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CODE NUMBER: 110000000031

SUBJECT: Secondary Optics for Power LEDs - PL600A40
Lens Coupling - Output Luminous Intensity Measurement

- **Typ. Illuminance@1m ~ 1236 lux***
- High lighting efficiency
- Excellent luminous flux
- No vibration problems
- NJC Technology
- Superior optical engineering for a perfect uniform light distribution
- Innovative design
- Easy fixing system to the PCB
- Complying with UL94 Specifications



Typical Application are:

- Wall Washing
- Architectural lighting
- Lamps
- Most applications where a compact light source is required
- Any application requiring placement of LEDs in narrow or recessed spaces, as well as in diverse LED configurations

Khatod Optics are a basic element to make your optical design real.

The right optical solution is fundamental for type and number of LEDs used in your design.

Advanced research, scientific rigour, great attention to the continuous evolution in LED Technology, have led Khatod to develop optical solutions performing an excellent, homogeneous luminous flux, and a high lighting efficiency.

The product we are proposing, is the result of Khatod's superior engineering. It helps in reducing the costs while meeting the most demanding lighting specifications and applications.

Contents:

Technical Data	- Page 1
Polar Intensity Plot	- Page 2
Luminous Intensity Graphics	- Page 3
Technical Drawing	- Page 4
Photographic reproduction of the Spot	- Page 5
Luminous Distribution Intensity Data	- Annex A
General Lens Features	- Annex B
General Notes	- Annex B

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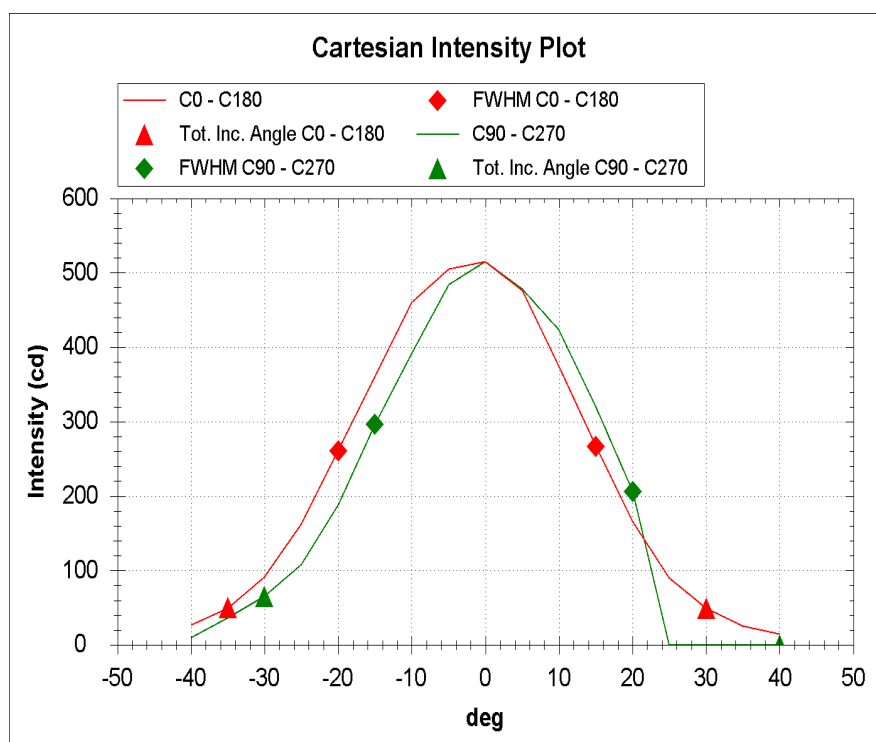
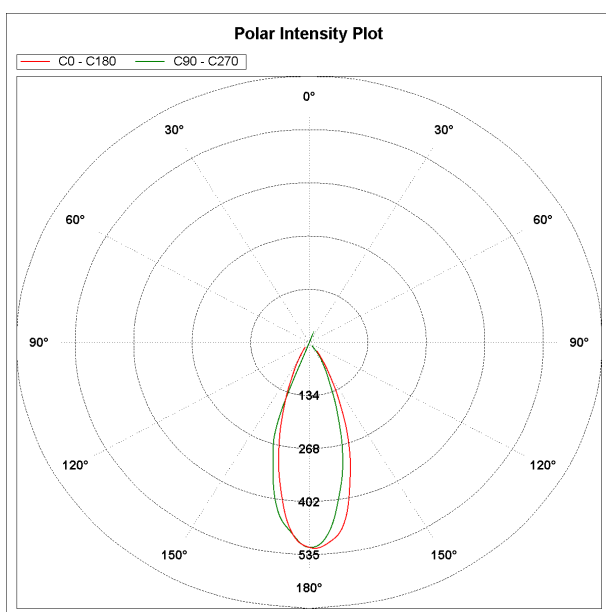
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Goniophotometer Type	KLX12M	Operator	SIMONE BASSI
Power Supply Type	ISO TECH ISP3303	Date	07/02/2011
LED Driver Type	////		

Lamp Model	////	Nominal Flux (lm)	130	Angle FWHM C Plane	35
Lens Model	PL600A40	Total Flux (lm)	390	Angle FWHM γ Plane	35
LED Model	REBEL ES	Imax (cd)	515		
N. LED	3	Max Ill. @ Meas. Dist. (lux)	20.5	Total Incl. Angle C Plane	65
Rated Voltage (V)	8.9	Measurement Distance (m)	5	Total Incl. Angle γ Plane	70
LED Drive Current (mA)	350	Room Temperature (°C)	25		

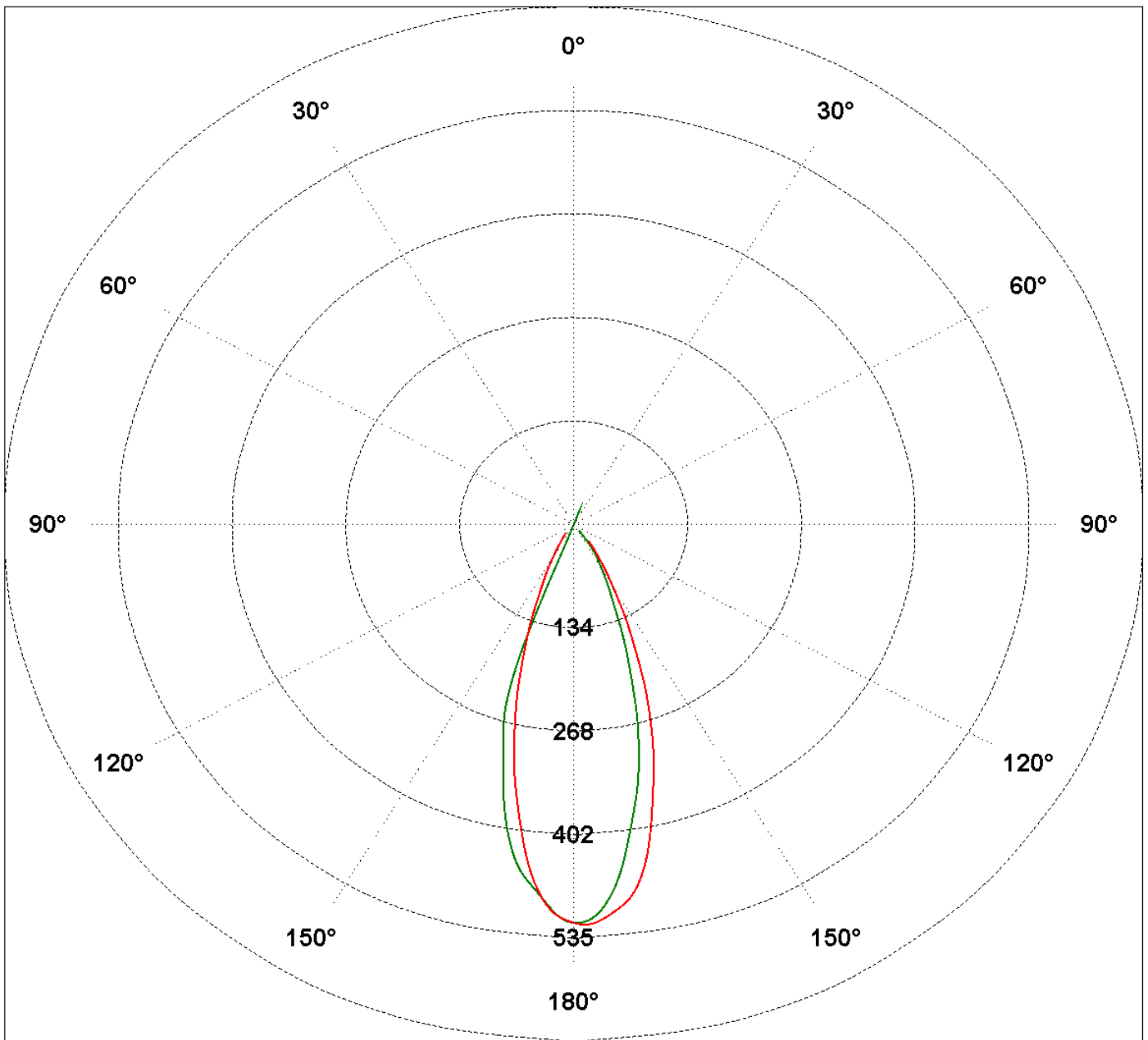
Notes:

General Optical Measurement Tolerance: +/-10%



Polar Intensity Plot

— C0 - C180 — C90 - C270



CODE NUMBER: 110000000031

Figure C0-C180

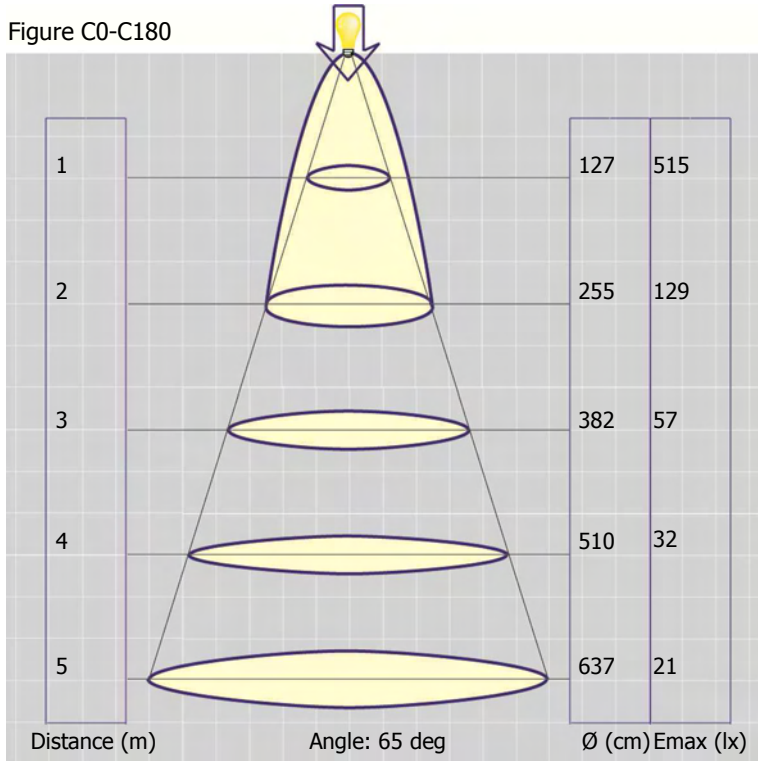
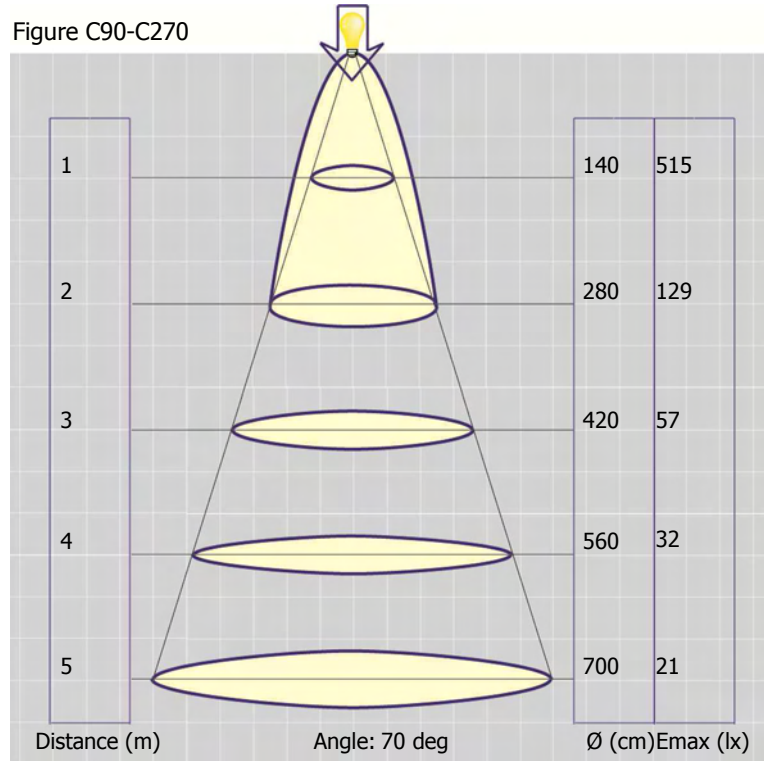
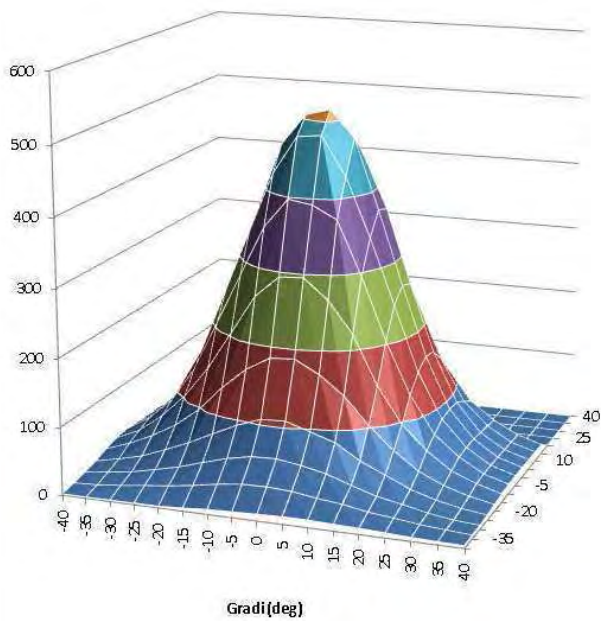


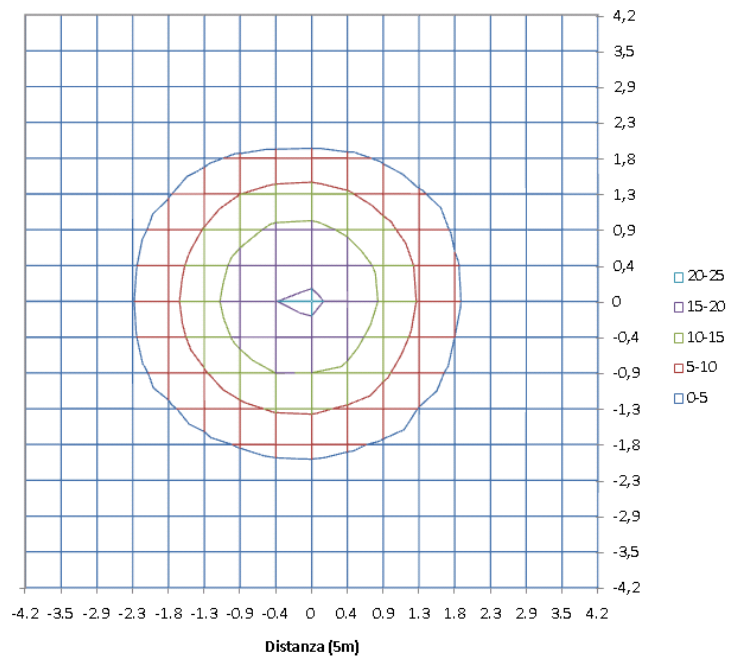
Figure C90-C270



Isocandela Diagram

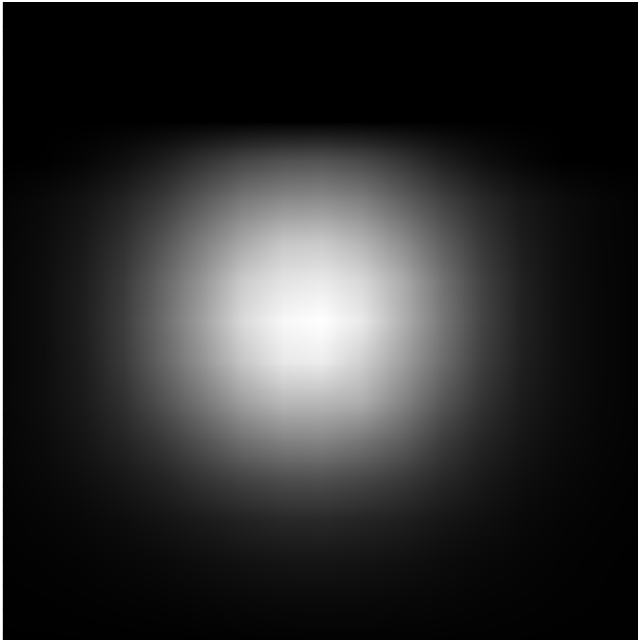


Isolux Diagram

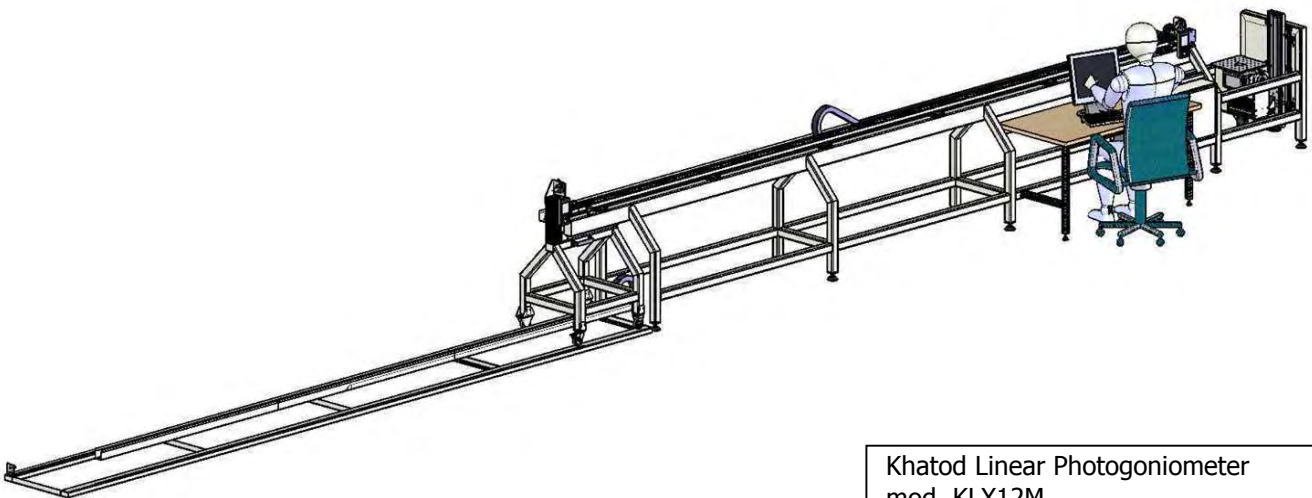
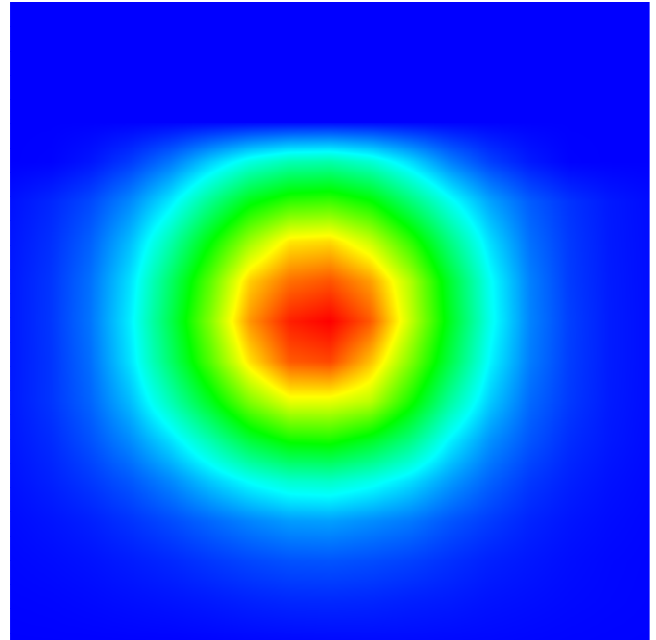


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Gray Scale Illuminance @ 5m Distance



False Colours Illuminance @ 5m Distance



Khatod Linear Photogoniometer
mod. KLX12M

Luminous Distribution Intensity Data

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C (deg) γ (deg)	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°	180°	190°
0°	515	515	515	515	515	515	515	515	515	515	515	515	515	515	515	515	515	515	515	515
5°	476	471	468	466	465	465	467	469	473	479	478	478	479	481	485	489	494	499	505	501
10°	375	376	381	389	387	390	398	402	410	423	424	428	434	432	435	445	448	453	460	449
15°	267	269	279	281	287	291	295	307	310	320	323	334	340	349	352	352	357	355	360	352
20°	165	169	176	184	185	188	188	192	197	206	211	221	238	247	252	257	257	258	261	257
25°	89.8	94.2	102	108	105	89.8	75.4	46	14.2	0	15.4	56.3	106	141	153	162	165	163	163	164
30°	48.8	50	57.4	63.2	37.9	20.7	0	0	0	0	0	0	0	37.4	71.2	94	97.1	94.1	91	92.5
35°	25.3	26.9	32.5	21.5	6.59	0	0	0	0	0	0	0	0	0	18.2	38.4	54	51.9	49.5	52.3
40°	14.3	15.1	18.4	0.14	0	0	0	0	0	0	0	0	0	0	0	3.63	29.5	28.3	26.8	29.8
45°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.26	0	0	0	0
50°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90°	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

200°	210°	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°
515	515	515	515	515	515	515	515	515	515	515	515	515	515	515	515
497	494	491	488	486	485	484	484	475	467	461	458	457	458	462	468
442	439	429	422	420	406	397	392	388	388	388	376	368	365	364	367
350	341	337	330	317	312	299	296	285	285	280	278	271	263	264	262
252	246	233	224	217	203	193	188	181	181	184	176	169	170	165	162
164	158	146	137	128	119	113	108	104	107	107	103	99.3	98.4	95.4	91.4
99.1	96	86.3	78	70.8	69.2	67.3	65	62.8	63.2	58.4	59.5	57.8	57.5	55.6	50.9
58.9	57.5	50.8	44.2	39.5	38.7	37.7	36.5	36	35.9	33.4	33.7	32.4	31.7	31.6	27.5
34.8	34.4	27.7	24.2	20.6	15.5	11.2	9.75	13.6	17.9	19.5	19.6	17.8	17.8	17.8	15.4
0	19.5	16	12.9	5.59	0	0	0	0	0	9.93	11.9	9.91	9.76	0	0
0	0	9.03	4.51	0	0	0	0	0	0	0	6.61	6.43	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lens characteristics

Parameter	Symbol	Rating	Unit
Lens Material	PMMA Optics	--	--
Holder Material	--	--	--
Operating Temperature	Topr	-30 to +80	°C
Storage Temperature	Tstg	-30 to +80	°C

Notes:

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 specification described in the section "OPTICAL CHARACTERISTICS"

- Should you require further information, please contact Khatod for advice.
- All lens testing must be subject to identical conditions as Khatod test condition.
- Published by Khatod optoelectronic srl - All the data contained in this document are the property of Khatod optoelectronic srl and may change without notice.

KHATOD LENS 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

Khatod SRL, 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 SRL. Khatod SRL 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 SRL 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 SRL 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.

