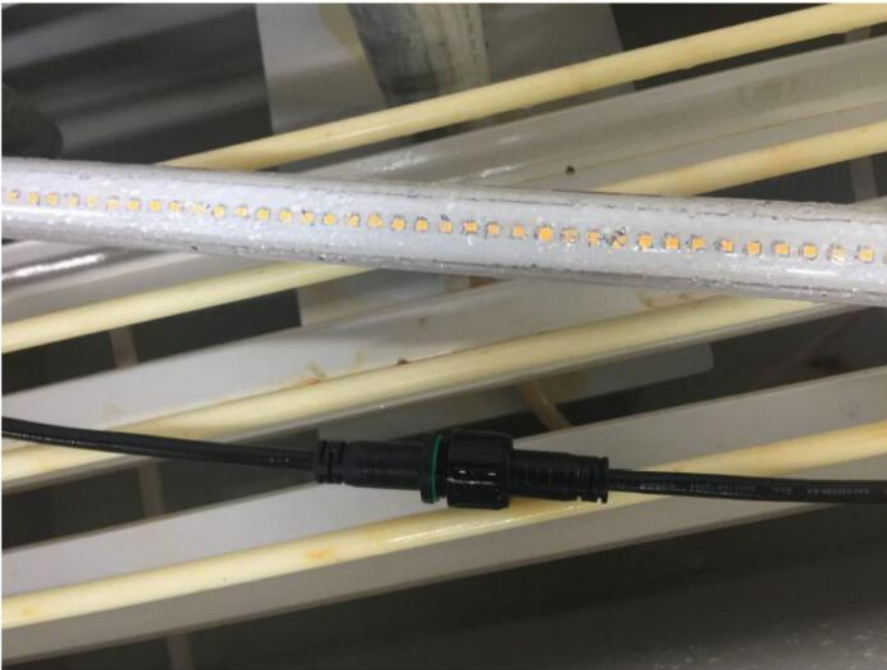
Report No.:LCS17114031BS



As we know Structural waterproofing is much better than Glue waterproof ,thanks to the design it does not effect by time.  
But Glue has a short life-span which is easy to become yellow ,Dry ,if the glue does not work someday you can image how dangerous it is.

## Anti-ammonia, anti-urine and chemical materials from cleaning agent.

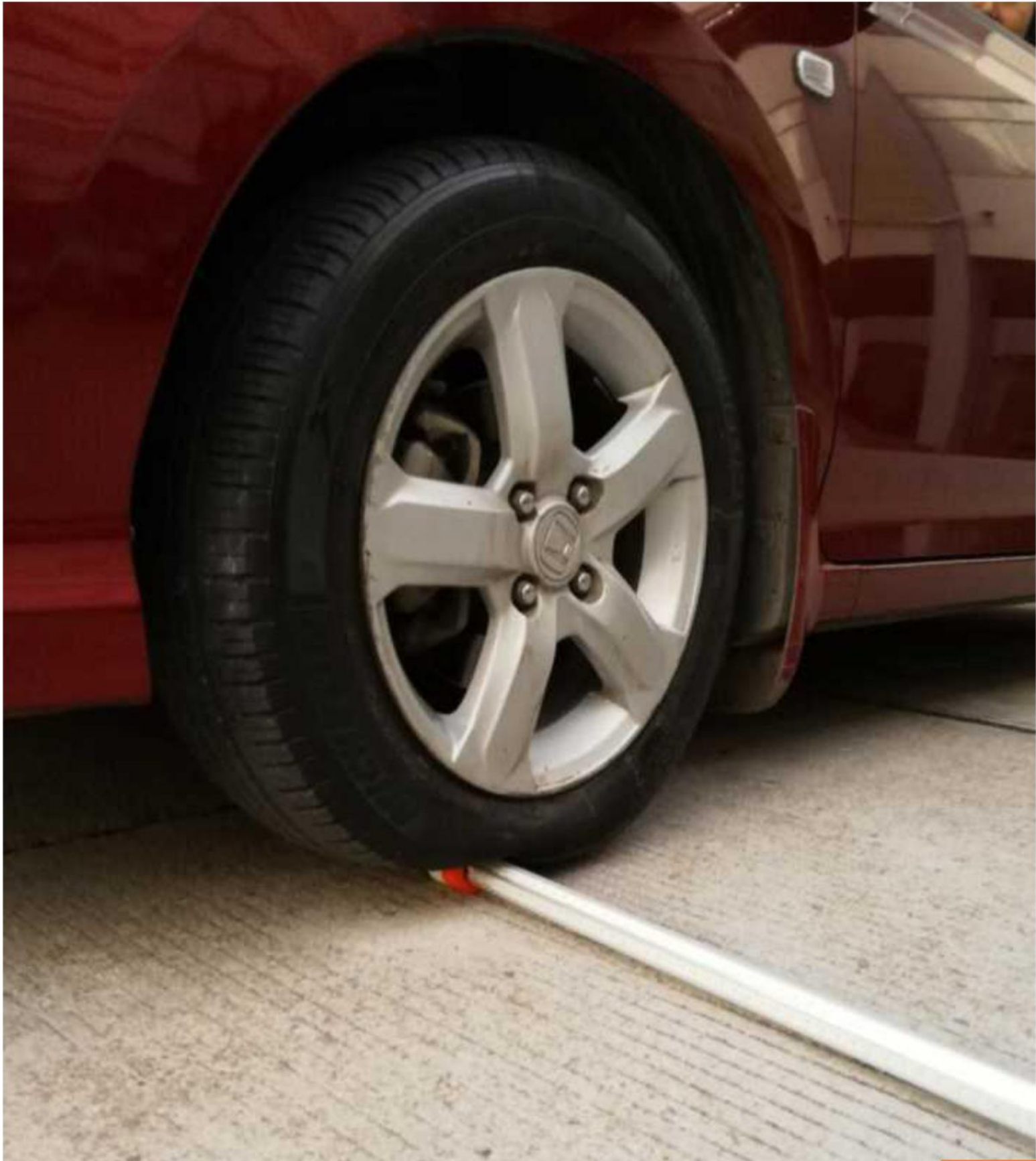
We use PC+PMMA housing and Nylon end cap for male/female connectors, besides, we use always rubber cable to avoid the corrosion from chemical materials(Ammonia, urine, weak acid, weak alkaline).





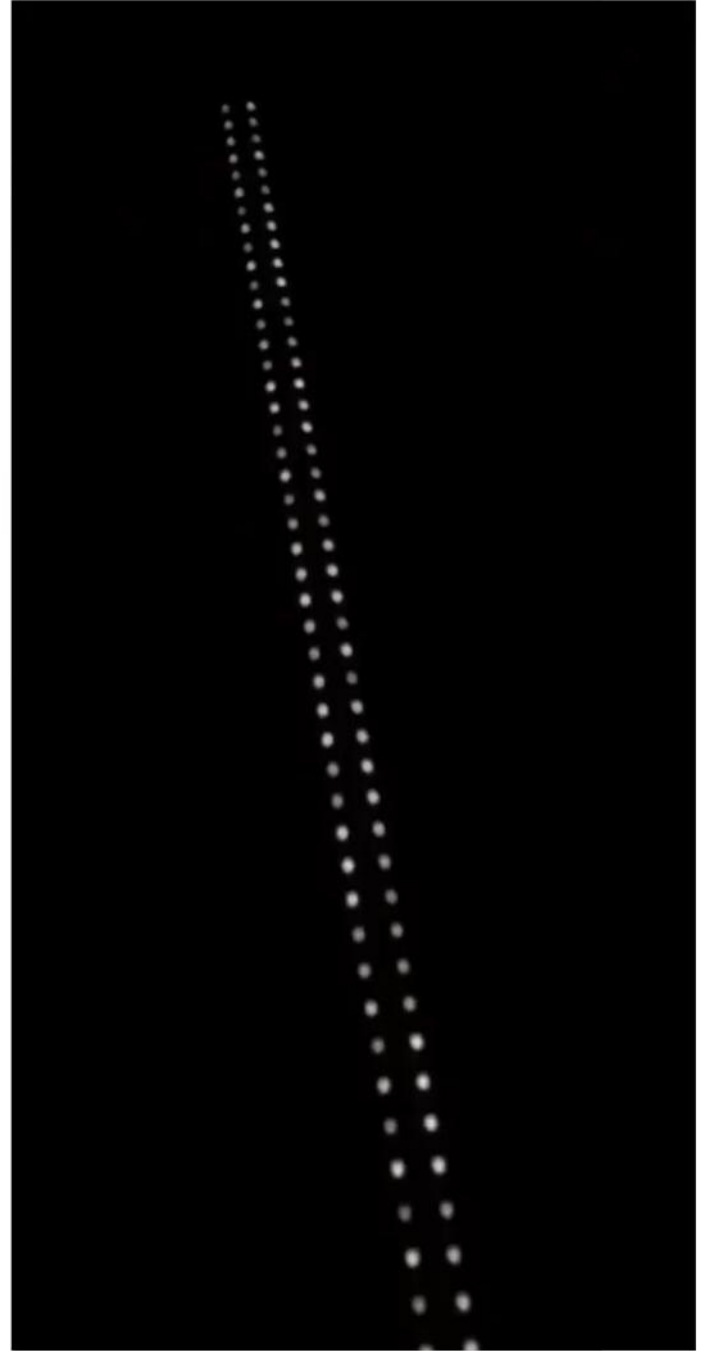
IK10 Design

**See how strong it is**



# Patent Non-flickering dimming Technology

We are the best in the world in Triac Dimming efficiency from 0.2-100% without any flicker(key factor for poultry growth ) - simulate sunrise and sunset with our smart dimming controller, flicker frequency is no less than 100Hz.



Testing in IES dark Room  
( from 0.2% to 100%)

# Non-flicking Lighting solution

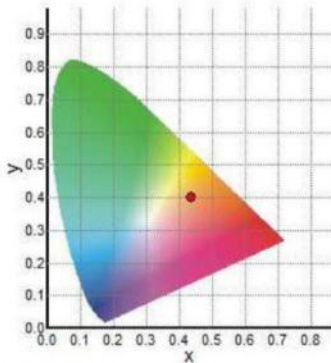
## Flicker testing report at 100% brightness

### Report of Photometry & Chromaticity for Light Source



#### Product Description

Product Name	1.2m 20W IP66 LED tube	Brightness:100%
Module	WP4E-20W-D	
Date(YYYY/MM/DD)	2018/1/15 17:22:40	
Temperature(°C)	20°C	Re. Humidity(65%)

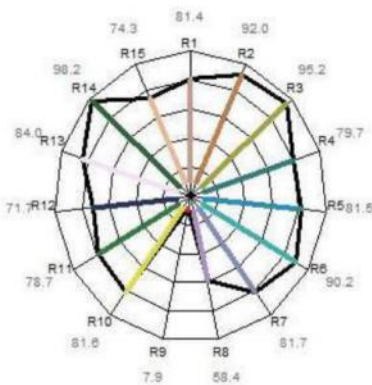


CIE1931 Chromaticity Diagram

#### Photometry and Chromaticity

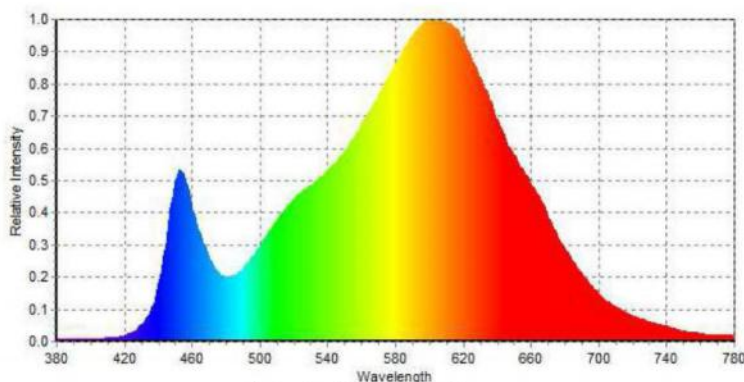
CIE_x	0.4380	Duv	-0.0015
CIE_y	0.4007	$\lambda_d$ (nm)	583.6
CIE_u'	0.2527	Purity(%)	52
CIE_v'	0.5202	FWHM(nm)	128
CCT(K)	2955	SP ratio	1.34
Illuminance(lx)	14175	PPFD( $\mu\text{mol}/\text{m}^2 \text{ s}$ )	212.6
$\lambda_p$ (nm)	604	CRI(Ra)	83
TLCI(Qa)	68.9	GAI	54.6
GAI BB8	97	GAI BB15	103
TM-30 Rf	82	TM-30 Rg	95

CQS-Qa	83	Re(thru R1~R15)	77
R1	81.4	R6	90.2
R2	92.0	R7	81.7
R3	95.2	R8	58.4
R4	79.7	R9	7.9
R5	81.5	R10	81.6
		R11	78.7
		R12	71.7
		R13	84.0
		R14	98.2
		R15	74.3

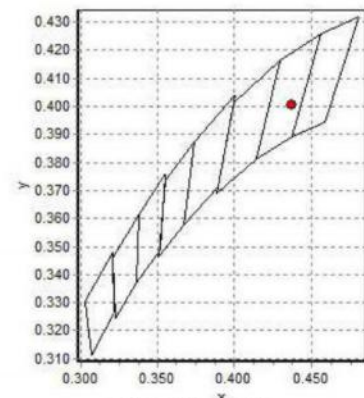


Radar Diagram of CRI

Flicker Frequency(Hz)	100	Flicker %	3
Flicker Index	0.01		



Spectral Distribution



C78.377-2008

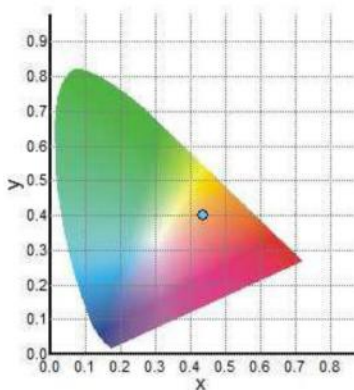
# Flicker testing report at 50% brightness

## Report of Photometry & Chromaticity for Light Source



### Product Description

Product Name	1.2m 20W IP66 LED tube	Brightness:50%
Module	WP4E-20W-D	
Date(YYYY/MM/DD)	2018/1/15 17:22:40	
Temperature(°C)	20°C	Re. Humidity(65%)

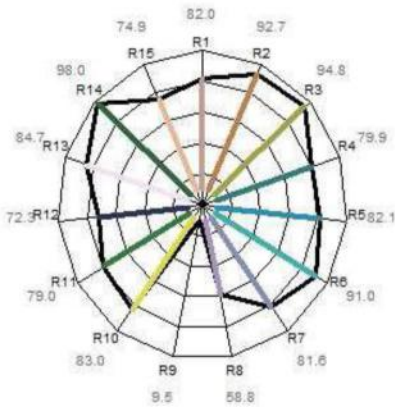


CIE1931 Chromaticity Diagram

### Photometry and Chromaticity

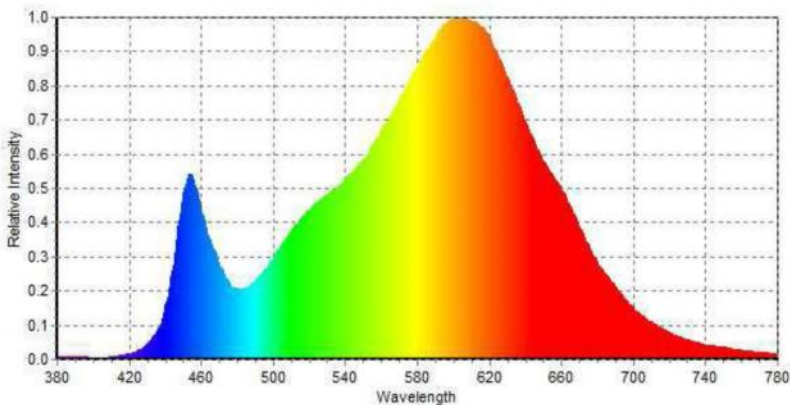
CIE_x	0.4384	Duv	-0.0017
CIE_y	0.4004	$\lambda_d$ (nm)	583.7
CIE_u'	0.2531	Purity(%)	52
CIE_v'	0.5201	FWHM(nm)	127
CCT(K)	2945	SP ratio	1.34
Illuminance(lx)	6595	PPFD( $\mu\text{mol}/\text{m}^2 \text{ s}$ )	99.2
$\lambda_p$ (nm)	601	CRI(Ra)	83
TLCI(Qa)	69.8	GAI	54.4
GAI BB8	97	GAI BB15	104
TM-30 Rf	82	TM-30 Rg	95

CQS-Qa	83	Re(thru R1~R15)	78
R1	82.0	R6	91.0
R2	92.7	R7	81.6
R3	94.8	R8	58.8
R4	79.9	R9	9.5
R5	82.1	R10	83.0
		R11	79.0
		R12	72.3
		R13	84.7
		R14	98.0
		R15	74.9

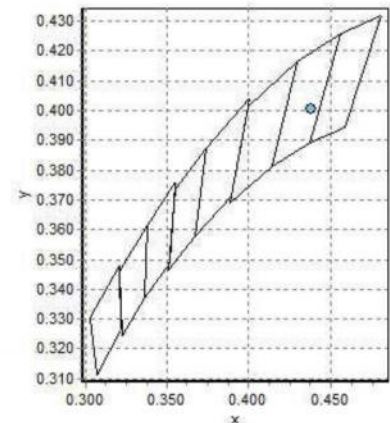


Radar Diagram of CRI

Flicker Frequency(Hz)	100	Flicker %	4
Flicker Index	0.01		



Spectral Distribution



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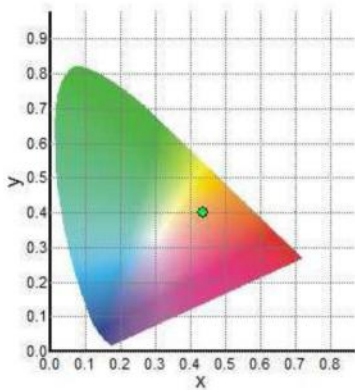
# Flicker testing report at 10% brightness

## Report of Photometry & Chromaticity for Light Source



### Product Description

Product Name	1.2m 20W IP66 LED tube	Brightness:10%
Module	WP4E-20W-D	
Date(YYYY/MM/DD)	2018/1/15 17:22:40	
Temperature(°C)	20°C	Re. Humidity(65%)

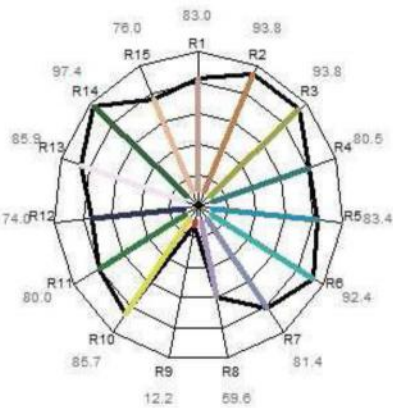


CIE1931 Chromaticity Diagram

### Photometry and Chromaticity

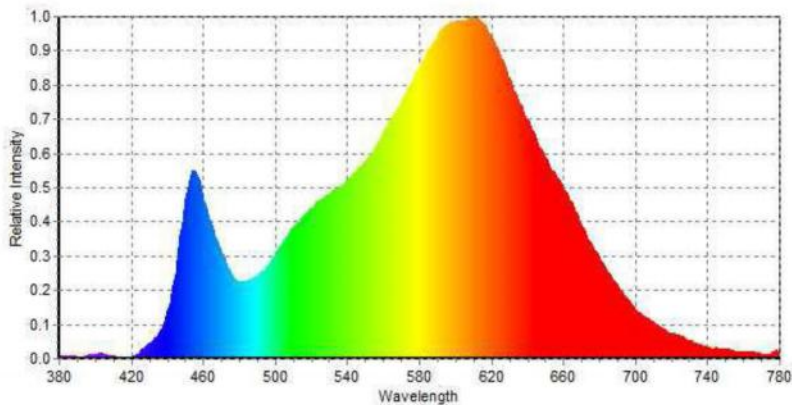
CIE_x	0.4369	Duv	-0.0021
CIE_y	0.3989	$\lambda_d$ (nm)	583.8
CIE_u'	0.2528	Purity(%)	51
CIE_v'	0.5193	FWHM(nm)	126
CCT(K)	2957	SP ratio	1.37
Illuminance(lx)	197	PPFD( $\mu\text{mol}/\text{m}^2 \text{ s}$ )	3.0
$\lambda_p$ (nm)	609	CRI(Ra)	83
TLCI(Qa)	71.3	GAI	55.2
GAI BB8	98	GAI BB15	104
TM-30 Rf	83	TM-30 Rg	95

CQS-Qa	84	Re(thru R1~R15)	79
R1	83.0	R6	92.4
R2	93.8	R7	81.4
R3	93.8	R8	59.6
R4	80.5	R9	12.2
R5	83.4	R10	85.7
		R11	80.0
		R12	74.0
		R13	85.9
		R14	97.4
		R15	76.0

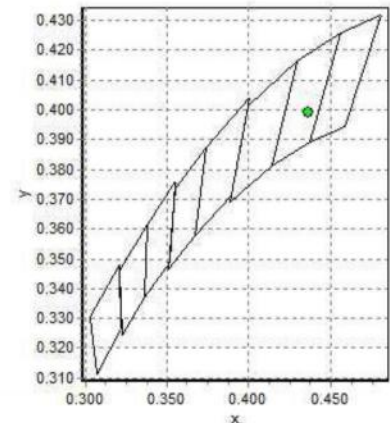


Radar Diagram of CRI

Flicker Frequency(Hz)	200	Flicker %	3
Flicker Index	0.01		



Spectral Distribution



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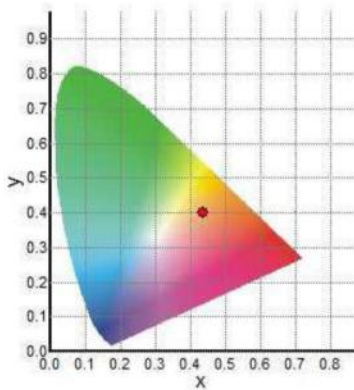
# Flicker testing report at 5% brightness

## Report of Photometry & Chromaticity for Light Source



### Product Description

Product Name	1.2m 20W IP66 LED tube	Brightness:5%
Module	WP4E-20W-D	
Date(YYYY/MM/DD)	2018/1/15 17:22:40	
Temperature(°C)	20°C	Re. Humidity(65%)

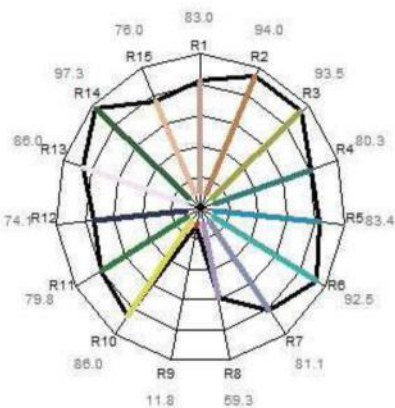


CIE1931 Chromaticity Diagram

### Photometry and Chromaticity

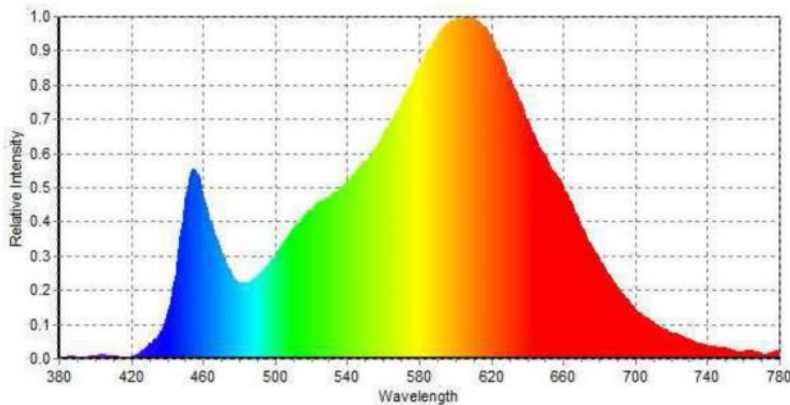
CIE_x	0.4373	Duv	-0.0023
CIE_y	0.3984	$\lambda_d$ (nm)	583.9
CIE_u'	0.2533	Purity(%)	51
CIE_v'	0.5192	FWHM(nm)	125
CCT(K)	2946	SP ratio	1.37
Illuminance(lx)	237	PPFD( $\mu\text{mol}/\text{m}^2 \text{ s}$ )	3.6
$\lambda_p$ (nm)	608	CRI(Ra)	83
TLCI(Qa)	71.0	GAI	55.3
GAI BB8	99	GAI BB15	105
TM-30 Rf	83	TM-30 Rg	95

CQS-Qa	84	Re(thru R1~R15)	79
R1	83.0	R6	92.5
R2	94.0	R7	81.1
R3	93.5	R8	59.3
R4	80.3	R9	11.8
R5	83.4	R10	86.0
		R11	79.8
		R12	74.1
		R13	86.0
		R14	97.3
		R15	76.0

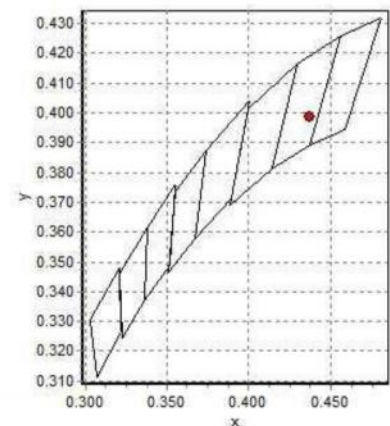


Radar Diagram of CRI

Flicker Frequency(Hz)	100	Flicker %	2
Flicker Index	0.01		



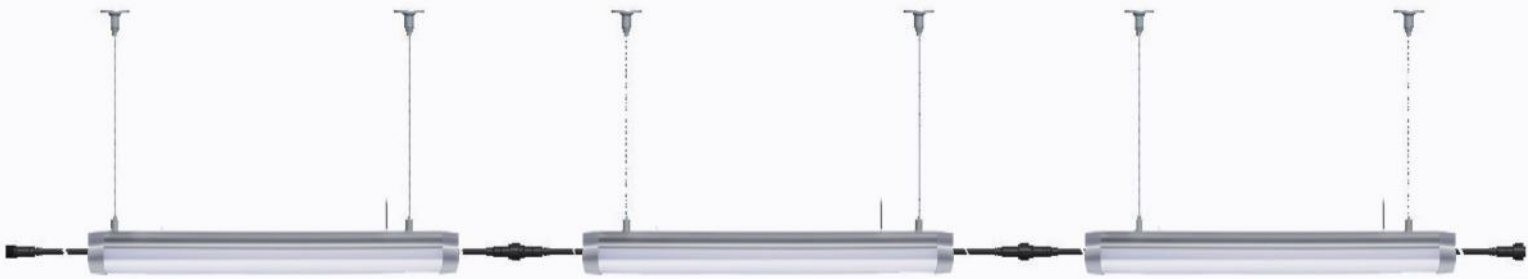
Spectral Distribution



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**Easy installation with quick connector**

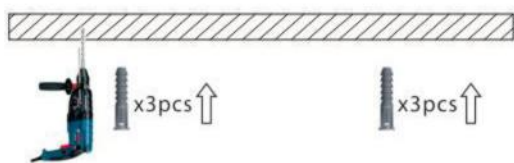
**Save your labor fee**



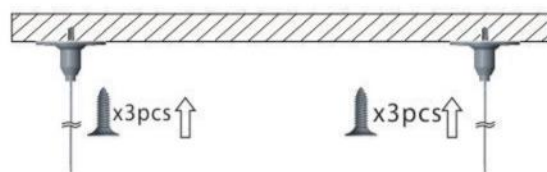
# Installation

## A.: Suspended Installation

① Ceiling punch



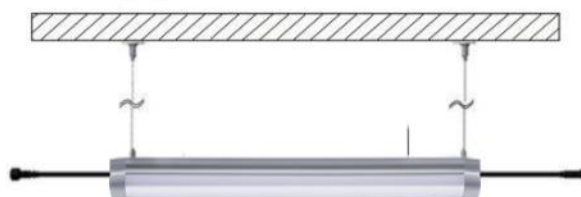
② Self-tapping screws hold the sling



③ Tighten the clamp



④ Hanging installed



## B: Ceiling Installation

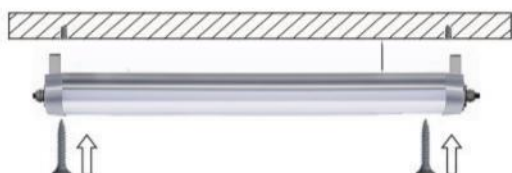
① Tighten double-threaded screw



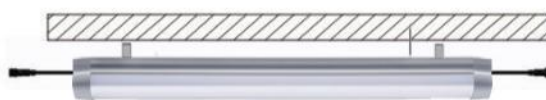
② V shape mounting bracket fixed



③ Tapping screw tighten V shape bracket to the ceiling



④ Ceiling mounted



## C: Series Connection



Recommended Installation Quantity (Rated Voltage: 220V)

Q'ty(Suggested) / Power	20W	24W	28W
Type			
Non-dimmable	50pcs	40pcs	30pcs
Dimmable (600W Dimmer)	25pcs	20pcs	15pcs



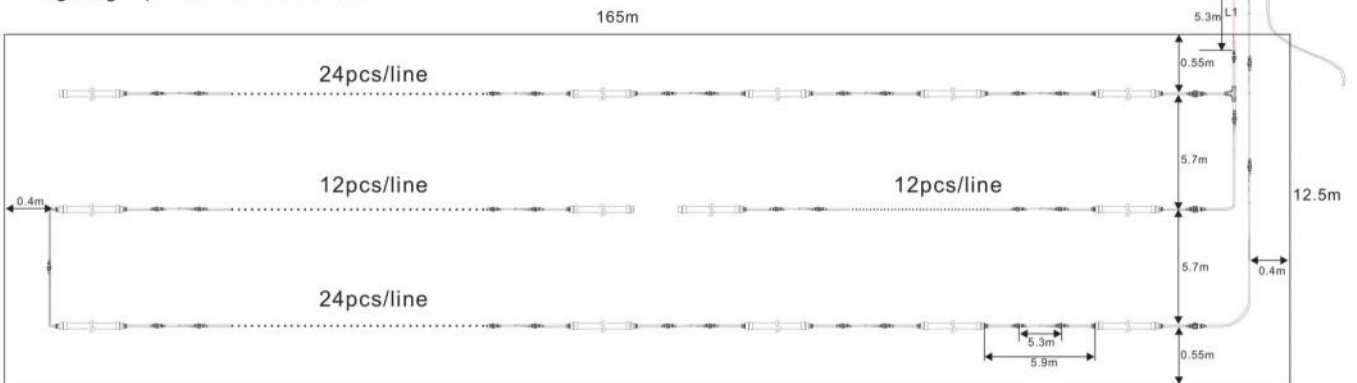
**We offer smart Dimming&Timing Controller, it is with English/Spanish/French versions. Customized interface and color are both available. Let us simulate sunrise and sunset automatically!**



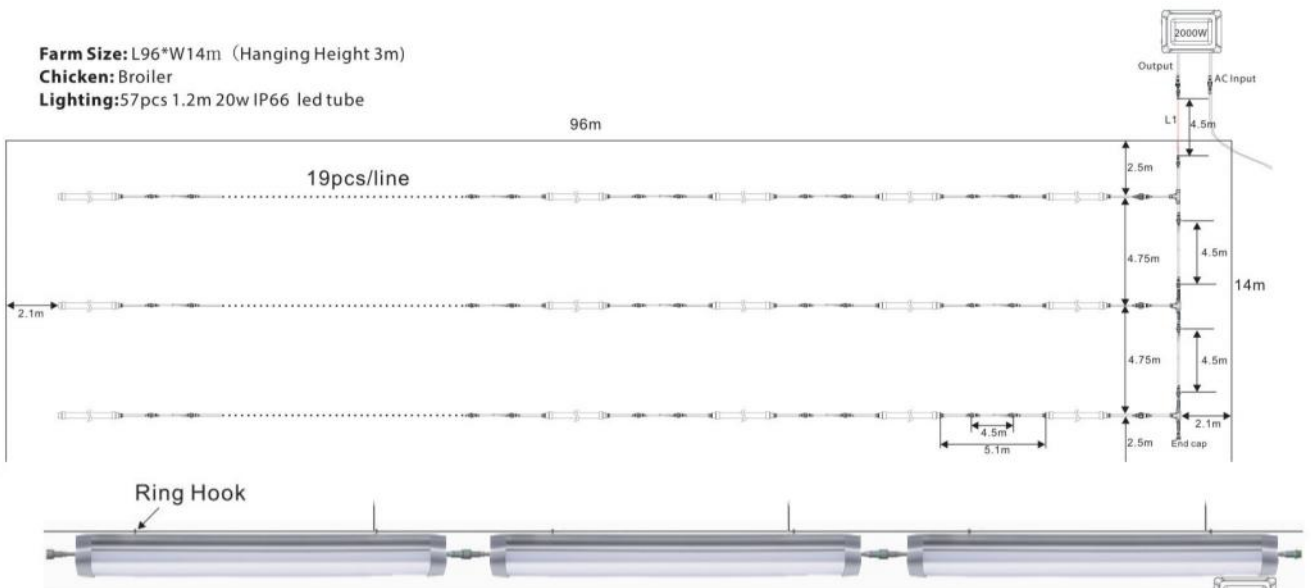
# Projects for reference

we can provide complete solutions if necessary

**Farm Size:** L165\*W12.5m (Hanging Height 3m)  
**Chicken:** Broiler  
**Lighting:** 72pcs 1.2m 20w IP66led tube



**Farm Size:** L96\*W14m (Hanging Height 3m)  
**Chicken:** Broiler  
**Lighting:** 57pcs 1.2m 20w IP66 led tube



**Farm Size:** L124\*W17m (Hanging Height 2.4m)

