



**HERCULUX** Chengdu HercuLux Photoelectric  
**恒坤光电** Technology Co.,Ltd  
**Product Approval**

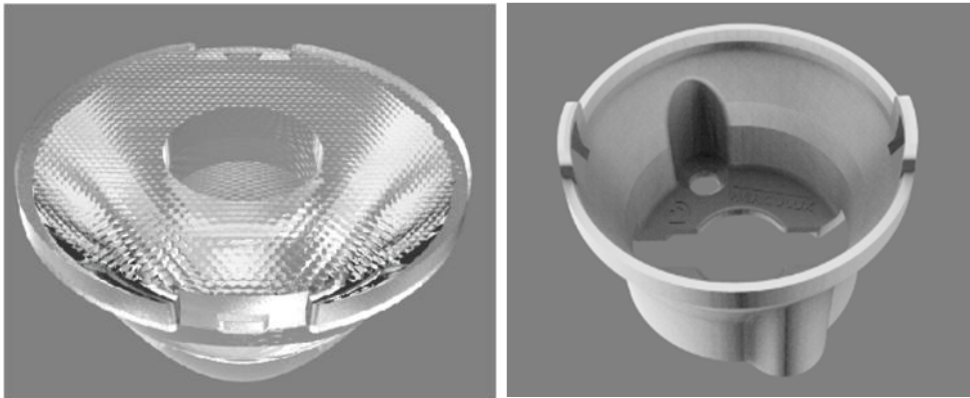
Approval number :

Customer :

Manufacturer : Chengdu HercuLux Photoelectric Technology Co.,Ltd

PN	Code	Product
HK-30@15-15-D4-01-1g-1	1. 01. 91816	HK 30@15-15° lens
HK-30@15-24-D6-01-1g-1	1. 01. 91817	HK 30@15-24° lens
HK-30@15-36-D6-01-1g-1	1. 01. 91818	HK 30@15-36° lens
HK-30@15-50-D6-01-1g-1	1. 01. 91979	HK 30@15-50° lens

Synthetic information: 1.07.81418\_HK-166@03-0223-S



Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified <input type="checkbox"/>		DATE	
Project manager		DATE		Unqualified <input type="checkbox"/>		DATE	
Audit		DATE		Audit		DATE	
Approved		DATE		Approved		DATE	
Stamp		DATE		Stamp		DATE	

( Confirmation of acceptance by both parties must be signed and sealed )

Factory: Chengdu Shuangliu District, Iot industrial park 2 road HercuLux Photoelectric Park

Phone : 028-85887727 ( 801 ) 028-85887990 ( 801 )

Fax : 028-85887730

<http://www.herculux.cn/>

Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building,

TEL: 0755-2937 1541

FAX: 0755-2907 5140

\*Approval In duplicate , for both supplier and customer.



**HERCULUX**  
恒坤光电

# Product Approval

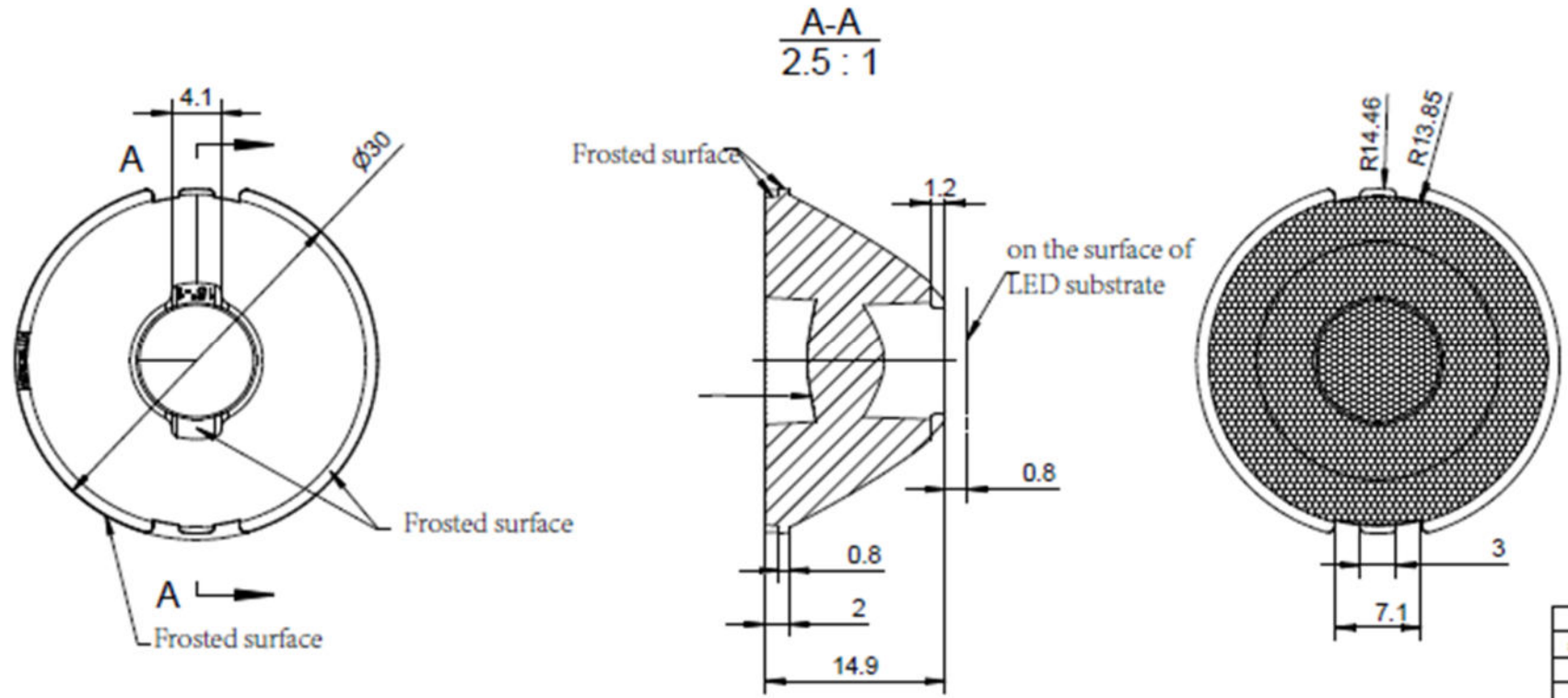
TEL: 0755-2937 1541

FAX: 0755-2907 5140

<http://www.herculux.cn/>

Date updated: 2020/12/22

Product Picture:	
PN:	HK-30@15-15-D4-01-1g-1
Size(L*W*H/Φ*H):	Φ:30mm; H:14.9mm
Material:	PC
Efficiency:	\
Temperature(Topr):	-40°C to +120°C
FWHM:	15°、24°、36°、50°
Matched LES:	15°-LED D4 24°、36°、50°LED D6

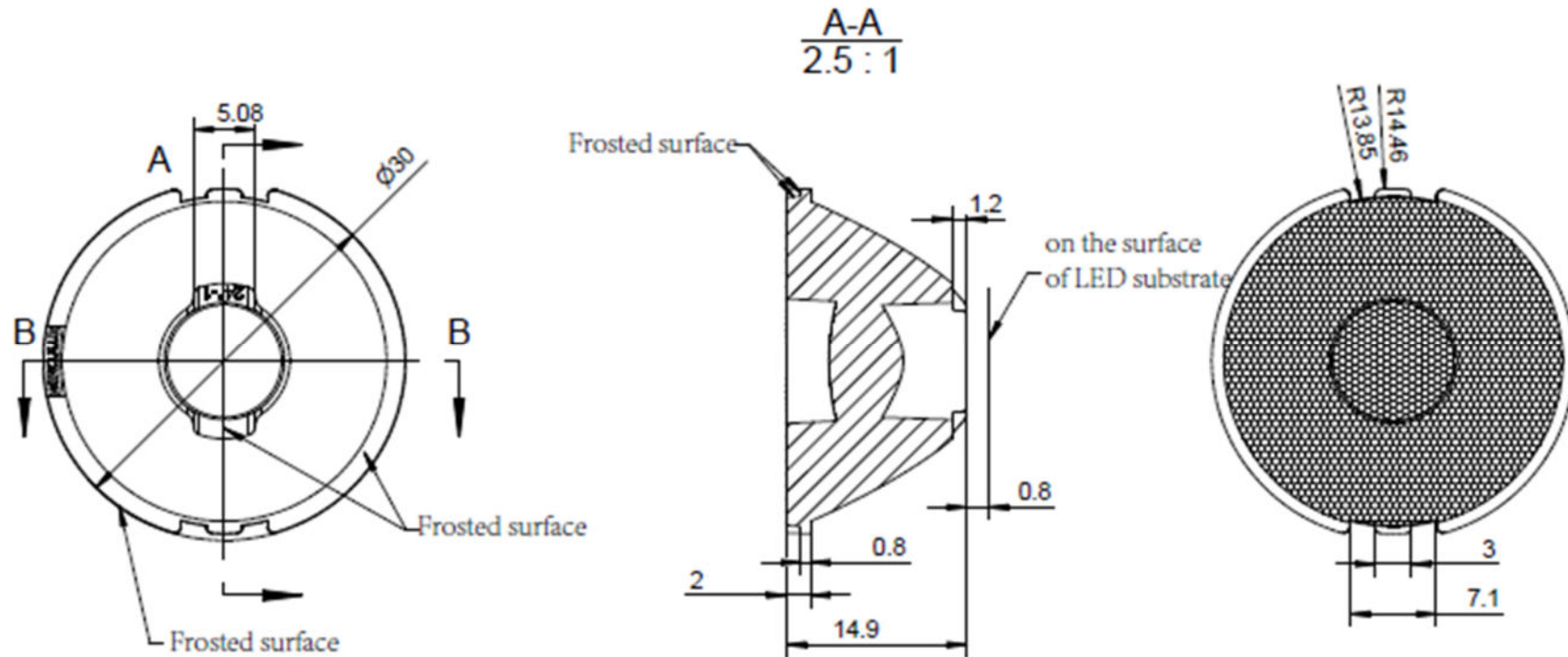


**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.

Optical design			HK 30@15-15°lens		HK-30@15-15-D4-01-1g-1		
structure design			HK 30@15-15°lens		1.01.91816		
Review					number of drawing	qty	weight
Validation			Material:	PC	CDHK		

MT5 Tolerance table (mm)	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450	
	olerance valu	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0	

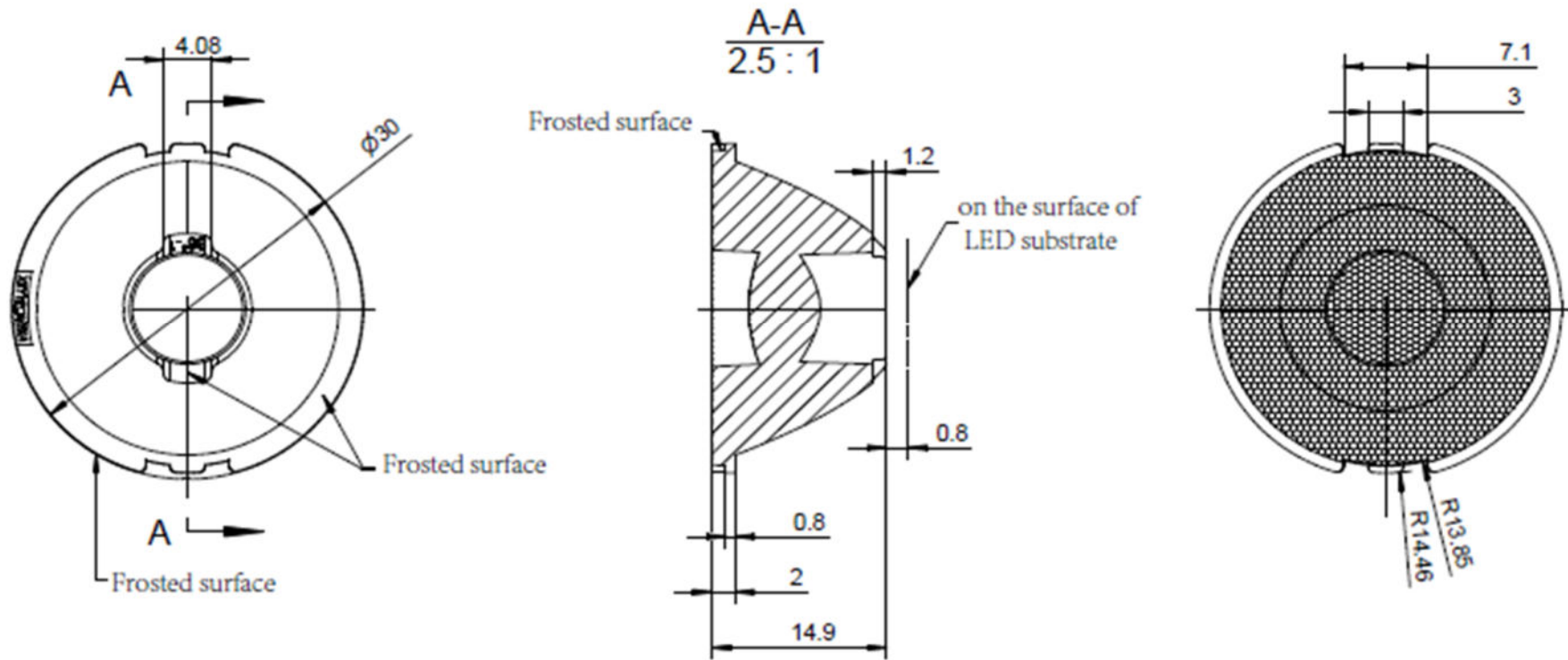


**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.

Optical design			HK 30@15-24@lens		HK-30@15-24-D6-01-1g-1		
Structure design			HK 30@15-24@lens		1.01.91817		
Review					Number of drawing	qty	weight
Validation			Material:	PC	CDHK		

MT5 Tolerance table (mm)	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450	
	olerance valu	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0	

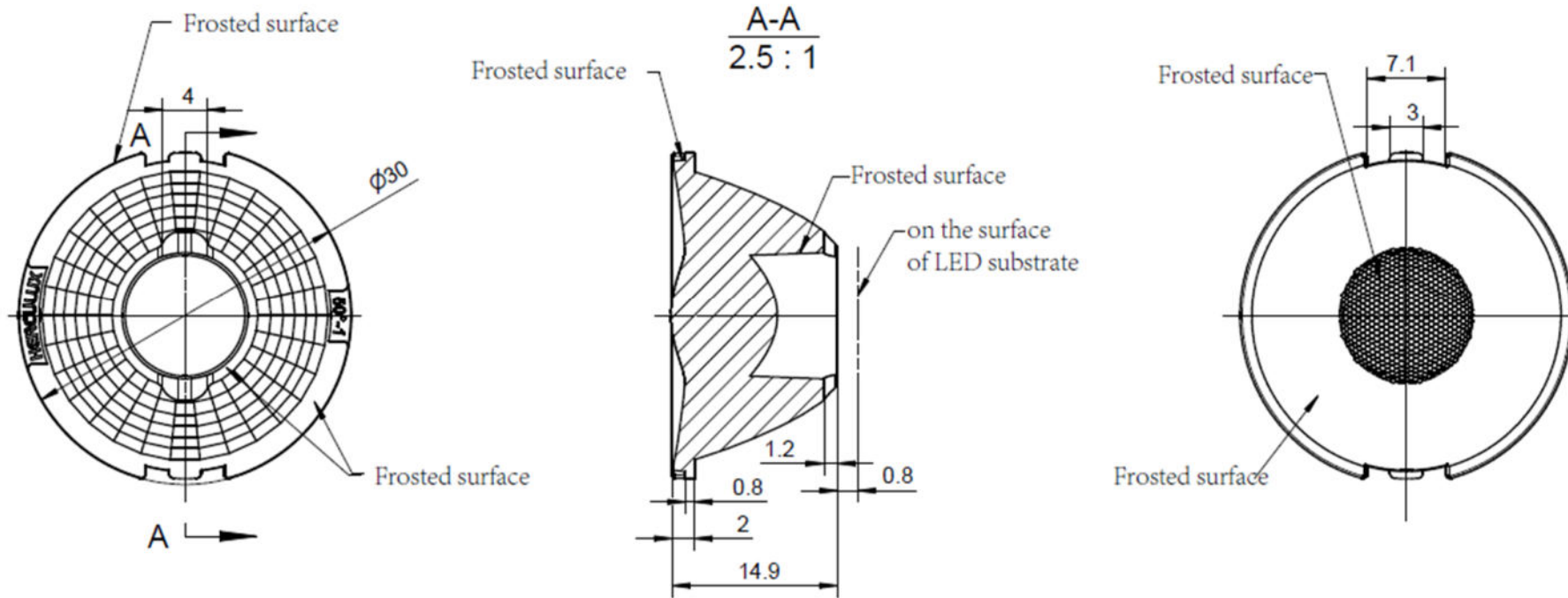


**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.

Optical design			HK 30@15-36°lens		HK-30@15-36-D6-01-1g-1		
Structure design			HK 30@15-36°lens		1.01.91818		
Review					Number of drawing	qty	weight
Validation			Material:	PC	CDHK		

MT5 Tolerance table (mm)	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450	
	olerance valu	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0	

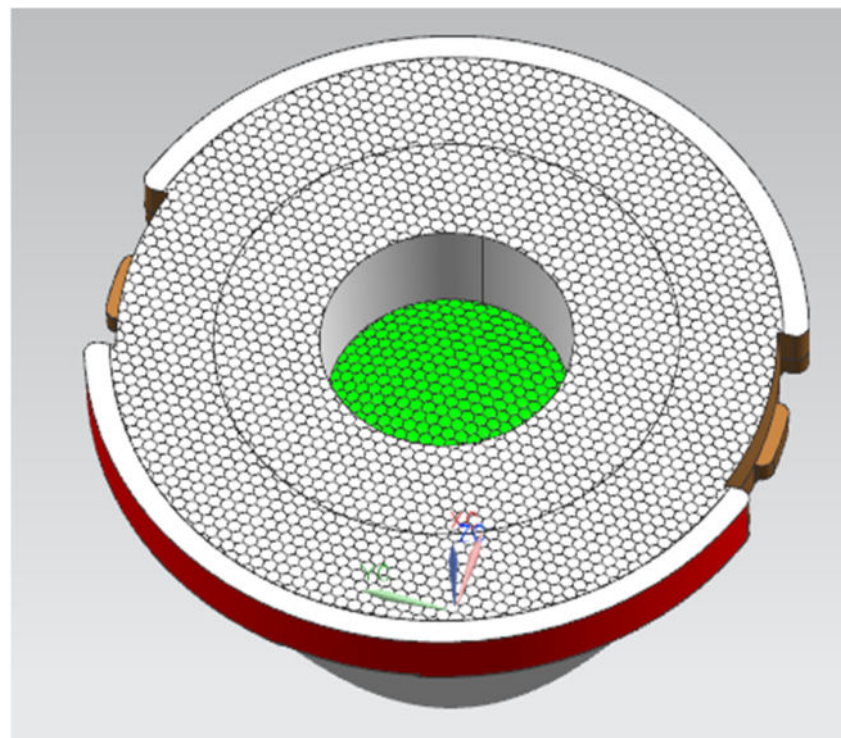
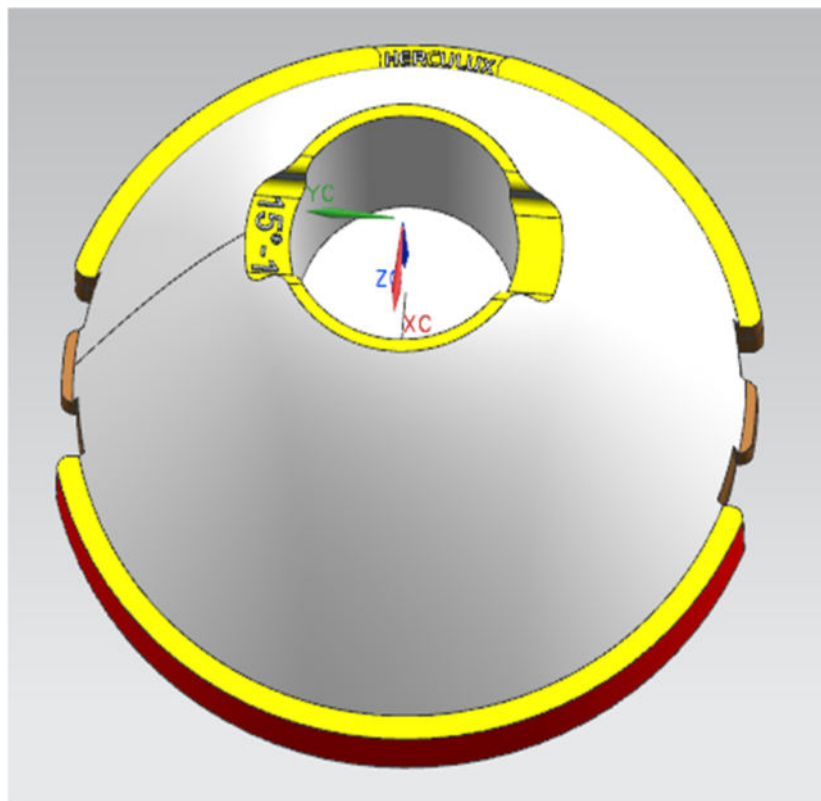


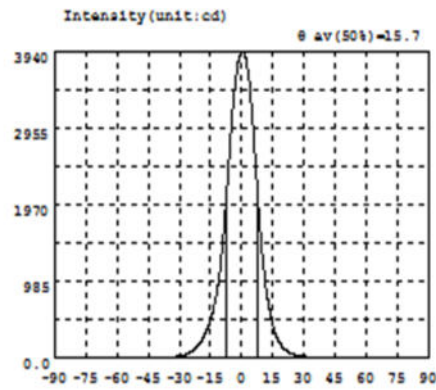
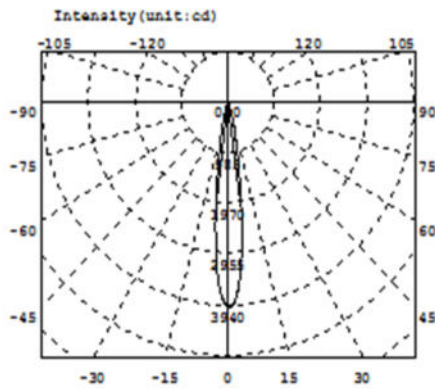
**Technical remark:**

1. The 3D map is not indicated for rounded corners and draft angle.
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
3. The surface has no flash, shrinkage, bubbles and other defects.

Optical design			HK 30@15-50°lens		HK-30@15-50-D6-01-1g-1		
Structure design			HK 30@15-50°lens		1.01.91979		
Review					Number of drawing	qty	weight
Validation			Material:	#N/A	CDHK		

MT5 Tolerance table (mm)	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450
		olerance value	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2





Intensity data: (deg , cd) CO-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.3057	-58.5	3.577	-27.0	51.38	4.5	3292	36.0	14.54	67.5	1.447
-88.5	0.2931	-57.0	4.231	-25.5	68.47	6.0	2744	37.5	12.95	69.0	1.294
-87.0	0.3055	-55.5	4.920	-24.0	92.26	7.5	2157	39.0	11.64	70.5	1.189
-85.5	0.3312	-54.0	5.593	-22.5	124.9	9.0	1617	40.5	10.49	72.0	1.085
-84.0	0.3698	-52.5	6.265	-21.0	168.0	10.5	1172	42.0	9.623	73.5	0.9542
-82.5	0.4209	-51.0	6.824	-19.5	220.4	12.0	838.5	43.5	8.823	75.0	0.8623
-81.0	0.4476	-49.5	7.409	-18.0	288.8	13.5	593.9	45.0	8.125	76.5	0.7685
-79.5	0.5243	-48.0	7.935	-16.5	380.5	15.0	420.4	46.5	7.487	78.0	0.7047
-78.0	0.5875	-46.5	8.456	-15.0	497.4	16.5	289.8	48.0	6.852	79.5	0.6752
-76.5	0.6888	-45.0	8.944	-13.5	648.0	18.0	209.2	49.5	6.321	81.0	0.6260
-75.0	0.7672	-43.5	9.509	-12.0	847.8	19.5	151.9	51.0	5.819	82.5	0.6097
-73.5	0.8811	-42.0	10.15	-10.5	1131	21.0	111.8	52.5	5.346	84.0	0.5860
-72.0	0.9959	-40.5	10.98	-9.0	1531	22.5	83.09	54.0	4.839	85.5	0.5620
-70.5	1.113	-39.0	12.10	-7.5	2041	24.0	62.76	55.5	4.385	87.0	0.5718
-69.0	1.215	-37.5	13.48	-6.0	2595	25.5	48.36	57.0	3.855	88.5	0.6101
-67.5	1.333	-36.0	15.24	-4.5	3148	27.0	38.18	58.5	3.338	90.0	0.6369
-66.0	1.485	-34.5	17.59	-3.0	3572	28.5	31.04	60.0	2.840		
-64.5	1.688	-33.0	20.66	-1.5	3830	30.0	25.79	61.5	2.400		
-63.0	1.977	-31.5	24.92	0.0	3936	31.5	21.93	63.0	2.026		
-61.5	2.420	-30.0	30.76	1.5	3887	33.0	18.86	64.5	1.765		
-60.0	2.935	-28.5	39.23	3.0	3664	34.5	16.46	66.0	1.575		

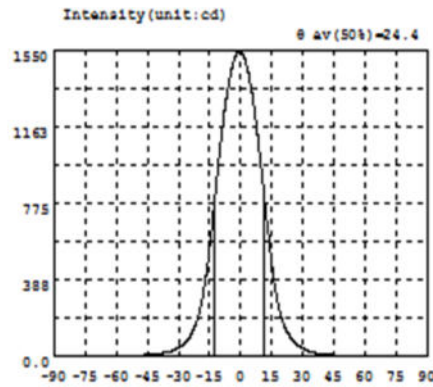
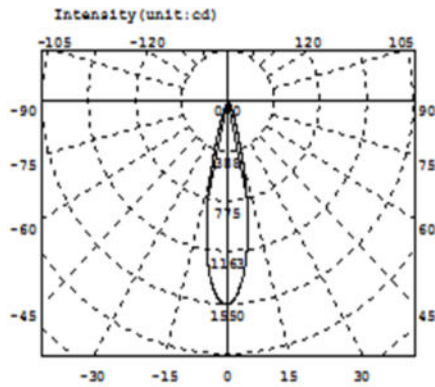
**Electricity Parameter:**

Current I: 0.1000A      Power: 3.210W  
Voltage V: 32.09V      PF: 1.000

**Optical Parameter(Distance=2.559m):**

Equivalent Luminous flux:  $\Phi_{eff}=424.0lm$       Efficiency:  $Eff=132.10lm/W$   
Diffuse angle:      @ (25%) : 22.4deg @ (50%) : 15.7deg @ (75%) : 10.4deg @ (50%) : 15.7deg  
Diffuse angle:      @ (25%) : 22.4deg @ (50%) : 15.7deg @ (75%) : 10.4deg @ (50%) : 15.7deg  
Imax=3937cd (C=0.0deg,G=0.5deg)      CO-180Plane Imax= 3937cd(G=0.5deg)  
CO-180Plane IO= 3936cd





Intensity data: (deg , cd) C0-180

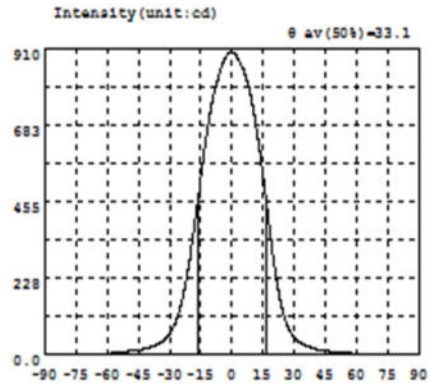
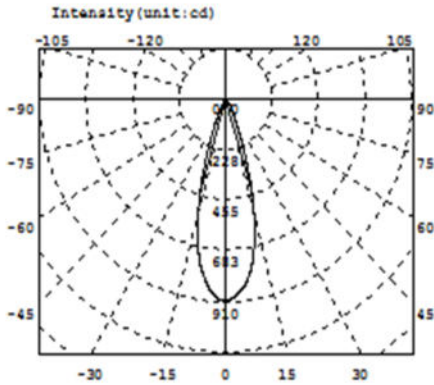
λ	I	λ	I	λ	I	λ	I	λ	I	λ	I
-90.0	0.3312	-58.5	4.091	-27.0	71.16	4.5	1386	36.0	19.72	67.5	1.679
-88.5	0.3313	-57.0	4.632	-25.5	88.83	6.0	1290	37.5	17.04	69.0	1.546
-87.0	0.3441	-55.5	5.219	-24.0	111.8	7.5	1171	39.0	14.93	70.5	1.398
-85.5	0.3949	-54.0	5.807	-22.5	144.1	9.0	1034	40.5	13.18	72.0	1.250
-84.0	0.4462	-52.5	6.418	-21.0	188.9	10.5	886.6	42.0	11.81	73.5	1.138
-82.5	0.4982	-51.0	7.068	-19.5	247.8	12.0	736.6	43.5	10.61	75.0	1.010
-81.0	0.5677	-49.5	7.850	-18.0	326.1	13.5	592.8	45.0	9.584	76.5	0.9087
-79.5	0.7026	-48.0	8.649	-16.5	431.5	15.0	463.6	46.5	8.640	78.0	0.8320
-78.0	0.8041	-46.5	9.506	-15.0	558.7	16.5	344.1	48.0	7.849	79.5	0.7319
-76.5	0.9317	-45.0	10.44	-13.5	702.9	18.0	262.9	49.5	7.082	81.0	0.6806
-75.0	1.071	-43.5	11.55	-12.0	855.0	19.5	200.9	51.0	6.381	82.5	0.6276
-73.5	1.201	-42.0	12.86	-10.5	1006	21.0	155.3	52.5	5.730	84.0	0.5987
-72.0	1.343	-40.5	14.52	-9.0	1146	22.5	122.1	54.0	5.117	85.5	0.5875
-70.5	1.508	-39.0	16.50	-7.5	1269	24.0	97.45	55.5	4.535	87.0	0.6228
-69.0	1.674	-37.5	19.03	-6.0	1371	25.5	78.10	57.0	4.001	88.5	0.6497
-67.5	1.867	-36.0	22.22	-4.5	1451	27.0	62.87	58.5	3.465	90.0	0.6752
-66.0	2.074	-34.5	26.36	-3.0	1507	28.5	50.71	60.0	3.015		
-64.5	2.333	-33.0	31.61	-1.5	1538	30.0	41.11	61.5	2.616		
-63.0	2.681	-31.5	38.31	0.0	1541	31.5	33.55	63.0	2.301		
-61.5	3.100	-30.0	46.76	1.5	1515	33.0	27.70	64.5	2.045		
-60.0	3.566	-28.5	57.56	3.0	1462	34.5	23.19	66.0	1.845		

**Electricity Parameter:**

Current I: 0.1000A      Power: 3.550W  
Voltage V: 35.50V      PF: 1.000

**Optical Parameter (Distance=2.559m):**

Equivalent Luminous flux:  $\Phi_{eff}$  = 337.4lm      Efficiency: Eff=95.06lm/W  
Diffuse angle: @ (25°): 33.0deg @ (50°): 24.4deg @ (75°): 16.4deg @ (50°): 24.4deg  
Diffuse angle: @ (25°): 33.0deg @ (50°): 24.4deg @ (75°): 16.4deg @ (50°): 24.4deg  
Imax=1543cd (C=0.0deg, G=-0.5deg)      C0-180Plane Imax= 1543cd (G=-0.5deg)  
C0-180Plane IO= 1541cd



Intensity data: (deg , cd) C0-180

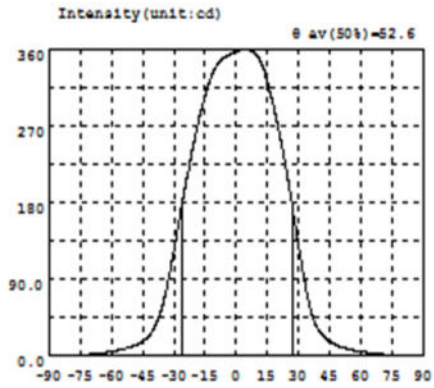
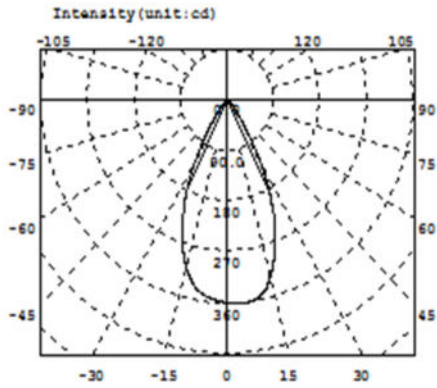
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	1.057	-58.5	5.570	-27.0	100.0	4.5	858.8	36.0	26.40	67.5	2.283
-88.5	1.044	-57.0	6.390	-25.5	127.4	6.0	836.9	37.5	22.95	69.0	2.076
-87.0	0.9681	-55.5	7.254	-24.0	163.1	7.5	807.8	39.0	19.96	70.5	1.905
-85.5	0.9690	-54.0	8.210	-22.5	207.2	9.0	769.1	40.5	17.53	72.0	1.729
-84.0	1.056	-52.5	9.200	-21.0	258.5	10.5	718.5	42.0	15.59	73.5	1.555
-82.5	1.084	-51.0	10.24	-19.5	318.9	12.0	659.1	43.5	13.92	75.0	1.384
-81.0	1.149	-49.5	11.38	-18.0	386.3	13.5	593.2	45.0	12.55	76.5	1.216
-79.5	1.249	-48.0	12.55	-16.5	458.1	15.0	523.5	46.5	11.36	78.0	1.050
-78.0	1.353	-46.5	13.84	-15.0	530.2	16.5	453.1	48.0	10.32	79.5	0.8631
-76.5	1.504	-45.0	15.27	-13.5	600.3	18.0	373.7	49.5	9.392	81.0	0.7461
-75.0	1.620	-43.5	16.86	-12.0	664.0	19.5	302.5	51.0	8.553	82.5	0.6404
-73.5	1.762	-42.0	18.76	-10.5	719.4	21.0	238.0	52.5	7.748	84.0	0.5367
-72.0	1.902	-40.5	21.17	-9.0	766.5	22.5	182.3	54.0	6.971	85.5	0.4601
-70.5	2.069	-39.0	23.99	-7.5	804.6	24.0	138.2	55.5	6.240	87.0	0.4459
-69.0	2.250	-37.5	27.32	-6.0	837.3	25.5	104.8	57.0	5.550	88.5	0.4599
-67.5	2.444	-36.0	31.47	-4.5	864.3	27.0	80.84	58.5	4.883	90.0	0.4841
-66.0	2.701	-34.5	36.80	-3.0	885.2	28.5	63.68	60.0	4.289		
-64.5	3.036	-33.0	43.63	-1.5	897.1	30.0	51.48	61.5	3.721		
-63.0	3.551	-31.5	52.43	0.0	899.4	31.5	42.57	63.0	3.207		
-61.5	4.123	-30.0	63.88	1.5	890.9	33.0	35.85	64.5	2.815		
-60.0	4.811	-28.5	79.36	3.0	876.7	34.5	30.61	66.0	2.493		

**Electricity Parameter:**

Current I: 0.1000A      Power: 4.138W  
Voltage V: 41.40V      PF: 1.000

**Optical Parameter (Distance=2.559m):**

Equivalent Luminous flux:  $\Phi_{eff}$  = 325.3lm      Efficiency:  $Eff$  = 78.63lm/W  
Diffuse angle: @ (25%): 43.2deg @ (50%): 33.1deg @ (75%): 23.3deg @ (50%): 33.1deg  
Diffuse angle: @ (25%): 43.2deg @ (50%): 33.1deg @ (75%): 23.3deg @ (50%): 33.1deg  
Imax=900.0cd (C=0.0deg, C=-0.5deg)      C0-180Plane Imax= 900.0cd (C=-0.5deg)  
C0-180Plane I0= 899.4cd



Intensity data: (deg , cd) CO-180

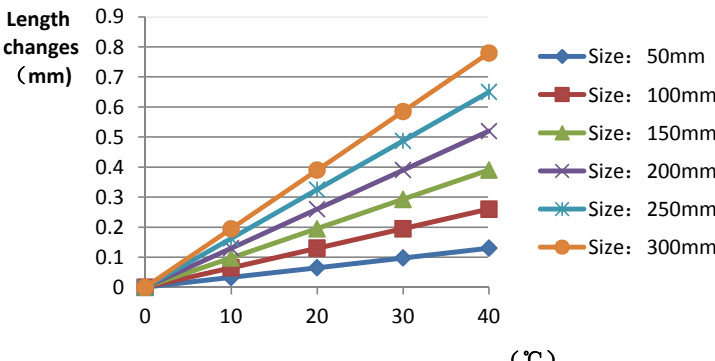
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.2938	-58.5	6.242	-27.0	166.2	4.5	359.1	36.0	51.83	67.5	2.895
-88.5	0.3047	-57.0	7.004	-25.5	187.1	6.0	358.6	37.5	40.85	69.0	2.508
-87.0	0.3155	-55.5	7.808	-24.0	206.7	7.5	357.3	39.0	32.94	70.5	2.168
-85.5	0.3261	-54.0	8.665	-22.5	223.7	9.0	354.7	40.5	27.15	72.0	1.857
-84.0	0.3383	-52.5	9.618	-21.0	243.4	10.5	350.1	42.0	22.85	73.5	1.561
-82.5	0.3954	-51.0	10.69	-19.5	260.1	12.0	343.6	43.5	19.53	75.0	1.303
-81.0	0.5351	-49.5	11.94	-18.0	276.6	13.5	333.7	45.0	16.96	76.5	1.080
-79.5	0.6839	-48.0	13.39	-16.5	291.8	15.0	319.7	46.5	14.91	78.0	0.9039
-78.0	0.8668	-46.5	15.20	-15.0	305.5	16.5	306.5	48.0	13.22	79.5	0.7440
-76.5	1.071	-45.0	17.44	-13.5	317.2	18.0	291.5	49.5	11.78	81.0	0.5972
-75.0	1.328	-43.5	20.27	-12.0	327.7	19.5	274.9	51.0	10.58	82.5	0.4422
-73.5	1.632	-42.0	23.87	-10.5	335.9	21.0	257.2	52.5	9.484	84.0	0.3320
-72.0	1.988	-40.5	28.71	-9.0	341.9	22.5	238.5	54.0	8.526	85.5	0.2780
-70.5	2.253	-39.0	35.07	-7.5	346.4	24.0	218.4	55.5	7.639	87.0	0.2449
-69.0	2.583	-37.5	43.52	-6.0	349.6	25.5	196.6	57.0	6.831	88.5	0.2432
-67.5	2.939	-36.0	54.55	-4.5	352.2	27.0	173.9	58.5	6.099	90.0	0.2191
-66.0	3.340	-34.5	68.52	-3.0	354.1	28.5	150.7	60.0	5.442		
-64.5	3.804	-33.0	85.01	-1.5	355.9	30.0	127.8	61.5	4.837		
-63.0	4.339	-31.5	103.6	0.0	357.4	31.5	105.3	63.0	4.285		
-61.5	4.819	-30.0	123.5	1.5	358.5	33.0	84.49	64.5	3.785		
-60.0	5.551	-28.5	144.9	3.0	358.9	34.5	66.30	66.0	3.321		

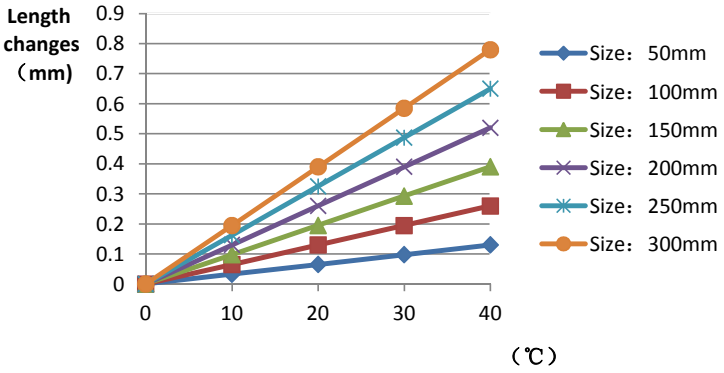
**Electricity Parameter:**

Current I: 0.1000A      Power: 3.358W  
Voltage V: 33.59V      PF: 1.000

**Optical Parameter (Distance=2.410m) :**

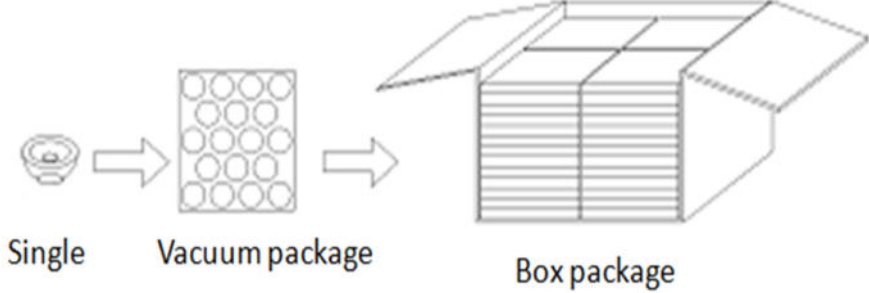
Equivalent Luminous flux:  $\Phi_{eff}$  = 277.4lm      Efficiency: Eff=82.61lm/W  
Diffuse angle:      @ (25%) : 65.2deg @ (50%) : 52.6deg @ (75%) : 38.5deg @ (50%) : 52.6deg  
Diffuse angle:      @ (25%) : 65.2deg @ (50%) : 52.7deg @ (75%) : 38.8deg @ (50%) : 52.7deg  
Imax=359.1cd (C=0.0deg,C=4.5deg)      CO-180Plane Imax= 359.1cd(C=4.5deg)  
CO-180Plane IO= 357.4cd

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks																																										
1.Size	diameter	30	/	/	30	29.95	29.95	30	/	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.																																										
	thickness	2	/	/	2.02	2.02	2.01	2.01	/																																											
	height	14.9	/	/	14.93	14.91	14.93	14.93	/																																											
	Gate shear can not affect the appearance of the lamp																																																			
See attachment "Appearance Inspection Standards"																																																				
2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr	No burr	No burr	No burr	No burr	No burr	OK																																											
			No stains	No stains	No stains	No stains	No stains																																													
3.Material	PC			Color	Transparent			OK																																												
4.Optical index	Testing LED	15°-LED D4																																																		
	The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.																																																			
	FWHM	See light distribution curve																																																		
	angle	/	15.7	14.8	15.2	14.8	/																																													
	K-value	/	9.29	9.62	9.48	9.36	/																																													
	Efficiency	/	84.80%	80.60%	84.60%	85.60%	/																																													
Facula	See the signature sample																																																			
Comprehensive judgment	Qualified																																																			
Remarks:	<p>1、 Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.</p> <p>2、 Ambient temperature on the size of the product refer to the table on the right</p>																																																			
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Temperature (°C)	Size: 50mm	Size: 100mm	Size: 150mm	Size: 200mm	Size: 250mm	Size: 300mm																																														
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Precautions:	<ol style="list-style-type: none"> <li>1、 Wear clean gloves during lens assembly to prevent contamination of the lens surface.</li> <li>2、 Take the lens try to avoid touching the total reflection surface.</li> <li>3、 When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.</li> <li>4、 The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens.</li> </ol>																																																			

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks																																										
1.Size	diameter	30	/	/	29.94	29.94	29.96	30	/	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.																																										
	thickness	2	/	/	2.02	2.01	2	2.02	/																																											
	height	14.9	/	/	14.82	14.86	14.88	14.87	/																																											
	Gate shear can not affect the appearance of the lamp																																																			
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2.Appearance Quality	See attachment "Appearance Inspection Standards"	E	No burr	No burr	No burr	No burr	No burr	No burr	OK																																											
			No stains	No stains	No stains	No stains	No stains																																													
3.Material	PC			Color	Transparent			OK																																												
4.Optical index	Testing LED	24°-LED D6																																																		
	The recommended size and power rating of the LED light source recommended for this lens should be comparable to the source of the test, if it is required to be out of range. According to the heat dissipation capability of the lamp and the actual conditions of the use environment, the lens should be fully tested and tested to prevent the lens life.																																																			
	FWHM	See light distribution curve																																																		
	angle	/	24.4	23.8	23.8	23.6	/																																													
	K-value	/	4.58	4.86	4.91	4.98	/																																													
	Efficiency	/	81.60%	79.66%	80.15%	81.11%	/																																													
Facula	See the signature sample																																																			
Comprehensive judgment	Qualified																																																			
Remarks:	<p>1、 Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.</p> <p>2、 Ambient temperature on the size of the product refer to the table on the right</p>																																																			
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Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm																																														
0	0.00	0.00	0.00	0.00	0.00	0.00																																														
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		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks																																										
1.Size	diameter	30	/	/	29.96	29.97	29.96	29.94	/	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.																																										
	thickness	2	/	/	2.04	2.04	2.06	2.07	/																																											
	height	14.9	/	/	14.93	14.97	14.93	14.95	/																																											
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	FWHM	See light distribution curve																																																		
	angle	/			34.3	33.1	33.5	33.5	/																																											
	K-value	/			2.77	2.77	2.69	2.69	/																																											
	Efficiency	/			82.35%	82.55%	81.06%	82.62%	/																																											
Facula	See the signature sample																																																			
Comprehensive judgment	Qualified																																																			
Remarks:	<p>1、 Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.</p> <p>2、 Ambient temperature on the size of the product refer to the table on the right</p>																																																			
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Temperature (°C)	50mm	100mm	150mm	200mm	250mm	300mm																																														
0	0.00	0.00	0.00	0.00	0.00	0.00																																														
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		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks																																										
1.Size	diameter	30	/	/	29.96	29.97	29.96	29.94	/	Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test.																																										
	thickness	2	/	/	2.04	2.04	2.06	2.07	/																																											
	height	14.9	/	/	14.93	14.97	14.93	14.95	/																																											
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3.Material	PC			Color	Transparent			OK																																												
4.Optical index	Testing LED	50°-LED D6																																																		
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	FWHM	See light distribution curve																																																		
	angle	/	49.4	52.6	51.5	52.6	/																																													
	K-value	/	/	/	/	/	/																																													
	Efficiency	/	81.32%	81.42%	80.73%	81.71%	/																																													
Facula	See the signature sample																																																			
Comprehensive judgment	Qualified																																																			
Remarks:	<p>1、 Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.</p> <p>2、 Ambient temperature on the size of the product refer to the table on the right</p>																																																			
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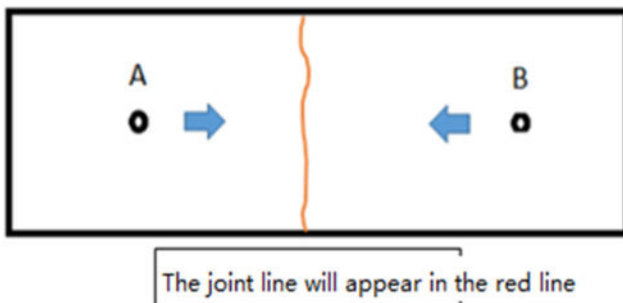
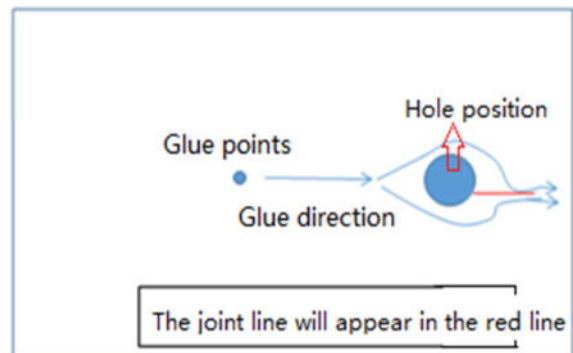
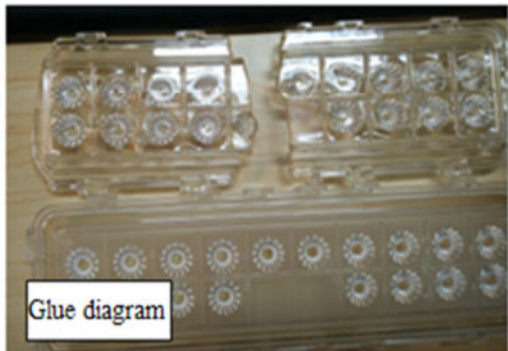
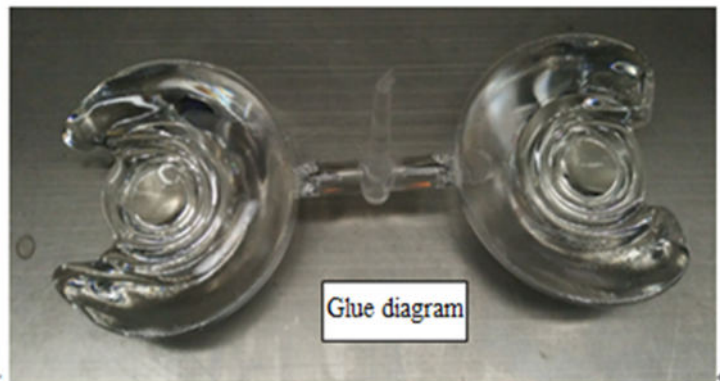
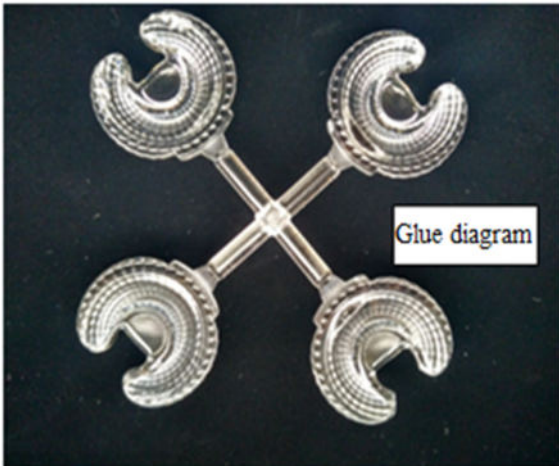
PN		HK-30@15-15-D4-01-1g-1		Product Name		HK 30@15-15°lens	
Product material		PC		Customer			
Package diagram		 <p style="text-align: center;">Single      Vacuum package      Box package</p>					
Product packing		27		A/ Box		4	
		16		Layer/Box		1728	
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0011	Blister box	23cm*21cm	64	BAG	
	2	2.08.0001	PE film	30cm*30cm	64	PCS	
	3	2.06.0005	Reel label paper	6.2cm*8cm	64	PCS	
	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	17	PCS	
	6	2.06.0015	big flat carton	48cm*44cm*19cm	1	PCS	
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail						



Special notice

When glue pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

Syntner



Please note :

The appearance of lines in the structure of the product as well as at the screw hole is a normal phenomenon, will not affect the actual use of the product, and can not be avoided at this stage.

## Appearance inspection standards

### 1 Operating procedures

#### 1.1.1 Sampling standards, sampling plan and AQL

Test level : GB/T2828.1-2012 The first part is according to the acceptance quality limit (AQL) retrieval batch inspection sampling plan, general inspection level II level, CR class defect coefficient 0, MA defect rejection level AQL = 0.65, MI class defect rejection level AQL = 1.0; defect level please see 5.4.

#### 2 Code table

Code	Code description	Unit	Code		Code description	Unit
N	Amount/pcs	pcs	D		Diameter	mm
L	Length	mm	H		Depth	mm
W	Width	mm	DS		Distance	mm
S	Proportion	mm <sup>2</sup>	SS		Offset	mm

### 3 Test conditions

3.1 Sight distance and working hours: Sight distance should be 30-35cm, each side of the inspection time does not exceed 12s, the visual angle of 45-135 degrees;

3.2 Light: 2x40w cool white fluorescent lamp, the light source is 500-550mm away from the lens surface; in order to make the appearance defect can be correctly recognized, the illumination should be 500-1000Lux, and the observation time is 10 seconds.

3.3 Visual inspection staff should be 1.0 (including corrected visual acuity) above, no color blindness, color weakness.

### 4 Appearance inspection standards

Test items	Judging standard	Inspection equipment	Defect level		
		Testing method	MI	MA	CR
Check the sample	When start the machine and process, all products have to check the appearance of the sample, the appearance of the sample is divided into qualified samples and limited samples.	Sample comparison , visual			
	1: Qualified sample refers to the appearance and structure standard of the product which recognized by the client, the sample size should be confirmed before mass production;				

	2: The limited sample refers to the limit of a particular exceptionally developed sample. Limit the sample only for its specific point of exception to confirm; The priority is higher than the other criteria in this table. When there is a limited sample, the limit sample shall prevail.				
Raw edge	Not allowed to affect the size and assembly	Visual, point card		√	
Scratch	1: Non-optical surface and non-exposed surface scratches should be visually insignificant and the length is less than 1/10 of the maximum surface size.	Visual, point card, calipers		√	
Fingerprint	Fingerprints are not allowed on all products	Visual		√	
Foreign objects, black spots, white spots	The product may not be attached to foreign objects, including oil, fiber, dregs of water gap and so on				√
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler			√
Poor ejection	Products may not appear bad ejection, including no convex top, thimble printed on the assembly surface shall not be higher than the product surface, non-assembled surface thimble height should not exceed the product size tolerances; thimble printing should be less than the product surface and no more than 0.3; thimble surface treatment should be consistent with the product side.	Visual, point card		√	
	Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, and the structural surface does not allow visual obvious strain.				
Insufficient filling	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces , The signature sample shall prevail.	Visual, point card		√	
Shrink	When the entire surface of the product shrinks, the optical properties and dimensions must meet the requirements, and the visual will not significantly affect the appearance.Part shrink reference point defects	Visual, point card		√	
Flow marks、Welding line	1 : Product does not allow the presence of flow marks and welding lines unless the structure can not be avoided;	Visual		√	
	2: The remaining flow marks shall not appear in the optical surface, a single L ≤ 10mm, no more than two				

Bubble	No bubbles are allowed	Visual		√	
Foreign objects, black spots, white spots	Not obvious or $D \leq 0.3\text{mm}$ black spots and foreign bodies in the area of 100x100mm not more than 1; Exceeded foreign matter black spots is judged bad.	Visual, point card	√		
Damaged	No damage is allowed	Visual			√
Cold glue	Optical surface may not have cold glue, non-optical surface cold glue should meet the visual is not obvious.	Visual	√		
Bad incision	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;	Visual			√
	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation				
	3: Three molds and hot runner gate shall not appear residue.				
Scrub	Scrub surface should be uniform, off the scrub phenomenon should not be obvious , A single off scrub imprint requires $D \leq 1\text{ mm}$ and no more than 1 area within a 50x50 mm area	Visual		√	