

Approval number:

Customer:

Manufacturer: Chengdu HercuLux Photoelectric Technology Co.,Ltd

| PN                             | Code              | Product                     |
|--------------------------------|-------------------|-----------------------------|
| HK-DX-50@24-15-D9-21-1g-1_PMMA | 1. 01. 02581_PMMA | HK Glareless 50@24-15° lens |
| HK-DX-50@24-24-D9-21-1g-1_PMMA | 1. 01. 02582_PMMA | HK Glareless 50@24-24° lens |
| HK-DX-50@24-36-D9-21-1g-1_PMMA | 1. 01. 02590_PMMA | HK Glareless 50@24-36° lens |
| HK-DX-50@24-60-D9-21-1g-1_PMMA | 1. 01. 12803_PMMA | HK Glareless 50@24-60° lens |



| 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, lot industrial park 2 road HercuLux Photoelectric Park

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

Fax: 028-85887730

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

Sales Dept: Shenzhen Nanshan District Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building, 501-505

TEL: 0755-2937 1541

FAX: 0755-2907 5140

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

# Disclaimer

Please use this product within the permitted range and environment according to the structure and material of the product. If the usage exceeds the recommended value, please test and verify by yourself. If the product is damaged due to out-of-range use, our company will not be responsible for the warranty.

Product material:

Customized products: The specifications and models of materials used are subject to the agreement between the two parties.

Conventional products: As a product that we continuously research and improve, under the premise of ensuring the quality and availability of the product, our company reserves the right to change the material. If the material specification and model change, without prior notice.

product data:

The measurement data and dimensional tolerances of the 2D drawings in the product data sheet of this acknowledgement are for reference only, and the final size shall prevail in kind.

The measurement data presented in this acknowledgment is a performance test of the product based on our company's internal test conditions and quality requirements, and the reported data is a typical value of the average results of multiple measurements. Therefore, in some cases, the actual product may deviate from the data provided. We reserve the right to notify you in advance of this data.

Product changes and improvements:

Changes and improvements of customized products are subject to the agreement between the two parties in the contract or technical documents.

As the conventional products that we continue to research and improve, our company reserves the right to make technical changes to its products, and reserves the right to make changes to data resulting from improvements without prior notice.

Operation cautions:

1. Please wear clean gloves during product assembly to prevent product surface contamination.
2. Try to avoid touching the optical surface of the lens when taking the lens.
3. When the surface of the product is polluted, please wipe it gently with a soft cotton cloth dipped in analytically pure neutral solvent. It is forbidden to use industrial solvents (alcohol, isopropanol, acetone, ether, toluene, xylene, carbon tetrachloride, MMA monomer, etc.) wipe.
4. The lens made of PC should not be exposed to direct sunlight in the storage and use environment. If the lens turns yellow or cracks due to long-term sunlight exposure, our company will not be responsible for the warranty.



**HERCULUX**  
恒坤光电

# Basic product information

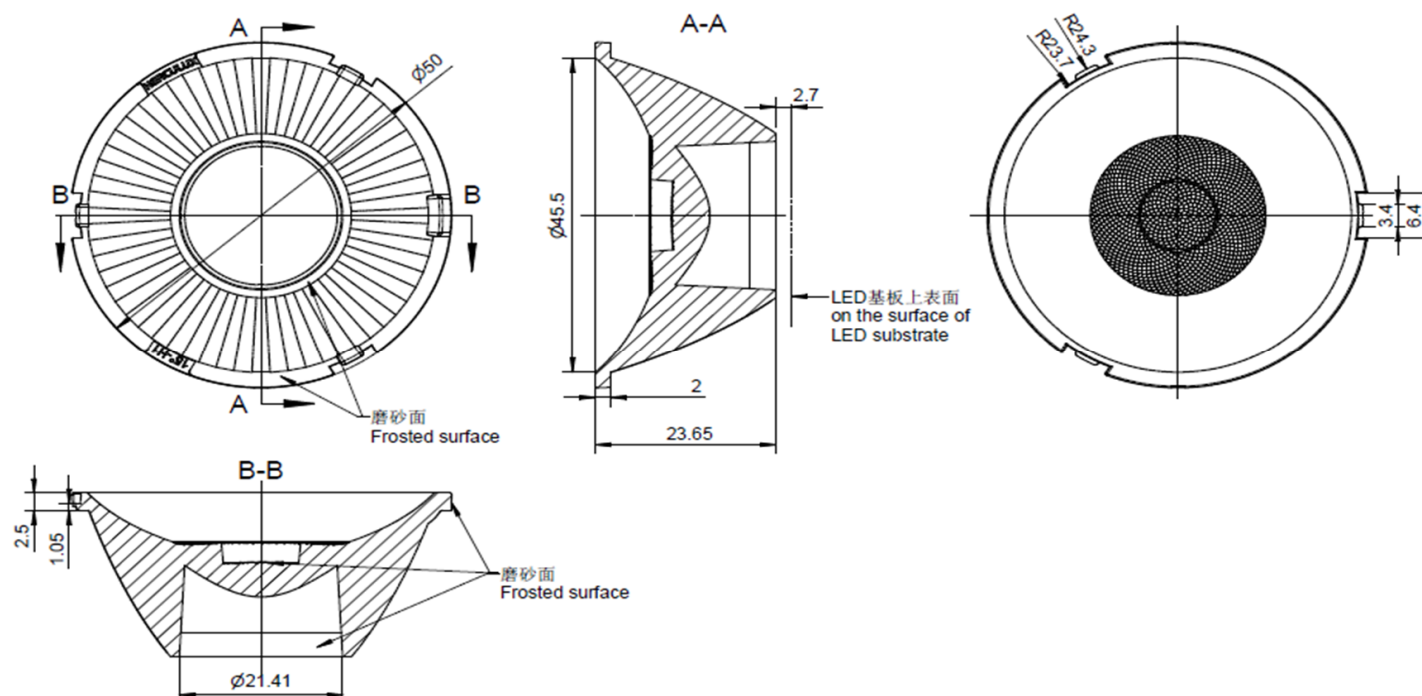
TEL: 0755-2937 1541

FAX: 0755-2907 5140

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

Date updated: 2024/5/22

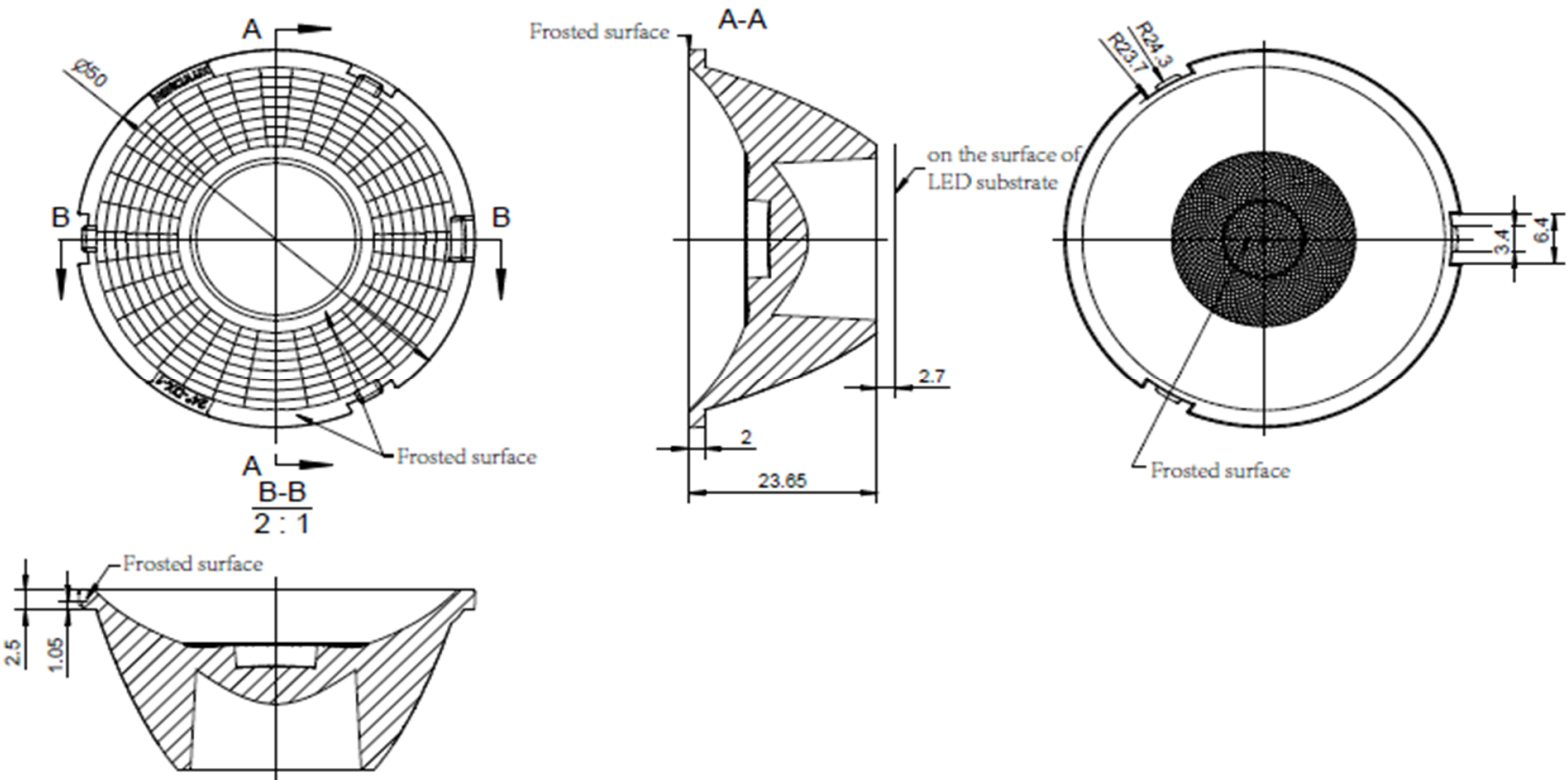
|                        |                                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------|
| Product Picture:       |                     |
| Size(L*W*H/Φ*H):       | Φ: 50mm*H: 23.65mm                                                                                    |
| Material:              | PMMA                                                                                                  |
| Effiency:              | \                                                                                                     |
| Temperature(Topr):     | Material extreme temperature resistance: -40°C to +100°C<br>long-term use temperature: -40°C to +80°C |
| FWHM:                  | 15°、24°、36°、60°                                                                                       |
| Matched LES:           | D9                                                                                                    |
| Recommended MAX power: | Not more than 25W                                                                                     |

**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<3.2μm

|                  |  |  |                             |                                 |     |        |
|------------------|--|--|-----------------------------|---------------------------------|-----|--------|
| Optical design   |  |  | HK Glareless 50@24-15° lens | HK-DX-50@24-15-D9-21-1g-1_PMMMA |     |        |
| Structure design |  |  |                             | 1.01.02581_PMMMA                |     |        |
| Review           |  |  |                             | umber of drawing                | qty | weight |
| Validation       |  |  |                             | CDHK                            |     |        |
|                  |  |  | Material:                   | PMMA                            |     |        |

| MT5<br>Tolerance<br>table (mm) | Basic size     | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |
|--------------------------------|----------------|------|-------|-------|-------|--------|---------|---------|------|--|--|
|                                | olerance value | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |

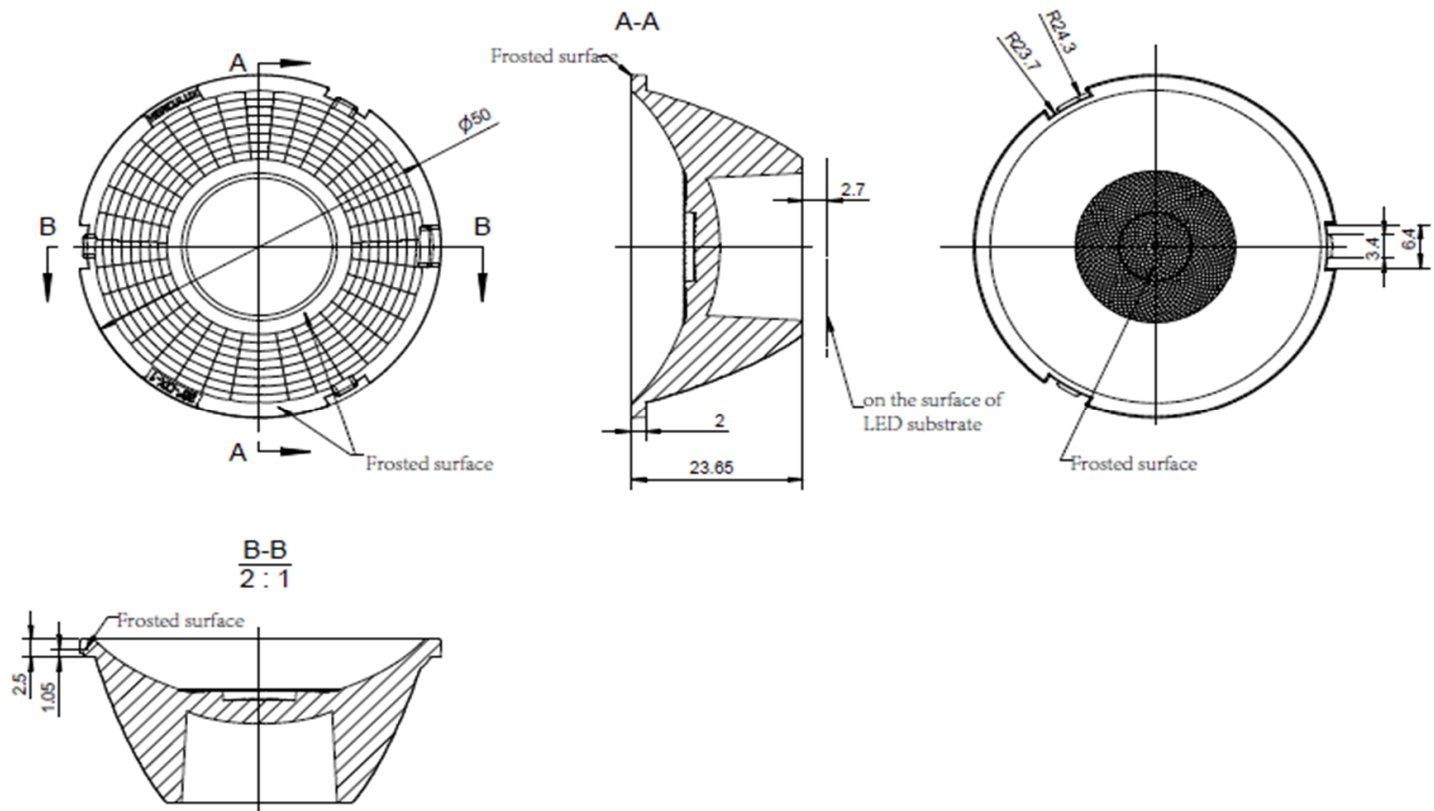


Technical remark:

- 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<3.2μm

|                  |  |  |                             |  |                                |     |        |
|------------------|--|--|-----------------------------|--|--------------------------------|-----|--------|
| Optical design   |  |  | HK Glareless 50@24-24° lens |  | HK-DX-50@24-24-D9-21-1g-1_PMMA |     |        |
| structure design |  |  |                             |  | 1.01.02582_PMMA                |     |        |
| Review           |  |  |                             |  | umber of drawing               | qty | weight |
| Validation       |  |  | Material: PMMA              |  | CDHK                           |     |        |

|                      |               |      |       |       |       |        |         |         |      |  |  |  |
|----------------------|---------------|------|-------|-------|-------|--------|---------|---------|------|--|--|--|
| MT5                  | Basic size    | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |  |
| Tolerance table (mm) | olerance valu | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |  |

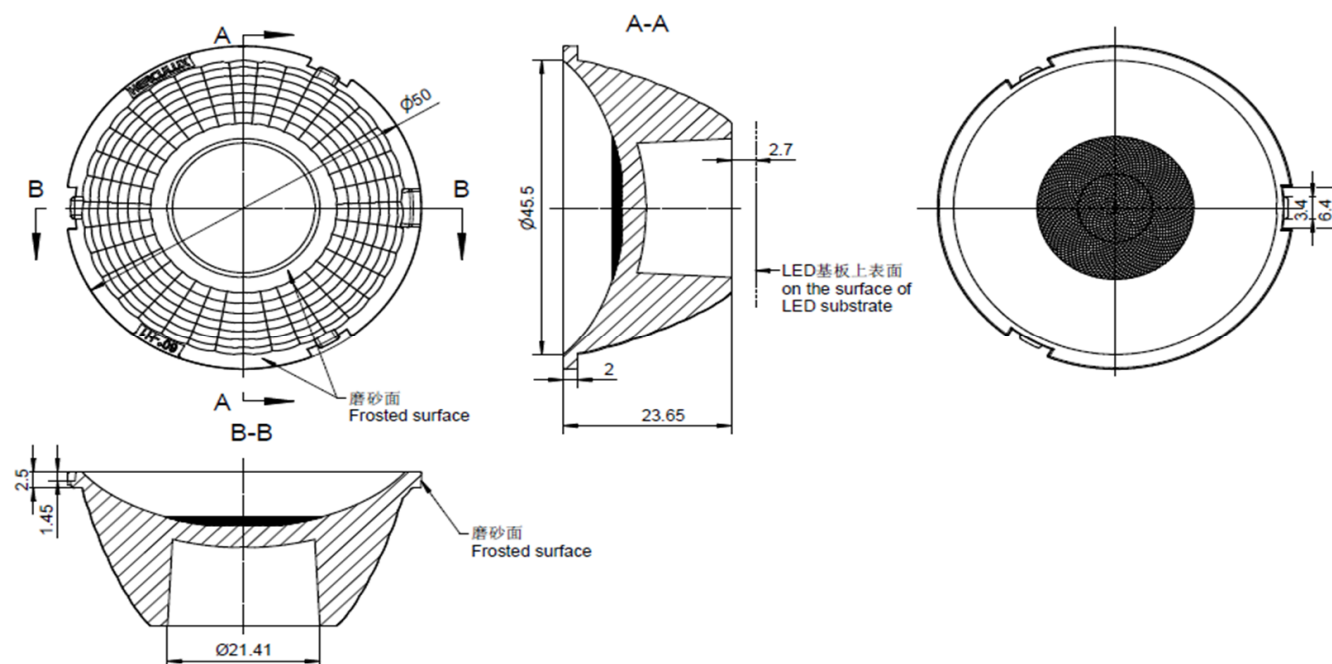


Technical remark:

- 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 Glareless 50@24-36° lens |  | HK-DX-50@24-36-D9-21-1g-1_PMMMA |     |        |
| structure design |  |  |                             |  | 1.01.02590_PMMMA                |     |        |
| Review           |  |  |                             |  | umber of drawin                 | qty | weight |
| Validation       |  |  | Material: PMMA              |  | CDHK                            |     |        |

|                                |               |      |       |       |       |        |         |         |      |  |  |  |
|--------------------------------|---------------|------|-------|-------|-------|--------|---------|---------|------|--|--|--|
| MT5<br>Tolerance<br>table (mm) | Basic size    | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |  |
|                                | olerance valu | ±0.1 | ±0.15 | ±0.2  | ±0.35 | ±0.50  | ±0.80   | ±1.2    | ±2.0 |  |  |  |

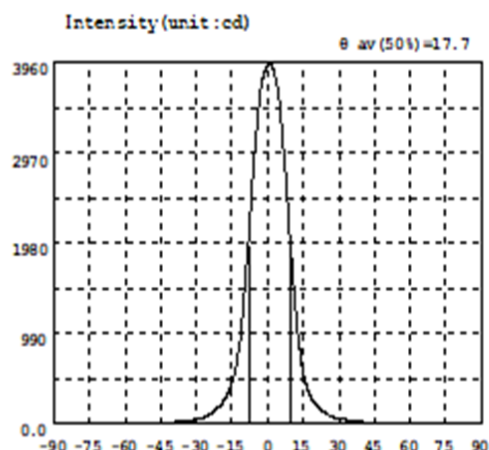
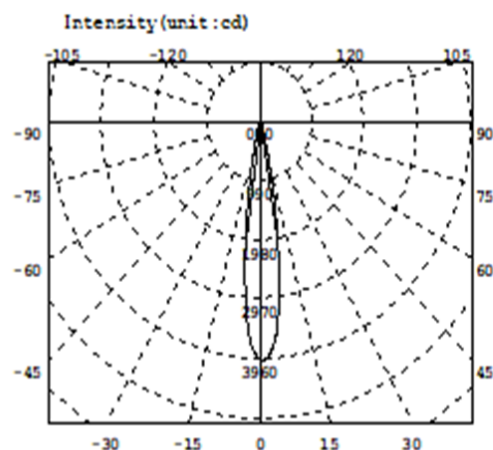


## Technical remark:

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 Glareless 50@24-60° lens |      | HK-DX-50@24-60-D9-21-1g-1_PMMA |     |        |
| Structure design |  |  |                             |      | 1.01.12803_PMMA                |     |        |
| Review           |  |  |                             |      | Number of drawing              | qty | weight |
| Validation       |  |  |                             |      | CDHK                           |     |        |
|                  |  |  | Material:                   | PMMA |                                |     |        |

| MT5<br>Tolerance<br>table (mm) | Basic size    | <3   | 3~10  | 10~24 | 24~65 | 65~140 | 140~250 | 250~450 | >450 |  |  |  |
|--------------------------------|---------------|------|-------|-------|-------|--------|---------|---------|------|--|--|--|
|                                | olerance valu | ±0.1 | ±0.15 | ±0.2  | ±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 | 2.369 | -58.5 | 12.96 | -27.0 | 76.55 | 4.5  | 3618  | 36.0 | 39.37 | 67.5 | 8.553 |
| -88.5 | 2.395 | -57.0 | 13.81 | -25.5 | 93.30 | 6.0  | 3254  | 37.5 | 34.90 | 69.0 | 7.774 |
| -87.0 | 2.511 | -55.5 | 14.60 | -24.0 | 114.9 | 7.5  | 2758  | 39.0 | 30.75 | 70.5 | 7.127 |
| -85.5 | 2.729 | -54.0 | 15.51 | -22.5 | 142.9 | 9.0  | 2202  | 40.5 | 26.94 | 72.0 | 6.606 |
| -84.0 | 3.061 | -52.5 | 16.28 | -21.0 | 177.3 | 10.5 | 1663  | 42.0 | 24.20 | 73.5 | 6.080 |
| -82.5 | 3.366 | -51.0 | 17.03 | -19.5 | 217.7 | 12.0 | 1186  | 43.5 | 22.31 | 75.0 | 5.616 |
| -81.0 | 3.661 | -49.5 | 17.81 | -18.0 | 272.3 | 13.5 | 815.6 | 45.0 | 20.87 | 76.5 | 5.091 |
| -79.5 | 4.056 | -48.0 | 18.63 | -16.5 | 346.6 | 15.0 | 571.2 | 46.5 | 19.68 | 78.0 | 4.678 |
| -78.0 | 4.453 | -46.5 | 19.52 | -15.0 | 448.6 | 16.5 | 417.4 | 48.0 | 18.69 | 79.5 | 4.271 |
| -76.5 | 4.907 | -45.0 | 20.58 | -13.5 | 604.8 | 18.0 | 309.4 | 49.5 | 17.83 | 81.0 | 3.916 |
| -75.0 | 5.387 | -43.5 | 21.81 | -12.0 | 847.9 | 19.5 | 243.0 | 51.0 | 17.19 | 82.5 | 3.606 |
| -73.5 | 5.872 | -42.0 | 23.28 | -10.5 | 1212  | 21.0 | 194.0 | 52.5 | 16.56 | 84.0 | 3.315 |
| -72.0 | 6.361 | -40.5 | 25.04 | -9.0  | 1689  | 22.5 | 156.9 | 54.0 | 16.10 | 85.5 | 3.048 |
| -70.5 | 6.898 | -39.0 | 27.08 | -7.5  | 2225  | 24.0 | 127.2 | 55.5 | 15.67 | 87.0 | 2.753 |
| -69.0 | 7.490 | -37.5 | 29.48 | -6.0  | 2760  | 25.5 | 103.5 | 57.0 | 14.86 | 88.5 | 2.503 |
| -67.5 | 8.238 | -36.0 | 32.32 | -4.5  | 3263  | 27.0 | 85.51 | 58.5 | 13.60 | 90.0 | 2.374 |
| -66.0 | 9.140 | -34.5 | 35.96 | -3.0  | 3627  | 28.5 | 72.08 | 60.0 | 12.75 |      |       |
| -64.5 | 9.992 | -33.0 | 40.52 | -1.5  | 3844  | 30.0 | 62.41 | 61.5 | 11.93 |      |       |
| -63.0 | 10.77 | -31.5 | 46.41 | 0.0   | 3940  | 31.5 | 54.92 | 63.0 | 11.15 |      |       |
| -61.5 | 11.47 | -30.0 | 53.84 | 1.5   | 3934  | 33.0 | 48.95 | 64.5 | 10.36 |      |       |
| -60.0 | 12.16 | -28.5 | 63.74 | 3.0   | 3827  | 34.5 | 43.98 | 66.0 | 9.477 |      |       |

## Electricity Parameter:

Current I: 0.1000A Power: 3.200W

Voltage V: 32.00V PF: 1.000

## Optical Parameter(Distance=2.559m):

Equivalent Luminous flux:  $\Phi_{\text{eff}} = 544.91\text{lm}$  Efficiency:  $\text{Eff} = 170.31\text{lm/W}$ 

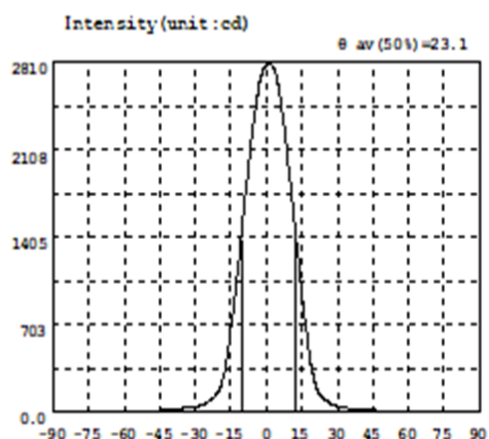
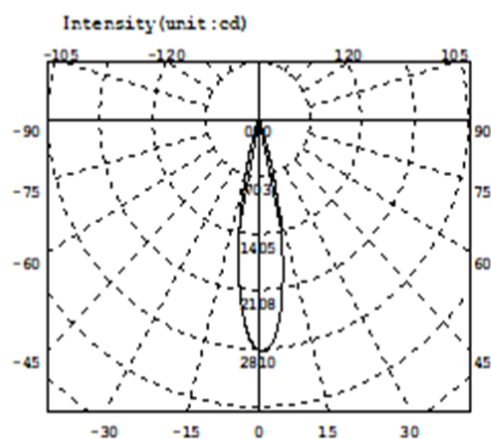
Diffuse angle: @ (25%): 24.0deg@ (50%): 17.7deg@ (75%): 12.3deg@ (50%): 17.7deg

Diffuse angle: @ (25%): 24.0deg@ (50%): 17.8deg@ (75%): 12.3deg@ (50%): 17.8deg

Imax=3951cd (C=0.0deg,G=0.5deg)

C0-180Plane Imax= 3951cd(G=0.5deg)

C0-180Plane I0= 3940cd



Intensity data:(deg , cd) C0-180

| A     | I     | A     | I     | A     | I     | A    | I     | A    | I     | A    | I     |
|-------|-------|-------|-------|-------|-------|------|-------|------|-------|------|-------|
| -90.0 | 1.808 | -58.5 | 12.06 | -27.0 | 63.33 | 4.5  | 2671  | 36.0 | 29.57 | 67.5 | 8.548 |
| -88.5 | 1.822 | -57.0 | 12.98 | -25.5 | 75.48 | 6.0  | 2510  | 37.5 | 26.66 | 69.0 | 7.700 |
| -87.0 | 1.911 | -55.5 | 13.99 | -24.0 | 92.07 | 7.5  | 2294  | 39.0 | 24.67 | 70.5 | 7.138 |
| -85.5 | 2.116 | -54.0 | 14.83 | -22.5 | 114.2 | 9.0  | 2047  | 40.5 | 22.90 | 72.0 | 6.583 |
| -84.0 | 2.383 | -52.5 | 15.49 | -21.0 | 145.6 | 10.5 | 1780  | 42.0 | 21.53 | 73.5 | 6.041 |
| -82.5 | 2.614 | -51.0 | 16.20 | -19.5 | 201.0 | 12.0 | 1506  | 43.5 | 20.74 | 75.0 | 5.493 |
| -81.0 | 2.947 | -49.5 | 17.00 | -18.0 | 295.6 | 13.5 | 1228  | 45.0 | 20.03 | 76.5 | 4.910 |
| -79.5 | 3.409 | -48.0 | 17.72 | -16.5 | 455.4 | 15.0 | 963.9 | 46.5 | 19.23 | 78.0 | 4.359 |
| -78.0 | 3.945 | -46.5 | 18.44 | -15.0 | 660.7 | 16.5 | 716.4 | 48.0 | 18.49 | 79.5 | 3.913 |
| -76.5 | 4.307 | -45.0 | 19.18 | -13.5 | 898.2 | 18.0 | 501.1 | 49.5 | 17.81 | 81.0 | 3.490 |
| -75.0 | 4.775 | -43.5 | 20.10 | -12.0 | 1162  | 19.5 | 314.0 | 51.0 | 17.09 | 82.5 | 3.109 |
| -73.5 | 5.236 | -42.0 | 21.15 | -10.5 | 1438  | 21.0 | 206.1 | 52.5 | 16.55 | 84.0 | 2.740 |
| -72.0 | 5.619 | -40.5 | 23.00 | -9.0  | 1717  | 22.5 | 144.7 | 54.0 | 15.92 | 85.5 | 2.526 |
| -70.5 | 6.105 | -39.0 | 26.15 | -7.5  | 1988  | 24.0 | 112.3 | 55.5 | 15.04 | 87.0 | 2.265 |
| -69.0 | 6.640 | -37.5 | 29.71 | -6.0  | 2229  | 25.5 | 89.86 | 57.0 | 14.09 | 88.5 | 1.999 |
| -67.5 | 7.250 | -36.0 | 33.24 | -4.5  | 2451  | 27.0 | 72.72 | 58.5 | 13.27 | 90.0 | 2.035 |
| -66.0 | 8.046 | -34.5 | 37.11 | -3.0  | 2629  | 28.5 | 59.90 | 60.0 | 12.39 |      |       |
| -64.5 | 9.013 | -33.0 | 40.74 | -1.5  | 2744  | 30.0 | 50.62 | 61.5 | 11.67 |      |       |
| -63.0 | 9.884 | -31.5 | 44.58 | 0.0   | 2793  | 31.5 | 43.56 | 63.0 | 10.93 |      |       |
| -61.5 | 10.66 | -30.0 | 48.55 | 1.5   | 2804  | 33.0 | 38.18 | 64.5 | 10.27 |      |       |
| -60.0 | 11.36 | -28.5 | 54.43 | 3.0   | 2768  | 34.5 | 33.57 | 66.0 | 9.534 |      |       |

## Electricity Parameter:

Current I: 0.1000A Power: 3.200W

Voltage V: 32.00V PF: 1.000

## Optical Parameter (Distance=2.559m) :

Equivalent Luminous flux:  $\Phi_{eff}$  = 545.8lm Efficiency:  $E_{eff}$  = 170.56lm/W

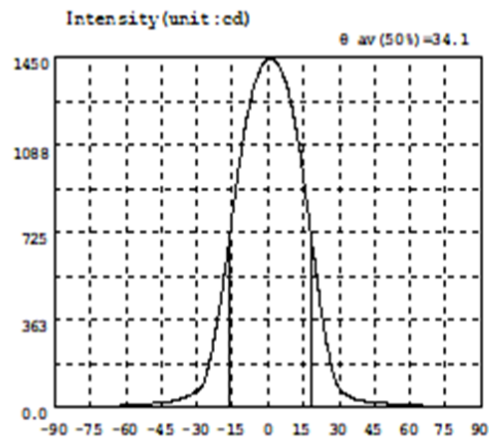
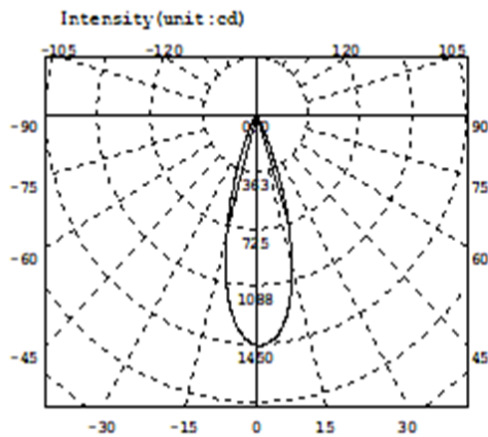
Diffuse angle: @ (25%) : 31.2deg @ (50%) : 23.1deg @ (75%) : 15.4deg @ (50%) : 23.1deg

Diffuse angle: @ (25%) : 31.3deg @ (50%) : 23.3deg @ (75%) : 15.5deg @ (50%) : 23.3deg

Imax=2804cd (C=0.0deg, G=1.5deg)

C0-180Plane Imax= 2804cd (G=1.5deg)

C0-180Plane I0= 2793cd



Intensity data:(deg , cd) C0-180

| A     | I     | A     | I     | A     | I     | A    | I     | A    | I     | A    | I     |
|-------|-------|-------|-------|-------|-------|------|-------|------|-------|------|-------|
| -90.0 | 1.859 | -58.5 | 11.95 | -27.0 | 108.3 | 4.5  | 1416  | 36.0 | 40.36 | 67.5 | 8.769 |
| -88.5 | 1.834 | -57.0 | 13.05 | -25.5 | 156.1 | 6.0  | 1390  | 37.5 | 35.30 | 69.0 | 8.105 |
| -87.0 | 1.898 | -55.5 | 14.31 | -24.0 | 218.0 | 7.5  | 1349  | 39.0 | 31.41 | 70.5 | 7.512 |
| -85.5 | 2.052 | -54.0 | 15.41 | -22.5 | 292.5 | 9.0  | 1297  | 40.5 | 28.17 | 72.0 | 6.922 |
| -84.0 | 2.282 | -52.5 | 15.83 | -21.0 | 378.8 | 10.5 | 1228  | 42.0 | 25.64 | 73.5 | 6.319 |
| -82.5 | 2.513 | -51.0 | 16.38 | -19.5 | 472.8 | 12.0 | 1149  | 43.5 | 23.59 | 75.0 | 5.814 |
| -81.0 | 2.797 | -49.5 | 17.05 | -18.0 | 577.5 | 13.5 | 1058  | 45.0 | 22.09 | 76.5 | 5.263 |
| -79.5 | 3.229 | -48.0 | 18.05 | -16.5 | 687.6 | 15.0 | 955.5 | 46.5 | 20.67 | 78.0 | 4.773 |
| -78.0 | 3.627 | -46.5 | 19.09 | -15.0 | 797.7 | 16.5 | 842.9 | 48.0 | 19.39 | 79.5 | 4.235 |
| -76.5 | 4.139 | -45.0 | 20.40 | -13.5 | 907.6 | 18.0 | 730.1 | 49.5 | 18.19 | 81.0 | 3.763 |
| -75.0 | 4.646 | -43.5 | 22.07 | -12.0 | 1016  | 19.5 | 619.3 | 51.0 | 17.08 | 82.5 | 3.439 |
| -73.5 | 5.116 | -42.0 | 24.20 | -10.5 | 1112  | 21.0 | 511.6 | 52.5 | 16.01 | 84.0 | 3.095 |
| -72.0 | 5.528 | -40.5 | 26.75 | -9.0  | 1194  | 22.5 | 407.9 | 54.0 | 15.19 | 85.5 | 2.738 |
| -70.5 | 5.965 | -39.0 | 30.42 | -7.5  | 1265  | 24.0 | 313.2 | 55.5 | 14.44 | 87.0 | 2.484 |
| -69.0 | 6.529 | -37.5 | 35.23 | -6.0  | 1326  | 25.5 | 233.1 | 57.0 | 13.51 | 88.5 | 2.224 |
| -67.5 | 7.084 | -36.0 | 39.94 | -4.5  | 1370  | 27.0 | 165.4 | 58.5 | 12.85 | 90.0 | 2.067 |
| -66.0 | 7.751 | -34.5 | 45.17 | -3.0  | 1405  | 28.5 | 114.3 | 60.0 | 12.41 |      |       |
| -64.5 | 8.585 | -33.0 | 51.48 | -1.5  | 1430  | 30.0 | 83.17 | 61.5 | 11.49 |      |       |
| -63.0 | 9.399 | -31.5 | 59.17 | 0.0   | 1443  | 31.5 | 66.01 | 63.0 | 10.71 |      |       |
| -61.5 | 10.23 | -30.0 | 69.01 | 1.5   | 1445  | 33.0 | 54.74 | 64.5 | 10.09 |      |       |
| -60.0 | 11.07 | -28.5 | 83.13 | 3.0   | 1434  | 34.5 | 46.55 | 66.0 | 9.394 |      |       |

## Electricity Parameter:

Current I: 0.1000A Power: 3.200W

Voltage V: 32.00V PF: 1.000

## Optical Parameter (Distance=2.559m):

Equivalent Luminous flux:  $\Phi_{\text{eff}} = 543.3\text{lm}$  Efficiency:  $\text{Eff} = 169.79\text{lm/W}$ 

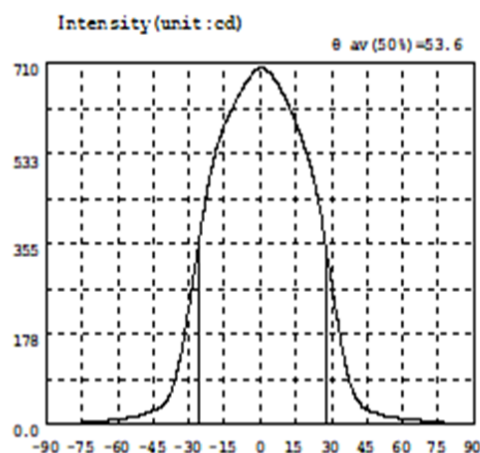
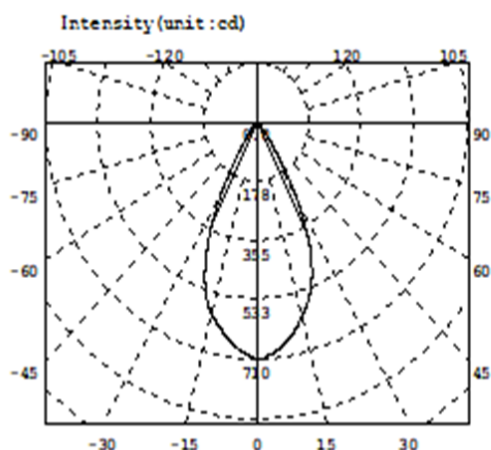
Diffuse angle: @ (25%): 44.3deg @ (50%): 34.1deg @ (75%): 23.9deg @ (50%): 34.1deg

Diffuse angle: @ (25%): 44.4deg @ (50%): 34.1deg @ (75%): 24.0deg @ (50%): 34.1deg

Imax=1446cd (C=0.0deg, G=1.0deg)

C0-180Plane Imax= 1446cd (G=1.0deg)

C0-180Plane IO= 1443cd



Intensity data:(deg , cd) C0-180

| A     | I     | A     | I     | A     | I     | A    | I     | A    | I     | A    | I     |
|-------|-------|-------|-------|-------|-------|------|-------|------|-------|------|-------|
| -90.0 | 1.961 | -58.5 | 11.65 | -27.0 | 324.3 | 4.5  | 689.5 | 36.0 | 116.4 | 67.5 | 8.484 |
| -88.5 | 1.872 | -57.0 | 12.87 | -25.5 | 369.3 | 6.0  | 679.1 | 37.5 | 88.26 | 69.0 | 7.821 |
| -87.0 | 1.949 | -55.5 | 14.25 | -24.0 | 412.8 | 7.5  | 669.0 | 39.0 | 67.34 | 70.5 | 7.303 |
| -85.5 | 2.166 | -54.0 | 15.66 | -22.5 | 453.8 | 9.0  | 656.6 | 40.5 | 51.63 | 72.0 | 6.867 |
| -84.0 | 2.371 | -52.5 | 16.70 | -21.0 | 491.1 | 10.5 | 642.6 | 42.0 | 41.13 | 73.5 | 6.429 |
| -82.5 | 2.603 | -51.0 | 18.07 | -19.5 | 522.0 | 12.0 | 626.5 | 43.5 | 34.30 | 75.0 | 5.988 |
| -81.0 | 2.924 | -49.5 | 19.88 | -18.0 | 548.3 | 13.5 | 610.2 | 45.0 | 29.91 | 76.5 | 5.239 |
| -79.5 | 3.257 | -48.0 | 22.29 | -16.5 | 569.9 | 15.0 | 594.2 | 46.5 | 26.66 | 78.0 | 4.677 |
| -78.0 | 3.689 | -46.5 | 25.10 | -15.0 | 589.5 | 16.5 | 575.8 | 48.0 | 24.06 | 79.5 | 4.207 |
| -76.5 | 4.113 | -45.0 | 28.11 | -13.5 | 604.5 | 18.0 | 555.5 | 49.5 | 21.78 | 81.0 | 3.792 |
| -75.0 | 4.580 | -43.5 | 31.35 | -12.0 | 618.5 | 19.5 | 536.0 | 51.0 | 19.71 | 82.5 | 3.407 |
| -73.5 | 4.990 | -42.0 | 35.13 | -10.5 | 633.3 | 21.0 | 512.7 | 52.5 | 17.91 | 84.0 | 3.054 |
| -72.0 | 5.440 | -40.5 | 40.59 | -9.0  | 647.4 | 22.5 | 484.4 | 54.0 | 16.42 | 85.5 | 2.759 |
| -70.5 | 5.951 | -39.0 | 49.15 | -7.5  | 661.1 | 24.0 | 452.0 | 55.5 | 15.11 | 87.0 | 2.545 |
| -69.0 | 6.474 | -37.5 | 63.31 | -6.0  | 671.2 | 25.5 | 415.3 | 57.0 | 13.99 | 88.5 | 2.358 |
| -67.5 | 6.979 | -36.0 | 85.14 | -4.5  | 681.8 | 27.0 | 366.5 | 58.5 | 12.96 | 90.0 | 2.244 |
| -66.0 | 7.554 | -34.5 | 113.2 | -3.0  | 690.2 | 28.5 | 324.6 | 60.0 | 11.86 |      |       |
| -64.5 | 8.205 | -33.0 | 147.3 | -1.5  | 698.2 | 30.0 | 282.6 | 61.5 | 10.95 |      |       |
| -63.0 | 8.887 | -31.5 | 187.5 | 0.0   | 701.7 | 31.5 | 237.8 | 63.0 | 10.47 |      |       |
| -61.5 | 9.690 | -30.0 | 229.0 | 1.5   | 701.0 | 33.0 | 193.7 | 64.5 | 9.726 |      |       |
| -60.0 | 10.65 | -28.5 | 277.1 | 3.0   | 695.6 | 34.5 | 152.0 | 66.0 | 9.067 |      |       |

## Electricity Parameter:

Current I: 0.1000A Power: 3.200W  
Voltage V: 32.00V PF: 1.000

## Optical Parameter (Distance=2.559m) :

Equivalent Luminous flux:  $\Phi_{\text{eff}} = 544.2\text{lm}$  Efficiency:  $\text{Eff} = 170.08\text{lm/W}$

Diffuse angle: @ (25%): 65.5deg @ (50%): 53.6deg @ (75%): 39.3deg @ (50%): 53.6deg

Diffuse angle: @ (25%): 65.5deg @ (50%): 53.6deg @ (75%): 39.3deg @ (50%): 53.6deg

$I_{\text{max}} = 701.7\text{cd}$  (C=0.0deg, G=0.0deg)

C0-180Plane  $I_{\text{max}} = 701.7\text{cd}$  (G=0.0deg)

C0-180Plane  $I_0 = 701.7\text{cd}$



| 1.Size                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                              | Standard size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                       |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|----------|-----------------------------------------------------------------------------------------------|-----------------|------------|-------------|-------------|-------------|-------------|-------------|---|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|
|                                                                                                                                                                                                                                | diameter                                                                                                                                                                                                                                                                                                                     | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  | 50.21        | 50.18        | 50.21        | 50.18        |          | Test environment:<br>In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test. |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | height                                                                                                                                                                                                                                                                                                                       | 23.65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                  | 23.72        | 23.73        | 23.72        | 23.73        |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | thickness                                                                                                                                                                                                                                                                                                                    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                  | 2.01         | 1.99         | 2.01         | 1.99         |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | 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    | No stains    |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 3.Material                                                                                                                                                                                                                     | PMMA                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              | Color        | Transparent  |              | OK       |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 4.Optical index                                                                                                                                                                                                                | Testing LED                                                                                                                                                                                                                                                                                                                  | D9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |              |              |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | 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 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              |              |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | FWHM                                                                                                                                                                                                                                                                                                                         | See light distribution curve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                  |              |              |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | angle                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              | 17.7         | 18           | 17.5         | 17.3     |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | K-value (CD/LM)                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              | 7.25         | 6.90         | 7.30         | 7.35     |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | Efficiency                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              | 93.00%       | 93.00%       | 93.00%       | 93.00%   |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Facult                                                                                                                                                                                                                         | See the signature sample                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              |              |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Comprehensive judgment                                                                                                                                                                                                         | Qualified                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              |              |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right |                                                                                                                                                                                                                                                                                                                              | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><div><table><thead><tr><th>Temperature (℃)</th><th>Size: 50mm</th><th>Size: 100mm</th><th>Size: 150mm</th><th>Size: 200mm</th><th>Size: 250mm</th><th>Size: 300mm</th></tr></thead><tbody><tr><td>0</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td></tr><tr><td>10</td><td>0.05</td><td>0.08</td><td>0.10</td><td>0.12</td><td>0.15</td><td>0.18</td></tr><tr><td>20</td><td>0.08</td><td>0.12</td><td>0.18</td><td>0.22</td><td>0.28</td><td>0.35</td></tr><tr><td>30</td><td>0.10</td><td>0.18</td><td>0.28</td><td>0.35</td><td>0.45</td><td>0.55</td></tr><tr><td>40</td><td>0.12</td><td>0.25</td><td>0.38</td><td>0.48</td><td>0.60</td><td>0.72</td></tr></tbody></table></div><div>Size: 50mm<br/>Size: 100mm<br/>Size: 150mm<br/>Size: 200mm<br/>Size: 250mm<br/>Size: 300mm</div></div> |                  |                  |              |              |              |              |          |                                                                                               | Temperature (℃) | Size: 50mm | Size: 100mm | Size: 150mm | Size: 200mm | Size: 250mm | Size: 300mm | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 10 | 0.05 | 0.08 | 0.10 | 0.12 | 0.15 | 0.18 | 20 | 0.08 | 0.12 | 0.18 | 0.22 | 0.28 | 0.35 | 30 | 0.10 | 0.18 | 0.28 | 0.35 | 0.45 | 0.55 | 40 | 0.12 | 0.25 | 0.38 | 0.48 | 0.60 | 0.72 |
| Temperature (℃)                                                                                                                                                                                                                | Size: 50mm                                                                                                                                                                                                                                                                                                                   | Size: 100mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Size: 150mm      | Size: 200mm      | Size: 250mm  | Size: 300mm  |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 0                                                                                                                                                                                                                              | 0.00                                                                                                                                                                                                                                                                                                                         | 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.00             | 0.00             | 0.00         | 0.00         |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 10                                                                                                                                                                                                                             | 0.05                                                                                                                                                                                                                                                                                                                         | 0.08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.10             | 0.12             | 0.15         | 0.18         |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 20                                                                                                                                                                                                                             | 0.08                                                                                                                                                                                                                                                                                                                         | 0.12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.18             | 0.22             | 0.28         | 0.35         |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 30                                                                                                                                                                                                                             | 0.10                                                                                                                                                                                                                                                                                                                         | 0.18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.28             | 0.35             | 0.45         | 0.55         |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 40                                                                                                                                                                                                                             | 0.12                                                                                                                                                                                                                                                                                                                         | 0.25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.38             | 0.48             | 0.60         | 0.72         |              |              |          |                                                                                               |                 |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |

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.

|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                               | Standard size                | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Test result5 | Test result6 | Test result7 | Test result8 | Judgment | Remarks                                                          |  |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------|------------------------------------------------------------------|--|
| 1.Size                                                                                                                         | diameter                                                                                                                                                                                                                                                                                                                                                      | 50                           |                  |                  | 50.05        | 50.12        | 50.12        | 50.2         | 50.12        | 50.05        | 50.16        | 50.2         |          | Test environment: In 20 °C -25 °C environment to achieve thermal |  |
|                                                                                                                                | height                                                                                                                                                                                                                                                                                                                                                        | 23.65                        |                  |                  | 23.85        | 23.84        | 23.92        | 23.91        | 23.93        | 23.93        | 23.91        | 23.91        |          |                                                                  |  |
|                                                                                                                                | thickness                                                                                                                                                                                                                                                                                                                                                     | 2                            |                  |                  | 2.02         | 2.05         | 2.1          | 2.13         | 2.1          | 2.09         | 2.07         | 2.13         |          |                                                                  |  |
|                                                                                                                                | 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    |              |              |              |          |                                                                  |  |
| 3.Material                                                                                                                     | PMMA                                                                                                                                                                                                                                                                                                                                                          |                              |                  |                  |              |              | Color        |              | Transparent  |              |              |              | OK       |                                                                  |  |
| 4.Optical index                                                                                                                | Testing LED                                                                                                                                                                                                                                                                                                                                                   | D9                           |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |  |
|                                                                                                                                | 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                                                                                                                                                                                                                                                                                                                                                         |                              |                  |                  |              | 23           | 23.5         | 23.3         | 24           | 23.9         | 23.5         | 23.4         | 23.7     |                                                                  |  |
|                                                                                                                                | K-value                                                                                                                                                                                                                                                                                                                                                       |                              |                  |                  |              | 5.13         | 5.01         | 5.10         | 4.85         | 4.9          | 5.02         | 5.10         | 5.00     |                                                                  |  |
|                                                                                                                                | efficiency                                                                                                                                                                                                                                                                                                                                                    |                              |                  |                  |              | 93.00%       | 93.00%       | 93.00%       | 93.00%       | 93.00%       | 93.00%       | 93.00%       | 93.00%   |                                                                  |  |
|                                                                                                                                | accuracy                                                                                                                                                                                                                                                                                                                                                      | 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                                               |                                                                                                                                                                                                                                                                                                                                                               |                              |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |  |
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|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                               |                              |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |  |

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.

|                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |
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| 1.Size                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                               | Standard size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Test result5 | Test result6 | Test result7 | Test result8 | Judgment | Remarks                                                          |
|                                                                                                                                                                                                                                | diameter                                                                                                                                                                                                                                                                                                                                                      | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  | 50.22        | 50.16        | 50.2         | 50.27        | 50.18        | 50.23        | 50.23        | 50.14        |          | Test environment: In 20 °C -25 °C environment to achieve thermal |
|                                                                                                                                                                                                                                | height                                                                                                                                                                                                                                                                                                                                                        | 23.65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                  | 23.77        | 23.77        | 23.85        | 23.84        | 23.87        | 23.85        | 23.79        | 23.79        |          |                                                                  |
|                                                                                                                                                                                                                                | thickness                                                                                                                                                                                                                                                                                                                                                     | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                  | 2.03         | 2.02         | 2.11         | 2.14         | 2.15         | 2.12         | 2.05         | 2.06         |          |                                                                  |
|                                                                                                                                                                                                                                | 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    |              |              |              |          |                                                                  |
| 3.Material                                                                                                                                                                                                                     | PMMA                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              |              | Color        |              | Transparent  |              |              |              | OK       |                                                                  |
| 4.Optical index                                                                                                                                                                                                                | Testing LED                                                                                                                                                                                                                                                                                                                                                   | D9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |
|                                                                                                                                                                                                                                | 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                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  | 34               | 34.3         | 34.6         | 35           | 34.5         | 34.7         | 35.1         | 33.9         |              |          |                                                                  |
|                                                                                                                                                                                                                                | K-value                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  | 2.66             | 2.55         | 2.50         | 2.40         | 2.48         | 2.4          | 2.40         | 2.67         |              |          |                                                                  |
|                                                                                                                                                                                                                                | efficiency                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  | 93.00%           | 93.00%       | 93.00%       | 93.00%       | 93.00%       | 93.00%       | 93.00%       | 93.00%       |              |          |                                                                  |
| accuracy                                                                                                                                                                                                                       | See the signature sample                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |
| Comprehensive judgment                                                                                                                                                                                                         | Qualified                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right |                                                                                                                                                                                                                                                                                                                                                               | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><div><div><div><div></div><div>Size: 50mm</div></div><div><div></div><div>Size: 100mm</div></div><div><div></div><div>Size: 150mm</div></div><div><div></div><div>Size: 200mm</div></div><div><div></div><div>Size: 250mm</div></div><div><div></div><div>Size: 300mm</div></div></div><div><div></div><div>0</div><div>10</div><div>20</div><div>30</div><div>40</div></div><div>(°C)</div></div></div> |                  |                  |              |              |              |              |              |              |              |              |          |                                                                  |

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.



|                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                              | Standard size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                      |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|----------|----------------------------------------------------------------------------------------------|------------------|------------|-------------|-------------|-------------|-------------|-------------|---|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|
| 1.Size                                                                                                                                                                                                                         | diameter                                                                                                                                                                                                                                                                                                                     | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                  | 50.13        | 50.14        | 50.13        | 50.14        |          | Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test. |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | height                                                                                                                                                                                                                                                                                                                       | 23.65                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  | 23.8         | 23.77        | 23.8         | 23.77        |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | thickness                                                                                                                                                                                                                                                                                                                    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  | 1.97         | 1.97         | 1.97         | 1.97         |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | 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    | No stains    |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 3.Material                                                                                                                                                                                                                     | PMMA                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              | Color        | Transparent  |              | OK       |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 4.Optical index                                                                                                                                                                                                                | Testing LED                                                                                                                                                                                                                                                                                                                  | D9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |                  |              |              |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | 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 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | FWHM                                                                                                                                                                                                                                                                                                                         | See light distribution curve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | angle                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              | 57.7         | 57.2         | 58           | 57.7     |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | K-value (CD/LM)                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                | Efficiency                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              | 90.00%       | 90.00%       | 90.00%       | 90.00%   |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Facult                                                                                                                                                                                                                         | See the signature sample                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Comprehensive judgment                                                                                                                                                                                                         | Qualified                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Remarks:<br>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.<br>2、Ambient temperature on the size of the product refer to the table on the right |                                                                                                                                                                                                                                                                                                                              | <div>PMMA product size changes with temperature table</div> <div><div>Length changes (mm)</div><table><thead><tr><th>Temperature (°C)</th><th>Size: 50mm</th><th>Size: 100mm</th><th>Size: 150mm</th><th>Size: 200mm</th><th>Size: 250mm</th><th>Size: 300mm</th></tr></thead><tbody><tr><td>0</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td></tr><tr><td>10</td><td>0.02</td><td>0.05</td><td>0.08</td><td>0.12</td><td>0.15</td><td>0.18</td></tr><tr><td>20</td><td>0.04</td><td>0.10</td><td>0.15</td><td>0.20</td><td>0.25</td><td>0.35</td></tr><tr><td>30</td><td>0.06</td><td>0.15</td><td>0.22</td><td>0.30</td><td>0.40</td><td>0.55</td></tr><tr><td>40</td><td>0.08</td><td>0.20</td><td>0.30</td><td>0.45</td><td>0.60</td><td>0.72</td></tr></tbody></table><div>Size: 50mm<br/>Size: 100mm<br/>Size: 150mm<br/>Size: 200mm<br/>Size: 250mm<br/>Size: 300mm</div></div> |                  |                  |              |              |              |              |          |                                                                                              | Temperature (°C) | Size: 50mm | Size: 100mm | Size: 150mm | Size: 200mm | Size: 250mm | Size: 300mm | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 10 | 0.02 | 0.05 | 0.08 | 0.12 | 0.15 | 0.18 | 20 | 0.04 | 0.10 | 0.15 | 0.20 | 0.25 | 0.35 | 30 | 0.06 | 0.15 | 0.22 | 0.30 | 0.40 | 0.55 | 40 | 0.08 | 0.20 | 0.30 | 0.45 | 0.60 | 0.72 |
| Temperature (°C)                                                                                                                                                                                                               | Size: 50mm                                                                                                                                                                                                                                                                                                                   | Size: 100mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Size: 150mm      | Size: 200mm      | Size: 250mm  | Size: 300mm  |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 0                                                                                                                                                                                                                              | 0.00                                                                                                                                                                                                                                                                                                                         | 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.00             | 0.00             | 0.00         | 0.00         |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 10                                                                                                                                                                                                                             | 0.02                                                                                                                                                                                                                                                                                                                         | 0.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.08             | 0.12             | 0.15         | 0.18         |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 20                                                                                                                                                                                                                             | 0.04                                                                                                                                                                                                                                                                                                                         | 0.10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.15             | 0.20             | 0.25         | 0.35         |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 30                                                                                                                                                                                                                             | 0.06                                                                                                                                                                                                                                                                                                                         | 0.15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.22             | 0.30             | 0.40         | 0.55         |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 40                                                                                                                                                                                                                             | 0.08                                                                                                                                                                                                                                                                                                                         | 0.20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.30             | 0.45             | 0.60         | 0.72         |              |              |          |                                                                                              |                  |            |             |             |             |             |             |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |

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.

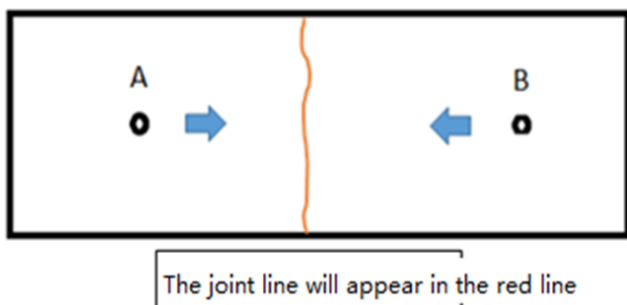
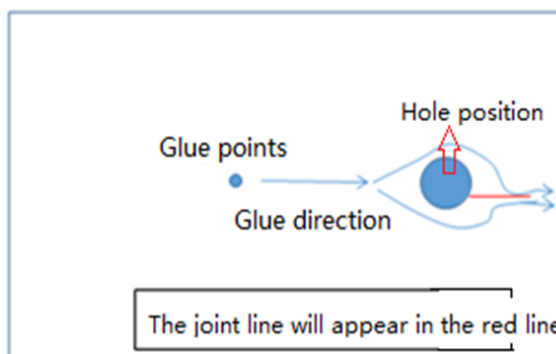
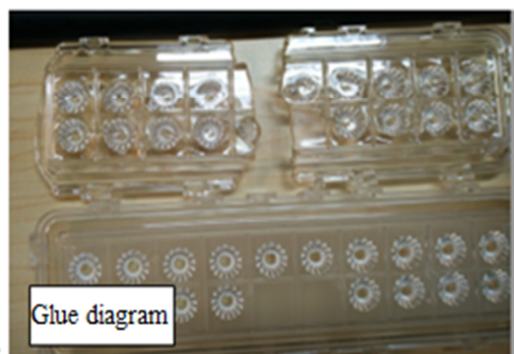
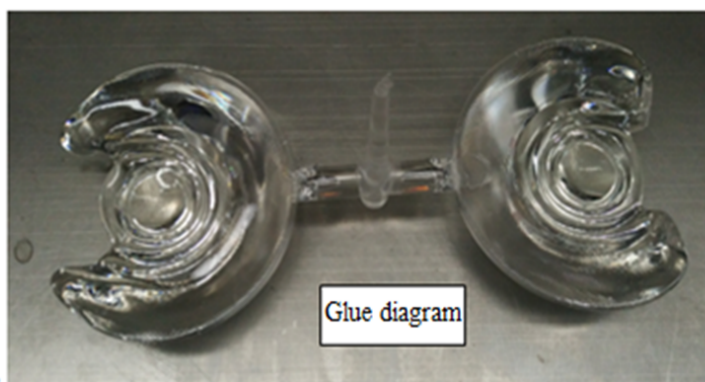


|                     |                                                                                               |                                                               |                  |                |                             |      |         |
|---------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------|----------------|-----------------------------|------|---------|
| PN                  |                                                                                               | HK-DX-50@24-15-D9-21-1g-1_PMMA                                |                  | Product Name   | HK Glareless 50@24-15° lens |      |         |
| Product material    |                                                                                               | PMMA                                                          |                  | Customer       |                             |      |         |
| Package diagram     |                                                                                               | <div><p>Single      Vacuum package      Box package</p></div> |                  |                |                             |      |         |
| Product packing     |                                                                                               | 14                                                            | A/ Box           | 4              | pcs/Layer                   |      |         |
|                     |                                                                                               | 10                                                            | Layer/Box        | 560            | A/ Carton                   |      |         |
| Packaging Materials | NO.                                                                                           | Part No                                                       | Part name        | Size           | Dosage                      | Unit | Remarks |
|                     | 1                                                                                             | 2.07.0024-1                                                   | Blister box      | 23cm*21cm      | 40                          | BAG  |         |
|                     | 2                                                                                             | 2.08.0001                                                     | PE film          | 30cm*30cm      | 40                          | PCS  |         |
|                     | 3                                                                                             | 2.06.0005                                                     | Reel label paper | 6.2cm*8cm      | 40                          | PCS  |         |
|                     | 4                                                                                             | 2.06.0005                                                     | Box label paper  | 6.2cm*9.2cm    | 1                           | PCS  |         |
|                     | 5                                                                                             | 2.06.0003                                                     | big plate        | 46.8cm*42.8cm  | 11                          | 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 <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<br>, 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;<br>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;<br>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 ,<br>A single off scrub imprint requires $D \leq 1\text{ mm}$ and no more than 1 area within a 50x50 mm area | Visual             |   | √ |   |