

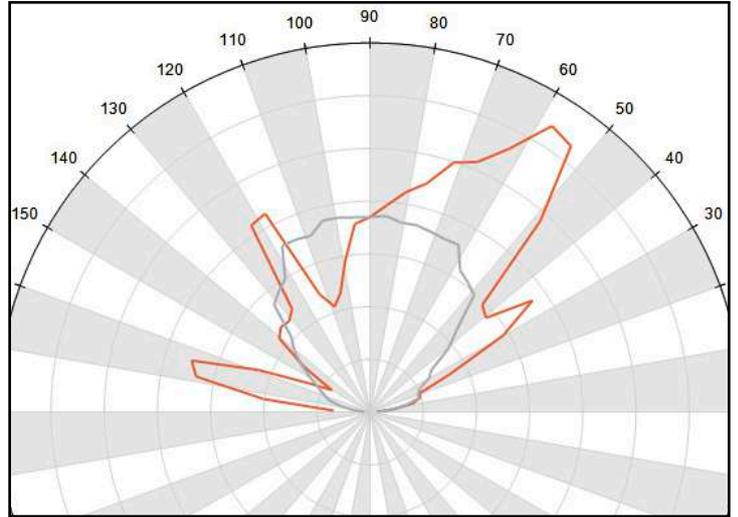
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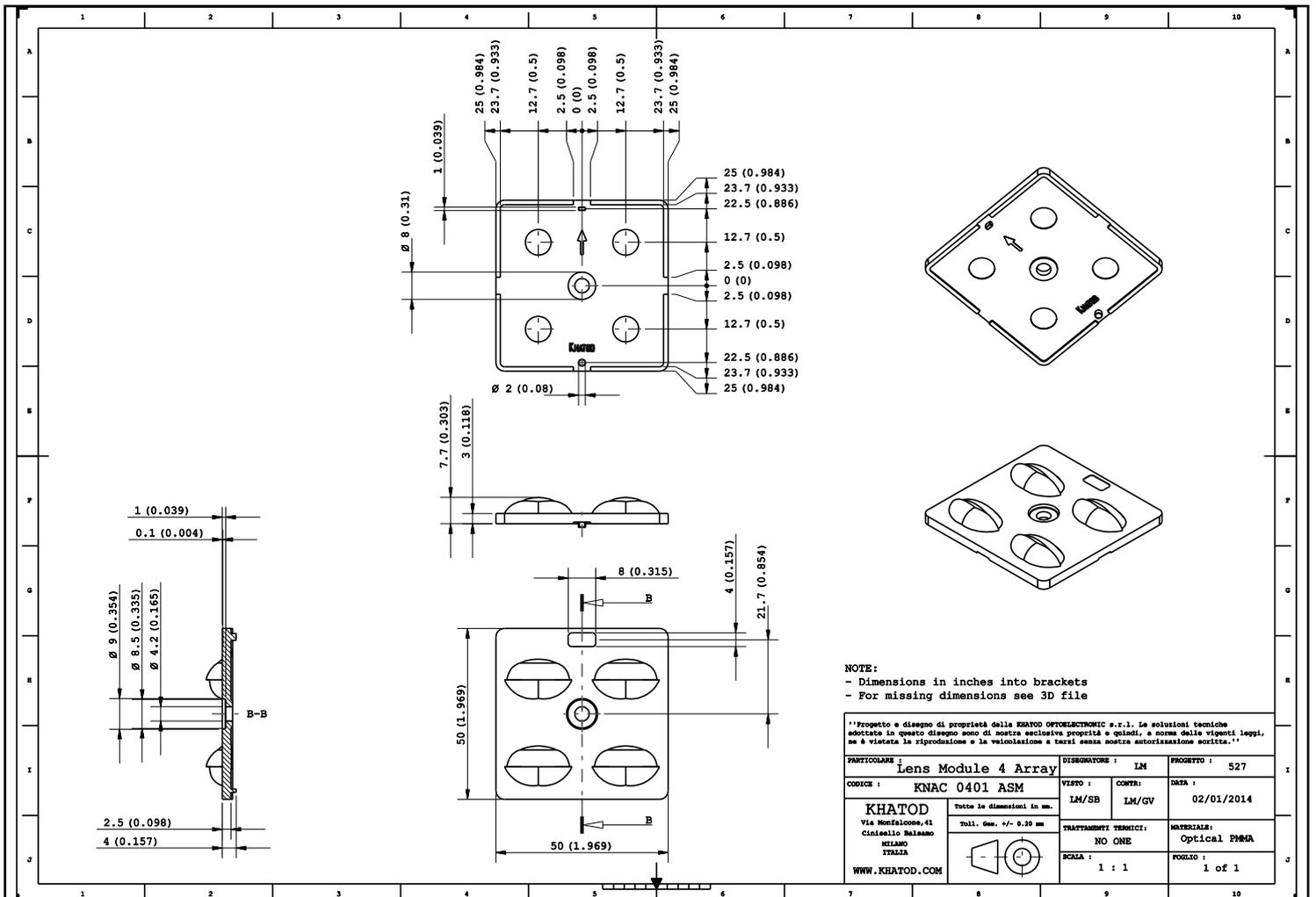
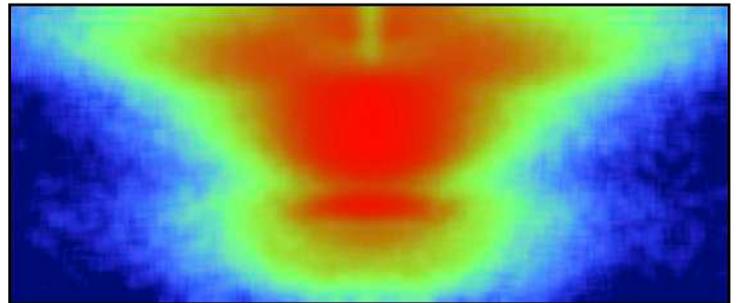
- The letter “x” in the Part Numbers listed above is for internal use only
- \* It depends on the LED models you will use

## KNAC0401ASM - Asymmetric for Residential & Industrial Light

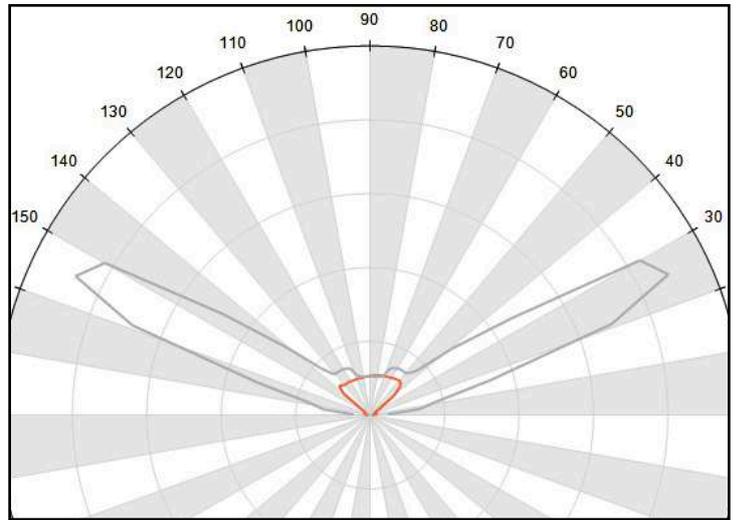


**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 135°x100°
- Full angle at 10% from maximum: ~ 170°x165°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

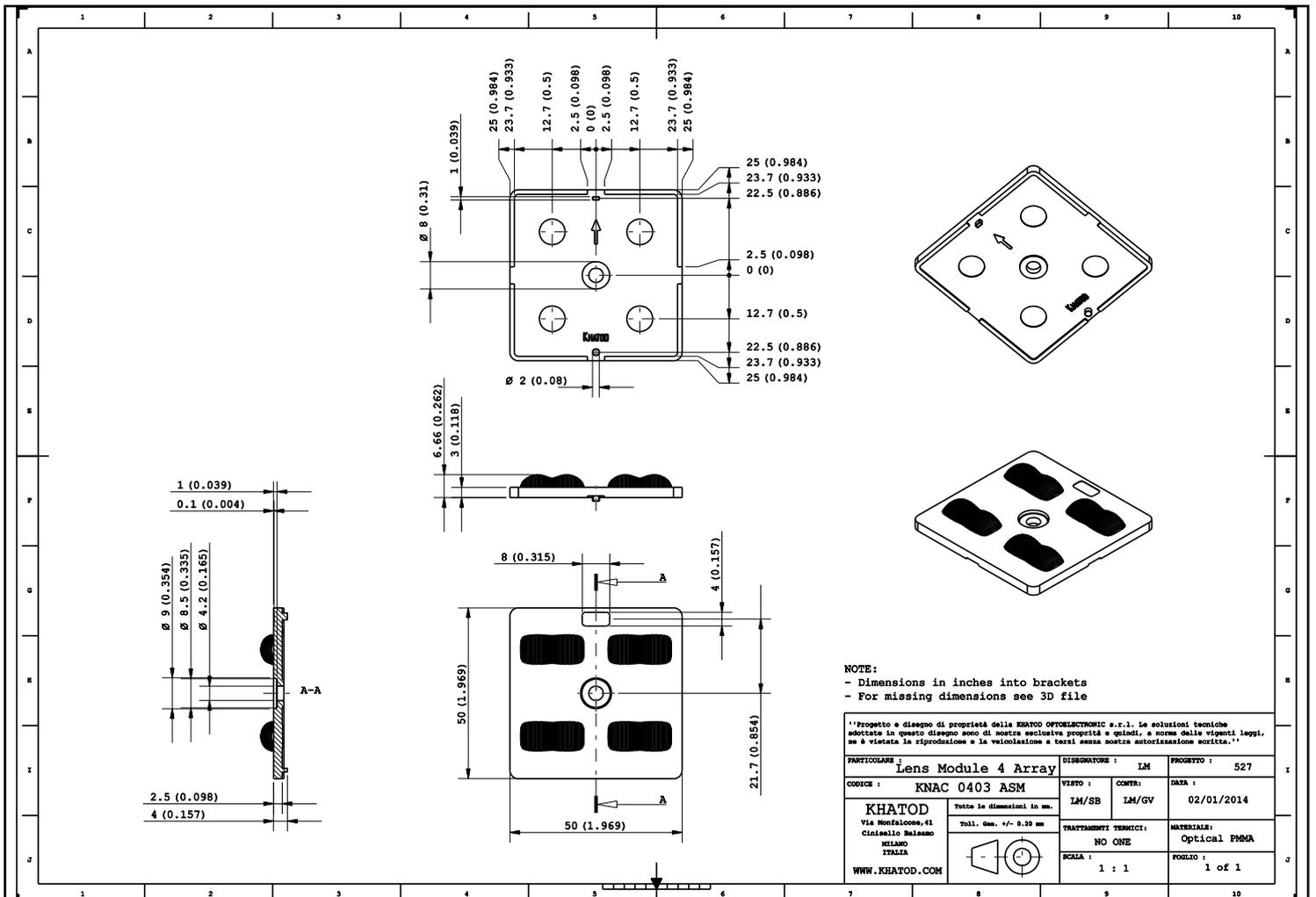
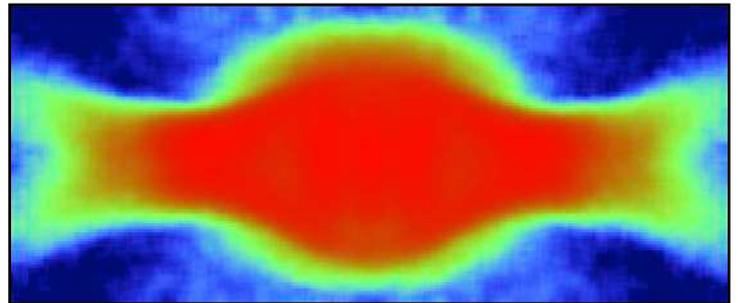


## KNAC0403ASM - IESNA TYPE I

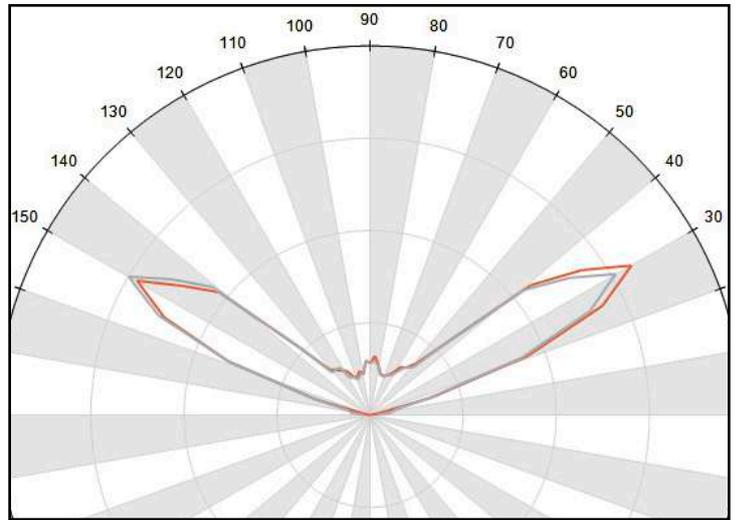


**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 105°x145°
- Full angle at 10% from maximum: ~ 160°x155°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

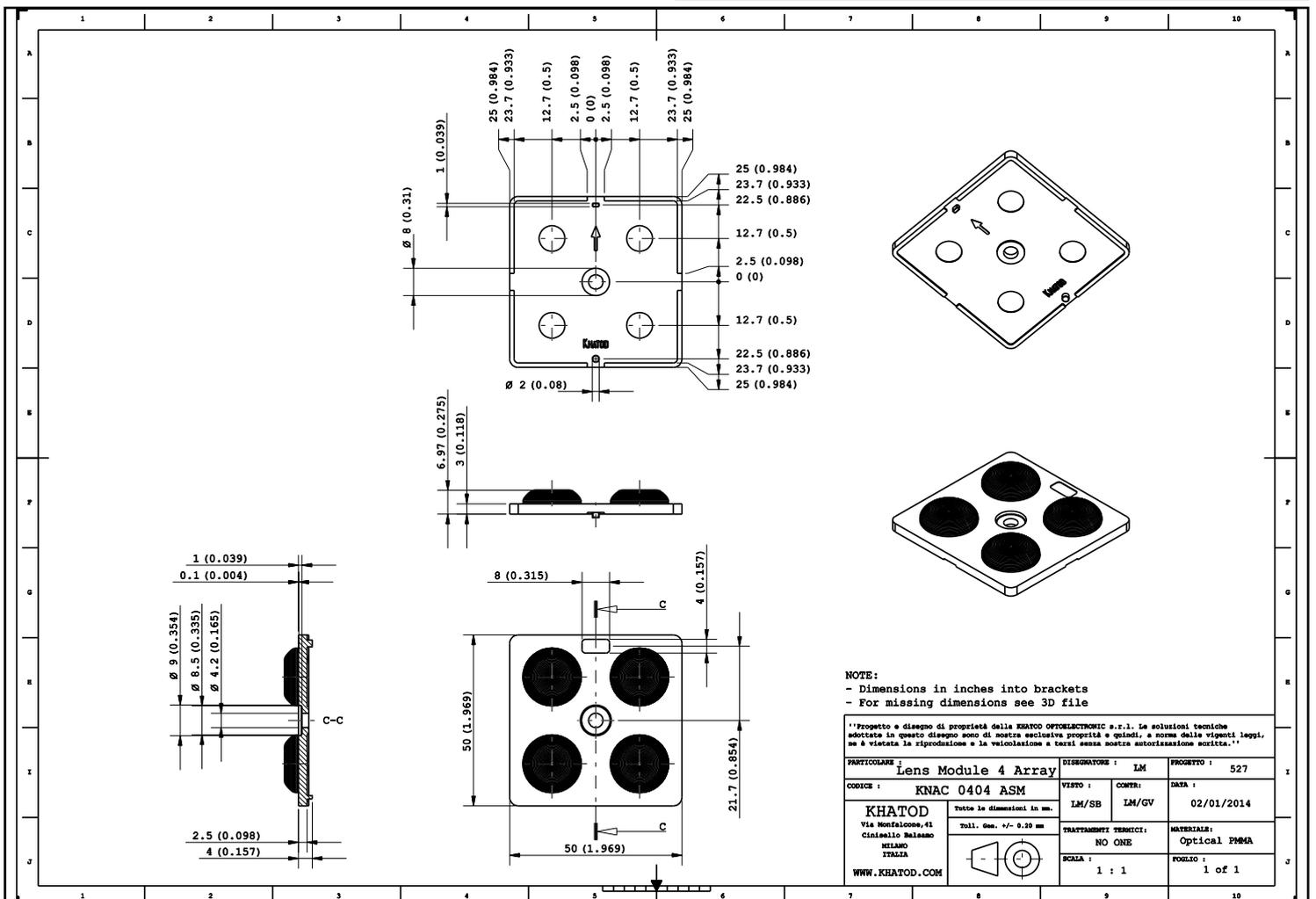
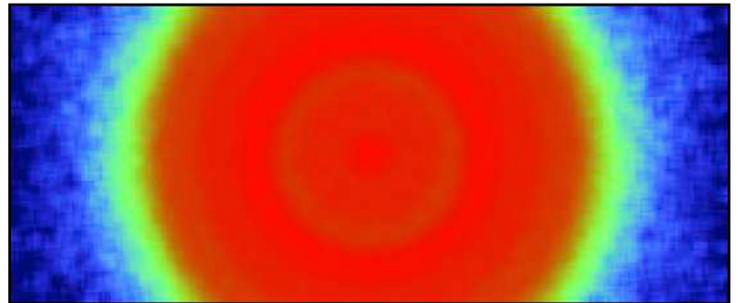


## KNAC0404ASM - IESNA TYPE: VS Short - 120° SYMM

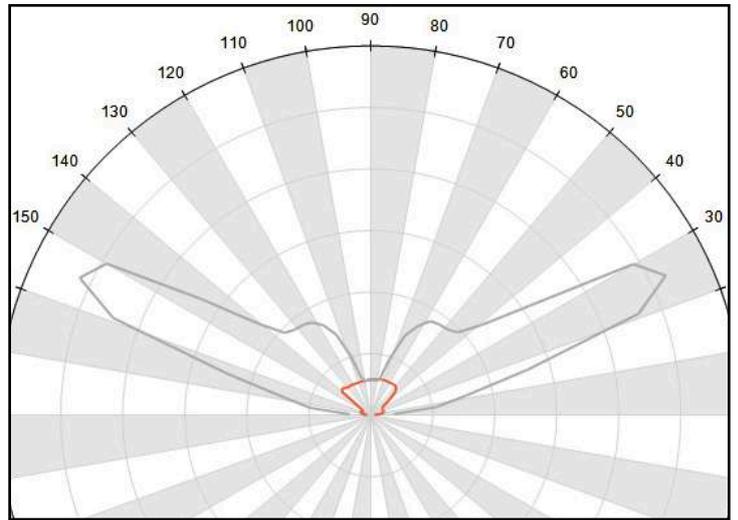


**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 130°x130°
- Full angle at 10% from maximum: ~ 152°x152°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

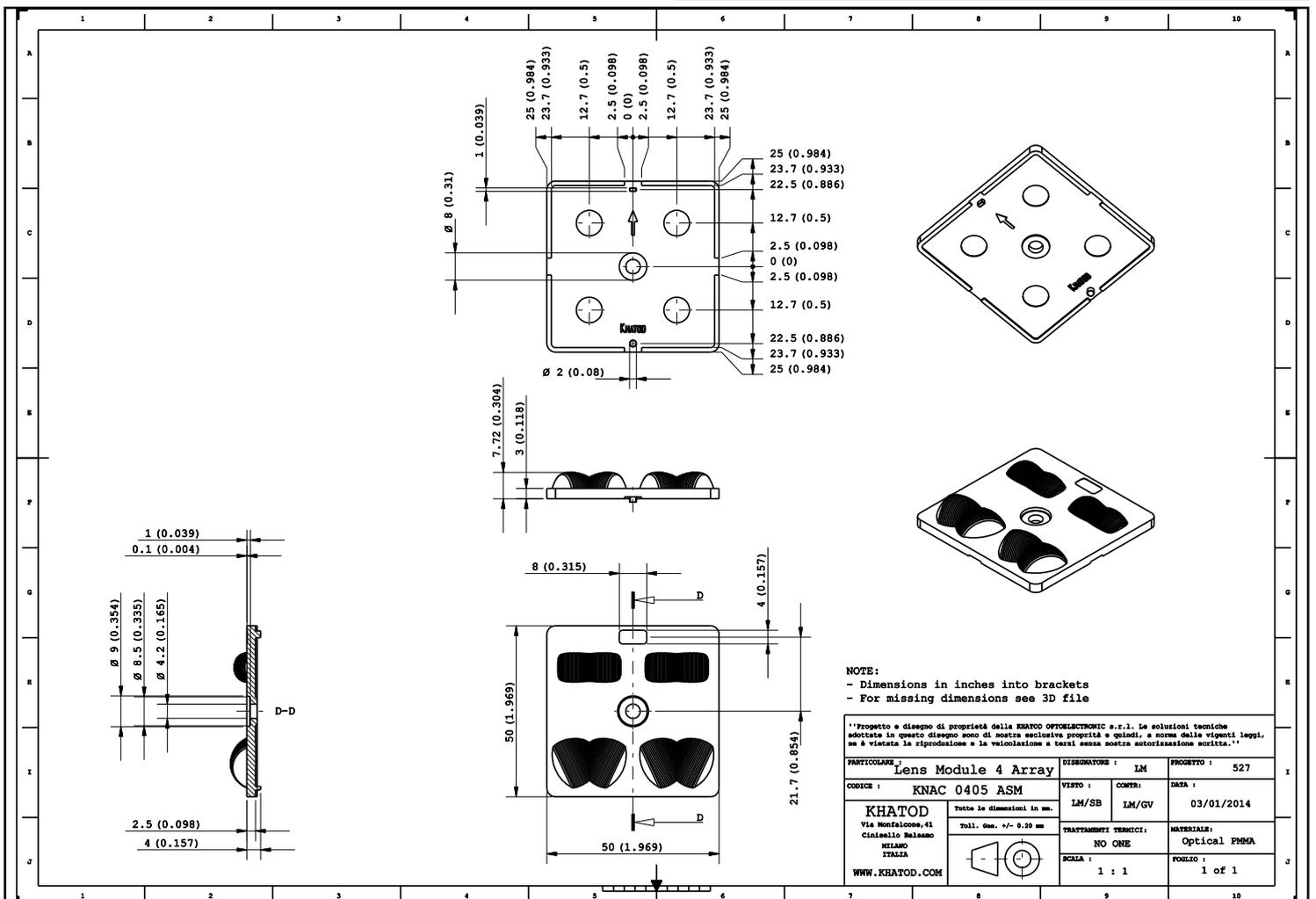
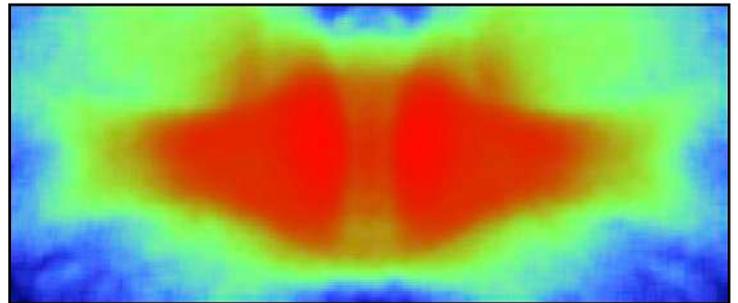


## KNAC0405ASM - IESNA TYPE: Type I



**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum:  $\sim 150^\circ \times 110^\circ$
- Full angle at 10% from maximum:  $\sim 185^\circ \times 170^\circ$
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES,  $\sim 250\text{lm}/\text{LED}$

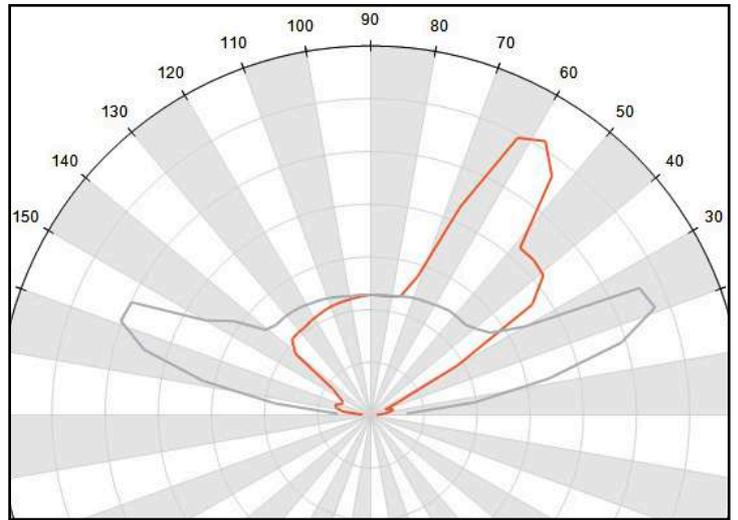


NOTE:  
- Dimensions in inches into brackets  
- For missing dimensions see 3D file

\*\*Progetto e disegno di proprietà della KHATOD OPTOELECTRONIC s.r.l. Le soluzioni tecniche adottate in questo disegno sono di nostra esclusiva proprietà e quindi, a norma delle vigenti leggi, ne è vietata la riproduzione e la divulgazione e tutti senza nostra autorizzazione scritta.\*\*

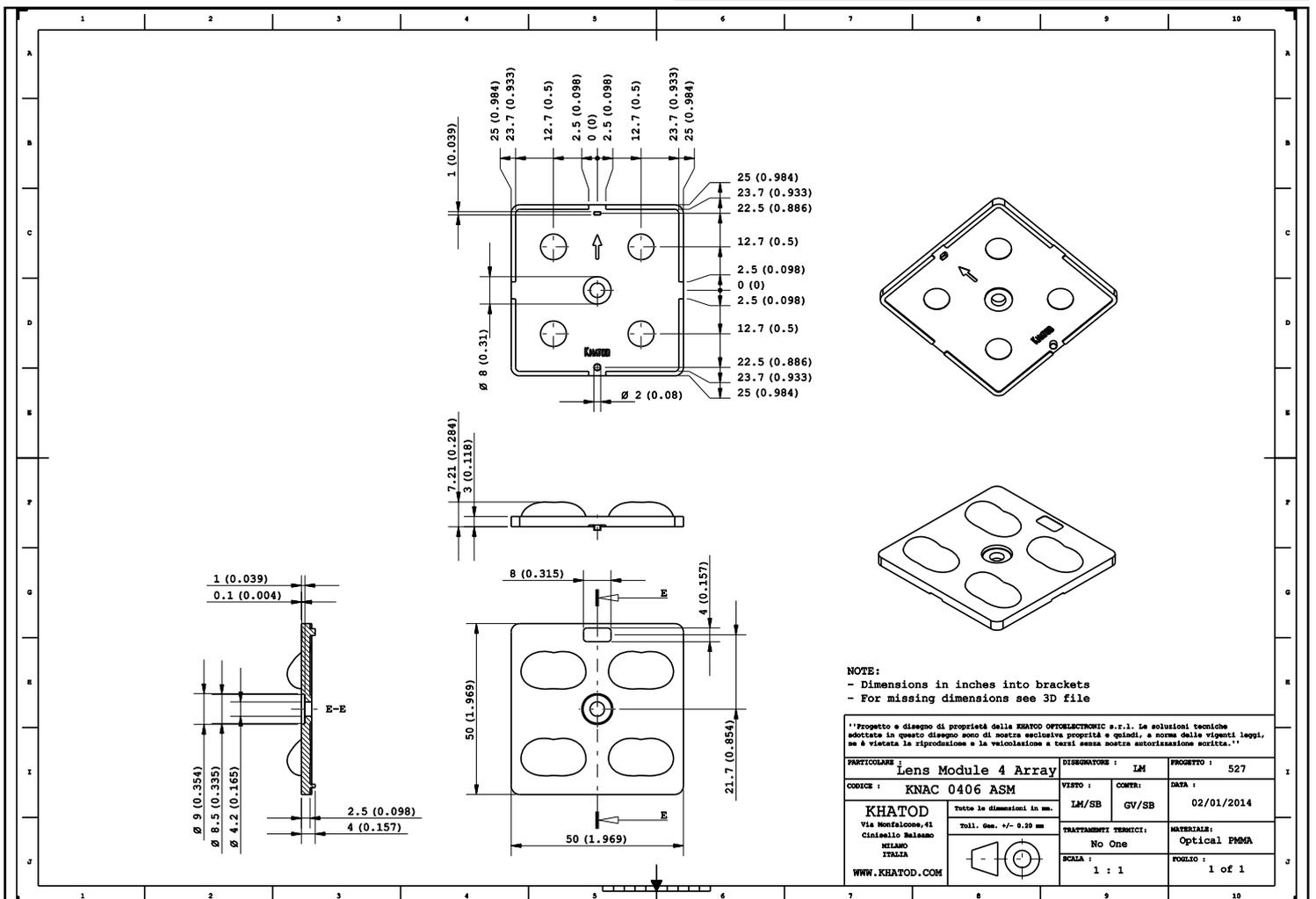
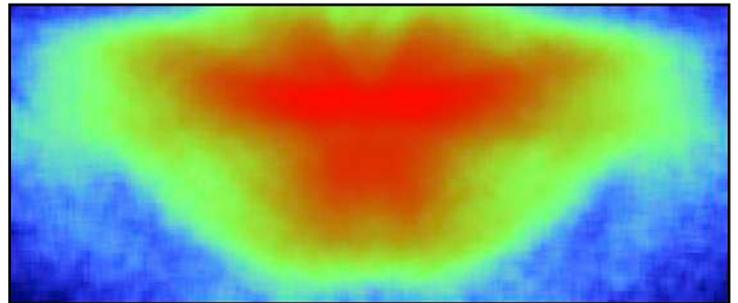
|   |                           |                             |                         |
|---|---------------------------|-----------------------------|-------------------------|
| PARTICOLARE: Lens Module 4 Array  |                           | DISGNATORE: LM              | PROGETTO: 527           |
| CODICE: KNAC 0405 ASM   | Tutte le dimensioni in mm | VISTO: LM/SB                | CONTR: LM/GV            |
| KHATOD<br>Via Montefalco, 41<br>Cinisello Balsamo<br>MILANO<br>ITALIA<br>WWW.KHATOD.COM | Toll. Geom. +/- 0.20 mm   | TRATTAMENTI TERMICI: NO ONE | MATERIALE: Optical PMMA |
|   |                           | SCALA: 1 : 1                | FOLIO: 1 of 1           |

## KNAC0406ASM - IESNA TYPE : II Medium / EN13201: ME3a

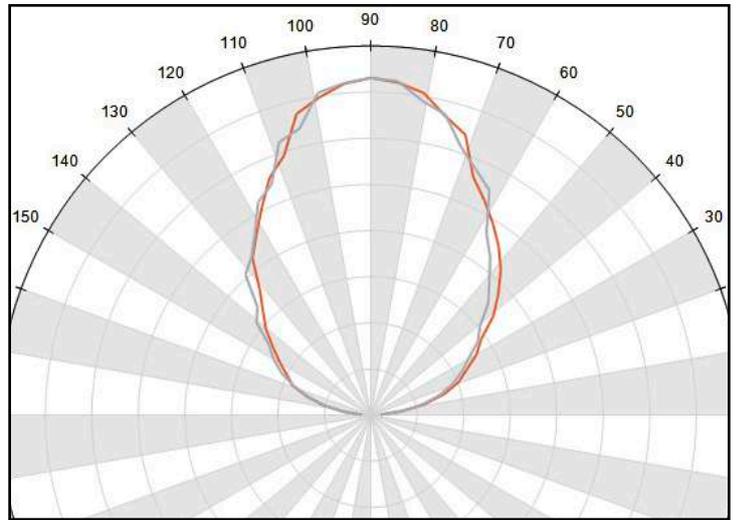


**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 160°x110°
- Full angle at 10% from maximum: ~ 170°x155°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

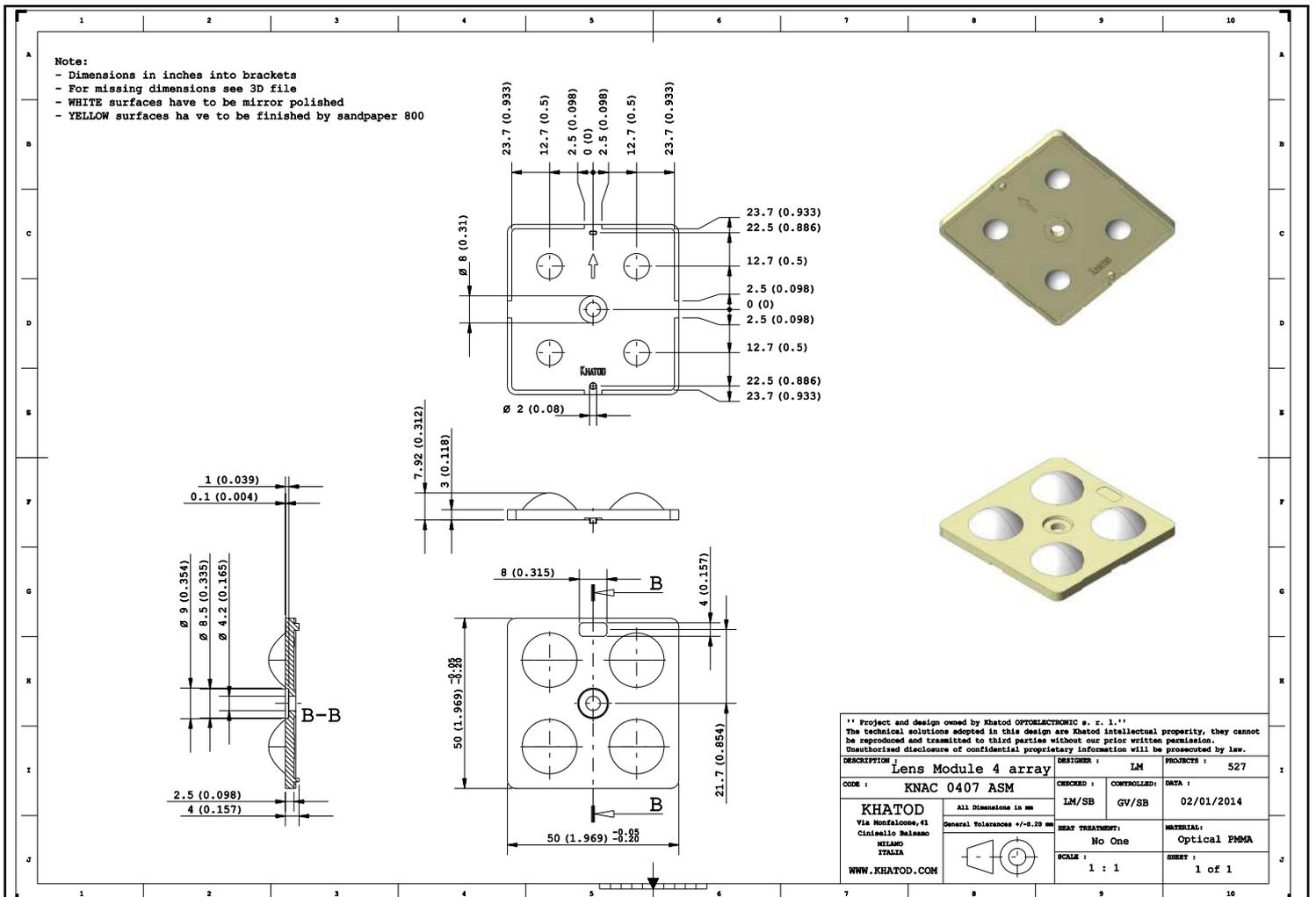
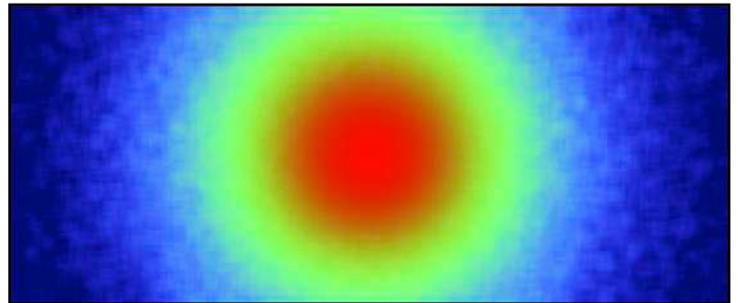


## KNAC0407ASM - IESNA TYPE : V

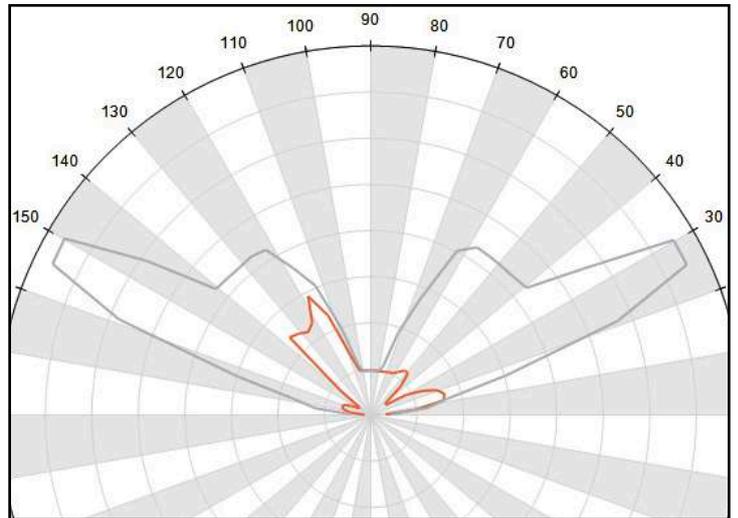


**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 90°
- Full angle at 10% from maximum: ~ 160°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

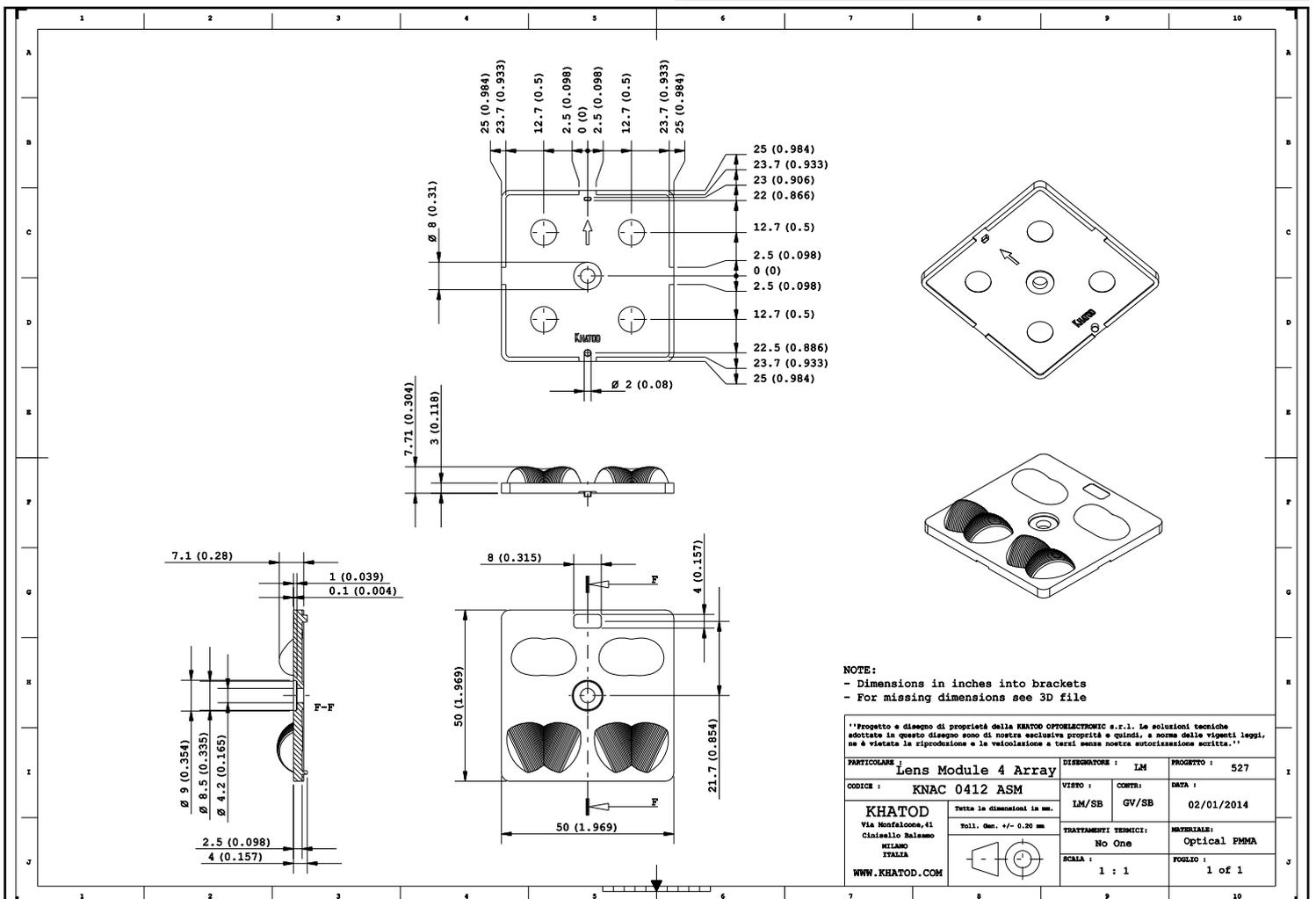
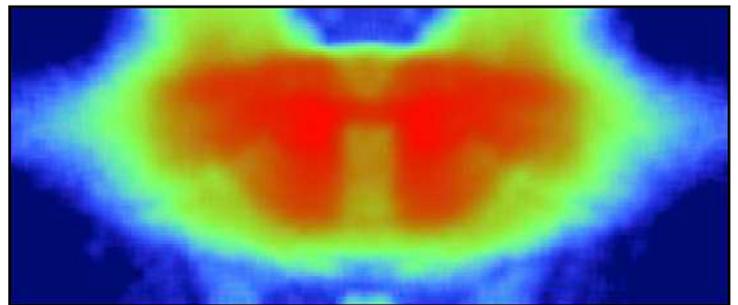


## KNAC0412ASM - IESNA TYPE : III

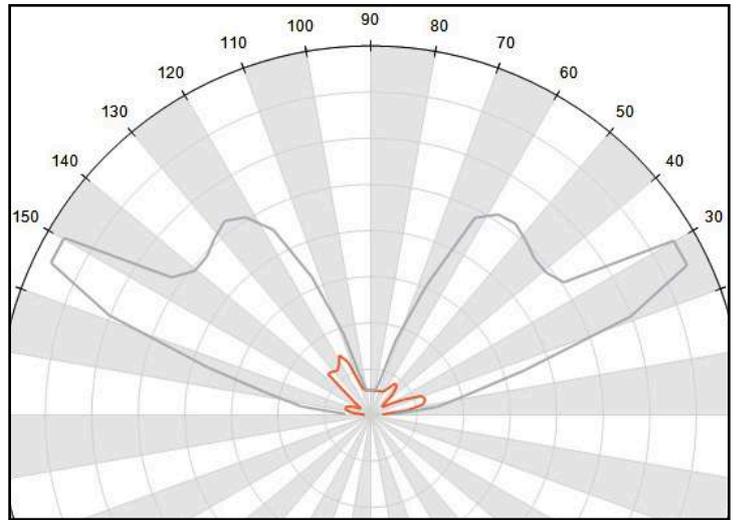


**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 160°x130°
- Full angle at 10% from maximum: ~ 175°x180°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

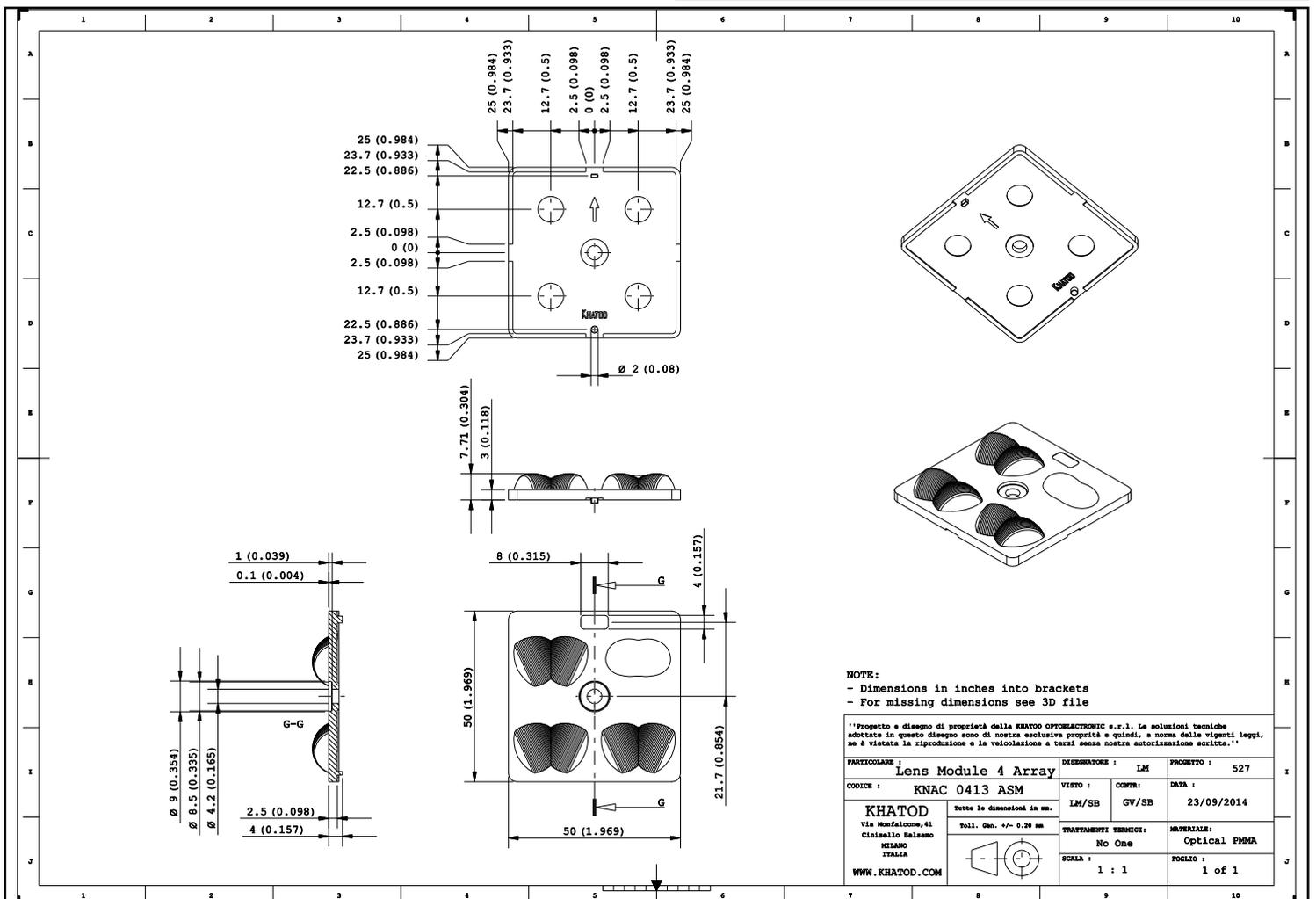
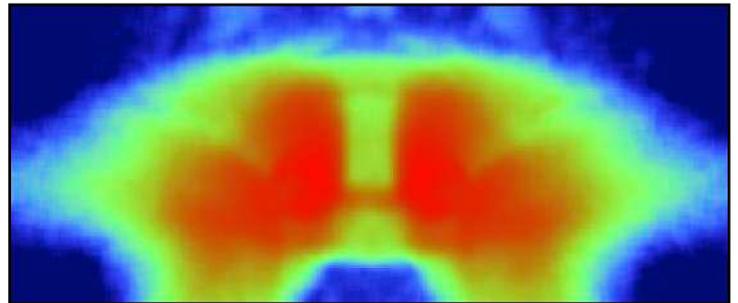


## KNAC0413ASM - IESNA TYPE : IV

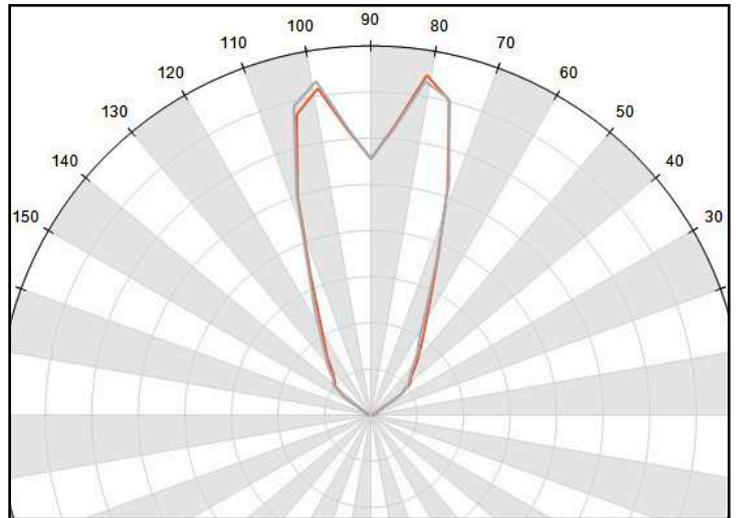


**It works also with 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 160°x120°
- Full angle at 10% from maximum: ~ 180°x185°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

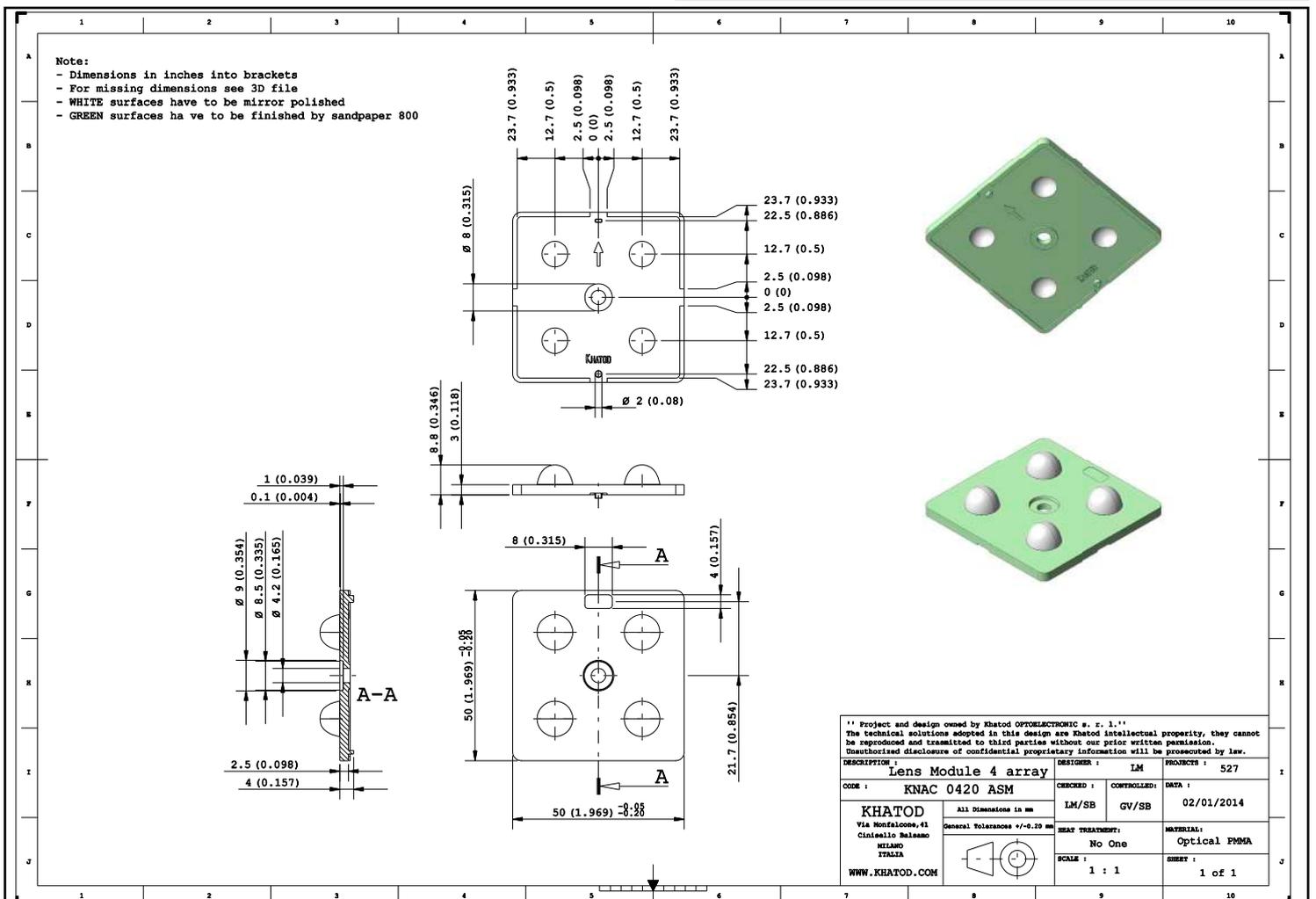
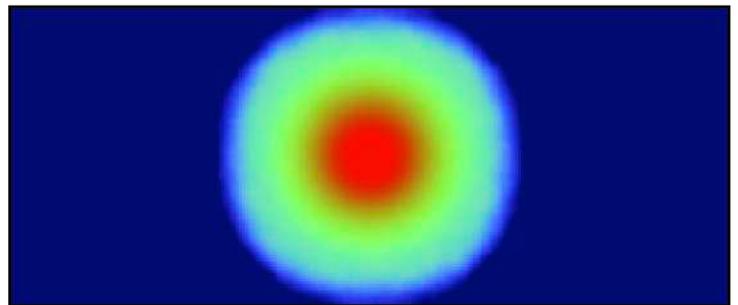


## KNAC0420ASM - IESNA TYPE : V

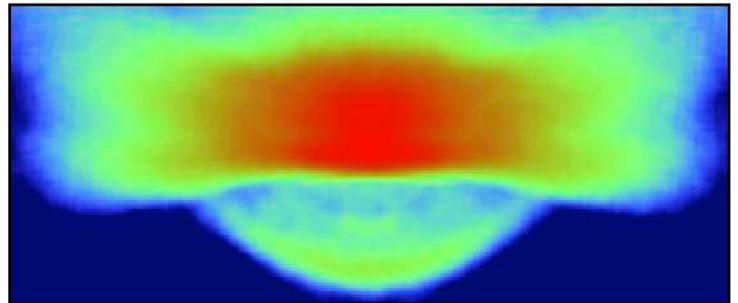
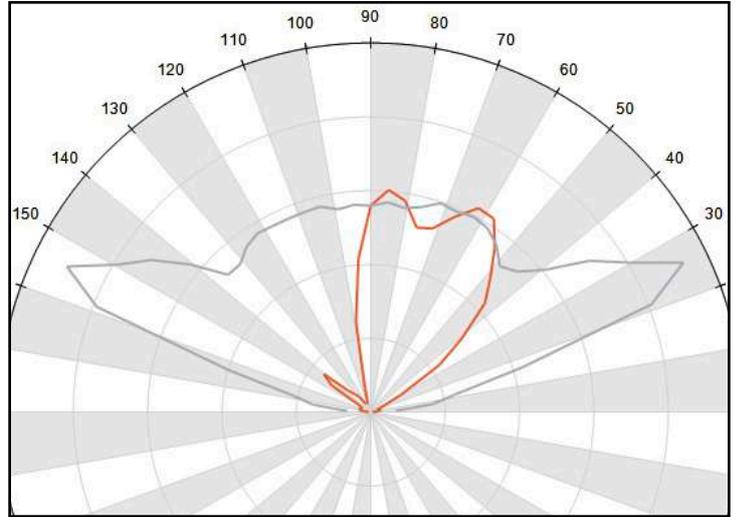


**It works also with 5050 LEDs**

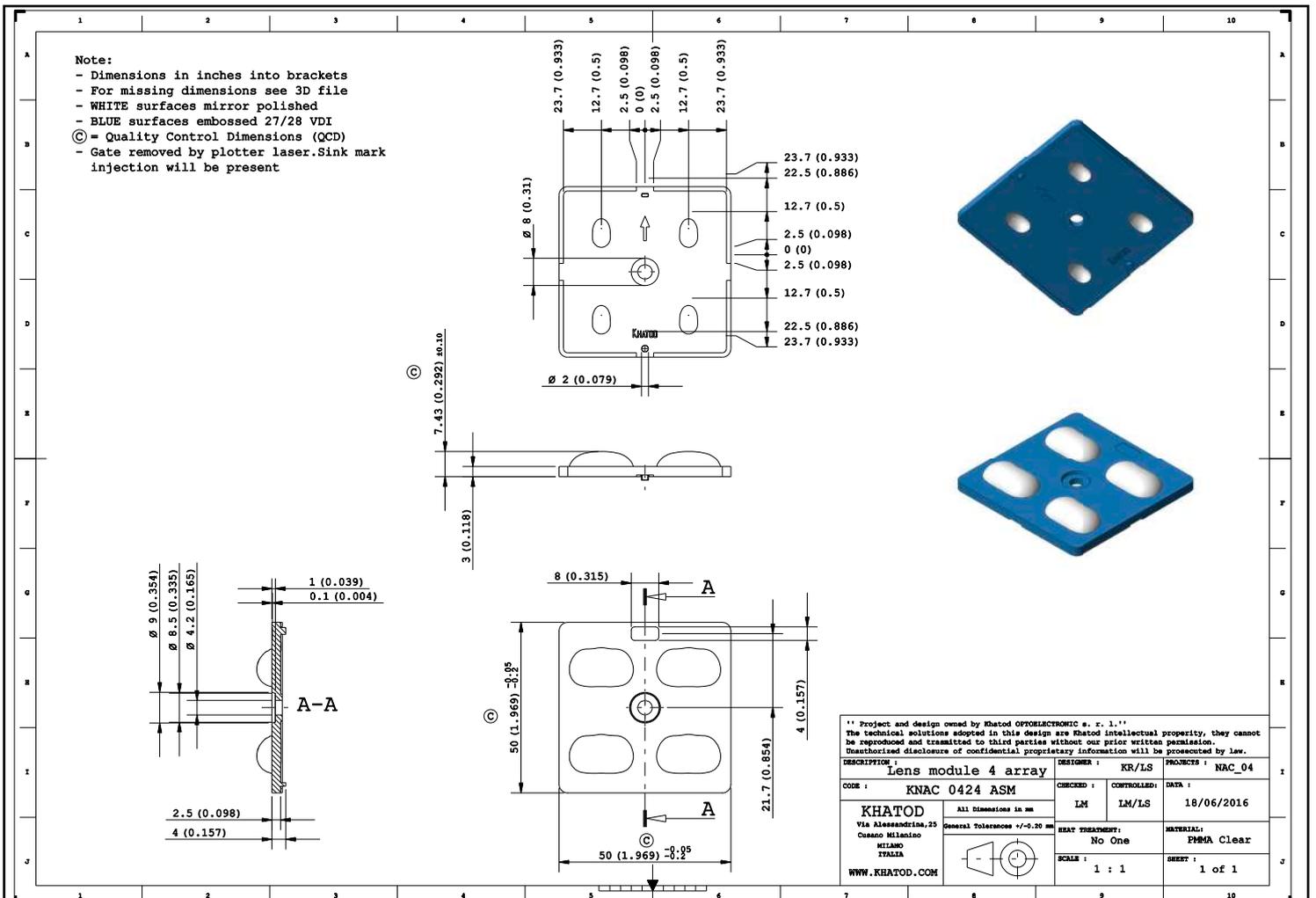
- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 50°
- Full angle at 10% from maximum: ~ 115°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED



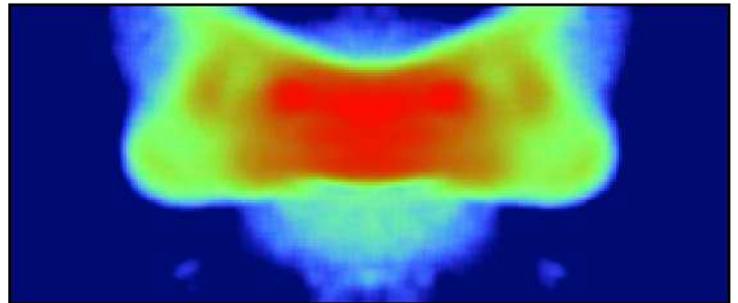
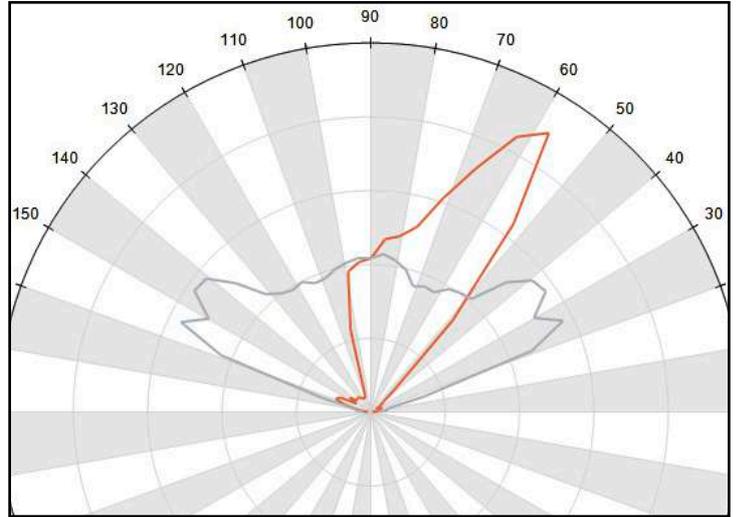
## KNAC0424ASM - IESNA Type II / Type III



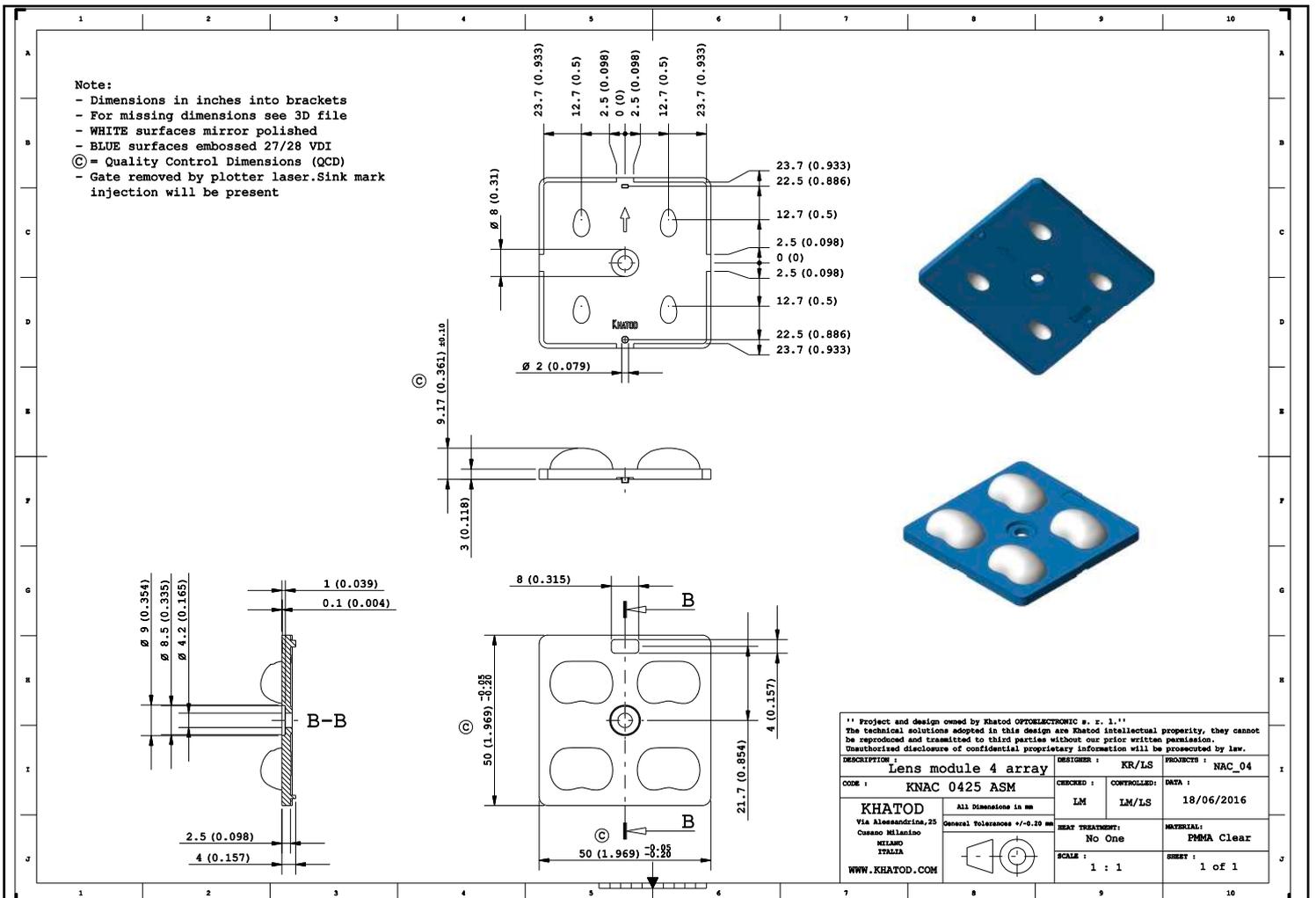
- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum:  $\sim 150^\circ \times 160^\circ$
- Full angle at 10% from maximum:  $\sim 160^\circ \times 110^\circ$
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES,  $\sim 250\text{lm@LED}$



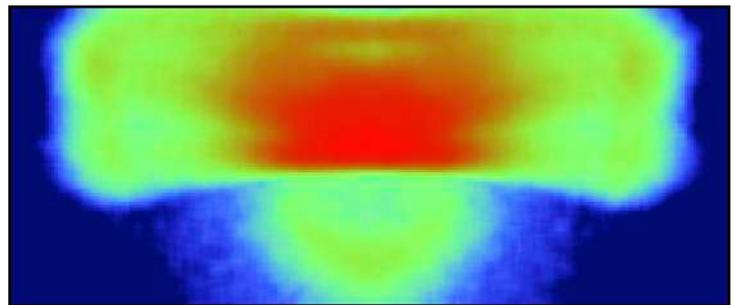
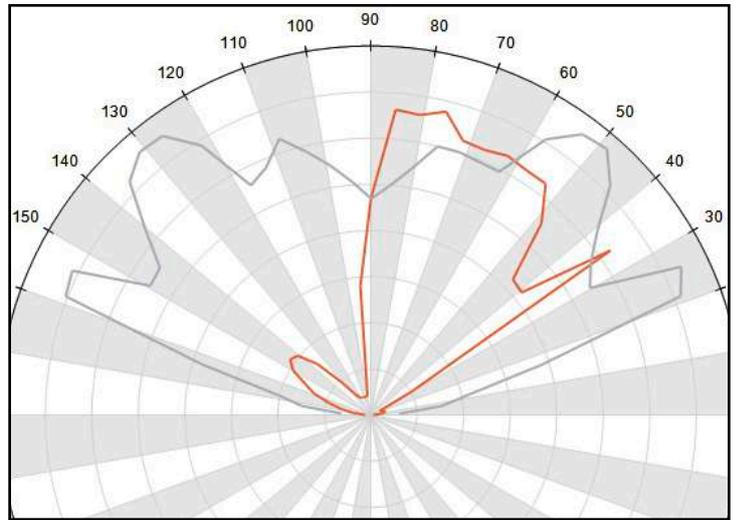
## KNAC0425ASM - Type II



- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 145°x55°
- Full angle at 10% from maximum: ~ 150°x120°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED



## KNAC0426ASM - IESNA Type III



- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 150°x110°
- Full angle at 10% from maximum: ~ 155°x140°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

**Note:**

- Dimensions in inches into brackets
- For missing dimensions see 3D file
- WHITE surfaces mirror polished
- BLUE surfaces embossed 27/28 VDI
- © = Quality Control Dimensions (QCD)
- Gate removed by plotter laser. Sink mark injection will be present

Top View Dimensions: 23.7 (0.933), 12.7 (0.5), 2.5 (0.098), 0 (0), 2.5 (0.098), 12.7 (0.5), 23.7 (0.933), 23.7 (0.933), 22.5 (0.886), 12.7 (0.5), 2.5 (0.098), 0 (0), 2.5 (0.098), 12.7 (0.5), 22.5 (0.886), 23.7 (0.933), 23.7 (0.933), 22.5 (0.886), 12.7 (0.5), 2.5 (0.098), 0 (0), 2.5 (0.098), 12.7 (0.5), 22.5 (0.886), 23.7 (0.933)

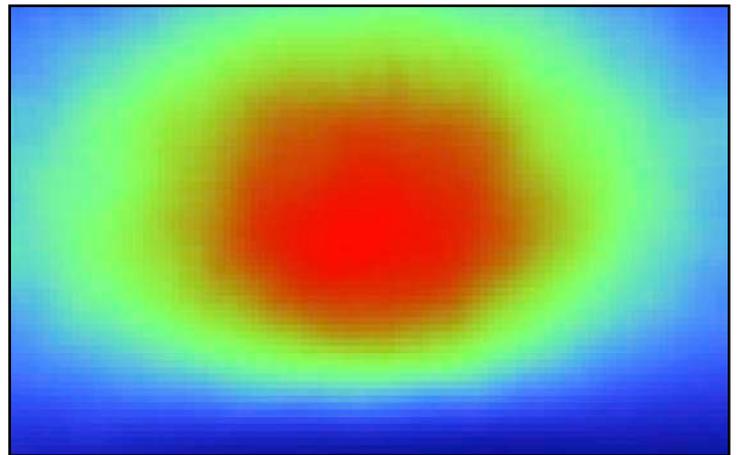
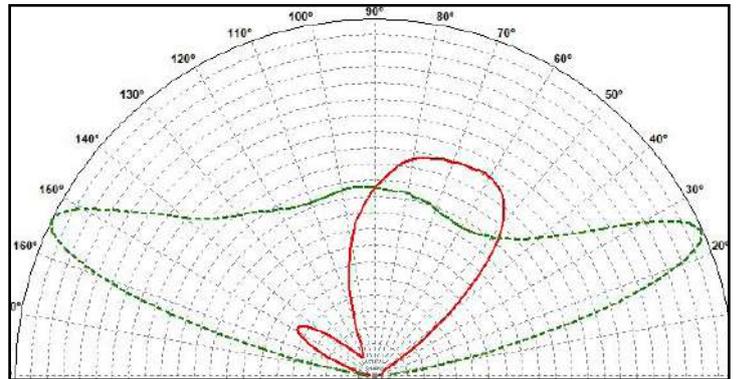
Side View Dimensions: 7.77 (0.306) ±0.10, 3 (0.118), 8 (0.315), 4 (0.157), 21.7 (0.854)

Section C-C Dimensions: 1 (0.039), 0.1 (0.004), 2.5 (0.098), 4 (0.157), 50 (1.969) ±0.05, 50 (1.969) ±0.20

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|   |             |   |                                       |
|---|-------------|---|---------------------------------------|
| DESCRIPTION: <b>Lens module 4 array</b>   |             | DESIGNER: KR/LS   | PROJECTS: NAC_04                      |
| CODE: KNAC 0426 ASM   | CHECKED: LM | CONTROLLED: LM/LS   | DATA: 18/06/2016                      |
| KHATOD<br>Via Alessandrina, 25<br>Cusano Milanino<br>MILANO<br>ITALIA<br>WWW.KHATOD.COM |             | All Dimensione in mm<br>General Tolerance +/- 0.10 mm<br>NEXT TREATMENT: No One<br>SCALE: 1 : 1 | MATERIAL: PMMA Clear<br>SHEET: 1 of 1 |

## KNAC0428ASM - Type II Medium Cut off, for 5x5mm LEDs



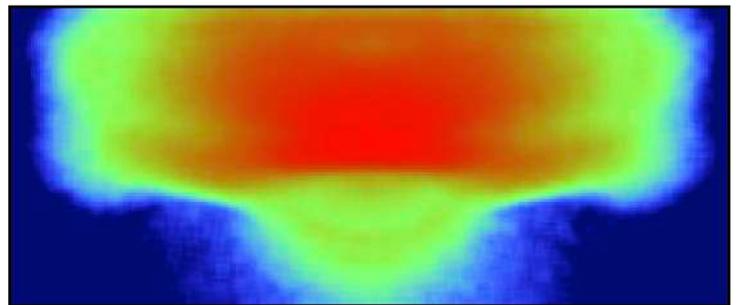
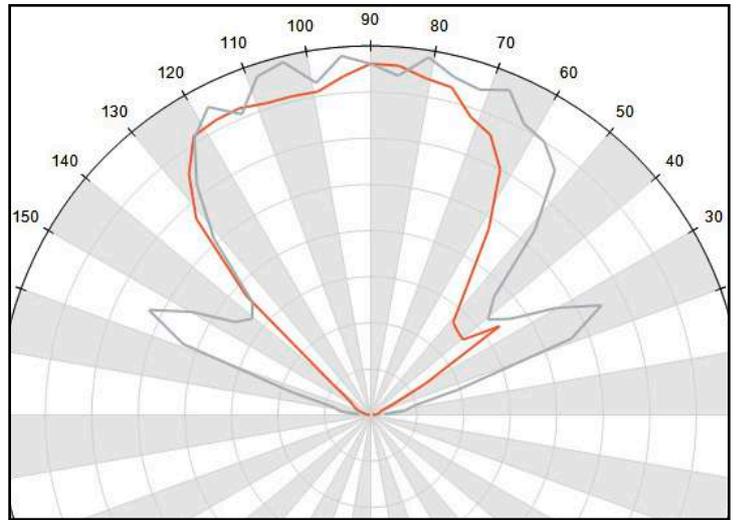
**For 5050 LEDs**

- Material = PMMA Clear, Non-yellowing, 10-year guarantee\*\*
- Full angle C0-C180 at 50% from maximum: ~ 80°x145°
- Full angle C0-C180 at 10% from maximum: ~ 110°x145°
- The light spots here represented refer to tests carried out with 5x5mm LEDs, and ~510lm@LED

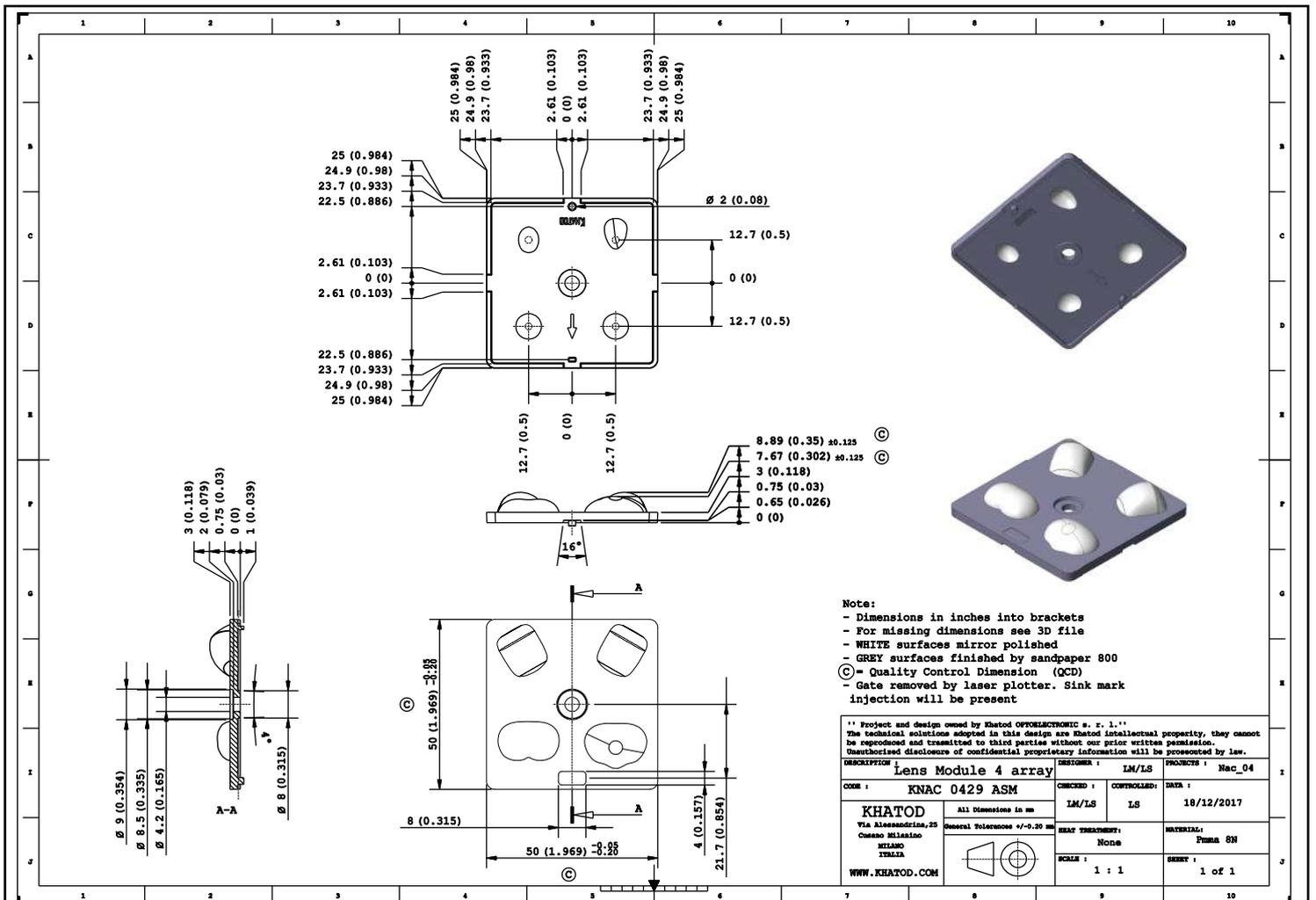
**Note:**  
 - Dimensions in inches into brackets  
 - For missing dimensions see 3D file  
 WHITE surfaces mirror polished  
 GREY surfaces embossed 25/27 VDI  
 RED surface available area for gate material  
 © = Quality Control Dimension (QCD)

|   |                           |                       |                       |
|---|---------------------------|-----------------------|-----------------------|
| ** Project and Design owned by Khatod OPTOELECTRONIC s. r. l.**<br>The technical solutions adopted in this design are Khatod intellectual property, they cannot be reproduced and transmitted to third parties without our prior written permission. Unauthorized disclosure of confidential proprietary information will be prosecuted by law. |                           | DESIGNER : LM/TAZ     | PROJECT : KNAC0428ASM |
| DESCRIPTION : Lens Module 4 Array   | CHECKED : LM/TAZ          | CONTROLLED : DP/TAZ   | DATE : 30/10/2017     |
| CODE : KNAC 0428 ASM  | GENERAL TOLERANCE 4/-0.30 |                       |                       |
| KHATOD<br>Via Alessandrina,25<br>Cusano Milanese<br>MILANO<br>ITALIA<br>WWW.KHATOD.COM  | All Dimensions in mm      | HEAD TREATMENT : None | MATERIAL : PMMA       |
| SCALE : 1 : 1   |                           | SHEET : 1 of 1        |                       |

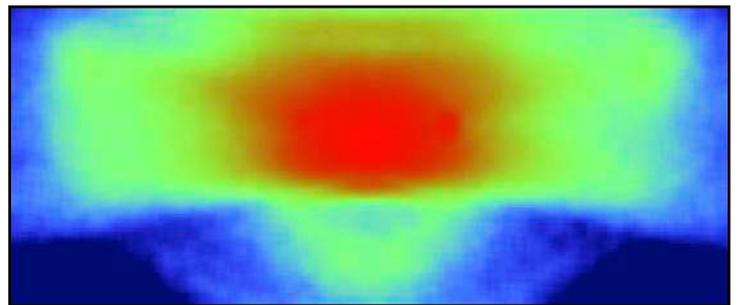
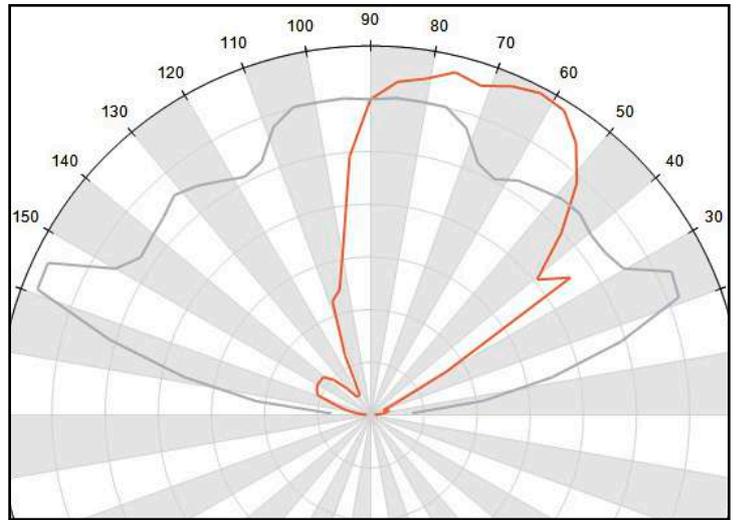
## KNAC0429ASM - IESNA Type II / III



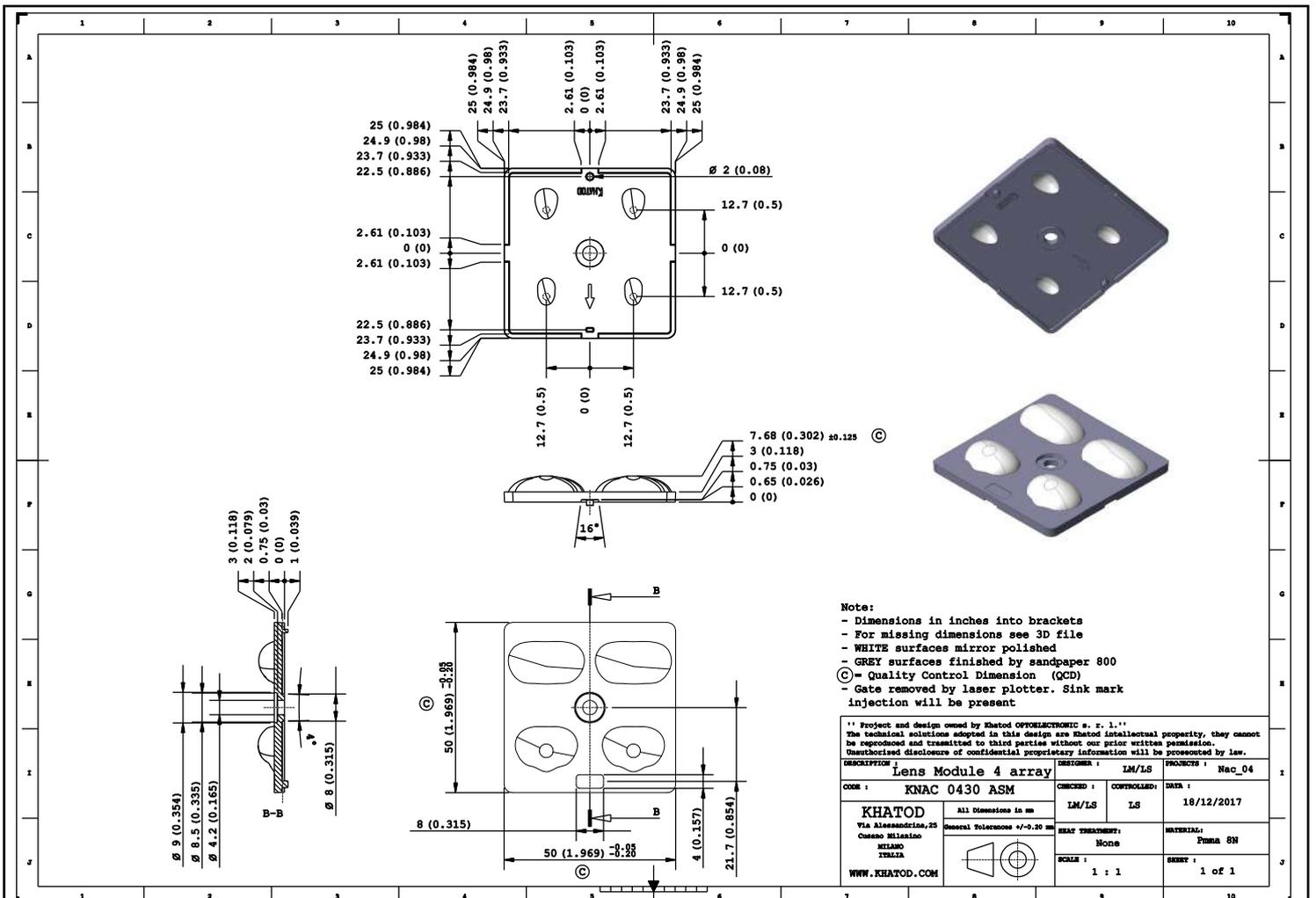
- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 125°x60°
- Full angle at 10% from maximum: ~ 150°x125°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED



## KNAC0430ASM - IESNA Type II / III

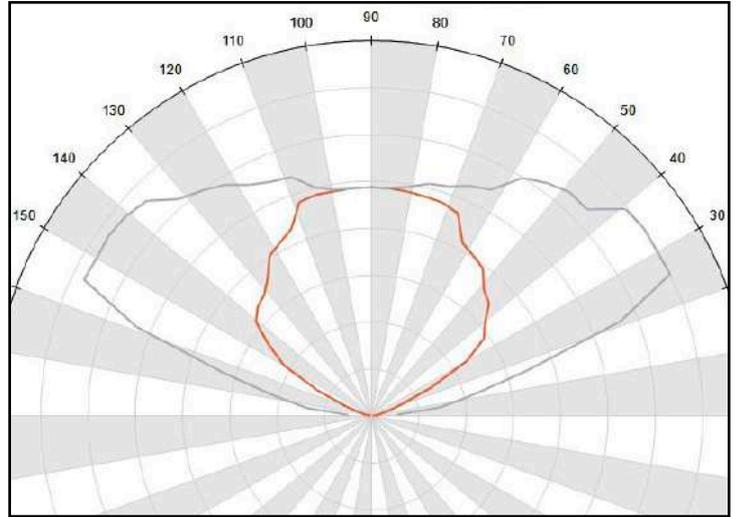


- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 150°x80°
- Full angle at 10% from maximum: ~ 155°x125°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED



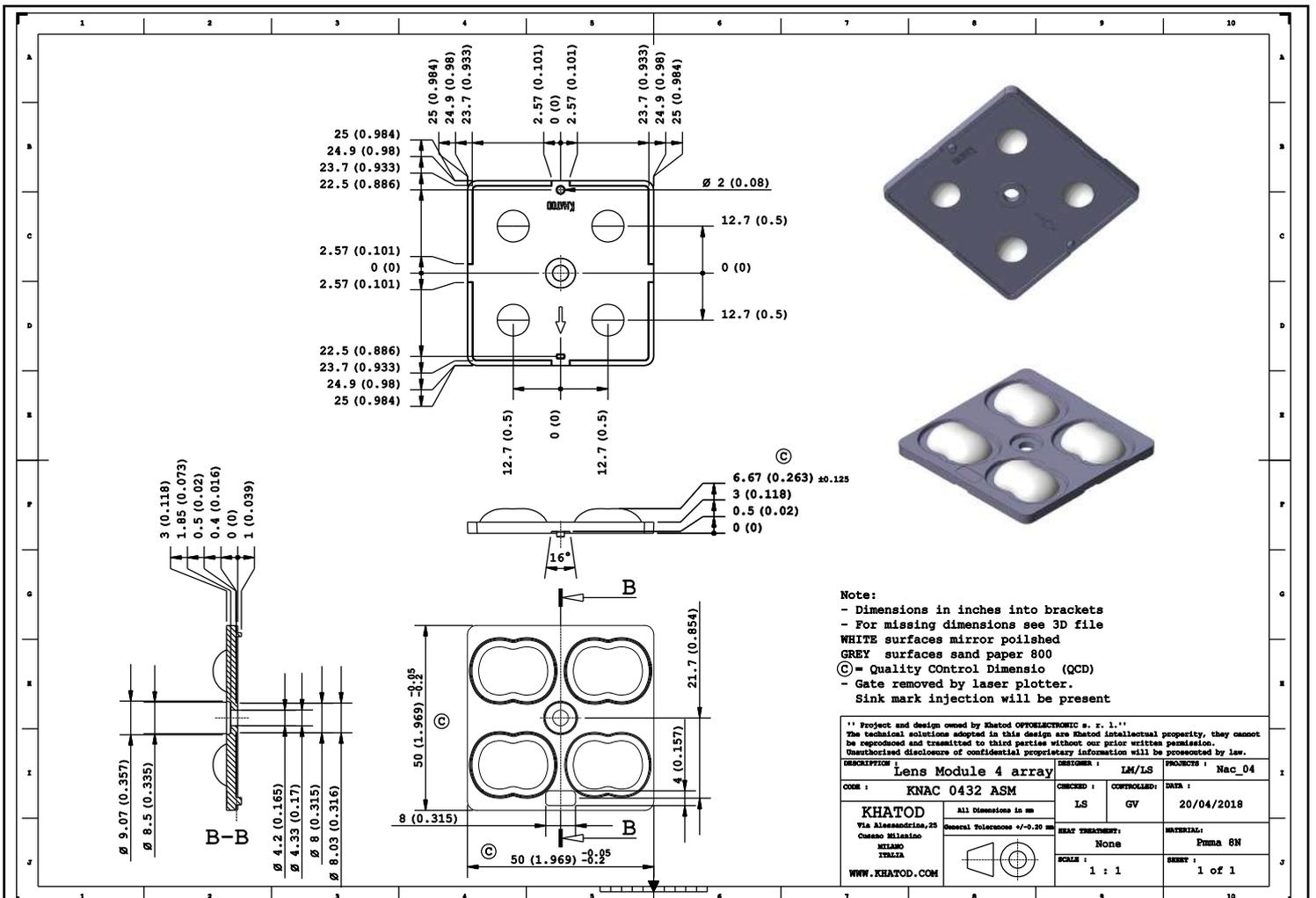
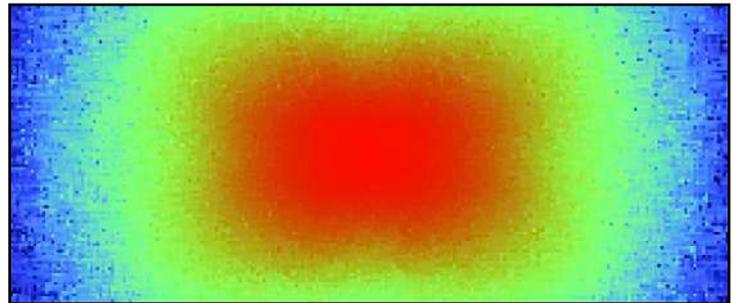


## KNAC0432ASM - IESNA Type I - for Central Lane

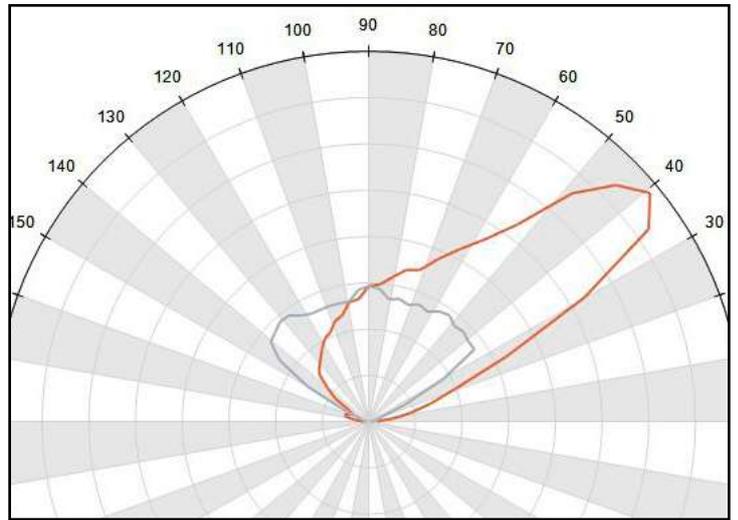


**For 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 115°x155°
- Full angle at 10% from maximum: ~ 140°x160°
- The light spots here represented refer to tests carried out with LEDs with 3mm dome and 2mm<sup>2</sup> LES, ~250lm@LED

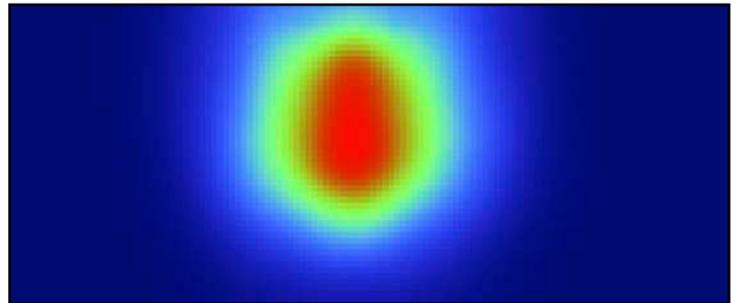


## KNAC0433ASM - Type for Tunnel Entrance



**For 5050 LEDs**

- Material = PMMA Clear, **Non-yellowing, 10-year guarantee\*\***
- Full angle at 50% from maximum: ~ 108°x120°
- Full angle at 10% from maximum: ~ 130°x130°
- The light spots here represented refer to tests carried out with 5x5mm LEDs, and ~510lm@LED



**Note:**

- Dimensions in inches into brackets
- For missing dimensions see 3D file
- WHITE surfaces mirror polished
- GREY surfaces finished by sand paper 800
- Ⓢ = Quality Control Dimension (QCD)
- Gate removed by laser plotter
- Sink mark injection will be present

|   |  |                         |                      |
|---|--|-------------------------|----------------------|
| ** Project and design owned by Khatod OPTOELECTRONIC s. r. l.**<br>The technical solutions adopted in this design are Khatod intellectual property, they cannot be reproduced and transmitted to third parties without our prior written permission. Unauthorized disclosure of confidential proprietary information will be prosecuted by law. |  |                         |                      |
| DESCRIPTION :<br><b>Lens module 4 array</b>   |  | CUSTOMER :<br>IM/LS     | PROJECT :<br>Nac_04  |
| CODE :<br>KNAC 0433 ASM   | DESIGNED :<br>LS                                   | CONTROLLED :<br>GV      | DATE :<br>07/07/2018 |
| KHATOD<br>Via Alessandrina, 25<br>Casale Mirafiori<br>10156<br>TRIVERA<br>WWW.KHATOD.COM  | All Dimensions in mm<br>General Tolerances V/-0.20 | BEAT TREATMENT:<br>None | MATERIAL:<br>PMMA GN |
| SCALE :<br>1 : 1  |  | SHEET :<br>1 of 1       |                      |

## Packaging

| Item      | Quantity                    | Total Parts | Size (L*W*H) | G.W.    |
|-----------|-----------------------------|-------------|--------------|---------|
| Cardboard | 40 pcs per Cardboard        | 40 pcs      | 50*32 cm     | 0.52 Kg |
| Outer Box | 37 Cardboards per Outer Box | 1480 pcs    | 50*32*38 cm  | 20 Kg   |



37 Cardboards / 40 Modules each



37 Cardboards / Outer Box

## Materials

|  |             |
|--|-------------|
| <b>Material</b>  | <b>Top</b>  |
| PMMA 8N **   | -40°...90°C |
| <b>For further information please visit Evonik website</b> |             |

\*\*

KNAC04xxxSM is made of the same material used to produce PLEXIGLAS® Solar which guarantees it will show no yellowing for 10 years.

Yellowness Index (YI) according to the test standards for Arizona/Florida outdoor exposure testing:

- YI 6 under hot/dry conditions
- YI 8 under hot/wet conditions

## Notes:

- Intensity (I) and illuminance (E) data are normalized by 1000 lm
- The optical values shown are the result of optical simulations carried out with LIGHTTOOLS, ASAP and ZEMAX software systems. The optical simulations are carried out on the basis of the typical values provided in the LED manufacturers' official datasheets. The photometric analysis has been carried out on physical samples. On request, by supplying your PCB, we can provide the measurement photometric file.

## Use and Maintenance

- DO NOT HANDLE OR INSTALL LENSES WITHOUT WEARING GLOVES, SKIN OILS MAY DAMAGE LENS OR LIGHT TRANSMISSION;
- CLEAN LENSES WITH MILD SOAP AND WATER AND A SOFT CLOTH;
- DO NOT USE ANY COMMERCIAL CLEANING SOLVENTS ON LENSES.

## Disclaimer

Please note that flow lines and weld lines on the external surfaces of the lenses are acceptable if the optical performance of the lens is within the specifications.

Should you require further information, please contact Khatod for advice. All lens testing must be subject to identical conditions as Khatod test condition. Khatod Optoelectronic, Milan, Italy, manufactures lenses for LEDs. Any other use of the lens shall void our liability and warranty. The lenses are an inert component to be used in the manufacture of various products. Our warranty and liability are limited only to the manufacture of the lens. You may not modify, copy, distribute reproduce, license or alter the lens and related materials of Khatod. Khatod does not warrant against damages or defects arising out of the use or misuse of the products; against defects or damage arising from improper installation, or against defects in the product or in its components. No warranty of any kind, expressed or implied, is made regarding the safety of the products. The entire risk as to the quality or performance of the product is with the buyer. In no event shall Khatod be liable for any direct, indirect, punitive, incidental, special, consequential damages, or any damages whatsoever arising out of or connected with the use or misuse of the product. Khatod shall not have any obligation with respect to the product or any part thereof, whether based on contract, tort, strict liability or otherwise. Buyer assumes all risks and liability from use of the product. The laws of Milan, Italy govern this product warranty and liability and you hereby consent to the exclusive jurisdiction and venue of courts in Milan, Italy in all disputes arising out of or relating to the use of this product. Production, marketing, distribution, sale of these products as well as their possible modifications and variations are only exclusive right of Khatod Optoelectronic. No company can perform any of these actions without written permission released by Khatod Optoelectronic. The information contained in this document is proprietary of Khatod Optoelectronic and may change without notice.

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