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## Nata

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|                                      |                     |
|--------------------------------------|---------------------|
| LumCAT: 3-1546-A3                    |                     |
| Luminaire: TE 2213401-1+92.76.365.00 |                     |
| Report No: GC2017071208              | Voltage(V): 35.2500 |
| Test No: NT-0010                     | Current(A): 0.5000  |
| LampCAT: CREE CXA1830                | Power (W): 17.6250  |
| Lamp flux(lm): 1976.0                | PF: 0.0000          |
| Number of Lamps: 1                   | Ballast type: DC    |
| Length(mm): 84                       | Width(mm): 84       |
| Phm Type: C                          | Height(mm): 0       |

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## Photometric Results

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Lumens(lm): 1830.45  
Efficiency(%): 92.63%  
Lumens(lm)/Power(W): 103.86  
Central intensity(cd): 6078.128  
Maximum intensity(cd): 6078.128  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=26.0  
[C90/270]Total=26.0  
Field angle(10%Imax): [C0/180]Total=62.7  
[C90/270]Total=62.7  
Maximum s/h(1/2): C0\_180=0.44 C90\_270=0.44  
Maximum s/h(1/4): C0\_180=0.44 C90\_270=0.44  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 92.63%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.686%

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Equipment: GMS1980  
Temperature(°C): 25.0

Date: 2017/7/12  
Humidity(%): 60.0%

Operator: NT07  
Distance(m): 7.46

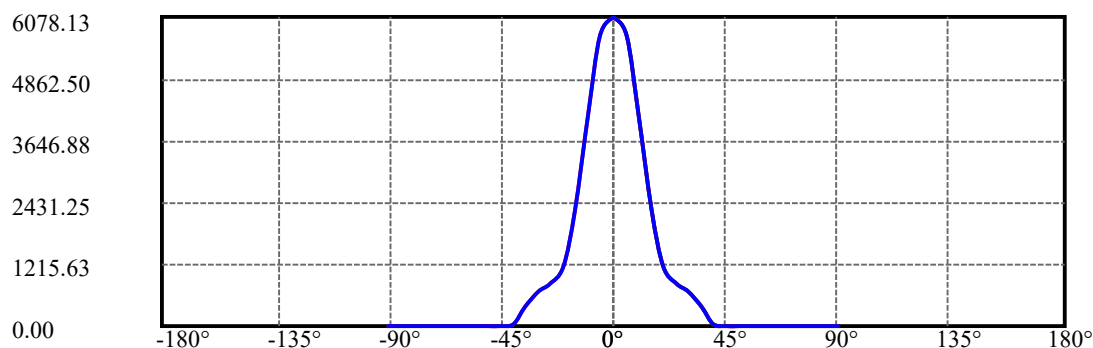
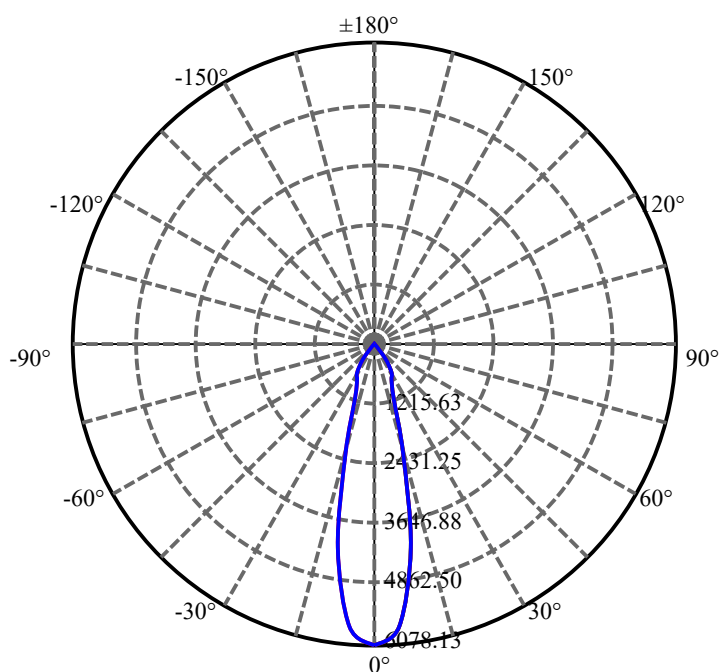
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 6078.129      | 0.000       | 0         | .000%       | .000%      |
| 5.0                | 5698.446      | 140.786     | 140.786   | 7.125%      | 7.691%     |
| 10.0               | 4178.740      | 353.338     | 494.124   | 17.881%     | 26.995%    |
| 15.0               | 2276.707      | 382.933     | 877.056   | 19.379%     | 47.915%    |
| 20.0               | 1171.424      | 284.174     | 1161.231  | 14.381%     | 63.440%    |
| 25.0               | 820.965       | 208.965     | 1370.196  | 10.575%     | 74.856%    |
| 30.0               | 691.346       | 191.384     | 1561.58   | 9.685%      | 85.311%    |
| 35.0               | 378.730       | 157.576     | 1719.156  | 7.975%      | 93.920%    |
| 40.0               | 30.873        | 68.339      | 1787.495  | 3.458%      | 97.654%    |
| 45.0               | 9.906         | 7.551       | 1795.046  | .382%       | 98.066%    |
| 50.0               | 8.863         | 3.792       | 1798.838  | .192%       | 98.273%    |
| 55.0               | 8.376         | 3.748       | 1802.586  | .190%       | 98.478%    |
| 60.0               | 8.090         | 3.806       | 1806.392  | .193%       | 98.686%    |
| 65.0               | 7.923         | 3.893       | 1810.285  | .197%       | 98.899%    |
| 70.0               | 7.791         | 3.979       | 1814.264  | .201%       | 99.116%    |
| 75.0               | 7.624         | 4.029       | 1818.294  | .204%       | 99.336%    |
| 80.0               | 7.534         | 4.056       | 1822.35   | .205%       | 99.558%    |
| 85.0               | 7.416         | 4.062       | 1826.412  | .206%       | 99.780%    |
| 90.0               | 7.318         | 4.034       | 1830.446  | .204%       | 100.000%   |

## ZONAL LUMEN SUMMARY

| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 1561.58 | 79.03% | 85.31%  |
| 0-40    | 1787.50 | 90.46% | 97.65%  |
| 0-60    | 1806.39 | 91.42% | 98.69%  |
| 0-90    | 1826.41 | 92.43% | 99.78%  |
| 0-120   | 1826.41 | 92.43% | 99.78%  |
| 0-180   | 1830.45 | 92.63% | 100.00% |
| 60-90   | 23.83   | 1.21%  | 1.30%   |
| 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%   |
| 0-27.46 | 1464.36 | 74.11% | 80.00%  |

## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 494.12 |
| 10-20   | 667.11 |
| 20-30   | 400.35 |
| 30-40   | 225.92 |
| 40-50   | 11.34  |
| 50-60   | 7.55   |
| 60-70   | 7.87   |
| 70-80   | 8.09   |
| 80-90   | 4.06   |
| 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:

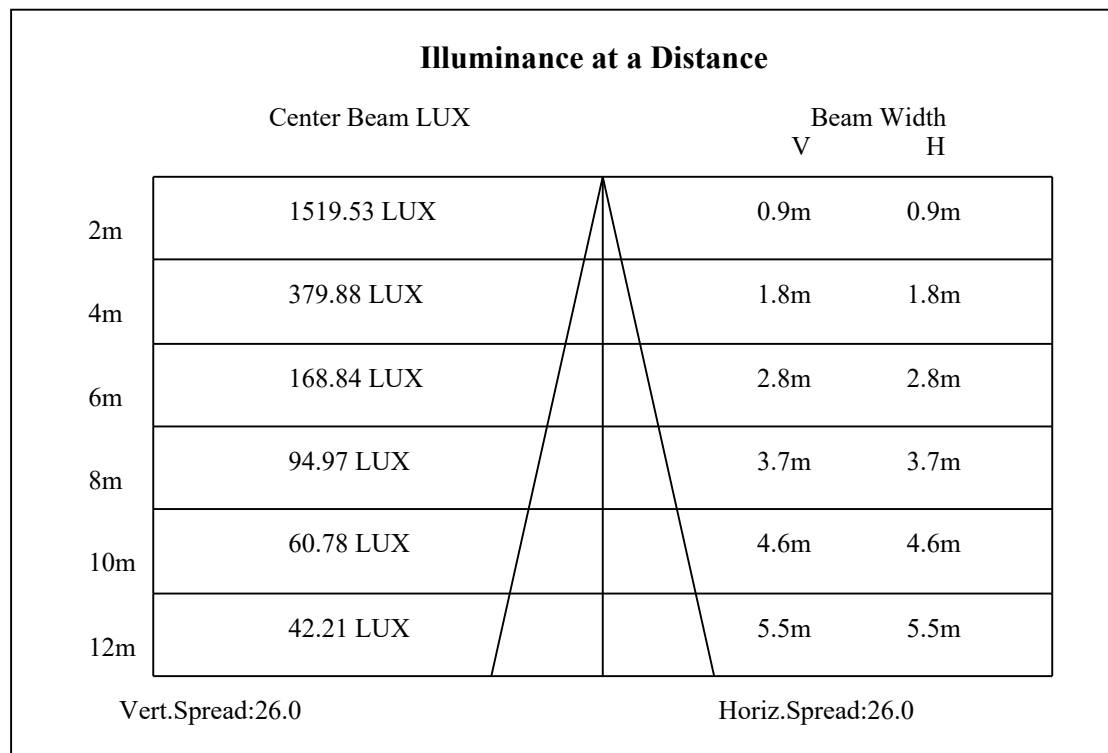
C90/C270:

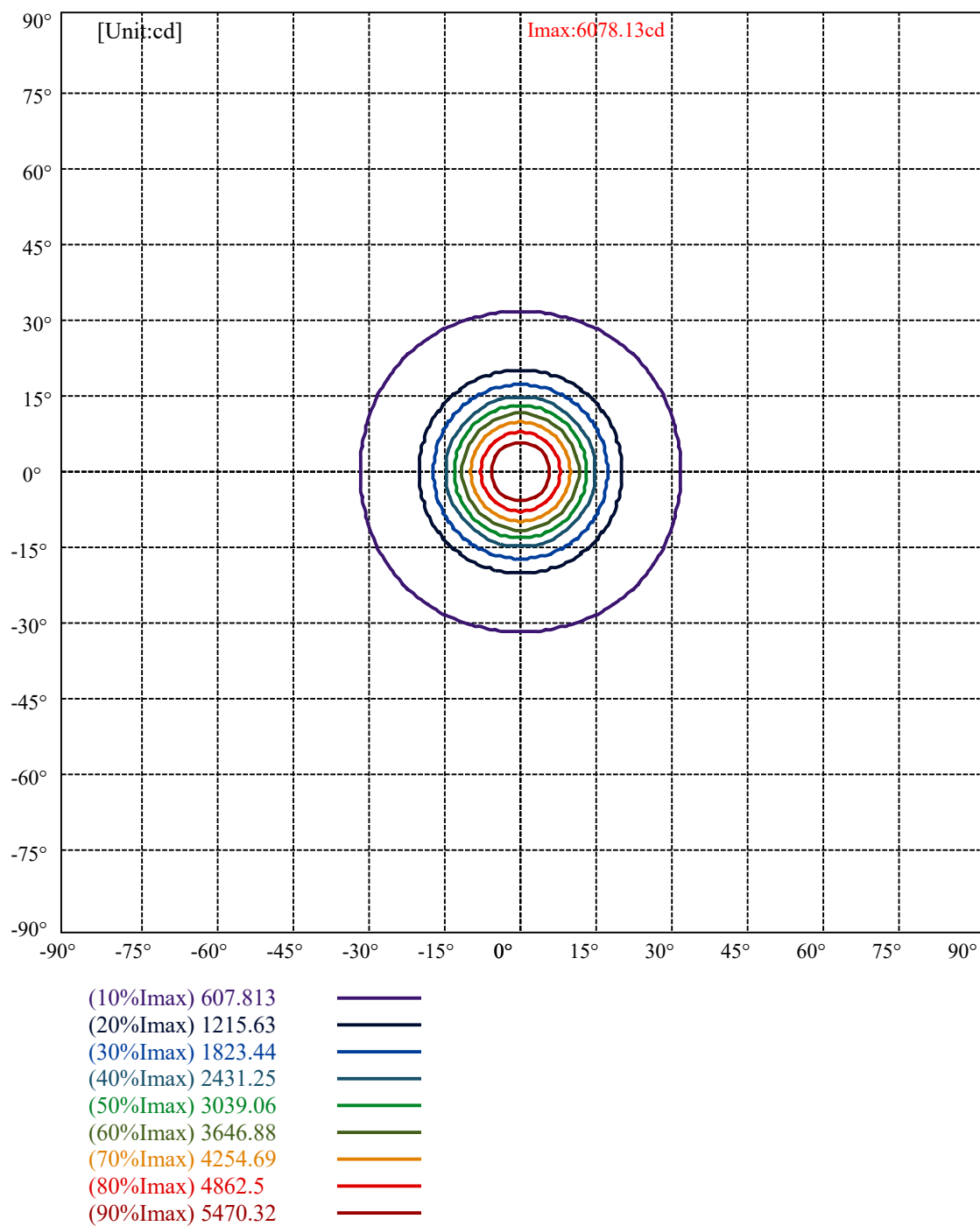
Field angle(10%Imax):C0/180Left:31.3 Right:31.3

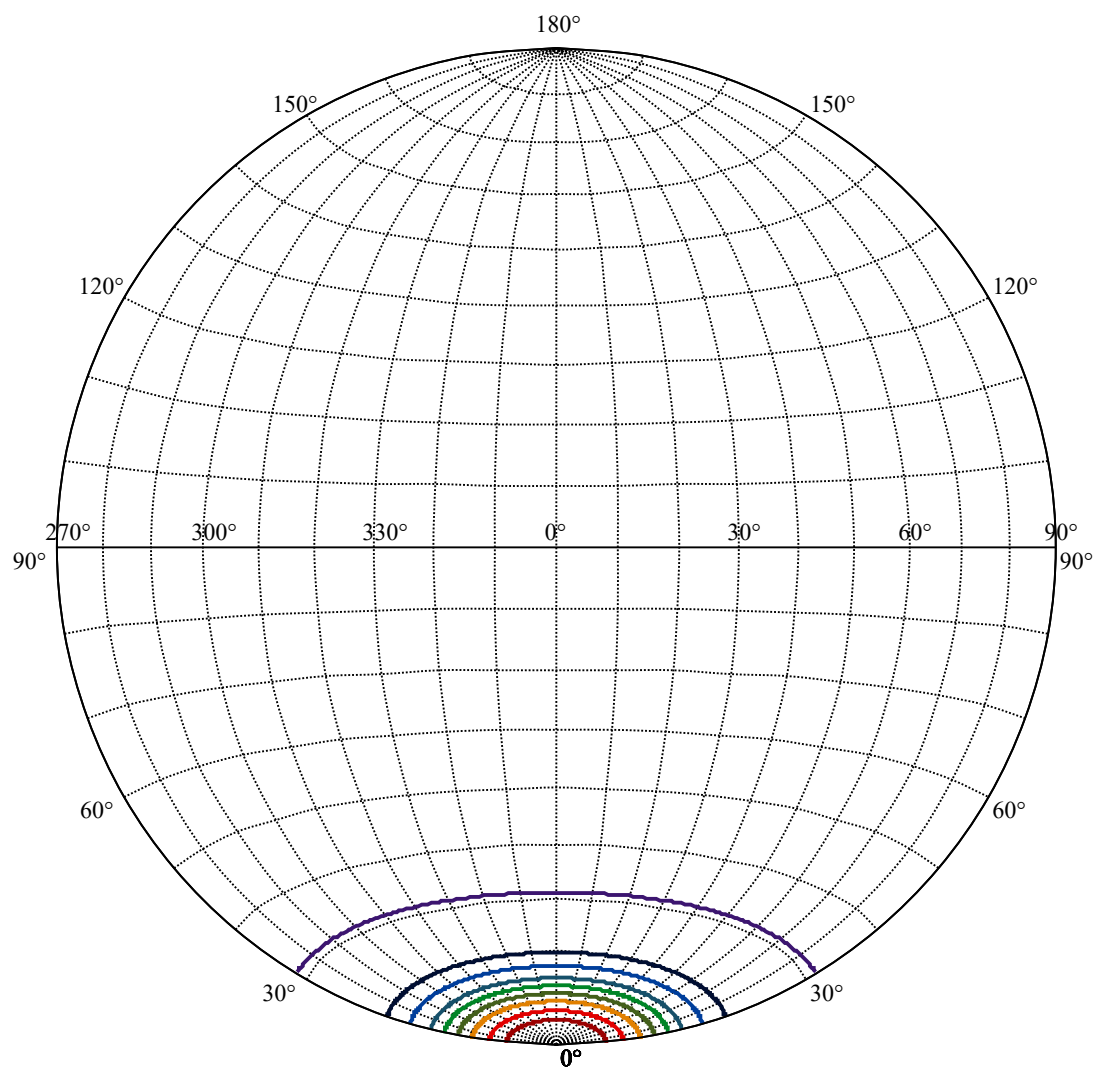
:C90/270Left:31.3 Right:31.3

Beam Angle(50%Imax):C0/180Left:13.0 Right:13.0

:C90/270Left:13.0 Right:13.0







House

[Unit:cd]

Road

**Imax:6078.13**

(10%Imax) 607.813

(20%Imax) 1215.63

(30%Imax) 1823.44

(40%Imax) 2431.25

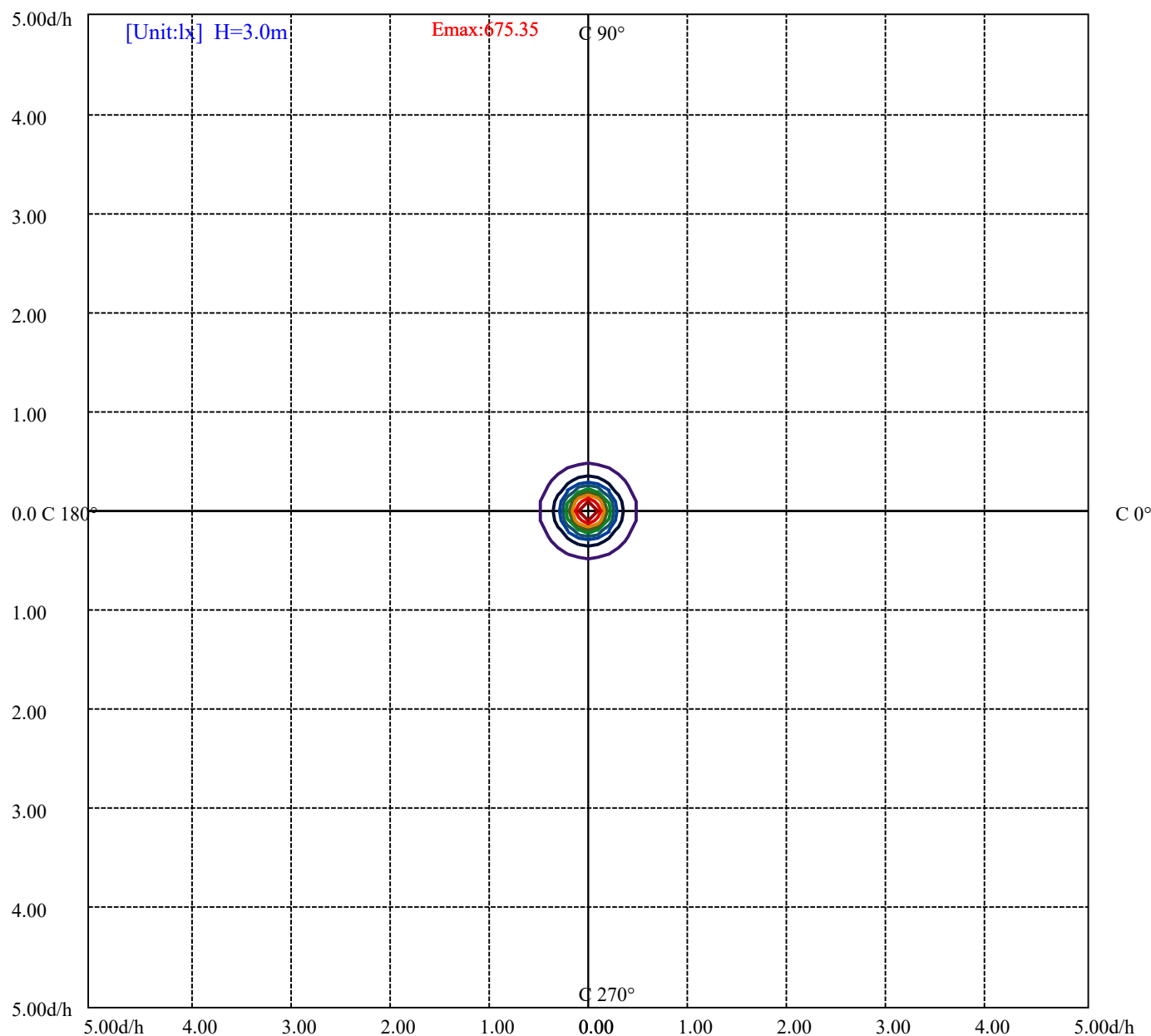
(50%Imax) 3039.06

(60%Imax) 3646.88

(70%Imax) 4254.69

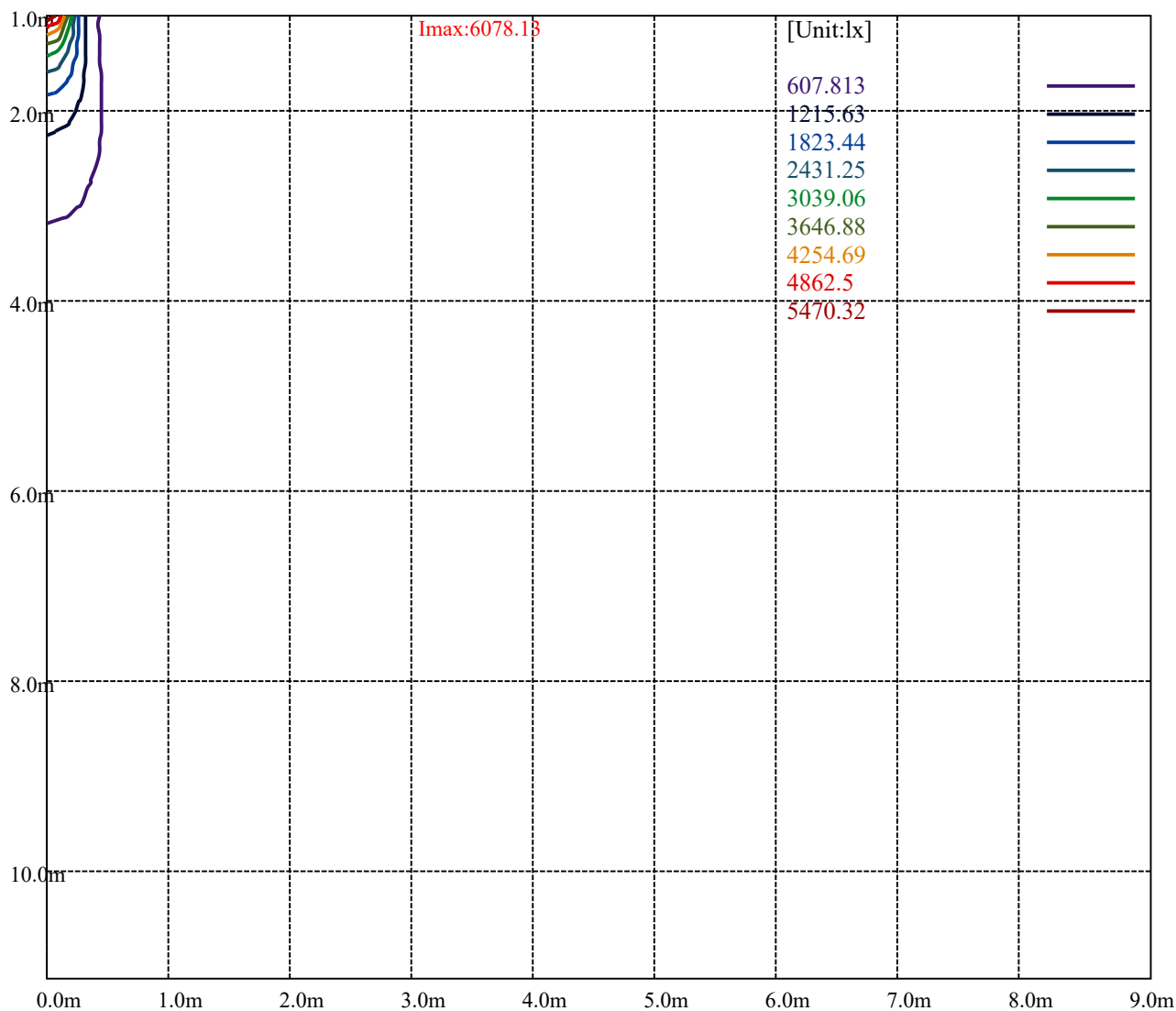
(80%Imax) 4862.5

(90%Imax) 5470.32



|                                 |   |
|---------------------------------|---|
| (10%E <sub>max</sub> ) 67.53467 | — |
| (20%E <sub>max</sub> ) 135.0689 | — |
| (30%E <sub>max</sub> ) 202.6044 | — |
| (40%E <sub>max</sub> ) 270.1389 | — |
| (50%E <sub>max</sub> ) 337.6733 | — |
| (60%E <sub>max</sub> ) 405.2078 | — |
| (70%E <sub>max</sub> ) 472.7422 | — |
| (80%E <sub>max</sub> ) 540.2767 | — |
| (90%E <sub>max</sub> ) 607.8123 | — |





Luminance Table

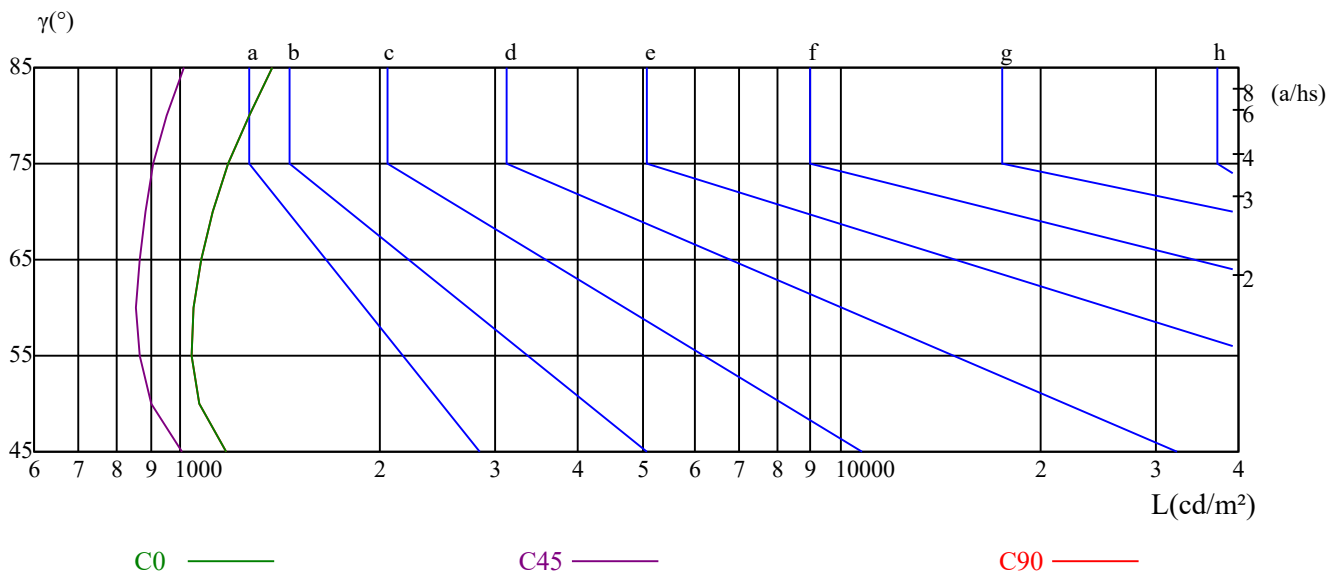
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85   |
|----------|------|------|------|------|------|------|------|------|------|
| C0       | 1169 | 1069 | 1041 | 1046 | 1075 | 1122 | 1179 | 1268 | 1381 |
| C45      | 1004 | 904  | 867  | 857  | 866  | 886  | 911  | 956  | 1011 |
| C90      | 1169 | 1069 | 1041 | 1046 | 1075 | 1122 | 1179 | 1268 | 1381 |

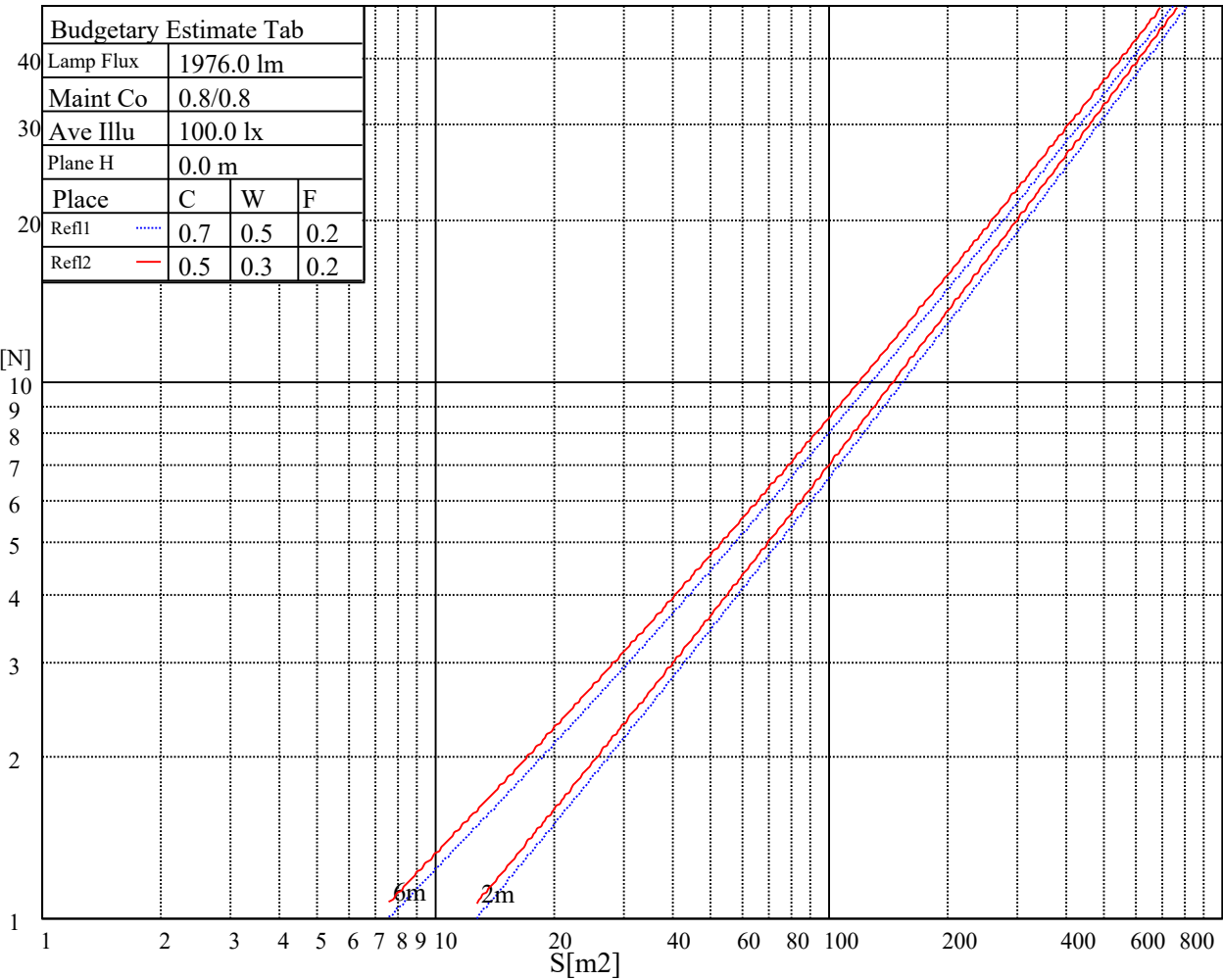
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 2595       | 2595       | 2595    | 4077       | 4077       | 4077    | 11776      | 11776      | 11776   |

Glare Table

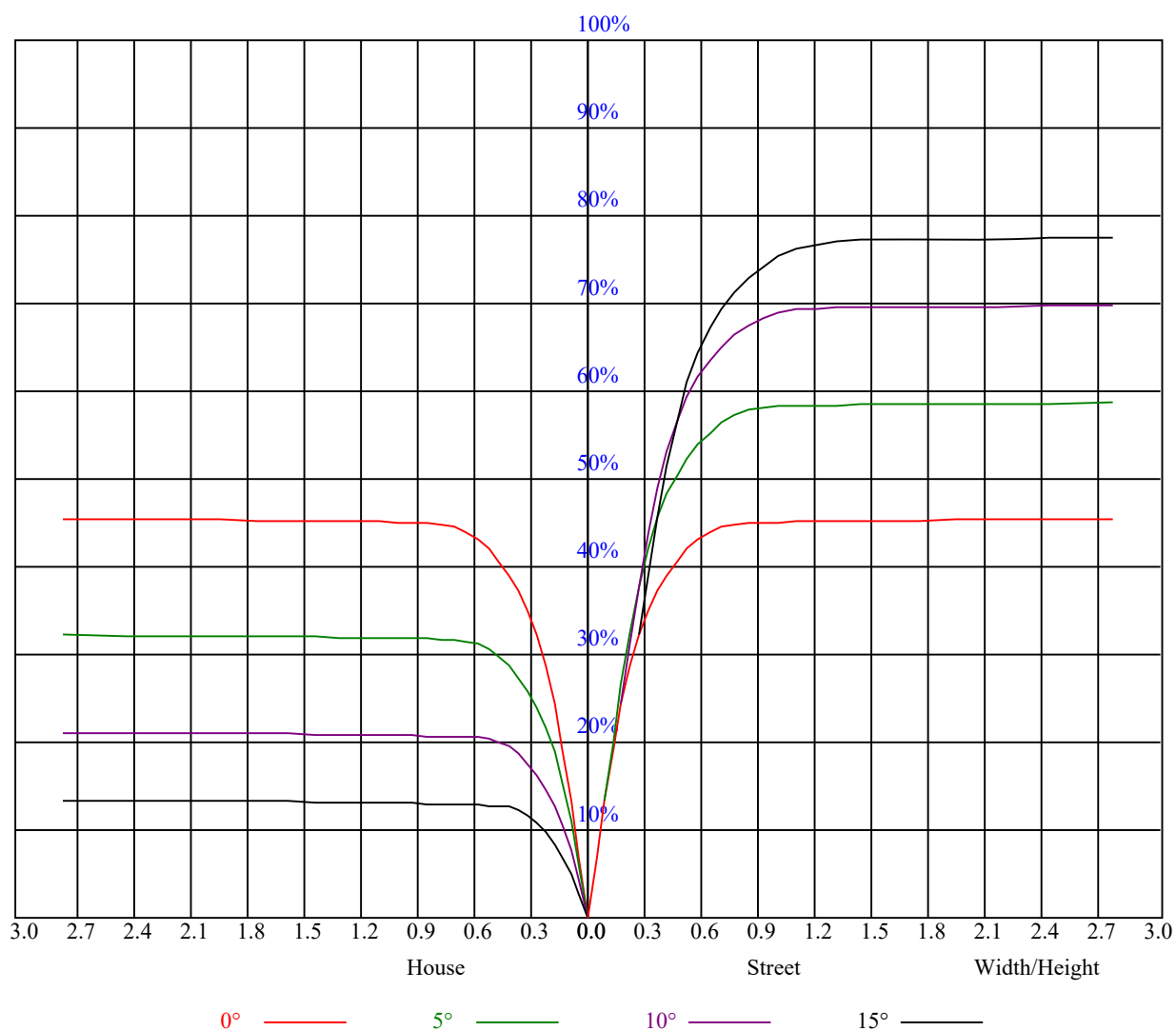
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000                           | 1000 | 500  | $\leq 300$ |            |            |            |            |
| 1.5   | B       |                                | 2000 | 1000 | 500        | $\leq 300$ |            |            |            |
| 1.85  | C       |                                |      | 2000 | 1000       | 500        | $\leq 300$ |            |            |
| 2.2   | D       |                                |      |      | 2000       | 1000       | 500        | $\leq 300$ |            |
| 2.55  | E       |                                |      |      |            | 2000       | 1000       | 500        | $\leq 300$ |
|       |         | 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 RHOFC=20 CU |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0     | 1.10                                    | 1.10 | 1.10 | 1.08 | 1.08 | 1.08 | 1.03 | 1.03 | 1.03 | 0.99 | 0.99 | 0.99 | 0.95 | 0.95 | 0.95 | 0.93 |
| 1     | 1.04                                    | 1.02 | 1.00 | 1.02 | 1.00 | 0.98 | 0.98 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 | 0.90 | 0.90 | 0.88 |
| 2     | 0.98                                    | 0.95 | 0.92 | 0.96 | 0.93 | 0.91 | 0.93 | 0.91 | 0.89 | 0.91 | 0.89 | 0.87 | 0.88 | 0.87 | 0.85 | 0.84 |
| 3     | 0.93                                    | 0.89 | 0.86 | 0.92 | 0.88 | 0.85 | 0.89 | 0.86 | 0.84 | 0.87 | 0.85 | 0.83 | 0.85 | 0.83 | 0.81 | 0.80 |
| 4     | 0.88                                    | 0.84 | 0.81 | 0.87 | 0.83 | 0.80 | 0.85 | 0.82 | 0.79 | 0.84 | 0.81 | 0.79 | 0.82 | 0.80 | 0.78 | 0.76 |
| 5     | 0.84                                    | 0.80 | 0.77 | 0.83 | 0.79 | 0.76 | 0.82 | 0.78 | 0.76 | 0.80 | 0.77 | 0.75 | 0.79 | 0.76 | 0.74 | 0.73 |
| 6     | 0.81                                    | 0.76 | 0.73 | 0.80 | 0.76 | 0.73 | 0.79 | 0.75 | 0.72 | 0.77 | 0.74 | 0.72 | 0.76 | 0.73 | 0.71 | 0.70 |
| 7     | 0.77                                    | 0.73 | 0.70 | 0.77 | 0.72 | 0.69 | 0.76 | 0.72 | 0.69 | 0.75 | 0.71 | 0.69 | 0.74 | 0.71 | 0.68 | 0.67 |
| 8     | 0.74                                    | 0.70 | 0.67 | 0.74 | 0.70 | 0.67 | 0.73 | 0.69 | 0.66 | 0.72 | 0.69 | 0.66 | 0.71 | 0.68 | 0.66 | 0.65 |
| 9     | 0.71                                    | 0.67 | 0.64 | 0.71 | 0.67 | 0.64 | 0.70 | 0.66 | 0.64 | 0.70 | 0.66 | 0.64 | 0.69 | 0.66 | 0.63 | 0.62 |
| 10    | 0.69                                    | 0.65 | 0.62 | 0.69 | 0.64 | 0.62 | 0.68 | 0.64 | 0.61 | 0.67 | 0.64 | 0.61 | 0.67 | 0.63 | 0.61 | 0.60 |



| Intensity data(cd) |         |         |         |         |         |        |        |        | Appendix Page: 14 Total:14 |  |  |
|--------------------|---------|---------|---------|---------|---------|--------|--------|--------|----------------------------|--|--|
| C/γ(°)             | 0.0     | 5.0     | 10.0    | 15.0    | 20.0    | 25.0   | 30.0   | 35.0   | 40.0                       |  |  |
| 0.0                | 6081.05 | 5803.91 | 4339.16 | 2554.41 | 1262.18 | 835.33 | 705.66 | 440.76 | 44.02                      |  |  |
| 45.0               | 6069.36 | 5713.75 | 4235.64 | 2358.51 | 1229.90 | 823.64 | 700.65 | 400.69 | 31.16                      |  |  |
| 90.0               | 6065.47 | 5669.79 | 4096.51 | 2165.96 | 1089.60 | 810.84 | 687.91 | 347.71 | 18.64                      |  |  |
| 135.0              | 6096.63 | 5901.30 | 4503.88 | 2559.97 | 1308.37 | 838.11 | 701.77 | 425.73 | 49.75                      |  |  |
| 180.0              | 6081.05 | 5628.05 | 3994.12 | 2057.44 | 1094.44 | 799.05 | 669.32 | 336.47 | 20.26                      |  |  |
| 225.0              | 6069.36 | 5693.72 | 4098.74 | 2143.70 | 1062.22 | 824.92 | 691.30 | 349.16 | 25.88                      |  |  |
| 270.0              | 6065.47 | 5690.38 | 4314.67 | 2334.03 | 1228.79 | 839.78 | 696.76 | 410.15 | 40.07                      |  |  |
| 315.0              | 6096.63 | 5486.69 | 3847.20 | 2039.63 | 1095.89 | 796.04 | 677.39 | 319.16 | 17.20                      |  |  |
| 360.0              | 6081.05 | 5803.91 | 4339.16 | 2554.41 | 1262.18 | 835.33 | 705.66 | 440.76 | 44.02                      |  |  |
|                    |         |         |         |         |         |        |        |        |                            |  |  |
| C/γ(°)             | 45.0    | 50.0    | 55.0    | 60.0    | 65.0    | 70.0   | 75.0   | 80.0   | 85.0                       |  |  |
| 0.0                | 10.02   | 8.90    | 8.40    | 8.01    | 7.96    | 7.74   | 7.68   | 7.57   | 7.46                       |  |  |
| 45.0               | 10.13   | 8.96    | 8.51    | 8.18    | 8.01    | 7.90   | 7.68   | 7.62   | 7.46                       |  |  |
| 90.0               | 9.74    | 8.79    | 8.29    | 8.07    | 7.85    | 7.79   | 7.57   | 7.51   | 7.35                       |  |  |
| 135.0              | 10.13   | 8.79    | 8.29    | 8.07    | 7.85    | 7.74   | 7.51   | 7.46   | 7.40                       |  |  |
| 180.0              | 9.46    | 8.63    | 8.29    | 8.01    | 7.85    | 7.68   | 7.57   | 7.40   | 7.35                       |  |  |
| 225.0              | 10.02   | 9.02    | 8.40    | 8.18    | 8.01    | 7.79   | 7.68   | 7.51   | 7.40                       |  |  |
| 270.0              | 10.18   | 9.07    | 8.51    | 8.18    | 7.96    | 7.90   | 7.68   | 7.62   | 7.46                       |  |  |
| 315.0              | 9.57    | 8.74    | 8.29    | 8.01    | 7.90    | 7.79   | 7.62   | 7.57   | 7.46                       |  |  |
| 360.0              | 10.02   | 8.90    | 8.40    | 8.01    | 7.96    | 7.74   | 7.68   | 7.57   | 7.46                       |  |  |
|                    |         |         |         |         |         |        |        |        |                            |  |  |
| C/γ(°)             | 90.0    |         |         |         |         |        |        |        |                            |  |  |
| 0.0                | 7.29    |         |         |         |         |        |        |        |                            |  |  |
| 45.0               | 7.40    |         |         |         |         |        |        |        |                            |  |  |
| 90.0               | 7.35    |         |         |         |         |        |        |        |                            |  |  |
| 135.0              | 7.29    |         |         |         |         |        |        |        |                            |  |  |
| 180.0              | 7.23    |         |         |         |         |        |        |        |                            |  |  |
| 225.0              | 7.35    |         |         |         |         |        |        |        |                            |  |  |
| 270.0              | 7.35    |         |         |         |         |        |        |        |                            |  |  |
| 315.0              | 7.29    |         |         |         |         |        |        |        |                            |  |  |
| 360.0              | 7.29    |         |         |         |         |        |        |        |                            |  |  |