

Why LED T8 Grow-light tubes from HSL over other products in the (NZ) market?

Colour Wave lengths

HOLLAND SOLUTIONS Limited's LED T8 Grow-light tubes have the correct wavelength colours, are very flexible in their use, are been manufactured to the same standards we apply to our Commercial line like:

- **UL and ULus** Listed product (single ended Power Supply & external Power Supply only)
- **CE, LVD& EMC**
- **FCC**
- **SAA (Aust & NZ safety)** (single ended Power Supply)
- **cCSA and CSAus** Listed product (single ended Power Supply only)
- Fully **RoHS** compliant (environmentally friendly product)
- **TuV** compliant (single ended Power Supply only)



As stated by Manufacture

Our LED T8 Grow-Light tubes can be used in layered growing applications, greenhouse solutions or any other growing medium. We focus on **Commercial growers, Research facilities**, etc..

With our LED T8 growlight tubes we precisely targeting the absorption peaks of chlorophylls a and b eliminate waste energy and heat

We recommend to use them in a wide range spectrum by using several wavelength colours in one setup. For example several full Red's or Multu Colour tubes Red or Blue + several full Blue tubes + several White (CCT6000k Peak 450Nm) tubes in a specific ratio, For example 4 "MC" Red tubes, 2 "MC" Blue tubes and on White tube or MC Red and MC blues or MC tubes as a stand alone options but this all depending on the plants your growing or the growing fase their in. This systems will give you a flexible option by just replacing LED tubes with a other wavelength colour to adjust the spectrum or ratio. A CCT6000k tube is available (Peak wavelength of 450Nm)for tissue growing application. In combination with our LED full or MC Blue T8 Tube this will give very good results having a more dominated Blue spectrum in the early stages of plant growth. Also UV-A (365Nm)could be a option to harden plants in th early stage to give them the most optimal growing change in or outdoors. A far red option is avavailable for flowering for exmample. ***We can provide all of these wavelenght options also in a PAR38 lamp.***

Products

Our LED tubes are of the highest Quality.

The manufactures are holding all manufacturing patents for tube shape and Heat-sink including the patents for the Power Supply/Driver. The Power supply used is fully insulated to save cart safety (electrocution) and Moisture-proofing IP40/IP20 depending on model. An external Power supply option is available IP40. LED Tubes have an IP rating of IP40/IP20 depending on model. An LED O-tube is available (IP40 & IP56) with external Power Supply in full "MC" Red and "MC" Blue or CCT



3000>7000k having an IP56 rating (not for direct sunlight) for usage outdoors or in high humidity rooms. This tube in the same size & diameter as our “normal” tubes but with an inbuilt heats-sink not compromising the IP rating and available with G13 (pins) end cap and without pins directly wired to Power Supply.

Main Features

Estimated minimum Lifespan (L70) of 35.000hrs and estimated 80.000hrs and up in cold environments, All depending on ambient temperature (Tj).

CCT 2800k>7000k with our special 6000k been used for tissue growing applications

Available Wave length colours **RED 660**, **BLUE 450nm**, **UV-A 365nm** and **far-red 730nm**

High Shock & vibration resistances

Durable PC-Cover in clear & frosted

Moisture-proof (IP40) fully insulated PS/Driver

External Power supply fully UL/SAA listed (IP40)

Moisture-proof (IP56) with external Power Supply

Lengths available **600mm**, **900mm**, **1200mm**, and **1500mm**

Fixed or adjustable end cap as an option (No extra cost)

Wide range of Operational temperatures form -20°C >45°C, Perfect for Environments with Extreme Climates

Wide voltage and constant current design

Low wattage against **HIGH light** output

Power factor of min PF0.95 >

Input Voltage: 120-277VAC

Frequency: 50-60Hz

Power Supply Efficiency: 88%

Tubes available in **Single ended** (UL, CSA, ETL, and SAA like our Commercial Standard), **double ended**

Power supply CE only and **external Power supply** as an option

Superior heat sink design and durable structure: Aluminum PCB boards with silicone bounding and aluminum integrated heat-sink housing.

Saver due to “full” longer plastic end-cap, no short circuiting can occur and full compliant to UL safety regulations and demands.

Fully **insulated Driver/Power supply** or **external option**

Reliable from strict HSL & manufactures **quality control**, like **Hi-spot test**, **drop test**, with a **burn-in of 72hours**

All patents are been hold be Manufacture

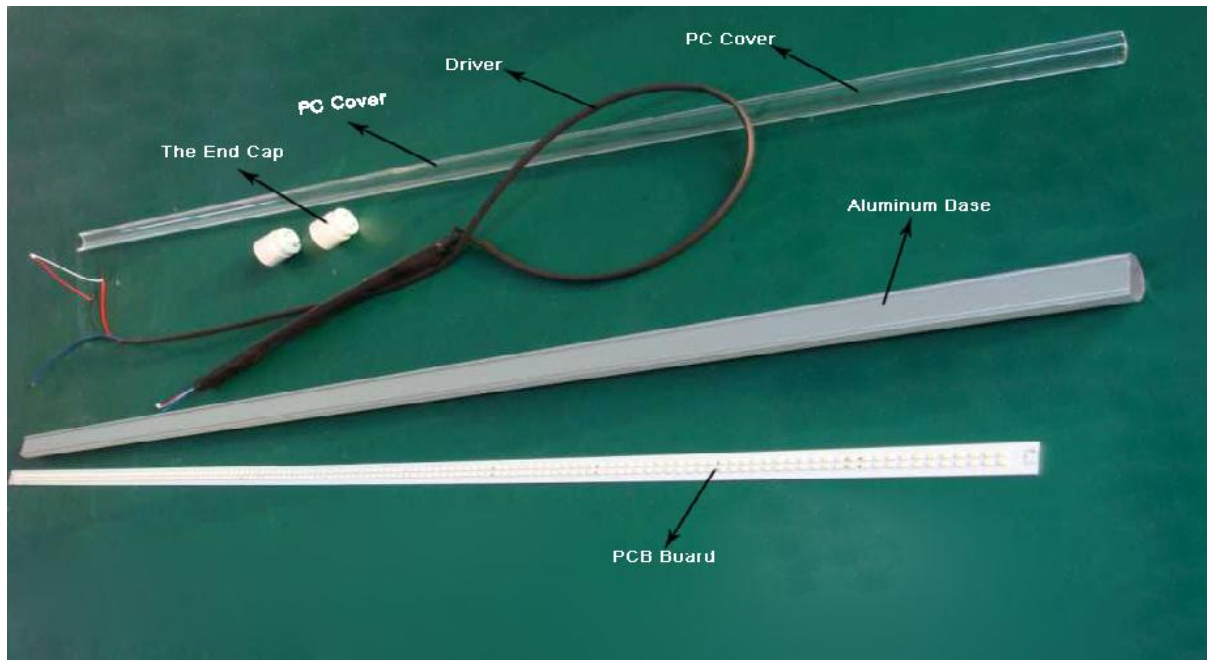
3/5 years of manufacture Warranty,

Product Photo

T8 in SMD Chips, internal & external Power supply Available

Internal one sided and external sided PS, Clear and frosted cover (Clear cover has highest Light output)

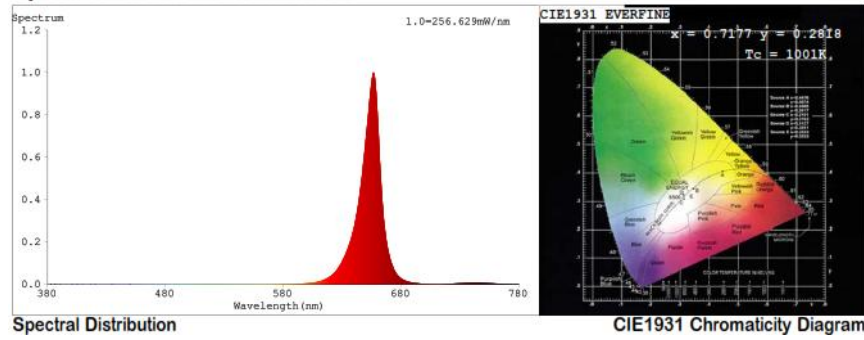
Sizes 600mm, 900mm, 1200 and 1500mm as standard, with 1800mm & 2400mm as options



Product Wavelengths

RED 660nm

Spectroradiometric Parameters



CIE Color Parameters :

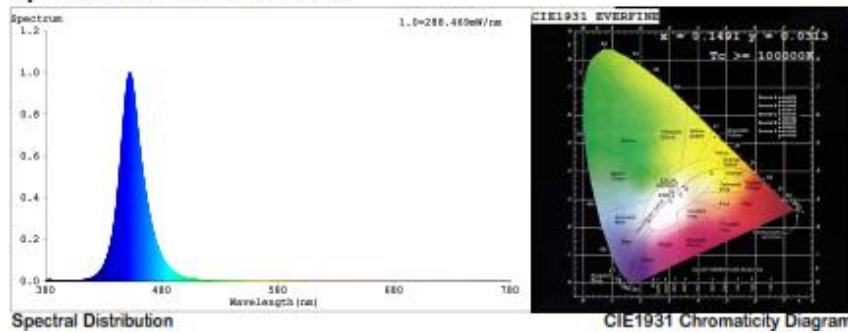
Chromaticity Coordinate: $x=0.7177$ $y=0.2818/u'=0.5804$ $v'=0.5128(duv=-1.33e-01)$

CCT: $T_c= 1001K$ Prcp WaveL: $\lambda_d=639.2nm$ Purity=99.9%

Peak WaveL: $\lambda_p=657nm$ Half Width: $\Delta\lambda_p=16.5nm$ Ratio: $R=98.9\%$ $G=1.1\%$ $B=0.0\%$

BLUE 450nm

Spectroradiometric Parameters



CIE Color Parameters :

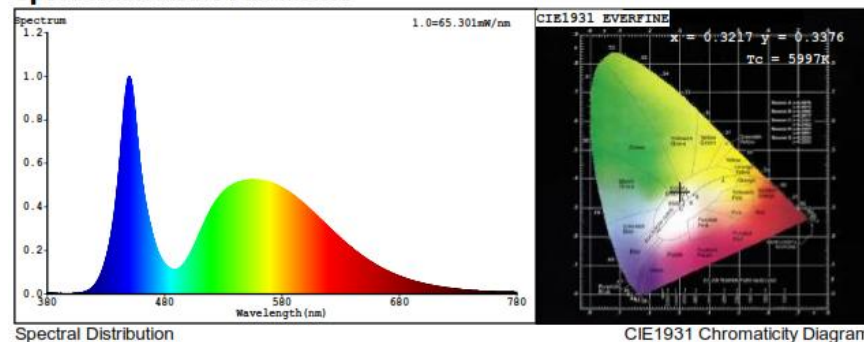
Chromaticity Coordinate: $x=0.1491$ $y=0.0313/u'=0.1938$ $v'=0.0916(duv=-2.05e-01)$

CCT: $T_c > 100000K$ Prcp WaveL: $\lambda_d=458.3nm$ Purity=98.6%

Peak WaveL: $\lambda_p=452nm$ Half Width: $\Delta\lambda_p=21.4nm$ Ratio: $R=0.2\%$ $G=9.3\%$ $B=90.5\%$

WHITE CCT 6000k for tissue growing option.

Spectroradiometric Parameters



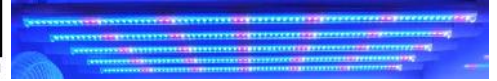
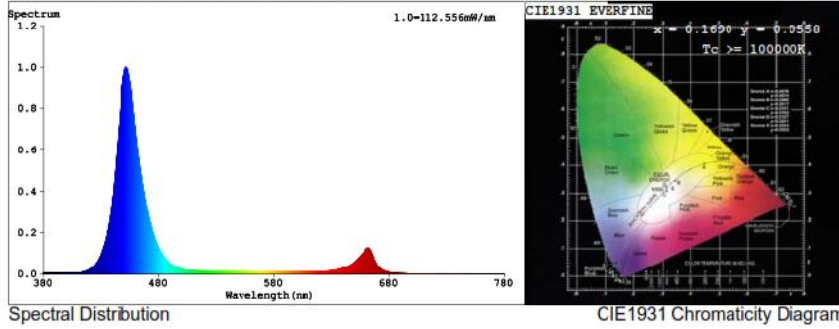
CIE Color Parameters:

Chromaticity Coordinate: $x=0.3217$ $y=0.3376/u'=0.2008$ $v'=0.4742(duv=3.17e-03)$

CCT: $T_c= 5997K$ Prcp WaveL: $\lambda_d=496.5nm$ Purity=3.7%

Peak WaveL: $\lambda_p=450nm$ Half Width: $\Delta\lambda_p=21.9nm$ Ratio: $R=13.8\%$ $G=82.6\%$ $B=3.7\%$

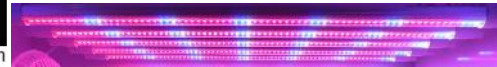
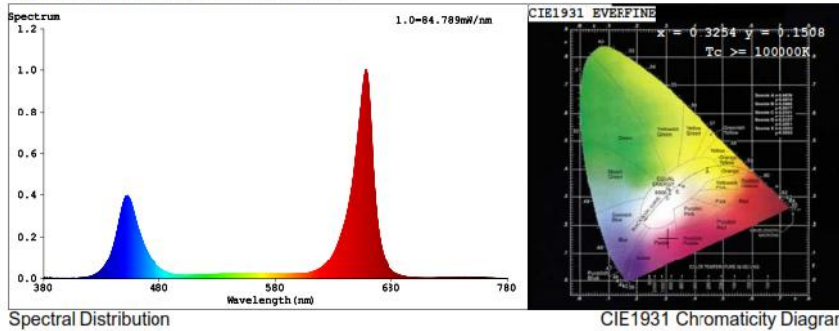
**Multi-Colour BLUE 450nm-RED 660nm-WHITE CCT6000k
Spectroradiometric Parameters**



CIE Color Parameters:

Chromaticity Coordinate: $x=0.1690$ $y=0.0558/u'=0.2029$ $v'=0.1508$ ($duv=-1.67e-01$)
CCT:Tc>=100000K Prcp WaveL: $\lambda d=455.7nm$ Purity=89.6%
Peak WaveL: $\lambda p=452nm$ Half Width: $\Delta\lambda p=22.3nm$ Ratio:R=13.3% G=38.2% B=48.6%

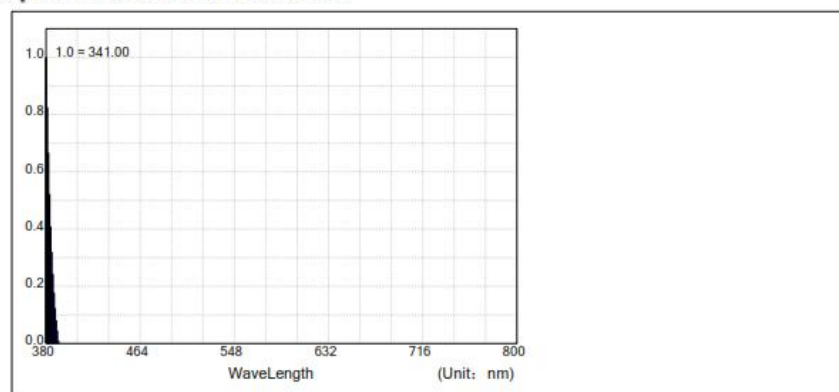
**Multi-Colour RED 660nm-BLUE 450nm-WHITE CCT6000k
Spectroradiometric Parameters**



CIE Color Parameters:

Chromaticity Coordinate: $x=0.3254$ $y=0.1508/u'=0.3130$ $v'=0.3263$ ($duv=-1.41e-01$)
CCT:Tc>=100000K Prcp WaveL: $\lambda d=380.0nm$ Purity=50.1%
Peak WaveL: $\lambda p=658nm$ Half Width: $\Delta\lambda p=17.3nm$ Ratio:R=52.9% G=34.9% B=12.2%

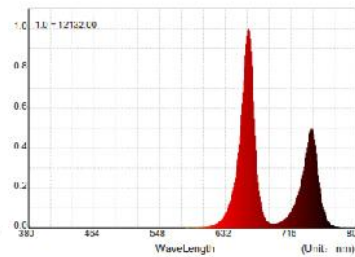
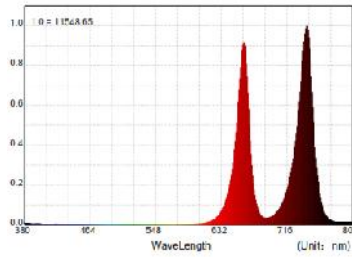
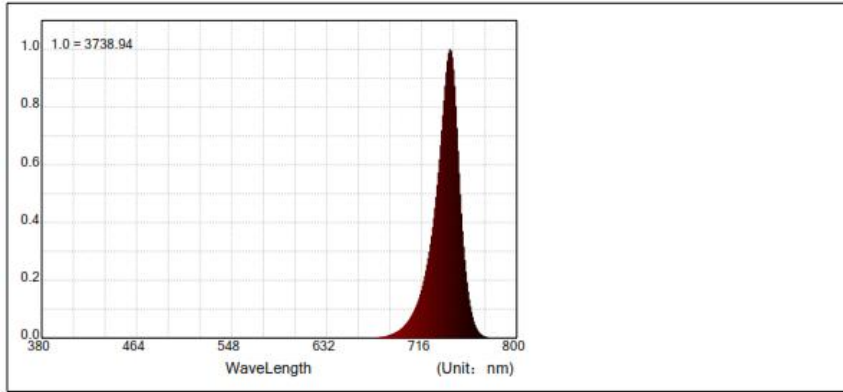
Spectroradiometric Parameters



Colorific Parameter

Chromatic Coordinate: $x=0.1740$ $y=0.0050$ $u=0.2567$ $v=0.0110$
CCT: 25000 K Domaint Wave: 382.0 nm Color Purity: 100.0 %
Red Ratio: 0 % Peak WaveLength: 380 nm Half WaveLength: 100.0 nm

Spectroradiometric Parameters



7 far red-5 Red

7 Red-5far red

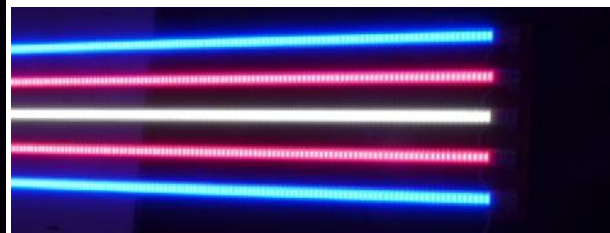
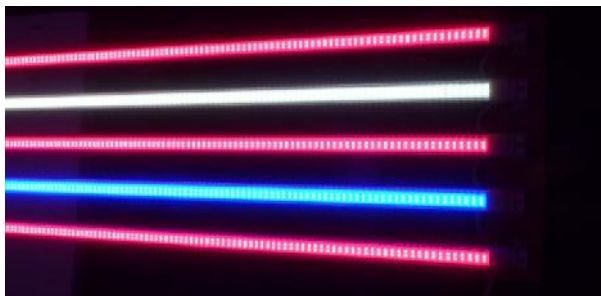
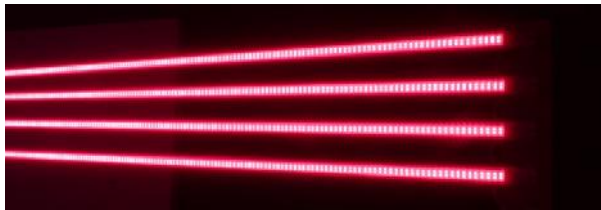
Colorific Parameter

Chromatic Coordinate: $x=0.7342$ $y=0.2658$ $u=0.6221$ $v=0.3378$

CCT: 1500 K Domaint Wave: 677.0 nm Color Purity: 100.0 %

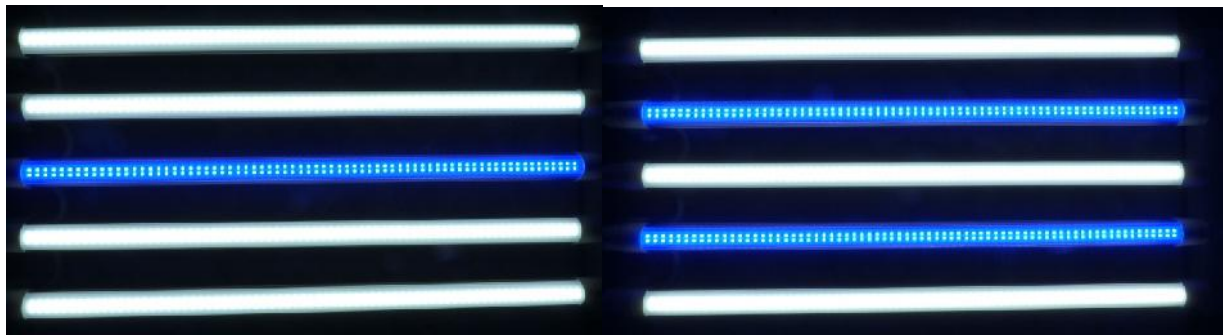
Red Ratio: 100 % Peak WaveLength: 741 nm Half WaveLength: 100.0 nm

Ratio examples (Full RED, Blue and White-CCT6000K)

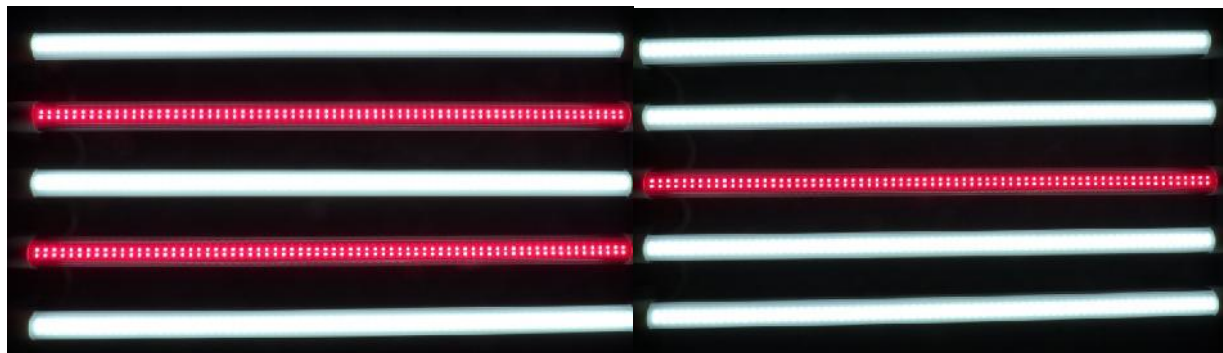


Ratio examples (Full White-CCT6000K-frosted cover, Red and Blue)

CTT 6000k + additional Blue

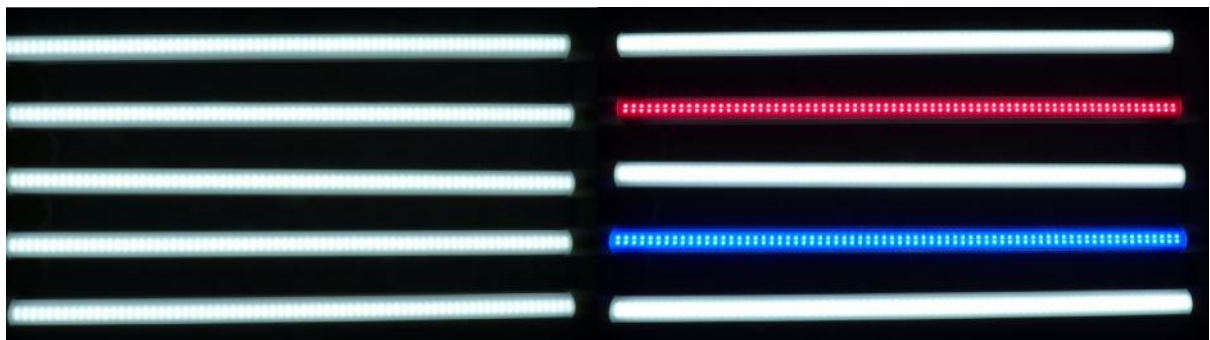


CCT6000k + Additional Red



Full white CCT6000k

White CCT6000k , Red & Blue



Multi Colour Blue

Multi colour Red

