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## Nata

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|                         |                     |
|-------------------------|---------------------|
| LumCAT: 2-1680-M        |                     |
| Luminaire: 92.70.127.00 |                     |
| Report No: NT2017081409 | Voltage(V): 37.4000 |
| Test No: GC2017081409   | Current(A): 0.3000  |
| LampCAT: CREE CXA1512   | Power (W): 11.2200  |
| Lamp flux(lm): 1330.0   | PF: 0.0000          |
| Number of Lamps: 1      | Ballast type: DC    |
| Length(mm): 70          | Width(mm): 70       |
| Phm Type: C             | Height(mm): 0       |

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## Photometric Results

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Lumens(lm): 1216.61  
Efficiency(%): 91.47%  
Lumens(lm)/Power(W): 108.43  
Central intensity(cd): 4547.153  
Maximum intensity(cd): 4547.153  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=23.5  
                                  [C90/270]Total=23.5  
Field angle(10%Imax): [C0/180]Total=56.3  
                                  [C90/270]Total=56.3  
Maximum s/h(1/2): C0\_180=0.40 C90\_270=0.40  
Maximum s/h(1/4): C0\_180=0.38 C90\_270=0.38  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 91.47%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.680%

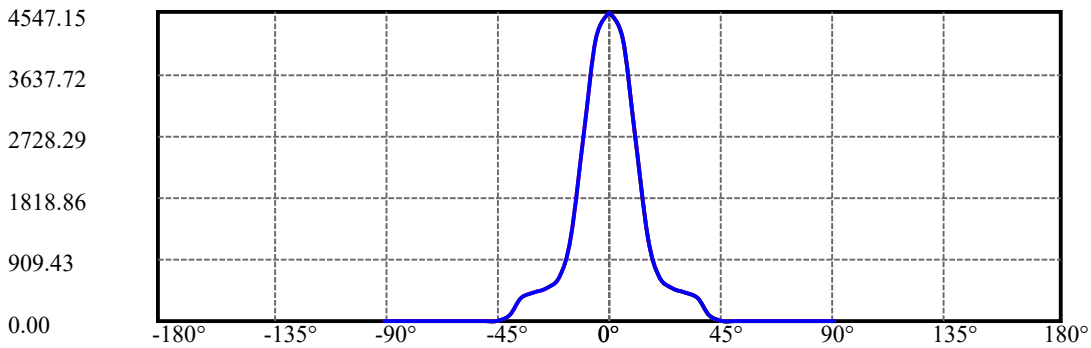
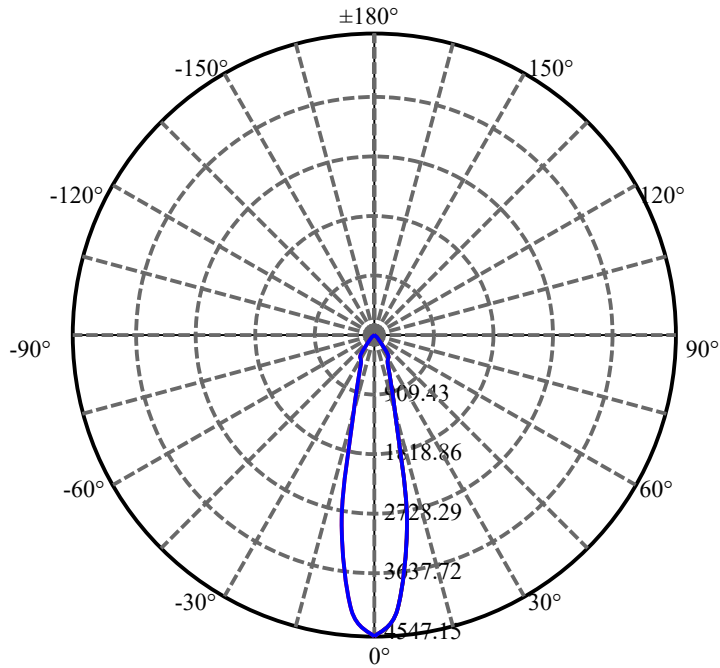
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 4547.153      | 0.000       | 0         | .000%       | .000%      |
| 5.0                | 4145.557      | 103.919     | 103.919   | 7.813%      | 8.542%     |
| 10.0               | 2828.353      | 249.479     | 353.398   | 18.758%     | 29.048%    |
| 15.0               | 1249.636      | 241.904     | 595.301   | 18.188%     | 48.931%    |
| 20.0               | 657.190       | 157.149     | 752.45    | 11.816%     | 61.848%    |
| 25.0               | 489.790       | 120.297     | 872.747   | 9.045%      | 71.736%    |
| 30.0               | 434.361       | 116.952     | 989.699   | 8.793%      | 81.349%    |
| 35.0               | 339.892       | 114.014     | 1103.714  | 8.572%      | 90.720%    |
| 40.0               | 83.853        | 70.699      | 1174.412  | 5.316%      | 96.531%    |
| 45.0               | 9.189         | 17.228      | 1191.64   | 1.295%      | 97.947%    |
| 50.0               | 6.901         | 3.251       | 1194.891  | .244%       | 98.215%    |
| 55.0               | 6.303         | 2.871       | 1197.762  | .216%       | 98.451%    |
| 60.0               | 5.774         | 2.791       | 1200.553  | .210%       | 98.680%    |
| 65.0               | 5.440         | 2.726       | 1203.279  | .205%       | 98.904%    |
| 70.0               | 5.176         | 2.688       | 1205.967  | .202%       | 99.125%    |
| 75.0               | 5.036         | 2.669       | 1208.637  | .201%       | 99.345%    |
| 80.0               | 4.932         | 2.667       | 1211.304  | .201%       | 99.564%    |
| 85.0               | 4.863         | 2.661       | 1213.965  | .200%       | 99.783%    |
| 90.0               | 4.800         | 2.646       | 1216.611  | .199%       | 100.000%   |

ZONAL LUMEN SUMMARY

| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 989.70  | 74.41% | 81.35%  |
| 0-40    | 1174.41 | 88.30% | 96.53%  |
| 0-60    | 1200.55 | 90.27% | 98.68%  |
| 0-90    | 1213.97 | 91.28% | 99.78%  |
| 0-120   | 1213.97 | 91.28% | 99.78%  |
| 0-180   | 1216.61 | 91.47% | 100.00% |
| 60-90   | 16.20   | 1.22%  | 1.33%   |
| 90-120  | 0.00    | 0.00%  | 0.00%   |
| 90-130  | 0.00    | 0.00%  | 0.00%   |
| 90-150  | 0.00    | 0.00%  | 0.00%   |
| 90-180  | 0.00    | 0.00%  | 0.00%   |
| 0-29.30 | 973.29  | 73.18% | 80.00%  |

ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 353.40 |
| 10-20   | 399.05 |
| 20-30   | 237.25 |
| 30-40   | 184.71 |
| 40-50   | 20.48  |
| 50-60   | 5.66   |
| 60-70   | 5.41   |
| 70-80   | 5.34   |
| 80-90   | 2.66   |
| 90-100  | 0.00   |
| 100-110 | 0.00   |
| 110-120 | 0.00   |
| 120-130 | 0.00   |
| 130-140 | 0.00   |
| 140-150 | 0.00   |
| 150-160 | 0.00   |
| 160-170 | 0.00   |
| 170-180 | 0.00   |



C0(Max): —————

C0/C180: —————

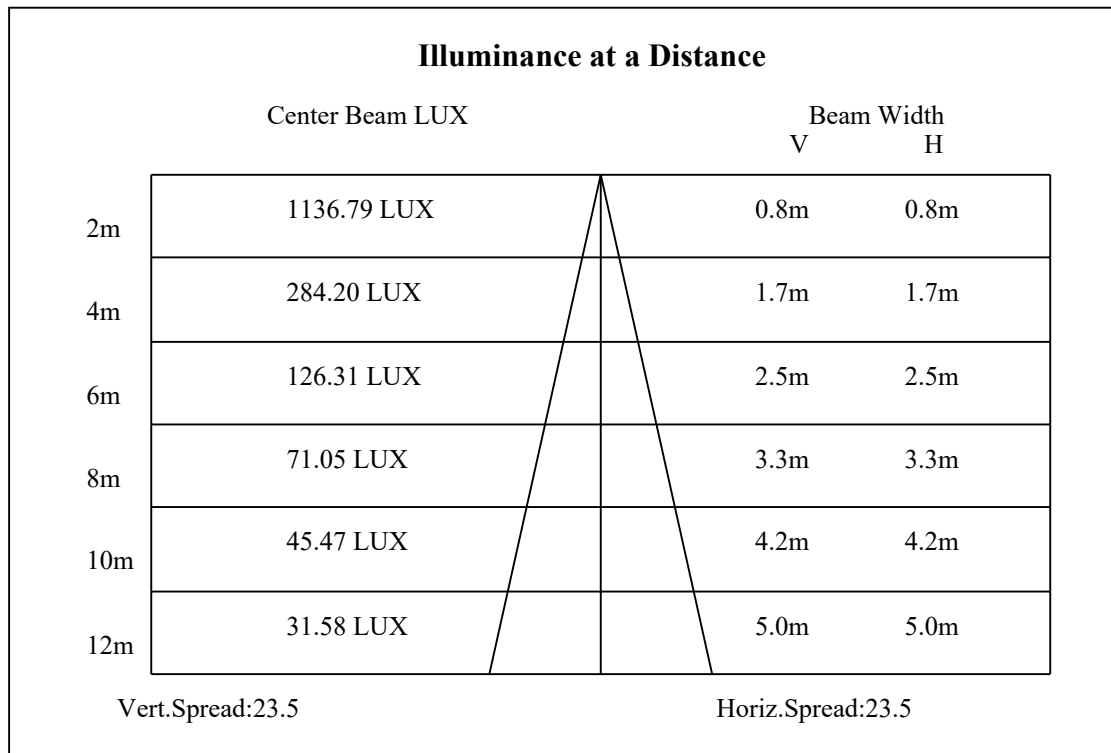
C90/C270: —————

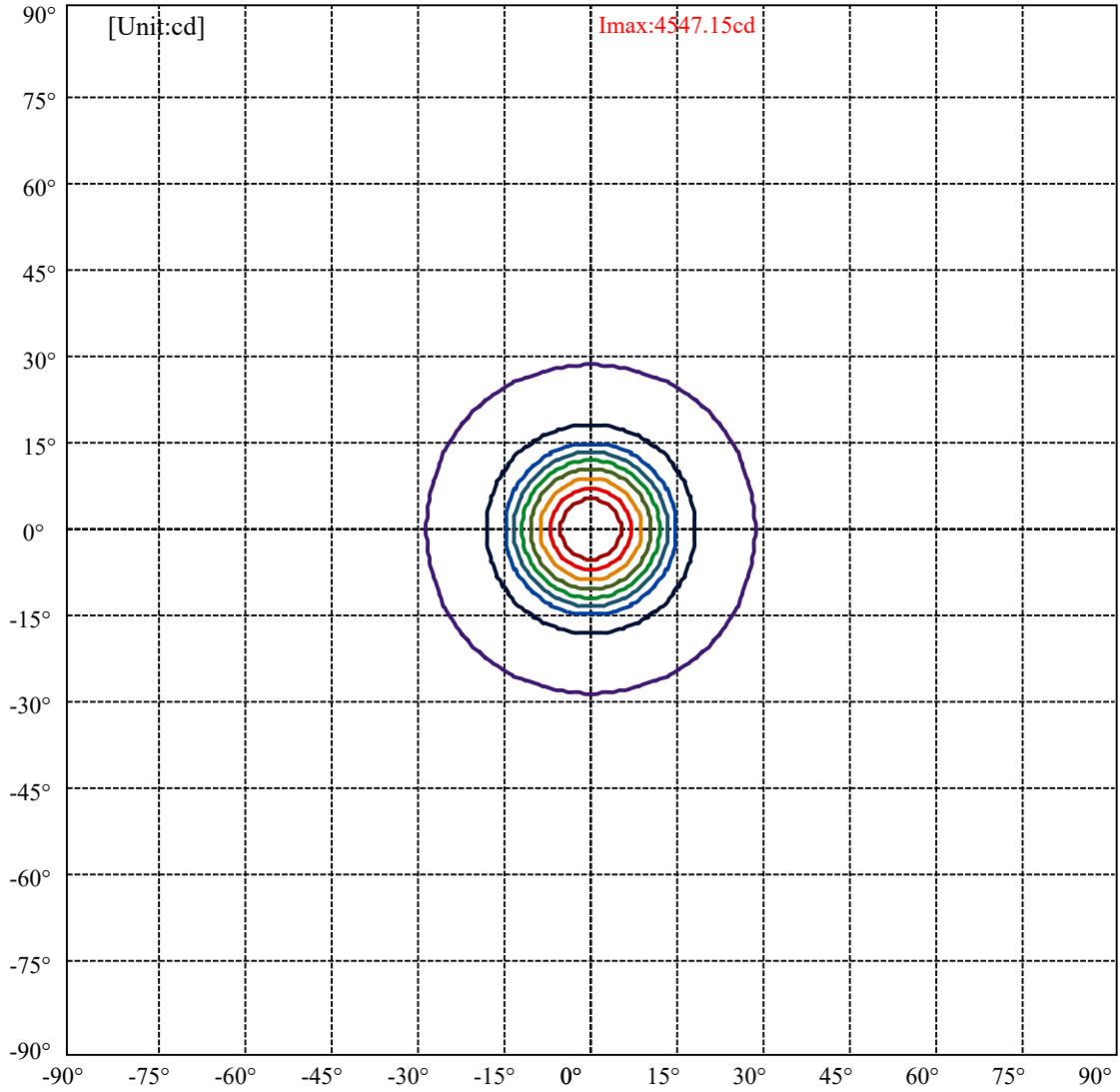
Field angle(10%Imax):C0/180Left:28.2 Right:28.2

:C90/270Left:28.2 Right:28.2

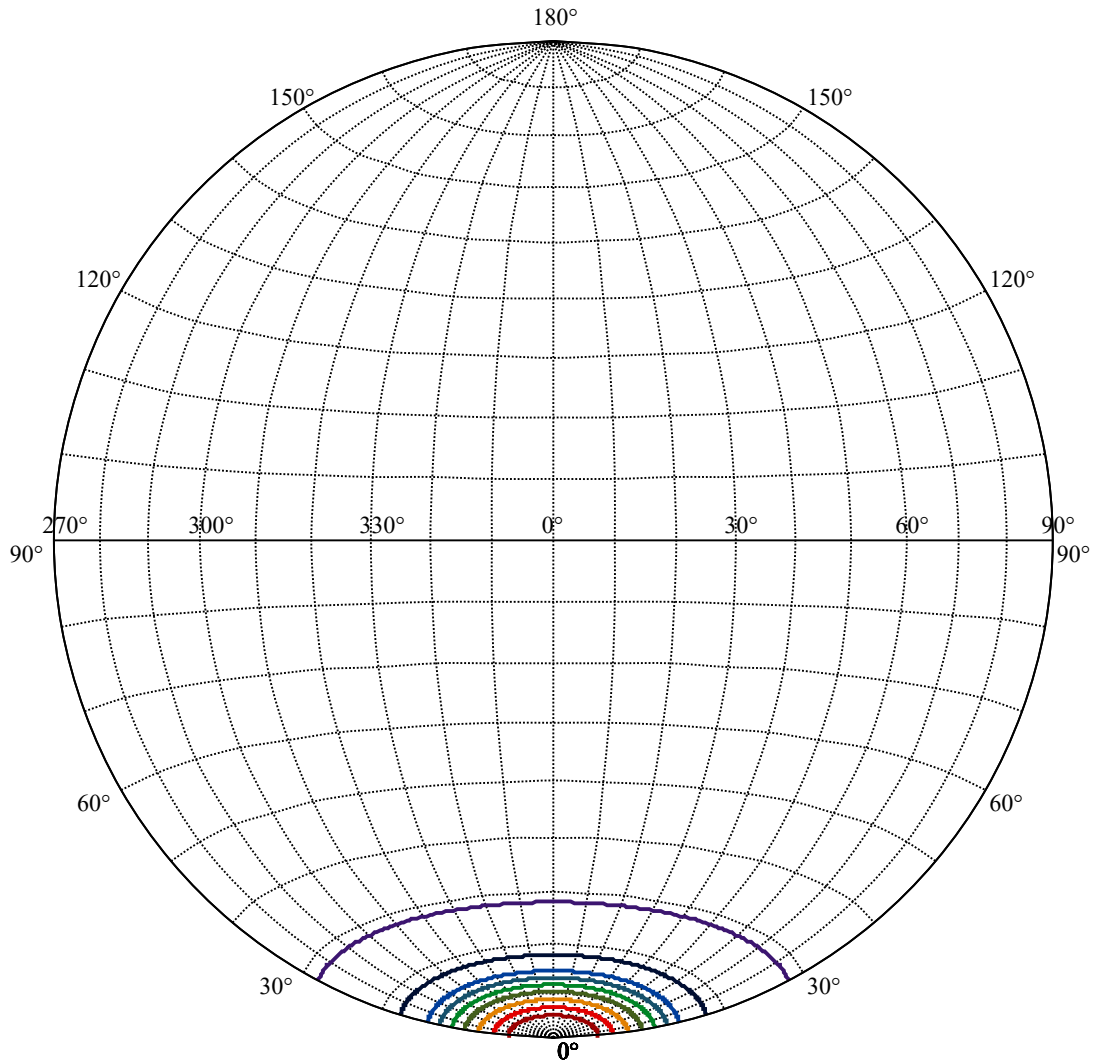
Beam Angle(50%Imax):C0/180Left:11.8 Right:11.8

:C90/270Left:11.8 Right:11.8





|                   |   |
|-------------------|---|
| (10%Imax) 454.715 | — |
| (20%Imax) 909.431 | — |
| (30%Imax) 1364.15 | — |
| (40%Imax) 1818.86 | — |
| (50%Imax) 2273.58 | — |
| (60%Imax) 2728.29 | — |
| (70%Imax) 3183.01 | — |
| (80%Imax) 3637.72 | — |
| (90%Imax) 4092.44 | — |



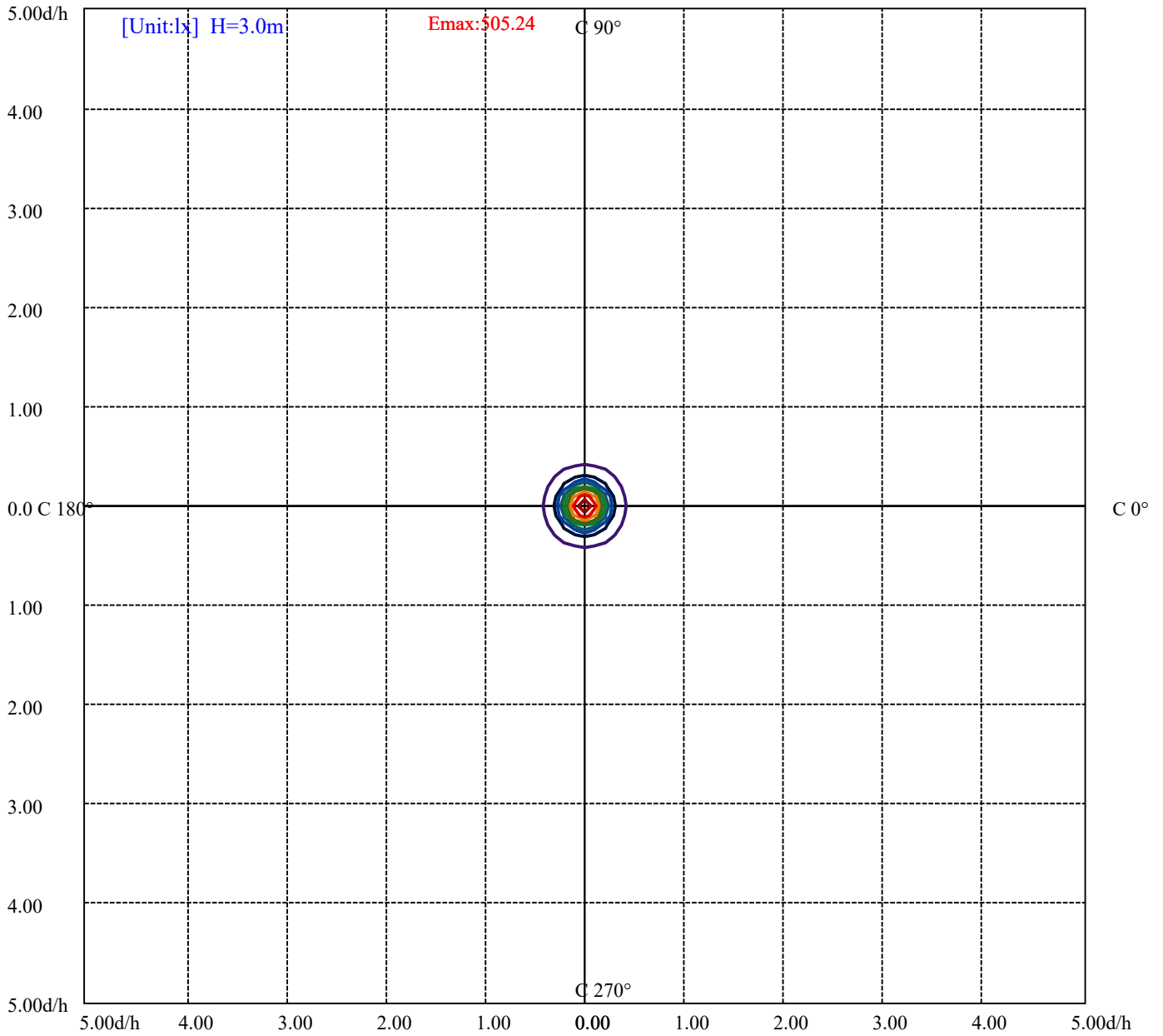
House

[Unit:cd]

Road

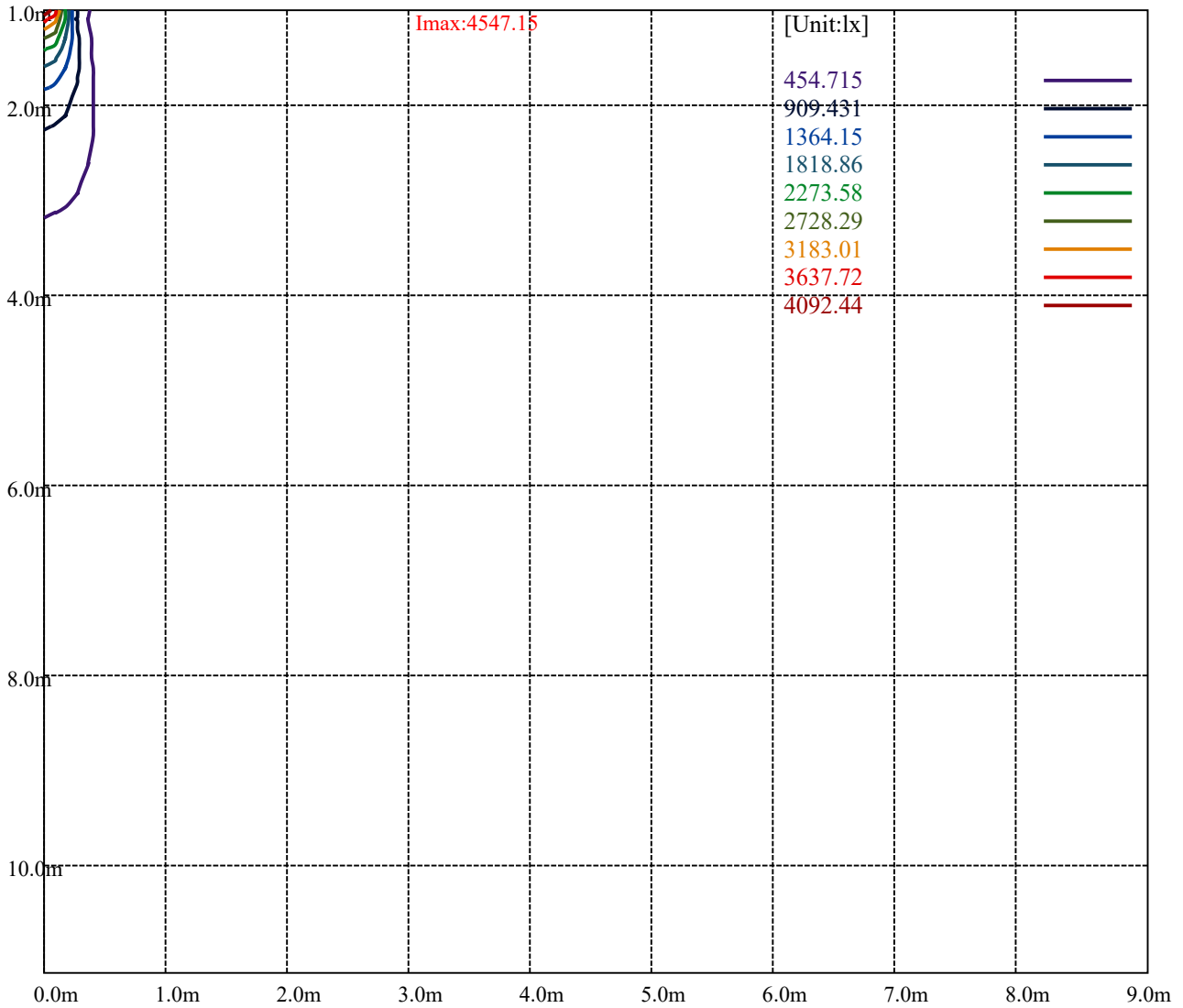
Imax:4547.15

|                   |   |
|-------------------|---|
| (10%Imax) 454.715 | — |
| (20%Imax) 909.431 | — |
| (30%Imax) 1364.15 | — |
| (40%Imax) 1818.86 | — |
| (50%Imax) 2273.58 | — |
| (60%Imax) 2728.29 | — |
| (70%Imax) 3183.01 | — |
| (80%Imax) 3637.72 | — |
| (90%Imax) 4092.44 | — |



|                    |   |
|--------------------|---|
| (10%Emax) 50.52378 | — |
| (20%Emax) 101.0476 | — |
| (30%Emax) 151.5711 | — |
| (40%Emax) 202.0956 | — |
| (50%Emax) 252.6189 | — |
| (60%Emax) 303.1422 | — |
| (70%Emax) 353.6667 | — |
| (80%Emax) 404.19   | — |
| (90%Emax) 454.7144 | — |





Luminance Table

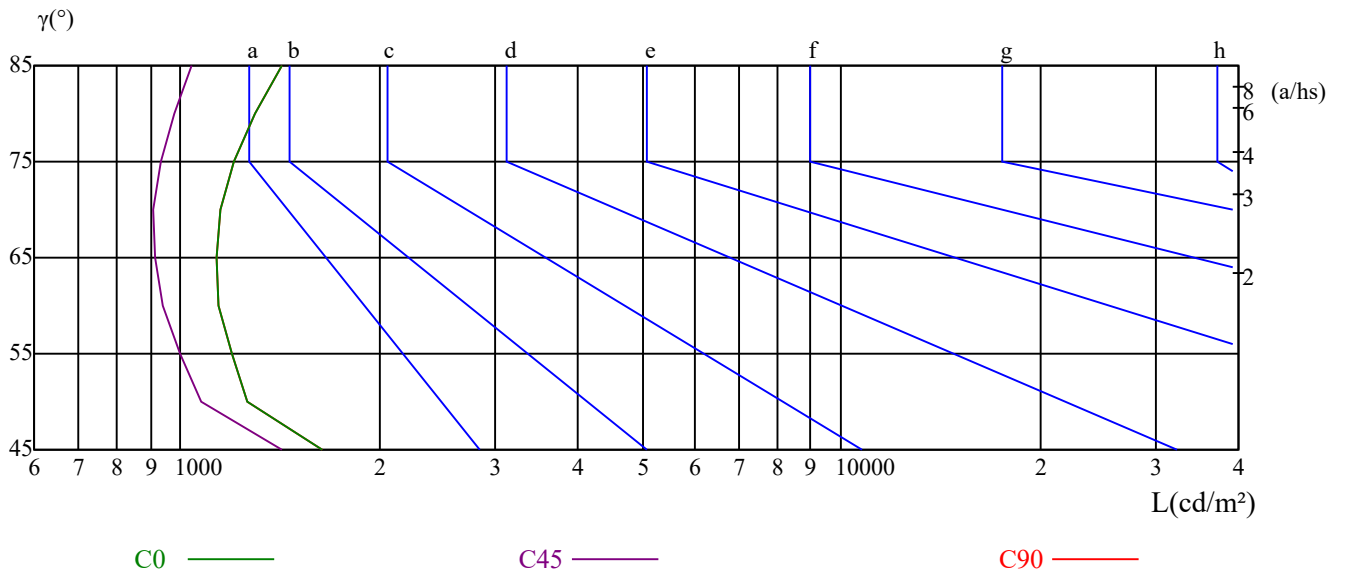
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85   |
|----------|------|------|------|------|------|------|------|------|------|
| C0       | 1643 | 1265 | 1195 | 1142 | 1134 | 1149 | 1206 | 1293 | 1419 |
| C45      | 1419 | 1076 | 1001 | 941  | 918  | 912  | 936  | 978  | 1042 |
| C90      | 1643 | 1265 | 1195 | 1142 | 1134 | 1149 | 1206 | 1293 | 1419 |

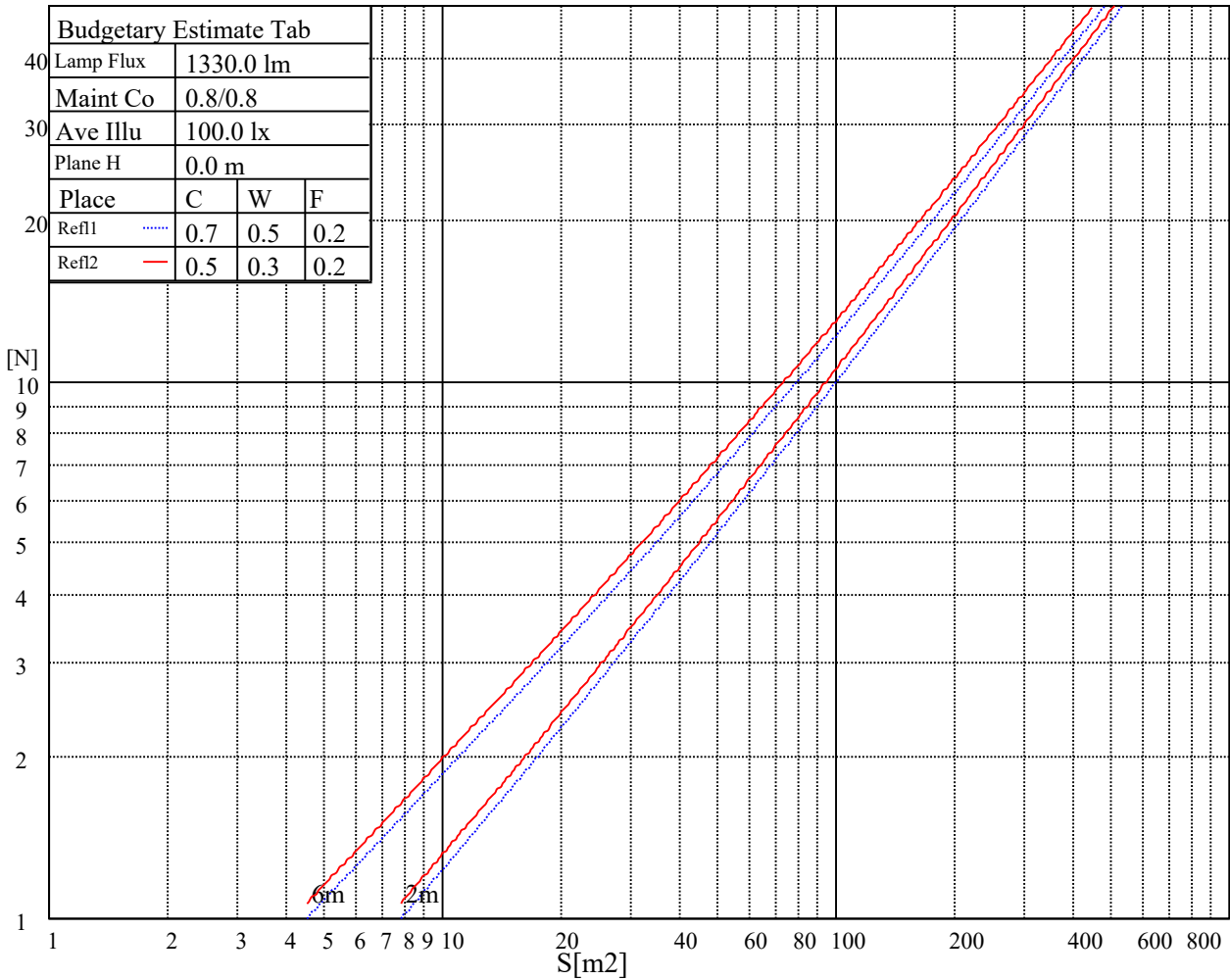
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 2627       | 2627       | 2627    | 3971       | 3971       | 3971    | 11386      | 11386      | 11386   |

Glare Table

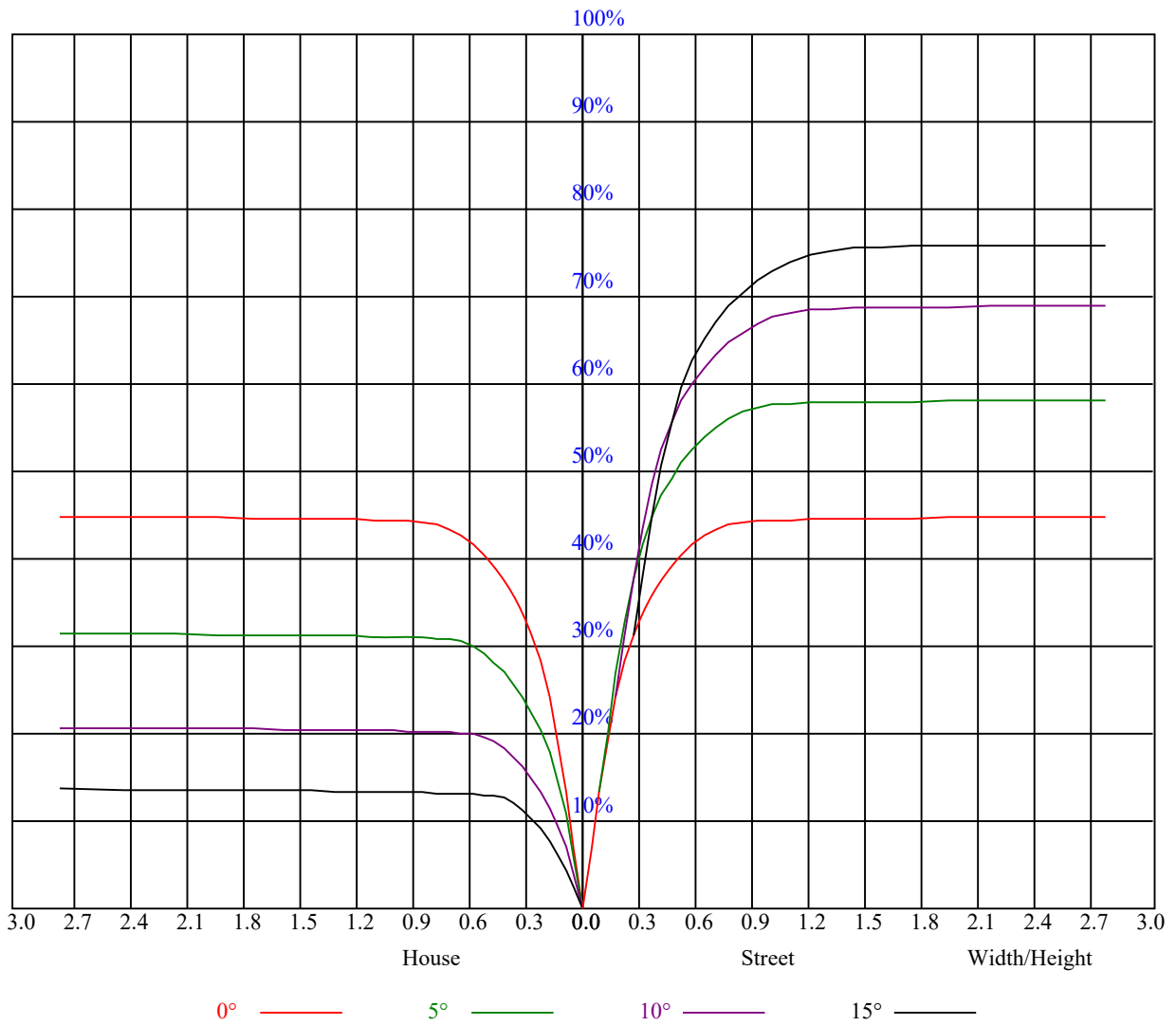
| Glare | Quality | Service Values Illuminance(lx) |      |      |       |       |       |       |       |
|-------|---------|--------------------------------|------|------|-------|-------|-------|-------|-------|
| 1.15  | A       | 2000                           | 1000 | 500  | <=300 |       |       |       |       |
| 1.5   | B       |                                | 2000 | 1000 | 500   | <=300 |       |       |       |
| 1.85  | C       |                                |      | 2000 | 1000  | 500   | <=300 |       |       |
| 2.2   | D       |                                |      |      | 2000  | 1000  | 500   | <=300 |       |
| 2.55  | E       |                                |      |      |       | 2000  | 1000  | 500   | <=300 |
|       |         | a                              | b    | c    | d     | e     | f     | g     | h     |

Luminance Limiting Curve





| RHOCC | 80                                     |      |      | 70   |      |      | 50   |      |      | 30   |      |      | 10   |      |      | 0    |
|-------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RHOW  | 50                                     | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 0    |
| RCR   | COEFFICIENTS OF UTILIZATION RHOF=20 CU |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0     | 1.09                                   | 1.09 | 1.09 | 1.06 | 1.06 | 1.06 | 1.02 | 1.02 | 1.02 | 0.97 | 0.97 | 0.97 | 0.93 | 0.93 | 0.93 | 0.91 |
| 1     | 1.02                                   | 1.00 | 0.98 | 1.00 | 0.98 | 0.97 | 0.97 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 | 0.90 | 0.89 | 0.88 | 0.87 |
| 2     | 0.96                                   | 0.93 | 0.91 | 0.95 | 0.92 | 0.90 | 0.92 | 0.90 | 0.88 | 0.89 | 0.87 | 0.86 | 0.87 | 0.85 | 0.84 | 0.83 |
| 3     | 0.91                                   | 0.87 | 0.84 | 0.90 | 0.87 | 0.84 | 0.88 | 0.85 | 0.82 | 0.86 | 0.83 | 0.81 | 0.84 | 0.82 | 0.80 | 0.79 |
| 4     | 0.87                                   | 0.83 | 0.79 | 0.86 | 0.82 | 0.79 | 0.84 | 0.81 | 0.78 | 0.82 | 0.79 | 0.77 | 0.81 | 0.78 | 0.76 | 0.75 |
| 5     | 0.83                                   | 0.78 | 0.75 | 0.82 | 0.78 | 0.75 | 0.80 | 0.77 | 0.74 | 0.79 | 0.76 | 0.74 | 0.78 | 0.75 | 0.73 | 0.72 |
| 6     | 0.79                                   | 0.75 | 0.71 | 0.78 | 0.74 | 0.71 | 0.77 | 0.73 | 0.71 | 0.76 | 0.73 | 0.70 | 0.75 | 0.72 | 0.70 | 0.69 |
| 7     | 0.76                                   | 0.71 | 0.68 | 0.75 | 0.71 | 0.68 | 0.74 | 0.70 | 0.68 | 0.73 | 0.70 | 0.67 | 0.72 | 0.69 | 0.67 | 0.66 |
| 8     | 0.73                                   | 0.68 | 0.65 | 0.72 | 0.68 | 0.65 | 0.71 | 0.68 | 0.65 | 0.71 | 0.67 | 0.65 | 0.70 | 0.67 | 0.64 | 0.63 |
| 9     | 0.70                                   | 0.66 | 0.63 | 0.70 | 0.66 | 0.63 | 0.69 | 0.65 | 0.62 | 0.68 | 0.65 | 0.62 | 0.68 | 0.64 | 0.62 | 0.61 |
| 10    | 0.68                                   | 0.63 | 0.60 | 0.67 | 0.63 | 0.60 | 0.67 | 0.63 | 0.60 | 0.66 | 0.62 | 0.60 | 0.65 | 0.62 | 0.60 | 0.59 |



Nata 2-1680-M

Intensity data(cd)

|        |         |         |         |         |        |        |        |        |        |
|--------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| C/γ(°) | 0.0     | 5.0     | 10.0    | 15.0    | 20.0   | 25.0   | 30.0   | 35.0   | 40.0   |
| 0.0    | 4519.47 | 4517.24 | 3652.97 | 1939.46 | 872.06 | 531.47 | 453.00 | 412.38 | 286.05 |
| 45.0   | 4574.01 | 4286.29 | 3065.85 | 1454.18 | 686.74 | 498.08 | 440.76 | 392.34 | 84.15  |
| 90.0   | 4530.04 | 3896.17 | 2461.47 | 1057.10 | 587.57 | 475.88 | 423.95 | 298.46 | 25.82  |
| 135.0  | 4565.10 | 4058.11 | 2480.95 | 1031.78 | 573.77 | 471.37 | 420.73 | 296.62 | 22.32  |
| 180.0  | 4519.47 | 3644.07 | 1996.78 | 830.88  | 543.72 | 459.13 | 408.54 | 195.34 | 14.36  |
| 225.0  | 4574.01 | 4089.84 | 2617.29 | 1092.50 | 601.76 | 478.38 | 432.58 | 328.62 | 30.55  |
| 270.0  | 4530.04 | 4337.49 | 3201.64 | 1499.25 | 689.52 | 505.87 | 454.12 | 404.03 | 102.29 |
| 315.0  | 4565.10 | 4335.26 | 3149.88 | 1091.94 | 702.38 | 498.14 | 441.21 | 391.34 | 105.29 |
| 360.0  | 4519.47 | 4517.24 | 3652.97 | 1939.46 | 872.06 | 531.47 | 453.00 | 412.38 | 286.05 |
| C/γ(°) | 45.0    | 50.0    | 55.0    | 60.0    | 65.0   | 70.0   | 75.0   | 80.0   | 85.0   |
| 0.0    | 14.41   | 7.23    | 6.46    | 5.90    | 5.51   | 5.23   | 5.06   | 4.95   | 4.90   |
| 45.0   | 9.07    | 6.73    | 6.12    | 5.68    | 5.34   | 5.12   | 4.95   | 4.90   | 4.90   |
| 90.0   | 7.46    | 6.73    | 6.18    | 5.68    | 5.29   | 5.06   | 5.01   | 4.90   | 4.90   |
| 135.0  | 7.79    | 6.85    | 6.34    | 5.73    | 5.45   | 5.18   | 5.06   | 4.90   | 4.79   |
| 180.0  | 7.57    | 6.79    | 6.29    | 5.73    | 5.45   | 5.23   | 5.01   | 5.01   | 4.79   |
| 225.0  | 7.85    | 6.90    | 6.40    | 5.90    | 5.51   | 5.18   | 5.06   | 4.95   | 4.90   |
| 270.0  | 9.96    | 7.01    | 6.34    | 5.84    | 5.51   | 5.23   | 5.06   | 4.95   | 4.90   |
| 315.0  | 9.41    | 6.96    | 6.29    | 5.73    | 5.45   | 5.18   | 5.06   | 4.90   | 4.84   |
| 360.0  | 14.41   | 7.23    | 6.46    | 5.90    | 5.51   | 5.23   | 5.06   | 4.95   | 4.90   |
| C/γ(°) | 90.0    |         |         |         |        |        |        |        |        |
| 0.0    | 4.84    |         |         |         |        |        |        |        |        |
| 45.0   | 4.79    |         |         |         |        |        |        |        |        |
| 90.0   | 4.79    |         |         |         |        |        |        |        |        |
| 135.0  | 4.84    |         |         |         |        |        |        |        |        |
| 180.0  | 4.79    |         |         |         |        |        |        |        |        |
| 225.0  | 4.79    |         |         |         |        |        |        |        |        |
| 270.0  | 4.79    |         |         |         |        |        |        |        |        |
| 315.0  | 4.79    |         |         |         |        |        |        |        |        |
| 360.0  | 4.84    |         |         |         |        |        |        |        |        |