

## 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 ⓘ

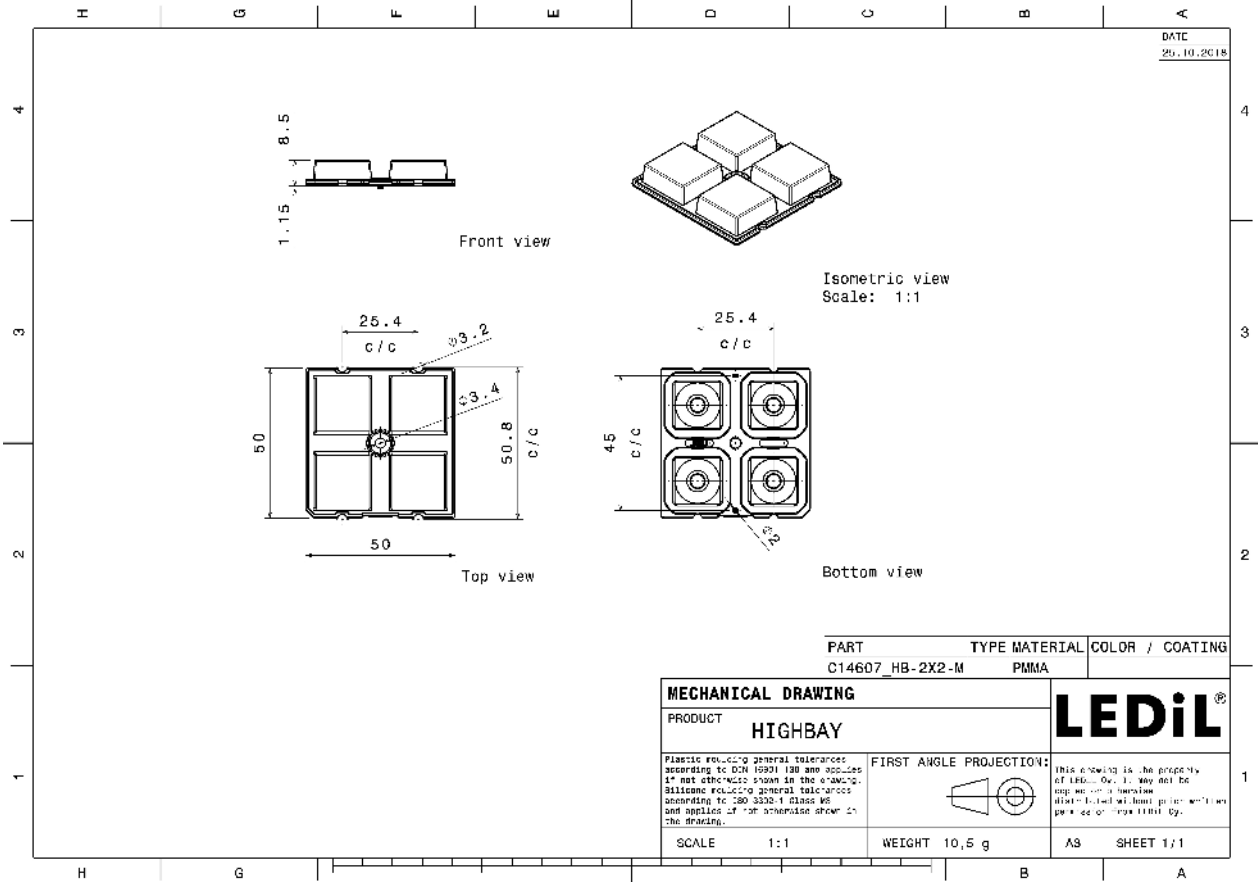
### MATERIALS:

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

### ORDERING INFORMATION:


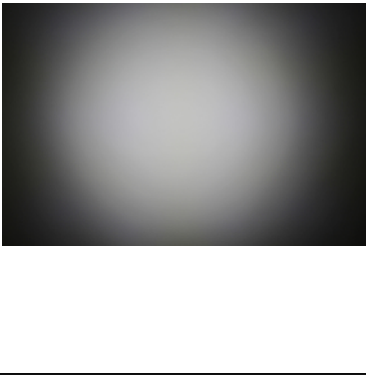
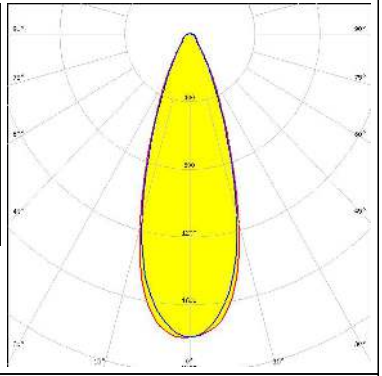


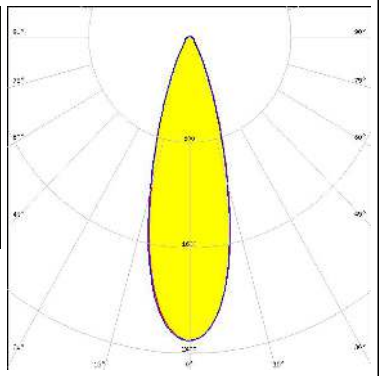

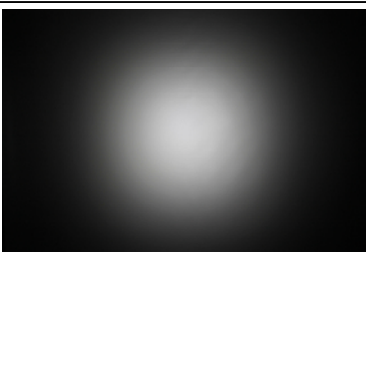
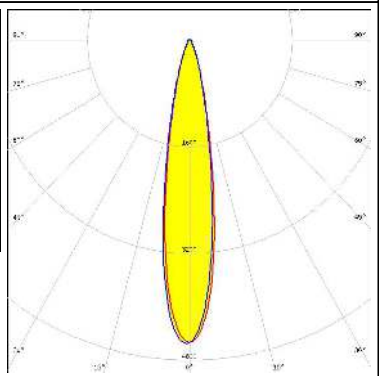

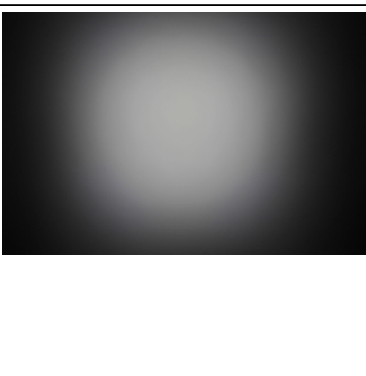
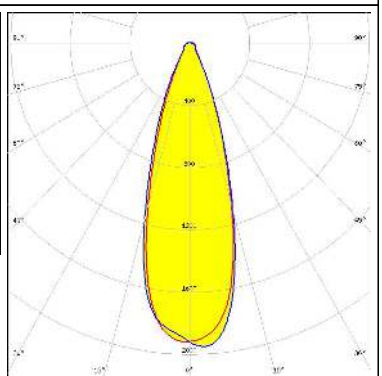
Component	Qty in box	MOQ	MPQ	Box weight (kg)
C14607_HB-2X2-M » Box size: 480 x 280 x 300 mm	800	160	160	9.2



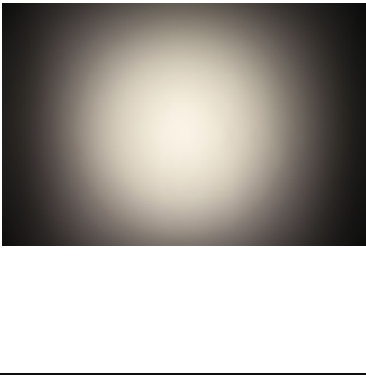
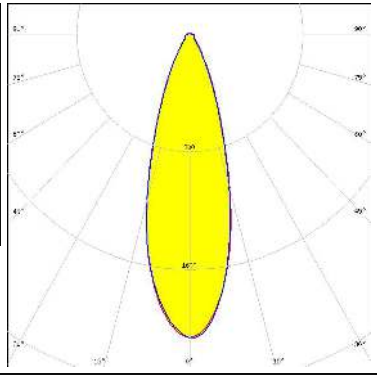
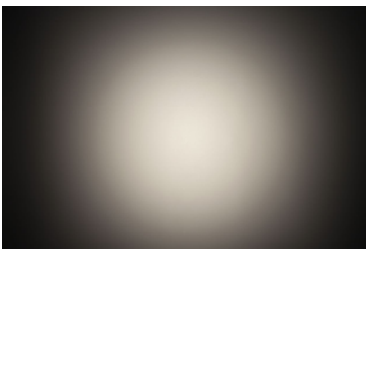
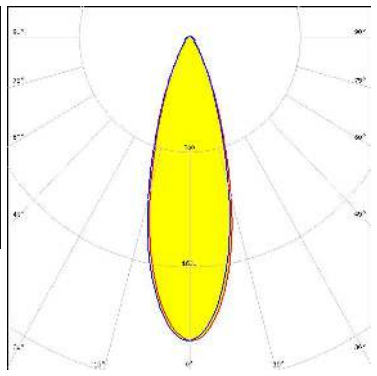

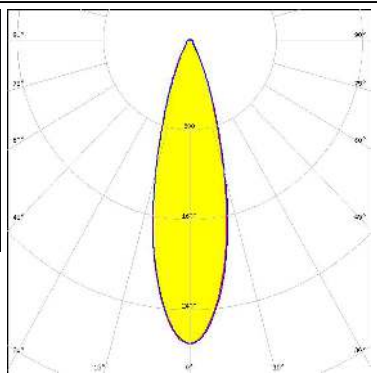
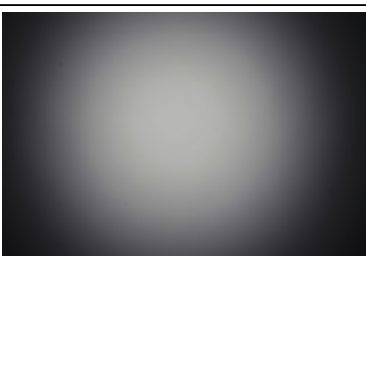
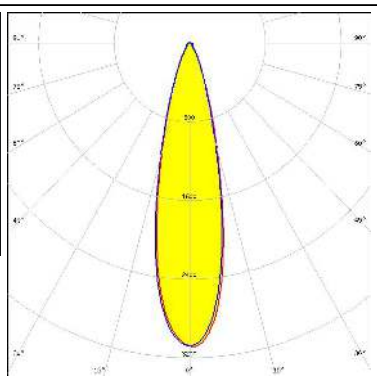


See also our general installation guide: [www.ledil.com/installation\\_guide](http://www.ledil.com/installation_guide)


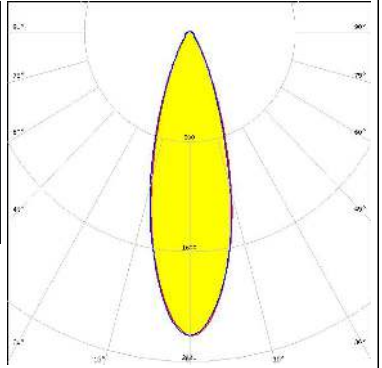
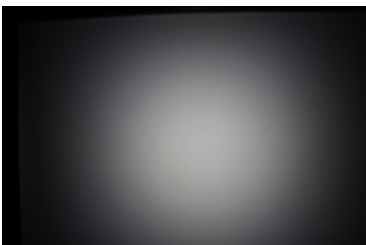
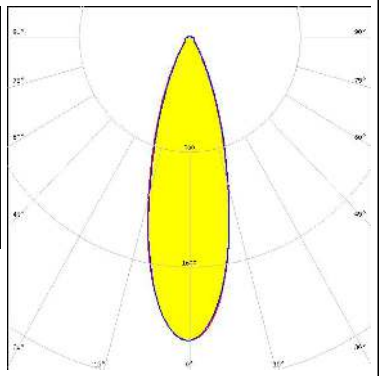
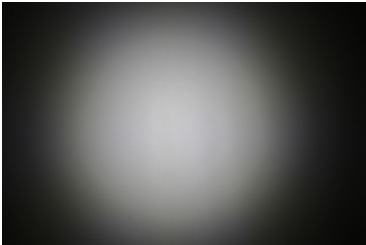
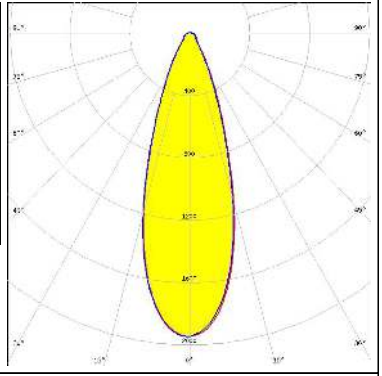
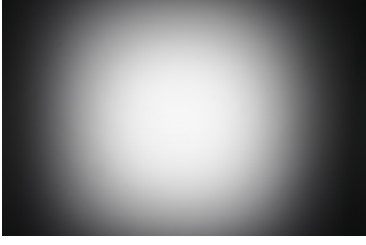
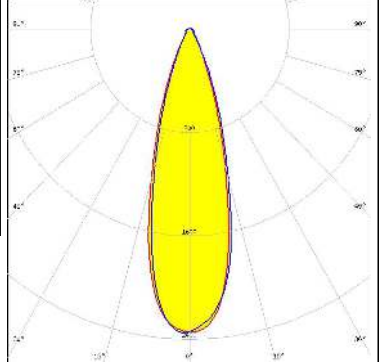
#### OPTICAL RESULTS (MEASURED):

<p> <b>bridgelux</b></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> <b>CREE LED</b></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> <b>CREE LED</b></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> <b>CREE LED</b></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>		


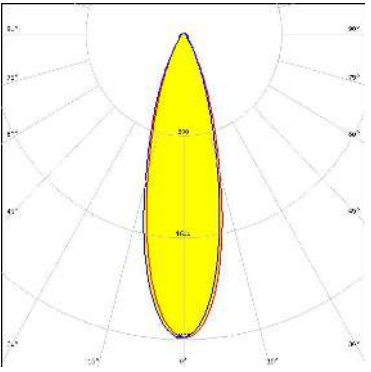

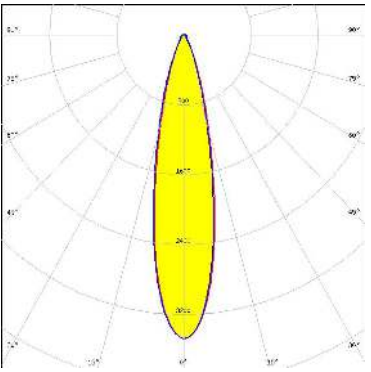
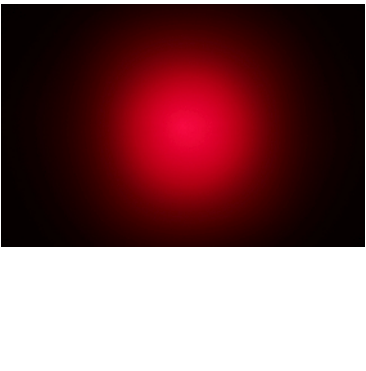
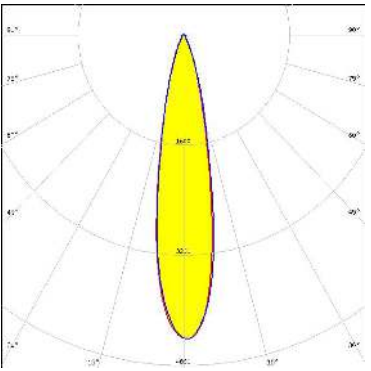
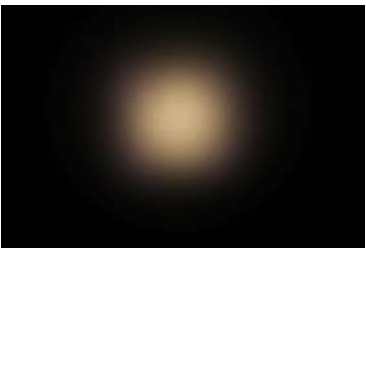
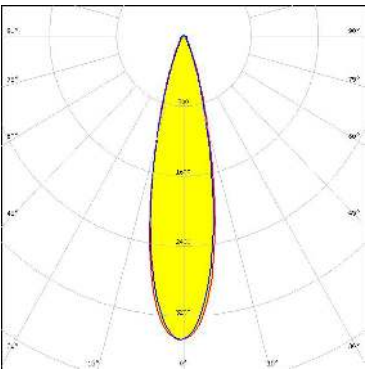
#### OPTICAL RESULTS (MEASURED):

<p><b>CREE</b> ⇄ <b>LED</b></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><b>CREE</b> ⇄ <b>LED</b></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><b>CREE</b> ⇄ <b>LED</b></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><b>CREE</b> ⇄ <b>LED</b></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>		

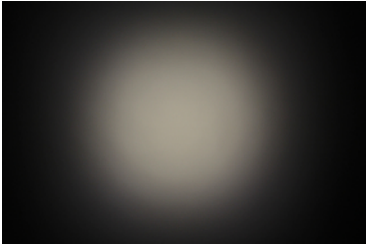
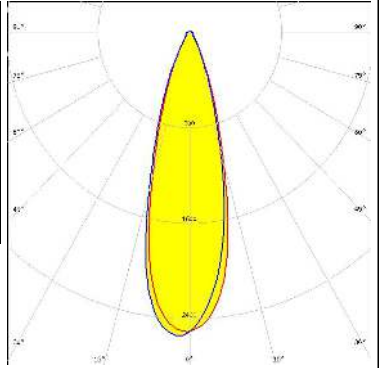

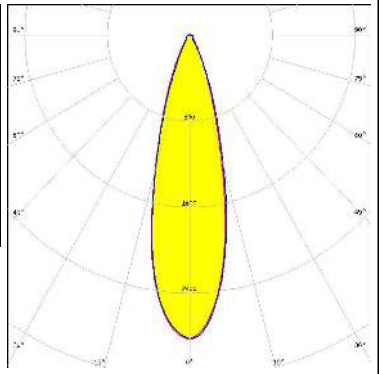
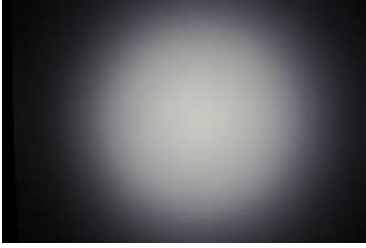
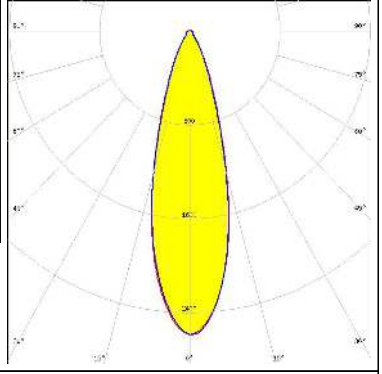
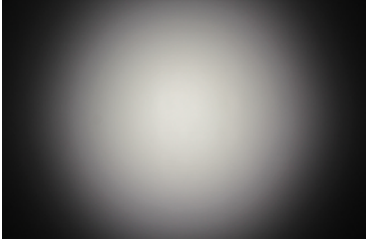
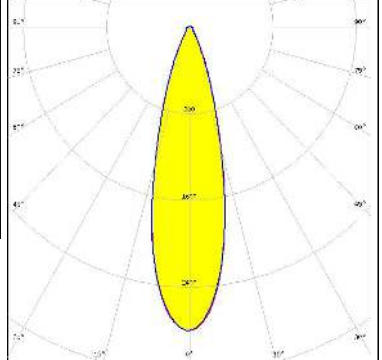
#### OPTICAL RESULTS (MEASURED):

<p><b>CREE</b> → <b>LED</b></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><b>CREE</b> → <b>LED</b></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><b>LUMILEDS</b></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><b>LUMILEDS</b></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>		

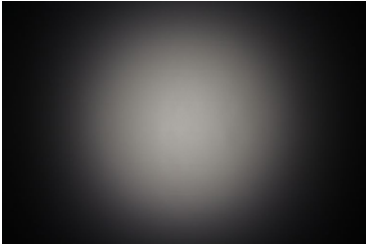
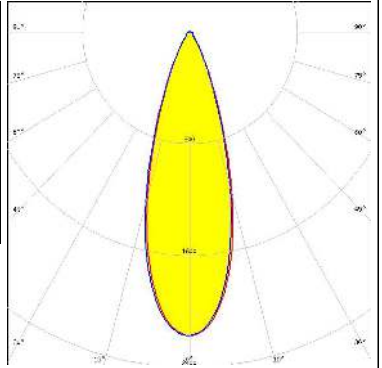

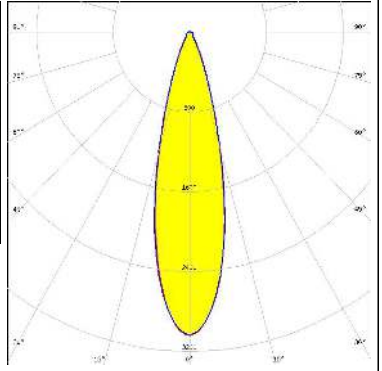
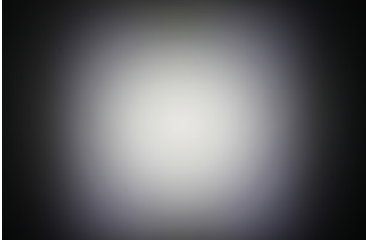
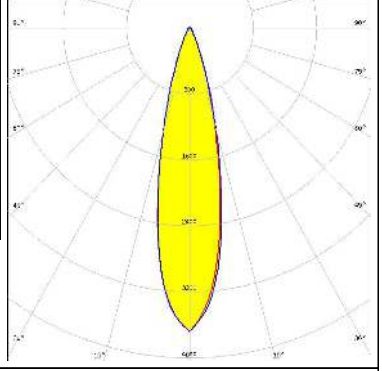
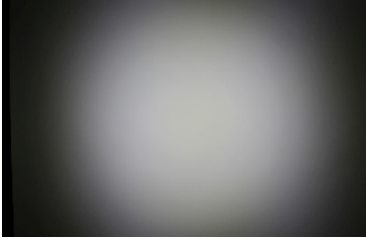
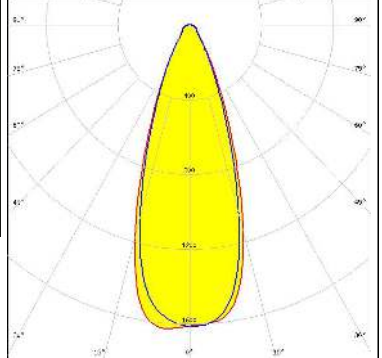
#### OPTICAL RESULTS (MEASURED):

<p><b>LUMILEDS</b></p> <p>LED LUXEON V</p> <p>FWHM / FWTM 29.0° / 58.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 2.4 cd/m</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p><b>LUMILEDS</b></p> <p>LED LUXEON V2</p> <p>FWHM / FWTM 23.0° / 47.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 3.5 cd/m</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p><b>LUMINUS</b></p> <p>LED SST-10-B130</p> <p>FWHM / FWTM 21.0° / 42.0°</p> <p>Efficiency 95 %</p> <p>Peak intensity 4.4 cd/m</p> <p>LEDs/each optic 1</p> <p>Light colour Deep Red</p> <p>Required components:</p>		
<p><b>MST</b> <i>Your solutions</i></p> <p>LED RecLED 122x50mm 1900lm 730 2x4 Opt G1</p> <p>FWHM / FWTM 24.0° / 46.0°</p> <p>Efficiency 95 %</p> <p>Peak intensity 3.5 cd/m</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		

#### OPTICAL RESULTS (MEASURED):

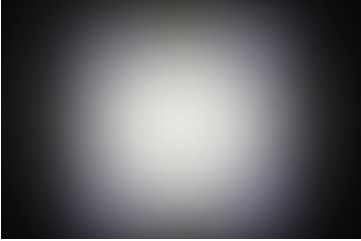
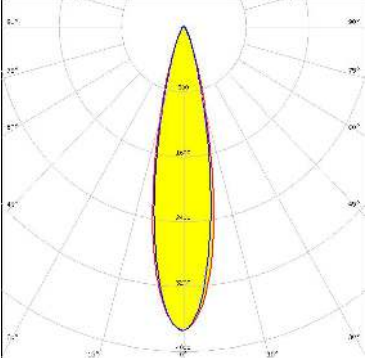
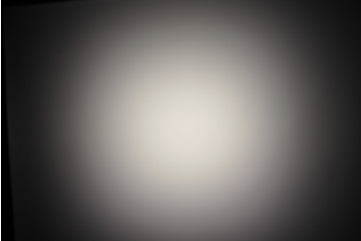
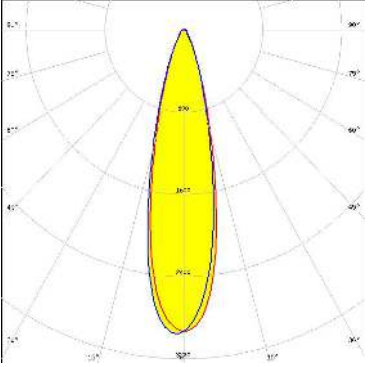
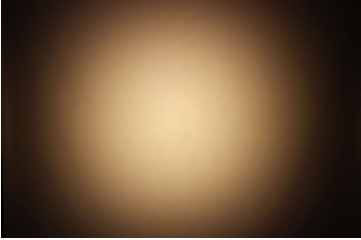
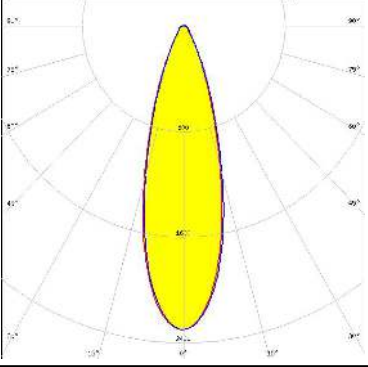
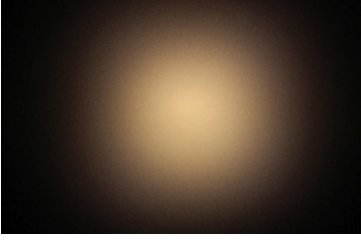
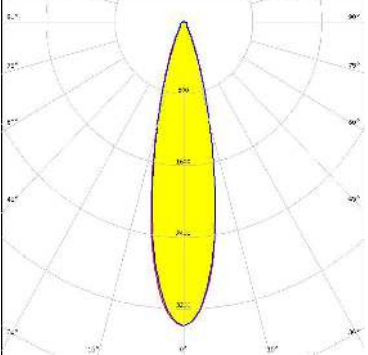
<p><b>NICHIA</b></p> <p>LED NVSW219D            FWHM / FWTM 29.0° / 55.0°            Efficiency 94 %            Peak intensity 2.5 cd/lm            LEDs/each optic 1            Light colour White            Required components:</p>		
<p><b>NICHIA</b></p> <p>LED NVSW219F            FWHM / FWTM 28.0° /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



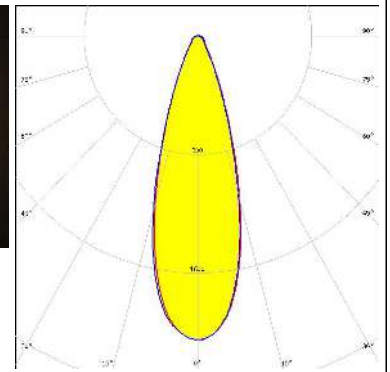
#### OPTICAL RESULTS (MEASURED):

<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED OSLON Square CSSRM2/CSSRM3</p> <p>FWHM / FWTM 23.0° / 44.0°</p> <p>Efficiency 91 %</p> <p>Peak intensity 3.8 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p><b>PHILIPS</b></p> <p>LED Fortimo FastFlex LED 2x8 DA G4</p> <p>FWHM / FWTM 25.0° / 51.0°</p> <p>Efficiency 92 %</p> <p>Peak intensity 3 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p><b>PHILIPS</b></p> <p>LED Fortimo FastFlex LED 2x8 DA G4+</p> <p>FWHM / FWTM 30.0° / 59.0°</p> <p>Efficiency 96 %</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><b>PHILIPS</b></p> <p>LED Fortimo FastFlex LED 2x8 DA G5</p> <p>FWHM / FWTM 24.0° / 47.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 3.4 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		

#### OPTICAL RESULTS (MEASURED):

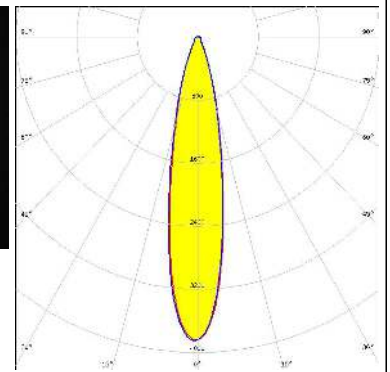
### PHILIPS

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



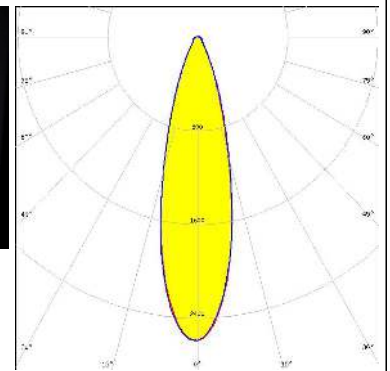
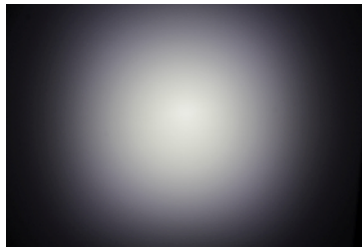
### SAMSUNG

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



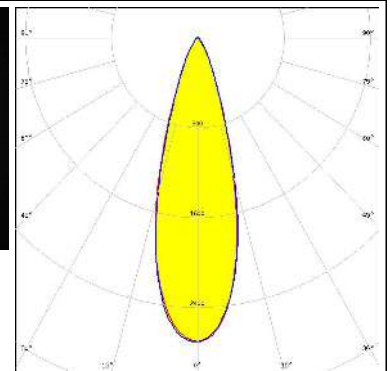
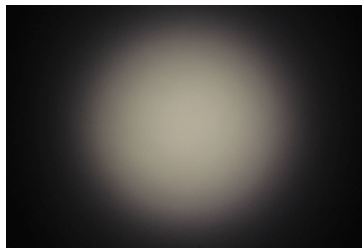
### SAMSUNG

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



### SAMSUNG

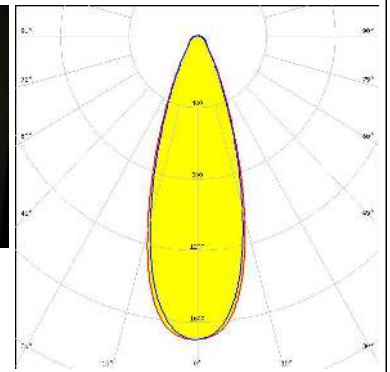
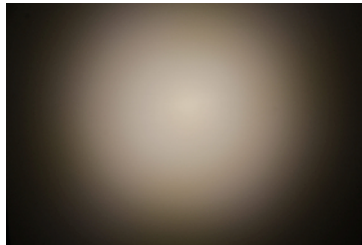
LED HiLOM RH16 (LH351C)  
 FWHM / FWTM 30.0° / 55.0°  
 Efficiency 94 %  
 Peak intensity 2.7 cd/m  
 LEDs/each optic 1  
 Light colour White  
 Required components:



#### OPTICAL RESULTS (MEASURED):

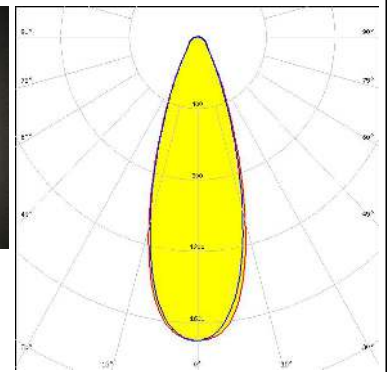
### SAMSUNG

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



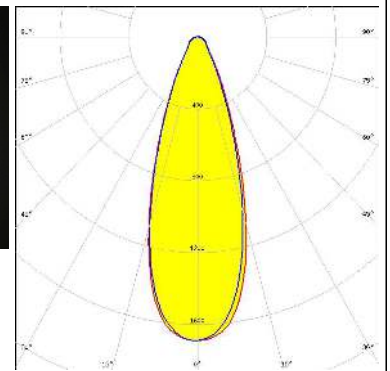
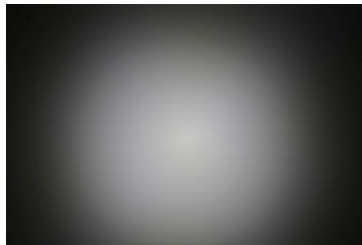
### SAMSUNG

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



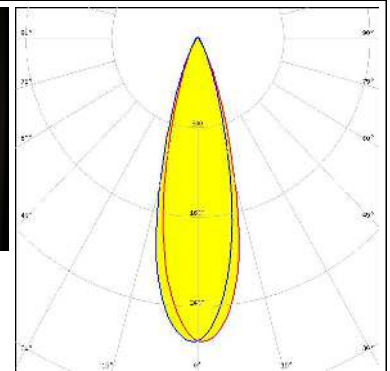
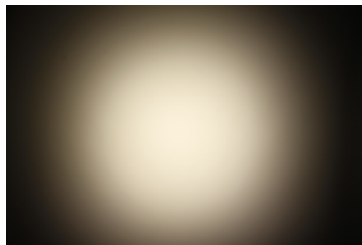
### SAMSUNG

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



### SAMSUNG

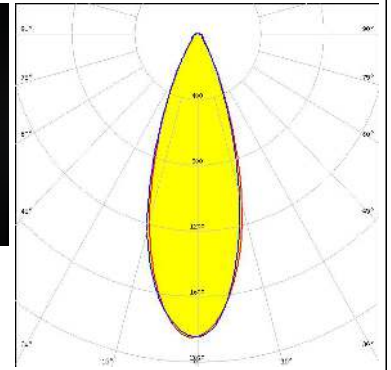
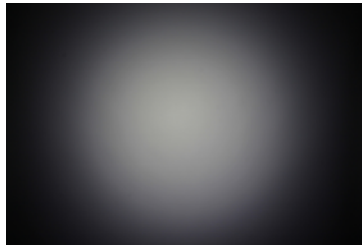
LED LH351B  
 FWHM / FWTM 28.0° / 52.0°  
 Efficiency 85 %  
 Peak intensity 2.7 cd/lm  
 LEDs/each optic 1  
 Light colour White  
 Required components:



#### OPTICAL RESULTS (MEASURED):

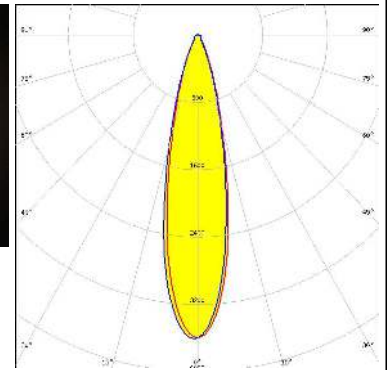
#### SAMSUNG

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:

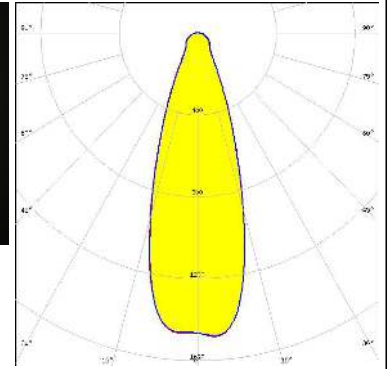
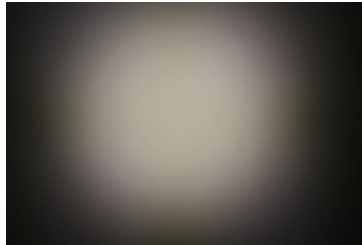


#### SKITEC

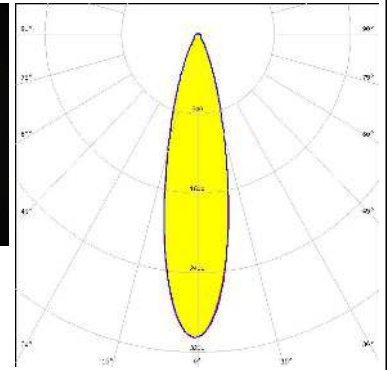
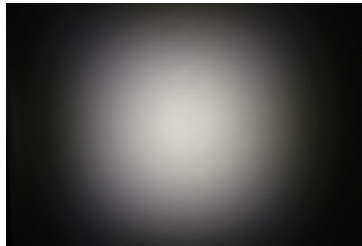
LED LED-Pa-L15c2W11c2-xxx-C050-01  
 FWHM / FWTM 24.0° / 48.0 + 47.0°  
 Efficiency 95 %  
 Peak intensity 3.6 cd/m  
 LEDs/each optic 1  
 Light colour White  
 Required components:





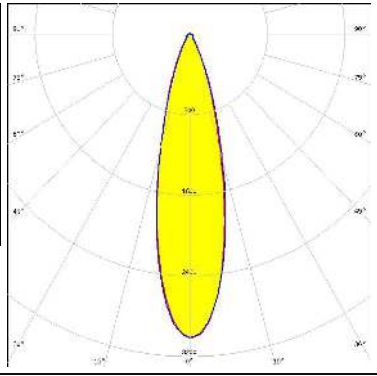


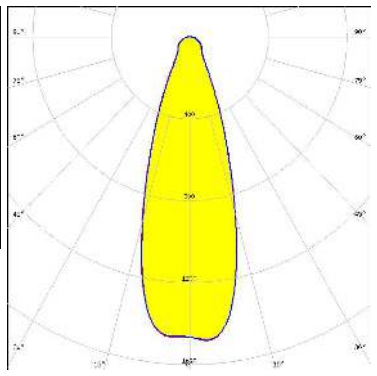


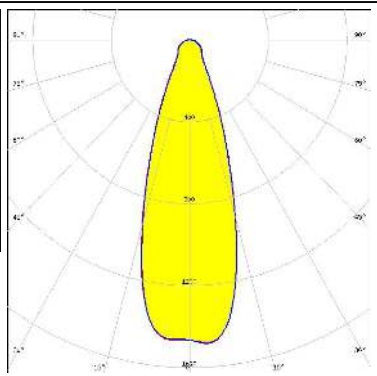


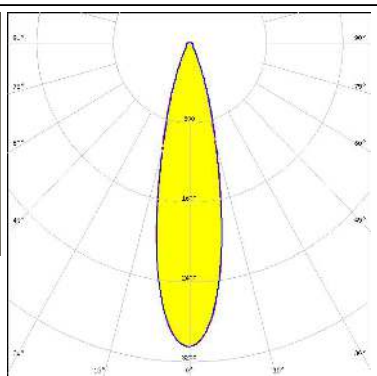
SEOUL SEMICONDUCTOR  
 LED 2x2 Y22 module - SMJQ-D48W16AA-XX  
 FWHM / FWTM 34.0° / 64.0°  
 Efficiency 93 %  
 Peak intensity 1.5 cd/m  
 LEDs/each optic 1  
 Light colour White  
 Required components:



SEOUL SEMICONDUCTOR  
 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:



#### OPTICAL RESULTS (MEASURED):

<p> SEOUL SEMICONDUCTOR</p> <p>LED Z5M4</p> <p>FWHM / FWTM 26.0° / 52.0°</p> <p>Efficiency 95 %</p> <p>Peak intensity 3 cd/m</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		
<p> SEOUL SEMICONDUCTOR</p> <p>LED Z8Y19</p> <p>FWHM / FWTM 34.0° / 64.0°</p> <p>Efficiency 93 %</p> <p>Peak intensity 1.5 cd/m</p> <p>LEDs/each optic 4</p> <p>Light colour White</p> <p>Required components:</p>		
<p> SEOUL SEMICONDUCTOR</p> <p>LED Z8Y19</p> <p>FWHM / FWTM 34.0° / 64.0°</p> <p>Efficiency 93 %</p> <p>Peak intensity 1.5 cd/m</p> <p>LEDs/each optic 4</p> <p>Light colour White</p> <p>Required components:</p>		
<p> SEOUL SEMICONDUCTOR</p> <p>LED Z8Y22P</p> <p>FWHM / FWTM 25.0° / 48.0°</p> <p>Efficiency 92 %</p> <p>Peak intensity 3.1 cd/m</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>		

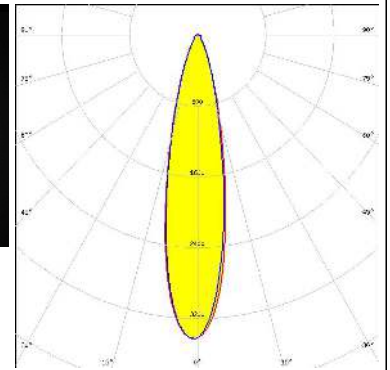
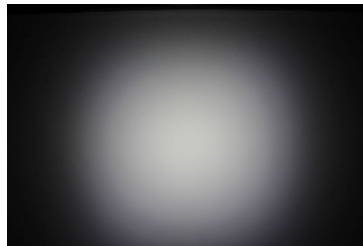
#### OPTICAL RESULTS (MEASURED):

#### 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:

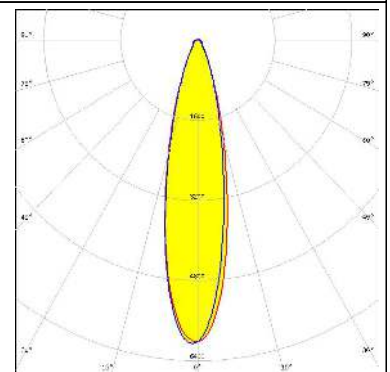
#### TRIDONIC

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:



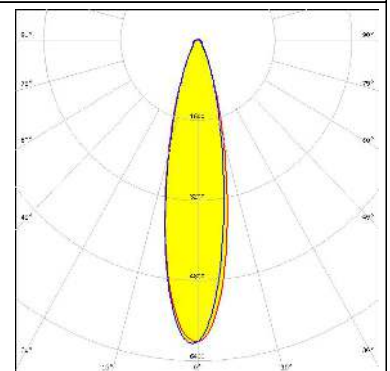
#### TRIDONIC

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:



#### TRIDONIC

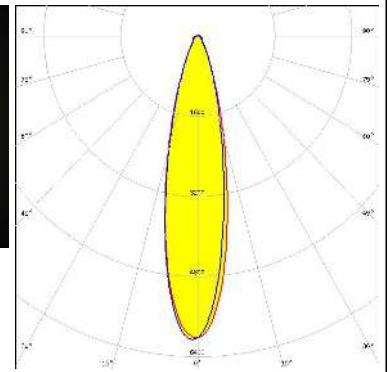
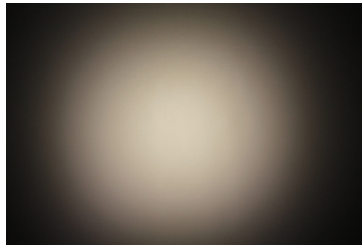
LED RLE G1 49x133mm 2000lm xxx EXC OTD  
 FWHM / FWTM 24.0° / 51.0°  
 Efficiency 94 %  
 Peak intensity 3 cd/lm  
 LEDs/each optic 1  
 Light colour White  
 Required components:



**OPTICAL RESULTS (MEASURED):**

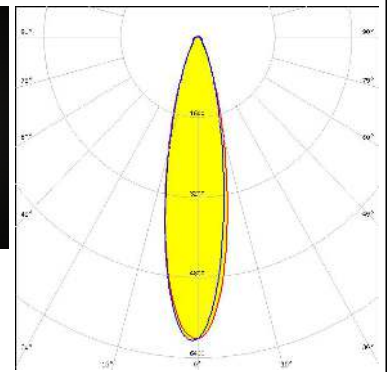
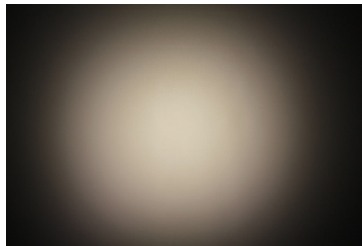
**TRIDONIC**

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:

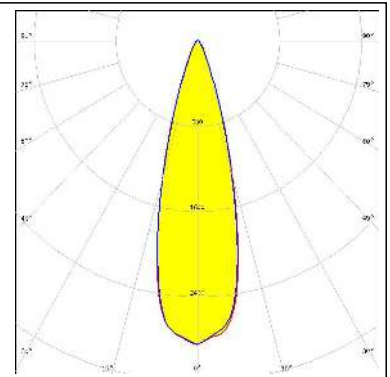
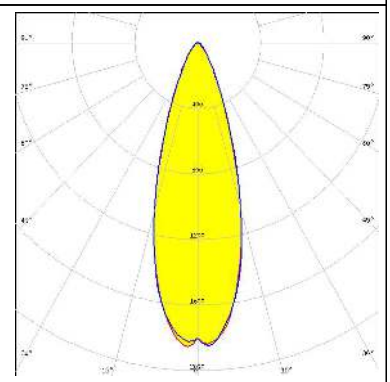
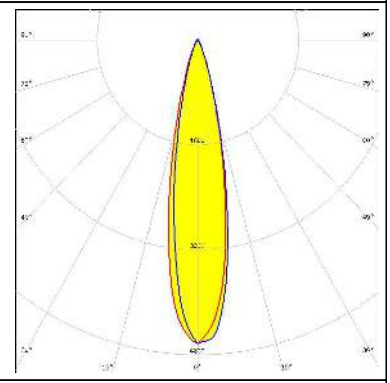
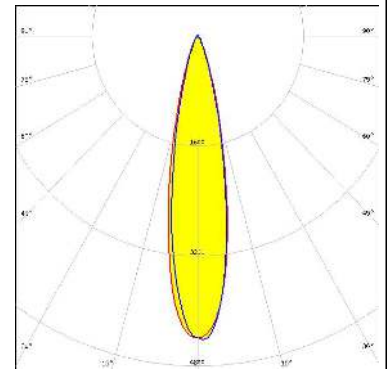


#### OPTICAL RESULTS (SIMULATED):

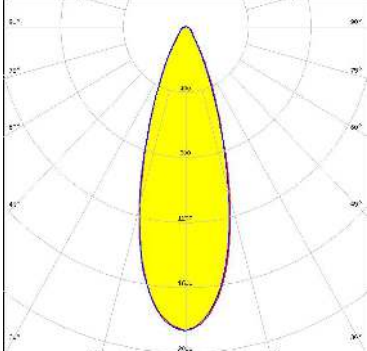
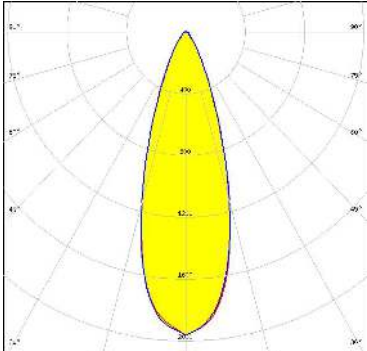
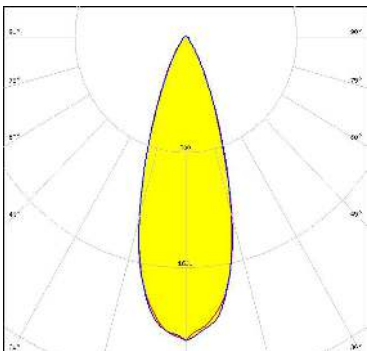
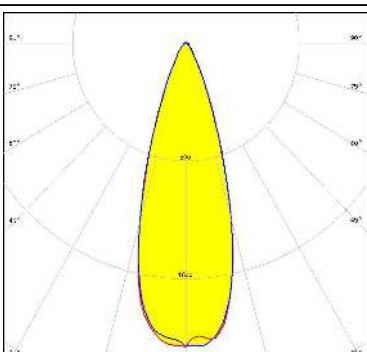
<p><b>CREE</b> ⇄ <b>LED</b></p> <p>LED J Series 5050 Round LES</p> <p>FWHM / FWTM 35.0° / 64.0°</p> <p>Efficiency 92 %</p> <p>Peak intensity 2 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p><b>CREE</b> ⇄ <b>LED</b></p> <p>LED XP-G2 HE</p> <p>FWHM / FWTM 35.0° / 58.0°</p> <p>Efficiency 92 %</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><b>CREE</b> ⇄ <b>LED</b></p> <p>LED XP-G3</p> <p>FWHM / FWTM 28.0° / 50.0°</p> <p>Efficiency 92 %</p> <p>Peak intensity 3 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p><b>CREE</b> ⇄ <b>LED</b></p> <p>LED XP-G4</p> <p>FWHM / FWTM 28.0° / 50.0°</p> <p>Efficiency 85 %</p> <p>Peak intensity 2.6 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):

<p><b>CREE</b> → <b>LED</b></p> <p>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:</p>	
<p><b>CREE</b> → <b>LED</b></p> <p>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:</p> <p style="background-color: #e0f0ff; padding: 2px; display: inline-block;">Protective plate, glass</p>	
<p><b>LUMILEDS</b></p> <p>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:</p>	
<p><b>LUMILEDS</b></p> <p>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:</p>	

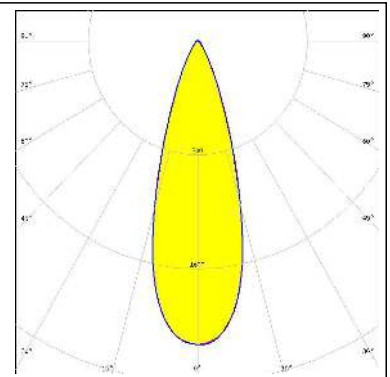
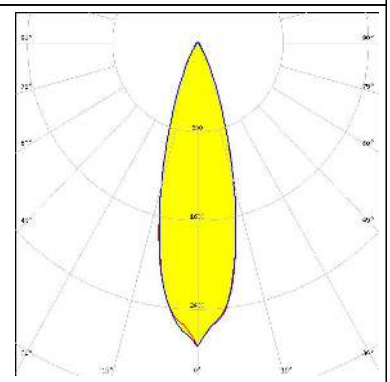
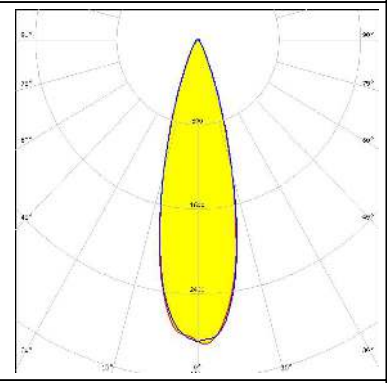
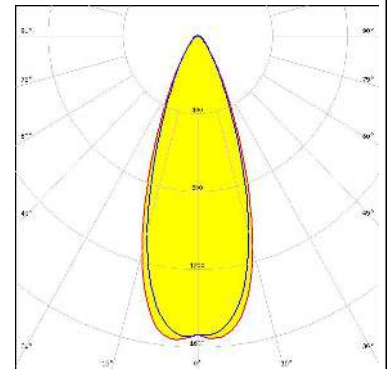
### OPTICAL RESULTS (SIMULATED):

<p><b>LUMILEDS</b></p> <p>LED LUXEON 5050 Round LES</p> <p>FWHM / FWTM 34.0° / 64.0°</p> <p>Efficiency 87 %</p> <p>Peak intensity 1.9 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p> <p>Protective plate, glass</p>	
<p><b>LUMILEDS</b></p> <p>LED LUXEON 5050 Square LES</p> <p>FWHM / FWTM 34.0° / 62.0°</p> <p>Efficiency 88 %</p> <p>Peak intensity 2 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p> <p>Protective plate, glass</p>	
<p><b>LUMILEDS</b></p> <p>LED LUXEON 5050 Square LES</p> <p>FWHM / FWTM 34.0° / 62.0°</p> <p>Efficiency 93 %</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><b>LUMILEDS</b></p> <p>LED LUXEON HL2X</p> <p>FWHM / FWTM 34.0° / 58.0°</p> <p>Efficiency 87 %</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>	

#### OPTICAL RESULTS (SIMULATED):

<p><b>LUMILEDS</b></p> <p>LED LUXEON HL2X-D</p> <p>FWHM / FWTM 34.0° / 58.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 2.2 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p><b>LUMILEDS</b></p> <p>LED LUXEON HL2X-D</p> <p>FWHM / FWTM 34.0° / 58.0°</p> <p>Efficiency 85 %</p> <p>Peak intensity 2 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p> <p>Protective plate, glass</p>	
<p><b>LUMILEDS</b></p> <p>LED LUXEON HL2X-P</p> <p>FWHM / FWTM 36.0° / 62.0°</p> <p>Efficiency 91 %</p> <p>Peak intensity 2 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p><b>LUMILEDS</b></p> <p>LED LUXEON XR-HL2X (L2H2-xxxxxxxMLU010)</p> <p>FWHM / FWTM 32.0° / 56.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 2.3 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	

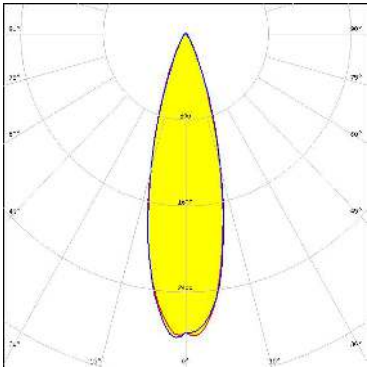
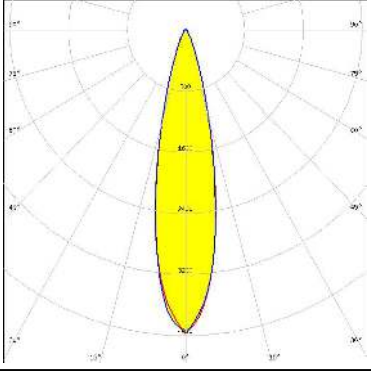
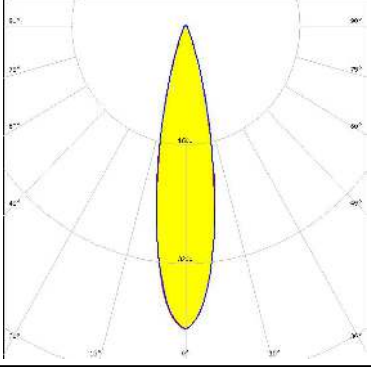
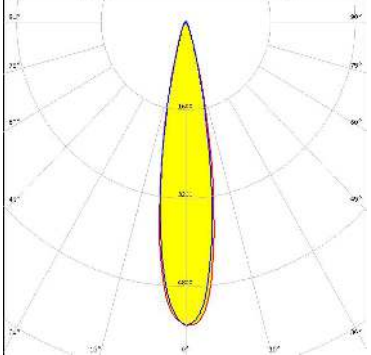
### OPTICAL RESULTS (SIMULATED):

<p><b>LUMILEDS</b></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><b>NICHIA</b></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><b>NICHIA</b></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><b>OSRAM</b> 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>	

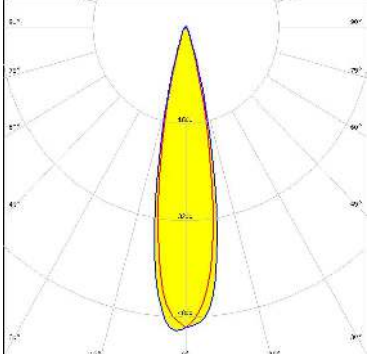
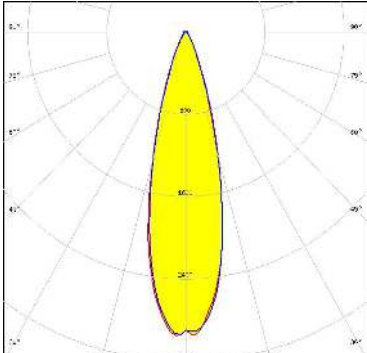
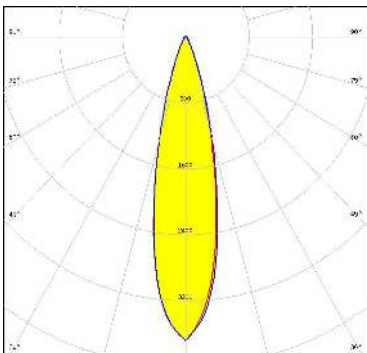
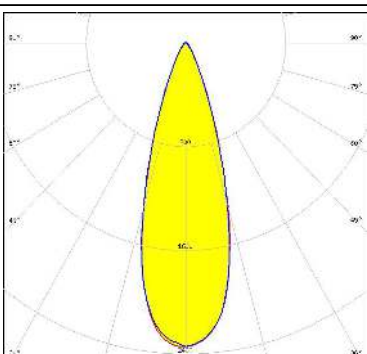
#### OPTICAL RESULTS (SIMULATED):

<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED                      OSCONIQ C 2424</p> <p>FWHM / FWTM        19.0 + 20.0° / 36.0°</p> <p>Efficiency             93 %</p> <p>Peak intensity        5.8 cd/lm</p> <p>LEDs/each optic     1</p> <p>Light colour          White</p> <p>Required components:</p>	
<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED                      OSCONIQ P 3030</p> <p>FWHM / FWTM        18.0° / 36.0°</p> <p>Efficiency             94 %</p> <p>Peak intensity        5.8 cd/lm</p> <p>LEDs/each optic     1</p> <p>Light colour          White</p> <p>Required components:</p>	
<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED                      OSCONIQ P 3737 (2W version)</p> <p>FWHM / FWTM        22.0° / 40.0°</p> <p>Efficiency             92 %</p> <p>Peak intensity        4.4 cd/lm</p> <p>LEDs/each optic     1</p> <p>Light colour          White</p> <p>Required components:</p>	
<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED                      OSCONIQ P 3737 (2W version)</p> <p>FWHM / FWTM        22.0° / 40.0°</p> <p>Efficiency             87 %</p> <p>Peak intensity        4 cd/lm</p> <p>LEDs/each optic     1</p> <p>Light colour          White</p> <p>Required components:</p> <p style="background-color: #ADD8E6; padding: 2px; display: inline-block;">Protective plate, glass</p>	

#### OPTICAL RESULTS (SIMULATED):

<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED OSCONIQ P 3737 (3W version)</p> <p>FWHM / FWTM 29.0° / 52.0°</p> <p>Efficiency 93 %</p> <p>Peak intensity 2.8 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED OSCONIQ P 3737 Flat</p> <p>FWHM / FWTM 24.0° / 44.0°</p> <p>Efficiency 93 %</p> <p>Peak intensity 4 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	
<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED OSLON Square CSSRM2/CSSRM3</p> <p>FWHM / FWTM 22.0° / 42.0°</p> <p>Efficiency 89 %</p> <p>Peak intensity 4.1 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p> <p style="background-color: #ADD8E6; padding: 2px;">Protective plate, glass</p>	
<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED OSLON Square Flat</p> <p>FWHM / FWTM 20.0° / 35.0°</p> <p>Efficiency 94 %</p> <p>Peak intensity 5.5 cd/lm</p> <p>LEDs/each optic 1</p> <p>Light colour White</p> <p>Required components:</p>	

#### OPTICAL RESULTS (SIMULATED):

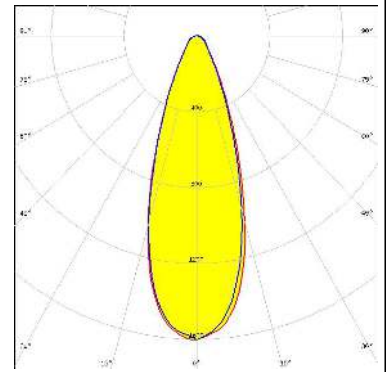
<p><b>OSRAM</b> Opto Semiconductors</p> <p>LED: OSTAR Projection Compact (KW.CSLNM1.TG)</p> <p>FWHM / FWTM: 21.0° / 38.0°</p> <p>Efficiency: 94 %</p> <p>Peak intensity: 5 cd/lm</p> <p>LEDs/each optic: 1</p> <p>Light colour: White</p> <p>Required components:</p>	
<p><b>PHILIPS</b></p> <p>LED: Fortimo FastFlex LED 2x8 DAX G4</p> <p>FWHM / FWTM: 28.0° / 50.0°</p> <p>Efficiency: 92 %</p> <p>Peak intensity: 3 cd/lm</p> <p>LEDs/each optic: 1</p> <p>Light colour: White</p> <p>Required components:</p>	
<p><b>SAMSUNG</b></p> <p>LED: LH231B</p> <p>FWHM / FWTM: 24.0° / 46.0°</p> <p>Efficiency: 92 %</p> <p>Peak intensity: 3.7 cd/lm</p> <p>LEDs/each optic: 4</p> <p>Light colour: White</p> <p>Required components:</p>	
<p><b>SAMSUNG</b></p> <p>LED: LH351C</p> <p>FWHM / FWTM: 32.0° / 56.0°</p> <p>Efficiency: 91 %</p> <p>Peak intensity: 2.3 cd/lm</p> <p>LEDs/each optic: 1</p> <p>Light colour: White</p> <p>Required components:</p>	

### 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:

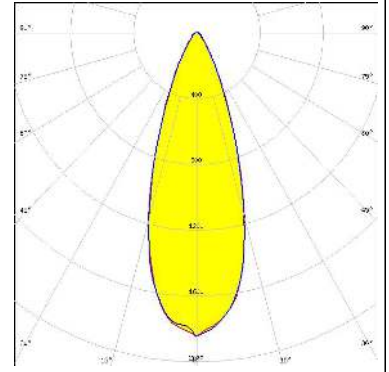
Protective plate, glass




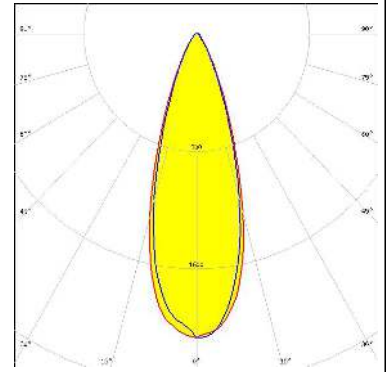
#### SAMSUNG

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:

 SEUL 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:


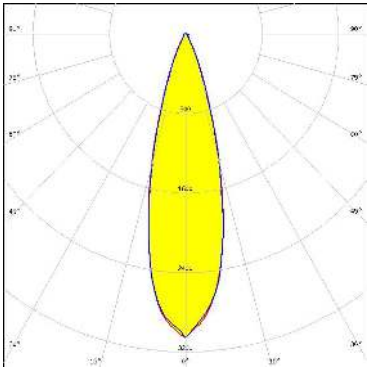

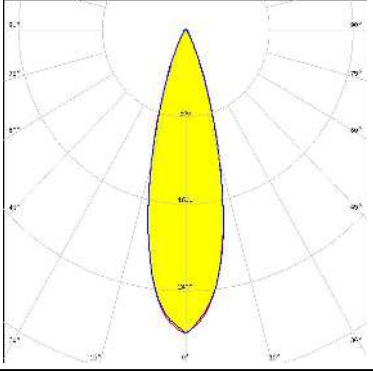

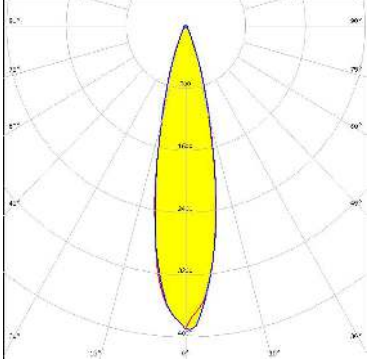


 SEUL SEMICONDUCTOR  
 LED SEOUL DC 5050 6V  
 FWHM / FWTM 34.0° / 62.0°  
 Efficiency 94 %  
 Peak intensity 2.1 cd/lm  
 LEDs/each optic 1  
 Light colour White  
 Required components:





#### OPTICAL RESULTS (SIMULATED):

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