

LIGHT ENGINE

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

I. LIGHT ENGINE I

11 WATT | 1000 LUMENS | 2200K TO 2700K
T30-11W-2200/2700K-E14-SMD

II. LIGHT ENGINE II

22 WATT | 2000 LUMENS | 2200K TO 2700K
T45-22W-2200/2700K-E27-SMD

III. LIGHT ENGINE III

32 WATT | 3000 LUMENS | 2200K TO 2700K
T45-32W-2200/2700K-E27-SMD



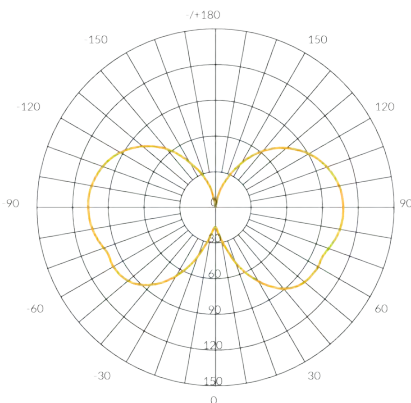
| | LIGHT ENGINE I | LIGHT ENGINE II | LIGHT ENGINE III |
|-----------------------|----------------|--|------------------|
| Min. delivered CCT | | 2200K | |
| Max. delivered CCT | | 2700K | |
| Percent Flicker (IES) | | <5% | |
| Beam angle | | ~340° | |
| Dimmable | | Dim to Warm | |
| Lumen Mainenance* | | 30,000hrs (L ⁷⁰ B ⁵⁰) | |
| Working ambient temp* | | -10° to 55° | |
| Switch cycles | | 30,000 | |
| Warm-up time | | Instant | |
| Input frequency | | 50/60Hz | |
| Input Voltage | | 220-240V | |
| Power Factor | | 0.95 | |

*refer to Light Engine operating conditions

| | | | |
|-----------------------|----------|----------|----------|
| CRI(Ra) | 95 | 93 | 93 |
| R9 | 65 | 60 | 60 |
| Rated power | 11W | 22W | 32W |
| Efficiency (lm/W) | 95 | 95 | 95 |
| Bulb shape | T30 | T45 | T45 |
| Base cap | E14 | E27 | E27 |
| Weight | 62g | 180g | 255g |
| Dimensions (ø x L mm) | 30 x 104 | 44 x 146 | 44 x 220 |

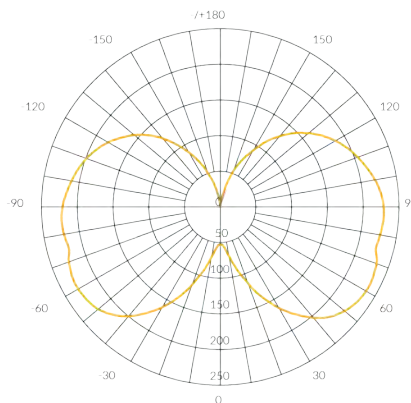
LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

LIGHT ENGINE I



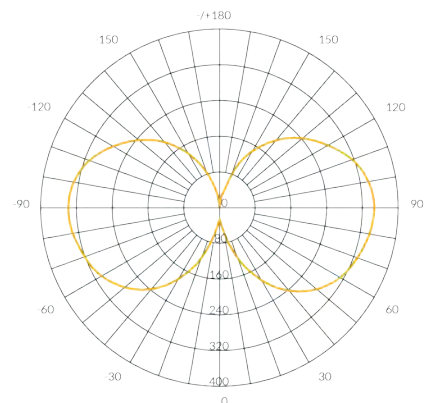
NOMINAL BEAM ANGLE (50%): 334 DEG
UNIT: cd

LIGHT ENGINE II



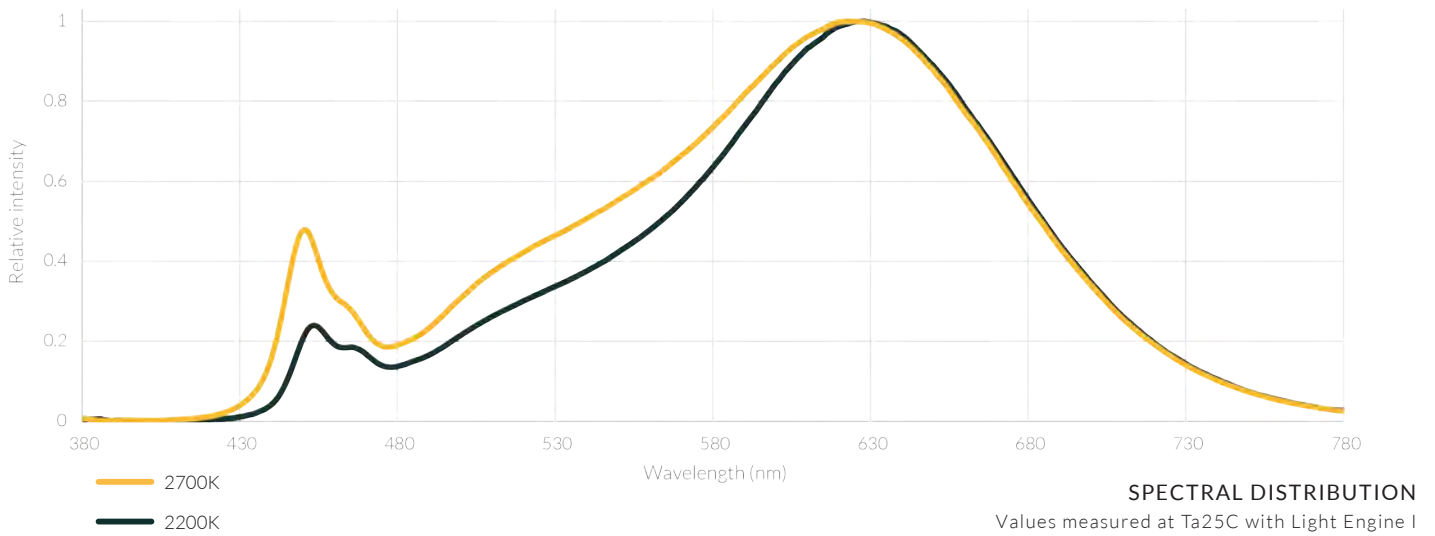
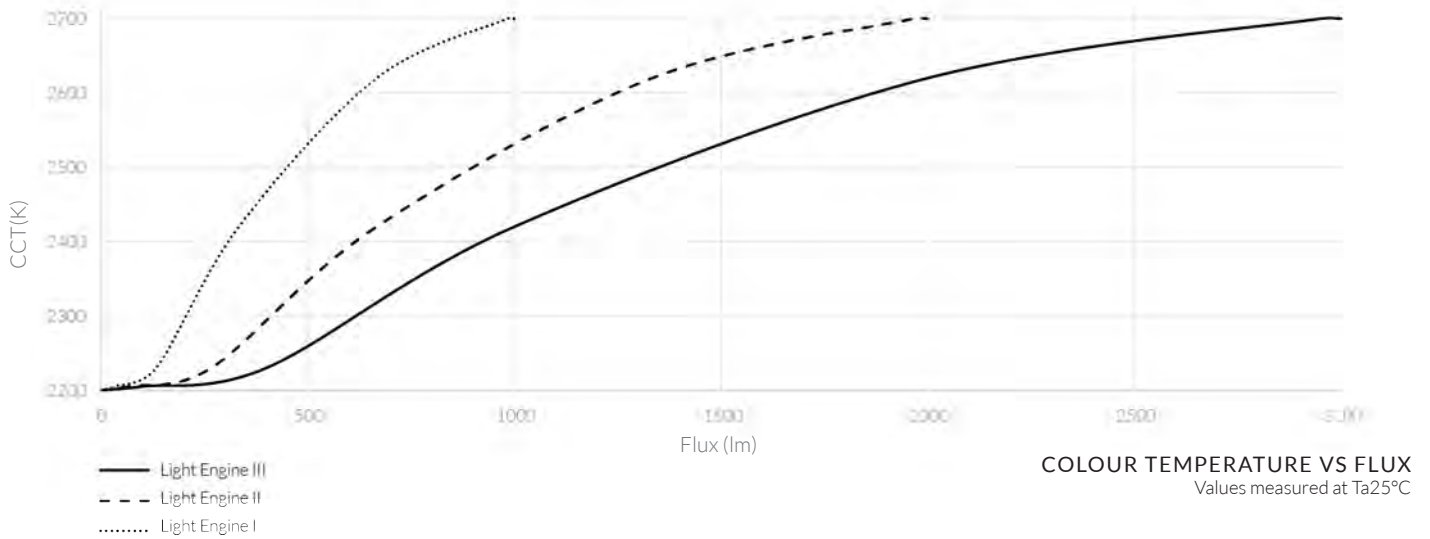
NOMINAL BEAM ANGLE (50%): 332 DEG
UNIT: cd

LIGHT ENGINE III



NOMINAL BEAM ANGLE (50%): 345 DEG
UNIT: cd

LIGHT ENGINE



COLOUR QUALITY METRICS

Values measured at Ta25°C with Light Engine I

2700K

2200K

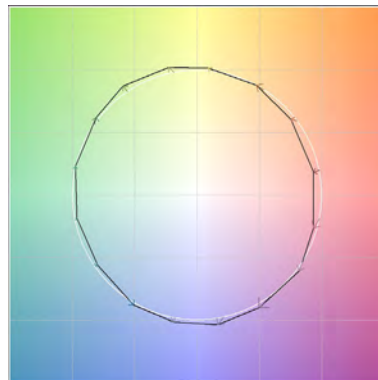
| Ra | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| 95 | 95 | 98 | 98 | 95 | 96 | 97 | 93 | 85 | 70 | 95 | 96 | 90 | 96 | 99 | 91 |
| 94 | 96 | 99 | 97 | 95 | 96 | 95 | 90 | 81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

IES TM30

COLOUR VECTOR GRAPHIC

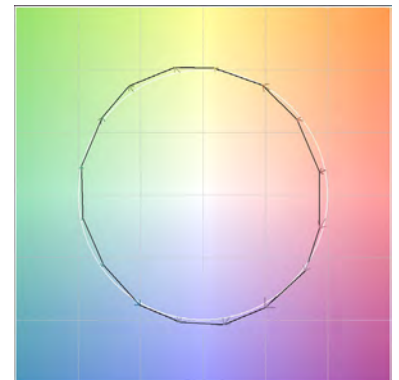
This plot shows the average chromaticity shift for the samples within each of 16 hue bins, which are compiled out of the 99 IES TM-30 Color Evaluation Samples. The values are normalized so that the reference is a circle. Vector arrows indicate the direction and degree of the shift for each hue bin.

- 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

Bticino L4408N/L4410N/L4411N
 Busch-Jaeger- 6523U-102
 Casambi - CBU-TED
 Dmax by Domintell - 420BLE
 Dmax by Domintell - 420SL
 Eltako- EUD61NPN-UC
 Eltako- EUD12NPN
 EPV - Dimmtronic M 1000/3.3

EPV - Dimmtronic PAB 315
 Hamilton - LEDIT-B100
 Kaoyi - KLD100EV1
 Kaoyi - KLD100E4
 Kaoyi - KLD 100EV-F
 Legrand - Universal Dimmer
 Lumex - L T1D450LSWE
 Lutron - RA2 Select

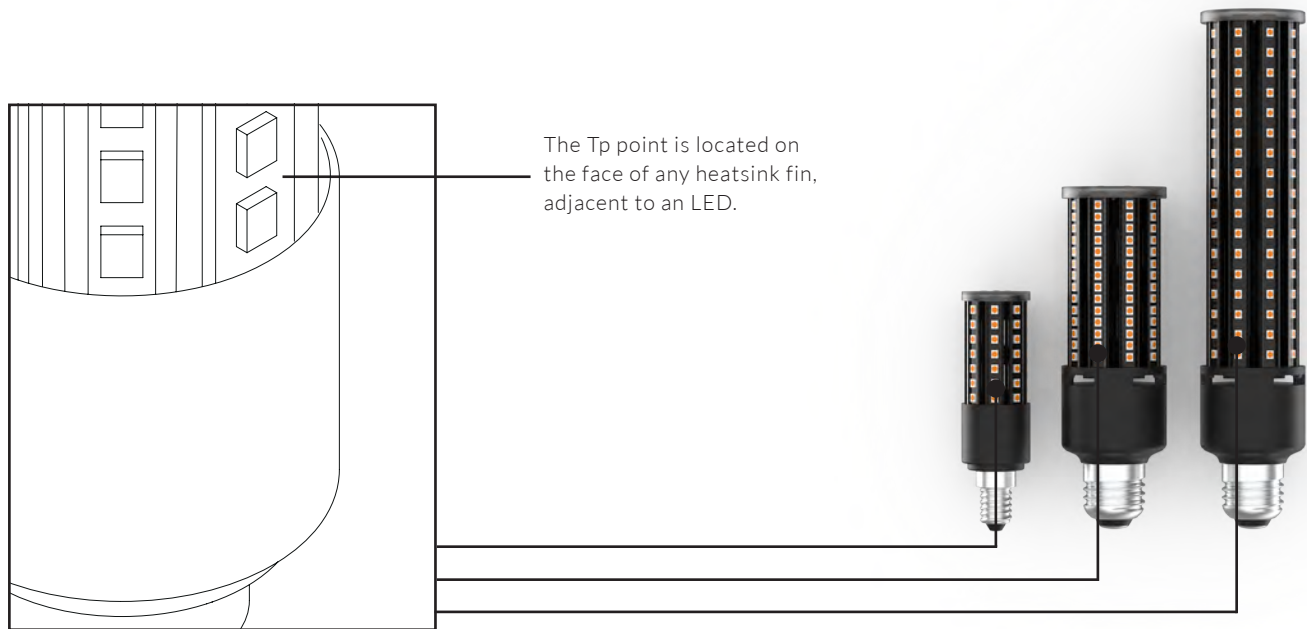
Osram - HTi DALI 315
 Rako - RMT500
 Relco -ART 101
 Relco- RTS 1
 Relco - Snello
 Relco - RT81
 Relco - Rondo
 Vadsbo - LD200

Vadsbo - VD300
 Vadsbo - LDN200
 Varilight - V-Pro
 Vimar -Eikon 20135.1/20136.1
 Wandsworth-WLC IR1x150TD
 Zano - ZBARLED1000

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.

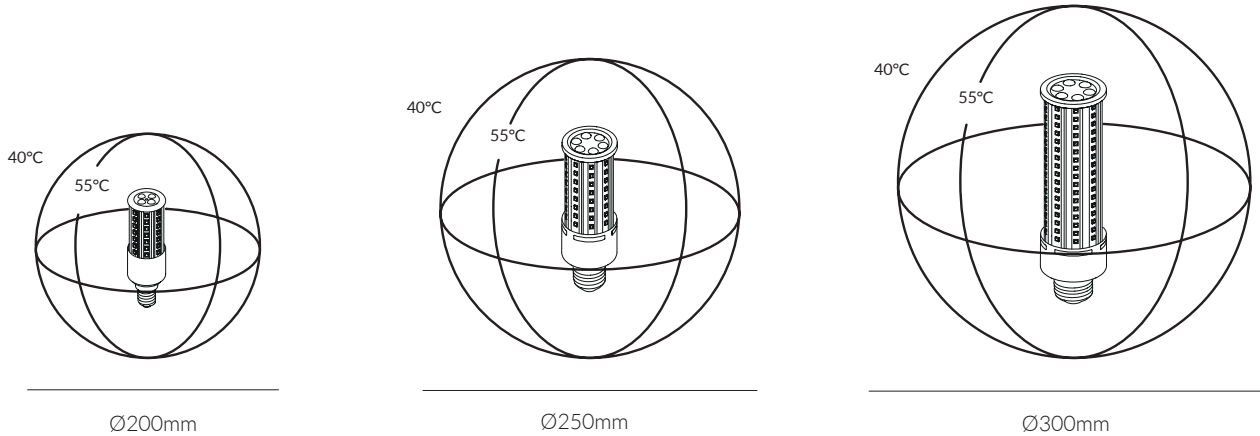
| | LIGHT ENGINE I | LIGHT ENGINE II | LIGHT ENGINE III |
|--|----------------|-----------------|------------------|
| TEMPERATURE AT TEST POINT T_p MUST NOT EXCEED: | 110°C | 105°C | 95°C |

LIGHT ENGINE

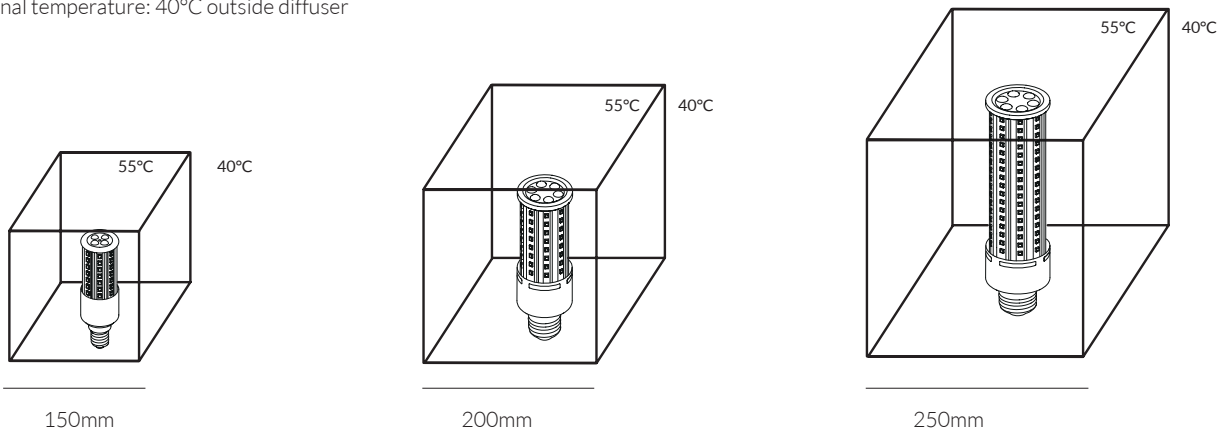
Maximum Ambient Air Temperature (T_a)

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 (T_a). 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.

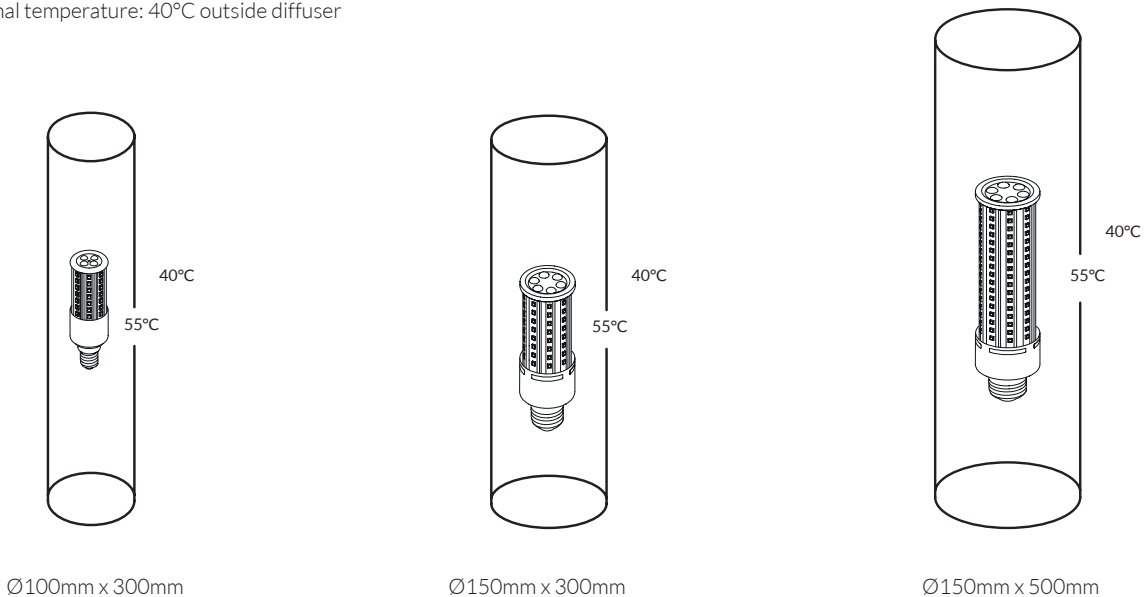
The enclosure sizes below correspond to approximate internal and external ambient air temperatures for each Light Engine when the relevant maximum temperature T_p has been reached. These are offered as a guideline and must not replace In-Situ Temperature Measurement Testing. Different material properties, 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