# HB-2X2-RW

**~50° wide beam optimized for CREE XP-L and XM-L**


## SPECIFICATION:

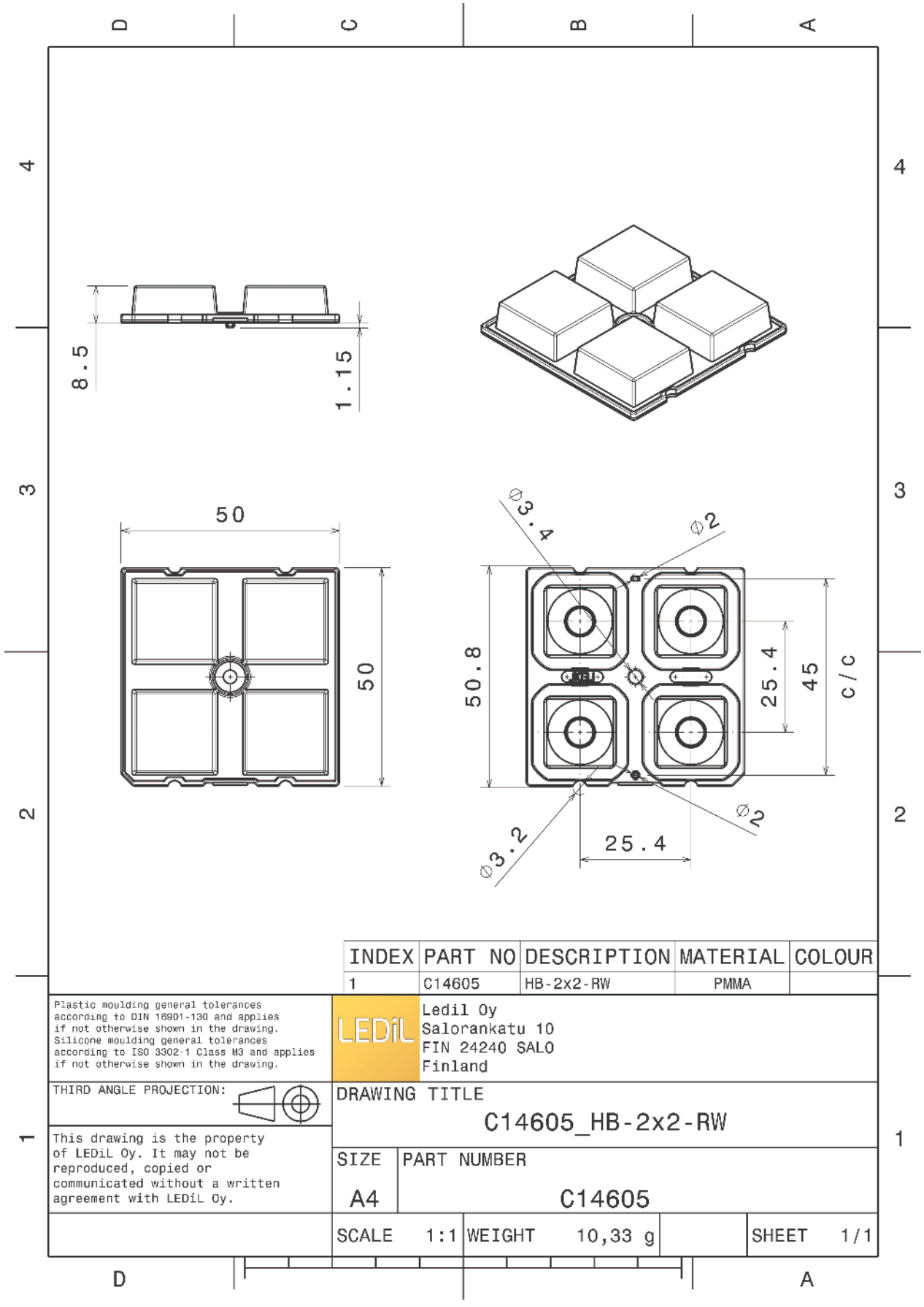
| | |
|---|---|
| Dimensions | 50.0 x 50.0 mm |
| Height | 8.5 mm |
| Fastening | pin, screw |
| ROHS compliant | yes |

## MATERIALS:

| Component | Type | Material | Colour | Finish |
|---|---|---|---|---|
| HB-2X2-RW | Multi-lens | PMMA | clear | |

## ORDERING INFORMATION:

| Component | Qty in box | MOQ | MPQ | Box weight (kg) |
|---|---|---|---|---|
| C14605_HB-2X2-RW<br>» Box size: 476 x 273 x 292 mm | 800 | 160 | 160 | 9.1 |




| INDEX | PART NO | DESCRIPTION | MATERIAL | COLOUR |
|---|---|---|---|---|
| 1 | C14605 | HB-2x2-RW | PMMA | |

Plastic moulding general tolerances according to DIN 16901-130 and applies if not otherwise shown in the drawing. Silicone moulding general tolerances according to ISO 3302-1 Class M3 and applies if not otherwise shown in the drawing.

THIRD ANGLE PROJECTION:



Ledil Oy
Salorankatu 10
FIN 24240 SALO
Finland

DRAWING TITLE
C14605_HB-2x2-RW

| SIZE | PART NUMBER |
|---|---|
| A4 | C14605 |

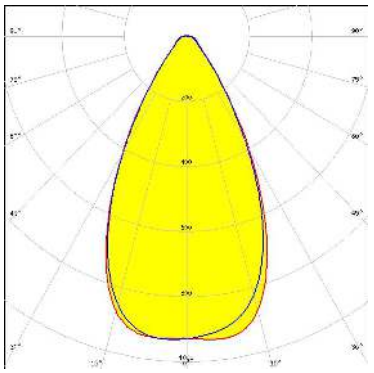
| SCALE | WEIGHT | SHEET |
|---|---|---|
| 1:1 | 10,33 g | 1/1 |

See also our general installation guide: [www.ledil.com/installation_guide](www.ledil.com/installation_guide)

## OPTICAL RESULTS (MEASURED):

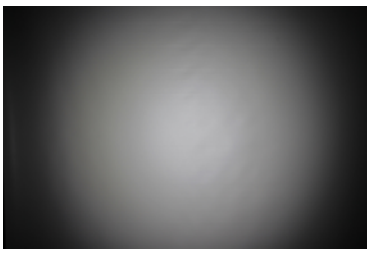
bridgelux

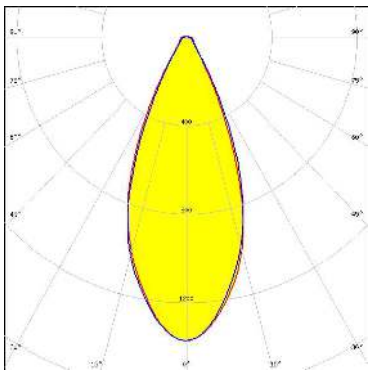
| | |
|---|---|
| LED | Bridgelux SMD 5050 |
| FWHM / FWTM | 56.0° / 89.0° |
| Efficiency | 94 % |
| Peak intensity | 0.9 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



CREE LED

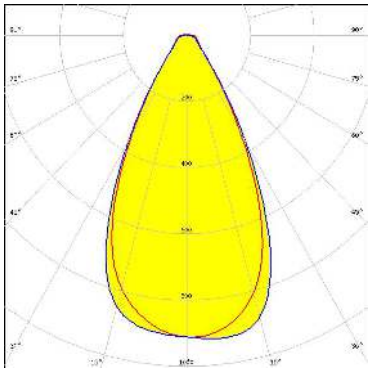
| | |
|---|---|
| LED | XD16 |
| FWHM / FWTM | 44.0° / 71.0° |
| Efficiency | 90 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |





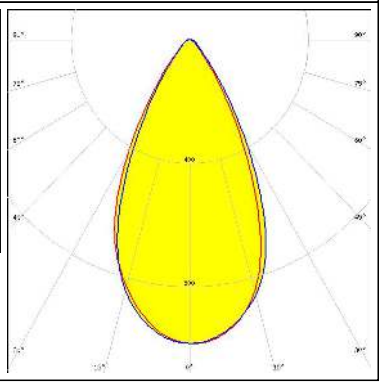
CREE LED

| | |
|---|---|
| LED | XD16 |
| FWHM / FWTM | 54.0° / 85.0° |
| Efficiency | 92 % |
| Peak intensity | 0.9 cd/lm |
| LEDs/each optic | 4 |
| Light colour | White |
| Required components: | |



CREE LED

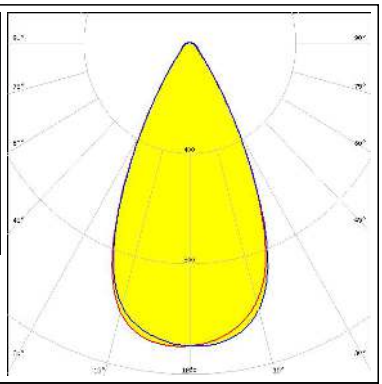
| | |
|---|---|
| LED | XHP35 HD |
| FWHM / FWTM | 53.0° / 82.0° |
| Efficiency | 84 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (MEASURED):

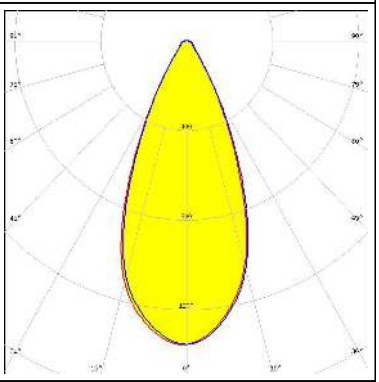
CREE LED

| | |
|---|---|
| LED | XM-L3 |
| FWHM / FWTM | 52.0° / 79.0° |
| Efficiency | 95 % |
| Peak intensity | 1.1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



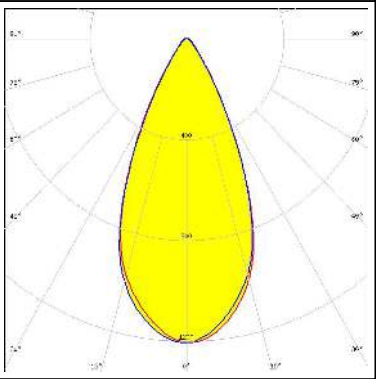
CREE LED

| | |
|---|---|
| LED | XP-G2 |
| FWHM / FWTM | 45.0° / 73.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



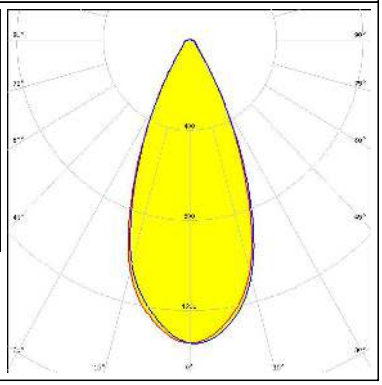
CREE LED

| | |
|---|---|
| LED | XP-G3 |
| FWHM / FWTM | 48.0° / 75.0° |
| Efficiency | 86 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



CREE LED

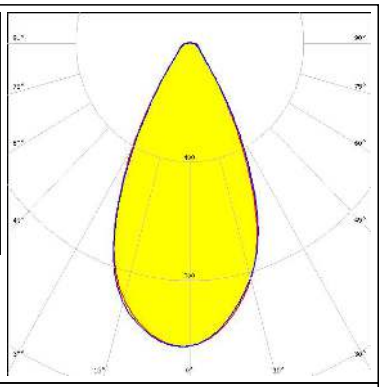
| | |
|---|---|
| LED | XP-L HI |
| FWHM / FWTM | 45.0° / 72.0° |
| Efficiency | 92 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (MEASURED):

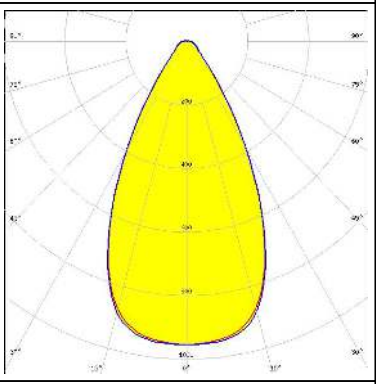
CREE LED

| | |
|---|---|
| LED | XP-L2 |
| FWHM / FWTM | 52.0° / 83.0° |
| Efficiency | 92 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



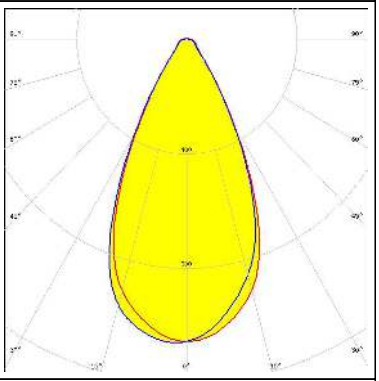
LUMILEDS

| | |
|---|---|
| LED | LUXEON 5050 Round LES |
| FWHM / FWTM | 55.0° / 87.0° |
| Efficiency | 94 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



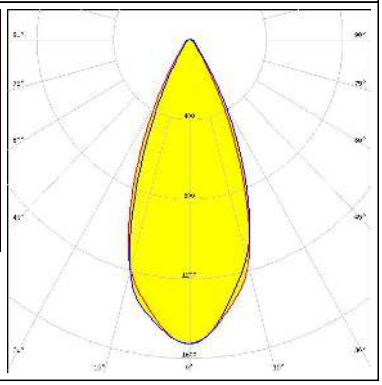
LUMILEDS

| | |
|---|---|
| LED | LUXEON V |
| FWHM / FWTM | 52.0° / 81.0° |
| Efficiency | 93 % |
| Peak intensity | 1.1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



LUMINUS

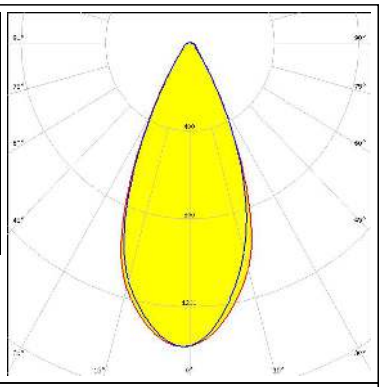
| | |
|---|---|
| LED | SST-10-B130 |
| FWHM / FWTM | 44.0° / 70.0° |
| Efficiency | 96 % |
| Peak intensity | 1.5 cd/lm |
| LEDs/each optic | 1 |
| Light colour | Deep Red |
| Required components: | |



## OPTICAL RESULTS (MEASURED):

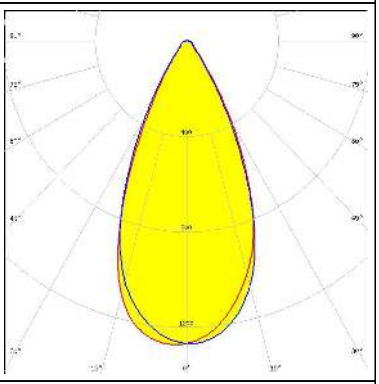
MST Your solutions

| | |
|---|---|
| LED | RecLED 122x50mm 1900lm 730 2x4 Opt G1 |
| FWHM / FWTM | 46.0° / 72.5° |
| Efficiency | 97 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



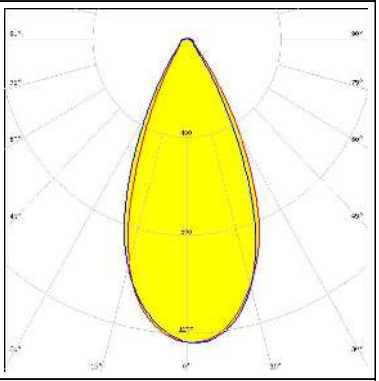
NICHIA

| | |
|---|---|
| LED | NVSW219F |
| FWHM / FWTM | 49.0° / 76.0° |
| Efficiency | 96 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



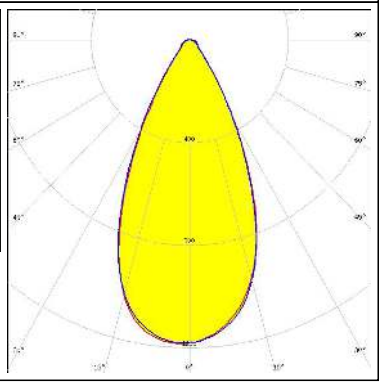
NICHIA

| | |
|---|---|
| LED | NVSW219F |
| FWHM / FWTM | 48.0° / 76.0° |
| Efficiency | 94 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



NICHIA

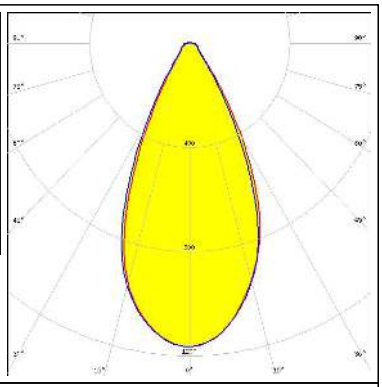
| | |
|---|---|
| LED | NVSW319B |
| FWHM / FWTM | 50.0° / 79.0° |
| Efficiency | 94 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (MEASURED):

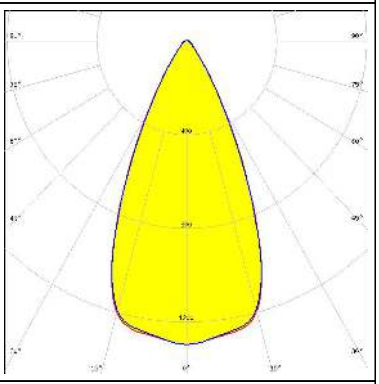
NICHIA

| | |
|---|---|
| LED | NVSW3x9A |
| FWHM / FWTM | 50.0° / 78.0° |
| Efficiency | 93 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



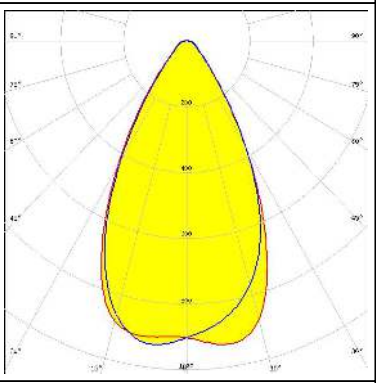
OSRAM

| | |
|---|---|
| LED | PrevaLED Brick HP 2x8 |
| FWHM / FWTM | 49.0° / 72.0° |
| Efficiency | 94 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



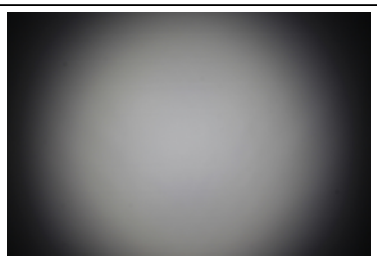
OSRAM Opto Semiconductors

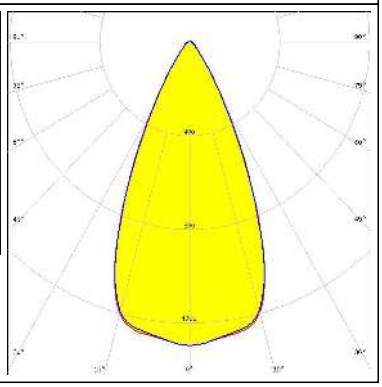
| | |
|---|---|
| LED | Duris S8 |
| FWHM / FWTM | 56.0° / 89.0° |
| Efficiency | 95 % |
| Peak intensity | 0.9 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



OSRAM Opto Semiconductors

| | |
|---|---|
| LED | OSLON Square CSSRM2/CSSRM3 |
| FWHM / FWTM | 49.0° / 72.0° |
| Efficiency | 94 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

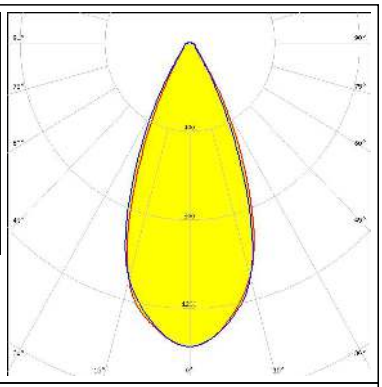




## OPTICAL RESULTS (MEASURED):

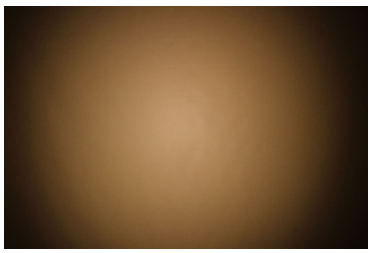
**PHILIPS**

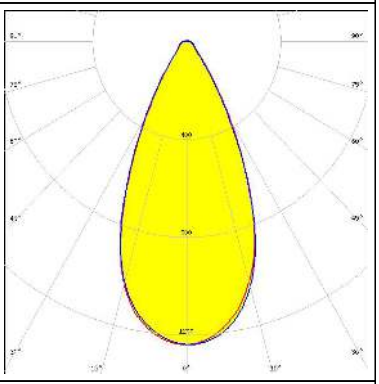
| | |
|---|---|
| LED | Fortimo FastFlex LED 2x8 DA G4 |
| FWHM / FWTM | 45.0° / 71.0° |
| Efficiency | 93 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



**PHILIPS**

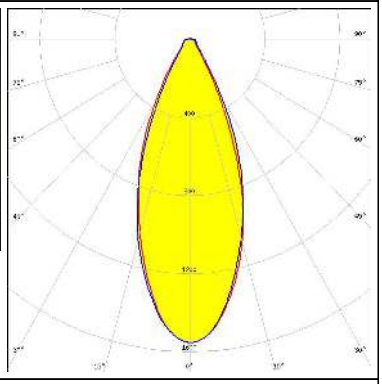
| | |
|---|---|
| LED | Fortimo FastFlex LED 2x8 DA G4+ |
| FWHM / FWTM | 48.0° / 77.0° |
| Efficiency | 96 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |





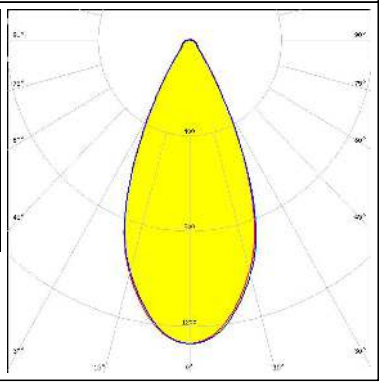
**SAMSUNG**

| | |
|---|---|
| LED | HiLOM RC12 Z (LH181B) |
| FWHM / FWTM | 41.0° / 71.0° |
| Efficiency | 97 % |
| Peak intensity | 1.6 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



**SAMSUNG**

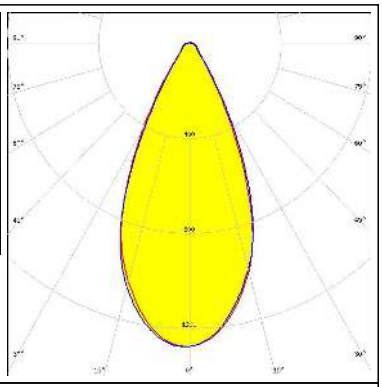
| | |
|---|---|
| LED | HiLOM RH12 Z (LH351C) |
| FWHM / FWTM | 48.0° / 75.0° |
| Efficiency | 96 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (MEASURED):

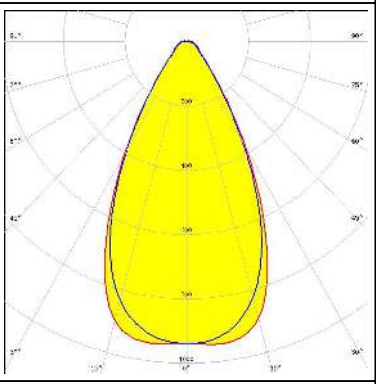
SAMSUNG

| | |
|---|---|
| LED | HiLOM RH16 (LH351C) |
| FWHM / FWTM | 48.0° / 75.0° |
| Efficiency | 94 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



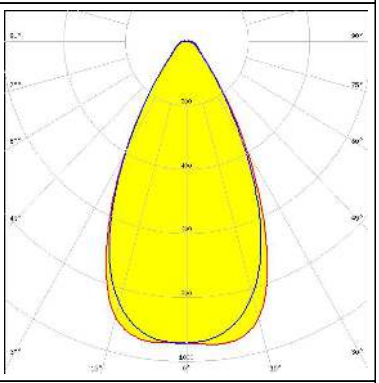
SAMSUNG

| | |
|---|---|
| LED | HiLOM RM12 Z (LH502C) |
| FWHM / FWTM | 55.0° / 88.0° |
| Efficiency | 95 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



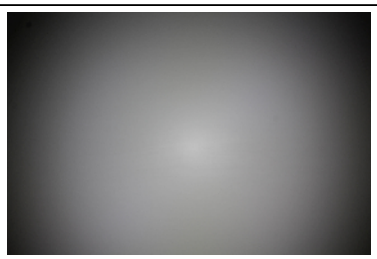
SAMSUNG

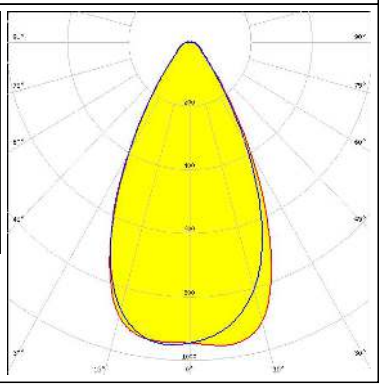
| | |
|---|---|
| LED | HiLOM RM16 Z (LH502C) |
| FWHM / FWTM | 55.0° / 89.0° |
| Efficiency | 96 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



SAMSUNG

| | |
|---|---|
| LED | HiLOM RM8 Z (LH502C) |
| FWHM / FWTM | 56.0° / 88.0° |
| Efficiency | 97 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

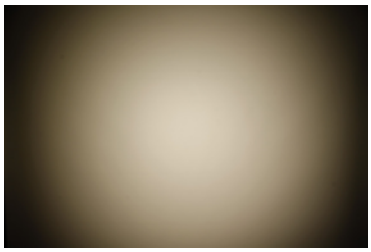


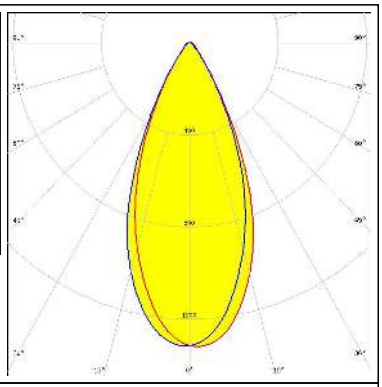


## OPTICAL RESULTS (MEASURED):

SAMSUNG

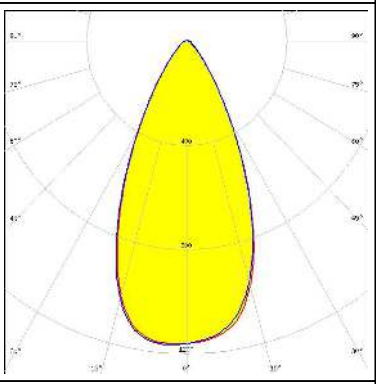
| | |
|---|---|
| LED | LH351B |
| FWHM / FWTM | 45.0° / 74.0° |
| Efficiency | 86 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |





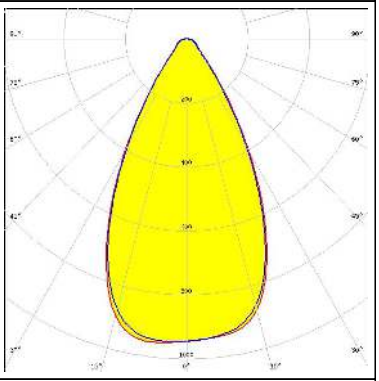
SAMSUNG

| | |
|---|---|
| LED | LH351D |
| FWHM / FWTM | 49.0° / 82.0° |
| Efficiency | 94 % |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



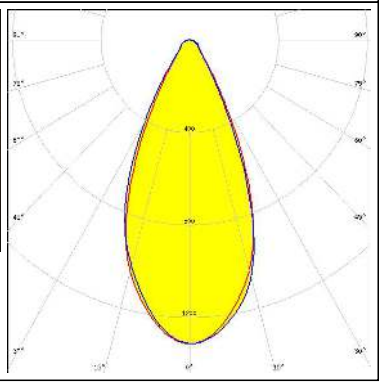
SAMSUNG

| | |
|---|---|
| LED | LH508A |
| FWHM / FWTM | 56.0° / 87.0° |
| Efficiency | 93 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



SEITEC Elektronik GmbH

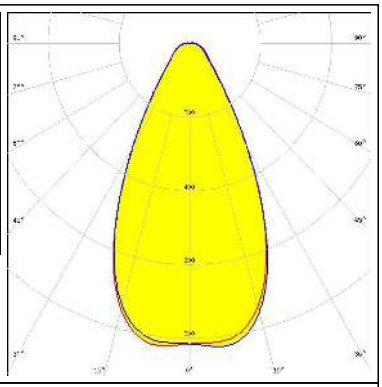
| | |
|---|---|
| LED | LED-Pa-L15c2W11c2-xxx-C050-01 |
| FWHM / FWTM | 47.0° / 76.0° |
| Efficiency | 96 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (MEASURED):

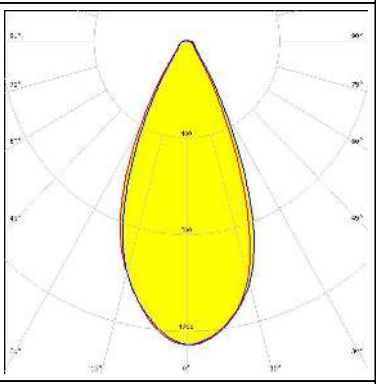
SEOUL SEMICONDUCTOR

| | |
|---|---|
| LED | 2x2 Y22 module - SMJQ-D48W16AA-XX |
| FWHM / FWTM | 54.0° / 94.0° |
| Efficiency | 92 % |
| Peak intensity | 0.8 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



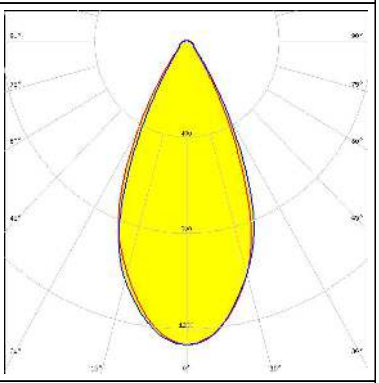
SEOUL SEMICONDUCTOR

| | |
|---|---|
| LED | Z5M3 |
| FWHM / FWTM | 47.0° / 75.0° |
| Efficiency | 94 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



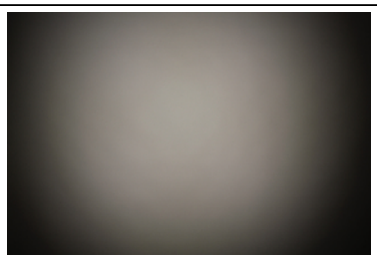
SEOUL SEMICONDUCTOR

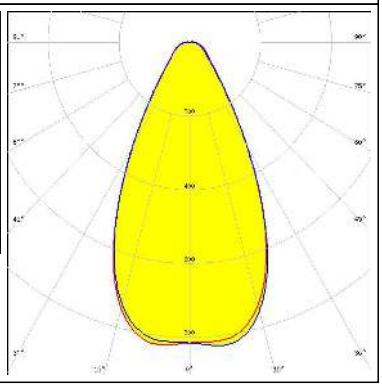
| | |
|---|---|
| LED | Z5M4 |
| FWHM / FWTM | 49.0° / 76.0° |
| Efficiency | 96 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



SEOUL SEMICONDUCTOR

| | |
|---|---|
| LED | Z8Y19 |
| FWHM / FWTM | 54.0° / 94.0° |
| Efficiency | 92 % |
| Peak intensity | 0.8 cd/lm |
| LEDs/each optic | 4 |
| Light colour | White |
| Required components: | |



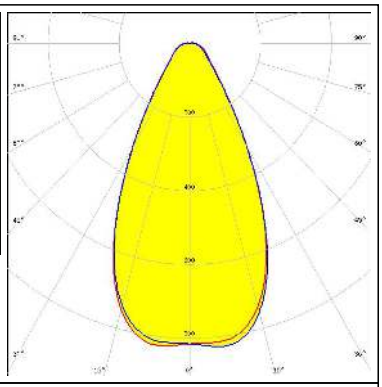


## OPTICAL RESULTS (MEASURED):

SEOUL SEMICONDUCTOR

| | |
|---|---|
| LED | Z8Y19 |
| FWHM / FWTM | 54.0° / 94.0° |
| Efficiency | 92 % |
| Peak intensity | 0.8 cd/lm |
| LEDs/each optic | 4 |
| Light colour | White |

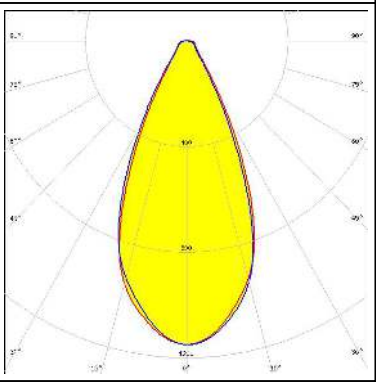
Required components:



SEOUL SEMICONDUCTOR

| | |
|---|---|
| LED | Z8Y22P |
| FWHM / FWTM | 48.0° / 77.0° |
| Efficiency | 92 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |

Required components:



TRIDONIC

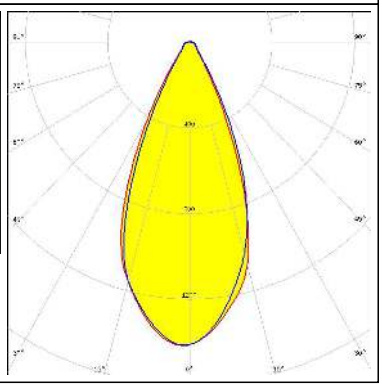
| | |
|---|---|
| LED | RLE 2x4 2000lm HP EXC2 OTD |
| FWHM / FWTM | 46.0° / 71.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |

Required components:

TRIDONIC

| | |
|---|---|
| LED | RLE 2x8 4000lm HP EXC2 OTD |
| FWHM / FWTM | 46.0° / 71.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |

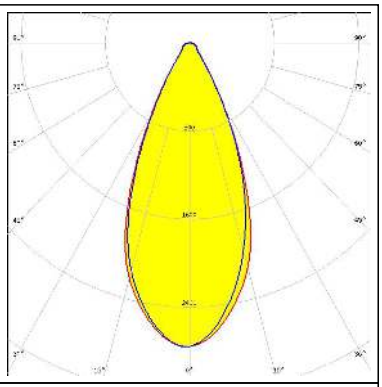
Required components:



## OPTICAL RESULTS (MEASURED):

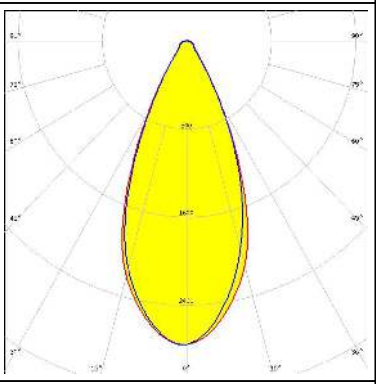
**TRIDONIC**

| | |
|---|---|
| LED | RLE G1 49x121mm 2000lm xxx EXC OTD |
| FWHM / FWTM | 46.0° / 73.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



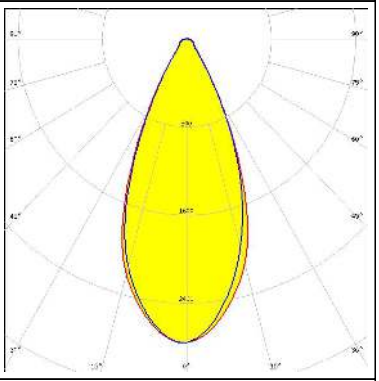
**TRIDONIC**

| | |
|---|---|
| LED | RLE G1 49x133mm 2000lm xxx EXC OTD |
| FWHM / FWTM | 46.0° / 73.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



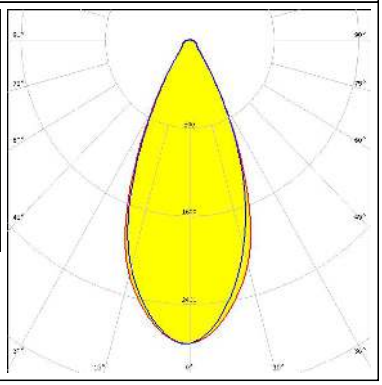
**TRIDONIC**

| | |
|---|---|
| LED | RLE G1 49x223mm 4000lm xxx EXC OTD |
| FWHM / FWTM | 46.0° / 73.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



**TRIDONIC**

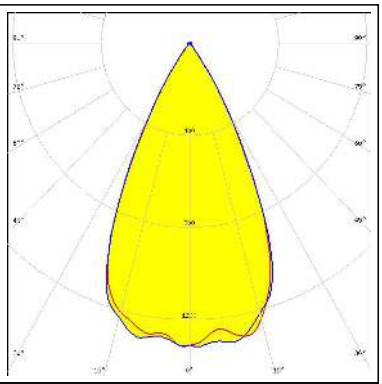
| | |
|---|---|
| LED | RLE G1 49x245mm 4000lm xxx EXC OTD |
| FWHM / FWTM | 46.0° / 73.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (SIMULATED):

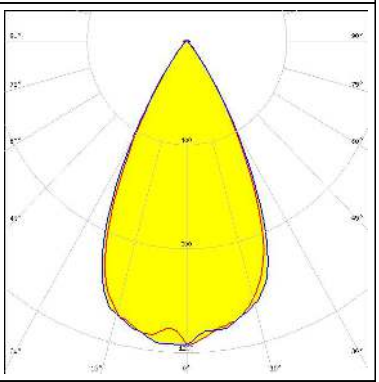
CREE LED

| | |
|---|---|
| LED | XHP35 HI |
| FWHM / FWTM | 52.0° / 68.0° |
| Efficiency | 93 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



CREE LED

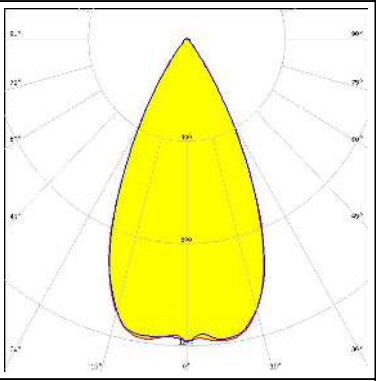
| | |
|---|---|
| LED | XM-L |
| FWHM / FWTM | 54.0° / 74.0° |
| Efficiency | 92 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



CREE LED

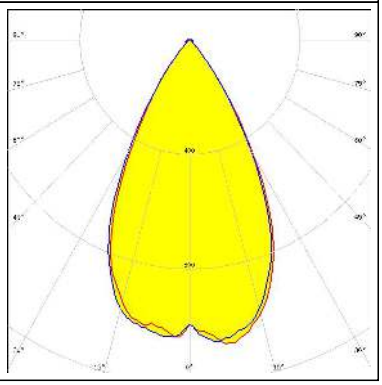
| | |
|---|---|
| LED | XP-G3 |
| FWHM / FWTM | 52.0° / 74.0° |
| Efficiency | 89 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

Protective plate, glass



CREE LED

| | |
|---|---|
| LED | XP-L HD |
| FWHM / FWTM | 55.0° / 79.0° |
| Efficiency | 93 % |
| Peak intensity | 1.1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



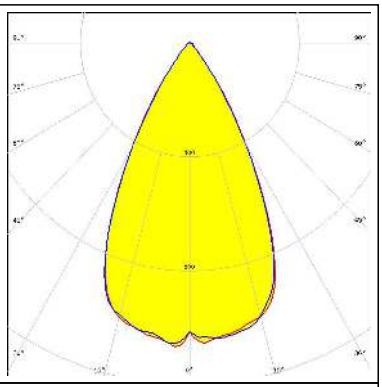
## OPTICAL RESULTS (SIMULATED):

CREE LED

| | |
|---|---|
| LED | XP-L HD |
| FWHM / FWTM | 56.0° / 78.0° |
| Efficiency | 90 % |
| Peak intensity | 1.1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |

Required components:

Protective plate, glass

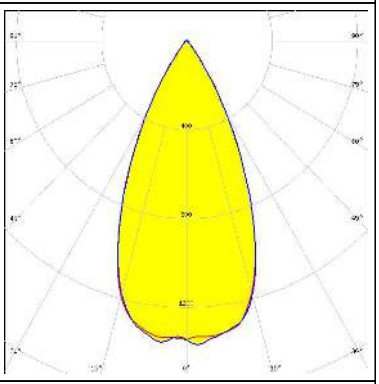


CREE LED

| | |
|---|---|
| LED | XP-L HI |
| FWHM / FWTM | 48.0° / 72.0° |
| Efficiency | 90 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |

Required components:

Protective plate, glass

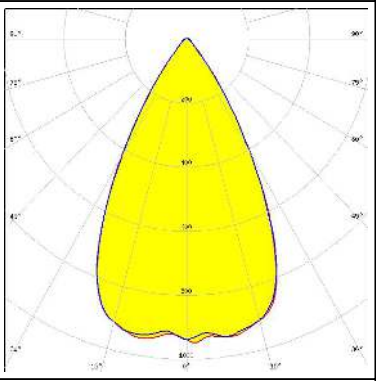


CREE LED

| | |
|---|---|
| LED | XP-L2 |
| FWHM / FWTM | 58.0° / 82.0° |
| Efficiency | 89 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |

Required components:

Protective plate, glass

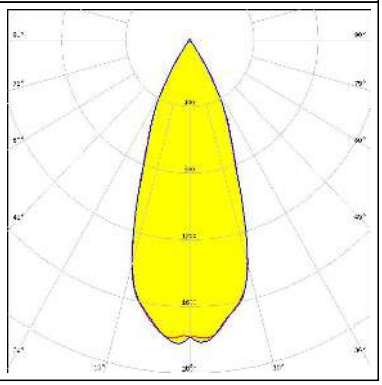


CREE LED

| | |
|---|---|
| LED | XP-P |
| FWHM / FWTM | 40.0° / 66.0° |
| Efficiency | 91 % |
| Peak intensity | 1.8 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |

Required components:

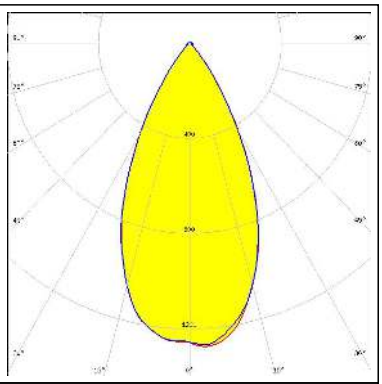
Protective plate, glass



## OPTICAL RESULTS (SIMULATED):

LUMILEDS

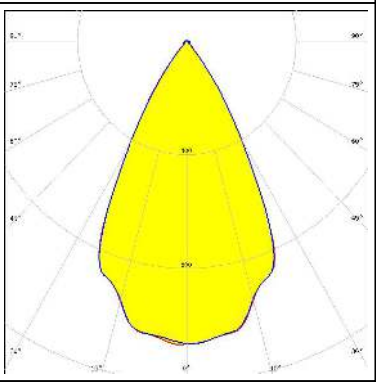
| | |
|---|---|
| LED | LUXEON HL2X |
| FWHM / FWTM | 50.0° / 76.0° |
| Efficiency | 94 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



LUMILEDS

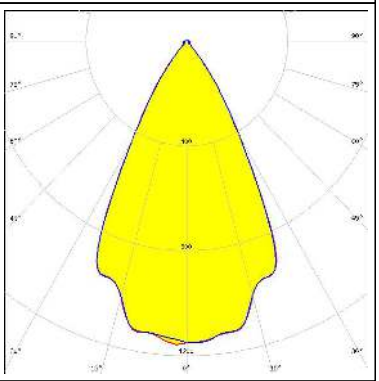
| | |
|---|---|
| LED | LUXEON HL2X-D |
| FWHM / FWTM | 56.0° / 76.0° |
| Efficiency | 88 % |
| Peak intensity | 1.1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

Protective plate, glass



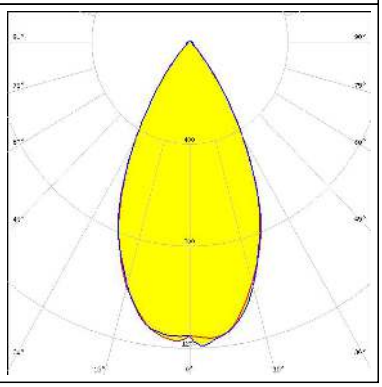
LUMILEDS

| | |
|---|---|
| LED | LUXEON HL2X-D |
| FWHM / FWTM | 56.0° / 76.0° |
| Efficiency | 96 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



LUMILEDS

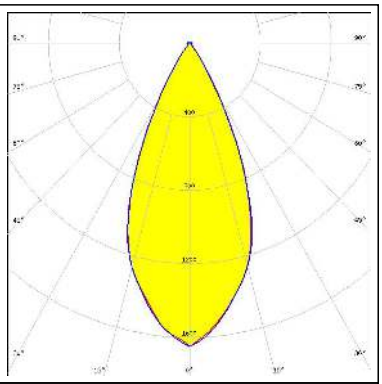
| | |
|---|---|
| LED | LUXEON HL2X-P |
| FWHM / FWTM | 54.0° / 80.0° |
| Efficiency | 94 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (SIMULATED):

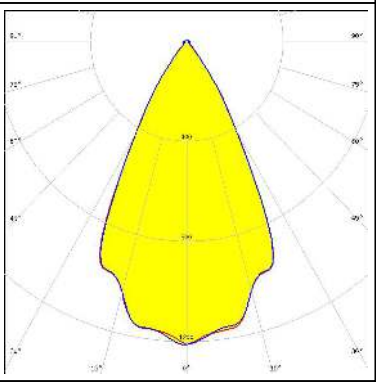
LUMILEDS

| | |
|---|---|
| LED | LUXEON HL2Z |
| FWHM / FWTM | 46.0° / 66.0° |
| Efficiency | 94 % |
| Peak intensity | 1.7 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



LUMILEDS

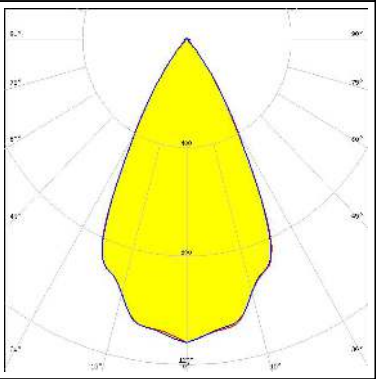
| | |
|---|---|
| LED | LUXEON XR-HL2X (L2H2-xxxxxxxMLU010) |
| FWHM / FWTM | 54.0° / 76.0° |
| Efficiency | 96 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



LUMILEDS

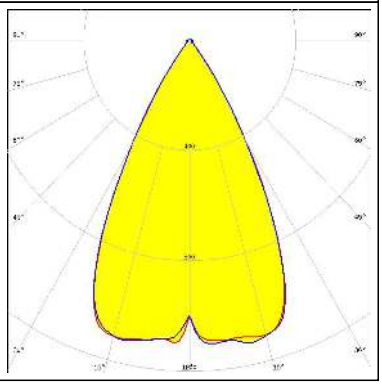
| | |
|---|---|
| LED | LUXEON XR-HL2X (L2H2-xxxxxxxMLU010) |
| FWHM / FWTM | 54.0° / 76.0° |
| Efficiency | 88 % |
| Peak intensity | 1.1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

Protective plate, glass



NICHIA

| | |
|---|---|
| LED | NV4WB35AM |
| FWHM / FWTM | 56.0° / 74.0° |
| Efficiency | 95 % |
| Peak intensity | 1.2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

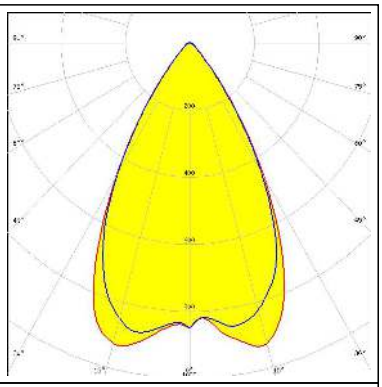


## OPTICAL RESULTS (SIMULATED):

OSRAM Opto Semiconductors

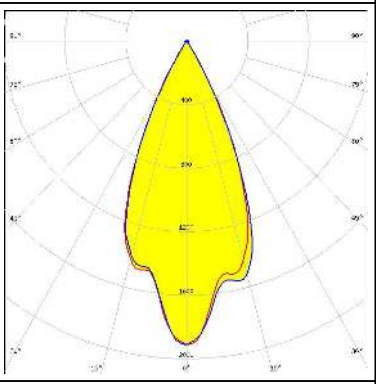
| | |
|---|---|
| LED | Duris S8 |
| FWHM / FWTM | 57.0° / 83.0° |
| Efficiency | 90 % |
| Peak intensity | 1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

Protective plate, glass



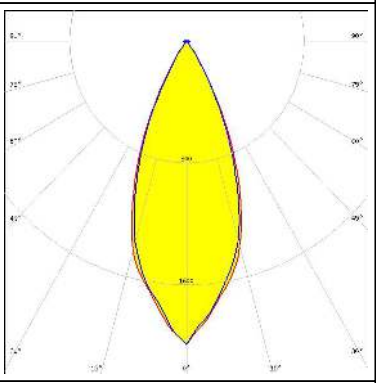
OSRAM Opto Semiconductors

| | |
|---|---|
| LED | OSCONIQ C 2424 |
| FWHM / FWTM | 45.0° / 62.0° |
| Efficiency | 96 % |
| Peak intensity | 1.9 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



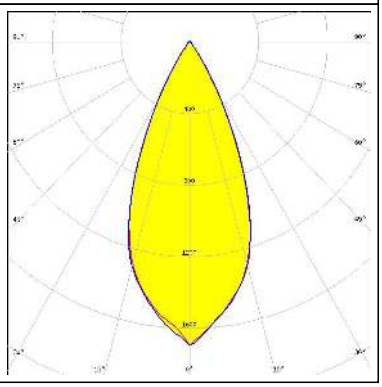
OSRAM Opto Semiconductors

| | |
|---|---|
| LED | OSCONIQ P 3030 |
| FWHM / FWTM | 42.0° / 64.0° |
| Efficiency | 96 % |
| Peak intensity | 2 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



OSRAM Opto Semiconductors

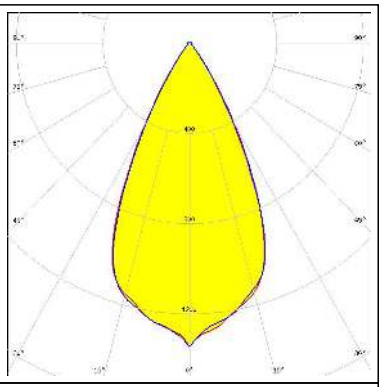
| | |
|---|---|
| LED | OSCONIQ P 3737 (2W version) |
| FWHM / FWTM | 45.0° / 68.0° |
| Efficiency | 96 % |
| Peak intensity | 1.7 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (SIMULATED):

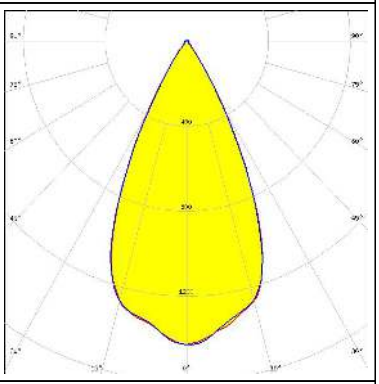
OSRAM Opto Semiconductors

| | |
|---|---|
| LED | OSCONIQ P 3737 (3W version) |
| FWHM / FWTM | 52.0° / 72.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



OSRAM Opto Semiconductors

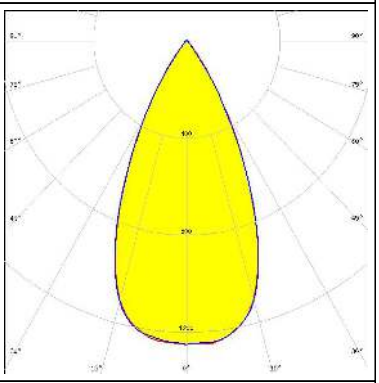
| | |
|---|---|
| LED | OSCONIQ P 3737 Flat |
| FWHM / FWTM | 50.0° / 68.0° |
| Efficiency | 96 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



OSRAM Opto Semiconductors

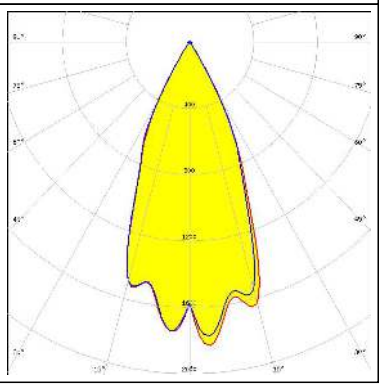
| | |
|---|---|
| LED | OSLON Square CSSRM2/CSSRM3 |
| FWHM / FWTM | 50.0° / 72.0° |
| Efficiency | 87 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

Protective plate, glass



OSRAM Opto Semiconductors

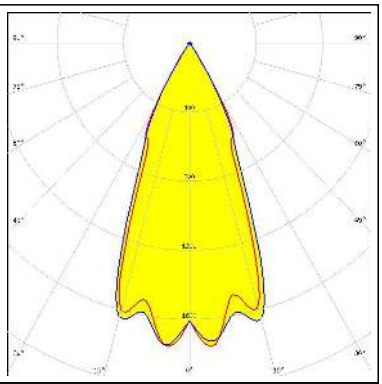
| | |
|---|---|
| LED | OSLON Square Flat |
| FWHM / FWTM | 43.0° / 64.0° |
| Efficiency | 96 % |
| Peak intensity | 1.8 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (SIMULATED):

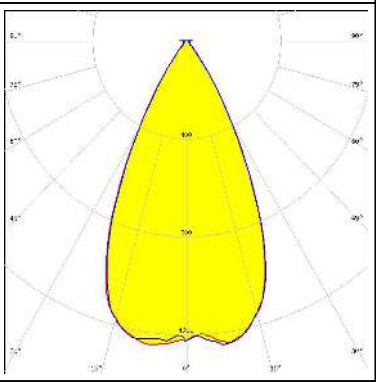
OSRAM
Opto Semiconductors

| | |
|---|---|
| LED | OSTAR Projection Compact (Kx.CSLNM1.xx) |
| FWHM / FWTM | 42.0° / 64.0° |
| Efficiency | 96 % |
| Peak intensity | 1.8 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



PHILIPS

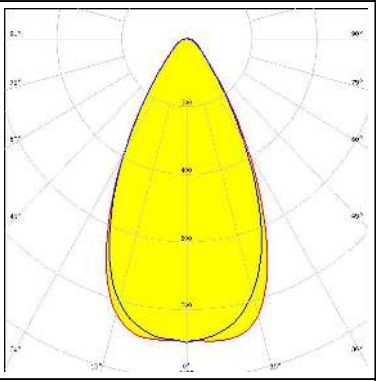
| | |
|---|---|
| LED | Fortimo FastFlex LED 2x8 DAX G4 |
| FWHM / FWTM | 51.0° / 73.0° |
| Efficiency | 94 % |
| Peak intensity | 1.3 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



SAMSUNG

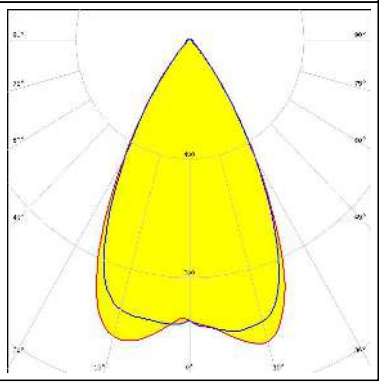
| | |
|---|---|
| LED | HiLOM RM16 Z (LH502C) |
| FWHM / FWTM | 56.0° / 90.0° |
| Efficiency | 89 % |
| Peak intensity | 0.9 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |

Protective plate, glass



SEOUL SEMICONDUCTOR

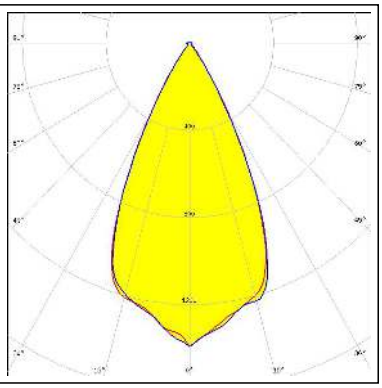
| | |
|---|---|
| LED | SEOUL DC 5050 6V |
| FWHM / FWTM | 54.0° / 79.0° |
| Efficiency | 94 % |
| Peak intensity | 1.1 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## OPTICAL RESULTS (SIMULATED):

SEOUL SEMICONDUCTOR

| | |
|---|---|
| LED | Z8Y22T |
| FWHM / FWTM | 51.0° / 69.0° |
| Efficiency | 94 % |
| Peak intensity | 1.4 cd/lm |
| LEDs/each optic | 1 |
| Light colour | White |
| Required components: | |



## GENERAL INFORMATION:

NOTE: The typical beam angle will be changed by different color, chip size and chip position tolerance. The typical total beam angle is the full angle measured where the luminous intensity is half of the peak value.

## MATERIALS:

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