

# LIGHT ENGINE

*Leading and trailing edge dimmable Light Engine with Dim to Warm, flicker free, behaviour*

## I. LIGHT ENGINE I

7 WATT | 700 LUMENS | 2200K TO 2700K  
T30-7W-2200/2700K-E12-SMD-120V

## II. LIGHT ENGINE II

16 WATT | 1600 LUMENS | 2200K TO 2700K  
T45-16W-2200/2700K-E26-SMD-120V

## III. LIGHT ENGINE III

24 WATT | 2400 LUMENS | 2200K TO 2700K  
T45-24W-2200/2700K-E26-SMD-120V



I.



II.



III.

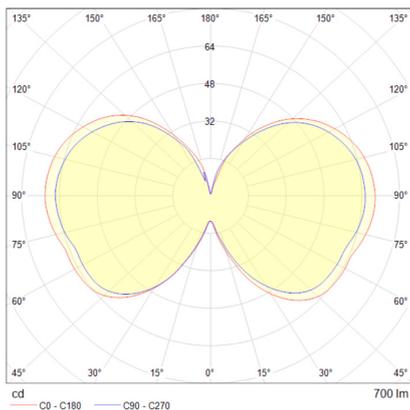
	LIGHT ENGINE I	LIGHT ENGINE II	LIGHT ENGINE III
Min. delivered CCT		2200K	
Max. delivered CCT		2700K	
Percent Flicker (IES)		<5%	
Beam angle		~340°	
Dimmable		Dim to Warm	
Lumen Maintenance*		30,000hrs (L <sub>70</sub> B <sub>50</sub> )	
Working ambient temp*		-10°C to 55°C	
Switch cycles		30,000	
Warm-up time		Instant	
Input frequency		50/60Hz	
Input Voltage		110-120V	
Power Factor		0.9	

\*refer to Light Engine operating conditions

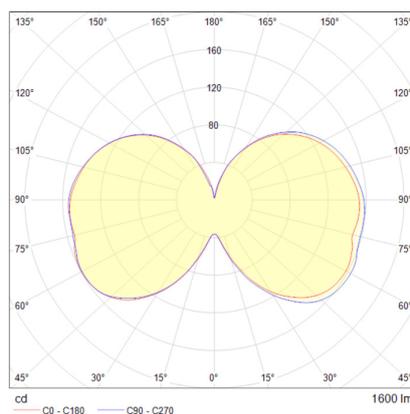
CRI(Ra)	95	93	93
R9	65	60	60
Rated power	7W	16W	24W
Efficiency (lm/W)	95	95	95
Bulb shape	T9	T14	T14
Base cap	E12	E26	E26
Weight	62g	180g	255g
Dimensions (ø x L mm)	30 x 104	44 x 146	44 x 220

## LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

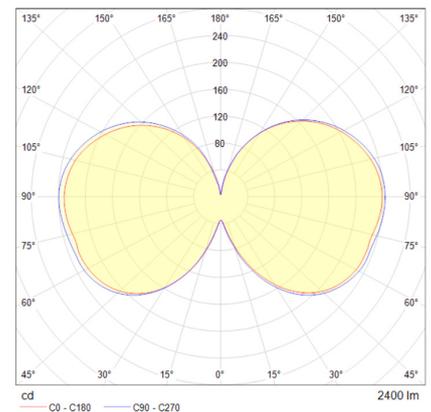
LIGHT ENGINE I



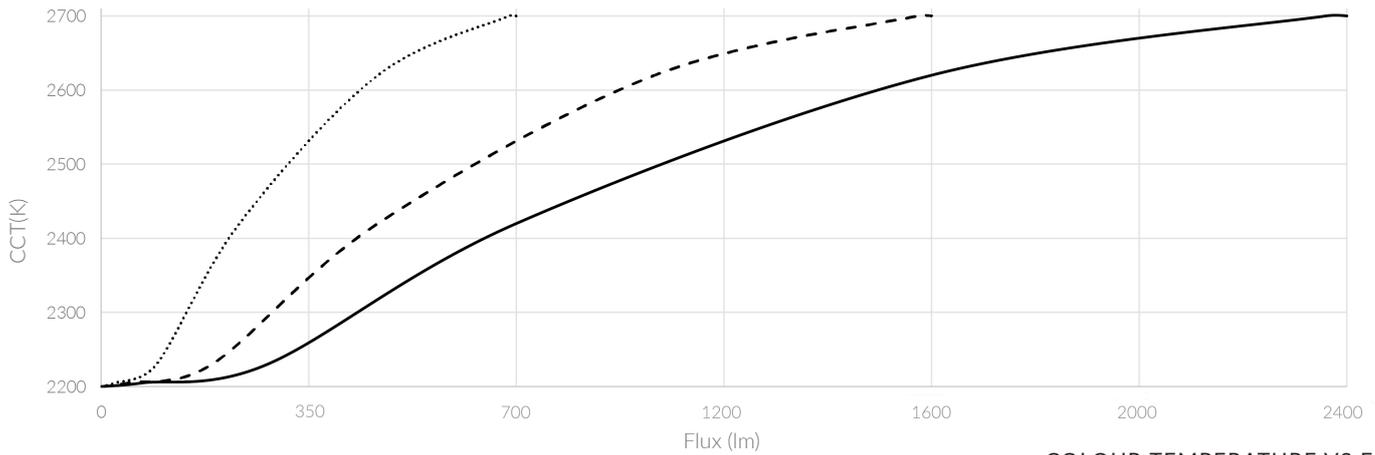
LIGHT ENGINE II



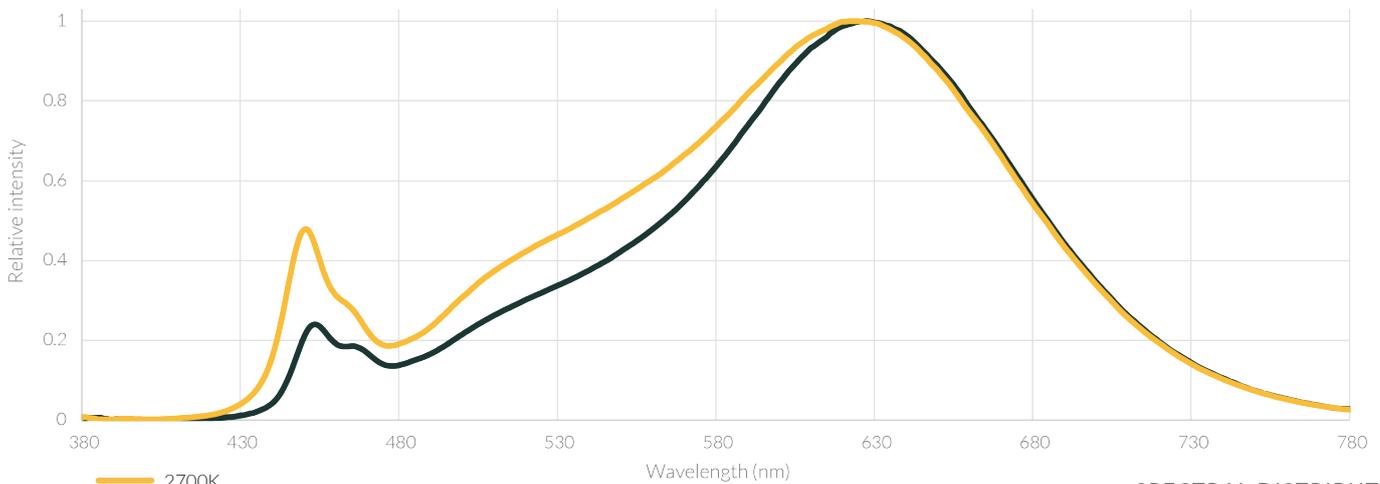
LIGHT ENGINE III



# LIGHT ENGINE



**COLOUR TEMPERATURE VS FLUX**  
Values measured at Ta25°C



**SPECTRAL DISTRIBUTION**  
Values measured at Ta25°C with Light Engine III

## COLOUR QUALITY METRICS

Values measured at Ta25°C with Light Engine III

**2700K**

**2200K**

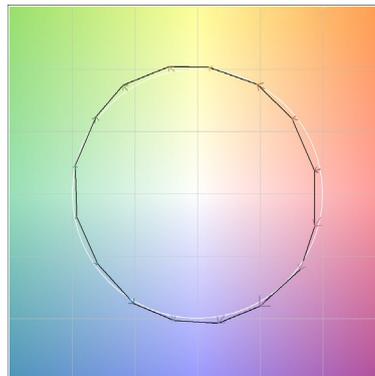
Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
95	95	98	98	95	96	97	93	85	70	95	96	90	96	99	91
94	96	99	97	95	96	95	90	81	62	98	97	92	97	99	90

## IES TM30

### COLOUR VECTOR GRAPHIC

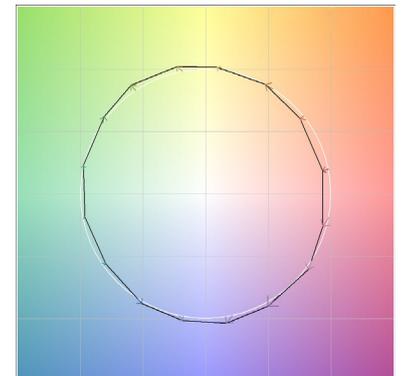
This plot shows the average chromaticity shift for the samples within each of 16 hue bins, which are compiled out of the 99 IES TM-30 Color Evaluation Samples. The values are normalized so that the reference is a circle. Vector arrows indicate the direction and degree of the shift for each hue bin.

- Radial shift indicates an increase/decrease in saturation.
- Tangential shift indicates a shift in hue.
- Length of arrow indicates degree of shift.



**2700K (full power)**

Colour fidelity (Rf) 90  
Colour Gamut (Rg) 102



**2200K (min power)**

Colour fidelity (Rf) 89  
Colour Gamut (Rg) 99

# LIGHT ENGINE

## Recommended Compatible Dimmers

Lutron DVELV-300P  
 Forbes & Lomax FLRV603P  
 Lutron DVCL-153P  
 Lutron DVELV-300P  
 Lutron LECL-153P

Lutron LGCL-153P  
 Lutron MACL-153P  
 Lutron RRD-6NA  
 Lutron SCL-153P  
 Lutron SELV-300P

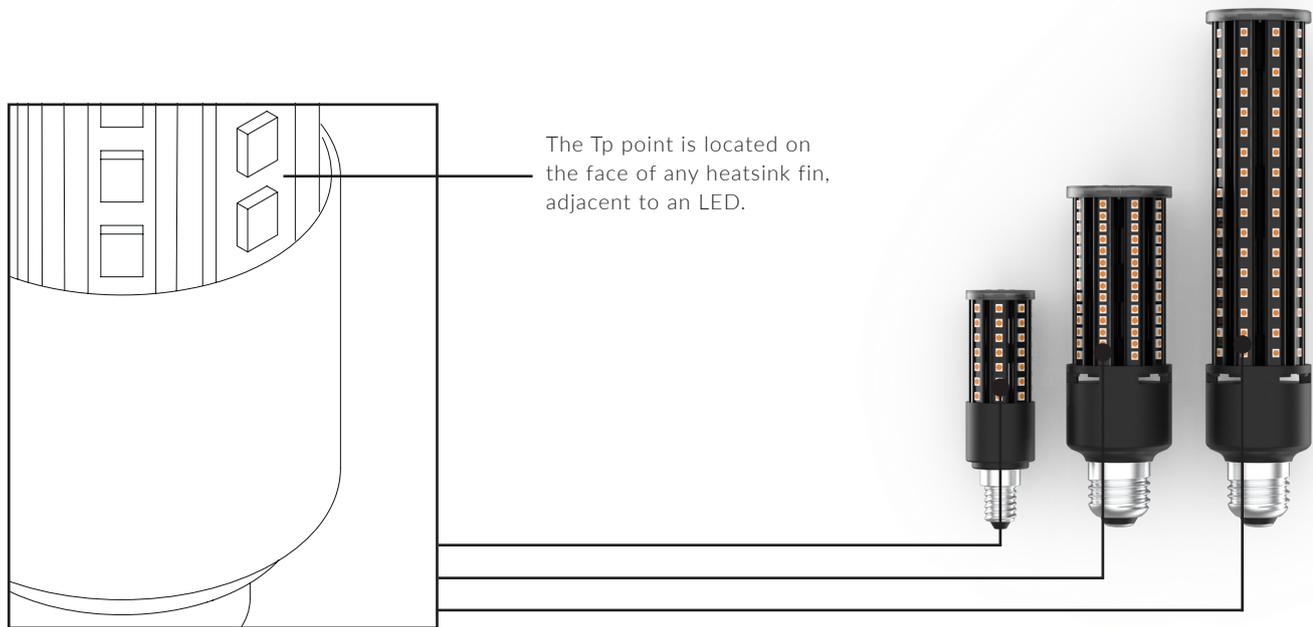
Lutron TGCL-153P  
 Sun-lite J-50C  
 Leviton DSL06-1LZ  
 Sun-lite J-02  
 Sun-lite J-35F

Kaoyi KLD-600V  
 Kaoyi KLD-60UV  
 Legrand Universal Dimmer  
 Lutron TTCL-100  
 HueRich HD-U100C-H

## In-situ Temperature Testing

To achieve the best possible performance and ensure the full stated lifetime of the Light Engine, correct thermal design must be practised to ensure the maximum operating temperature of the LEDs and critical components is never exceeded. To ensure compliance it is recommended to undertake In-Situ Temperature Measurement Testing (ISTMT) on each luminaire.

ISTMT can be performed by applying a calibrated thermocouple to the indicated location (Tp) and measuring the maximum steady state temperature at Tp while it is operating in its designed position and or environment. Thermocouples should be bonded to Tp using thermally conductive glue, ideally with direct contact between the thermocouple and the heatsink. A steady state condition can be considered a temperature with less than  $\pm 3^{\circ}\text{C}$  of variation over a 15min period.



### KEY POINTS FOR THERMAL TESTING

- Exceeding the maximum operating temperature of the product will damage the LEDs and internal components, leading to premature failure and voiding the product warranty.
- Maximum operating temperatures are stated in the table below.
- Measure the temperature at the indicated location (Tp).
- Use calibrated thermocouples, bonded directly onto Tp using appropriate thermally conductive glue.
- Perform the test in its designed position and or environment.
- Record the maximum steady state temperature as defined above.

### RECOMMENDATIONS FOR CORRECT THERMAL DESIGN

- Adequate airflow around the light engine.
- Not clustering engines close together, minimum distance 10cm.
- Keep away from flammable objects or surfaces.
- Follow recommended enclosure sizes below.

Alternatively, these tests can be performed by an ISTMT certified laboratory.

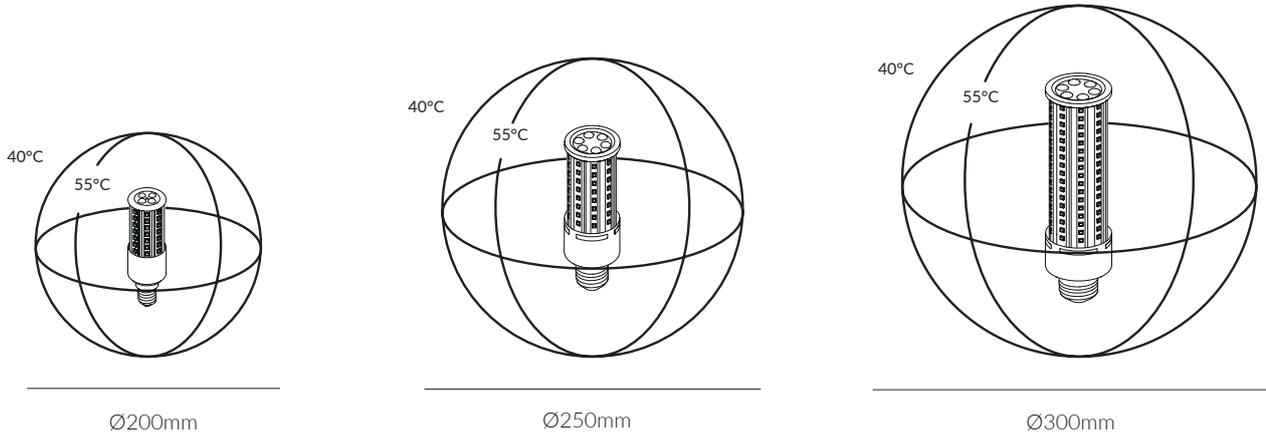
	LIGHT ENGINE I	LIGHT ENGINE II	LIGHT ENGINE III
TEMPERATURE AT TEST POINT $T_p$ MUST NOT EXCEED:	110°C	105°C	95°C

# LIGHT ENGINE

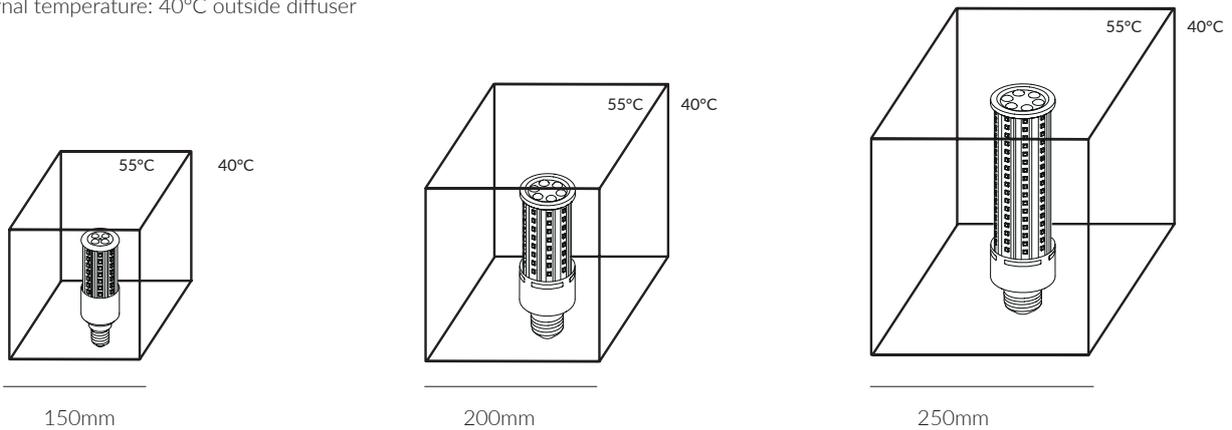
## *Maximum Ambient Air Temperature (Ta)*

The size of the intended fixture, enclosure or luminaire and the temperature of the surrounding external ambient air all impact on the operating temperature of the Light Engine. Tala have performed testing with various shapes and sizes of enclosure to determine minimum internal volumes and maximum internal and external ambient air temperatures (Ta). When operating the Light Engine at full power within these enclosure sizes the maximum external ambient air temperature is 40°C. Failure to adhere to the guidelines will lead to premature failure and void the product warranty.

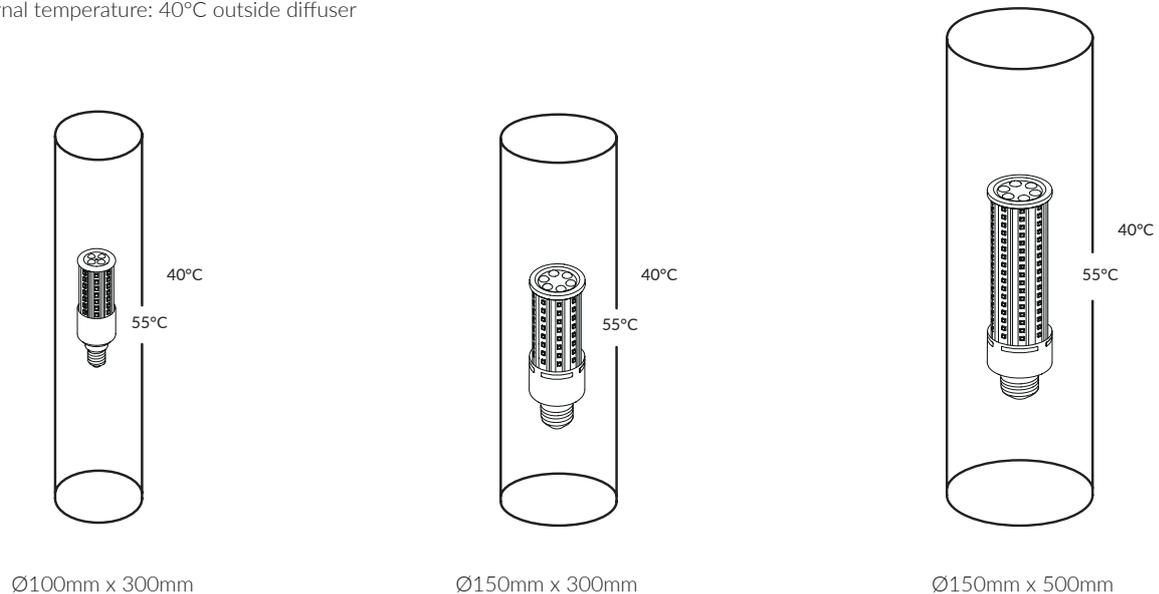
The enclosure sizes below correspond to approximate internal and external ambient air temperatures for each Light Engine when the relevant maximum temperature T<sub>p</sub> has been reached. These are offered as a guideline and must not replace In-Situ Temperature Measurement Testing. Different material properties, air flow and Light Engine position within the enclosure will affect actual temperatures offered as a guideline and must not replace In-Situ Temperature Measurement Testing.



Approximately spherical, thin (1-5mm) glass or plastic diffusers  
Max external temperature: 40°C outside diffuser



Approximately cubic, thin (1-5mm) glass or plastic diffusers  
Max external temperature: 40°C outside diffuser



Approximately cylindrical, thin (1-5mm) glass or plastic diffusers  
Max external temperature: 40°C outside diffuser