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恒坤光电

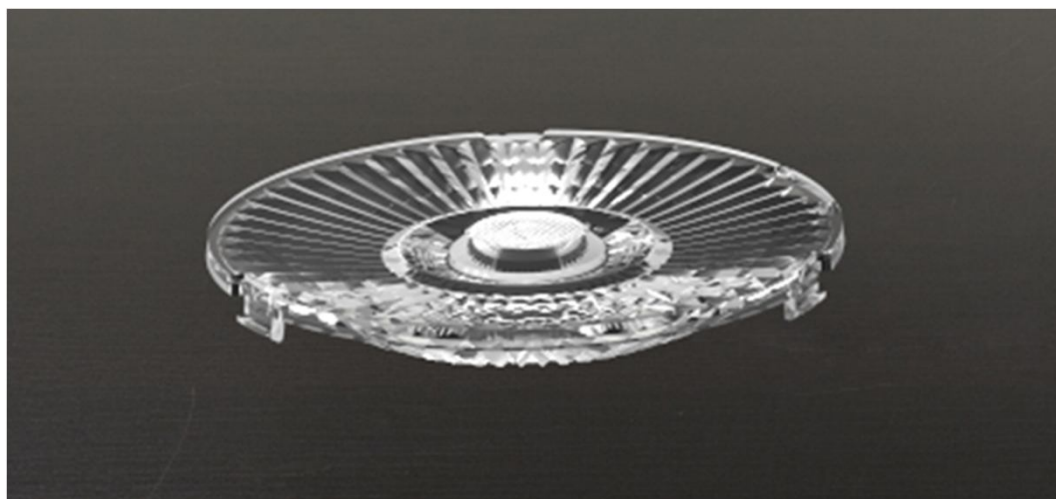
Chengdu HercuLux Photoelectric
Technology Co.,Ltd
Product Approval

Approval number :

Customer :

PN	Code	Product
HK-45@8-12-7070-20-1g-1	1. 01. 6793	HK-GU10-12° Lens
HK-45@8-24-7070-20-1g-1	1. 01. 6794	HK-GU10-24° Lens
HK-45@8-36-7070-20-1g-1	1. 01. 6795	HK GU10-36° Lens
HK-45@8-60-7070-20-1g-1	1. 01. 81435	HK GU10-60° 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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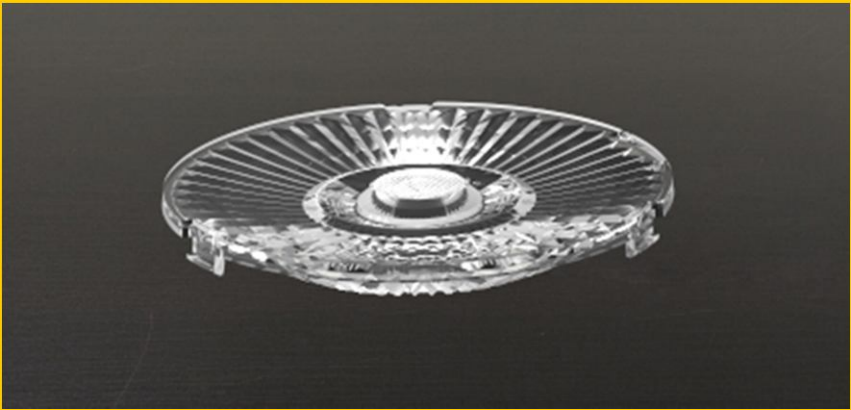
Product Approval

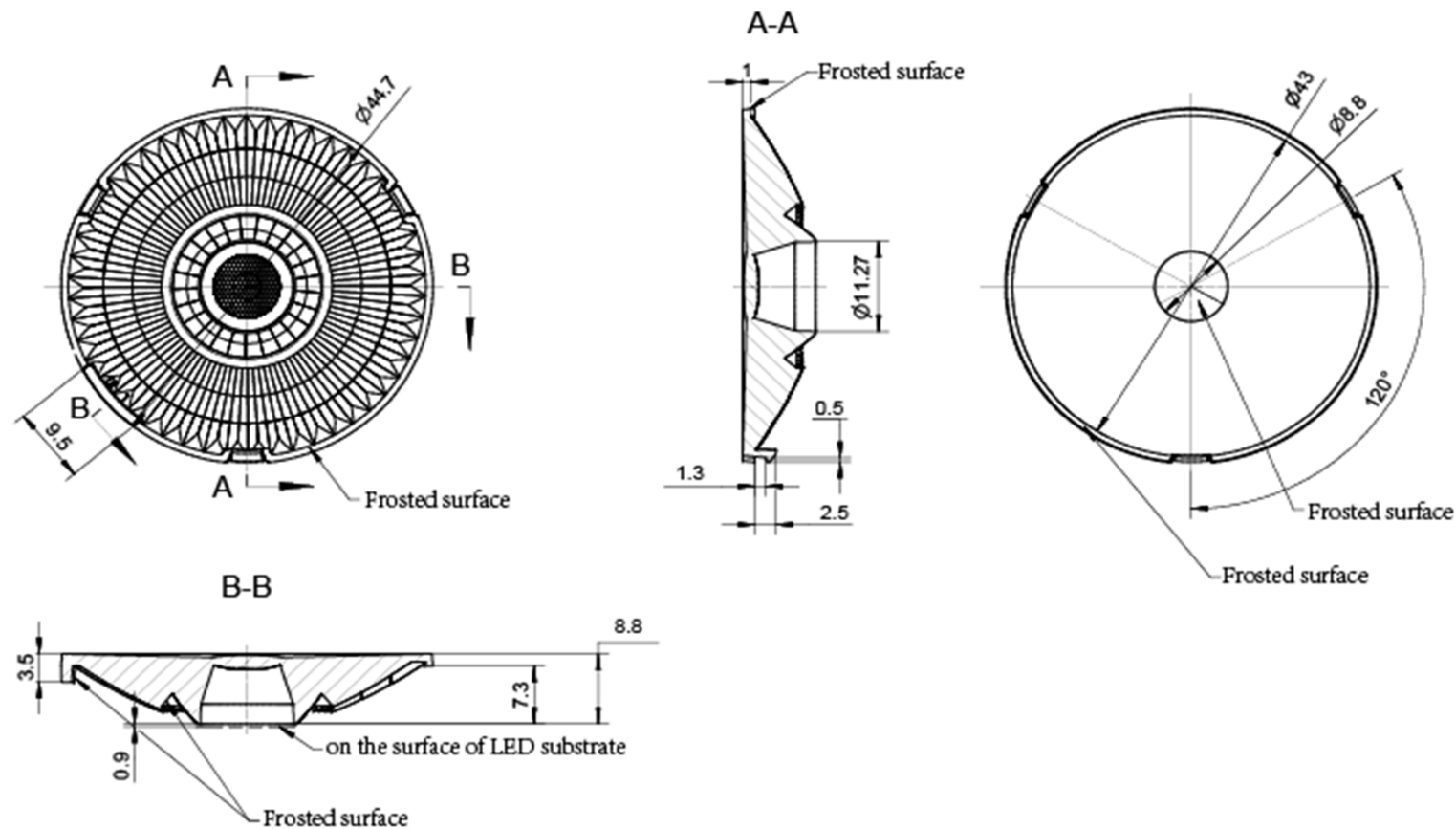
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Date updated: 2019/3/6

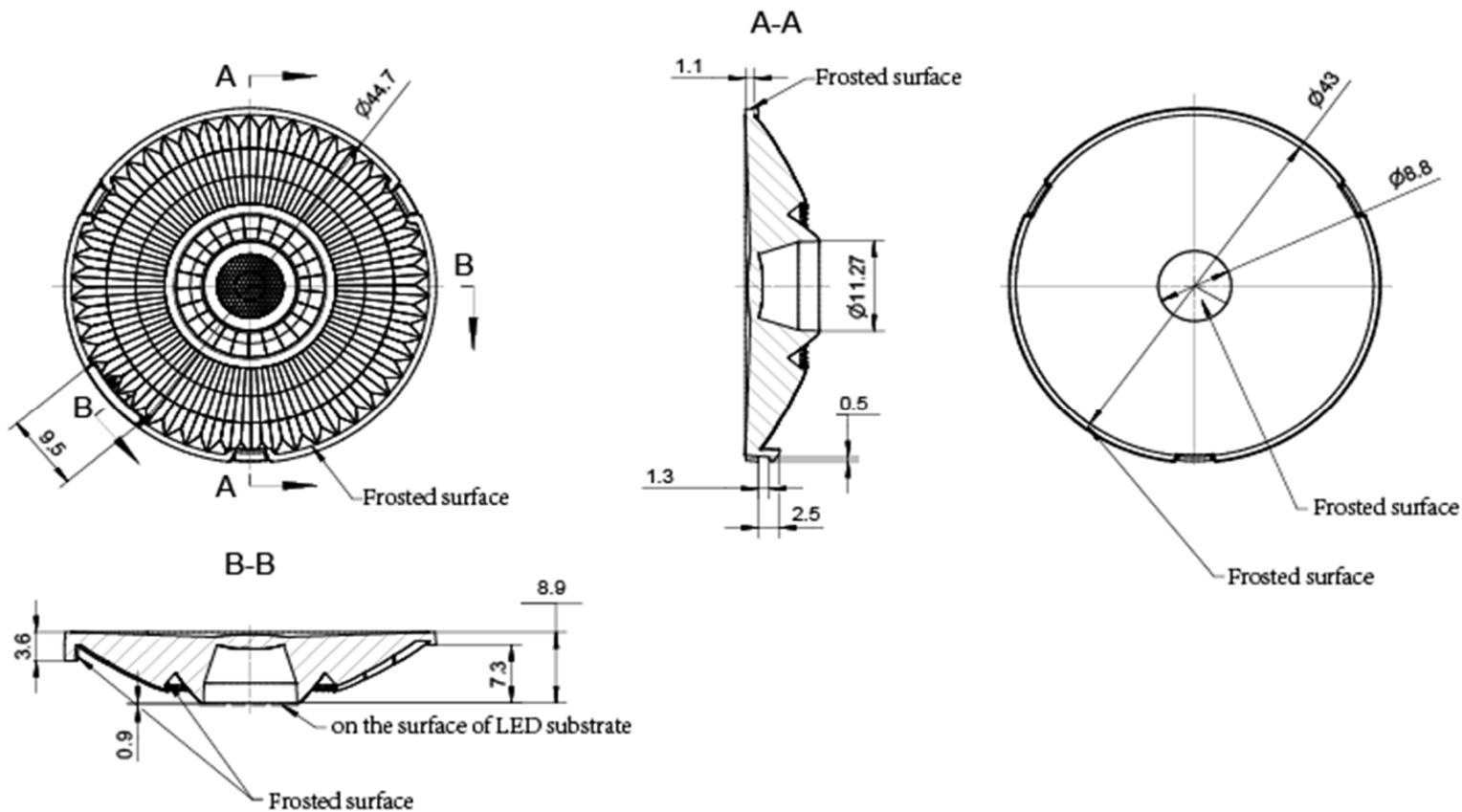
Product Picture:		
PN:	HK-45@8-12-7070-20-1g-1	
Size(L*W*H/ Φ *H):	Φ :44.7mm; H:8.8mm	
1.07.81418_HK-166@03-0223-S	PC	
Effiency:	\	
Temperature(Topr):	-40°C to +120°C	
FWHM:	15°/24°/36°/60°	
Matched LES:	7070	



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-GU10-12°Lens			HK-45@8-12-7070-20-1g-1		
structure design							1.01.6793	
Review						umber of drawin	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				

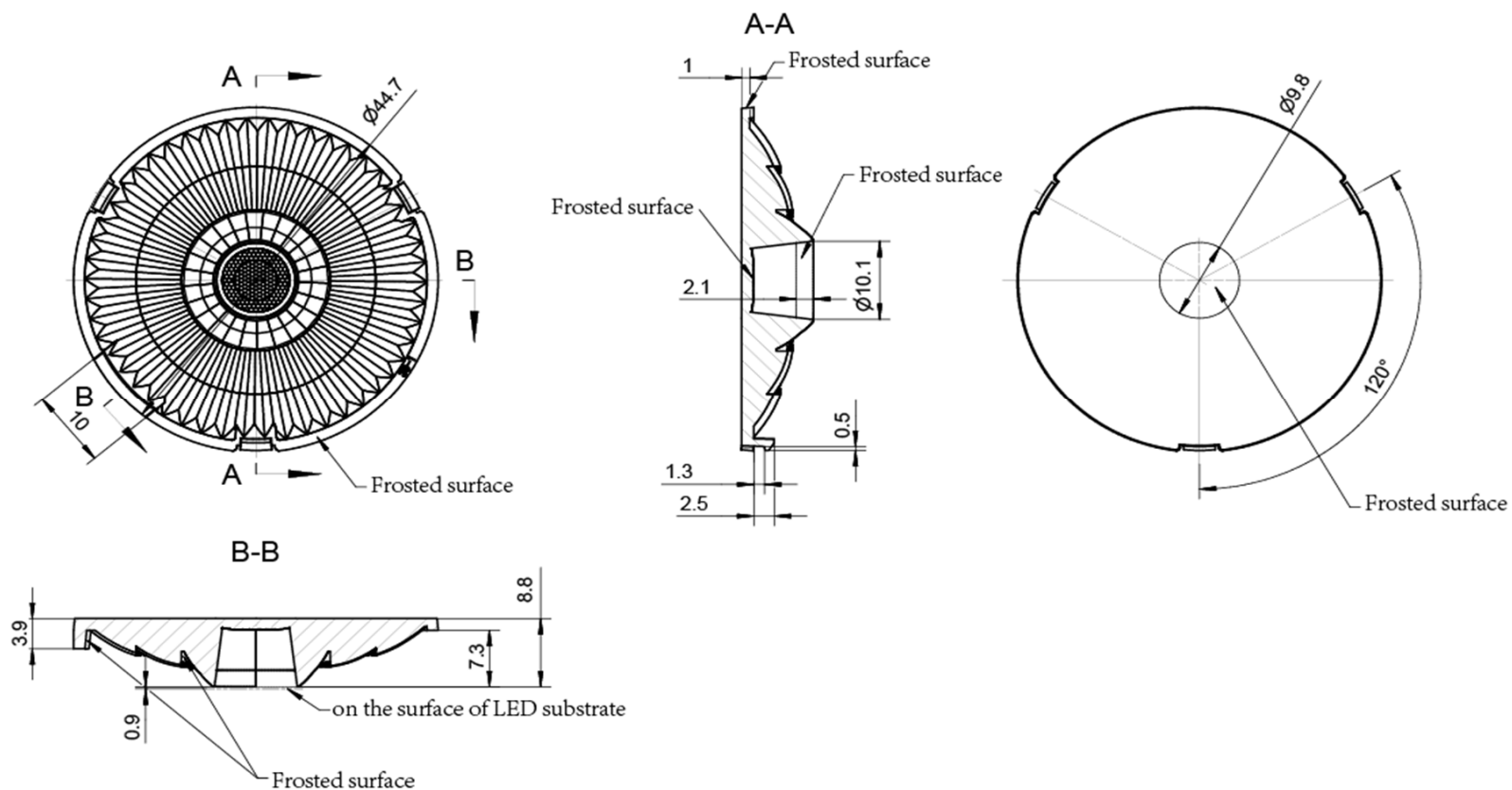


Technical remark:

- 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-GU10-24°Lens		HK-45@8-24-7070-20-1g-1		
structure design					1.01.6794		
Review					umber of drawin	qty	weight
Validation			Material:	PC	CDHK		

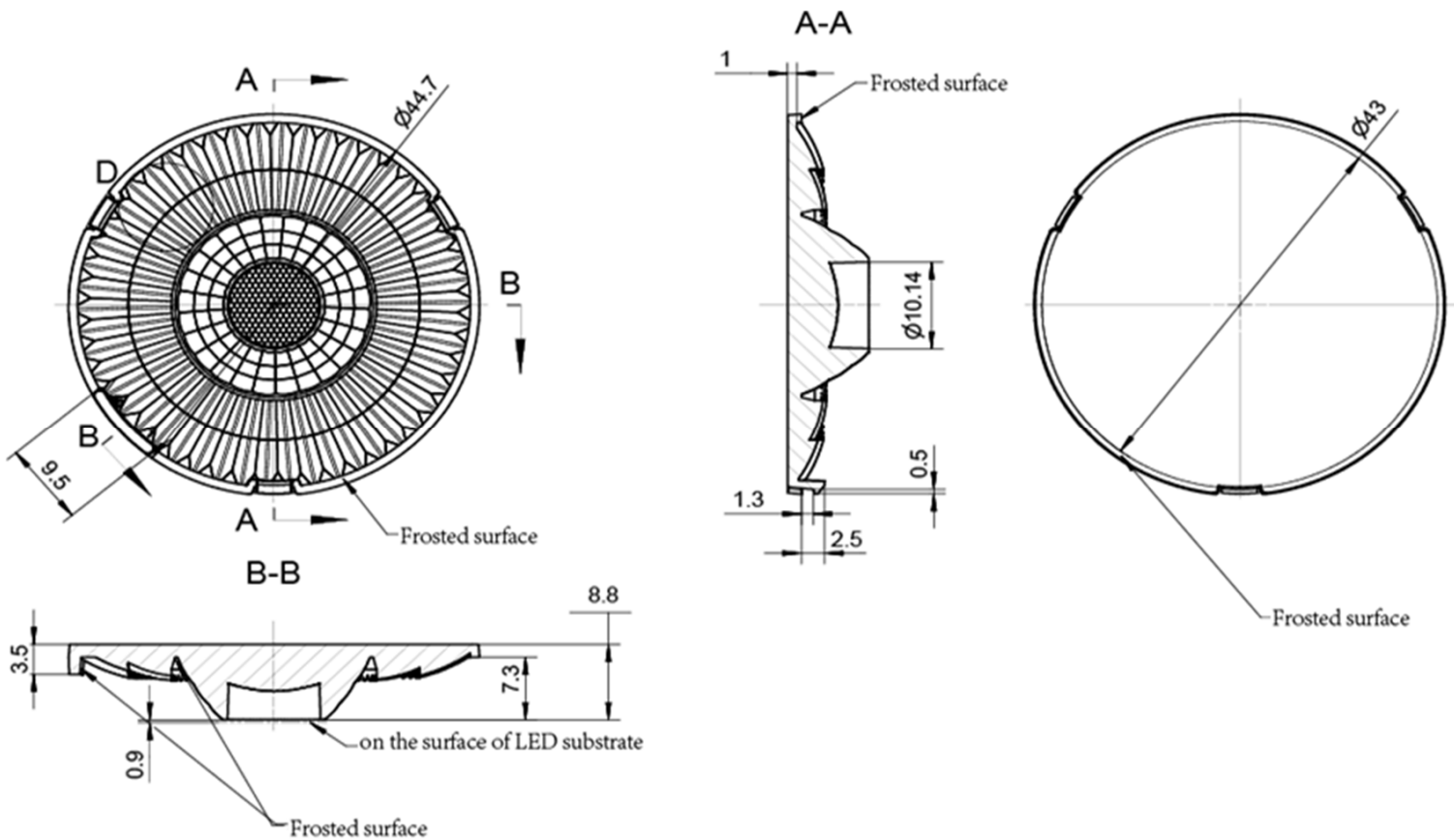
MT5 Tolerance table (mm)	Basic size	<3	3~10	24~65	65~140	140~250	250~450	>450		
	olerance valu	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0		

**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 GU10-36°Lens		HK-45@8-36-7070-20-1g-1		
Structure design					1.01.6795		
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		
	tolerance value	±0.1	±0.15	±0.35	±0.50	±0.80	±1.2	±2.0		



Technical remark:

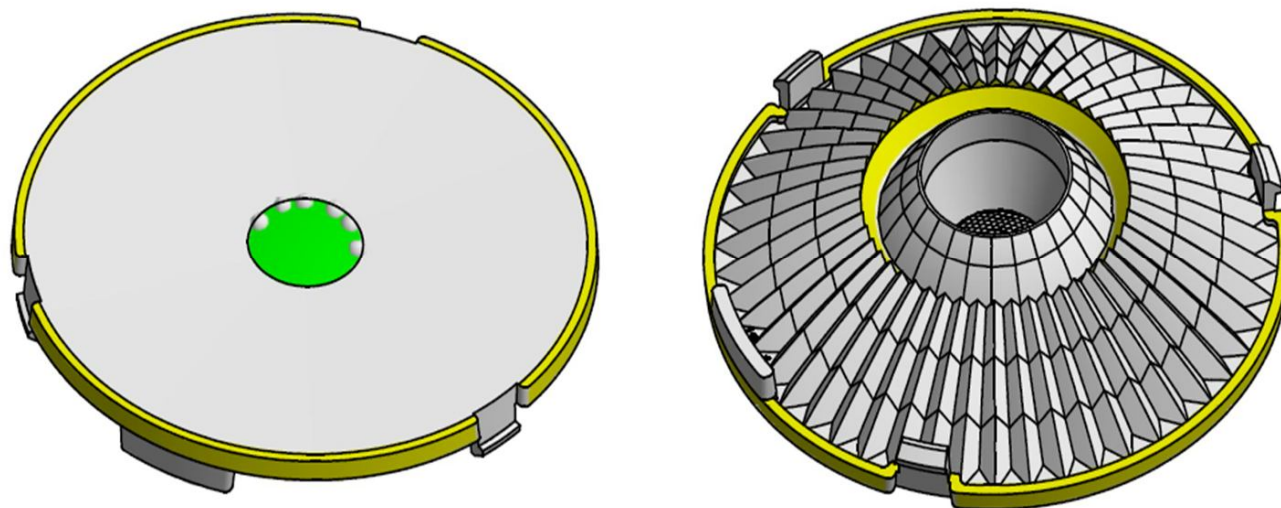
1. The 3D map is not indicated for rounded corners and draft angle.

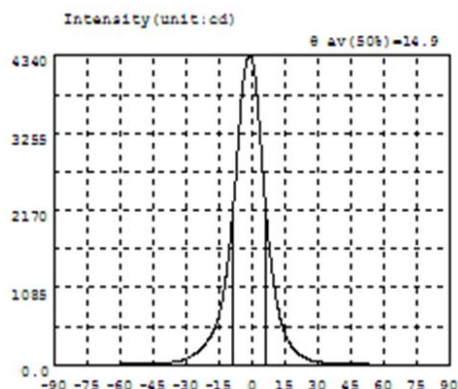
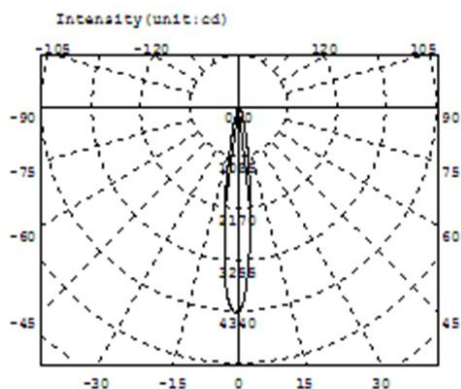
2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.

3. The surface has no flash, shrinkage, bubbles and other defects.

Optical design			HK GU10-60°Lens			HK-45@8-60-7070-20-1g-1		
structure design							1.01.81435	
Review						umber of drawin	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		





Intensity data: (deg , cd) CO-180

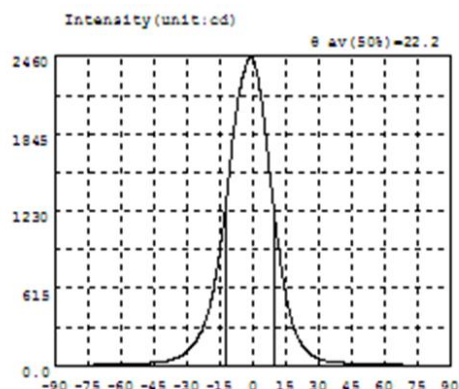
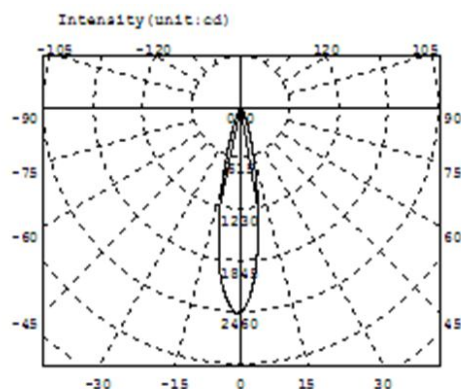
θ	I	θ	I	θ	I	θ	I	θ	I	θ	I
-90.0	0.4076	-58.5	11.64	-27.0	135.6	4.5	2900	36.0	27.56	67.5	6.582
-88.5	0.6632	-57.0	12.22	-25.5	168.1	6.0	2302	37.5	24.81	69.0	6.132
-87.0	0.9438	-55.5	12.91	-24.0	205.3	7.5	1799	39.0	22.28	70.5	5.660
-85.5	1.264	-54.0	13.62	-22.5	250.7	9.0	1373	40.5	20.01	72.0	5.187
-84.0	1.801	-52.5	14.42	-21.0	303.5	10.5	1036	42.0	18.15	73.5	4.740
-82.5	2.426	-51.0	15.33	-19.5	366.3	12.0	781.0	43.5	16.68	75.0	4.314
-81.0	2.925	-49.5	16.41	-18.0	443.6	13.5	589.2	45.0	15.43	76.5	3.933
-79.5	3.460	-48.0	17.58	-16.5	546.4	15.0	451.0	46.5	14.41	78.0	3.489
-78.0	4.035	-46.5	18.93	-15.0	687.4	16.5	338.0	48.0	13.50	79.5	3.031
-76.5	4.597	-45.0	20.53	-13.5	893.6	18.0	265.7	49.5	12.80	81.0	2.520
-75.0	5.146	-43.5	22.50	-12.0	1184	19.5	208.8	51.0	12.25	82.5	1.711
-73.5	5.683	-42.0	24.79	-10.5	1563	21.0	164.9	52.5	11.69	84.0	1.253
-72.0	6.231	-40.5	27.70	-9.0	2029	22.5	130.0	54.0	11.14	85.5	0.9646
-70.5	6.767	-39.0	30.84	-7.5	2573	24.0	102.9	55.5	10.70	87.0	0.6866
-69.0	7.330	-37.5	34.66	-6.0	3204	25.5	81.95	57.0	10.30	88.5	0.4666
-67.5	7.921	-36.0	39.64	-4.5	3802	27.0	65.96	58.5	9.790	90.0	0.3949
-66.0	8.508	-34.5	47.23	-3.0	4163	28.5	53.96	60.0	9.222		
-64.5	9.134	-33.0	56.90	-1.5	4326	30.0	45.68	61.5	8.660		
-63.0	9.828	-31.5	69.90	0.0	4291	31.5	39.12	63.0	8.102		
-61.5	10.55	-30.0	87.00	1.5	4038	33.0	34.11	64.5	7.556		
-60.0	11.15	-28.5	108.8	3.0	3524	34.5	30.47	66.0	7.070		

Electricity Parameter:

Current I: 0.1000A Power: 3.529W
Voltage V: 35.29V PF: 1.000

Optical Parameter (Distance=2.559m):

Equivalent Luminous flux: $\Phi_{\text{eff}} = 539.81\text{lm}$ Efficiency: $\text{Eff} = 152.97\text{lm/W}$
Diffuse angle: $\theta(25\%) : 22.6\text{deg}$ $\theta(50\%) : 14.9\text{deg}$ $\theta(75\%) : 9.4\text{deg}$ $\theta(50\%) : 14.9\text{deg}$
Diffuse angle: $\theta(25\%) : 22.8\text{deg}$ $\theta(50\%) : 15.0\text{deg}$ $\theta(75\%) : 9.6\text{deg}$ $\theta(50\%) : 15.0\text{deg}$
 $\text{Imax} = 4338\text{cd}$ ($C = 0.0\text{deg}$, $C = -1.0\text{deg}$) $\text{CO-180Plane Imax} = 4338\text{cd}$ ($G = -1.0\text{deg}$)
 $\text{CO-180Plane IO} = 4291\text{cd}$



Intensity data: (deg, cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.4586	-58.5	12.67	-27.0	167.5	4.5	2046	36.0	31.29	67.5	6.842
-88.5	0.7398	-57.0	13.26	-25.5	204.4	6.0	1827	37.5	28.34	69.0	6.326
-87.0	1.020	-55.5	13.87	-24.0	250.2	7.5	1577	39.0	25.74	70.5	5.843
-85.5	1.290	-54.0	14.81	-22.5	308.0	9.0	1336	40.5	23.32	72.0	5.366
-84.0	1.678	-52.5	15.86	-21.0	380.9	10.5	1111	42.0	21.31	73.5	4.883
-82.5	2.618	-51.0	17.07	-19.5	473.0	12.0	908.9	43.5	19.73	75.0	4.416
-81.0	3.116	-49.5	18.51	-18.0	590.4	13.5	724.1	45.0	18.57	76.5	3.927
-79.5	3.665	-48.0	20.02	-16.5	737.0	15.0	566.8	46.5	17.49	78.0	3.438
-78.0	4.227	-46.5	21.71	-15.0	908.9	16.5	442.9	48.0	16.34	79.5	2.987
-76.5	4.803	-45.0	23.84	-13.5	1106	18.0	337.1	49.5	15.19	81.0	2.211
-75.0	5.402	-43.5	26.54	-12.0	1323	19.5	265.3	51.0	14.20	82.5	1.665
-73.5	5.940	-42.0	29.85	-10.5	1559	21.0	207.6	52.5	13.37	84.0	1.298
-72.0	6.503	-40.5	33.84	-9.0	1804	22.5	162.7	54.0	12.68	85.5	1.018
-70.5	7.126	-39.0	38.73	-7.5	2018	24.0	128.5	55.5	12.25	87.0	0.8258
-69.0	7.767	-37.5	44.64	-6.0	2176	25.5	102.0	57.0	11.70	88.5	0.6626
-67.5	8.449	-36.0	52.20	-4.5	2299	27.0	81.90	58.5	10.89	90.0	0.4319
-66.0	9.188	-34.5	62.04	-3.0	2394	28.5	66.63	60.0	10.09		
-64.5	10.00	-33.0	74.81	-1.5	2454	30.0	55.14	61.5	9.354		
-63.0	10.82	-31.5	90.99	0.0	2440	31.5	46.29	63.0	8.642		
-61.5	11.57	-30.0	111.1	1.5	2358	33.0	39.72	64.5	8.000		
-60.0	12.05	-28.5	136.4	3.0	2222	34.5	34.86	66.0	7.437		

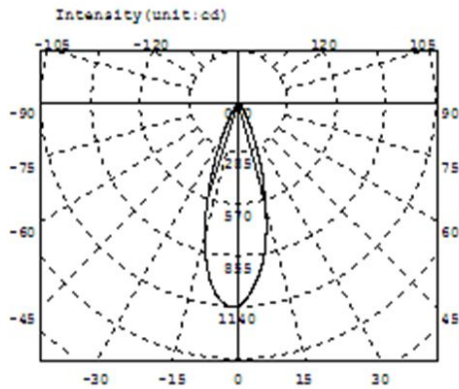
Electricity Parameter:

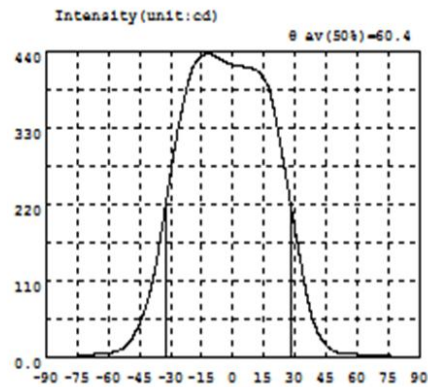
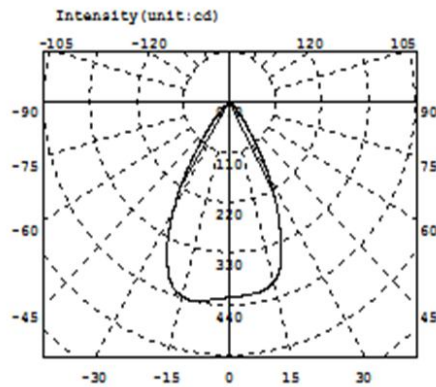
Current I: 0.1000A Power: 3.529W

Voltage V: 35.29V PF: 1.000

Optical Parameter (Distance=2.559m):

Equivalent Luminous flux: $\Phi_{eff} = 540.01\text{lm}$ Efficiency: $Eff = 153.03\text{lm/W}$ Diffuse angle: $\theta(25\%)$: 32.2deg $\theta(50\%)$: 22.2deg $\theta(75\%)$: 14.5deg $\theta(50\%)$: 22.2degDiffuse angle: $\theta(25\%)$: 32.2deg $\theta(50\%)$: 22.3deg $\theta(75\%)$: 14.7deg $\theta(50\%)$: 22.3deg $I_{max} = 2459\text{cd}$ ($C = 0.0\text{deg}$, $G = -1.0\text{deg}$)C0-180Plane $I_{max} = 2459\text{cd}$ ($G = -1.0\text{deg}$)C0-180Plane $I_0 = 2440\text{cd}$





Intensity data: (deg , cd) C0-180

A	I	A	I	A	I	A	I	A	I	A	I
-90.0	0.3057	-58.5	8.482	-27.0	319.2	4.5	417.9	36.0	82.98	67.5	4.184
-88.5	0.3565	-57.0	9.305	-25.5	342.3	6.0	417.3	37.5	64.76	69.0	3.913
-87.0	0.4080	-55.5	10.57	-24.0	363.5	7.5	416.2	39.0	50.38	70.5	3.645
-85.5	0.4470	-54.0	12.51	-22.5	383.6	9.0	415.6	40.5	39.23	72.0	3.367
-84.0	0.6917	-52.5	15.35	-21.0	401.4	10.5	414.1	42.0	30.43	73.5	3.109
-82.5	1.059	-51.0	19.36	-19.5	414.9	12.0	411.1	43.5	23.29	75.0	2.868
-81.0	1.318	-49.5	24.58	-18.0	424.0	13.5	406.2	45.0	17.84	76.5	2.600
-79.5	1.662	-48.0	31.12	-16.5	429.5	15.0	399.6	46.5	13.83	78.0	2.372
-78.0	1.994	-46.5	39.19	-15.0	433.3	16.5	392.1	48.0	11.04	79.5	2.138
-76.5	2.367	-45.0	48.83	-13.5	436.3	18.0	379.5	49.5	9.099	81.0	1.908
-75.0	2.784	-43.5	60.07	-12.0	437.1	19.5	359.7	51.0	7.927	82.5	1.680
-73.5	3.172	-42.0	73.21	-10.5	435.9	21.0	336.7	52.5	7.166	84.0	1.447
-72.0	3.646	-40.5	88.59	-9.0	433.8	22.5	311.2	54.0	6.653	85.5	1.340
-70.5	4.152	-39.0	106.2	-7.5	430.7	24.0	286.1	55.5	6.238	87.0	1.297
-69.0	4.630	-37.5	126.7	-6.0	427.9	25.5	260.5	57.0	5.959	88.5	1.252
-67.5	5.152	-36.0	151.7	-4.5	425.6	27.0	234.4	58.5	5.701	90.0	1.224
-66.0	5.677	-34.5	180.2	-3.0	423.4	28.5	208.1	60.0	5.436		
-64.5	6.248	-33.0	209.3	-1.5	421.4	30.0	181.8	61.5	5.203		
-63.0	6.762	-31.5	234.9	0.0	420.2	31.5	156.0	63.0	4.940		
-61.5	7.275	-30.0	265.9	1.5	419.1	33.0	130.4	64.5	4.689		
-60.0	7.837	-28.5	293.6	3.0	418.4	34.5	105.4	66.0	4.419		

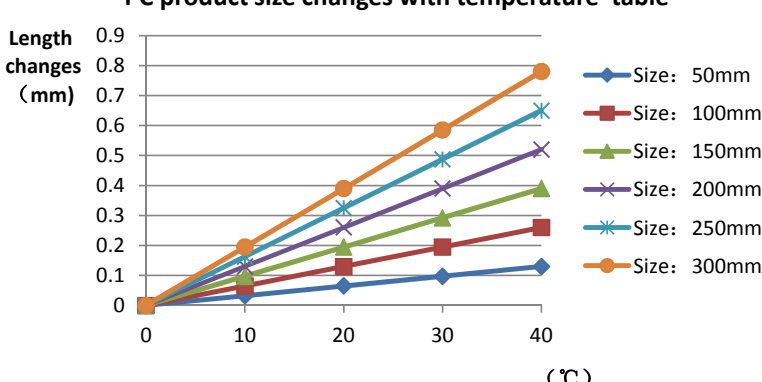
Electricity Parameter:

Current I: 0.1000A Power: 3.490W
Voltage V: 34.90V PF: 1.000

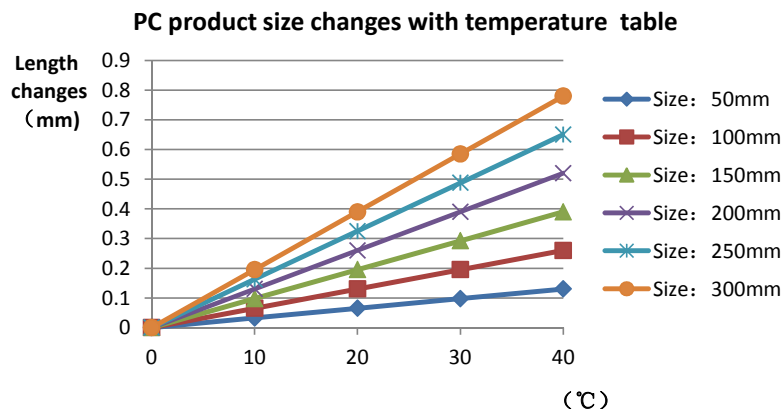
Optical Parameter(Distance=2.559m):

Equivalent Luminous flux: $\Phi_{\text{eff}} = 426.91\text{lm}$ Efficiency: $\text{Eff} = 122.32\text{lm/W}$
Diffuse angle: @ (25%): 72.9deg @ (50%): 60.4deg @ (75%): 47.9deg @ (50%): 60.4deg
Diffuse angle: @ (25%): 73.5deg @ (50%): 61.2deg @ (75%): 49.4deg @ (50%): 61.2deg
Imax=437.1cd (C=0.0deg, C=-12.0deg) C0-180Plane Imax= 437.1cd(C=-12.0deg)
C0-180Plane IO= 420.2cd

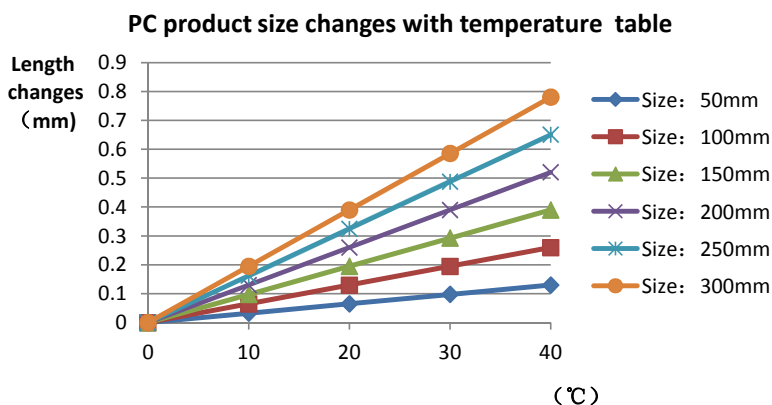
1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks
	diameter	44.7			44.8	44.68	44.64			Test environment: In 20℃ -25℃ environment to achieve thermal equilibrium after the test.
	height1	8.8			8.82	8.84	8.86			
	Gate shear can not 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	OK		
				No stains	No stains	No stains	No stains			
3.Material		PC			Color	Transparent		OK		
4.Optical index	Testing LED		7070							
	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				16°	15.2°	14.6°			
	K-value				7.20	7.94	8.49			
	Efficiency				85.00%	87.00%	86.00%			
	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 the table on the right PC product size changes with temperature table Length changes (mm) 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0 0 10 20 30 40 Size: 50mm Size: 100mm Size: 150mm Size: 200mm Size: 250mm Size: 300mm								
Precautions:										
1、Wear clean gloves during lens assembly to prevent contamination of the lens surface.										
2、Take the lens try to avoid touching the total reflection surface.										
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.										

1.Size		Standard size	Upper Size limit	Lower size limit	Test result1	Test result2	Test result3	Test result4	Judgment	Remarks																																										
	diameter	44.7			44.79	44.7	44.83			Test environment: In 20℃ -25℃ environment to achieve thermal equilibrium after the test.																																										
	height1	8.8			8.83	8.75	8.76																																													
	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	OK																																											
				No stains		No stains	No stains	No stains																																												
3.Material		PC				Color	Transparent		OK																																											
4.Optical index	Testing LED		7070																																																	
	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				22.2°	23.7°	24.6°																																													
	K-value				4.50	4.18	4.07																																													
	Efficiency				86.24%	85.73%	84.52%																																													
Facula		See the signature sample																																																		
Comprehensive judgment		Qualified																																																		
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	diameter	44.7			44.69	44.68	44.77			Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test.																																										
	height1	8.8			8.83	8.84	8.8																																													
	Gate shear can not affect the appearance of the lamp																																																			
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	FWHM		See light distribution curve																																																	
	angle				35.8°	35.1°	34.2°																																													
	K-value				2.18	2.26	2.33																																													
	Efficiency				87.20%	88.00%	87.50%																																													
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	diameter	44.7			44.63	44.81				Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test.																																										
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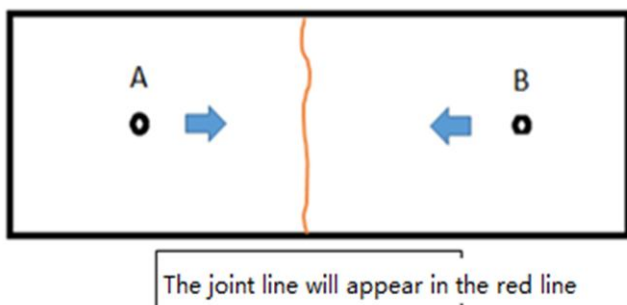
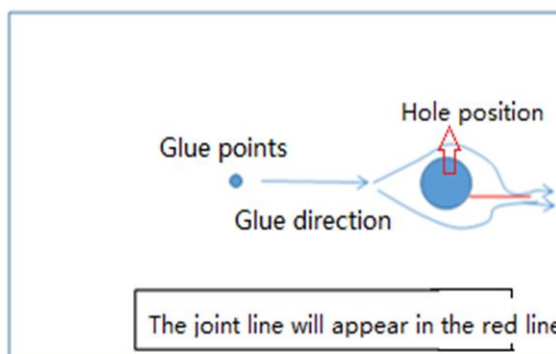
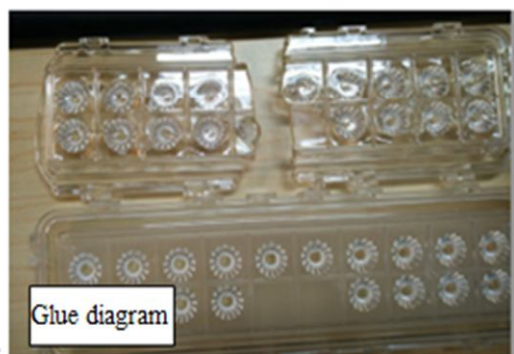
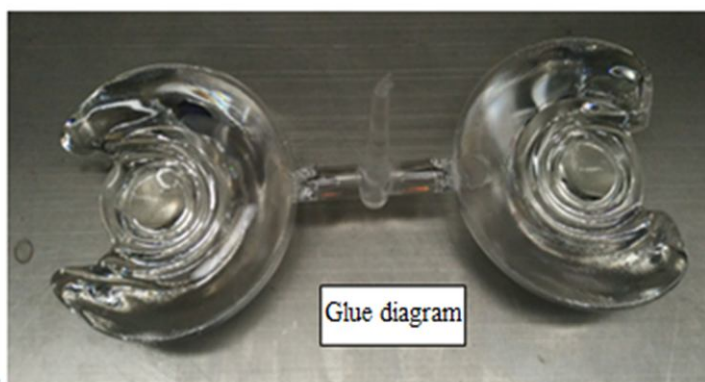


PN		HK-45@8-12-7070-20-1g-1		Product Name		HK-GU10-12°Lens	
Product material		PC		Customer			
Package diagram		Single Vacuum package Box package					
Product packing		18	A/ Box	4	Box/Layer		
		20	Layer/Box	1440	A/ Carton		
Packaging Materials	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0042	Blister box	23cm*21cm	80	BAG	
	2	2.08.0001	PE film	30cm*30cm	80	PCS	
	3	2.06.0005	Reel label paper	6.2cm*8cm	80	PCS	
	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	21	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		√	