

HB-2X2-M

~25° medium 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 ⓘ

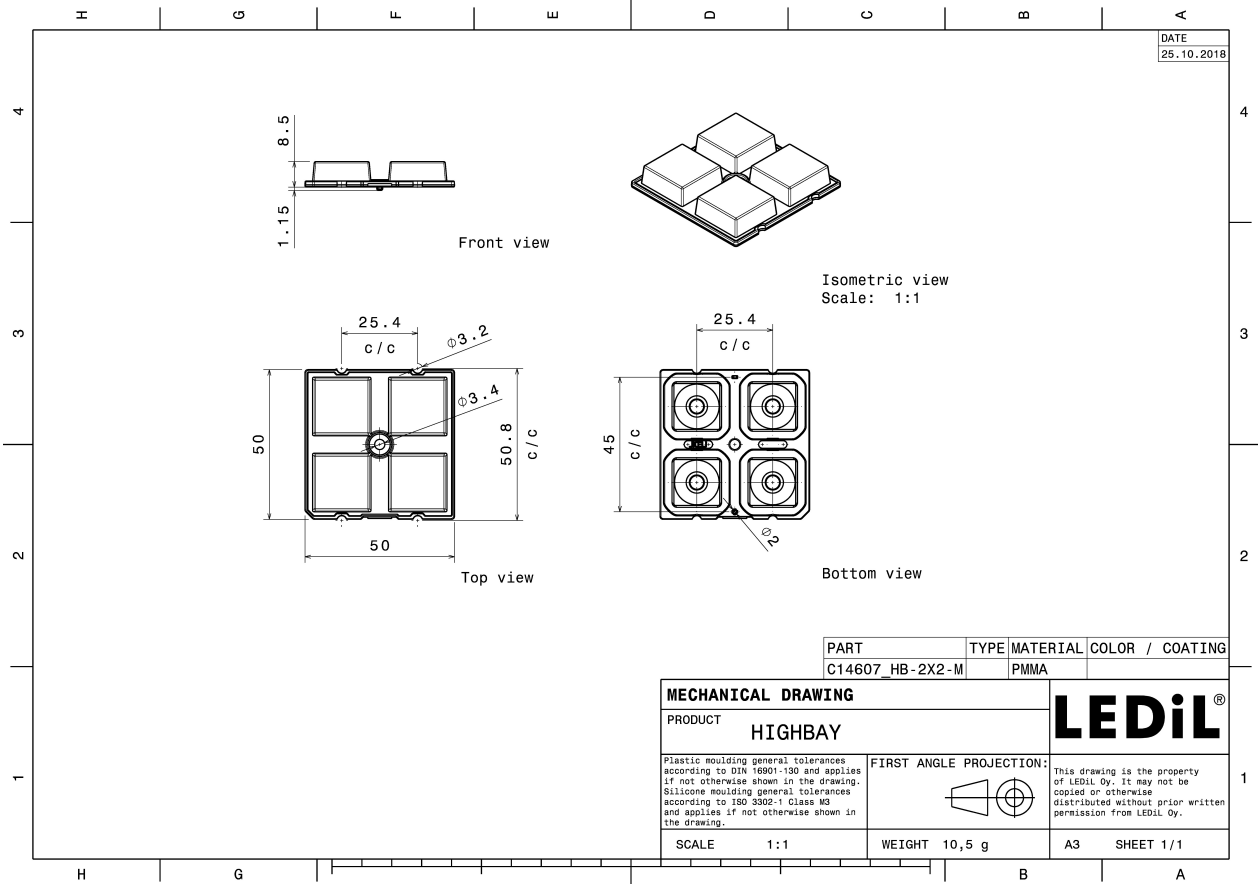
MATERIALS:

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

ORDERING INFORMATION:

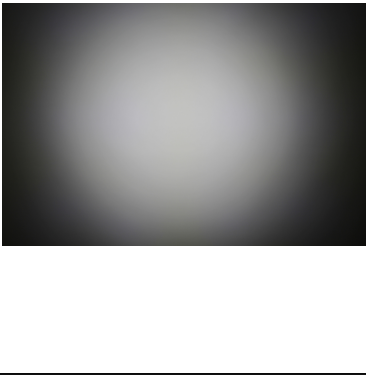
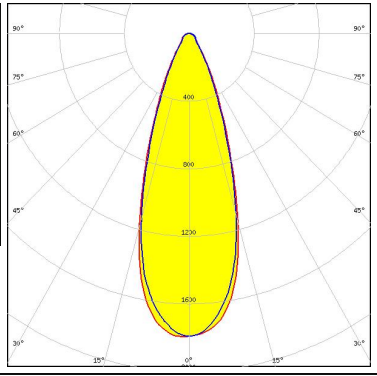

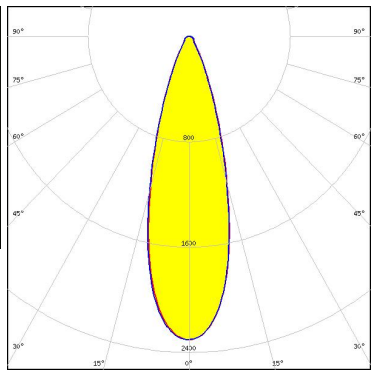

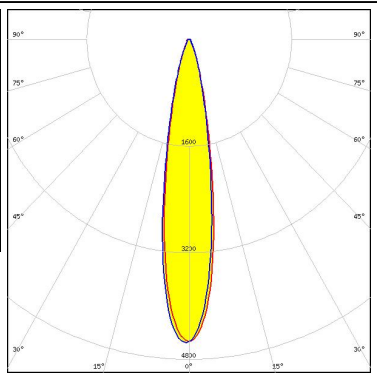

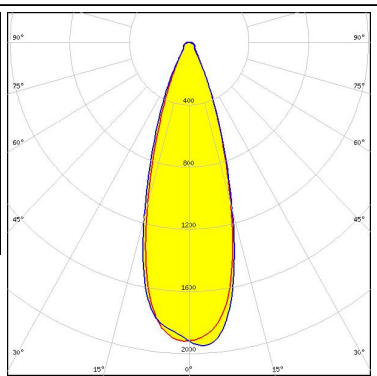
Component	Qty in box	MOQ	MPQ	Box weight (kg)
C14607_HB-2X2-M » Box size: 480 x 280 x 300 mm	800	160	160	9.2



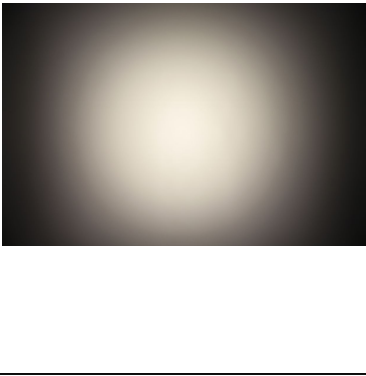
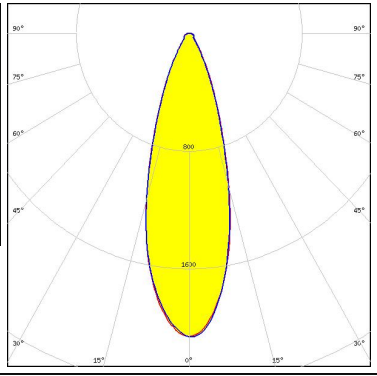
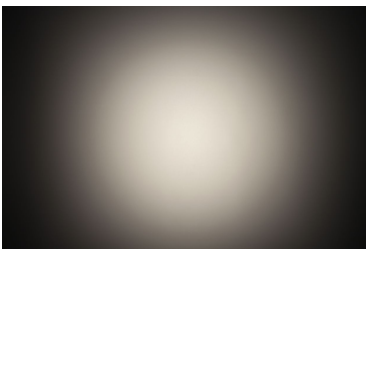
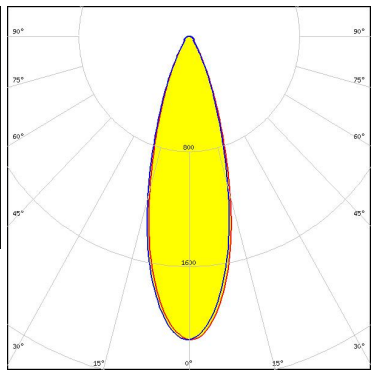

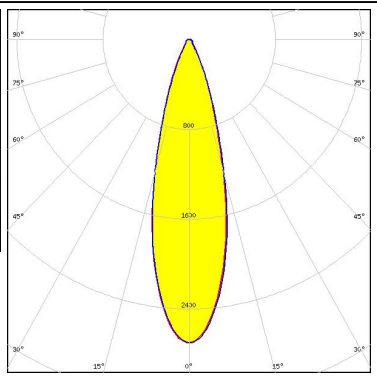
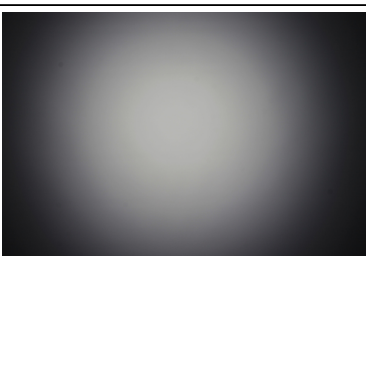
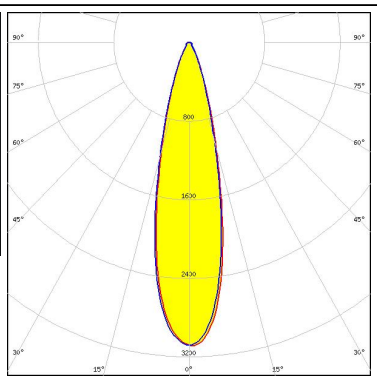


See also our general installation guide: www.ledil.com/installation_guide

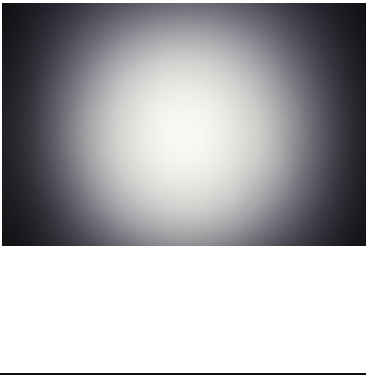
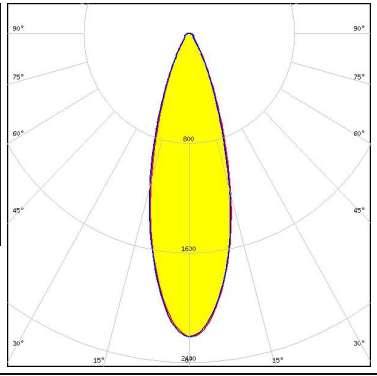

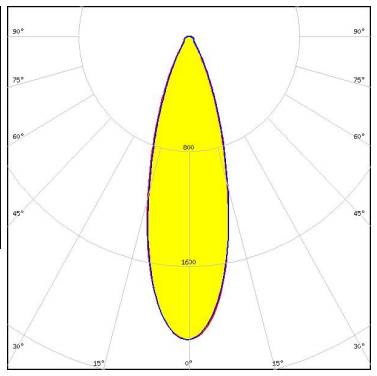

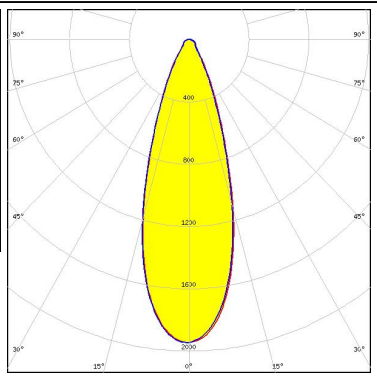
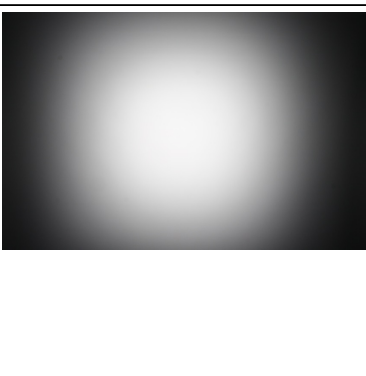
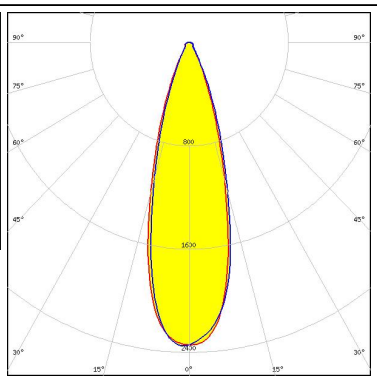
OPTICAL RESULTS (MEASURED):

<p>bridgelux</p> <p>LED Bridgelux SMD 5050</p> <p>FWHM / FWTM 36.0° / 66.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 1.8 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p>CREE LEDs</p> <p>LED J Series 5050C 6V E Class</p> <p>FWHM / FWTM 31.0° / 57.0°</p> <p>Efficiency 93 %</p> <p>Peak intensity 2.3 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p>CREE LEDs</p> <p>LED XD16</p> <p>FWHM / FWTM 19.0° / 39.0°</p> <p>Efficiency 90 %</p> <p>Peak intensity 4.6 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p>CREE LEDs</p> <p>LED XD16</p> <p>FWHM / FWTM 33.0° / 59.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 2 cd/lm</p> <p>LEDs/each optic 4</p> <p>Light colour White</p> <p>Required components:</p>		

OPTICAL RESULTS (MEASURED):

<p>CREE LEDs</p> <p>LED XM-L FWHM / FWTM 32.0° / 61.0° Efficiency 93 % Peak intensity 2 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>CREE LEDs</p> <p>LED XM-L2 FWHM / FWTM 32.0° / 61.0° Efficiency 92 % Peak intensity 2.1 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>CREE LEDs</p> <p>LED XM-L3 FWHM / FWTM 28.0° / 54.0° Efficiency 95 % Peak intensity 2.7 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>CREE LEDs</p> <p>LED XP-G2 FWHM / FWTM 25.0° / 49.0° Efficiency 0 % Peak intensity 3.1 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		

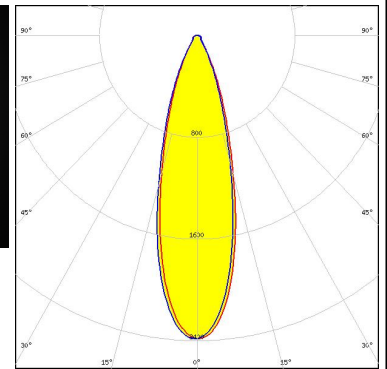
OPTICAL RESULTS (MEASURED):

<p>CREE LEDs</p> <p>LED: XP-L HD FWHM / FWTM: 31.0° / 60.0° Efficiency: 94 % Peak intensity: 2.2 cd/lm LEDs/each optic: 1 Light colour: White Required components:</p>		
<p>CREE LEDs</p> <p>LED: XP-L2 FWHM / FWTM: 31.0° / 61.0° Efficiency: 93 % Peak intensity: 2.1 cd/lm LEDs/each optic: 1 Light colour: White Required components:</p>		
<p>LUMILEDS</p> <p>LED: LUXEON 5050 Round LES FWHM / FWTM: 34.0° / 65.0° Efficiency: 94 % Peak intensity: 2 cd/lm LEDs/each optic: 1 Light colour: White Required components:</p>		
<p>LUMILEDS</p> <p>LED: LUXEON MZ FWHM / FWTM: 30.0° / 55.0° Efficiency: 91 % Peak intensity: 2.4 cd/lm LEDs/each optic: 1 Light colour: White Required components:</p>		

OPTICAL RESULTS (MEASURED):

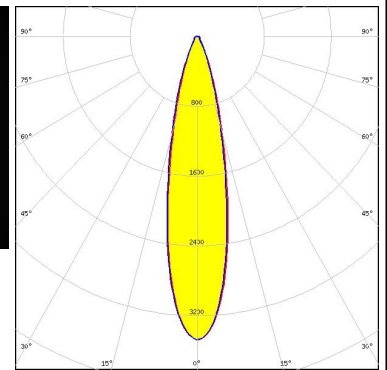
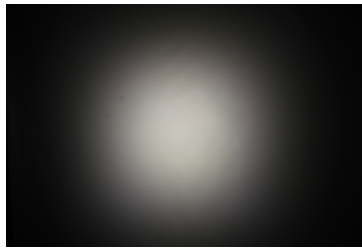
LUMILEDS

LED LUXEON V
 FWHM / FWTM 29.0° / 58.0°
 Efficiency 94 %
 Peak intensity 2.4 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



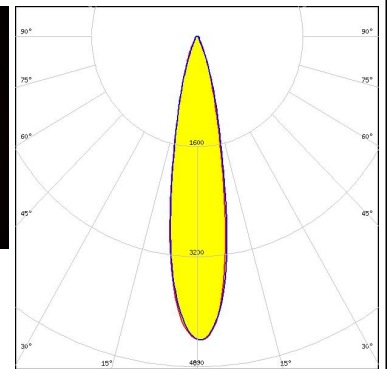
LUMILEDS

LED LUXEON V2
 FWHM / FWTM 23.0° / 47.0°
 Efficiency 94 %
 Peak intensity 3.5 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



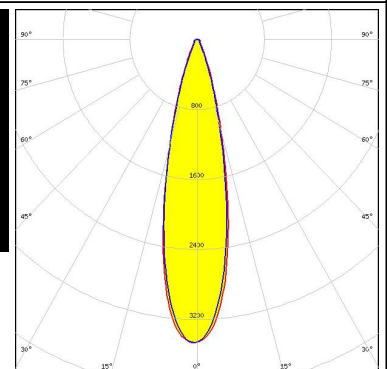
LUMINUS

LED SST-10-B130
 FWHM / FWTM 21.0° / 42.0°
 Efficiency 95 %
 Peak intensity 4.4 cd/m
 LEDs/each optic 1
 Light colour Deep Red
 Required components:


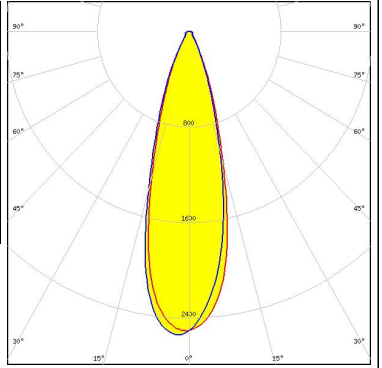

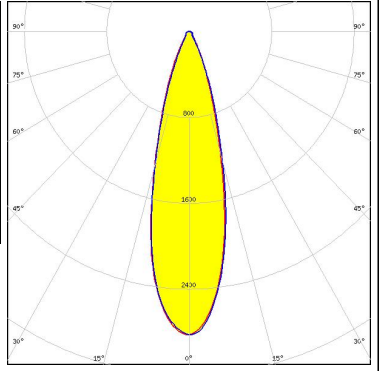
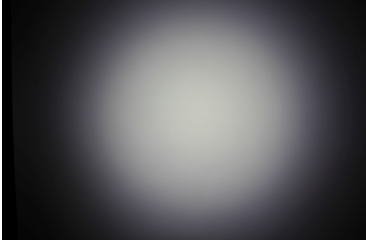
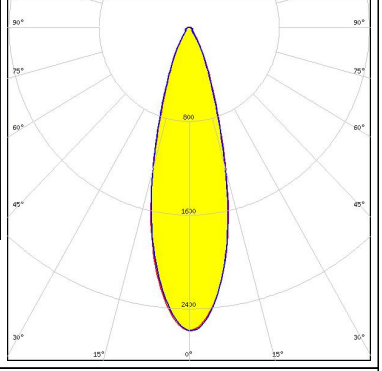
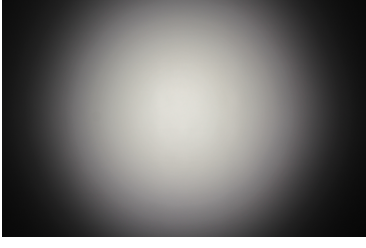
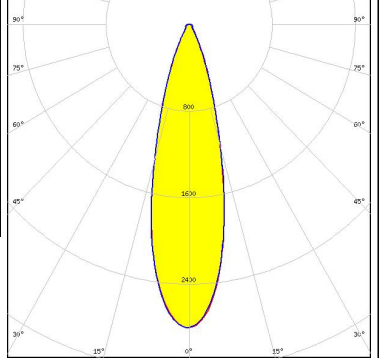


Your solutions

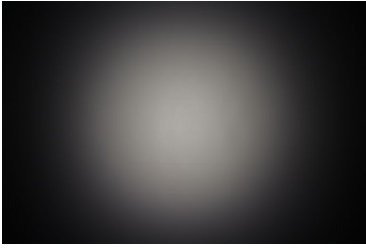
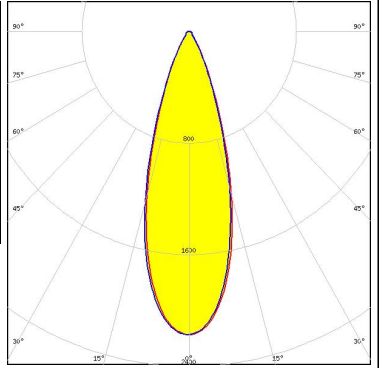

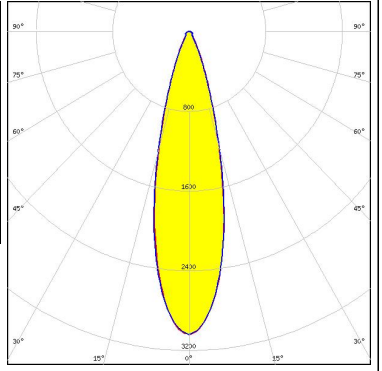
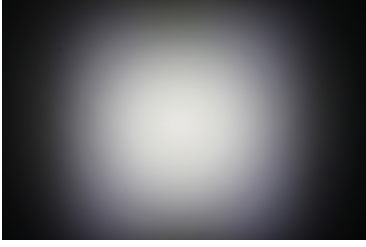
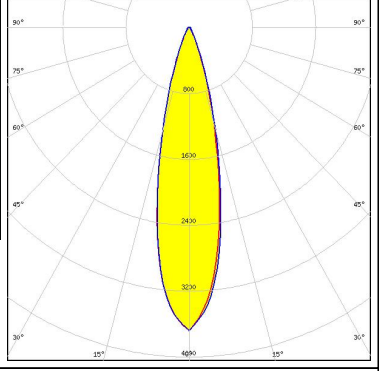
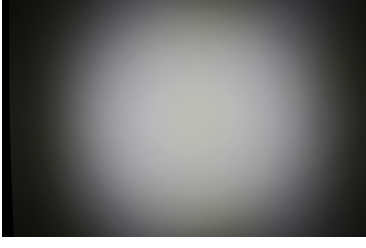
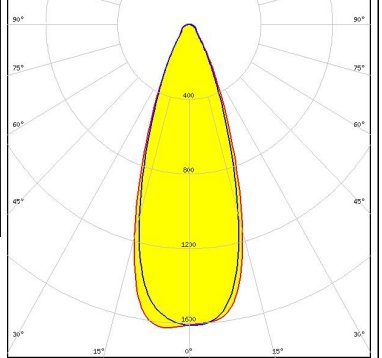
LED RecLED 122x50mm 1900lm 730 2x4 Opt G1
 FWHM / FWTM 24.0° / 46.0°
 Efficiency 95 %
 Peak intensity 3.5 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



OPTICAL RESULTS (MEASURED):

<p>NICHIA</p> <p>LED NVSW219D FWHM / FWTM 29.0° / 55.0° Efficiency 94 % Peak intensity 2.5 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>NICHIA</p> <p>LED NVSW219F FWHM / FWTM 28.0° / 53.0° Efficiency 95 % Peak intensity 2.8 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>NICHIA</p> <p>LED NVSW319B FWHM / FWTM 29.0° / 57.0° Efficiency 94 % Peak intensity 2.6 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>NICHIA</p> <p>LED NVSW3x9A FWHM / FWTM 28.0° / 53.0° Efficiency 94 % Peak intensity 2.8 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		

OPTICAL RESULTS (MEASURED):

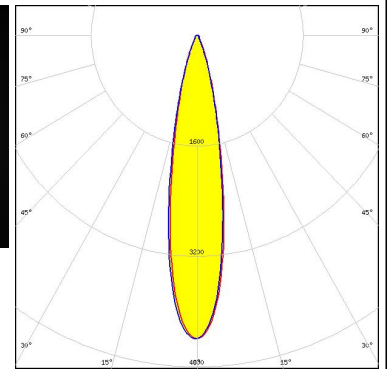
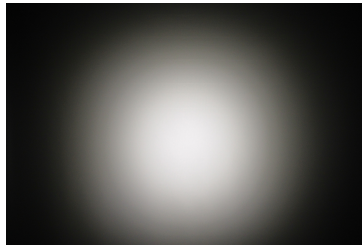
<p>NICHIA</p> <p>LED NWSx229A FWHM / FWTM 33.0° / 58.0° Efficiency 87 % Peak intensity 2.2 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>OSRAM</p> <p>LED PL-BRICK HP 3800 2x8 SSG FWHM / FWTM 26.0° / 50.0° Efficiency 94 % Peak intensity 3 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>OSRAM</p> <p>LED PrevaLED Brick HP 2x8 FWHM / FWTM 23.0° / 44.0° Efficiency 91 % Peak intensity 3.8 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		
<p>OSRAM <small>Opto Semiconductors</small></p> <p>LED Duris S8 FWHM / FWTM 38.0° / 68.0° Efficiency 94 % Peak intensity 1.6 cd/lm LEDs/each optic 1 Light colour White Required components:</p>		

OPTICAL RESULTS (MEASURED):

OSRAM

Opto Semiconductors

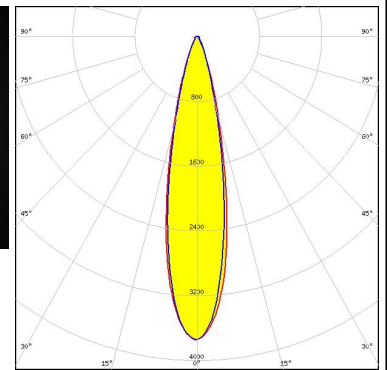
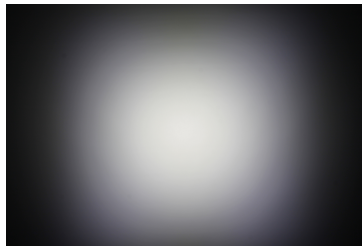
LED OSCONIQ C 3030
 FWHM / FWTM 21.0° / 42.0°
 Efficiency 93 %
 Peak intensity 4.4 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OSRAM

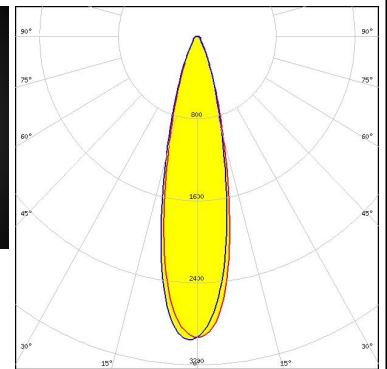
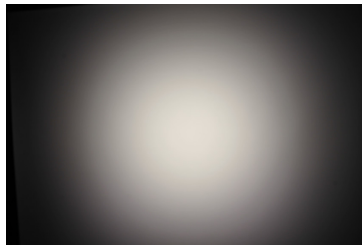
Opto Semiconductors

LED OSLON Square CSSRM2/CSSRM3
 FWHM / FWTM 23.0° / 44.0°
 Efficiency 91 %
 Peak intensity 3.8 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



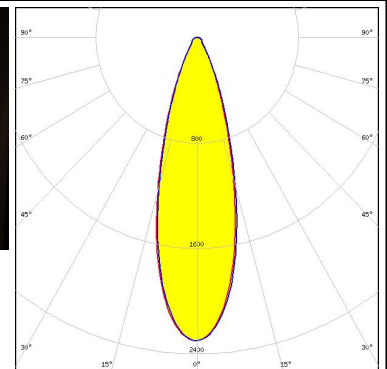
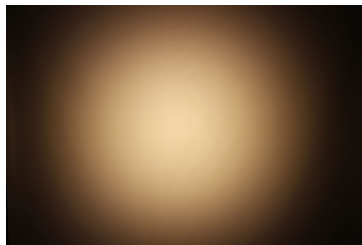
PHILIPS

LED Fortimo FastFlex LED 2x8 DA G4
 FWHM / FWTM 25.0° / 51.0°
 Efficiency 92 %
 Peak intensity 3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



PHILIPS

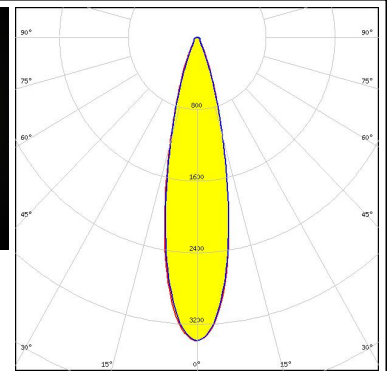
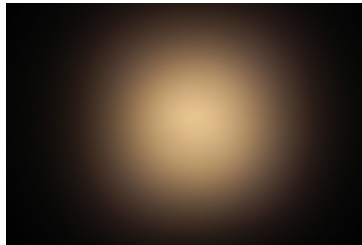
LED Fortimo FastFlex LED 2x8 DA G4+
 FWHM / FWTM 30.0° / 59.0°
 Efficiency 96 %
 Peak intensity 2.3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OPTICAL RESULTS (MEASURED):

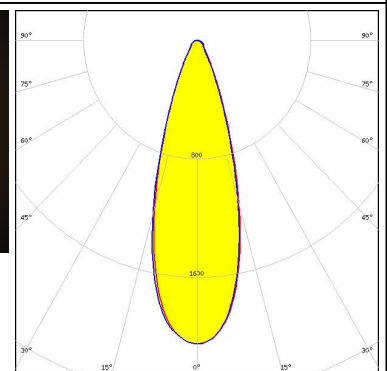
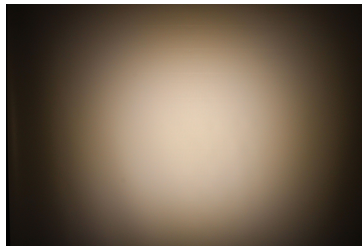
PHILIPS

LED Fortimo FastFlex LED 2x8 DA G5
 FWHM / FWTM 24.0° / 47.0°
 Efficiency 94 %
 Peak intensity 3.4 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



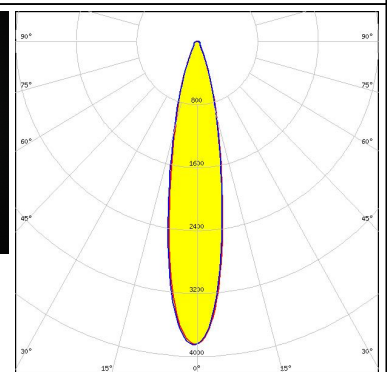
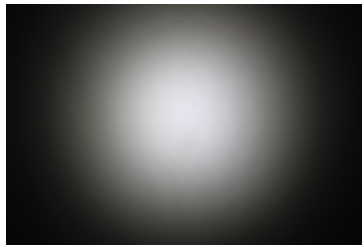
PHILIPS

LED Fortimo FastFlex LED 2x8 DA HE
 FWHM / FWTM 32.0° / 61.0°
 Efficiency 96 %
 Peak intensity 2.1 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



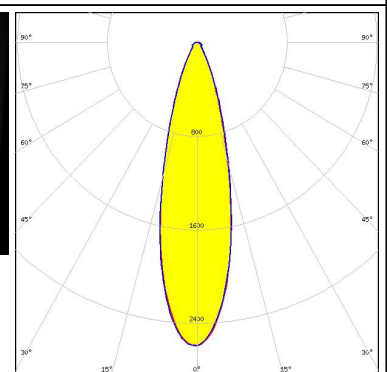
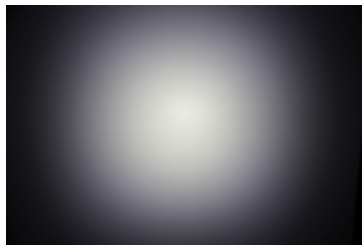
SAMSUNG

LED HiLOM RC12 Z (LH181B)
 FWHM / FWTM 21.0° / 45.0°
 Efficiency 96 %
 Peak intensity 3.9 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



SAMSUNG

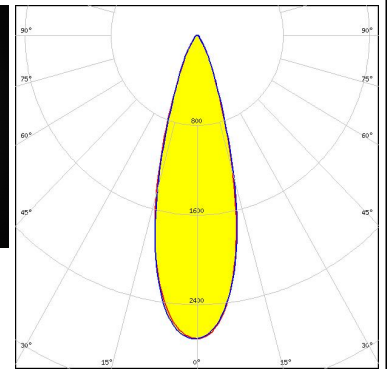
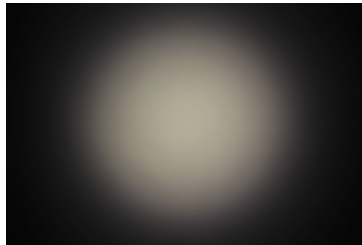
LED HiLOM RH12 Z (LH351C)
 FWHM / FWTM 27.0° / 55.0°
 Efficiency 95 %
 Peak intensity 2.6 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OPTICAL RESULTS (MEASURED):

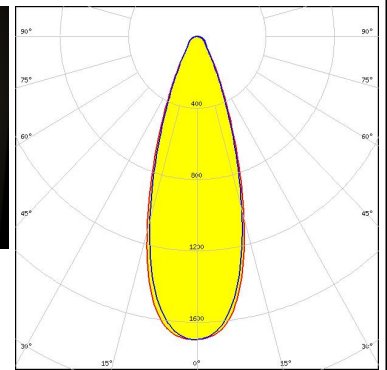
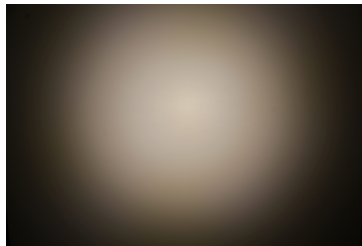
SAMSUNG

LED HiLOM RH16 (LH351C)
 FWHM / FWTM 30.0° / 55.0°
 Efficiency 94 %
 Peak intensity 2.7 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



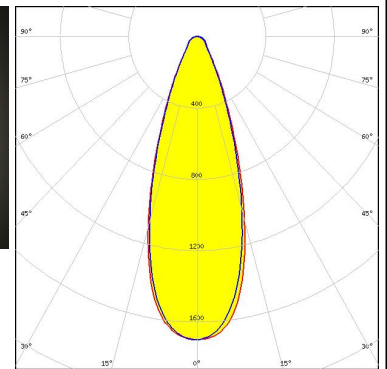
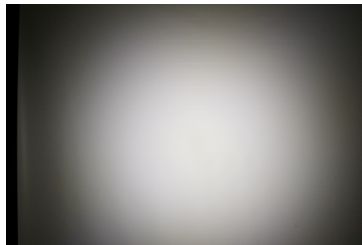
SAMSUNG

LED HiLOM RM12 Z (LH502C)
 FWHM / FWTM 35.0° / 67.0°
 Efficiency 95 %
 Peak intensity 1.7 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



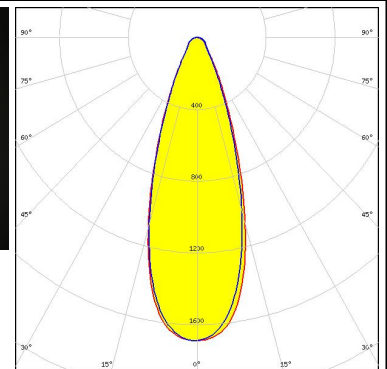
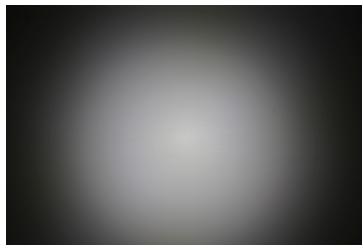
SAMSUNG

LED HiLOM RM16 Z (LH502C)
 FWHM / FWTM 36.0° / 68.0°
 Efficiency 96 %
 Peak intensity 1.7 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



SAMSUNG

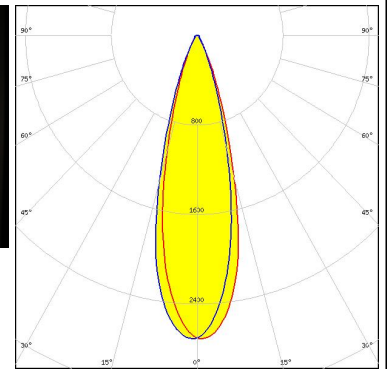
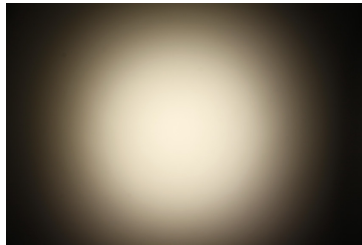
LED HiLOM RM8 Z (LH502C)
 FWHM / FWTM 36.0° / 68.0°
 Efficiency 96 %
 Peak intensity 1.7 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



OPTICAL RESULTS (MEASURED):

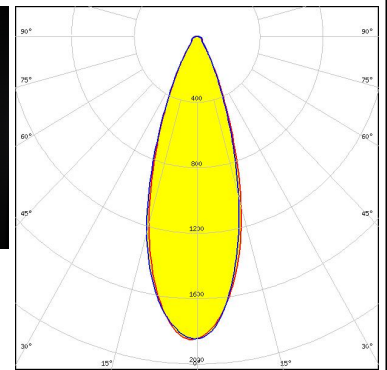
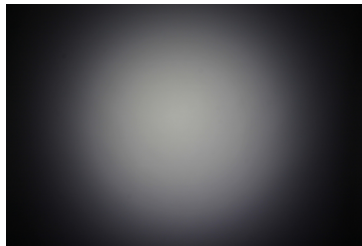
SAMSUNG

LED LH351B
 FWHM / FWTM 28.0° / 52.0°
 Efficiency 85 %
 Peak intensity 2.7 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:

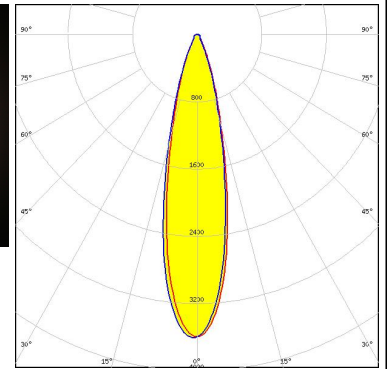
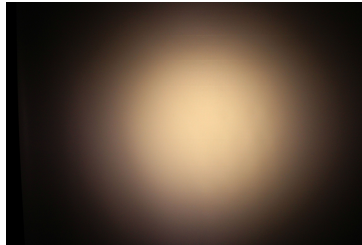


SAMSUNG

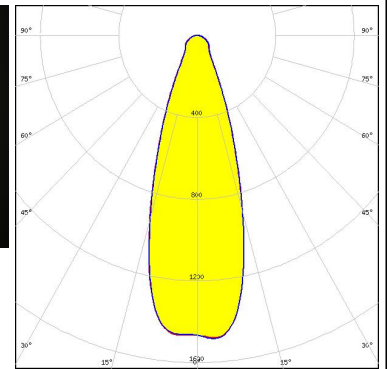
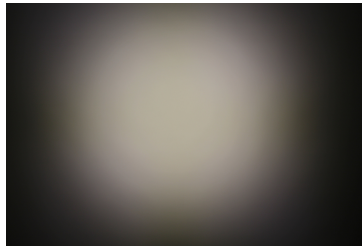
LED LH351D
 FWHM / FWTM 35.0° / 64.0°
 Efficiency 91 %
 Peak intensity 1.9 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:




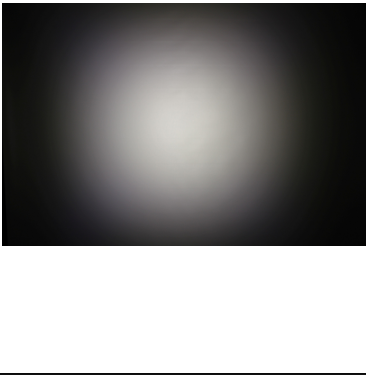
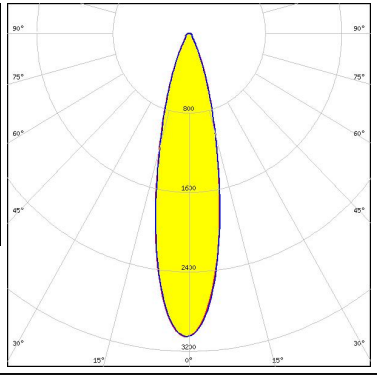


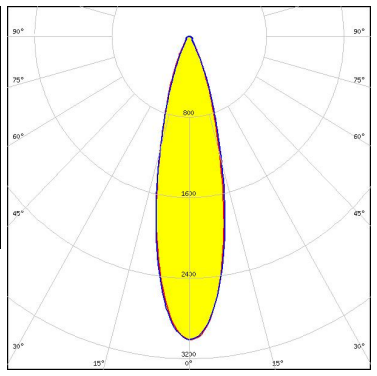


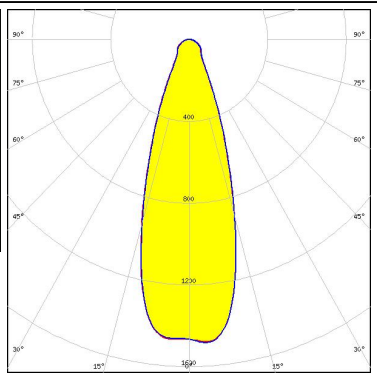

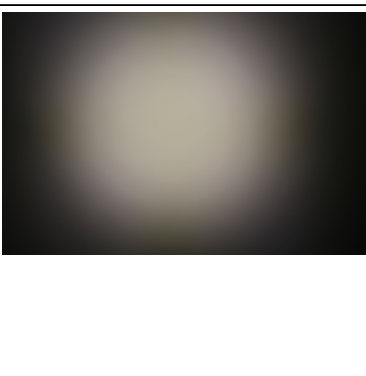
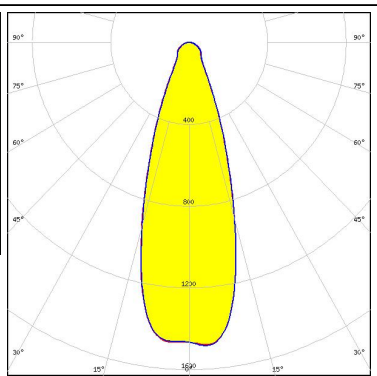
LED LED-Pa-L15c2W11c2-xxx-C050-01
 FWHM / FWTM 24.0° / 48.0 + 47.0°
 Efficiency 95 %
 Peak intensity 3.6 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



LED 2x2 Y22 module - SMJQ-D48W16AA-XX
 FWHM / FWTM 34.0° / 64.0°
 Efficiency 93 %
 Peak intensity 1.5 cd/m
 LEDs/each optic 1
 Light colour White
 Required components:



OPTICAL RESULTS (MEASURED):

<p> SEOUL SEMICONDUCTOR</p> <p>LED Z5M3 FWHM / FWTM 25.0° / 51.0° Efficiency 94 % Peak intensity 3.1 cd/m LEDs/each optic 1 Light colour White Required components:</p>		
<p> SEOUL SEMICONDUCTOR</p> <p>LED Z5M4 FWHM / FWTM 26.0° / 52.0° Efficiency 95 % Peak intensity 3 cd/m LEDs/each optic 1 Light colour White Required components:</p>		
<p> SEOUL SEMICONDUCTOR</p> <p>LED Z8Y19 FWHM / FWTM 34.0° / 64.0° Efficiency 93 % Peak intensity 1.5 cd/m LEDs/each optic 4 Light colour White Required components:</p>		
<p> SEOUL SEMICONDUCTOR</p> <p>LED Z8Y19 FWHM / FWTM 34.0° / 64.0° Efficiency 93 % Peak intensity 1.5 cd/m LEDs/each optic 4 Light colour White Required components:</p>		

OPTICAL RESULTS (MEASURED):

			
LED	Z8Y22P		
FWHM / FWTM	25.0° / 48.0°		
Efficiency	92 %		
Peak intensity	3.1 cd/lm		
LEDs/each optic	1		
Light colour	White		
Required components:			

TRIDONIC

LED RLE 2x4 2000lm HP EXC2 OTD
 FWHM / FWTM 23.0° / 48.0°
 Efficiency 94 %
 Peak intensity 3.4 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

TRIDONIC

LED RLE 2x8 4000lm HP EXC2 OTD
 FWHM / FWTM 23.0° / 48.0°
 Efficiency 94 %
 Peak intensity 3.4 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

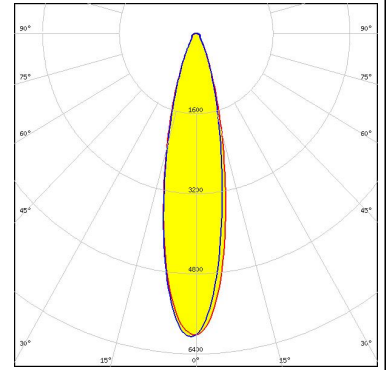
TRIDONIC

LED RLE G1 49x121mm 2000lm xxx EXC OTD
 FWHM / FWTM 24.0° / 51.0°
 Efficiency 94 %
 Peak intensity 3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

OPTICAL RESULTS (MEASURED):

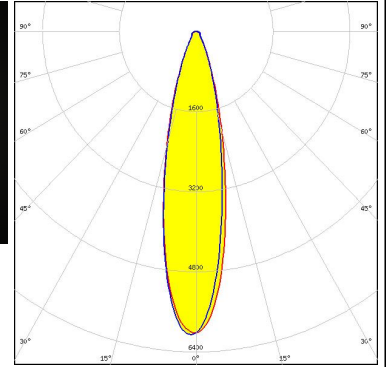
TRIDONIC

LED RLE G1 49x133mm 2000lm xxx EXC OTD
 FWHM / FWTM 24.0° / 51.0°
 Efficiency 94 %
 Peak intensity 3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



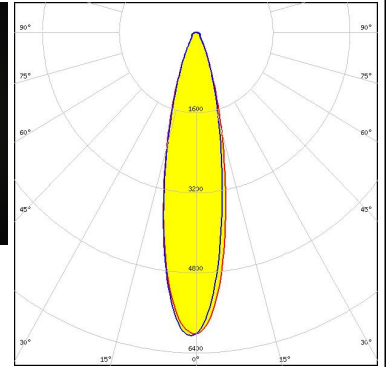
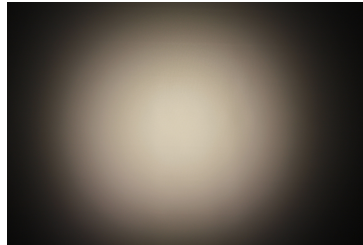
TRIDONIC

LED RLE G1 49x223mm 4000lm xxx EXC OTD
 FWHM / FWTM 24.0° / 51.0°
 Efficiency 94 %
 Peak intensity 3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



TRIDONIC

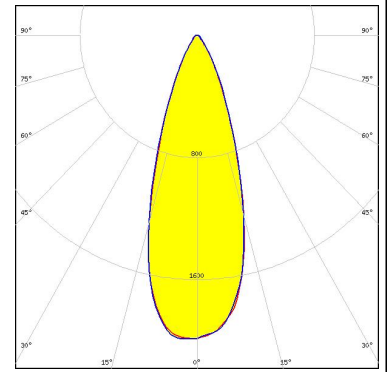
LED RLE G1 49x245mm 4000lm xxx EXC OTD
 FWHM / FWTM 24.0° / 51.0°
 Efficiency 94 %
 Peak intensity 3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



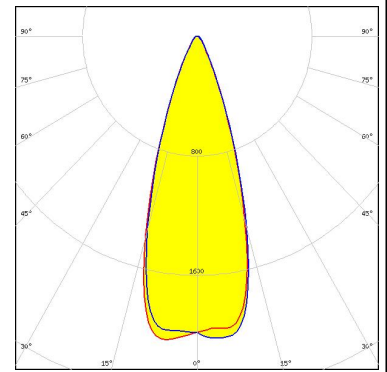
OPTICAL RESULTS (SIMULATED):



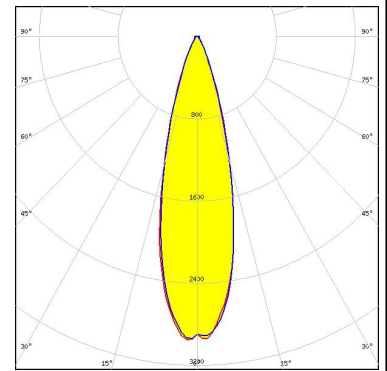
LED J Series 5050 Round LES
 FWHM / FWTM 35.0° / 64.0°
 Efficiency 92 %
 Peak intensity 2 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



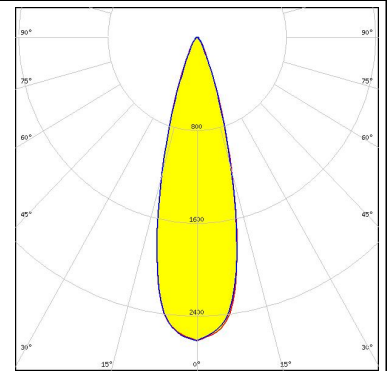
LED XP-G2 HE
 FWHM / FWTM 35.0° / 58.0°
 Efficiency 92 %
 Peak intensity 2.1 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



LED XP-G3
 FWHM / FWTM 28.0° / 50.0°
 Efficiency 92 %
 Peak intensity 3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



LED XP-G4
 FWHM / FWTM 28.0° / 50.0°
 Efficiency 85 %
 Peak intensity 2.6 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

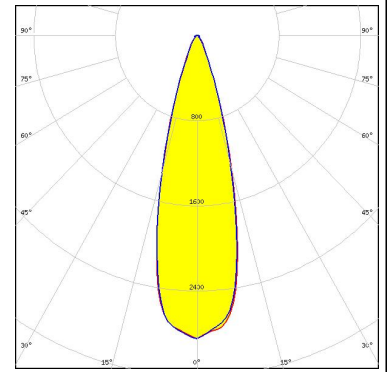


Protective plate, glass

OPTICAL RESULTS (SIMULATED):

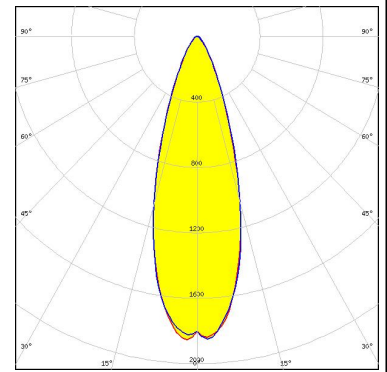


LED XP-G4
 FWHM / FWTM 28.0° / 50.0 + 49.0°
 Efficiency 93 %
 Peak intensity 2.9 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

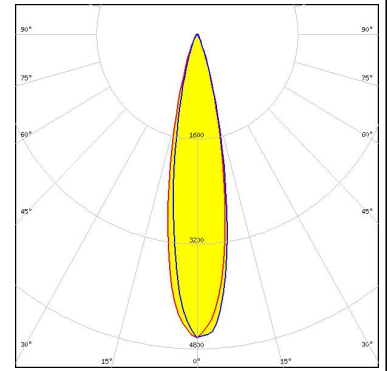


LED XP-L2
 FWHM / FWTM 32.0° / 62.0°
 Efficiency 82 %
 Peak intensity 1.9 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

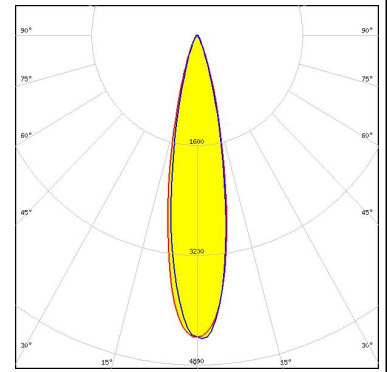
Protective plate, glass



LED LUXEON 3030 2D (Round LES)
 FWHM / FWTM 21.0° / 41.0°
 Efficiency 91 %
 Peak intensity 4.7 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



LED LUXEON 3535 2D
 FWHM / FWTM 22.0° / 42.0°
 Efficiency 92 %
 Peak intensity 4.5 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

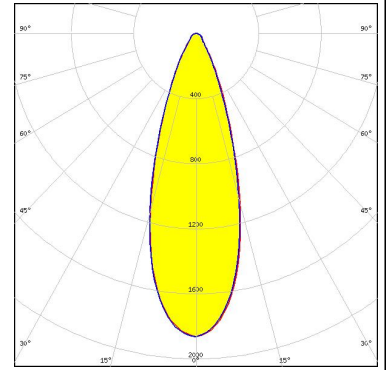


OPTICAL RESULTS (SIMULATED):

LUMILEDS

LED LUXEON 5050 Round LES
 FWHM / FWTM 34.0° / 64.0°
 Efficiency 87 %
 Peak intensity 1.9 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

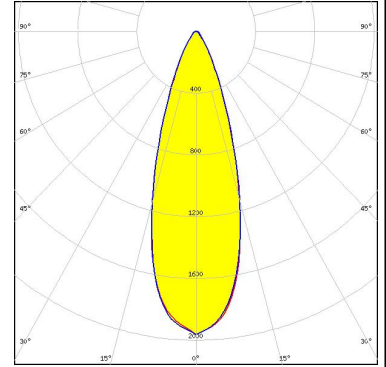
Protective plate, glass



LUMILEDS

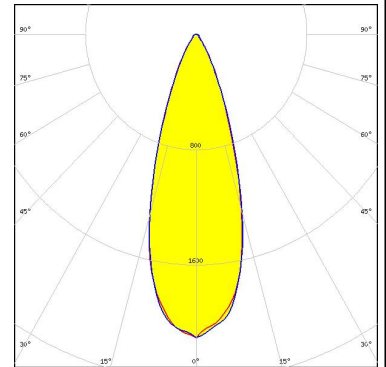
LED LUXEON 5050 Square LES
 FWHM / FWTM 34.0° / 62.0°
 Efficiency 88 %
 Peak intensity 2 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

Protective plate, glass



LUMILEDS

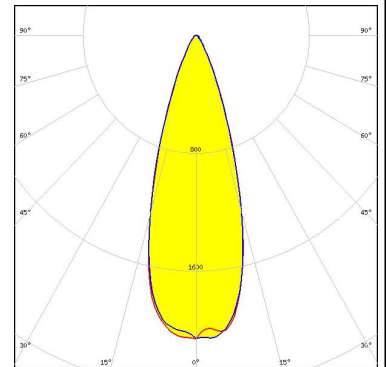
LED LUXEON 5050 Square LES
 FWHM / FWTM 34.0° / 62.0°
 Efficiency 93 %
 Peak intensity 2.1 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



LUMILEDS

LED LUXEON HL2X
 FWHM / FWTM 34.0° / 58.0°
 Efficiency 87 %
 Peak intensity 2.1 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

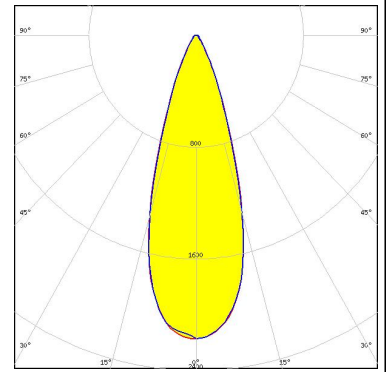
Protective plate, glass



OPTICAL RESULTS (SIMULATED):

LUMILEDS

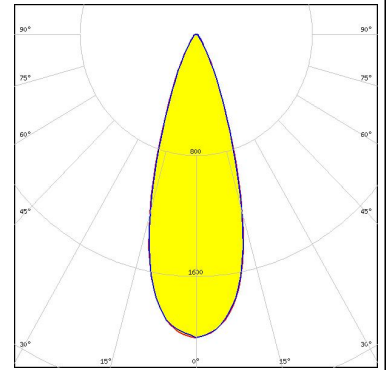
LED LUXEON HL2X-D
 FWHM / FWTM 34.0° / 58.0°
 Efficiency 94 %
 Peak intensity 2.2 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



LUMILEDS

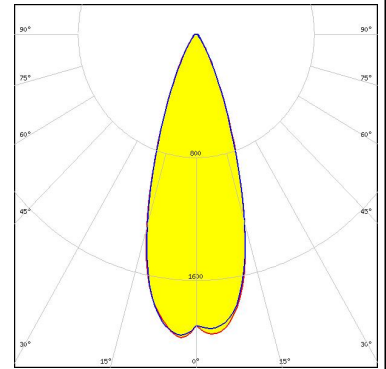
LED LUXEON HL2X-D
 FWHM / FWTM 34.0° / 58.0°
 Efficiency 85 %
 Peak intensity 2 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

Protective plate, glass



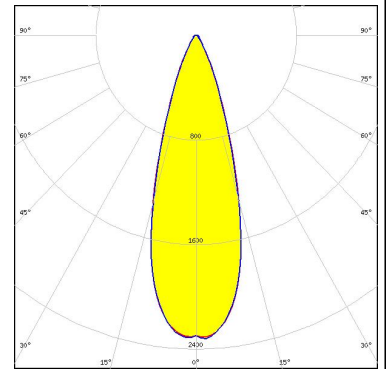
LUMILEDS

LED LUXEON HL2X-P
 FWHM / FWTM 36.0° / 62.0°
 Efficiency 91 %
 Peak intensity 2 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



LUMILEDS

LED LUXEON XR-HL2X (L2H2-xxxxxxxMLU010)
 FWHM / FWTM 32.0° / 56.0°
 Efficiency 94 %
 Peak intensity 2.3 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OPTICAL RESULTS (SIMULATED):

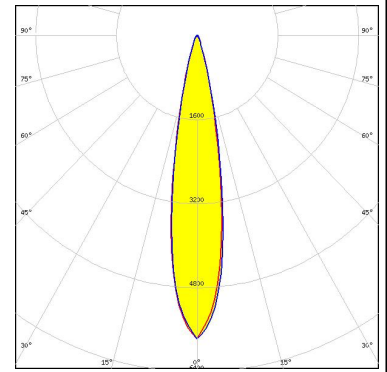
<p>LUMILEDS</p> <p>LED LUXEON XR-HL2X (L2H2-xxxxxxxMLU010)</p> <p>FWHM / FWTM 32.0° / 58.0°</p> <p>Efficiency 85 %</p> <p>Peak intensity 2.1 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p> <p>Protective plate, glass</p>	
<p>NICHIA</p> <p>LED NV4WB35AM</p> <p>FWHM / FWTM 30.0° / 54.0°</p> <p>Efficiency 93 %</p> <p>Peak intensity 2.7 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p>NICHIA</p> <p>LED NVSxx19B/NVSxx19C</p> <p>FWHM / FWTM 28.0° / 50.0°</p> <p>Efficiency 92 %</p> <p>Peak intensity 2.9 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p>OSRAM Opto Semiconductors</p> <p>LED Duris S8</p> <p>FWHM / FWTM 38.0° / 69.0°</p> <p>Efficiency 89 %</p> <p>Peak intensity 1.6 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p> <p>Protective plate, glass</p>	

OPTICAL RESULTS (SIMULATED):

OSRAM

Opto Semiconductors

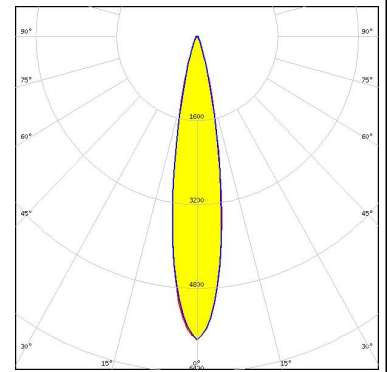
LED OSCONIQ C 2424
 FWHM / FWTM 19.0 + 20.0° / 36.0°
 Efficiency 93 %
 Peak intensity 5.8 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OSRAM

Opto Semiconductors

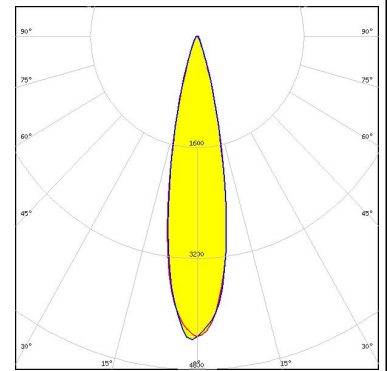
LED OSCONIQ P 3030
 FWHM / FWTM 18.0° / 36.0°
 Efficiency 94 %
 Peak intensity 5.8 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OSRAM

Opto Semiconductors

LED OSCONIQ P 3737 (2W version)
 FWHM / FWTM 22.0° / 40.0°
 Efficiency 92 %
 Peak intensity 4.4 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

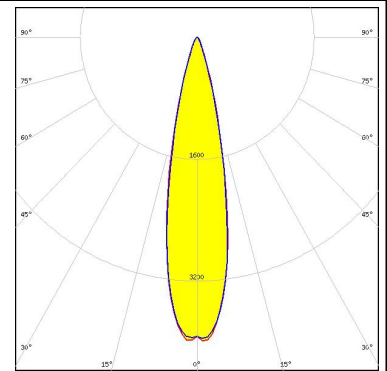


OSRAM

Opto Semiconductors

LED OSCONIQ P 3737 (2W version)
 FWHM / FWTM 22.0° / 40.0°
 Efficiency 87 %
 Peak intensity 4 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

Protective plate, glass

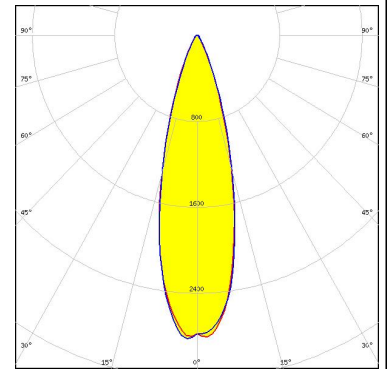


OPTICAL RESULTS (SIMULATED):

OSRAM

Opto Semiconductors

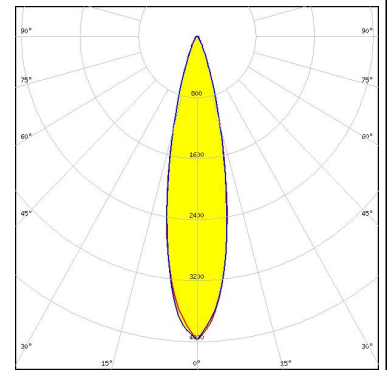
LED OSCONIQ P 3737 (3W version)
 FWHM / FWTM 29.0° / 52.0°
 Efficiency 93 %
 Peak intensity 2.8 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OSRAM

Opto Semiconductors

LED OSCONIQ P 3737 Flat
 FWHM / FWTM 24.0° / 44.0°
 Efficiency 93 %
 Peak intensity 4 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

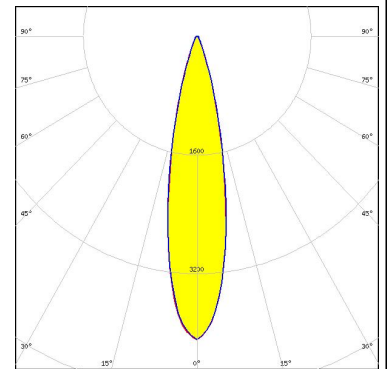


OSRAM

Opto Semiconductors

LED OSLON Square CSSRM2/CSSRM3
 FWHM / FWTM 22.0° / 42.0°
 Efficiency 89 %
 Peak intensity 4.1 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

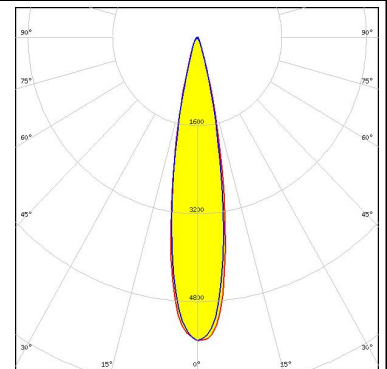
Protective plate, glass



OSRAM

Opto Semiconductors

LED OSLON Square Flat
 FWHM / FWTM 20.0° / 35.0°
 Efficiency 94 %
 Peak intensity 5.5 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

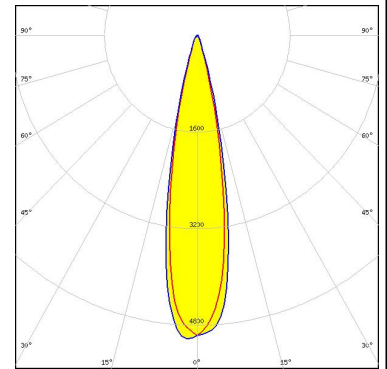


OPTICAL RESULTS (SIMULATED):

OSRAM

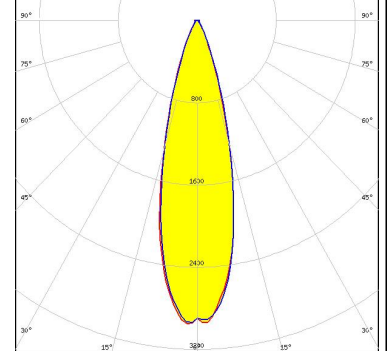
Opto Semiconductors

LED	OSTAR Projection Compact (KW.CSLNM1.TG)
FWHM / FWTM	21.0° / 38.0°
Efficiency	94 %
Peak intensity	5 cd/lm
LEDs/each optic	1
Light colour	White
Required components:	



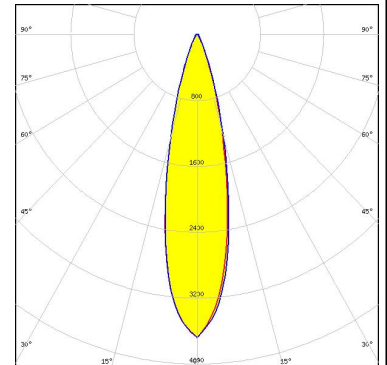
PHILIPS

LED	Fortimo FastFlex LED 2x8 DAX G4
FWHM / FWTM	28.0° / 50.0°
Efficiency	92 %
Peak intensity	3 cd/lm
LEDs/each optic	1
Light colour	White
Required components:	



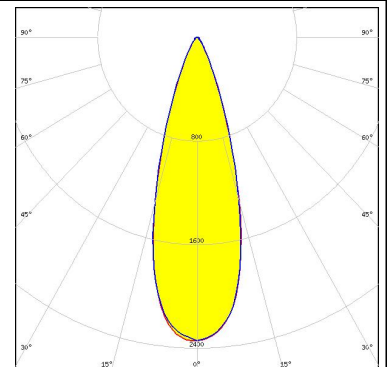
SAMSUNG

LED	LH231B
FWHM / FWTM	24.0° / 46.0°
Efficiency	92 %
Peak intensity	3.7 cd/lm
LEDs/each optic	4
Light colour	White
Required components:	



SAMSUNG

LED	LH351C
FWHM / FWTM	32.0° / 56.0°
Efficiency	91 %
Peak intensity	2.3 cd/lm
LEDs/each optic	1
Light colour	White
Required components:	

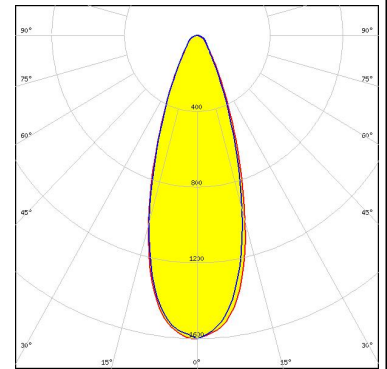


OPTICAL RESULTS (SIMULATED):

SAMSUNG

LED LH502C
 FWHM / FWTM 36.0° / 70.0°
 Efficiency 89 %
 Peak intensity 1.6 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:

Protective plate, glass

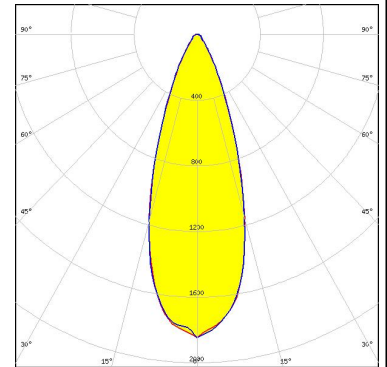


SAMSUNG

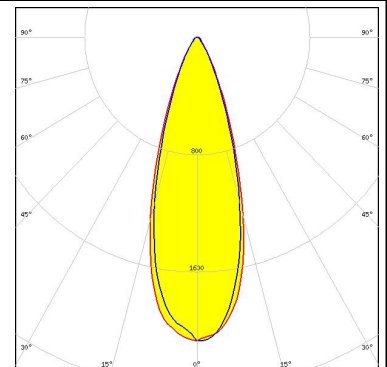
LED LH508A Plus
 FWHM / FWTM 32.0° / 62.0°
 Efficiency 93 %
 Peak intensity 2.1 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



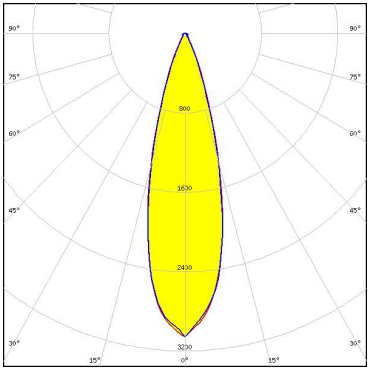
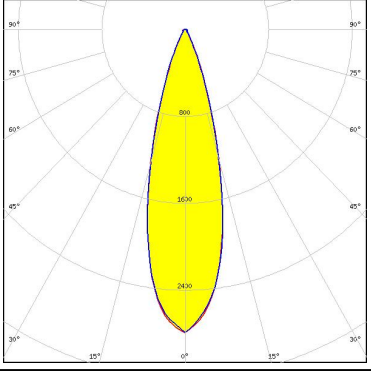
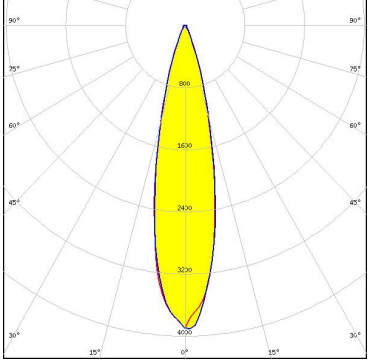
SEOUL SEMICONDUCTOR
 LED MJT 5050
 FWHM / FWTM 36.0° / 66.0°
 Efficiency 92 %
 Peak intensity 1.8 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



SEOUL SEMICONDUCTOR
 LED SEOUL DC 5050 6V
 FWHM / FWTM 34.0° / 62.0°
 Efficiency 94 %
 Peak intensity 2.1 cd/lm
 LEDs/each optic 1
 Light colour White
 Required components:



OPTICAL RESULTS (SIMULATED):

<p>SEOUL SEMICONDUCTOR</p> <p>LED: Z5M5 FWHM / FWTM: 28.0° / 50.0° Efficiency: 94 % Peak intensity: 3.1 cd/lm LEDs/each optic: 1 Light colour: White Required components:</p>	
<p>SEOUL SEMICONDUCTOR</p> <p>LED: Z5M5 FWHM / FWTM: 28.0° / 50.0° Efficiency: 85 % Peak intensity: 2.8 cd/lm LEDs/each optic: 1 Light colour: White Required components:</p> <p style="background-color: #ADD8E6; padding: 2px; display: inline-block;">Protective plate, glass</p>	
<p>SEOUL SEMICONDUCTOR</p> <p>LED: Z8Y22T FWHM / FWTM: 23.0° / 44.0° Efficiency: 91 % Peak intensity: 3.9 cd/lm LEDs/each optic: 1 Light colour: White Required components:</p>	

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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