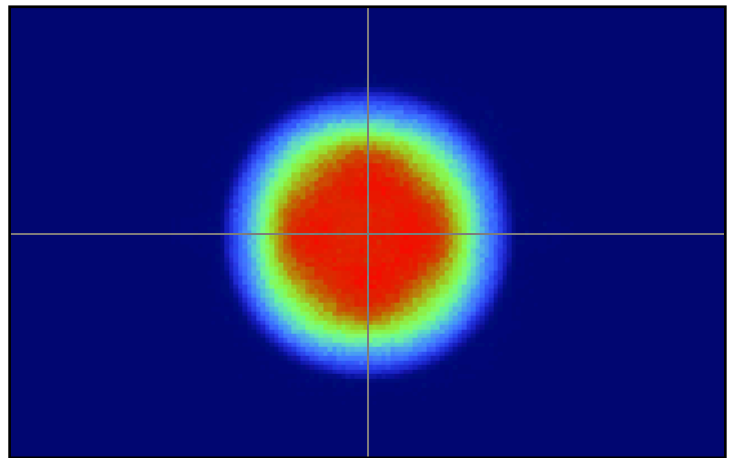
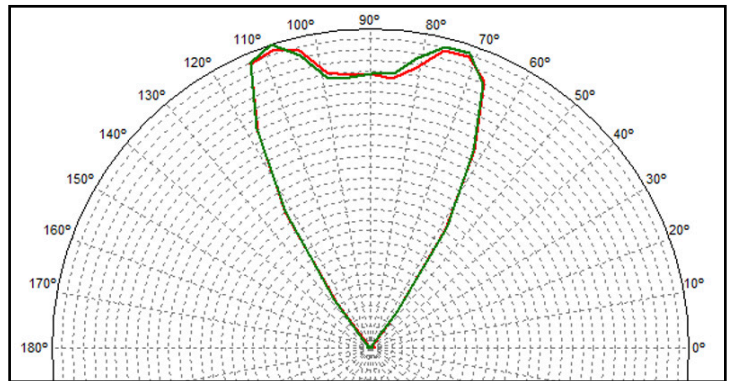


Contents

1	PLAL0111	60° Rotosymmetric	Pag. 2
2	PLAL0122	90° Rotosymmetric	Pag. 3
3	PLAL0133	IESNA Type I	Pag. 4
4	PLAL0144	IESNA Type II	Pag. 5
5	PLAL0155	IESNA Type III	Pag. 6
6	PLAL0166	IESNA Type V	Pag. 7
7	PLAL0177	ME3A	Pag. 8
8	PLAL0188	120° Square	Pag. 9
9	PLAL01xx Series Layout	Optional	Pag. 10
10	Optional		Pag. 10
11	Materials / Use and Maintenance / Disclaimer		Pag. 11

PLAL0111 - 60° FWHM



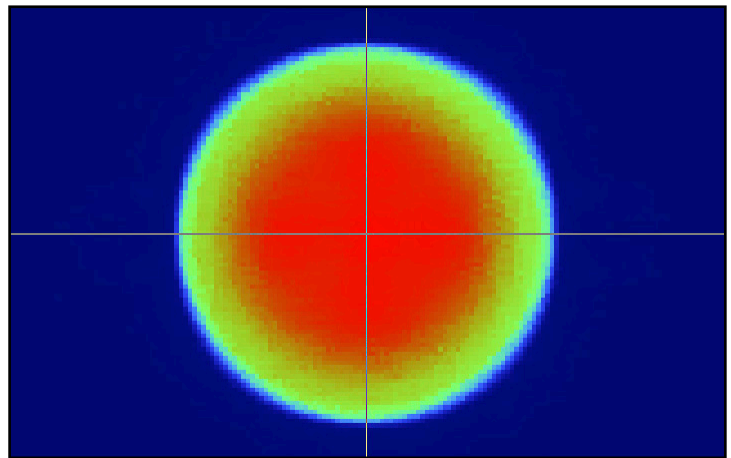
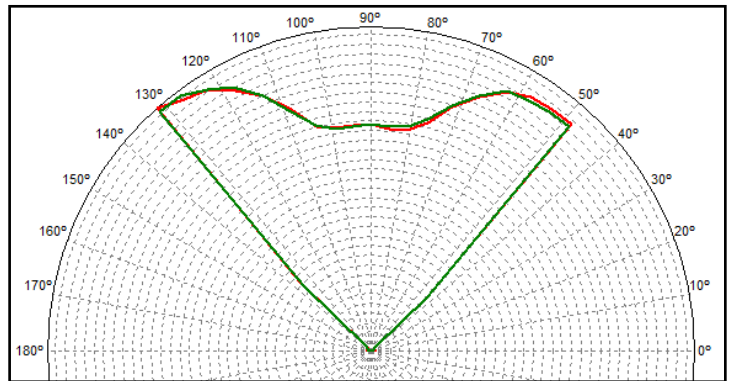
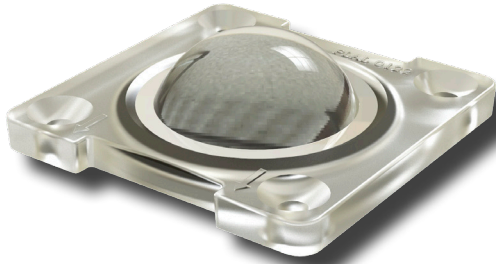
- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 60°
- Full angle at 10% from maximum: ~ 75°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED

Note:

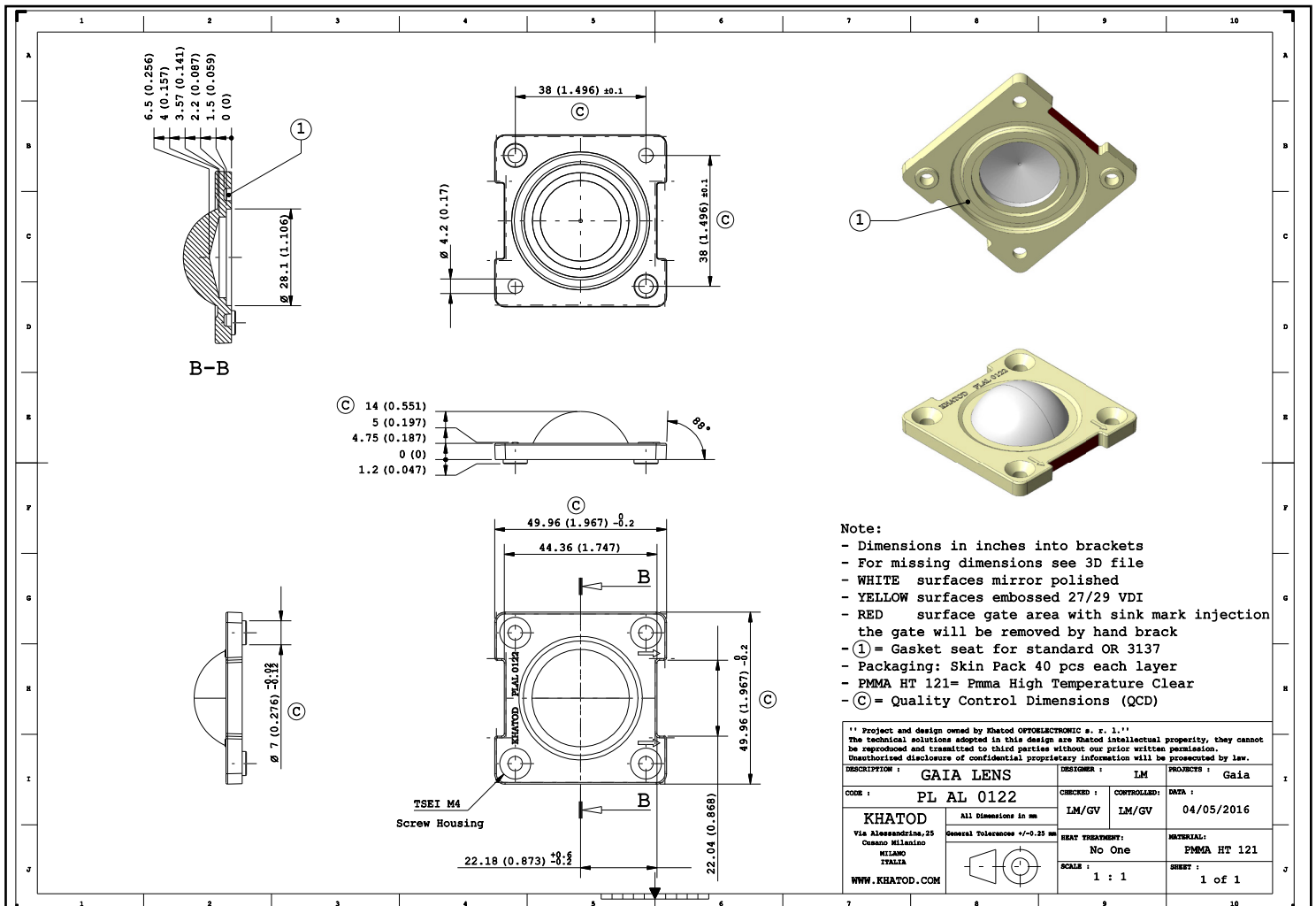
- Dimensions in inches into brackets
- For missing dimensions see 3D file
- WHITE surfaces mirror polished
- YELLOW surfaces embossed 27/29 VDI
- RED surface gate area with sink mark injection the gate will be removed by hand brack
- ① = Gasket seat for standard OR 3137
- Packaging: Skin Pack 40 pcs each layer
- PMMA HT 121= Pmma High Temperature Clear
- © = Quality Control Dimensions (QCD)

<small>** Project and design owned by Khatod OPTOELECTRONIC s. r. l. ** 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.</small>			
DESCRIPTION :	GAIA LENS	DESIGNER :	LM
PROJECT :	Gaia	CONTROLLED :	LM/GV
CODE :	PL AL 0111	CHECKED :	LM/GV
DATE :	04/05/2016	SCALE :	1 : 1
KHATOD <small>Via Alessandro, 25 Cusano Milanino MILANO ITALIA WWW.KHATOD.COM</small>		All Dimensions in mm General Tolerances +/-0.25 mm SEAT TREATMENT: No One MATERIAL: PMMA HT 121 SHEET : 1 of 1	

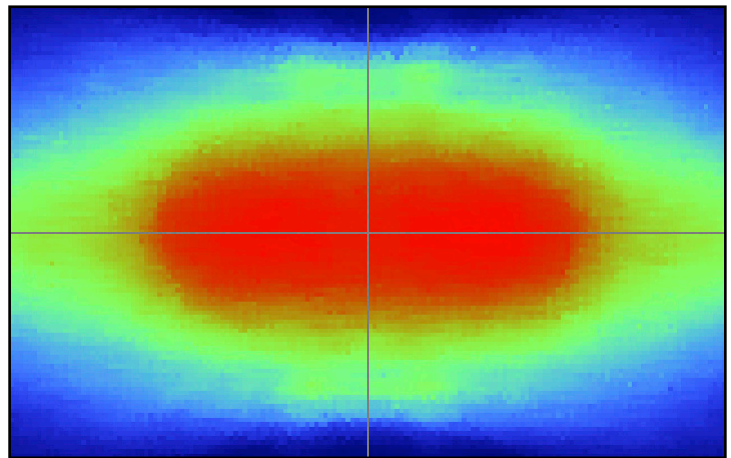
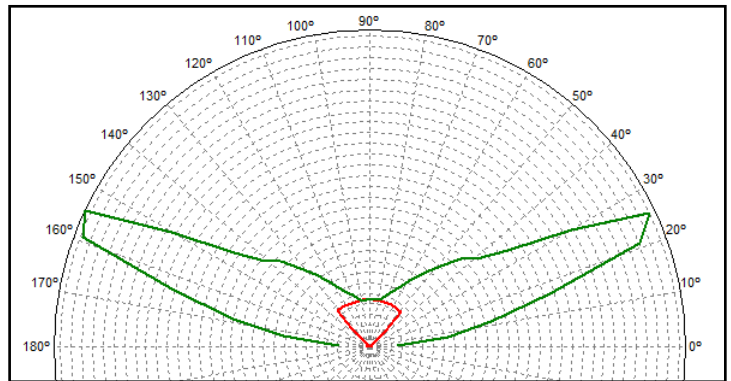
PLAL0122 - 90° FWHM



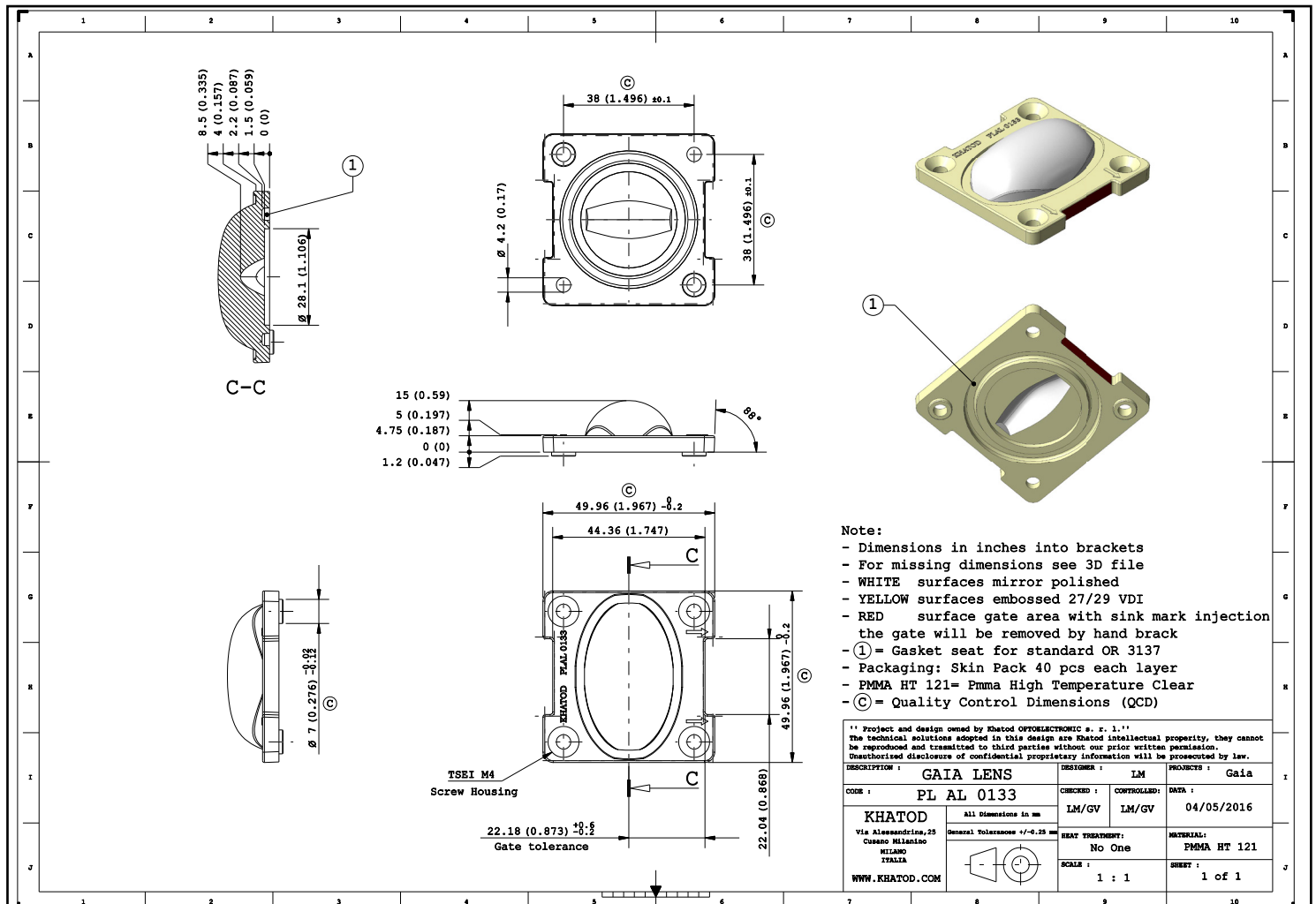
- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 90°
- Full angle at 10% from maximum: ~ 95°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED



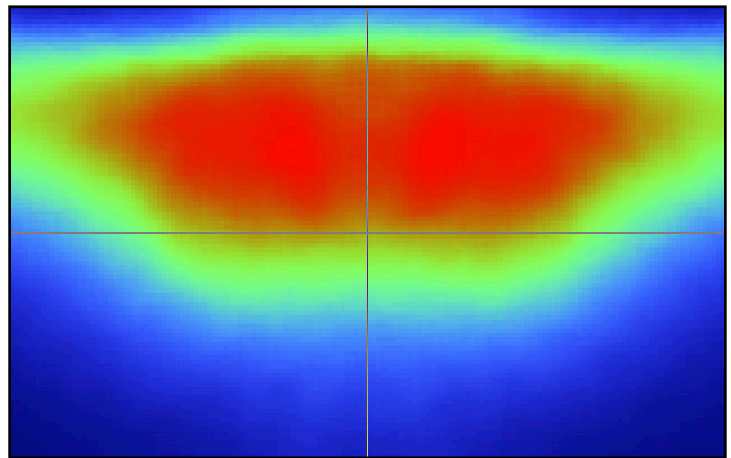
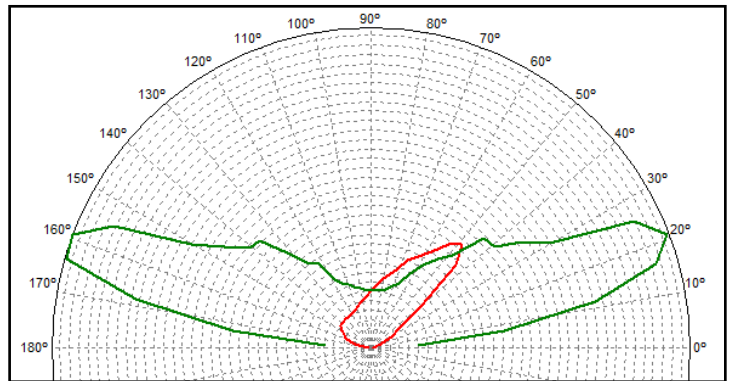
PLAL0133 - IESNA Type I



- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 150°x90°
- Full angle at 10% from maximum: ~ 160°x100°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED



PLAL0144 - IESNA Type II



- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 160°x120°
- Full angle at 10% from maximum: ~ 175°x145°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED

Technical Drawing Details:

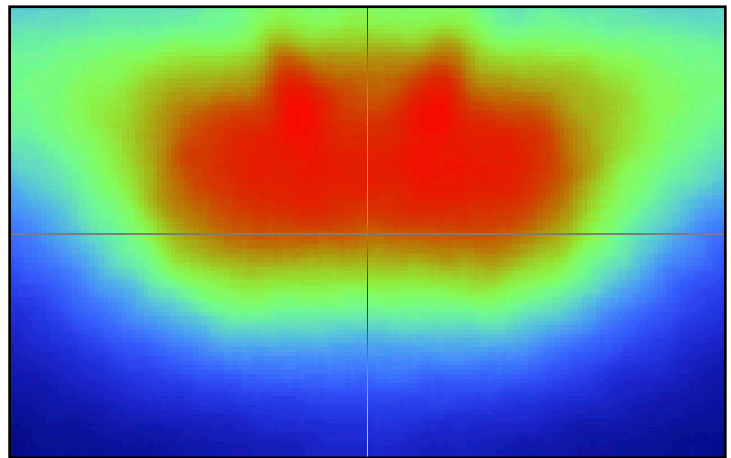
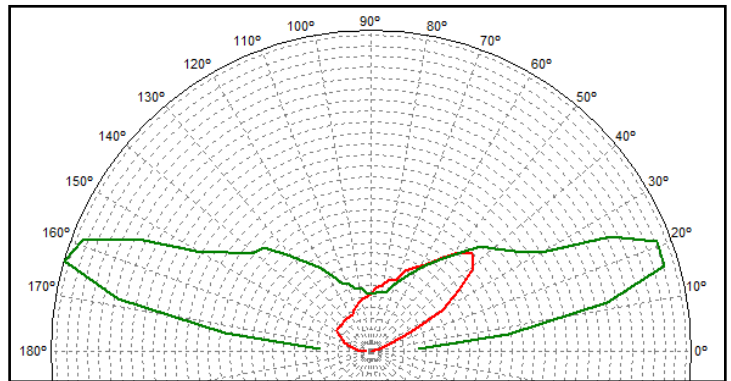
- Section D-D:** Shows the lens profile with dimensions: 9.61 (0.379), 4 (0.157), 2.2 (0.087), 1.5 (0.059), 0 (0).
- Top View:** Shows a square lens with a diameter of 38 (1.496) ±0.1. Mounting holes are spaced 15.26 (0.601) apart.
- Bottom View:** Shows the lens with a diameter of 49.96 (1.967) ±0.2. Mounting holes are spaced 44.36 (1.747) apart.
- Side View:** Shows the lens thickness with dimensions: 5 (0.197), 4.75 (0.187), 0 (0), 1.2 (0.047).
- Other Dimensions:** 38 (1.496) ±0.1, 49.96 (1.967) ±0.2, 44.36 (1.747), 22.18 (0.873) ±0.2, 22.04 (0.868), 7 (0.276) ±0.12.
- Material:** TSEI M4 Screw Housing.
- Gate Tolerance:** 22.18 (0.873) ±0.2.

Note:

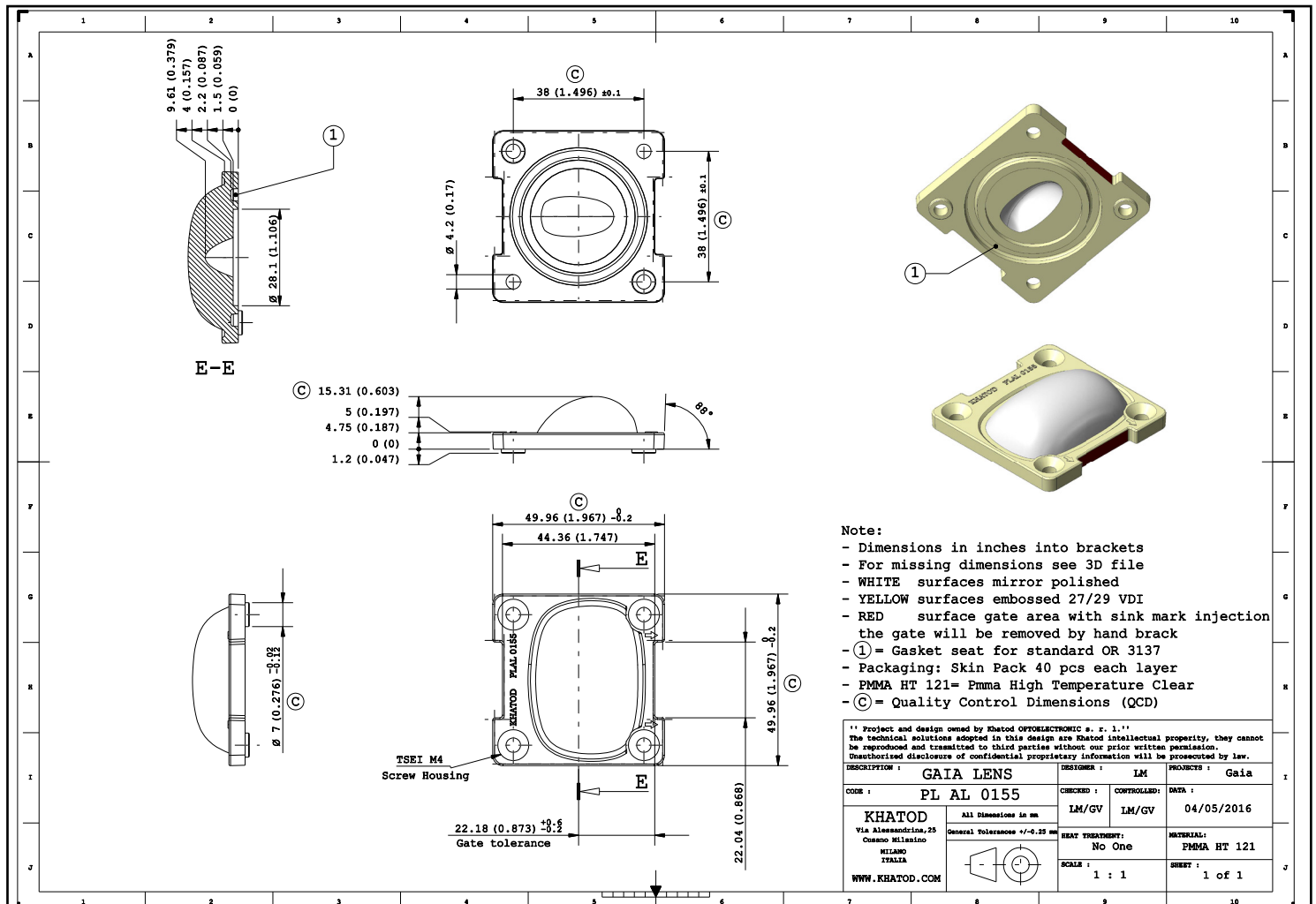
- Dimensions in inches into brackets
- For missing dimensions see 3D file
- WHITE surfaces mirror polished
- YELLOW surfaces embossed 27/29 VDI
- RED surface gate area with sink mark injection the gate will be removed by hand brack
- 1 = Gasket seat for standard OR 3137
- Packaging: Skin Pack 40 pcs each layer
- PMMA HT 121= Pmma High Temperature Clear
- C = Quality Control Dimensions (QCD)

** Project and design owned by Khatod OPTOELECTRONIC s. r. l. **			
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 :	GAIA LENS	DESIGNER :	LM
PROJECT :	Gaia	DATE :	04/05/2016
COD. :	PL AL 0144	CHECKED :	LM/GV
Khatod		CONTROLLED :	LM/GV
Via Alessandro, 25		HEAT TREATMENT :	No One
Cusano Milanino		SCALE :	1 : 1
Milano		MATERIAL :	PMMA HT 121
ITALIA		SHEET :	1 of 1
WWW.KHATOD.COM			

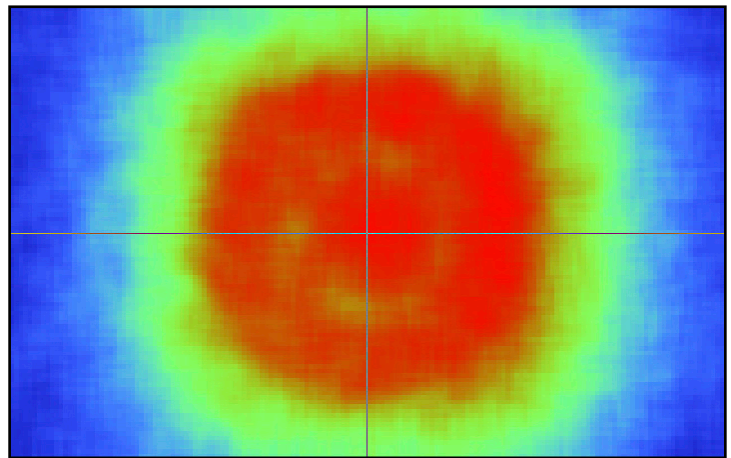
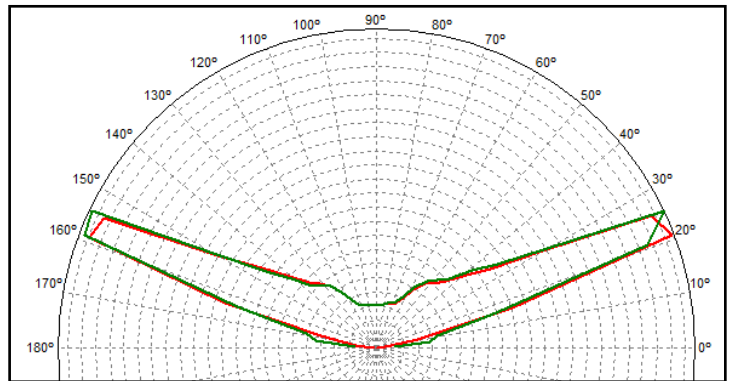
PLAL0155 - IESNA Type III



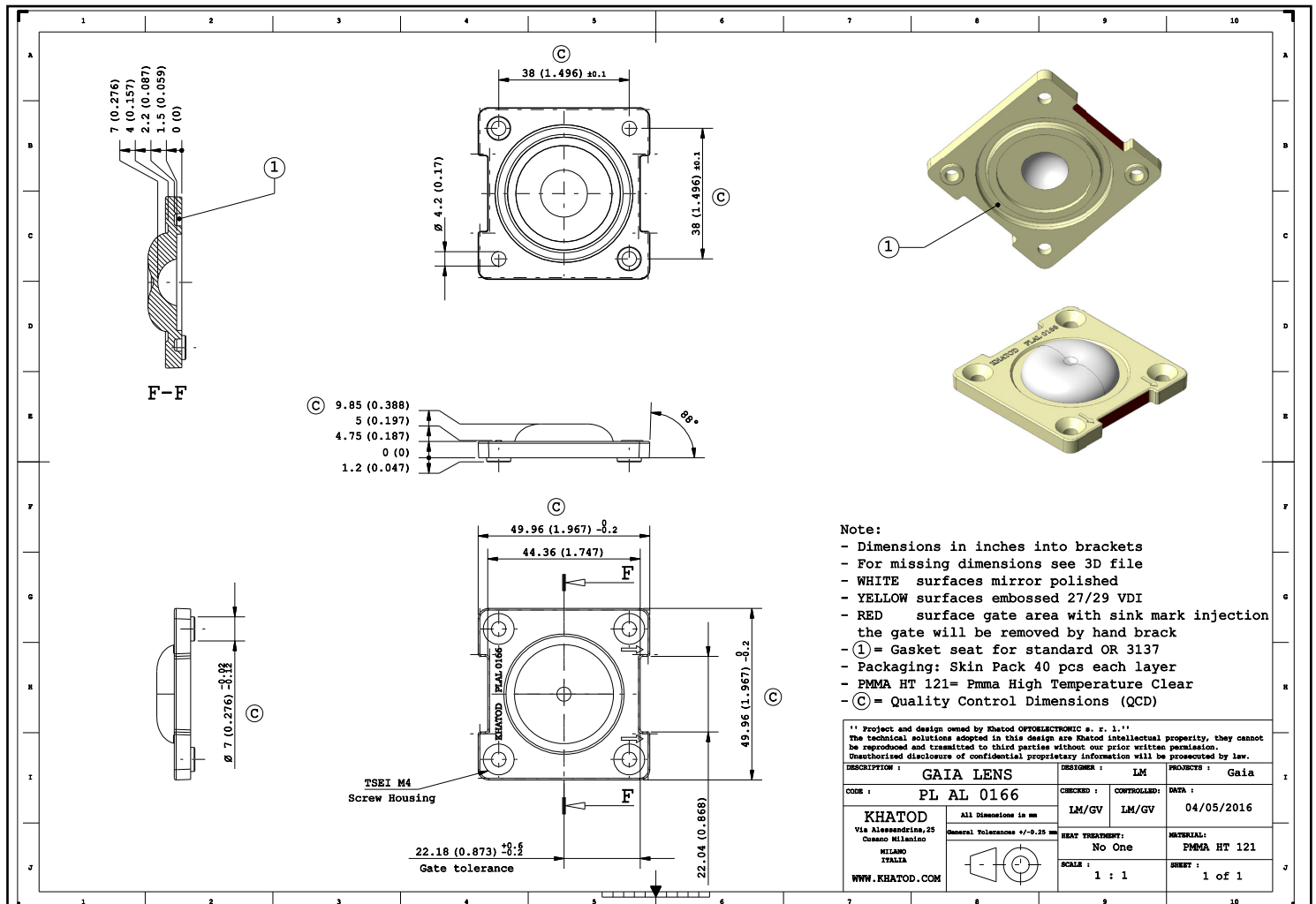
- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 160°x130°
- Full angle at 10% from maximum: ~ 175°x155°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED



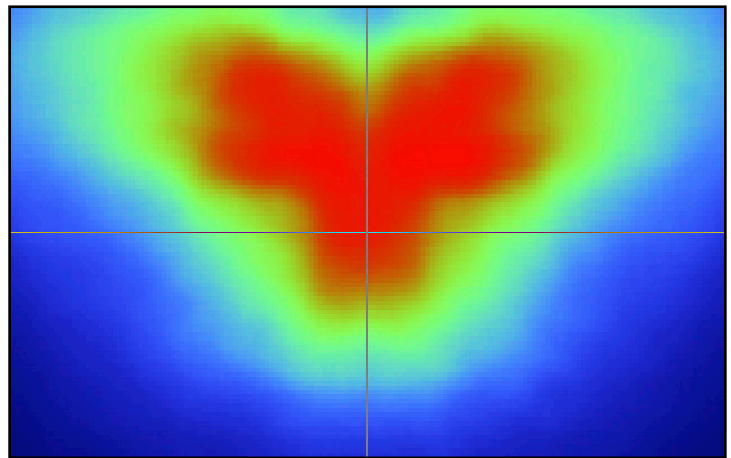
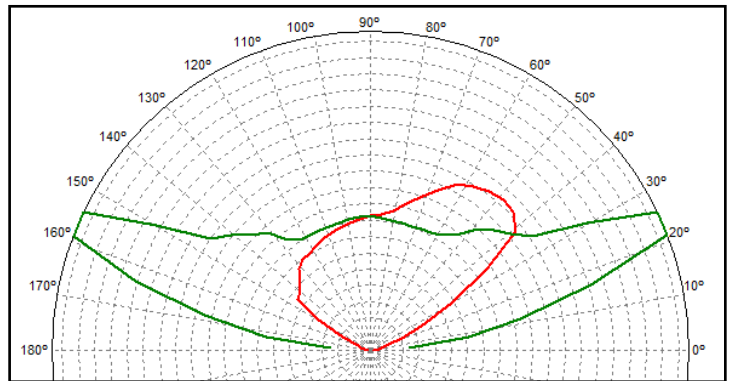
PLAL0166 - IESNA Type V



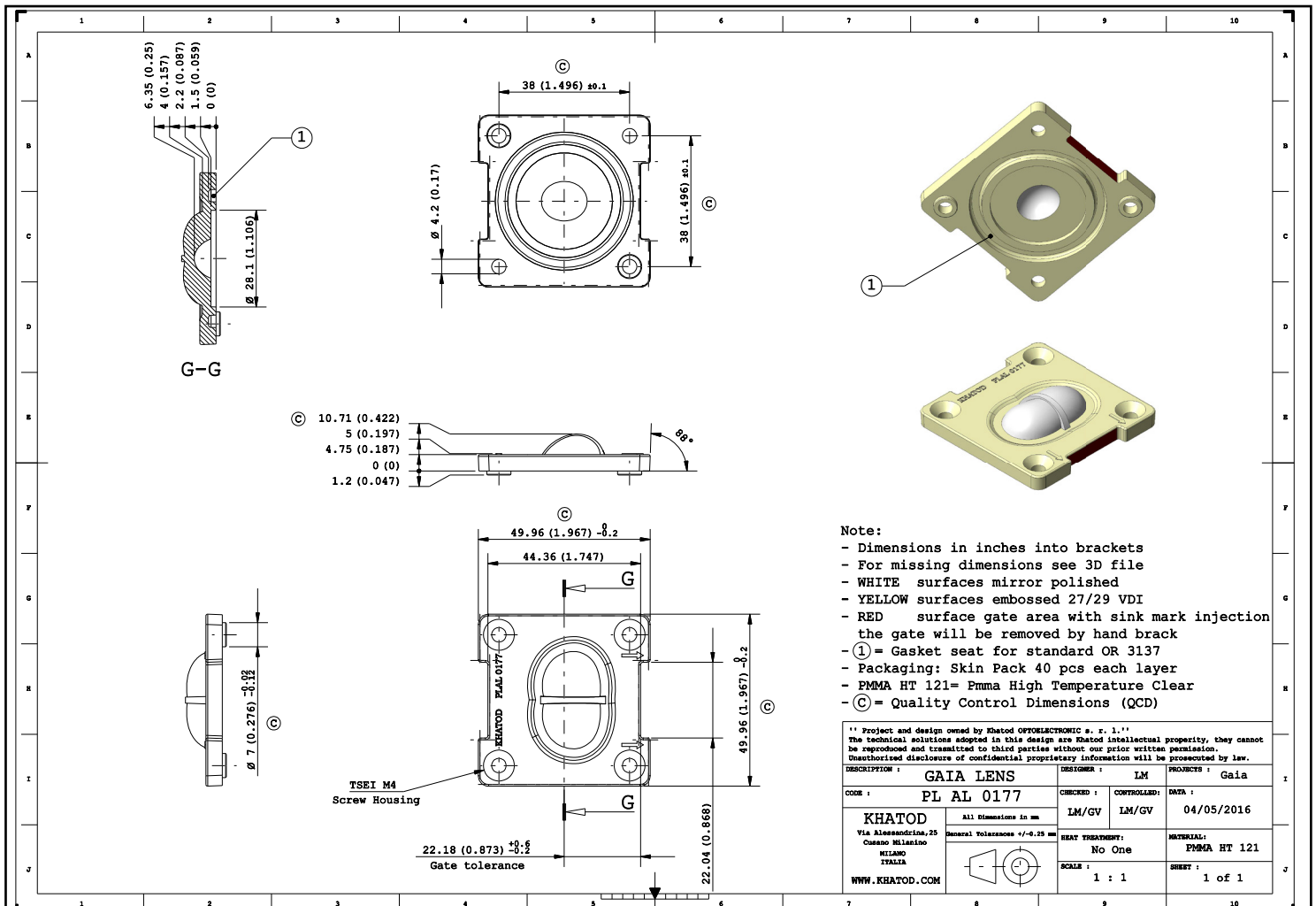
- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 145°
- Full angle at 10% from maximum: ~ 155°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED



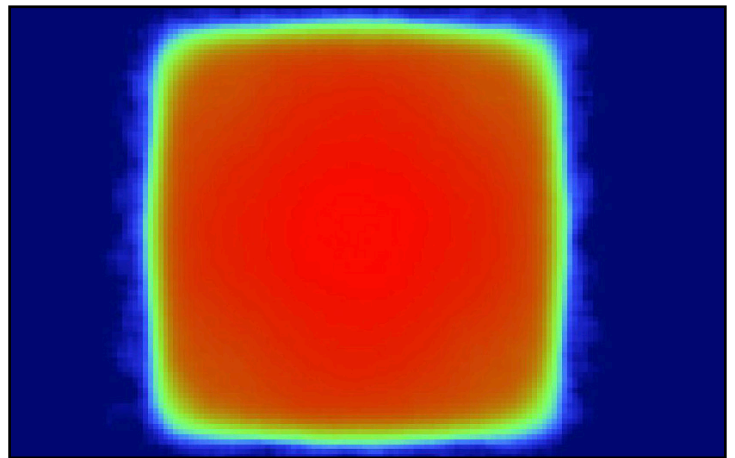
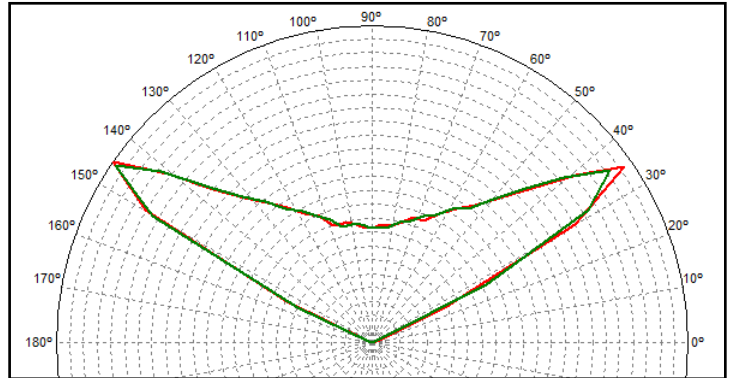
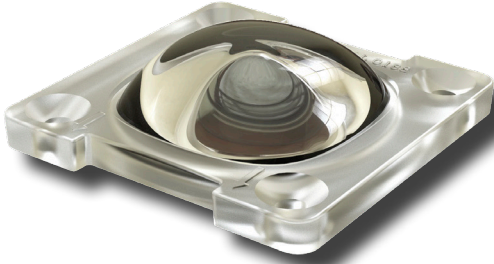
PLAL0177 - ME3A



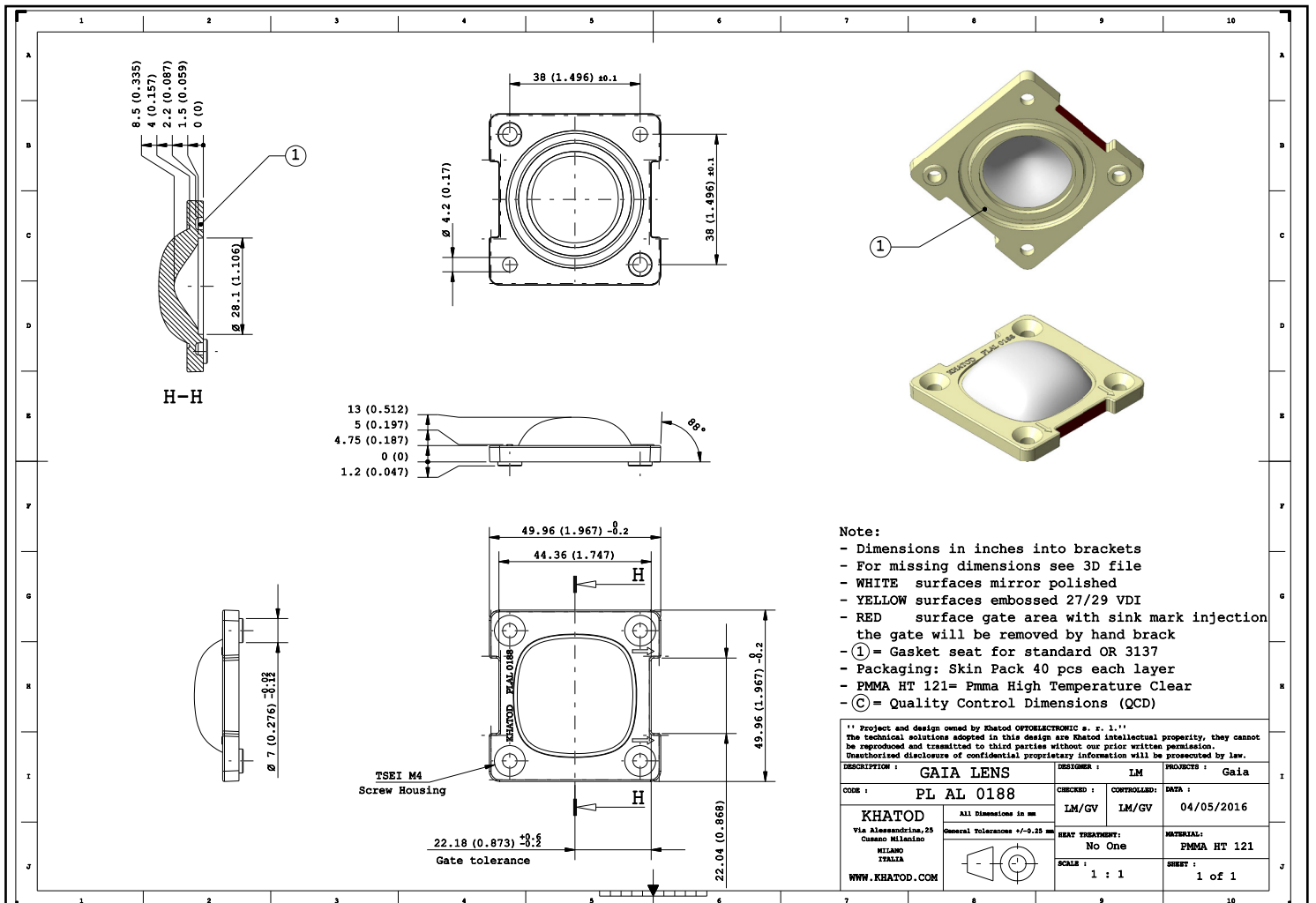
- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 155°x120°
- Full angle at 10% from maximum: ~ 165°x140°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED



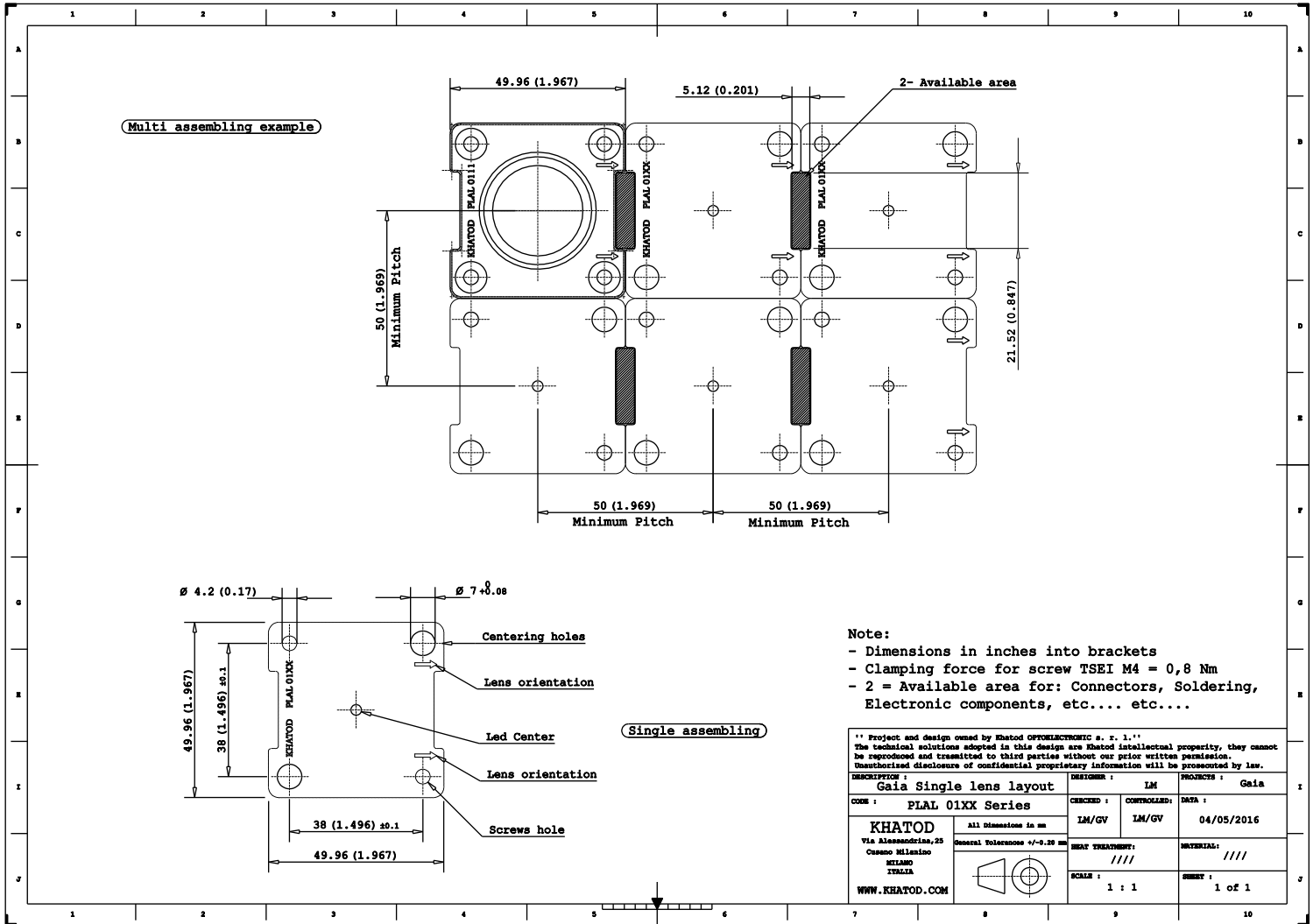
PLAL0188 - 120° Square



- Material = **PMMA HT** - (UHT On Request)
- Full angle at 50% from maximum: ~ 120°
- Full angle at 10% from maximum: ~ 130°
- The light spots here represented refer to tests carried out with Multichip LEDs with 6.8mm dome, ~1040lm@LED



PLAL01xx - Series Layout



Optional

- UHT* : Ultra High-Temperature (*For more information, see on page 11) - Eg PLAL01xxUHT
- Other Optionals or Beams: On Request.
- Gasket: Standard OR 3137

Materials

Material	Top	Tstg
PMMA - HT (Hight Temperature)	-30°...105°C	-30°...105°C
PMMI - UHT (Ultra High Temperature)*	-30°...145°C	-30°...145°C

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 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.

REPRODUCTION PROHIBITED.