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## Nata

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LumCAT: 3-1945-E  
Luminaire: BJB 47.319.2011  
Report No: NATA0100 Voltage(V): 35.9600  
Test No: GC2019112013 Current(A): 0.3970  
LampCAT: LUMILEDS LUXEON CoB 1204 LES13 Power (W): 14.2700  
Lamp flux(lm): 1930.0 PF: 1.0000  
Number of Lamps: 1 Ballast type: DC  
Length(mm): 0 Width(mm): 0  
Phm Type: C Height(mm): 0

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## Photometric Results

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Lumens(lm): 1718.60  
Efficiency(%): 89.05%  
Lumens(lm)/Power(W): 120.43  
Central intensity(cd): 2028.938  
Maximum intensity(cd): 2059.172  
Angle of maximum intensity: C=0.0  $\gamma$ =5.0  
Beam Angle(50%Imax): [C0/180]Total=59.0  
[C90/270]Total=59.0  
Field angle(10%Imax): [C0/180]Total=75.5  
[C90/270]Total=75.5  
Maximum s/h(1/2): C0\_180=0.96 C90\_270=0.96  
Maximum s/h(1/4): C0\_180=0.87 C90\_270=0.87  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 89.05%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.420%

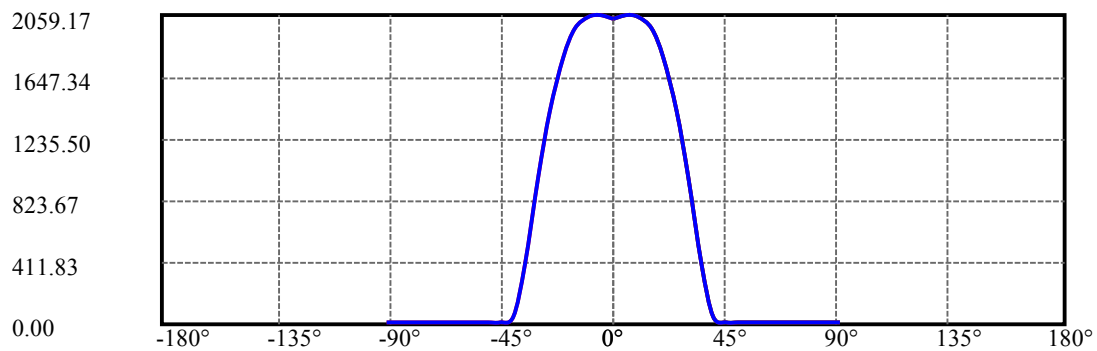
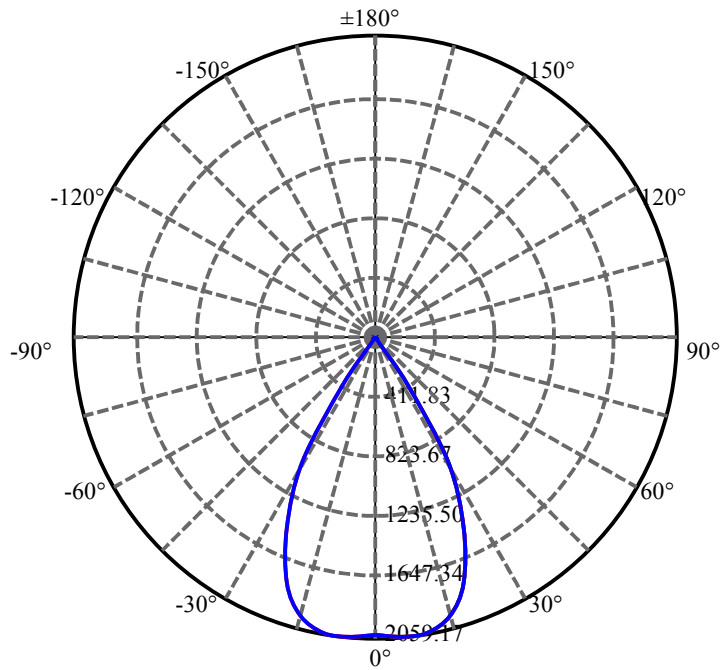
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 2028.938      | 0.000       | 0         | .000%       | .000%      |
| 5.0                | 2059.172      | 48.872      | 48.872    | 2.532%      | 2.844%     |
| 10.0               | 2052.773      | 147.097     | 195.969   | 7.622%      | 11.403%    |
| 15.0               | 1971.563      | 238.721     | 434.69    | 12.369%     | 25.293%    |
| 20.0               | 1782.352      | 309.375     | 744.066   | 16.030%     | 43.295%    |
| 25.0               | 1425.916      | 336.488     | 1080.554  | 17.435%     | 62.874%    |
| 30.0               | 987.279       | 305.392     | 1385.946  | 15.823%     | 80.644%    |
| 35.0               | 394.720       | 203.509     | 1589.455  | 10.545%     | 92.486%    |
| 40.0               | 49.050        | 74.040      | 1663.494  | 3.836%      | 96.794%    |
| 45.0               | 17.128        | 12.253      | 1675.748  | .635%       | 97.507%    |
| 50.0               | 12.417        | 5.970       | 1681.718  | .309%       | 97.854%    |
| 55.0               | 10.659        | 5.018       | 1686.735  | .260%       | 98.146%    |
| 60.0               | 9.696         | 4.705       | 1691.441  | .244%       | 98.420%    |
| 65.0               | 8.930         | 4.528       | 1695.969  | .235%       | 98.683%    |
| 70.0               | 8.438         | 4.397       | 1700.366  | .228%       | 98.939%    |
| 75.0               | 9.520         | 4.694       | 1705.06   | .243%       | 99.212%    |
| 80.0               | 8.135         | 4.724       | 1709.784  | .245%       | 99.487%    |
| 85.0               | 8.100         | 4.411       | 1714.195  | .229%       | 99.744%    |
| 90.0               | 7.973         | 4.401       | 1718.597  | .228%       | 100.000%   |

## ZONAL LUMEN SUMMARY

| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 1385.95 | 71.81% | 80.64%  |
| 0-40    | 1663.49 | 86.19% | 96.79%  |
| 0-60    | 1691.44 | 87.64% | 98.42%  |
| 0-90    | 1714.20 | 88.82% | 99.74%  |
| 0-120   | 1714.20 | 88.82% | 99.74%  |
| 0-180   | 1718.60 | 89.05% | 100.00% |
| 60-90   | 27.46   | 1.42%  | 1.60%   |
| 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%   |
| 0-29.82 | 1374.88 | 71.24% | 80.00%  |

## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 195.97 |
| 10-20   | 548.10 |
| 20-30   | 641.88 |
| 30-40   | 277.55 |
| 40-50   | 18.22  |
| 50-60   | 9.72   |
| 60-70   | 8.93   |
| 70-80   | 9.42   |
| 80-90   | 4.41   |
| 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:

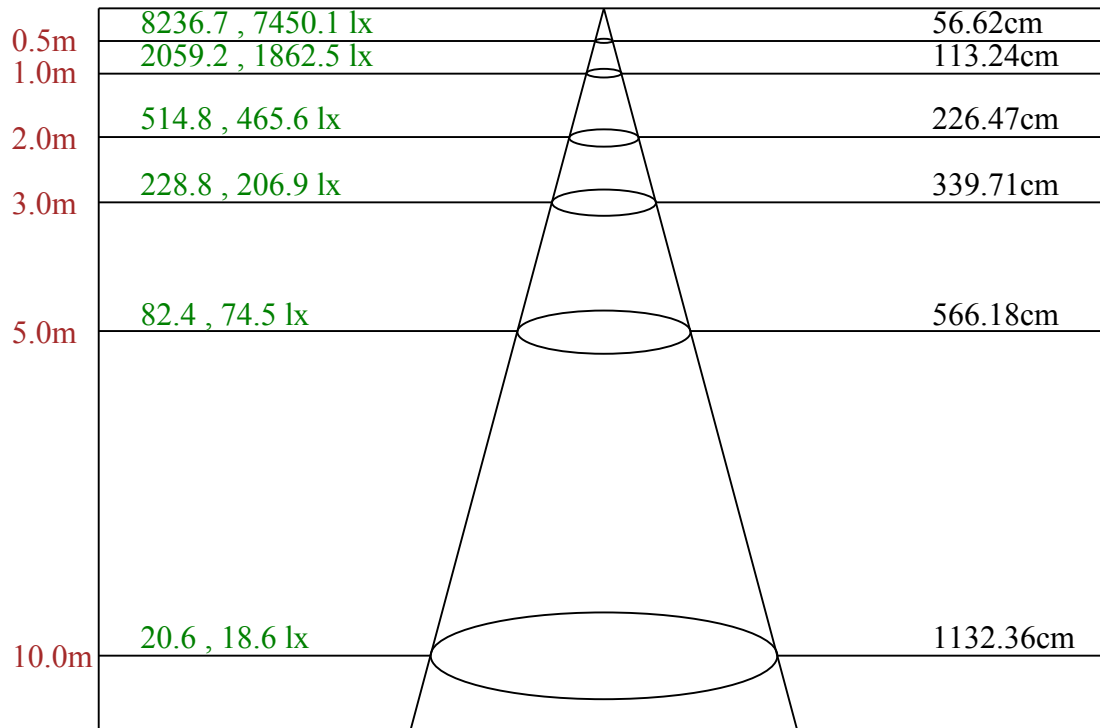
C90/C270:

Field angle(10%Imax):C0/180Left:42.7 Right:32.7

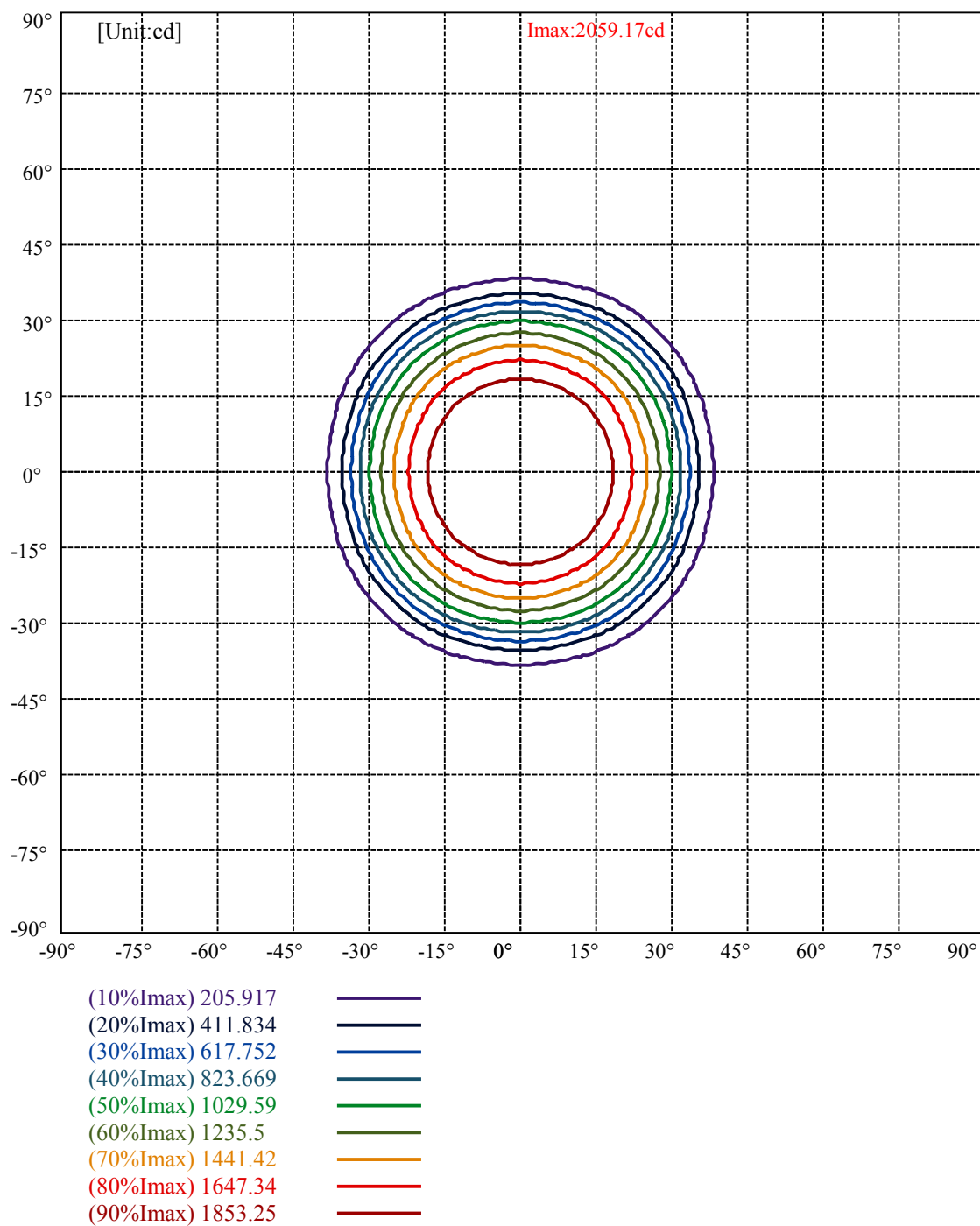
:C90/270Left:42.7 Right:32.7

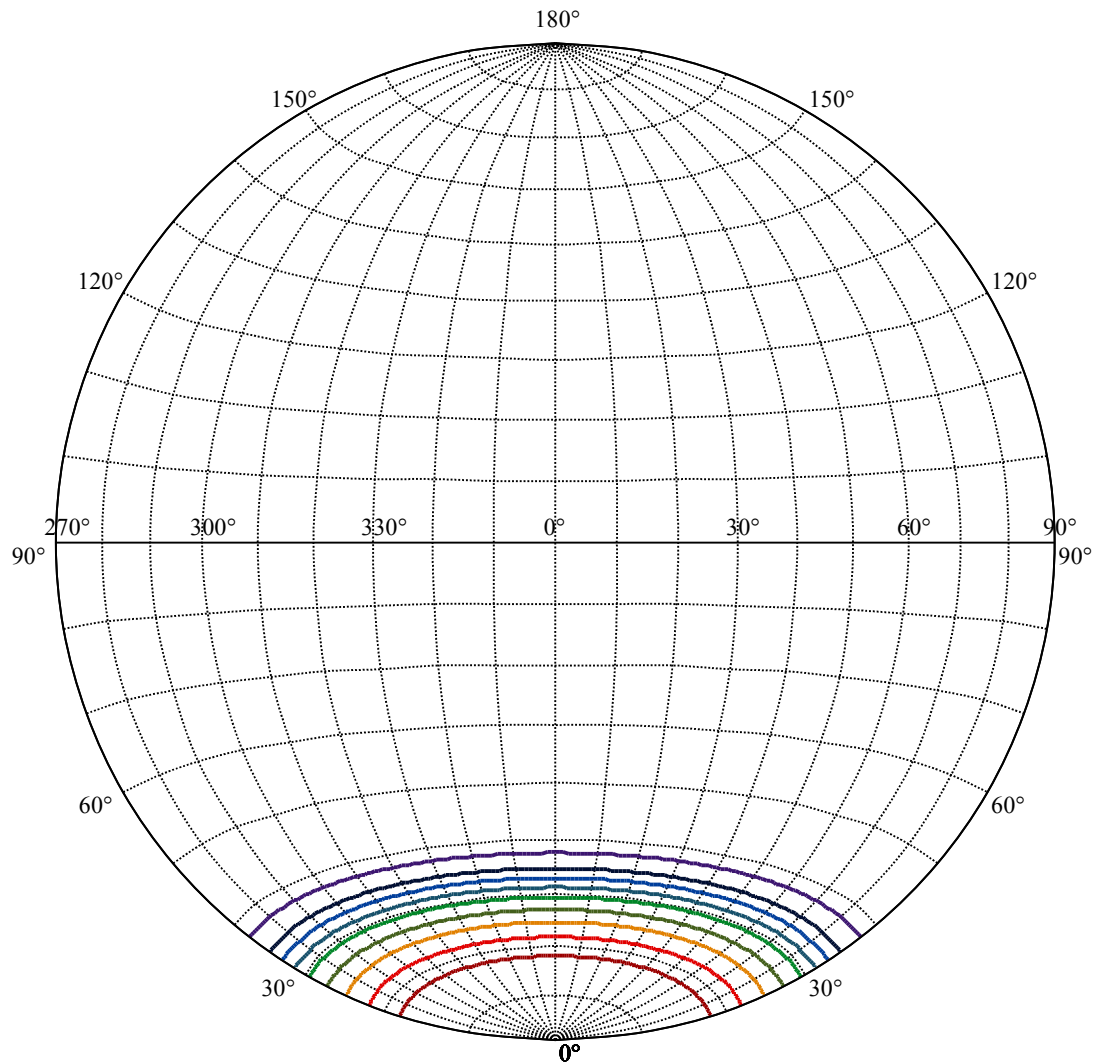
Beam Angle(50%Imax):C0/180Left:34.5 Right:24.5

:C90/270Left:34.5 Right:24.5



Max , Ave      Beam angle of C0 plane 59.04





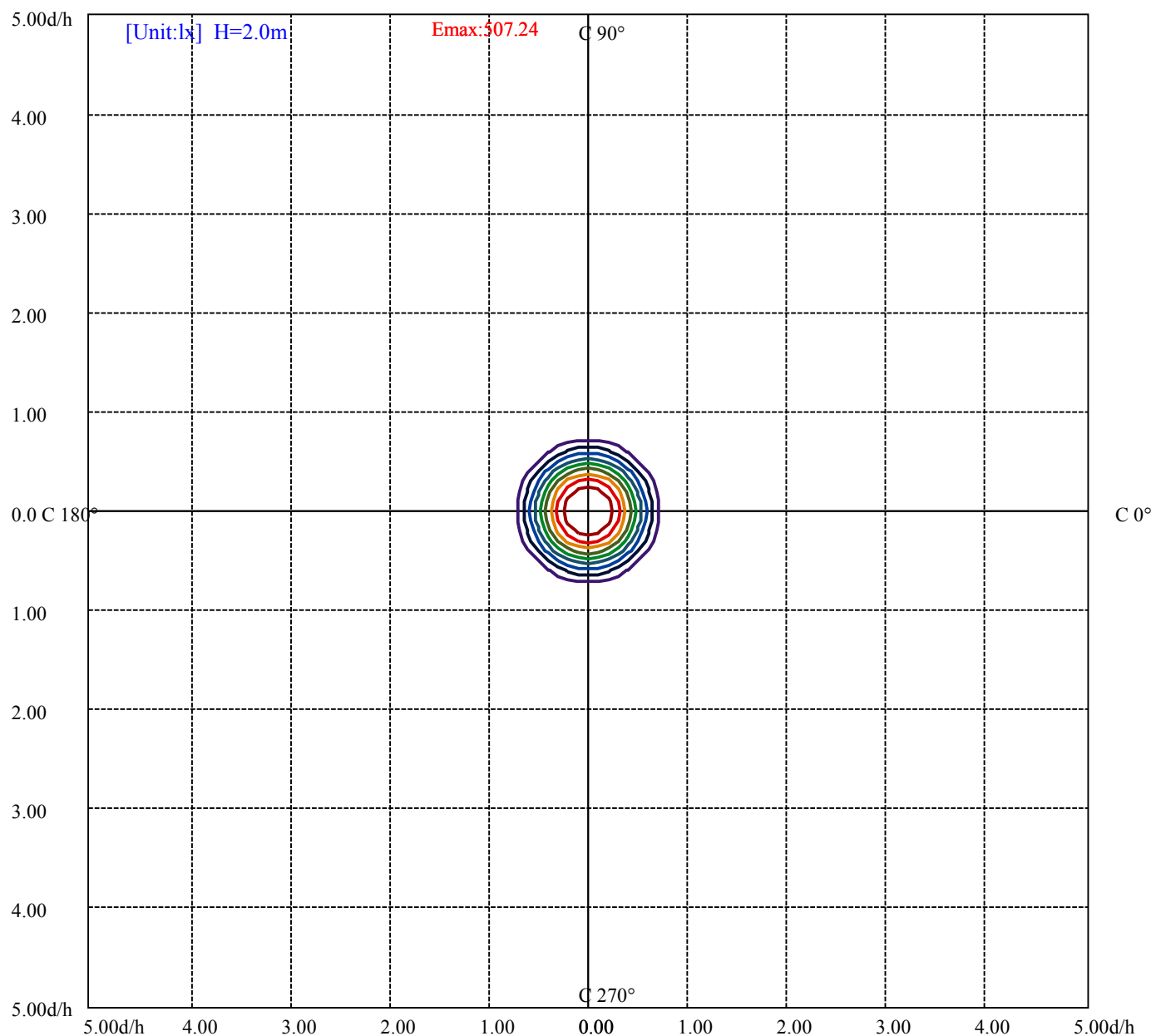
House

[Unit:cd]

Road

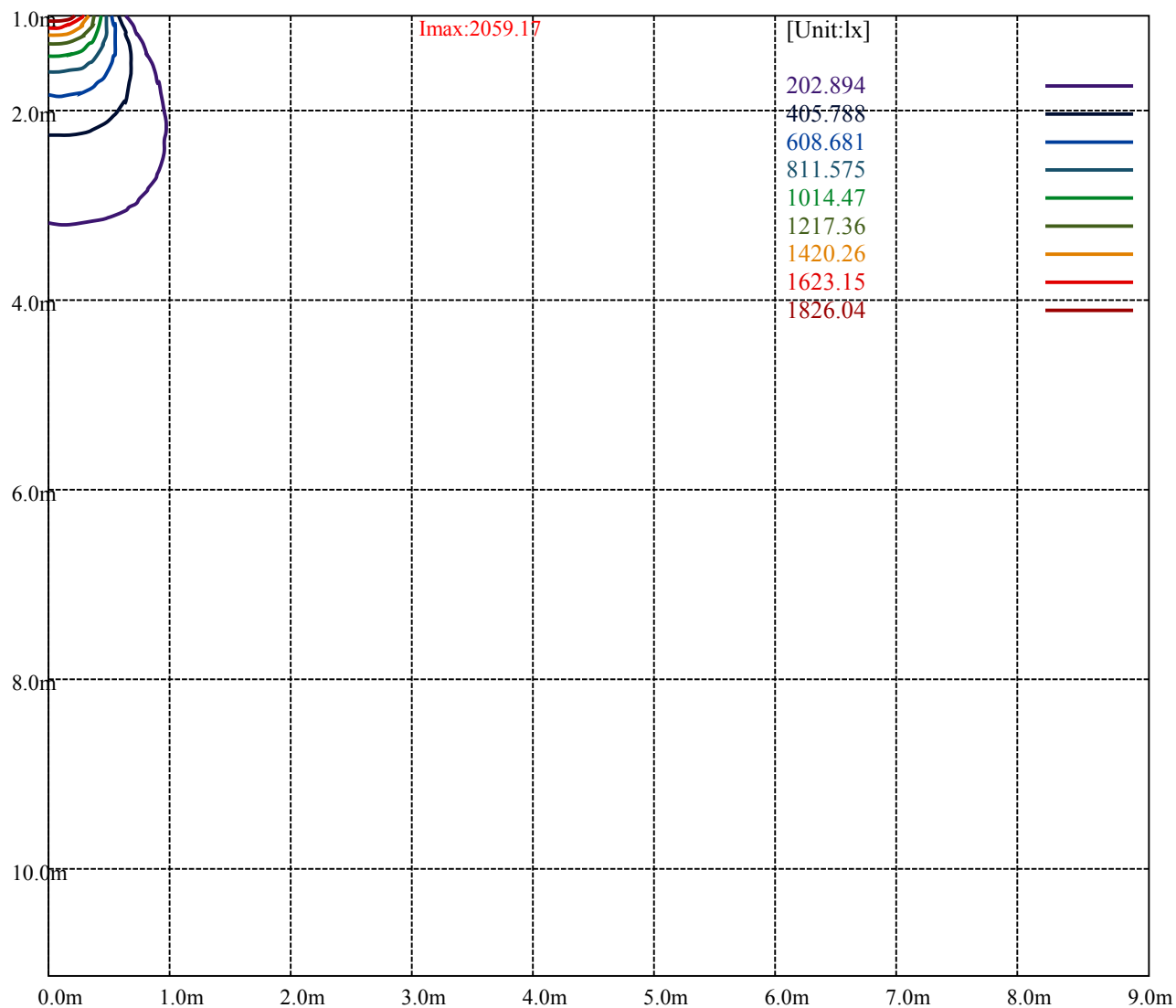
**Imax:2059.17**

|           |         |                                                                                     |
|-----------|---------|-------------------------------------------------------------------------------------|
| (10%Imax) | 205.917 |  |
| (20%Imax) | 411.834 |  |
| (30%Imax) | 617.752 |  |
| (40%Imax) | 823.669 |  |
| (50%Imax) | 1029.59 |  |
| (60%Imax) | 1235.5  |  |
| (70%Imax) | 1441.42 |  |
| (80%Imax) | 1647.34 |  |
| (90%Imax) | 1853.25 |  |



|                    |   |
|--------------------|---|
| (10%Emax) 50.7235  | — |
| (20%Emax) 101.447  | — |
| (30%Emax) 152.1705 | — |
| (40%Emax) 202.8938 | — |
| (50%Emax) 253.6175 | — |
| (60%Emax) 304.34   | — |
| (70%Emax) 355.065  | — |
| (80%Emax) 405.7875 | — |
| (90%Emax) 456.51   | — |





Luminance Table

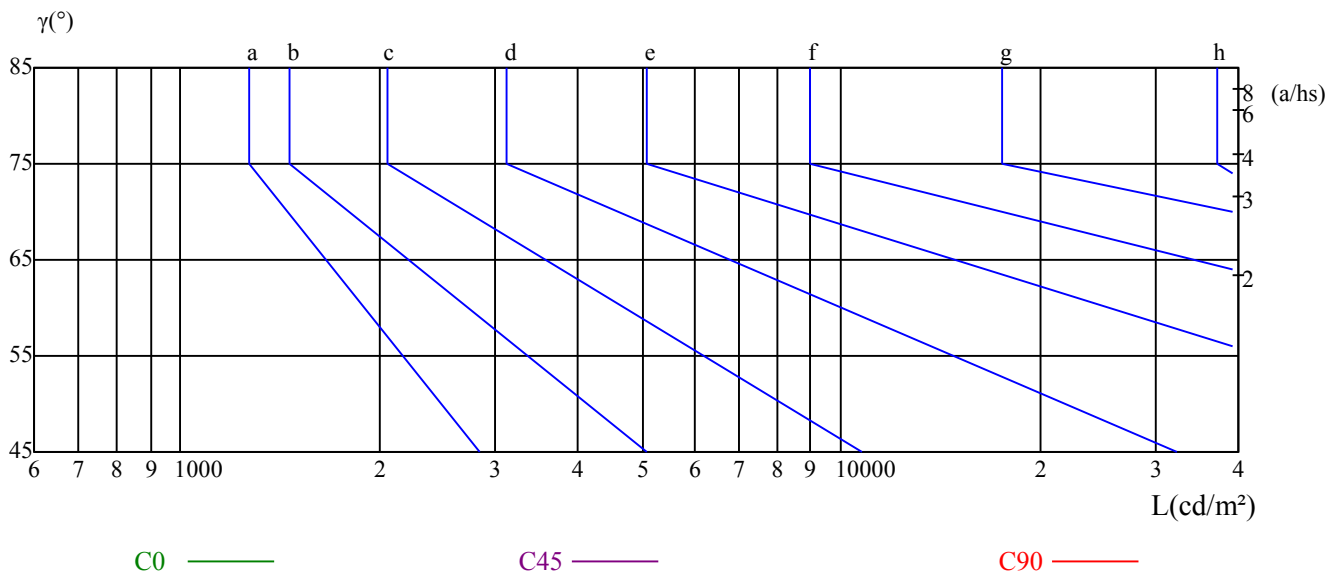
| $\gamma$ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|----------|----|----|----|----|----|----|----|----|----|
| C0       | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C45      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C90      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |

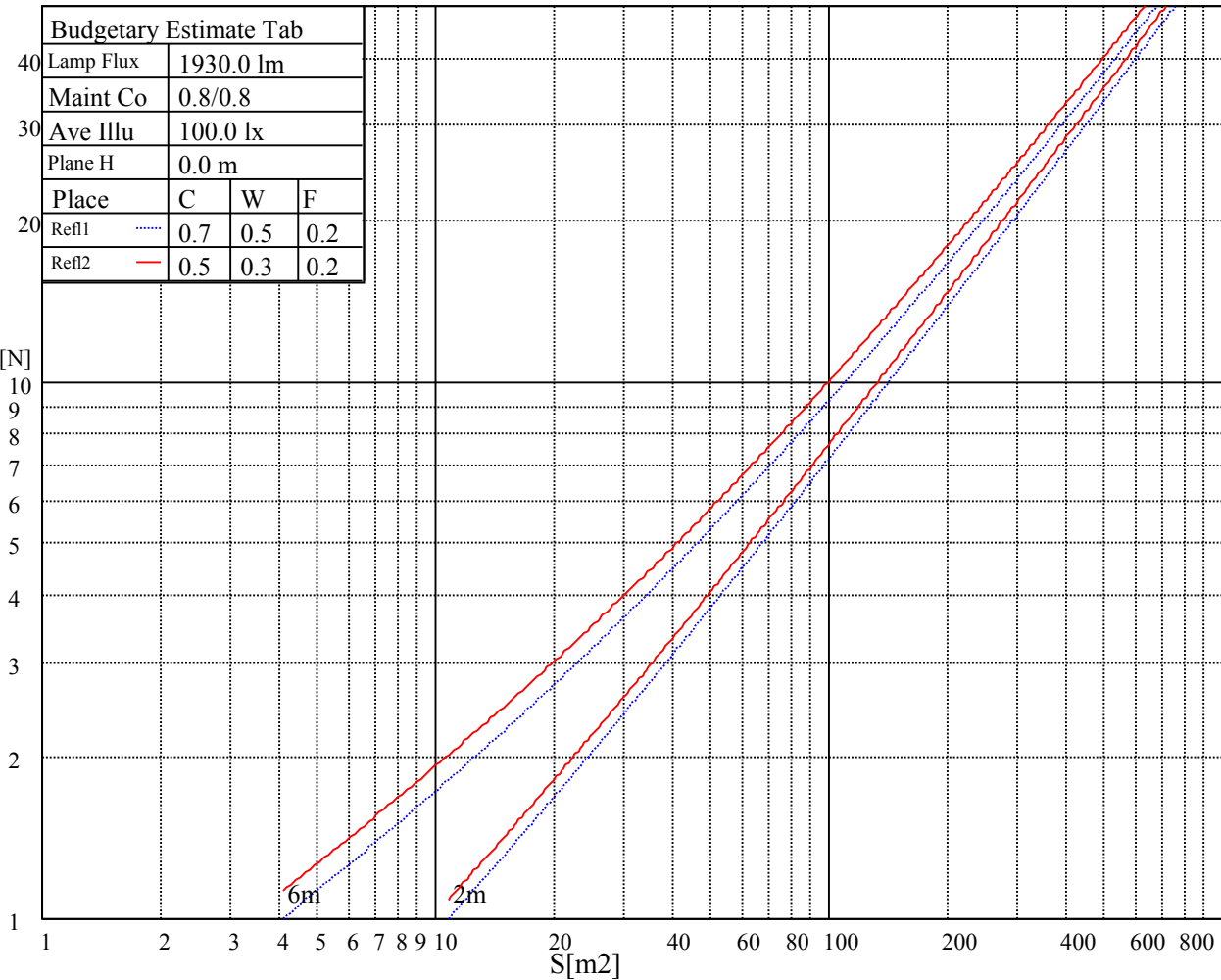
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 0          | 0          | 0       | 0          | 0          | 0       | 0          | 0          | 0       |

Glare Table

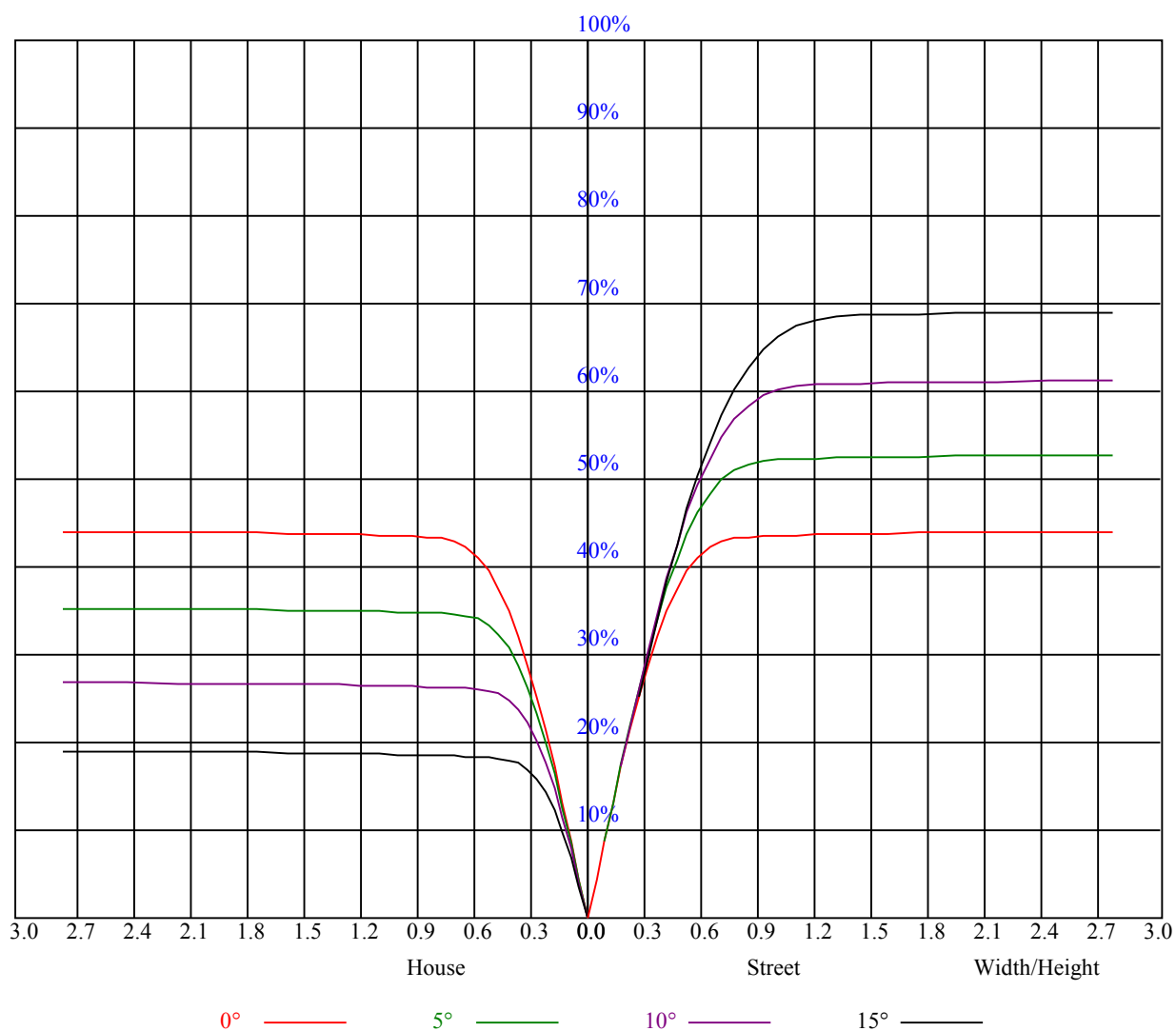
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000                           | 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





| RHOC | 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    | 1.06                                    | 1.06 | 1.06 | 1.04 | 1.04 | 1.04 | 0.99 | 0.99 | 0.99 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.89 |
| 1    | 0.99                                    | 0.96 | 0.94 | 0.97 | 0.95 | 0.93 | 0.93 | 0.92 | 0.90 | 0.90 | 0.89 | 0.87 | 0.87 | 0.86 | 0.85 | 0.83 |
| 2    | 0.92                                    | 0.89 | 0.86 | 0.91 | 0.87 | 0.85 | 0.88 | 0.85 | 0.83 | 0.85 | 0.83 | 0.81 | 0.83 | 0.81 | 0.79 | 0.78 |
| 3    | 0.86                                    | 0.82 | 0.79 | 0.85 | 0.81 | 0.78 | 0.83 | 0.80 | 0.77 | 0.81 | 0.78 | 0.76 | 0.79 | 0.76 | 0.75 | 0.73 |
| 4    | 0.81                                    | 0.77 | 0.73 | 0.80 | 0.76 | 0.72 | 0.78 | 0.75 | 0.72 | 0.77 | 0.73 | 0.71 | 0.75 | 0.72 | 0.70 | 0.69 |
| 5    | 0.76                                    | 0.72 | 0.68 | 0.76 | 0.71 | 0.68 | 0.74 | 0.70 | 0.67 | 0.73 | 0.69 | 0.66 | 0.71 | 0.68 | 0.66 | 0.65 |
| 6    | 0.72                                    | 0.67 | 0.64 | 0.71 | 0.67 | 0.63 | 0.70 | 0.66 | 0.63 | 0.69 | 0.65 | 0.62 | 0.68 | 0.65 | 0.62 | 0.61 |
| 7    | 0.68                                    | 0.63 | 0.60 | 0.68 | 0.63 | 0.59 | 0.67 | 0.62 | 0.59 | 0.66 | 0.62 | 0.59 | 0.65 | 0.61 | 0.59 | 0.57 |
| 8    | 0.65                                    | 0.60 | 0.56 | 0.64 | 0.59 | 0.56 | 0.63 | 0.59 | 0.56 | 0.62 | 0.58 | 0.56 | 0.61 | 0.58 | 0.55 | 0.54 |
| 9    | 0.61                                    | 0.56 | 0.53 | 0.61 | 0.56 | 0.53 | 0.60 | 0.56 | 0.53 | 0.59 | 0.55 | 0.53 | 0.59 | 0.55 | 0.52 | 0.51 |
| 10   | 0.58                                    | 0.53 | 0.50 | 0.58 | 0.53 | 0.50 | 0.57 | 0.53 | 0.50 | 0.56 | 0.53 | 0.50 | 0.56 | 0.52 | 0.50 | 0.49 |



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| 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                | 2019.94 | 2041.31 | 2016.56 | 1913.63 | 1741.50 | 1379.25 | 880.31  | 285.75 | 34.14                      |  |
| 45.0               | 2027.81 | 2062.13 | 2039.63 | 1952.44 | 1746.56 | 1360.69 | 929.25  | 285.75 | 30.66                      |  |
| 90.0               | 2040.75 | 2090.25 | 2080.69 | 2001.38 | 1756.69 | 1368.56 | 889.76  | 293.01 | 33.30                      |  |
| 135.0              | 2027.25 | 2079.56 | 2097.56 | 2040.19 | 1863.00 | 1550.25 | 1097.44 | 549.00 | 81.11                      |  |
| 180.0              | 2019.94 | 2063.81 | 2084.63 | 2028.94 | 1857.94 | 1572.75 | 1092.88 | 529.14 | 64.86                      |  |
| 225.0              | 2027.81 | 2053.69 | 2073.94 | 2006.44 | 1834.31 | 1574.44 | 1102.50 | 513.45 | 69.58                      |  |
| 270.0              | 2040.75 | 2038.50 | 2028.38 | 1941.75 | 1764.00 | 1484.44 | 1073.81 | 478.69 | 49.33                      |  |
| 315.0              | 2027.25 | 2044.13 | 2000.81 | 1887.75 | 1694.81 | 1116.96 | 832.28  | 222.98 | 29.42                      |  |
| 360.0              | 2019.94 | 2041.31 | 2016.56 | 1913.63 | 1741.50 | 1379.25 | 880.31  | 285.75 | 34.14                      |  |
| C/γ(°)             | 45.0    | 50.0    | 55.0    | 60.0    | 65.0    | 70.0    | 75.0    | 80.0   | 85.0                       |  |
| 0.0                | 15.13   | 12.09   | 10.52   | 9.73    | 9.11    | 8.66    | 13.61   | 8.55   | 8.27                       |  |
| 45.0               | 14.51   | 11.64   | 10.18   | 9.39    | 8.72    | 8.33    | 8.21    | 8.16   | 8.21                       |  |
| 90.0               | 14.96   | 11.59   | 10.07   | 9.34    | 8.72    | 8.21    | 8.10    | 8.04   | 8.10                       |  |
| 135.0              | 19.69   | 13.05   | 11.03   | 9.84    | 8.94    | 8.38    | 8.04    | 7.99   | 7.99                       |  |
| 180.0              | 19.46   | 13.11   | 10.97   | 9.79    | 8.89    | 8.33    | 7.99    | 7.93   | 7.88                       |  |
| 225.0              | 19.97   | 13.05   | 11.03   | 9.84    | 8.94    | 8.44    | 8.10    | 8.04   | 8.04                       |  |
| 270.0              | 18.39   | 12.88   | 10.97   | 9.96    | 9.06    | 8.49    | 8.16    | 8.04   | 8.10                       |  |
| 315.0              | 14.91   | 11.93   | 10.52   | 9.68    | 9.06    | 8.66    | 13.95   | 8.33   | 8.21                       |  |
| 360.0              | 15.13   | 12.09   | 10.52   | 9.73    | 9.11    | 8.66    | 13.61   | 8.55   | 8.27                       |  |
| C/γ(°)             | 90.0    |         |         |         |         |         |         |        |                            |  |
| 0.0                | 7.88    |         |         |         |         |         |         |        |                            |  |
| 45.0               | 7.99    |         |         |         |         |         |         |        |                            |  |
| 90.0               | 7.99    |         |         |         |         |         |         |        |                            |  |
| 135.0              | 7.93    |         |         |         |         |         |         |        |                            |  |
| 180.0              | 7.93    |         |         |         |         |         |         |        |                            |  |
| 225.0              | 8.04    |         |         |         |         |         |         |        |                            |  |
| 270.0              | 8.04    |         |         |         |         |         |         |        |                            |  |
| 315.0              | 7.99    |         |         |         |         |         |         |        |                            |  |
| 360.0              | 7.88    |         |         |         |         |         |         |        |                            |  |