



NATA LIGHTING CO.,LTD.  
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## NATA

LumCAT: 3-1920-E  
Luminaire: 92.76.323.00  
Report No: NATA0100  
Test No: GC2018111206  
LampCAT: Philips SLM 1208 G7  
Lamp flux(lm): 3443.0  
Number of Lamps: 1  
Length(mm): 70  
Phm Type: C  
Voltage(V): 35.3000  
Current(A): 0.7000  
Power (W): 24.7100  
PF: 0.0000  
Ballast type: DC  
Width(mm): 70  
Height(mm): 0

## Photometric Results

Lumens(lm): 3052.01  
Efficiency(%): 88.64%  
Lumens(lm)/Power(W): 124.46  
Central intensity(cd): 4393.969  
Maximum intensity(cd): 4393.969  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=53.4  
[C90/270]Total=53.4  
Field angle(10%Imax): [C0/180]Total=75.2  
[C90/270]Total=75.2  
Maximum s/h(1/2): C0\_180=0.81 C90\_270=0.81  
Maximum s/h(1/4): C0\_180=0.82 C90\_270=0.82  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 89.32%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 97.854%

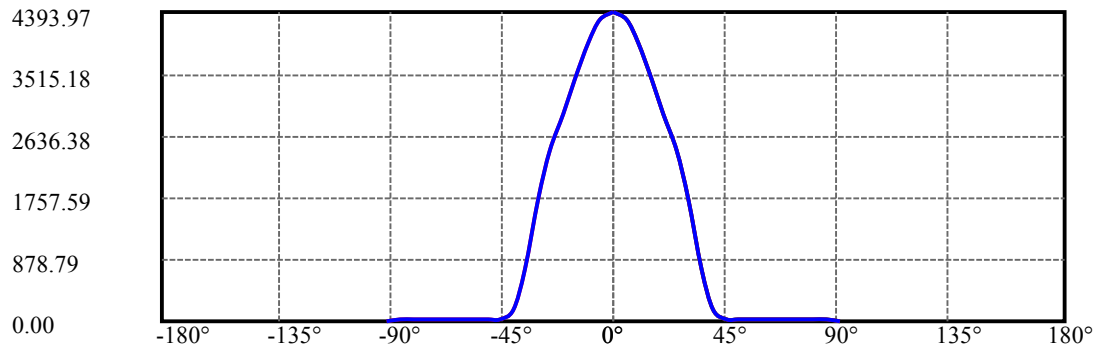
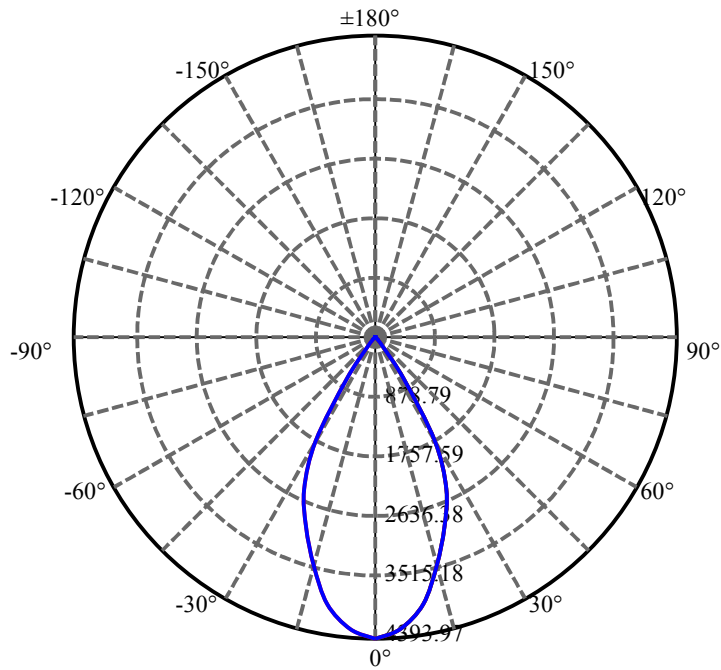
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 4393.969      | 26.277      | 26.277    | .763%       | .861%      |
| 5.0                | 4272.188      | 204.097     | 230.373   | 5.928%      | 7.548%     |
| 10.0               | 3954.867      | 376.436     | 606.81    | 10.933%     | 19.882%    |
| 15.0               | 3447.211      | 489.050     | 1095.86   | 14.204%     | 35.906%    |
| 20.0               | 2940.750      | 551.314     | 1647.174  | 16.013%     | 53.970%    |
| 25.0               | 2437.172      | 564.578     | 2211.752  | 16.398%     | 72.469%    |
| 30.0               | 1734.188      | 475.287     | 2687.039  | 13.804%     | 88.042%    |
| 35.0               | 740.714       | 232.880     | 2919.918  | 6.764%      | 95.672%    |
| 40.0               | 166.570       | 58.689      | 2978.607  | 1.705%      | 97.595%    |
| 45.0               | 25.102        | 9.729       | 2988.336  | .283%       | 97.914%    |
| 50.0               | 16.530        | 6.941       | 2995.277  | .202%       | 98.141%    |
| 55.0               | 15.483        | 6.952       | 3002.229  | .202%       | 98.369%    |
| 60.0               | 15.096        | 7.166       | 3009.395  | .208%       | 98.604%    |
| 65.0               | 15.427        | 7.664       | 3017.059  | .223%       | 98.855%    |
| 70.0               | 15.377        | 7.921       | 3024.979  | .230%       | 99.114%    |
| 75.0               | 14.681        | 7.773       | 3032.753  | .226%       | 99.369%    |
| 80.0               | 14.857        | 8.020       | 3040.772  | .233%       | 99.632%    |
| 85.0               | 13.957        | 7.621       | 3048.394  | .221%       | 99.882%    |
| 90.0               | 13.191        | 3.615       | 3052.009  | .105%       | 100.000%   |

## ZONAL LUMEN SUMMARY

| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 2687.04 | 78.04% | 88.04%  |
| 0-40    | 2978.61 | 86.51% | 97.59%  |
| 0-60    | 3009.40 | 87.41% | 98.60%  |
| 0-90    | 3048.39 | 88.54% | 99.88%  |
| 0-120   | 3048.39 | 88.54% | 99.88%  |
| 0-180   | 3052.01 | 88.64% | 100.00% |
| 60-90   | 46.16   | 1.34%  | 1.51%   |
| 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%   |
| 0-27.42 | 2441.61 | 70.92% | 80.00%  |

## ZONAL LUMEN SUMMARY

|         |         |
|---------|---------|
| 0-10    | 606.81  |
| 10-20   | 1040.36 |
| 20-30   | 1039.86 |
| 30-40   | 291.57  |
| 40-50   | 16.67   |
| 50-60   | 14.12   |
| 60-70   | 15.58   |
| 70-80   | 15.79   |
| 80-90   | 7.62    |
| 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:

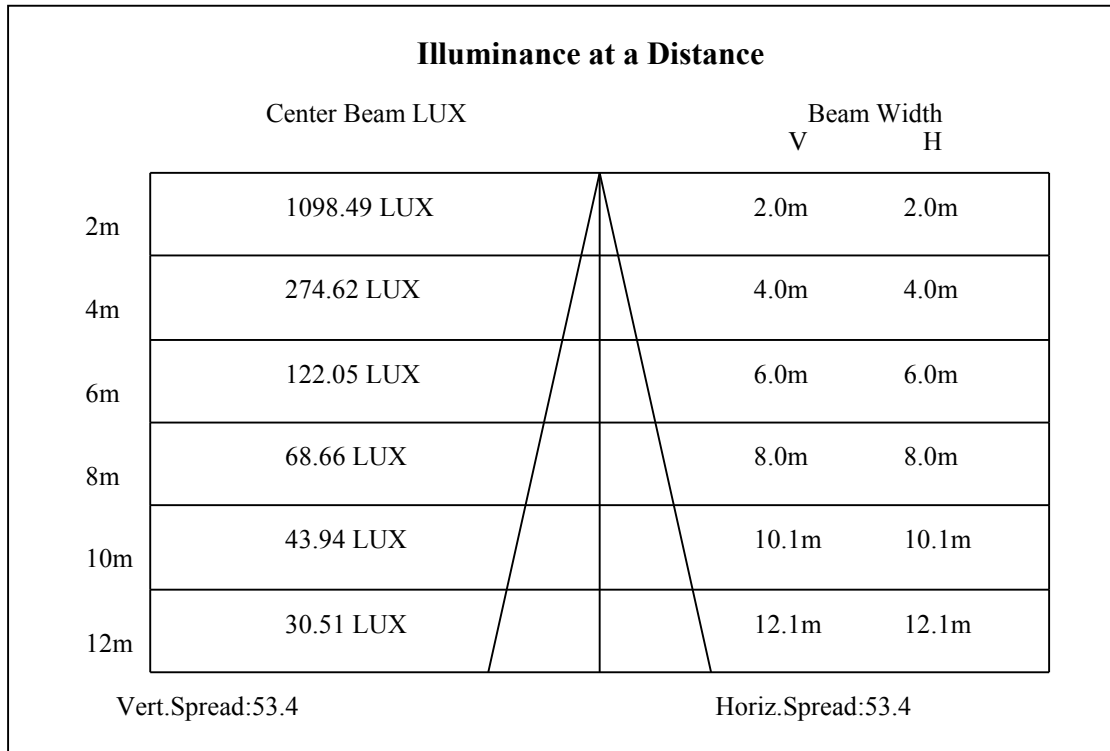
C90/C270:

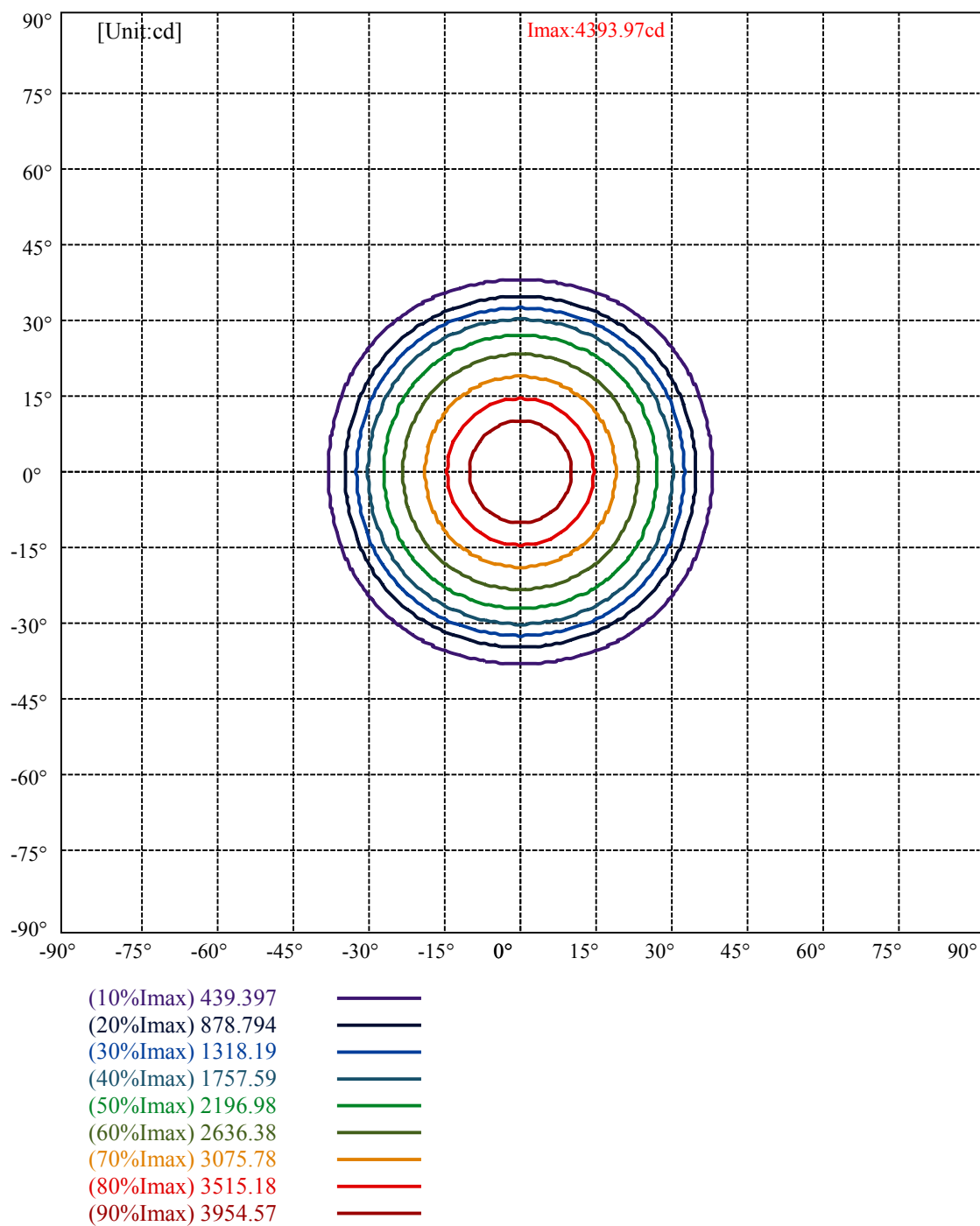
Field angle(10%Imax):C0/180Left:37.6 Right:37.6

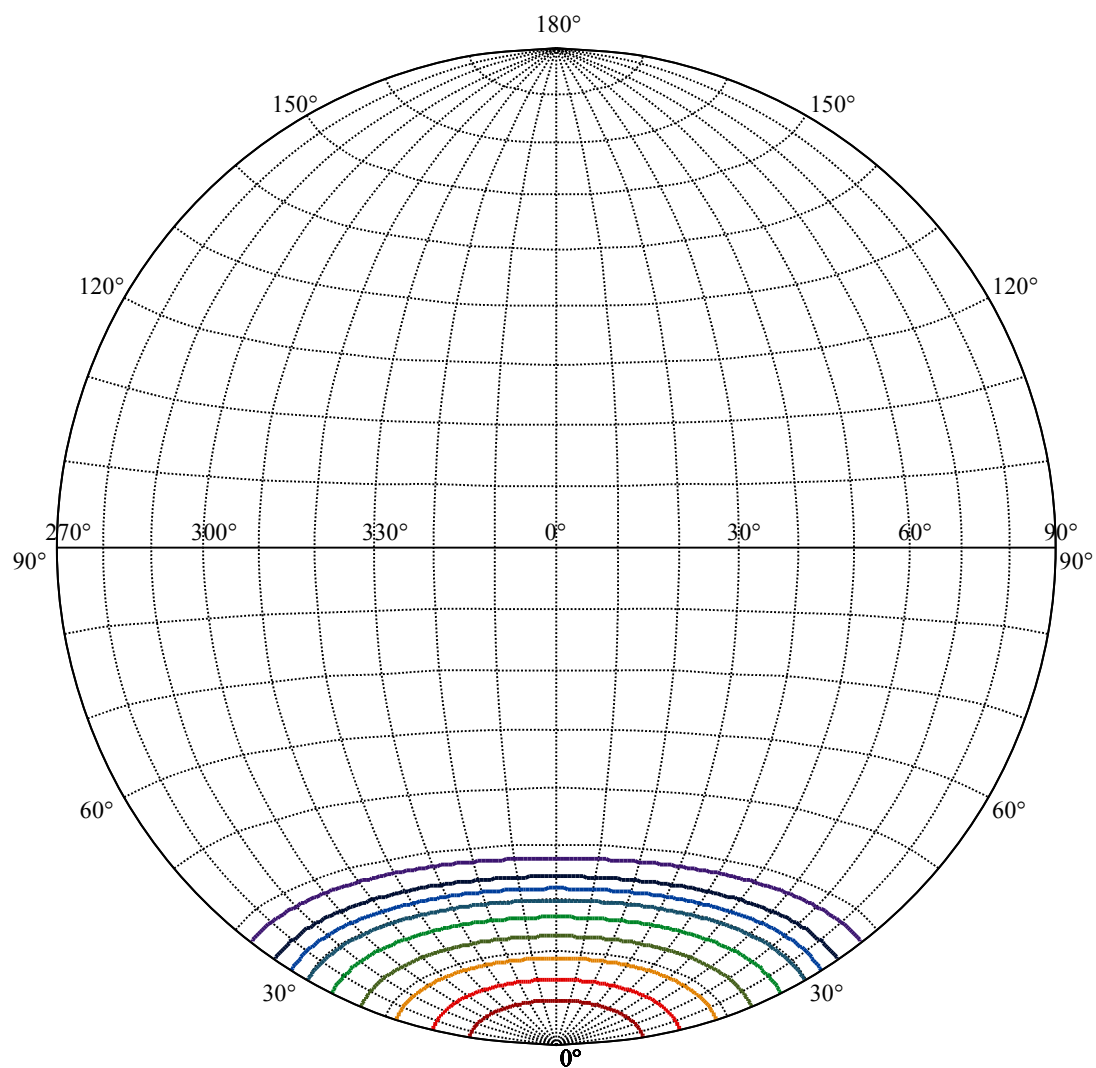
:C90/270Left:37.6 Right:37.6

Beam Angle(50%Imax):C0/180Left:26.7 Right:26.7

:C90/270Left:26.7 Right:26.7







House

[Unit:cd]

Road

Imax:4393.97

(10%Imax) 439.397

(20%Imax) 878.794

(30%Imax) 1318.19

(40%Imax) 1757.59

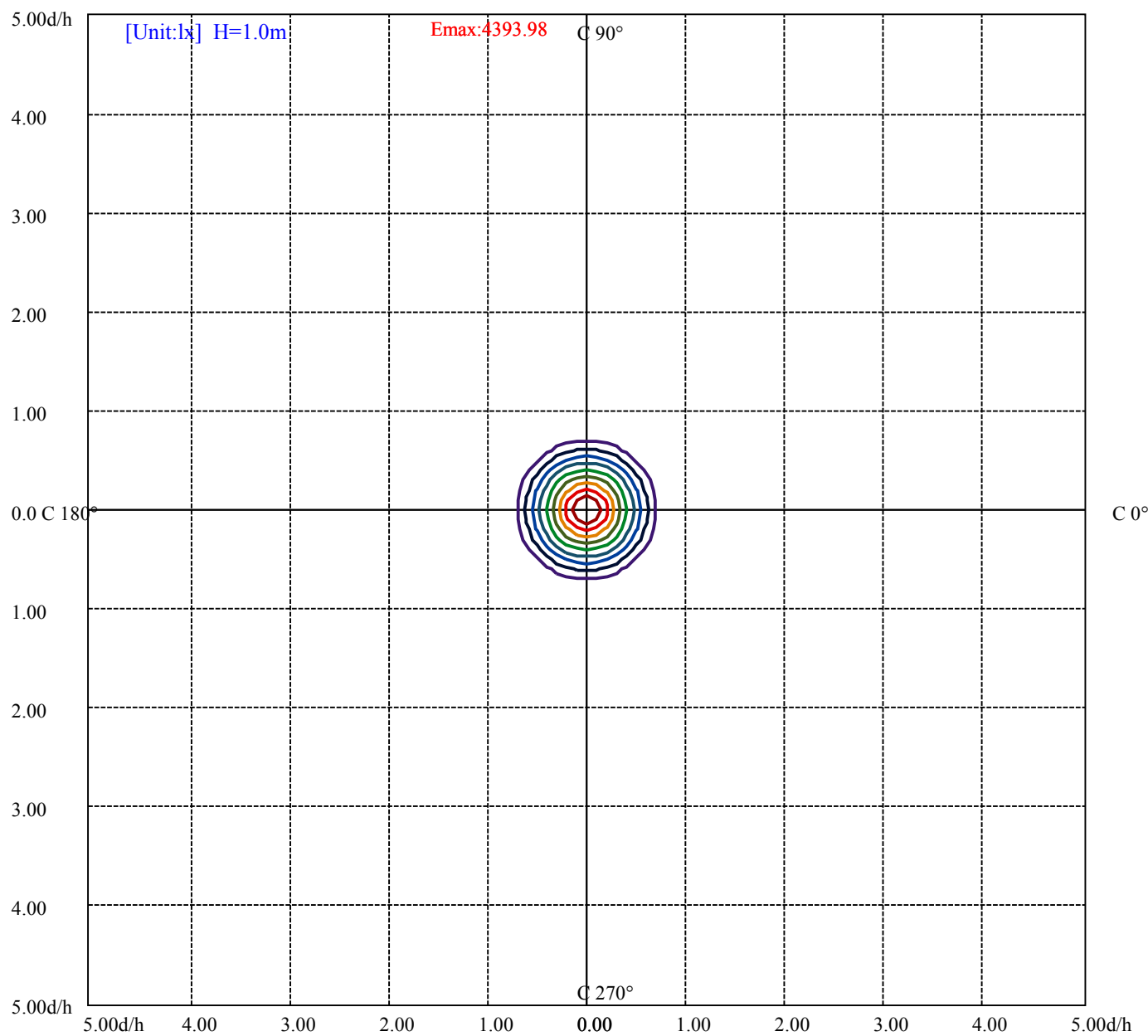
(50%Imax) 2196.98

(60%Imax) 2636.38

(70%Imax) 3075.78

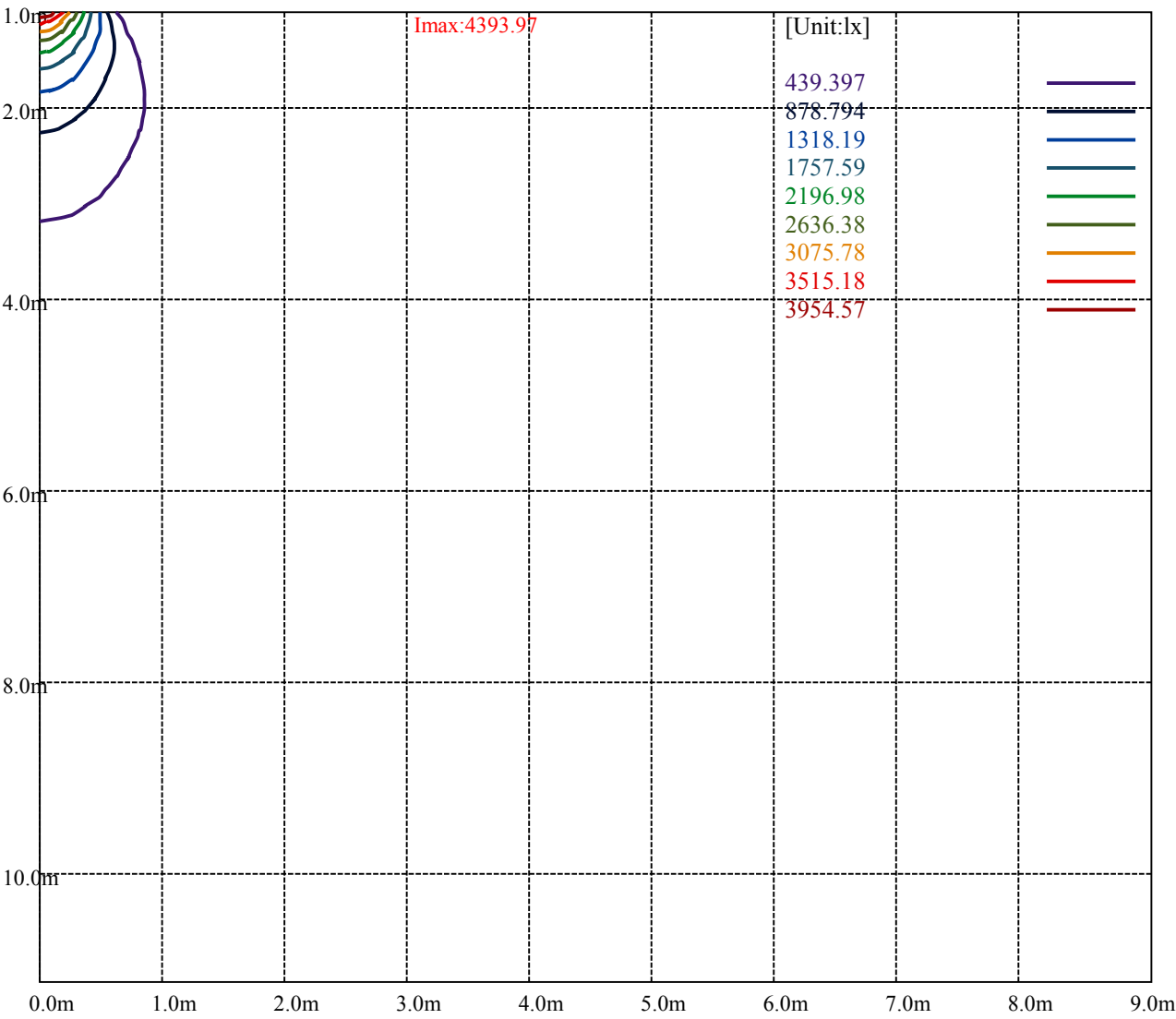
(80%Imax) 3515.18

(90%Imax) 3954.57



|                                |   |
|--------------------------------|---|
| (10%E <sub>max</sub> ) 439.397 | — |
| (20%E <sub>max</sub> ) 878.793 | — |
| (30%E <sub>max</sub> ) 1318.19 | — |
| (40%E <sub>max</sub> ) 1757.59 | — |
| (50%E <sub>max</sub> ) 2196.98 | — |
| (60%E <sub>max</sub> ) 2636.38 | — |
| (70%E <sub>max</sub> ) 3075.78 | — |
| (80%E <sub>max</sub> ) 3515.17 | — |
| (90%E <sub>max</sub> ) 3954.57 | — |





Luminance Table

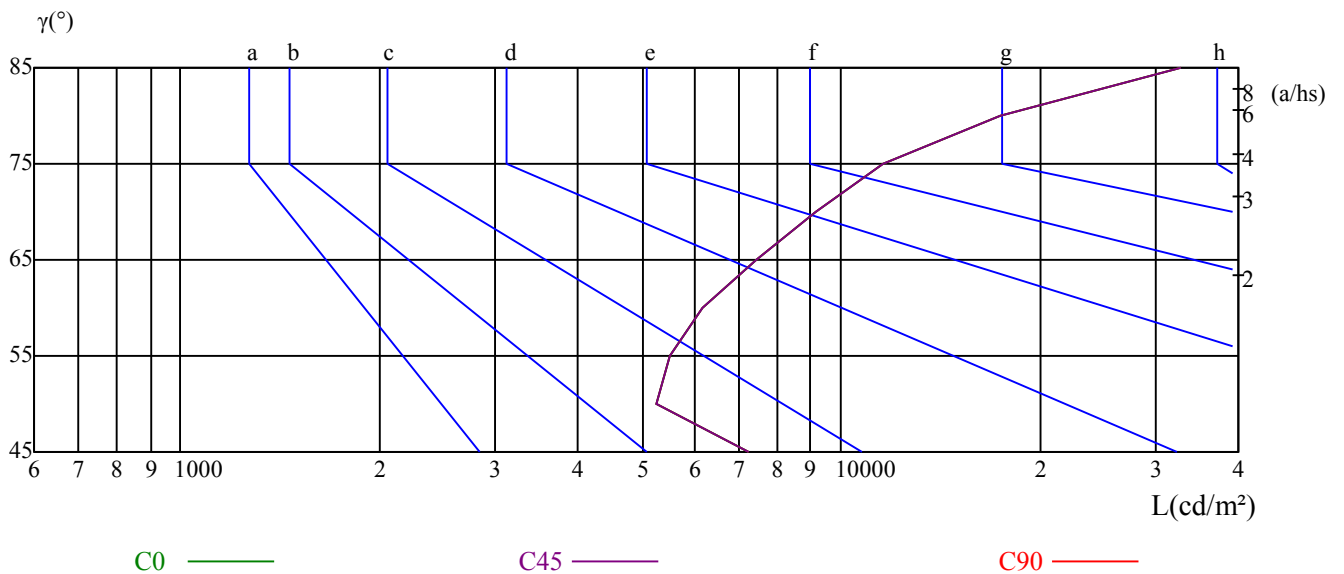
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75    | 80    | 85    |
|----------|------|------|------|------|------|------|-------|-------|-------|
| C0       | 7245 | 5248 | 5509 | 6162 | 7449 | 9176 | 11576 | 17461 | 32681 |
| C45      | 7245 | 5248 | 5509 | 6162 | 7449 | 9176 | 11576 | 17461 | 32681 |
| C90      | 7245 | 5248 | 5509 | 6162 | 7449 | 9176 | 11576 | 17461 | 32681 |

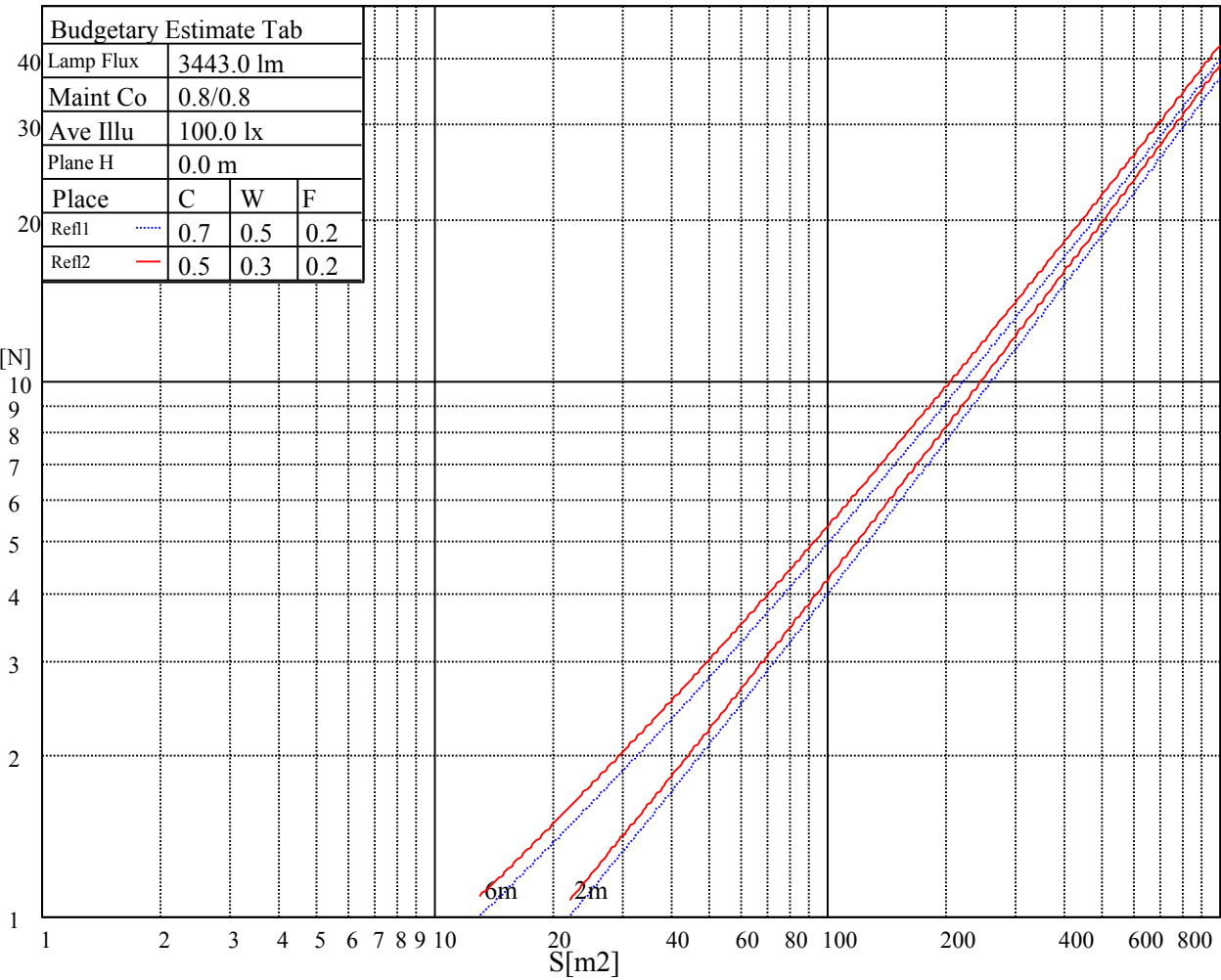
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 7449       | 7449       | 7449    | 11576      | 11576      | 11576   | 32681      | 32681      | 32681   |

Glare Table

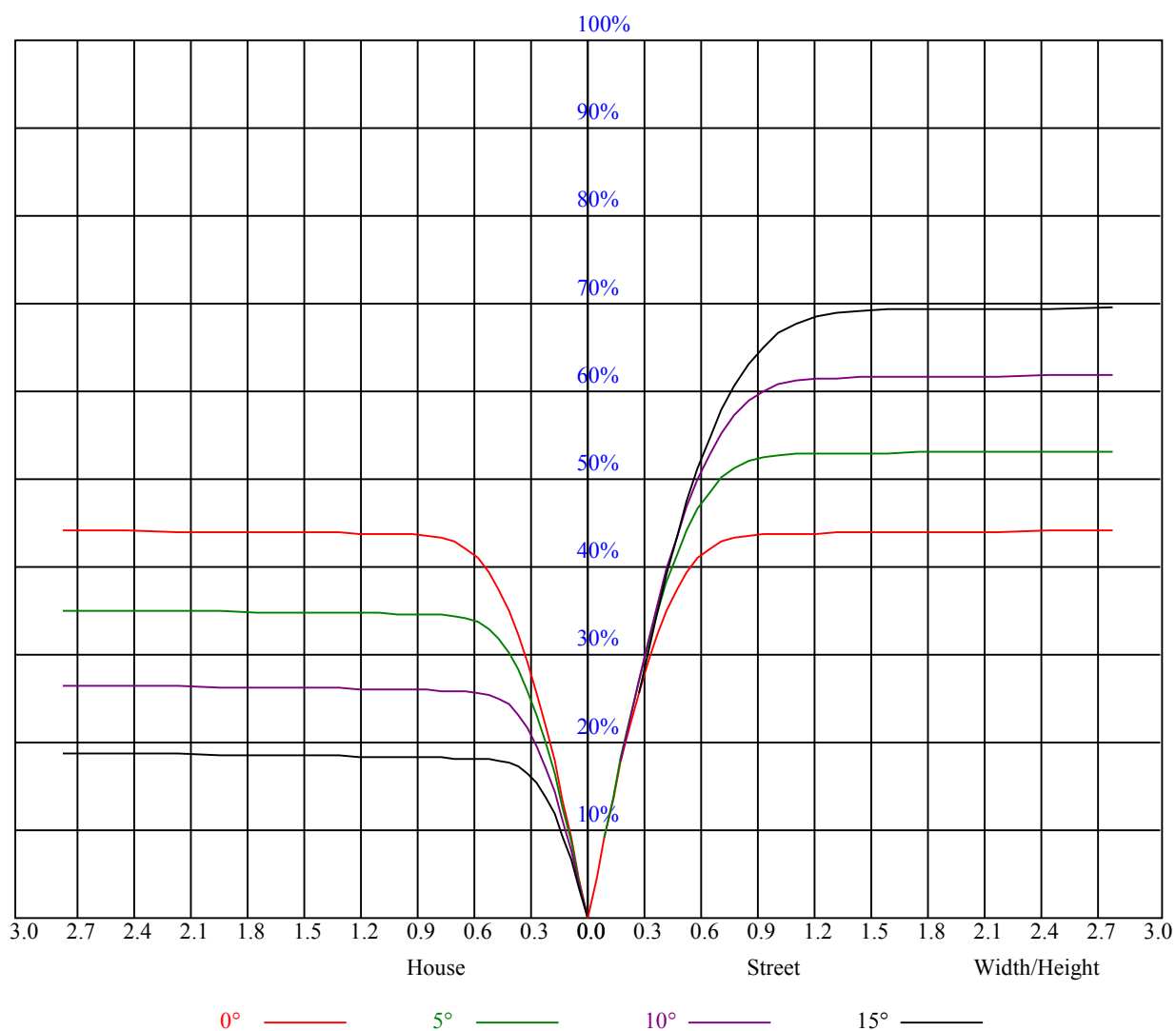
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000                           | 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     | 1.06                                    | 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 | 0.91 | 0.90 | 0.90 | 0.88 | 0.87 | 0.87 | 0.86 | 0.85 | 0.83 |
| 2     | 0.93                                    | 0.89 | 0.86 | 0.91 | 0.88 | 0.85 | 0.88 | 0.86 | 0.84 | 0.86 | 0.84 | 0.82 | 0.83 | 0.82 | 0.80 | 0.79 |
| 3     | 0.88                                    | 0.83 | 0.80 | 0.86 | 0.83 | 0.79 | 0.84 | 0.81 | 0.78 | 0.82 | 0.79 | 0.77 | 0.80 | 0.78 | 0.76 | 0.75 |
| 4     | 0.83                                    | 0.78 | 0.75 | 0.82 | 0.78 | 0.75 | 0.80 | 0.76 | 0.74 | 0.78 | 0.75 | 0.73 | 0.77 | 0.74 | 0.72 | 0.71 |
| 5     | 0.79                                    | 0.74 | 0.71 | 0.78 | 0.74 | 0.70 | 0.76 | 0.73 | 0.70 | 0.75 | 0.72 | 0.69 | 0.74 | 0.71 | 0.68 | 0.67 |
| 6     | 0.75                                    | 0.70 | 0.67 | 0.74 | 0.70 | 0.67 | 0.73 | 0.69 | 0.66 | 0.72 | 0.68 | 0.66 | 0.71 | 0.68 | 0.65 | 0.64 |
| 7     | 0.71                                    | 0.67 | 0.63 | 0.71 | 0.66 | 0.63 | 0.70 | 0.66 | 0.63 | 0.69 | 0.65 | 0.63 | 0.68 | 0.65 | 0.62 | 0.61 |
| 8     | 0.68                                    | 0.63 | 0.60 | 0.68 | 0.63 | 0.60 | 0.67 | 0.63 | 0.60 | 0.66 | 0.62 | 0.60 | 0.65 | 0.62 | 0.59 | 0.58 |
| 9     | 0.65                                    | 0.61 | 0.57 | 0.65 | 0.60 | 0.57 | 0.64 | 0.60 | 0.57 | 0.63 | 0.60 | 0.57 | 0.63 | 0.59 | 0.57 | 0.56 |
| 10    | 0.62                                    | 0.58 | 0.55 | 0.62 | 0.58 | 0.55 | 0.61 | 0.57 | 0.55 | 0.61 | 0.57 | 0.55 | 0.60 | 0.57 | 0.54 | 0.53 |



# NATA 3-1920-E

| 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                | 4396.50 | 4313.81 | 4035.94 | 3554.44 | 3069.56 | 2520.56 | 1859.06 | 840.94 | 307.13 |                            |  |
| 45.0               | 4393.69 | 4249.69 | 3938.63 | 3398.63 | 2888.44 | 2370.94 | 1671.75 | 607.50 | 81.73  |                            |  |
| 90.0               | 4389.19 | 4237.88 | 3880.13 | 3367.69 | 2866.50 | 2336.06 | 1357.88 | 592.31 | 61.88  |                            |  |
| 135.0              | 4396.50 | 4293.56 | 3975.75 | 3483.00 | 2944.69 | 2487.94 | 1809.56 | 806.06 | 287.44 |                            |  |
| 180.0              | 4396.50 | 4223.81 | 3861.00 | 3321.00 | 2828.25 | 2335.50 | 1701.00 | 612.73 | 71.44  |                            |  |
| 225.0              | 4393.69 | 4287.38 | 3988.13 | 3476.25 | 2970.56 | 2509.88 | 1900.13 | 827.44 | 124.65 |                            |  |
| 270.0              | 4389.19 | 4314.38 | 4038.19 | 3533.63 | 3022.88 | 2559.38 | 1893.38 | 964.69 | 321.19 |                            |  |
| 315.0              | 4396.50 | 4257.00 | 3921.19 | 3443.06 | 2935.13 | 2377.13 | 1680.75 | 674.04 | 77.12  |                            |  |
| 360.0              | 4396.50 | 4313.81 | 4035.94 | 3554.44 | 3069.56 | 2520.56 | 1859.06 | 840.94 | 307.13 |                            |  |
| C/γ(°)             | 45.0    | 50.0    | 55.0    | 60.0    | 65.0    | 70.0    | 75.0    | 80.0   | 85.0   |                            |  |
| 0.0                | 27.39   | 16.71   | 15.41   | 14.91   | 14.57   | 14.40   | 14.23   | 14.01  | 13.67  |                            |  |
| 45.0               | 24.02   | 16.54   | 15.36   | 14.79   | 14.46   | 14.12   | 13.89   | 13.73  | 13.50  |                            |  |
| 90.0               | 20.93   | 16.37   | 15.36   | 14.74   | 14.46   | 14.18   | 13.84   | 13.78  | 13.61  |                            |  |
| 135.0              | 29.08   | 16.48   | 15.47   | 14.85   | 14.74   | 14.01   | 13.67   | 13.56  | 13.33  |                            |  |
| 180.0              | 19.35   | 16.03   | 15.08   | 14.63   | 14.23   | 13.95   | 13.67   | 13.50  | 13.33  |                            |  |
| 225.0              | 26.10   | 16.54   | 15.41   | 15.02   | 14.63   | 14.57   | 14.06   | 13.84  | 13.67  |                            |  |
| 270.0              | 31.05   | 17.04   | 15.98   | 15.69   | 19.01   | 20.25   | 14.63   | 14.01  | 13.84  |                            |  |
| 315.0              | 22.89   | 16.54   | 15.81   | 16.14   | 17.33   | 17.55   | 19.46   | 22.44  | 16.71  |                            |  |
| 360.0              | 27.39   | 16.71   | 15.41   | 14.91   | 14.57   | 14.40   | 14.23   | 14.01  | 13.67  |                            |  |
| C/γ(°)             | 90.0    |         |         |         |         |         |         |        |        |                            |  |
| 0.0                | 13.16   |         |         |         |         |         |         |        |        |                            |  |
| 45.0               | 13.28   |         |         |         |         |         |         |        |        |                            |  |
| 90.0               | 13.22   |         |         |         |         |         |         |        |        |                            |  |
| 135.0              | 13.11   |         |         |         |         |         |         |        |        |                            |  |
| 180.0              | 13.05   |         |         |         |         |         |         |        |        |                            |  |
| 225.0              | 13.28   |         |         |         |         |         |         |        |        |                            |  |
| 270.0              | 13.28   |         |         |         |         |         |         |        |        |                            |  |
| 315.0              | 13.16   |         |         |         |         |         |         |        |        |                            |  |
| 360.0              | 13.16   |         |         |         |         |         |         |        |        |                            |  |