



HERCULUX
恒坤光电

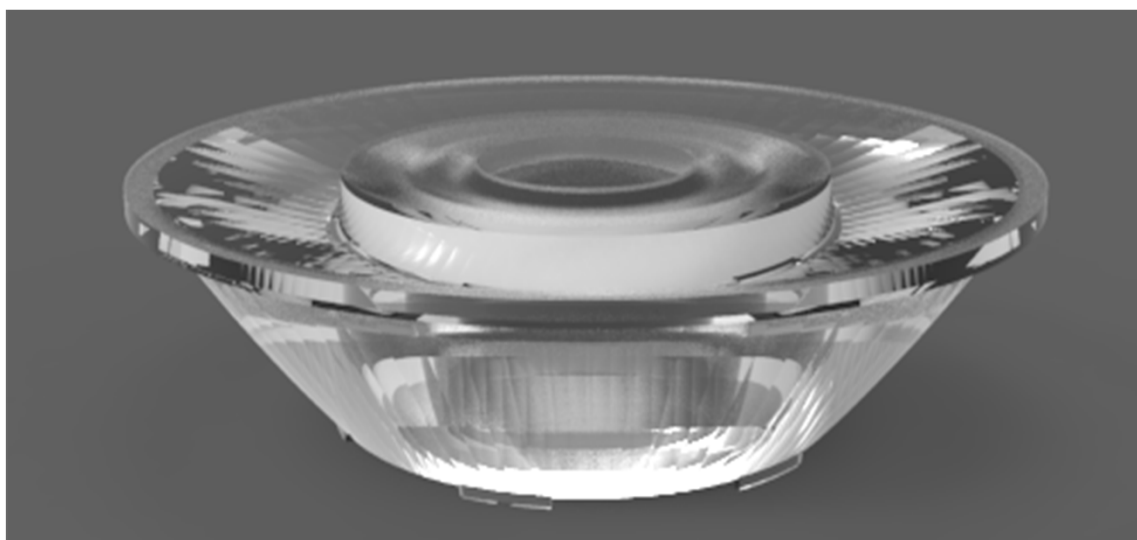
Chengdu HercuLux Photoelectric
Technology Co.,Ltd
Product Approval

Approval number :

Customer :

PN	Code	Product
HK-83@22-15-D12-20-1g-1	1. 01. 6874	HK 83@22-15° Lens
HK-83@22-24-D12-20-1g-1	1. 01. 6875	HK 83@22-24° Lens
HK-83@22-36-D12-20-1g-1	1. 01. 6876	HK 83@22-36° Lens
HK-83@22-60-D12-20-1g-1	1. 01. 81516	HK 83@22-60° Lens

Manufacturer : Chengdu HercuLux Photoelectric Technology Co.,Ltd



Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified ☐		DATE	
Project manager		DATE		Unqualified ☐		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

www.hkoptics.com

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.



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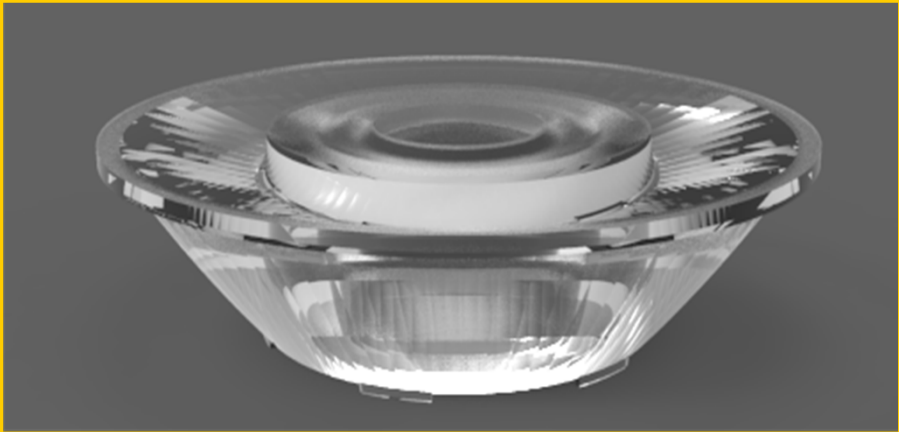
Product Approval

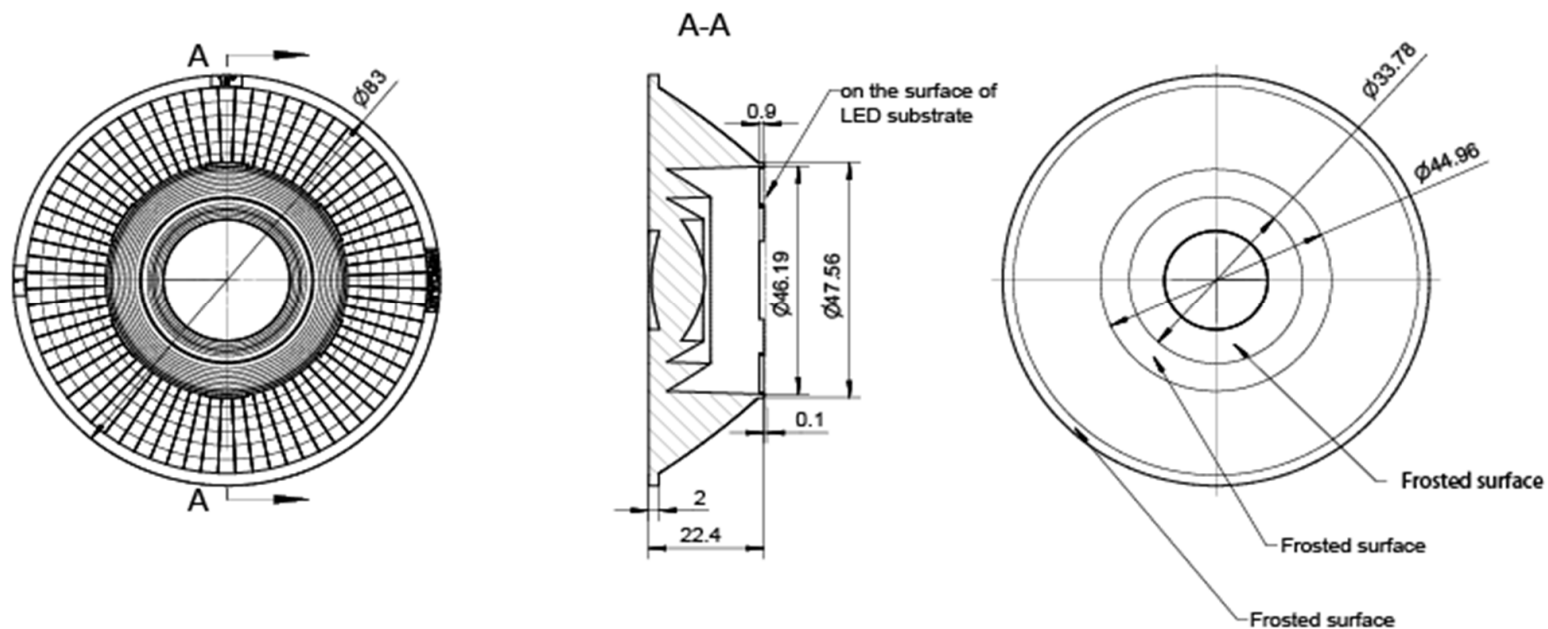
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Date updated: 2022/3/3

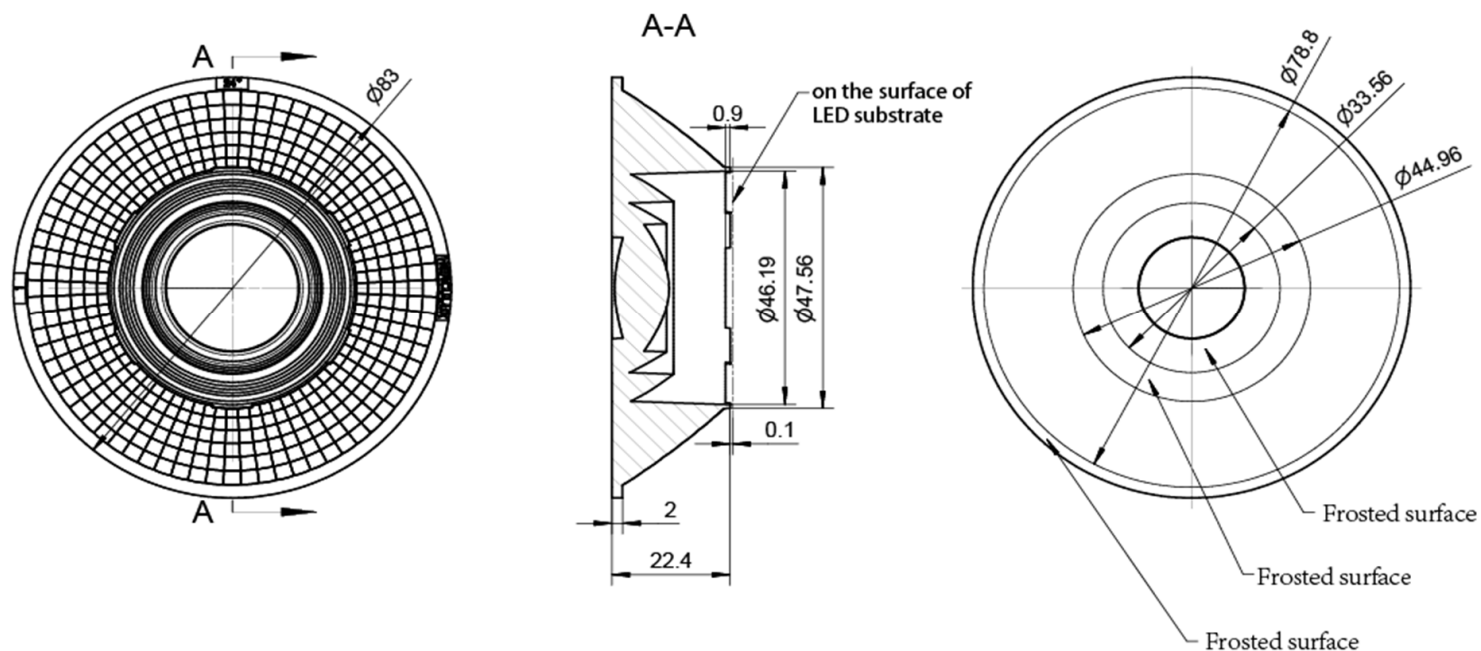
Product Picture:	
PN:	HK-83@22-15-D12-20-1g-1
Size(L*W*H/Φ*H):	Φ:83mm; H:22.4mm
Material:	PC
Efficiency:	\
Temperature(Topr):	Material extreme temperature resistance : -40°C to +120°C long-term use temperature : -40°C to +100°C
FWHM:	15°/24°/36°/60°
Matched LES:	D12


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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK 83@22-15° Lens		HK-83@22-15-D12-20-1g-1		
Structure design						1.01.6874	
Review					number of drawing	qty	weight
Validation			Material:	PC	CDHK		

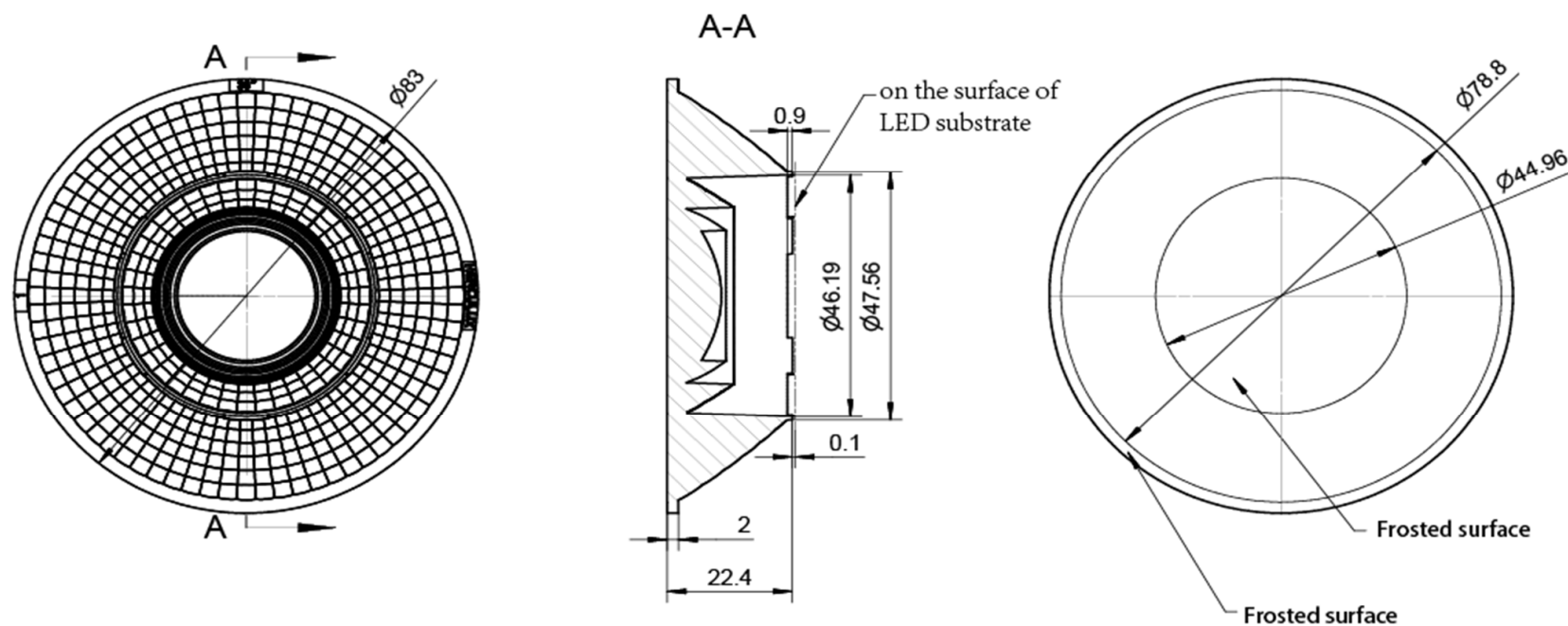
MT5 Tolerance table	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450			
	tolerance val	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0			


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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK 83@22-24° Lens		HK-83@22-24-D12-20-1g-1		
Structure design						1.01.6875	
Review					number of drawing	qty	weight
Validation			Material:	PC	CDHK		

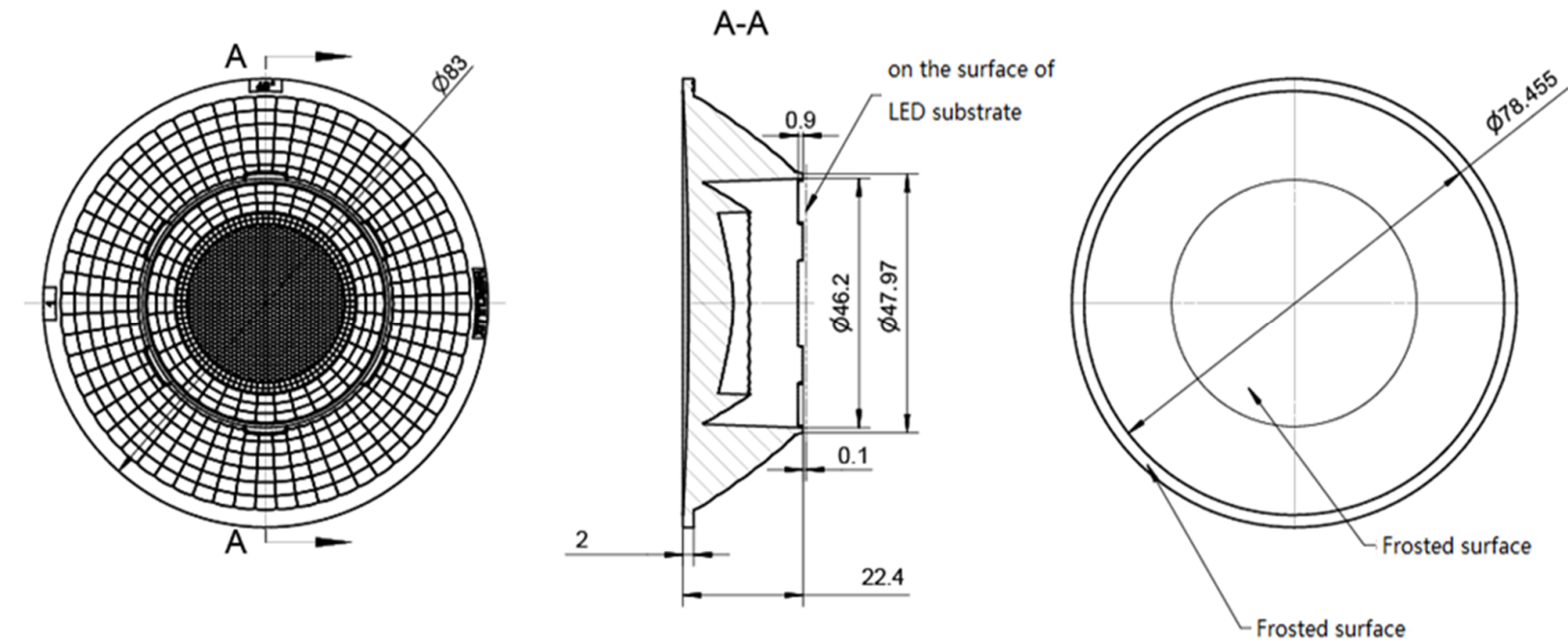
MT5 Tolerance table	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450			
	tolerance val	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0			


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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK 83@22-36° Lens		HK-83@22-36-D12-20-1g-1		
Structure design						1.01.6876	
Review					number of draw	qty	weight
Validation			Material:	PC	CDHK		

MT5 Tolerance table	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450
olerance val		±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0

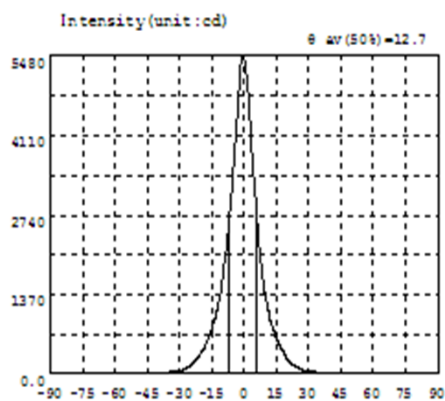
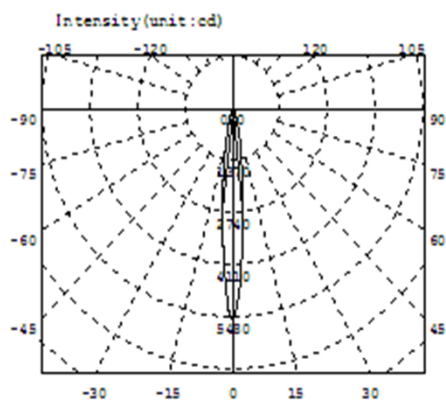


Technical remark:

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.
- *4. When the lamp adopts rubber ring for waterproofing: the roughness of the contact surface between the radiator and the rubber ring is required: $Ra < 3.2\mu m$

Optical design			HK 83@22-60°Lens		HK-83@22-60-D12-20-1g-1		
Structure design						1.01.81516	
Review					number of drawing	qty	weight
Validation			Material:	PC	CDHK		

MT5	Basic size	<3	3~10	10~24	24~65	65~140	140~250	250~450	>450		
Tolerance table	tolerance value	±0.1	±0.15	±0.20	±0.35	±0.50	±0.80	±1.2	±2.0		



Intensity data:(deg , cd) C0-180

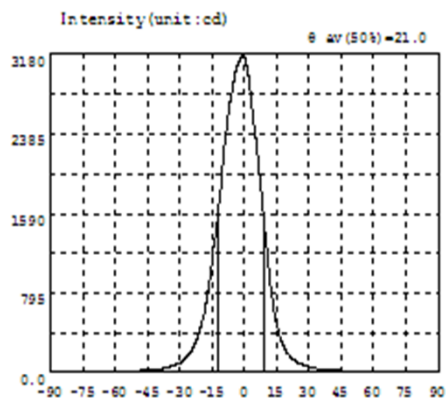
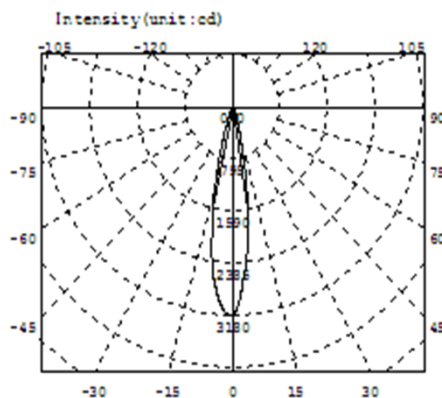
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.9588	-58.5	10.16	-27.0	99.91	4.5	3468	36.0	30.06	67.5	8.035
-88.5	1.445	-57.0	10.59	-25.5	131.4	6.0	2743	37.5	26.55	69.0	7.351
-87.0	1.875	-55.5	11.70	-24.0	174.6	7.5	2075	39.0	23.55	70.5	6.604
-85.5	2.348	-54.0	11.56	-22.5	231.2	9.0	1597	40.5	21.12	72.0	5.829
-84.0	2.687	-52.5	12.07	-21.0	305.5	10.5	1251	42.0	19.06	73.5	5.116
-82.5	3.041	-51.0	12.84	-19.5	391.4	12.0	985.1	43.5	17.40	75.0	4.610
-81.0	3.560	-49.5	13.67	-18.0	494.3	13.5	788.5	45.0	16.06	76.5	4.418
-79.5	4.022	-48.0	14.65	-16.5	619.8	15.0	634.1	46.5	14.76	78.0	4.014
-78.0	4.410	-46.5	15.85	-15.0	774.5	16.5	513.5	48.0	13.76	79.5	3.633
-76.5	4.864	-45.0	17.23	-13.5	952.4	18.0	407.0	49.5	12.80	81.0	3.069
-75.0	5.055	-43.5	18.73	-12.0	1182	19.5	301.8	51.0	12.01	82.5	2.667
-73.5	5.705	-42.0	20.61	-10.5	1494	21.0	225.9	52.5	12.85	84.0	2.398
-72.0	6.532	-40.5	22.99	-9.0	1917	22.5	171.6	54.0	12.79	85.5	2.024
-70.5	7.463	-39.0	25.79	-7.5	2420	24.0	129.8	55.5	10.40	87.0	1.612
-69.0	8.307	-37.5	28.97	-6.0	3063	25.5	99.27	57.0	9.834	88.5	1.309
-67.5	8.925	-36.0	32.88	-4.5	3729	27.0	78.15	58.5	9.377	90.0	0.9055
-66.0	9.214	-34.5	38.00	-3.0	4523	28.5	64.27	60.0	9.069		
-64.5	9.361	-33.0	44.42	-1.5	5294	30.0	54.00	61.5	8.851		
-63.0	9.393	-31.5	52.01	0.0	5445	31.5	45.92	63.0	8.810		
-61.5	9.540	-30.0	62.36	1.5	5046	33.0	39.43	64.5	8.656		
-60.0	9.784	-28.5	77.36	3.0	4232	34.5	34.30	66.0	8.443		

Electricity Parameter:

Current I: 0.1000A Power: 3.369W
Voltage V: 33.70V PF: 0.000

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: $\Phi_{\text{eff}} = 585.7\text{lm}$ Efficiency: $\text{Eff} = 173.85\text{lm/W}$
Diffuse angle: $\theta(25\%) : 20.9\text{deg} \theta(50\%) : 12.7\text{deg} \theta(75\%) : 6.9\text{deg} \theta(50\%) : 12.7\text{deg}$
Diffuse angle: $\theta(25\%) : 20.9\text{deg} \theta(50\%) : 12.7\text{deg} \theta(75\%) : 6.9\text{deg} \theta(50\%) : 12.7\text{deg}$
 $\text{Imax} = 5471\text{cd}$ ($C = 0.0\text{deg}, G = -0.5\text{deg}$) $\text{C0-180Plane Imax} = 5471\text{cd}(G = -0.5\text{deg})$
 $\text{C0-180Plane I0} = 5445\text{cd}$



Intensity data: (deg , cd) C0-180

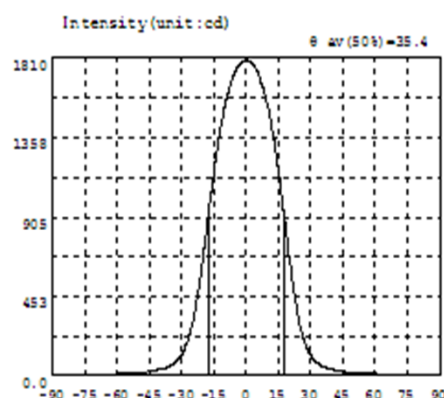
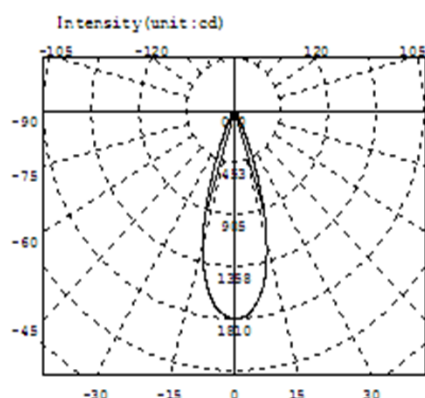
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.6649	-58.5	13.82	-27.0	152.1	4.5	2500	36.0	36.88	67.5	9.083
-88.5	1.477	-57.0	14.64	-25.5	190.7	6.0	2226	37.5	33.04	69.0	8.432
-87.0	2.382	-55.5	15.50	-24.0	240.2	7.5	1919	39.0	29.82	70.5	7.754
-85.5	3.107	-54.0	16.49	-22.5	306.9	9.0	1582	40.5	27.16	72.0	7.099
-84.0	3.668	-52.5	17.65	-21.0	399.9	10.5	1239	42.0	24.90	73.5	6.472
-82.5	4.191	-51.0	18.90	-19.5	511.4	12.0	923.9	43.5	22.81	75.0	5.858
-81.0	4.764	-49.5	20.29	-18.0	656.3	13.5	674.1	45.0	20.93	76.5	5.358
-79.5	5.313	-48.0	21.94	-16.5	852.9	15.0	491.1	46.5	19.42	78.0	4.952
-78.0	5.730	-46.5	23.98	-15.0	1098	16.5	363.6	48.0	18.11	79.5	4.536
-76.5	6.159	-45.0	26.31	-13.5	1350	18.0	276.6	49.5	16.89	81.0	4.040
-75.0	6.649	-43.5	28.89	-12.0	1622	19.5	215.9	51.0	15.80	82.5	3.594
-73.5	7.148	-42.0	32.00	-10.5	1941	21.0	172.1	52.5	14.94	84.0	3.100
-72.0	7.665	-40.5	35.77	-9.0	2285	22.5	141.3	54.0	14.15	85.5	2.469
-70.5	8.205	-39.0	40.51	-7.5	2564	24.0	116.8	55.5	13.41	87.0	1.708
-69.0	8.761	-37.5	45.72	-6.0	2783	25.5	97.22	57.0	12.80	88.5	1.088
-67.5	9.333	-36.0	52.14	-4.5	2953	27.0	81.71	58.5	12.24	90.0	0.7361
-66.0	10.04	-34.5	60.41	-3.0	3082	28.5	70.26	60.0	11.74		
-64.5	10.84	-33.0	70.79	-1.5	3149	30.0	60.99	61.5	11.27		
-63.0	11.76	-31.5	83.19	0.0	3163	31.5	53.10	63.0	10.84		
-61.5	12.77	-30.0	99.53	1.5	3029	33.0	46.56	64.5	10.39		
-60.0	13.11	-28.5	121.6	3.0	2769	34.5	41.41	66.0	9.908		

Electricity Parameter:

Current I: 0.1000A Power: 3.540W
Voltage V: 35.40V PF: 0.000

Optical Parameter(Distance=2.559m):

Equivalent Luminous flux: $\Phi_{\text{eff}} = 608.71\text{lm}$ Efficiency: $\text{Eff} = 171.97\text{lm/W}$
Diffuse angle: $\theta(25\%): 29.6\text{deg} \theta(50\%): 21.0\text{deg} \theta(75\%): 13.6\text{deg} \theta(50\%): 21.0\text{deg}$
Diffuse angle: $\theta(25\%): 29.6\text{deg} \theta(50\%): 21.2\text{deg} \theta(75\%): 13.7\text{deg} \theta(50\%): 21.2\text{deg}$
 $I_{\text{max}} = 3171\text{cd}$ (C=0.0deg, G=-0.5deg) C0-180Plane $I_{\text{max}} = 3171\text{cd}$ (G=-0.5deg)
C0-180Plane $I_{0} = 3163\text{cd}$



Intensity data:(deg , cd) C0-180

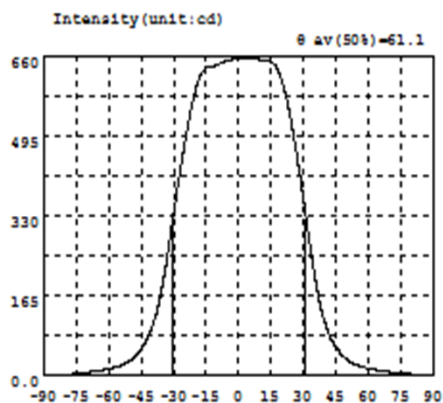
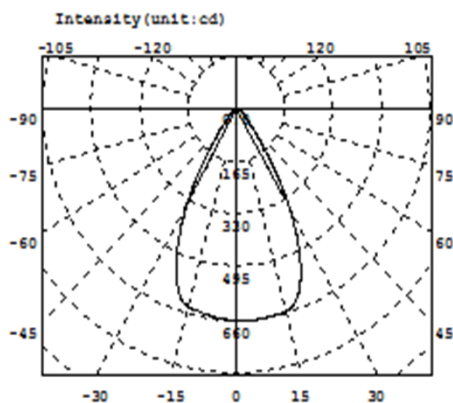
A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.4459	-58.5	13.46	-27.0	206.0	4.5	1758	36.0	53.44	67.5	8.975
-88.5	0.5737	-57.0	14.50	-25.5	268.6	6.0	1715	37.5	45.84	69.0	8.372
-87.0	0.8701	-55.5	15.52	-24.0	350.8	7.5	1661	39.0	40.07	70.5	7.767
-85.5	1.688	-54.0	16.58	-22.5	454.6	9.0	1599	40.5	35.50	72.0	7.167
-84.0	2.490	-52.5	17.83	-21.0	576.8	10.5	1521	42.0	31.86	73.5	6.618
-82.5	3.181	-51.0	19.17	-19.5	715.7	12.0	1425	43.5	28.81	75.0	6.102
-81.0	3.867	-49.5	20.66	-18.0	862.0	13.5	1310	45.0	26.28	76.5	5.604
-79.5	4.403	-48.0	22.41	-16.5	1009	15.0	1181	46.5	24.18	78.0	5.083
-78.0	4.900	-46.5	24.37	-15.0	1148	16.5	1041	48.0	22.31	79.5	4.583
-76.5	5.412	-45.0	26.52	-13.5	1277	18.0	892.3	49.5	20.58	81.0	4.089
-75.0	5.935	-43.5	29.03	-12.0	1393	19.5	743.7	51.0	19.14	82.5	3.484
-73.5	6.447	-42.0	31.95	-10.5	1497	21.0	599.1	52.5	17.84	84.0	2.779
-72.0	6.985	-40.5	35.65	-9.0	1579	22.5	472.8	54.0	16.65	85.5	2.047
-70.5	7.600	-39.0	40.20	-7.5	1647	24.0	357.9	55.5	15.55	87.0	1.230
-69.0	8.211	-37.5	45.94	-6.0	1704	25.5	270.6	57.0	14.51	88.5	0.8729
-67.5	8.812	-36.0	53.31	-4.5	1746	27.0	206.3	58.5	13.59	90.0	0.7171
-66.0	9.490	-34.5	63.26	-3.0	1771	28.5	157.7	60.0	12.72		
-64.5	10.17	-33.0	76.45	-1.5	1792	30.0	121.6	61.5	11.86		
-63.0	10.87	-31.5	94.90	0.0	1803	31.5	95.28	63.0	11.07		
-61.5	11.68	-30.0	120.6	1.5	1797	33.0	76.68	64.5	10.32		
-60.0	12.52	-28.5	157.4	3.0	1782	34.5	63.32	66.0	9.636		

Electricity Parameter:

Current I: 0.1000A Power: 3.410W
Voltage V: 34.09V PF: 0.000

Optical Parameter(Distance=2.559m):

Equivalent Luminous flux: $\Phi_{\text{eff}} = 711.1\text{lm}$ Efficiency: $\text{Eff} = 208.55\text{lm/W}$
Diffuse angle: $\theta(25\%) : 45.2\text{deg} \theta(50\%) : 35.4\text{deg} \theta(75\%) : 25.4\text{deg} \theta(50\%) : 35.4\text{deg}$
Diffuse angle: $\theta(25\%) : 45.2\text{deg} \theta(50\%) : 35.4\text{deg} \theta(75\%) : 25.4\text{deg} \theta(50\%) : 35.4\text{deg}$
 $I_{\text{max}} = 1803\text{cd}$ ($C = 0.0\text{deg}, G = 0.0\text{deg}$) $C0-180\text{Plane } I_{\text{max}} = 1803\text{cd}$ ($G = 0.0\text{deg}$)
 $C0-180\text{Plane } I_0 = 1803\text{cd}$



Intensity data: (deg , cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.5084	-58.5	16.35	-27.0	422.7	4.5	656.2	36.0	182.6	67.5	9.516
-88.5	0.6218	-57.0	18.28	-25.5	463.8	6.0	655.4	37.5	149.2	69.0	8.581
-87.0	0.7917	-55.5	20.48	-24.0	502.6	7.5	654.6	39.0	121.9	70.5	7.799
-85.5	1.122	-54.0	22.89	-22.5	538.5	9.0	653.4	40.5	100.5	72.0	7.026
-84.0	1.541	-52.5	25.89	-21.0	569.8	10.5	652.3	42.0	83.17	73.5	6.193
-82.5	2.017	-51.0	29.65	-19.5	595.2	12.0	651.0	43.5	69.33	75.0	5.479
-81.0	2.640	-49.5	34.17	-18.0	614.4	13.5	650.2	45.0	58.22	76.5	4.910
-79.5	3.182	-48.0	39.70	-16.5	627.8	15.0	647.8	46.5	49.19	78.0	4.408
-78.0	3.694	-46.5	46.61	-15.0	635.8	16.5	642.1	48.0	41.89	79.5	3.913
-76.5	4.239	-45.0	54.86	-13.5	638.7	18.0	631.0	49.5	35.83	81.0	3.384
-75.0	4.829	-43.5	65.20	-12.0	638.4	19.5	614.5	51.0	30.90	82.5	2.770
-73.5	5.513	-42.0	78.03	-10.5	642.2	21.0	592.2	52.5	27.02	84.0	2.333
-72.0	6.354	-40.5	93.96	-9.0	642.5	22.5	563.5	54.0	23.84	85.5	1.980
-70.5	7.232	-39.0	113.6	-7.5	645.7	24.0	529.5	55.5	21.25	87.0	1.603
-69.0	7.986	-37.5	138.1	-6.0	651.1	25.5	490.8	57.0	19.02	88.5	1.462
-67.5	8.906	-36.0	168.3	-4.5	650.6	27.0	448.7	58.5	17.03	90.0	1.391
-66.0	9.964	-34.5	203.1	-3.0	652.9	28.5	406.8	60.0	15.39		
-64.5	11.27	-33.0	246.0	-1.5	655.1	30.0	361.5	61.5	13.99		
-63.0	12.35	-31.5	290.7	0.0	656.2	31.5	310.6	63.0	12.90		
-61.5	13.47	-30.0	335.8	1.5	656.6	33.0	265.6	64.5	11.83		
-60.0	14.75	-28.5	380.3	3.0	656.7	34.5	222.2	66.0	10.69		

Electricity Parameter:

Current I: 0.1000A Power: 3.410W
Voltage V: 34.09V PF: 1.669

Optical Parameter(Distance=2.410m):

Equivalent Luminous flux: Φ_{eff} = 675.11lm Efficiency: Eff = 197.98lm/W

Diffuse angle: @ (25%): 72.8deg @ (50%): 61.1deg @ (75%): 49.8deg @ (50%): 61.1deg

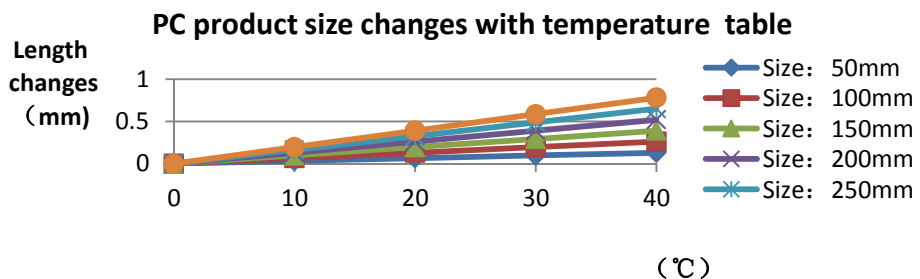
Diffuse angle: @ (25%): 73.0deg @ (50%): 61.1deg @ (75%): 49.8deg @ (50%): 61.1deg

I_{max} = 656.8cd (C=0.0deg, G=2.0deg)

C0-180Plane I_{max} = 656.8cd (G=2.0deg)

C0-180Plane I_0 = 656.2cd

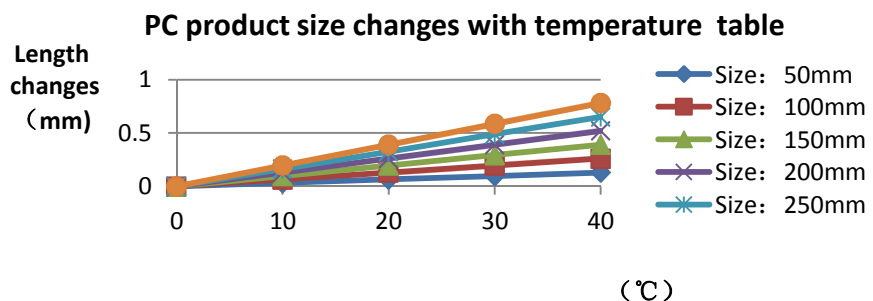
		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks	
1.Size	diameter	83			83.08	83				Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test.	
	height1	22.4			22.65	22.68					
	height2	20.4			20.57	20.54					
	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	OK		
			No stains		No stains	No stains	No stains	No stains			
3.Material	PC					Color	Transparent			OK	
4.Optical index	Testing LED	D12									
	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					12.7°	12.5°				
	K-value					9.40	9.30				
	Efficiency					85.09%	85.74%				
	Facula	See the signature sample									
Comprehensive judgment	Qualified										
Remarks:		1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2、Ambient temperature on the size of the product refer to Precautions: 1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated. 2. Try to avoid touching the total reflection surface when taking the lens. 3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.). 4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees									
		PC product size changes with temperature table Length changes (mm) 1 0.5 0 0 10 20 30 40 Size: 50mm Size: 100mm Size: 150mm Size: 200mm Size: 250mm ℃									



		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks	
1.Size	diameter	83			82.86	82.88				Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test.	
	height1	22.4			22.45	22.44					
	height2	20.4			20.37	20.45					
	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	OK		
			No stains		No stains	No stains	No stains	No stains			
3.Material	PC					Color	Transparent			OK	
4.Optical index	Testing LED	D12									
	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					21.5°	20.6				
	K-value					5.20	5.30				
	Efficiency					84.82%	85.56%				
Facula	See the signature sample										
Comprehensive judgment	Qualified										
Remarks:		1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2、Ambient temperature on the size of the product refer to PC product size changes with temperature table Length changes (mm)									

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks	
1.Size	diameter	83			83	83				Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test.	
	height1	22.4			22.53	22.55					
	height2	20.4			20.52	20.48					
	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	OK		
			No stains		No stains	No stains	No stains	No stains			
3.Material	PC					Color	Transparent			OK	
4.Optical index	Testing LE	D12									
	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					35.8°	35.4°				
	K-value					2.50	2.53				
	Efficiency					86.64%	86.94%				
Facula	See the signature sample										
Comprehensive judgment	Qualified										
Remarks:		1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2、Ambient temperature on the size of the product refer to PC product size changes with temperature table Length changes (mm) 1 0.5 0 0 10 20 30 40 Size: 50mm Size: 100mm Size: 150mm Size: 200mm Size: 250mm (℃)									
1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated. 2. Try to avoid touching the total reflection surface when taking the lens. 3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.). 4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees.											

		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks	
1.Size	diameter	83			82.91	82.84				Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test.	
	height1	22.4			22.56	22.57					
	thickness	2			2.15	2.11					
	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	OK		
			No stains		No stains	No stains	No stains	No stains			
3.Material	PC					Color	Transparent			OK	
4.Optical index	Testing LED	D12									
	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					60.5°	61.5°				
	K-value										
	Efficiency					88.81%	89.03%				
	Facult	See the signature sample									
Comprehensive judgment	Qualified										
Remarks:		1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual. 2、Ambient temperature on the size of the product refer to Precautions: 1. Please wear clean gloves during the lens assembly process to prevent the lens surface from being contaminated. 2. Try to avoid touching the total reflection surface when taking the lens. 3. The lens surface is contaminated. Only use a soft cotton cloth dipped in analytically pure neutral solvent to wipe gently. Do not wipe with industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA Body, etc.). 4. The working temperature of the lens should be within the temperature resistance limit of the lens material. Exceeding the temperature resistance limit will cause the lens to crack or melt and affect the service life of the lens. It is recommended that the upper surface temperature of the LED colloid should be less than 120 degrees									
		PC product size changes with temperature table Length changes (mm) 1 0.5 0 0 10 20 30 40 Size: 50mm Size: 100mm Size: 150mm Size: 200mm Size: 250mm 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 0 10 20 30 40 (℃)									



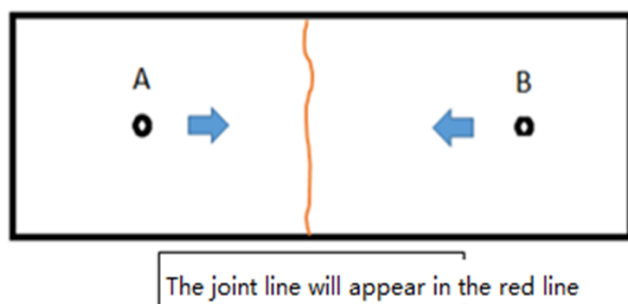
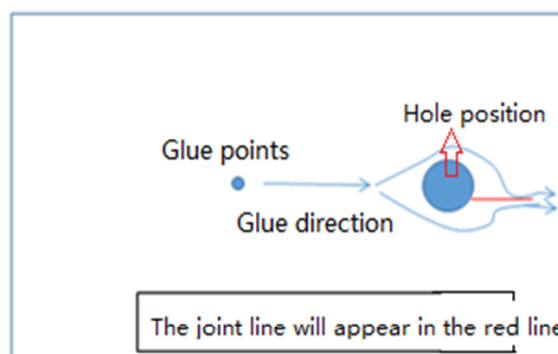
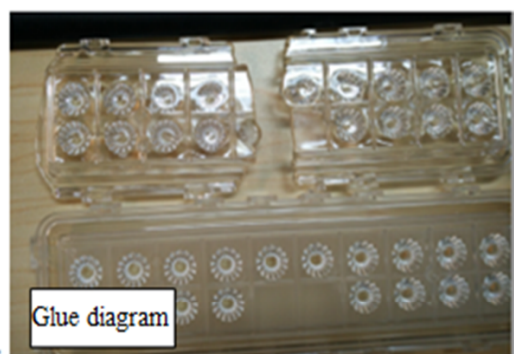
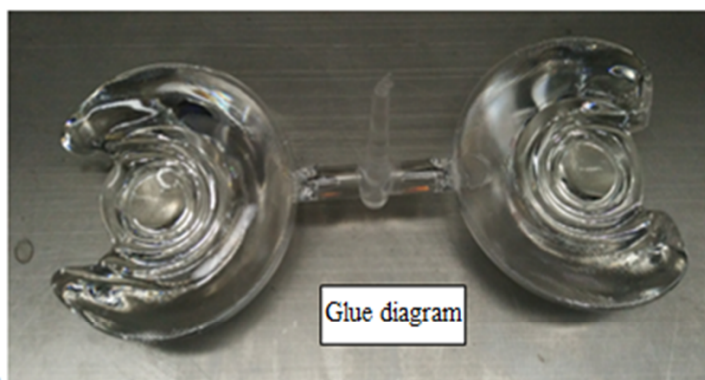


PN		HK-83@22-15-D12-20-1g-1		Product Name		HK 83@22-15°Lens	
Product material		PC		Customer			
Package diagram		Single Vacuum package Box package					
Product packing		5	A/ Box	4	Box/Layer		
		6	Layer/Box	120	A/ Carton		
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0065	Blister box	23cm*21cm	24	BAG	
	2	2.08.0001	PE film	25cm*27cm	24	PCS	
	3	2.06.0005	Reel label paper	62mm*42mm	24	PCS	
	4	2.06.0005	Box label paper	62mm*70mm	1	PCS	
	5	2.06.0003	big plate	46cm*42cm	7	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:

Synthesis



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 ²	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 $L \leq 10\text{mm}$, 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		√	