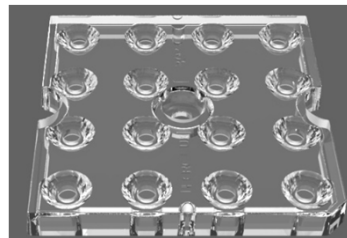


Approval number :

Customer :

Manufacturer : Chengdu HercuLux Photoelectric Technology Co.,Ltd

| PN                        | Code         | Product                            |
|---------------------------|--------------|------------------------------------|
| HK-50@04-90-3030-#0-1g-16 | 1. 02. 81531 | HK 16close1-90degree Road lam Lens |
| HK-50@05-60-3030-#0-1g-16 | 1. 02. 81532 | HK 16close1-60degree Road lam Lens |
| HK-50@06-30-3030-#1-1g-16 | 1. 02. 81539 | HK 16close1-30degree Road lam 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, Iot industrial park 2 road HercuLux Photoelectric Park

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

Fax : 028-85887730

[www.hkoptics.com](http://www.hkoptics.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.



**HERCULUX**  
恒坤光电

# Product Approval

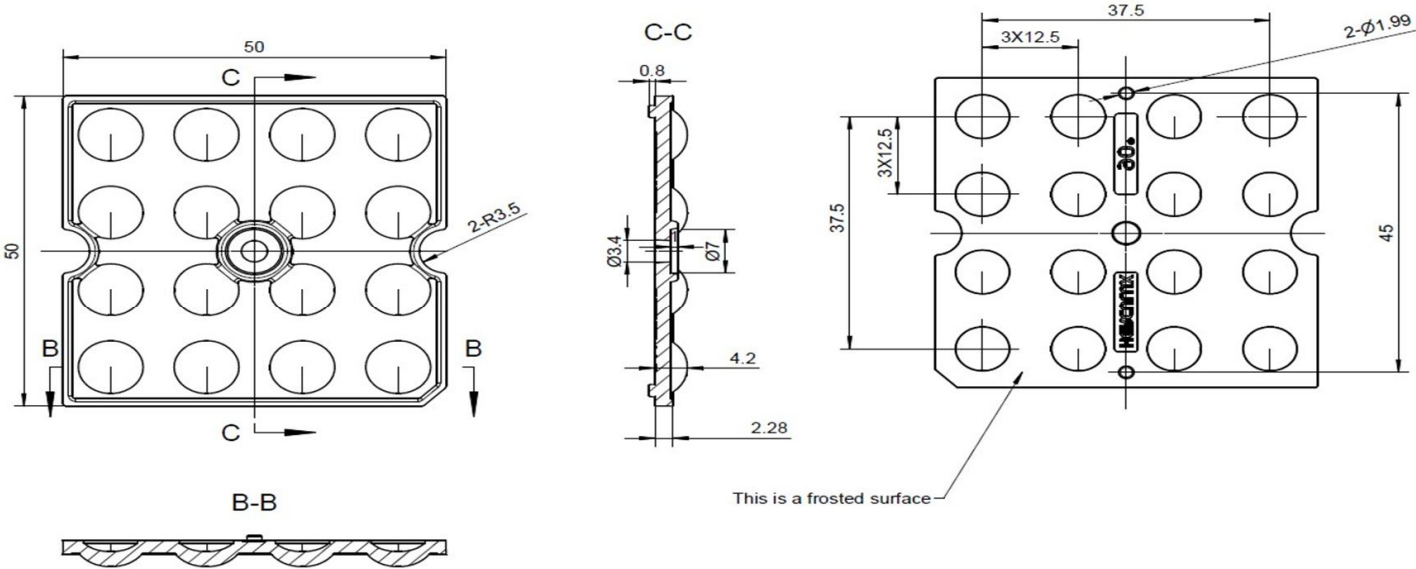
TEL: 0755-2937 1541

FAX: 0755-2907 5140

[www.hkoptics.com](http://www.hkoptics.com)

Date updated: 2020/9/18

|                    |                                                                                    |  |
|--------------------|------------------------------------------------------------------------------------|--|
| Product Picture:   |  |  |
|                    |                                                                                    |  |
| PN:                | HK-50@XX-X-3030-#0-1g-16                                                           |  |
| Size(L*W*H/Φ*H):   | L:50mm; W:50mm; H:Xmm                                                              |  |
| Material:          | PMMA                                                                               |  |
| Effiency:          | \                                                                                  |  |
| Temperature(Topr): | -40°C to +80°C                                                                     |  |
| FWHM:              | 90°,60°,30°                                                                        |  |
| Matched LES:       | 3030                                                                               |  |



Technical remark:

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

|                  |  |  |                                       |  |                           |     |        |
|------------------|--|--|---------------------------------------|--|---------------------------|-----|--------|
| Optical design   |  |  | HK 16close1-90degree Road lam<br>Lens |  | HK-50@04-90-3030-#0-1g-16 |     |        |
| structure design |  |  |                                       |  | 1.02.81531                |     |        |
| Review           |  |  |                                       |  | umber of drawin           | qty | weight |
| Validation       |  |  | Material: PMMA                        |  | CDHK                      |     |        |

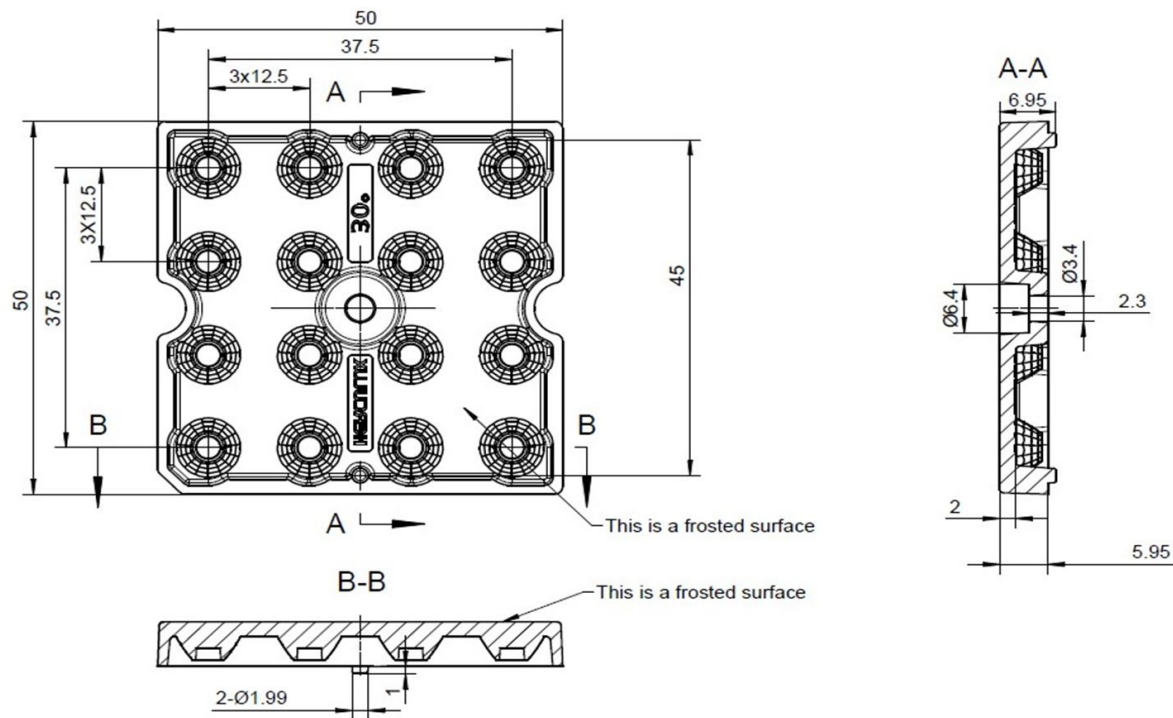
|                                |               |      |       |       |        |         |         |      |
|--------------------------------|---------------|------|-------|-------|--------|---------|---------|------|
| MT5<br>Tolerance<br>table (mm) | Basic size    | <3   | 3~10  | 24~65 | 65~140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



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

|                 |  |  |                                       |      |                           |            |        |  |
|-----------------|--|--|---------------------------------------|------|---------------------------|------------|--------|--|
| Optical design  |  |  | HK 16close1-60degree Road lam<br>Lens |      | HK-50@05-60-3030-#0-1g-16 |            |        |  |
| structure desig |  |  |                                       |      |                           | 1.02.81532 |        |  |
| Review          |  |  |                                       |      | umber of drawing          | qty        | weight |  |
| Validation      |  |  | Material:                             | PMMA | CDHK                      |            |        |  |

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

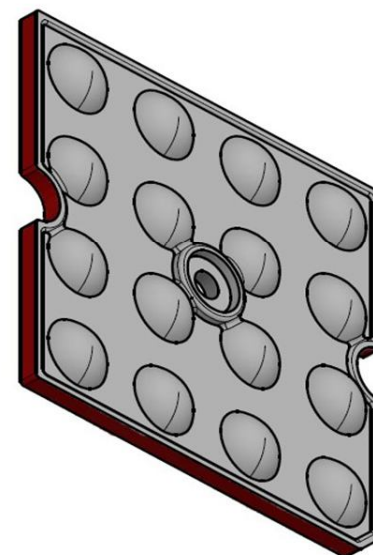
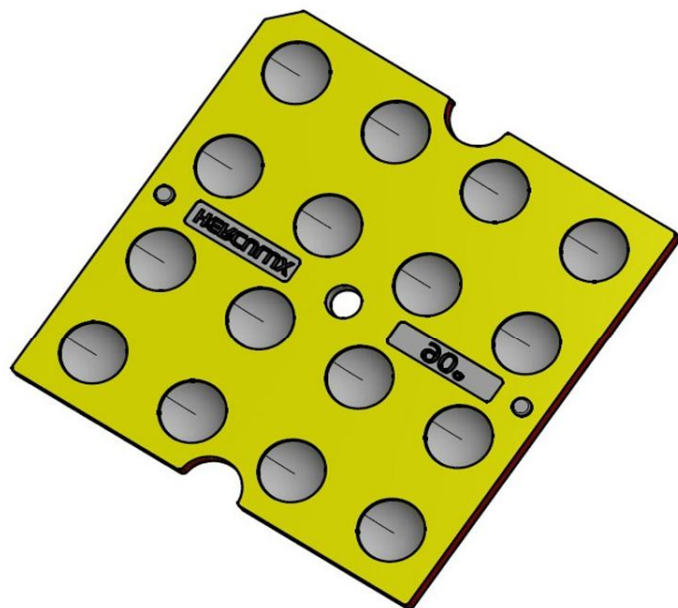


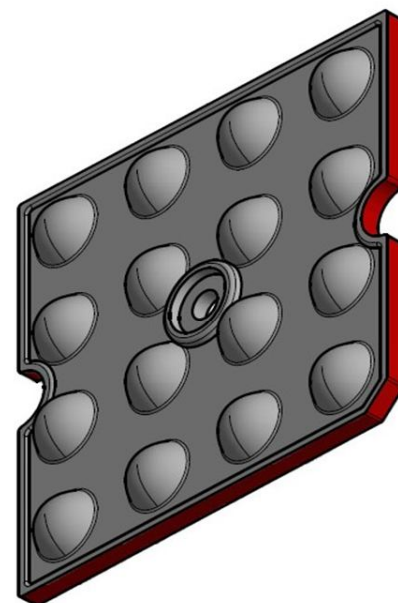
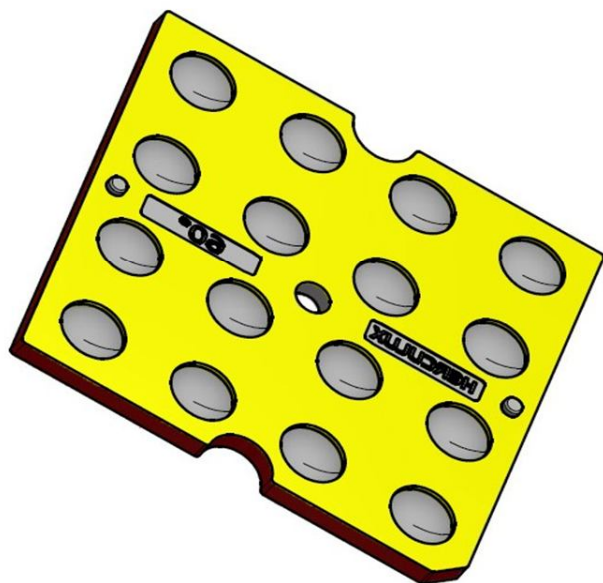
Technical remark:

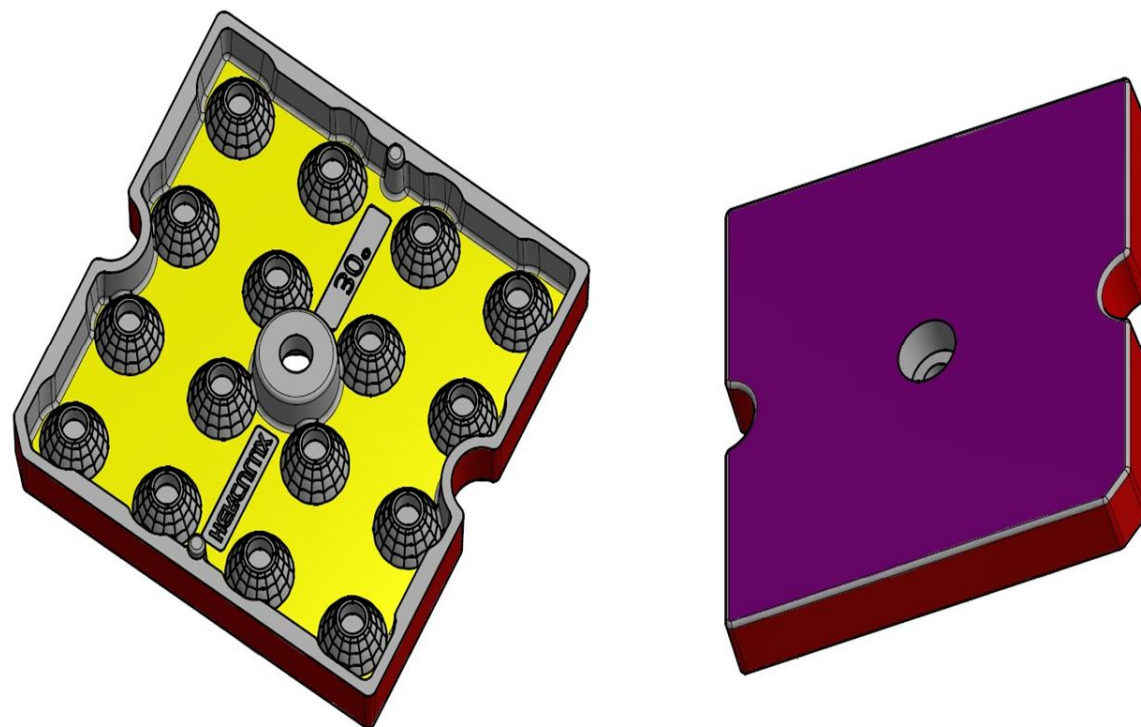
- 1. The 3D map is not indicated for rounded corners and draft angle.
- 2. The dimensional tolerances are not specified according to GB/T 14486 2008 MT5.
- 3. The surface has no flash, shrinkage, bubbles and other defects.

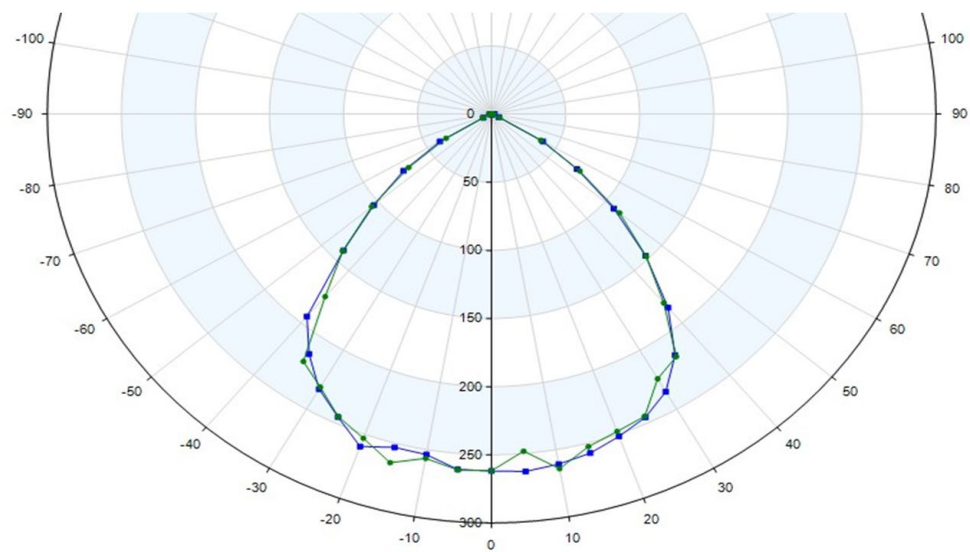
|                  |  |  |                                       |                           |     |        |
|------------------|--|--|---------------------------------------|---------------------------|-----|--------|
| Optical design   |  |  | HK 16close1-30degree Road lam<br>Lens | HK-50@06-30-3030-#1-1g-16 |     |        |
| structure design |  |  |                                       | 1.02.81539                |     |        |
| Review           |  |  |                                       | umber of drawing          | qty | weight |
| Validation       |  |  |                                       | CDHK                      |     |        |
|                  |  |  | Material:                             | PMMA                      |     |        |

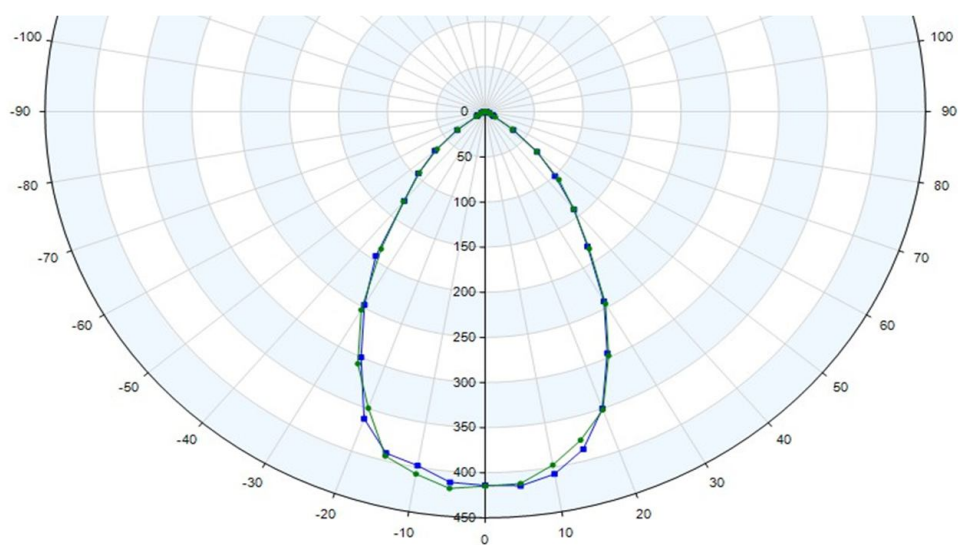
| MT5<br>Tolerance<br>table (mm) | Basic size    | <3   | 3~10  | 24~65 | 65~140 | 140~250 | 250~450 | >450 |
|--------------------------------|---------------|------|-------|-------|--------|---------|---------|------|
|                                | olerance valu | ±0.1 | ±0.15 | ±0.35 | ±0.50 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

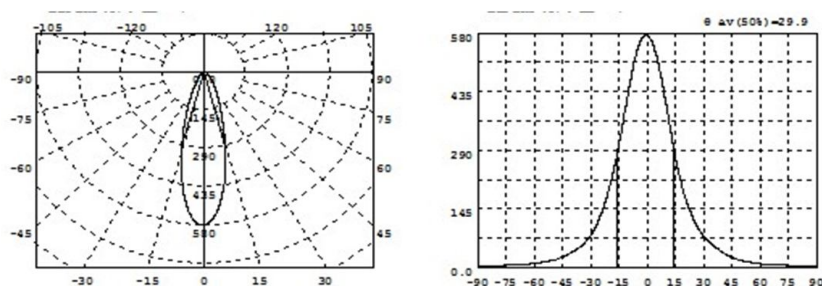












光强分布数据: (角度°, 光强cd) C0-180

| 角度    | 光强    | 角度    | 光强    | 角度    | 光强    | 角度   | 光强    | 角度   | 光强    | 角度   | 光强    |
|-------|-------|-------|-------|-------|-------|------|-------|------|-------|------|-------|
| -90.0 | 1.468 | -58.5 | 10.65 | -27.0 | 103.6 | 4.5  | 530.3 | 36.0 | 50.25 | 67.5 | 6.489 |
| -88.5 | 2.215 | -57.0 | 11.55 | -25.5 | 119.3 | 6.0  | 502.1 | 37.5 | 45.02 | 69.0 | 6.045 |
| -87.0 | 2.692 | -55.5 | 12.61 | -24.0 | 137.4 | 7.5  | 468.3 | 39.0 | 39.78 | 70.5 | 5.668 |
| -85.5 | 3.347 | -54.0 | 13.78 | -22.5 | 158.5 | 9.0  | 431.1 | 40.5 | 35.24 | 72.0 | 5.315 |
| -84.0 | 3.728 | -52.5 | 15.15 | -21.0 | 182.5 | 10.5 | 390.9 | 42.0 | 31.20 | 73.5 | 4.973 |
| -82.5 | 3.967 | -51.0 | 16.56 | -19.5 | 206.2 | 12.0 | 350.3 | 43.5 | 27.53 | 75.0 | 4.679 |
| -81.0 | 4.206 | -49.5 | 18.23 | -18.0 | 237.4 | 13.5 | 305.5 | 45.0 | 24.35 | 76.5 | 4.417 |
| -79.5 | 4.410 | -48.0 | 20.15 | -16.5 | 270.5 | 15.0 | 269.5 | 46.5 | 21.74 | 78.0 | 4.155 |
| -78.0 | 4.569 | -46.5 | 22.54 | -15.0 | 306.1 | 16.5 | 236.8 | 48.0 | 19.45 | 79.5 | 3.936 |
| -76.5 | 4.844 | -45.0 | 25.22 | -13.5 | 343.8 | 18.0 | 207.6 | 49.5 | 17.50 | 81.0 | 3.772 |
| -75.0 | 5.197 | -43.5 | 28.21 | -12.0 | 382.8 | 19.5 | 181.7 | 51.0 | 15.78 | 82.5 | 3.513 |
| -73.5 | 5.537 | -42.0 | 31.64 | -10.5 | 422.5 | 21.0 | 159.4 | 52.5 | 14.28 | 84.0 | 3.364 |
| -72.0 | 5.897 | -40.5 | 35.64 | -9.0  | 461.3 | 22.5 | 140.3 | 54.0 | 12.96 | 85.5 | 3.058 |
| -70.5 | 6.314 | -39.0 | 40.06 | -7.5  | 496.6 | 24.0 | 123.8 | 55.5 | 11.80 | 87.0 | 2.639 |
| -69.0 | 6.798 | -37.5 | 44.43 | -6.0  | 527.2 | 25.5 | 109.4 | 57.0 | 10.78 | 88.5 | 2.246 |
| -67.5 | 7.407 | -36.0 | 49.20 | -4.5  | 550.7 | 27.0 | 97.05 | 58.5 | 9.893 | 90.0 | 1.887 |
| -66.0 | 8.467 | -34.5 | 54.86 | -3.0  | 566.5 | 28.5 | 86.40 | 60.0 | 9.137 |      |       |
| -64.5 | 8.232 | -33.0 | 61.47 | -1.5  | 574.2 | 30.0 | 77.03 | 61.5 | 8.631 |      |       |
| -63.0 | 8.515 | -31.5 | 69.49 | 0.0   | 574.5 | 31.5 | 68.84 | 63.0 | 8.502 |      |       |
| -61.5 | 9.129 | -30.0 | 78.95 | 1.5   | 567.0 | 33.0 | 61.69 | 64.5 | 7.739 |      |       |
| -60.0 | 9.836 | -28.5 | 90.35 | 3.0   | 552.3 | 34.5 | 55.57 | 66.0 | 7.068 |      |       |

## 电学参数:

电流: 0.1000A      功率: 3.390W  
电压: 33.90V      功率因数: 1.000

## 光学参数 (测试距离2.410m):

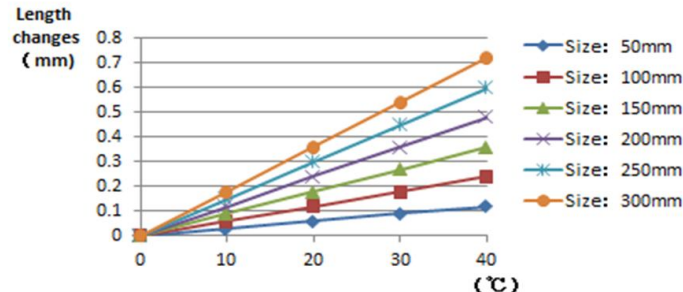
等效光通量:  $\Phi_{\text{eff}} = 263.71\text{lm}$       光效:  $\text{Eff} = 77.81\text{lm/W}$

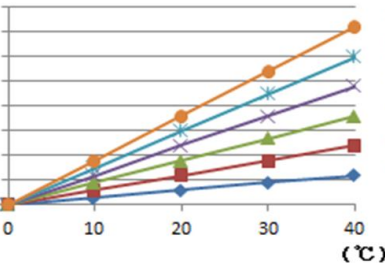
最大光强扩散角:  $\theta (25\%) : 45.7^\circ$     $\theta (50\%) : 29.9^\circ$     $\theta (75\%) : 19.0^\circ$     $\theta (50\%) : 29.9^\circ$

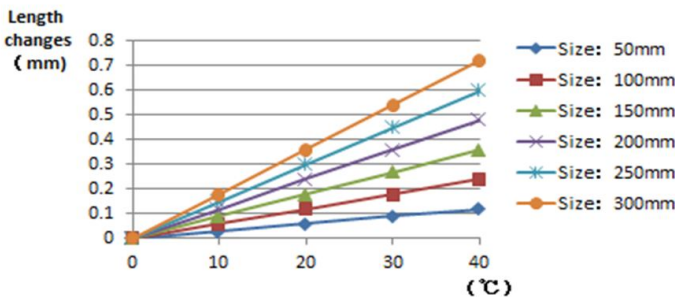
中心光强扩散角:  $\theta (25\%) : 45.7^\circ$     $\theta (50\%) : 29.9^\circ$     $\theta (75\%) : 19.1^\circ$     $\theta (50\%) : 29.9^\circ$

最大光强 $I_{\text{max}} = 575.3\text{cd}$  ( $C=0.0^\circ$ ,  $G=-0.5^\circ$ )      C0-180平面 $I_{\text{max}} = 575.3\text{cd}$  ( $G=-0.5^\circ$ )

C0-180平面 $I_0 = 574.5\text{cd}$

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                               | Standard size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                      |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|----------|----------------------------------------------------------------------------------------------|------------------|------|-------|-------|-------|-------|-------|---|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|----|------|------|------|------|------|------|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | length                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                  |              |              |              |              |          | Test environment: In 20 °C -25 °C environment to achieve thermal equilibrium after the test. |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | width                                                                                                                                                                                                                                                                                                                                                         | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Locating column spacing                                                                                                                                                                                                                                                                                                                                       | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Locating post                                                                                                                                                                                                                                                                                                                                                 | 1.99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | thickness                                                                                                                                                                                                                                                                                                                                                     | 2.28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                              | E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | No burr          | No burr          | No burr      | No burr      | OK           |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No stains        | No stains        | No stains    | No stains    |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PMMA                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  | Color            | Transparent  |              |              | OK           |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Testing LED                                                                                                                                                                                                                                                                                                                                                   | 3030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 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                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | K-value                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Efficiency                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | See the signature sample                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Qualified                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| Remarks:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                               | <p>1、Tool Number: V-Vernier Caliper 2D-Quadratic H-Height Gauge M-Tool Microscope P-Needle T-Thick Gauge R-Radius Gauge E-Visual.</p> <p>2、Ambient temperature on the size of the product refer to the table on the right</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                               | <p align="center"><b>PMMA product size changes with temperature table</b></p>  <table border="1"> <caption>Approximate data from PMMA product size changes with temperature table</caption> <thead> <tr> <th>Temperature (°C)</th> <th>50mm</th> <th>100mm</th> <th>150mm</th> <th>200mm</th> <th>250mm</th> <th>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>0.04</td> <td>0.06</td> <td>0.08</td> <td>0.10</td> <td>0.12</td> </tr> <tr> <td>20</td> <td>0.04</td> <td>0.08</td> <td>0.12</td> <td>0.16</td> <td>0.20</td> <td>0.24</td> </tr> <tr> <td>30</td> <td>0.06</td> <td>0.12</td> <td>0.18</td> <td>0.24</td> <td>0.30</td> <td>0.36</td> </tr> <tr> <td>40</td> <td>0.08</td> <td>0.16</td> <td>0.24</td> <td>0.32</td> <td>0.40</td> <td>0.48</td> </tr> </tbody> </table> |                  |                  |              |              |              |              |          |                                                                                              | Temperature (°C) | 50mm | 100mm | 150mm | 200mm | 250mm | 300mm | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 10 | 0.02 | 0.04 | 0.06 | 0.08 | 0.10 | 0.12 | 20 | 0.04 | 0.08 | 0.12 | 0.16 | 0.20 | 0.24 | 30 | 0.06 | 0.12 | 0.18 | 0.24 | 0.30 | 0.36 | 40 | 0.08 | 0.16 | 0.24 | 0.32 | 0.40 | 0.48 |
| Temperature (°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50mm                                                                                                                                                                                                                                                                                                                                                          | 100mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 150mm            | 200mm            | 250mm        | 300mm        |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.00                                                                                                                                                                                                                                                                                                                                                          | 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.00             | 0.00             | 0.00         | 0.00         |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.02                                                                                                                                                                                                                                                                                                                                                          | 0.04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.06             | 0.08             | 0.10         | 0.12         |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.04                                                                                                                                                                                                                                                                                                                                                          | 0.08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.12             | 0.16             | 0.20         | 0.24         |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.06                                                                                                                                                                                                                                                                                                                                                          | 0.12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.18             | 0.24             | 0.30         | 0.36         |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.08                                                                                                                                                                                                                                                                                                                                                          | 0.16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.24             | 0.32             | 0.40         | 0.48         |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |
| <p>Precautions:</p> <ol style="list-style-type: none"> <li>1、Wear clean gloves during lens assembly to prevent contamination of the lens surface.</li> <li>2、Take the lens try to avoid touching the total reflection surface.</li> <li>3、When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.</li> <li>4、The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                  |              |              |              |              |          |                                                                                              |                  |      |       |       |       |       |       |   |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |    |      |      |      |      |      |      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                               | Standard size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|----------|--------------------------------------------------------------------------------------------|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | length                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                  |              |              |              |              |          | Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | width                                                                                                                                                                                                                                                                                                                                                         | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Locating column spacing                                                                                                                                                                                                                                                                                                                                       | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Locating post                                                                                                                                                                                                                                                                                                                                                 | 1.99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | thickness                                                                                                                                                                                                                                                                                                                                                     | 2.28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  |              |              |              |              |          |                                                                                            |
| See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  |              |              |              |              |          |                                                                                            |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                               | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | E                | No burr          | No burr      | No burr      | No burr      | OK           |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  | No stains        | No stains    | No stains    | No stains    |              |          |                                                                                            |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                               | PMMA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              | Color        | Transparent  |              | OK       |                                                                                            |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Testing LED                                                                                                                                                                                                                                                                                                                                                   | 3030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 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                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | K-value                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Efficiency                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  |              |              |              |              |          |                                                                                            |
| Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                               | See the signature sample                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                  |              |              |              |              |          |                                                                                            |
| Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                               | Qualified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |                  |              |              |              |              |          |                                                                                            |
| Remarks:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                               | <div><div>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><div><div>PMMA product size changes with temperature table</div><div><div>Length changes (mm)</div><div><div><div>Size: 50mm</div><div>Size: 100mm</div><div>Size: 150mm</div><div>Size: 200mm</div><div>Size: 250mm</div><div>Size: 300mm</div></div></div></div></div></div> |                  |                  |              |              |              |              |          |                                                                                            |
| Precautions:<br>1、Wear clean gloves during lens assembly to prevent contamination of the lens surface.<br>2、Take the lens try to avoid touching the total reflection surface.<br>3、When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.<br>4、The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens. |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |                  |              |              |              |              |          |                                                                                            |

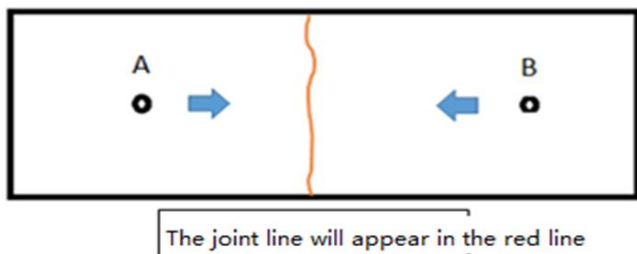
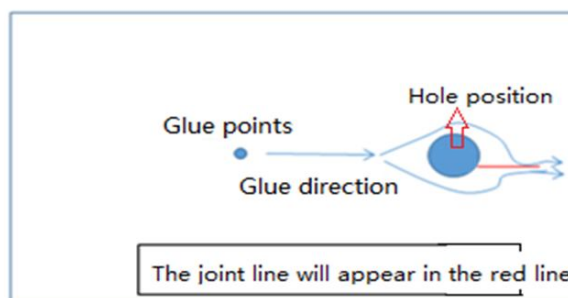
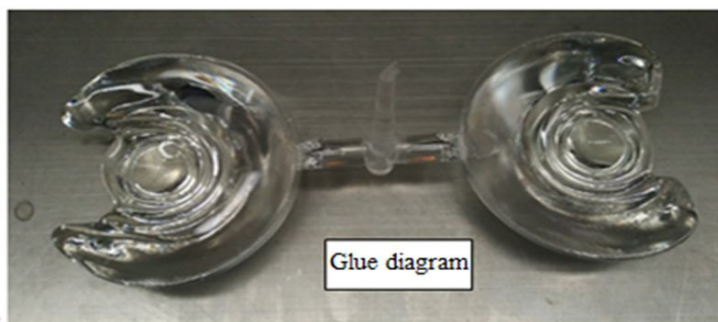
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                               | Standard size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Upper Size limit | Lower size limit | Test result1 | Test result2 | Test result3 | Test result4 | Judgment | Remarks                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|--------------|--------------|--------------|--------------|----------|--------------------------------------------------------------------------------------------|
| 1.Size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | length                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          | Test environment: In 20 ℃ -25 ℃ environment to achieve thermal equilibrium after the test. |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | width                                                                                                                                                                                                                                                                                                                                                         | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Locating column spacing                                                                                                                                                                                                                                                                                                                                       | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Locating post                                                                                                                                                                                                                                                                                                                                                 | 1.99                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | thickness                                                                                                                                                                                                                                                                                                                                                     | 2.28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Gate shear can not affect the appearance of the lamp                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                            |
| See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                            |
| 2.Appearance Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                               | See attachment "Appearance Inspection Standards"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | E                | No burr          | No burr      | No burr      | No burr      | OK           |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  | No stains        | No stains    | No stains    | No stains    |              |          |                                                                                            |
| 3.Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                               | PMMA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              | Color        | Transparent  |              | OK       |                                                                                            |
| 4.Optical index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Testing LED                                                                                                                                                                                                                                                                                                                                                   | 3030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 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                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | K-value                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Efficiency                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                            |
| Facula                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                               | See the signature sample                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |              |              |              |              |          |                                                                                            |
| Comprehensive judgment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                               | Qualified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |                  |              |              |              |              |          |                                                                                            |
| Remarks:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                               | <div><div>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><div><div>PMMA product size changes with temperature table</div><div><div>Length changes (mm)</div><div><div>Size: 50mm<br/>Size: 100mm<br/>Size: 150mm<br/>Size: 200mm<br/>Size: 250mm<br/>Size: 300mm</div></div></div></div></div> |                  |                  |              |              |              |              |          |                                                                                            |
| Precautions:<br>1、Wear clean gloves during lens assembly to prevent contamination of the lens surface.<br>2、Take the lens try to avoid touching the total reflection surface.<br>3、When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.<br>4、The working temperature of the lens should be within the temperature limit of the lens material. Exceeding the temperature limit will cause damage to the lens and affect the service life of the lens. |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                  |              |              |              |              |          |                                                                                            |

|                     |     |                                                                                     |                     |                |                  |                                                                                                                |           |  |
|---------------------|-----|-------------------------------------------------------------------------------------|---------------------|----------------|------------------|----------------------------------------------------------------------------------------------------------------|-----------|--|
| PN                  |     | HK-50@04-90-3030-#0-1g-16<br>HK-50@05-60-3030-#0-1g-16<br>HK-50@06-30-3030-#1-1g-16 |                     | Product Name   |                  | HK 16close1-90degree Road lam Lens<br>HK 16close1-60degree Road lam Lens<br>HK 16close1-30degree Road lam Lens |           |  |
| Product material    |     | PMMA                                                                                |                     | Customer       |                  |                                                                                                                |           |  |
| Package diagram     |     | <div><p>Single      Vacuum package      Box package</p></div>                       |                     |                |                  |                                                                                                                |           |  |
| Product packing     |     | 24                                                                                  | PCS/BOX             | 4              | BOX/Layer        | 15                                                                                                             | Layer/BOX |  |
|                     |     | 1440                                                                                | PCS/BOX             |                |                  |                                                                                                                |           |  |
| Packaging Materials | NO. | Material Code                                                                       | Item name           | Specification  | Single box usage | Unit                                                                                                           | Remarks   |  |
|                     | 1   | 2.07.0049                                                                           | Plastic blister box | 23cm*21cm      | 60               | PCS                                                                                                            |           |  |
|                     | 2   | 2.08.0001                                                                           | Pemembrane          | 25cm*27cm      | 60               | PCS                                                                                                            |           |  |
|                     | 3   | 2.06.0005                                                                           | Inside label paper  | 62mm*42mm      | 60               | PCS                                                                                                            |           |  |
|                     | 4   | 2.06.0005                                                                           | BOX label paper     | 62mm*70mm      | 1                | PCS                                                                                                            |           |  |
|                     | 5   | 2.06.0003                                                                           | Large baffle        | 46cm*42cm      | 16               | PCS                                                                                                            |           |  |
|                     | 6   | 2.06.0011                                                                           | Carton              | 48cm*44cm*37cm | 1                | PCS                                                                                                            |           |  |
|                     | 7   |                                                                                     |                     |                |                  |                                                                                                                |           |  |
| Remarks             |     | Scattered packaging is not subject to this specification                            |                     |                |                  |                                                                                                                |           |  |
| organization:       |     |                                                                                     | proofreading:       |                | To examine:      |                                                                                                                | Approval: |  |

## 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:

Symmetry



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 Sampling standards, sampling plan and AQL

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

#### 2 Code table

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

### 3 Test conditions

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

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

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

## 4 Appearance inspection standards

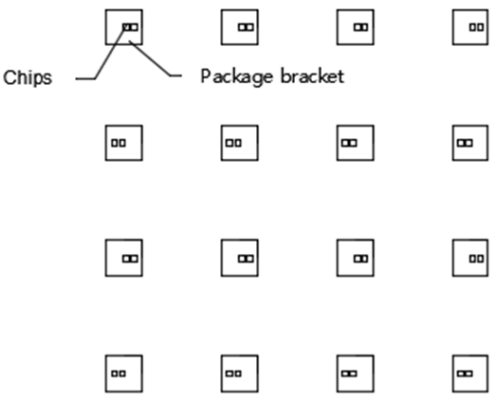
| Test items       | Judging standard                                                                                                                                                                 | Inspection equipment      | Defect level |    |    |
|------------------|-------------------------------------------------------------------------------------------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

|                                           |                                                                                                                                                                                                                                                                                                                                                                                               |                              |   |   |   |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---|---|---|
|                                           | 2: The limited sample refers to the limit of a particular exceptionally developed sample. Limit the sample only for its specific point of exception to confirm;<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 ≤ 10mm, no more than two                                                                                                                                                                                                                                                                                      |                              |   |   |   |
| Bubble                                    | No bubbles are allowed                                                                                                                                                                                                                                                                                                                                                                        | Visual                       |   | √ |   |
| Foreign objects, black spots, white spots | Not obvious or D ≤ 0.3mm black spots and foreign bodies in the area of 100x100mm not more than 1; Exceeded foreign matter black spots is judged bad.                                                                                                                                                                                                                                          | Visual, point card           | √ |   |   |
| Damaged                                   | No damage is allowed                                                                                                                                                                                                                                                                                                                                                                          | Visual                       |   |   | √ |
| Cold glue                                 | Optical surface may not have cold glue, non-optical surface cold glue should meet the visual is not obvious.                                                                                                                                                                                                                                                                                  | Visual                       | √ |   |   |
| Bad incision                              | 1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;                                                                                                                                                                                                                                                                                         | Visual                       |   |   | √ |
|                                           | 2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation                                                                                                                                                                                                                                          |                              |   |   |   |
|                                           | 3: Three molds and hot runner gate shall not appear residue.                                                                                                                                                                                                                                                                                                                                  |                              |   |   |   |
| Scrub                                     | Scrub surface should be uniform, off the scrub phenomenon should not be obvious , A single off scrub imprint requires D ≤ 1 mm and no more than 1 area within a 50x50 mm area                                                                                                                                                                                                                 | Visual                       |   | √ |   |

Description on the arrangement of light source suitable for SMD 3030 light source and body lens:

The chip position of most SMD 3030 light source packages in the market is not in the middle position. When fitting the body lens, it will affect the light distribution of the lens and cause the optical shape to shift. Therefore, when the light source plate is designed and arranged, the eccentric direction of the chip is arranged symmetrically, which can effectively reduce its influence on the light distribution.  
Sample layout proposal:

Example 1: as shown in the figure below, 16 chips in rows 1 and 3 are eccentric to the right, while those in rows 2 and 4 are eccentric to the left.



Example 2: as shown in the figure below, 16 chips in the first and second columns are eccentric to the right, while those in the third and fourth columns are eccentric to the left.

