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## NATA

LumCAT: 3-1568-M  
Luminaire: BJB 47.319.2135  
Report No: NATA0100  
Test No: GC2019012103  
LampCAT: PHILIPS Certaflux slm 1205  
Lamp flux(lm): 2360.0  
Number of Lamps: 1  
Length(mm): 70  
Phm Type: C

Voltage(V): 36.7600  
Current(A): 0.5000  
Power (W): 18.3800  
PF: 0.0000  
Ballast type: DC  
Width(mm): 70  
Height(mm): 0

## Photometric Results

Lumens(lm): 2161.00  
Efficiency(%): 91.57%  
Lumens(lm)/Power(W): 118.84  
Central intensity(cd): 4245.469  
Maximum intensity(cd): 4245.469  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=39.2  
[C90/270]Total=39.2  
Field angle(10%Imax): [C0/180]Total=73.9  
[C90/270]Total=73.9  
Maximum s/h(1/2): C0\_180=0.66 C90\_270=0.66  
Maximum s/h(1/4): C0\_180=0.61 C90\_270=0.61  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 92.56%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 97.738%

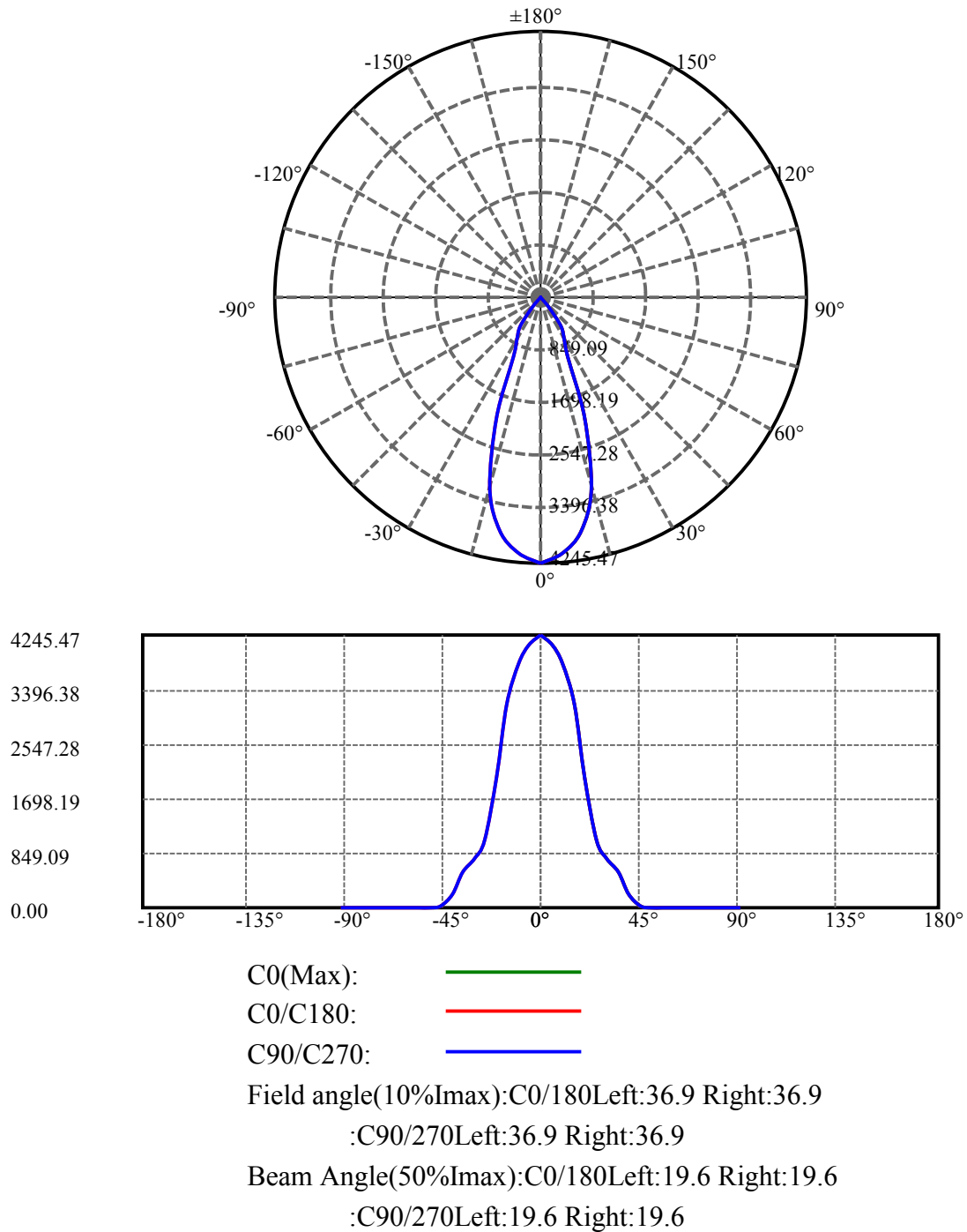
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 4245.469      | 25.389      | 25.389    | 1.076%      | 1.175%     |
| 5.0                | 4086.422      | 195.222     | 220.611   | 8.272%      | 10.209%    |
| 10.0               | 3792.656      | 360.997     | 581.607   | 15.296%     | 26.914%    |
| 15.0               | 3168.844      | 449.559     | 1031.166  | 19.049%     | 47.717%    |
| 20.0               | 2036.109      | 381.718     | 1412.884  | 16.174%     | 65.381%    |
| 25.0               | 1051.516      | 243.587     | 1656.471  | 10.321%     | 76.653%    |
| 30.0               | 767.412       | 210.324     | 1866.794  | 8.912%      | 86.386%    |
| 35.0               | 566.895       | 178.231     | 2045.025  | 7.552%      | 94.633%    |
| 40.0               | 199.737       | 70.374      | 2115.399  | 2.982%      | 97.890%    |
| 45.0               | 16.327        | 6.328       | 2121.727  | .268%       | 98.183%    |
| 50.0               | 10.392        | 4.364       | 2126.091  | .185%       | 98.385%    |
| 55.0               | 9.731         | 4.369       | 2130.46   | .185%       | 98.587%    |
| 60.0               | 9.401         | 4.463       | 2134.923  | .189%       | 98.793%    |
| 65.0               | 9.204         | 4.572       | 2139.495  | .194%       | 99.005%    |
| 70.0               | 9.063         | 4.668       | 2144.164  | .198%       | 99.221%    |
| 75.0               | 8.972         | 4.750       | 2148.914  | .201%       | 99.441%    |
| 80.0               | 8.916         | 4.813       | 2153.727  | .204%       | 99.663%    |
| 85.0               | 8.880         | 4.849       | 2158.576  | .205%       | 99.888%    |
| 90.0               | 8.852         | 2.426       | 2161.002  | .103%       | 100.000%   |

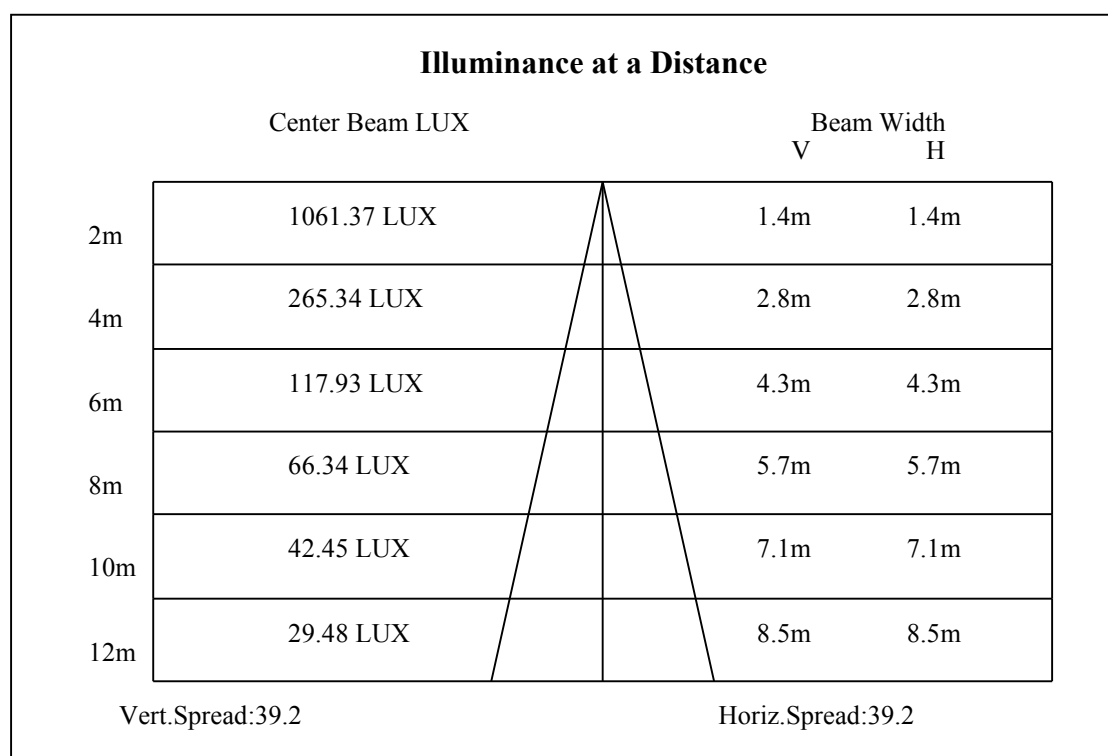
## ZONAL LUMEN SUMMARY

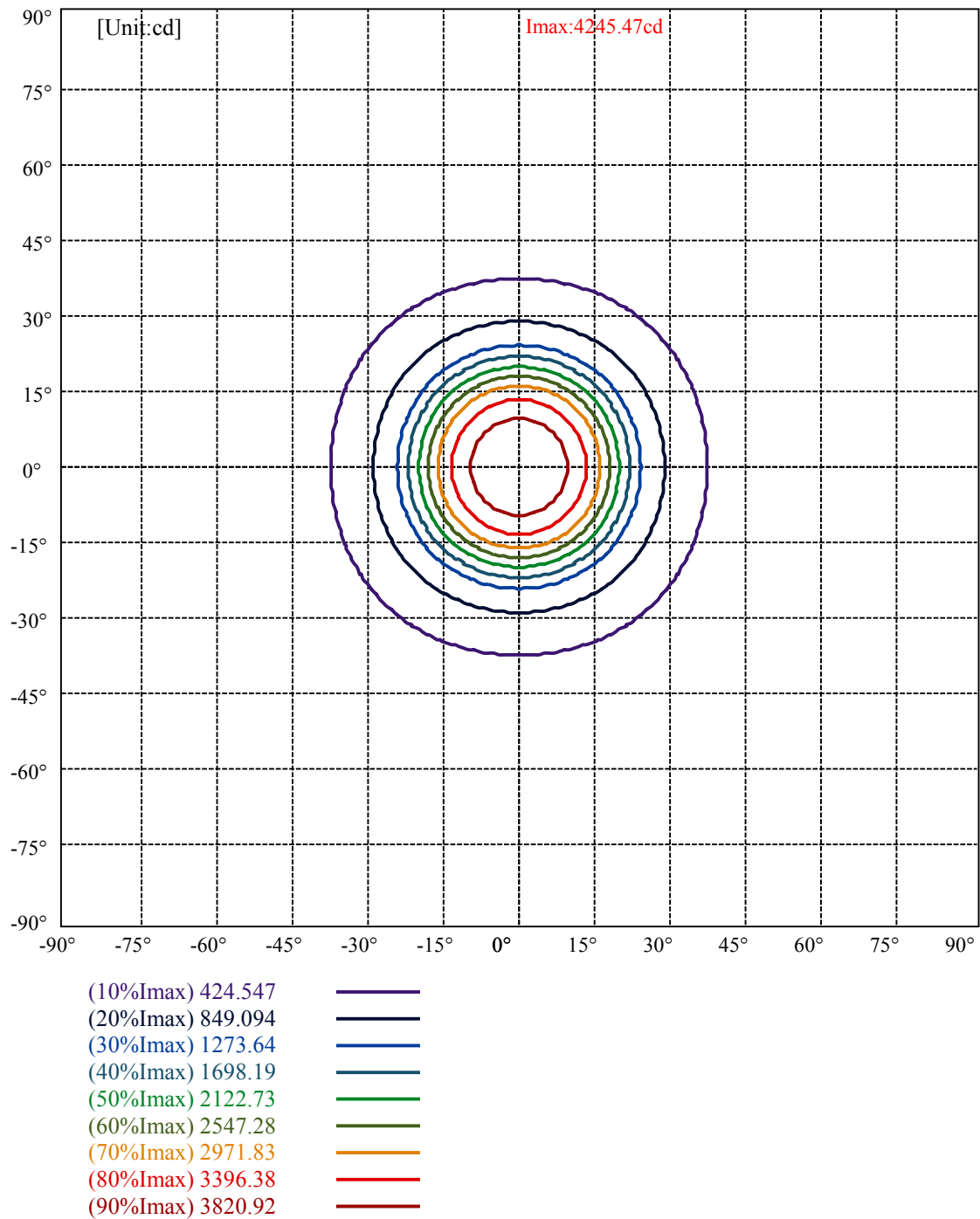
| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 1866.79 | 79.10% | 86.39%  |
| 0-40    | 2115.40 | 89.64% | 97.89%  |
| 0-60    | 2134.92 | 90.46% | 98.79%  |
| 0-90    | 2158.58 | 91.47% | 99.89%  |
| 0-120   | 2158.58 | 91.47% | 99.89%  |
| 0-180   | 2161.00 | 91.57% | 100.00% |
| 60-90   | 28.12   | 1.19%  | 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%   |
| 0-26.72 | 1728.80 | 73.25% | 80.00%  |

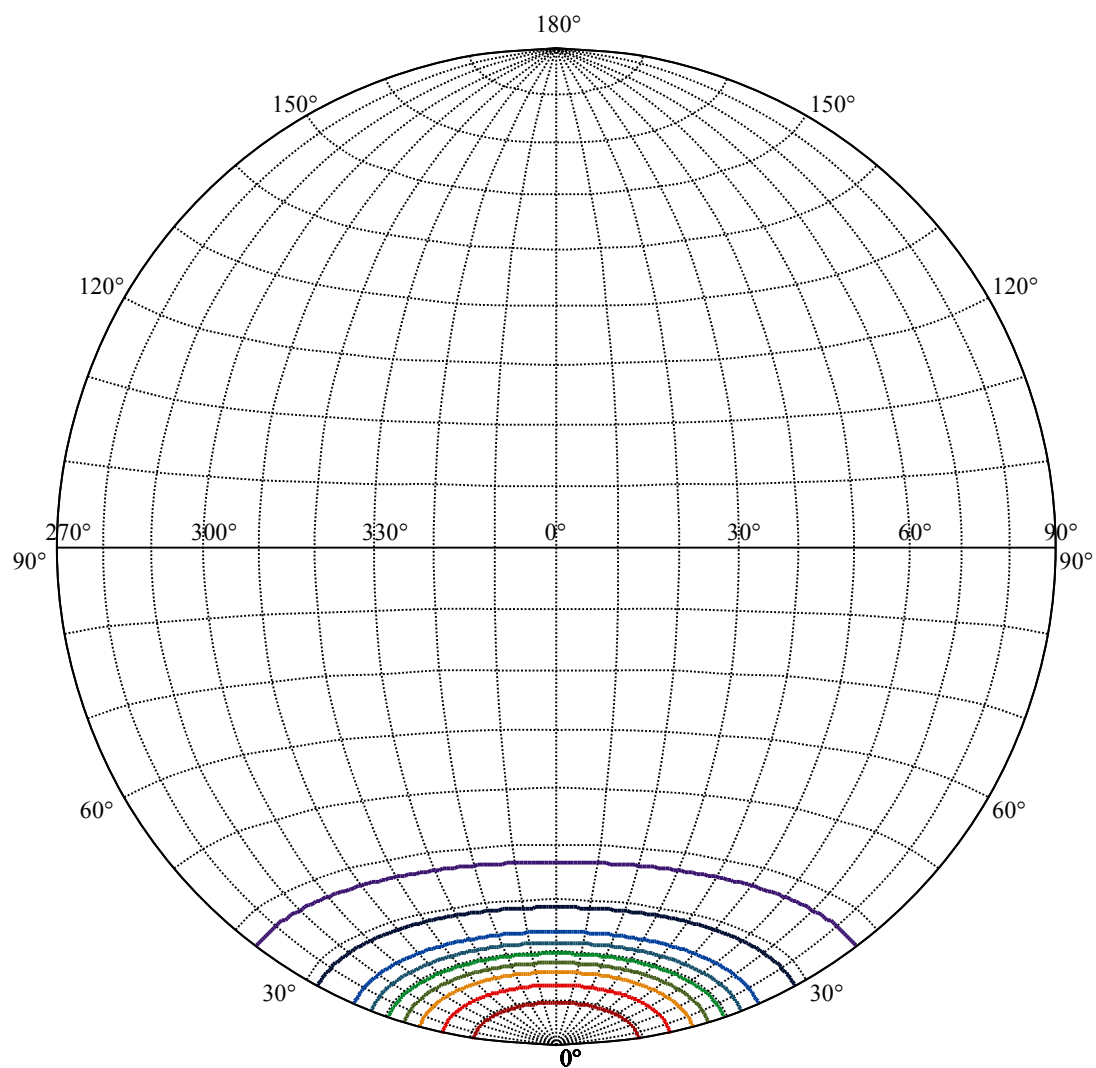
## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 581.61 |
| 10-20   | 831.28 |
| 20-30   | 453.91 |
| 30-40   | 248.61 |
| 40-50   | 10.69  |
| 50-60   | 8.83   |
| 60-70   | 9.24   |
| 70-80   | 9.56   |
| 80-90   | 4.85   |
| 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   |









House

[Unit:cd]

Road

**Imax:4245.47**

(10%Imax) 424.547

(20%Imax) 849.094

(30%Imax) 1273.64

(40%Imax) 1698.19

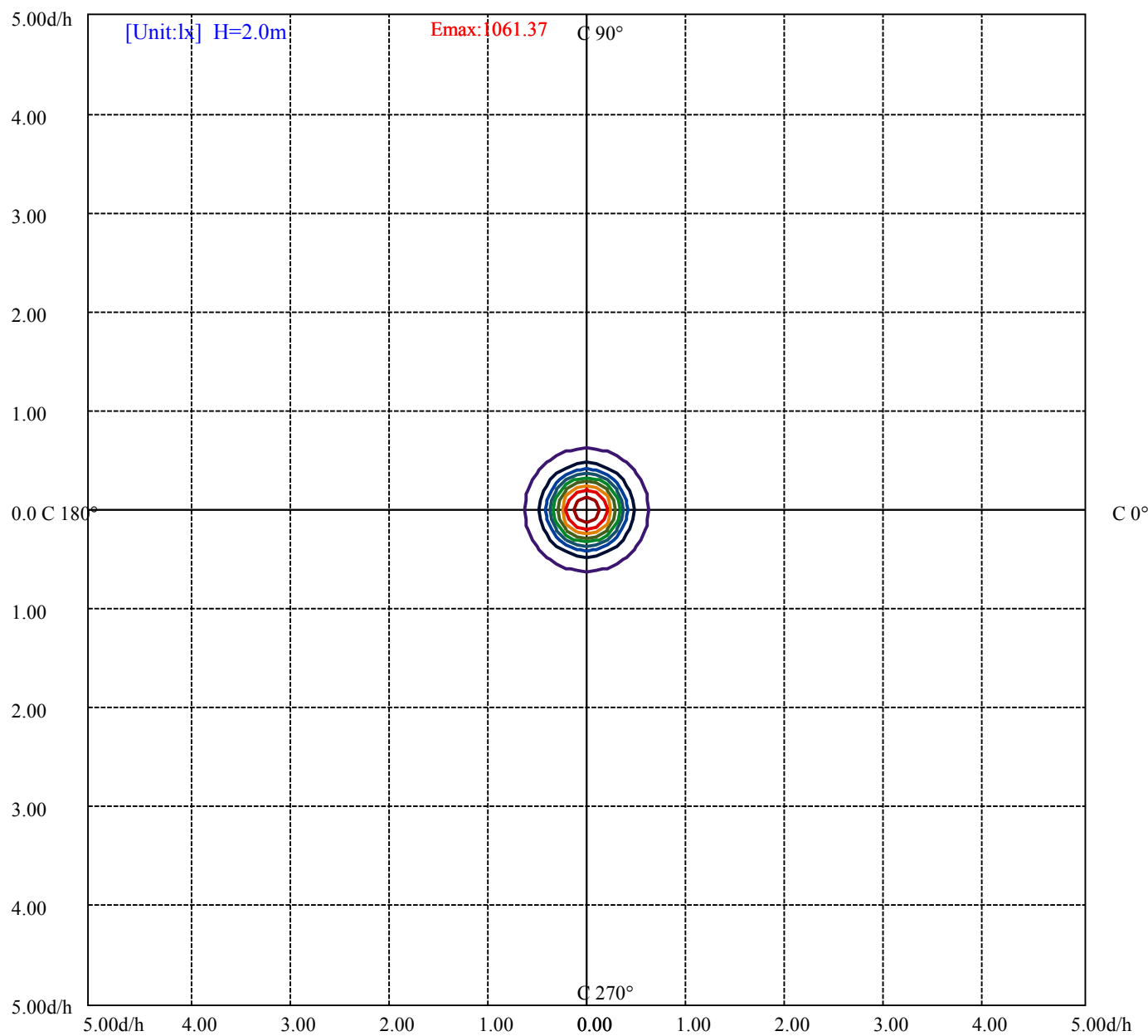
(50%Imax) 2122.73

(60%Imax) 2547.28

(70%Imax) 2971.83

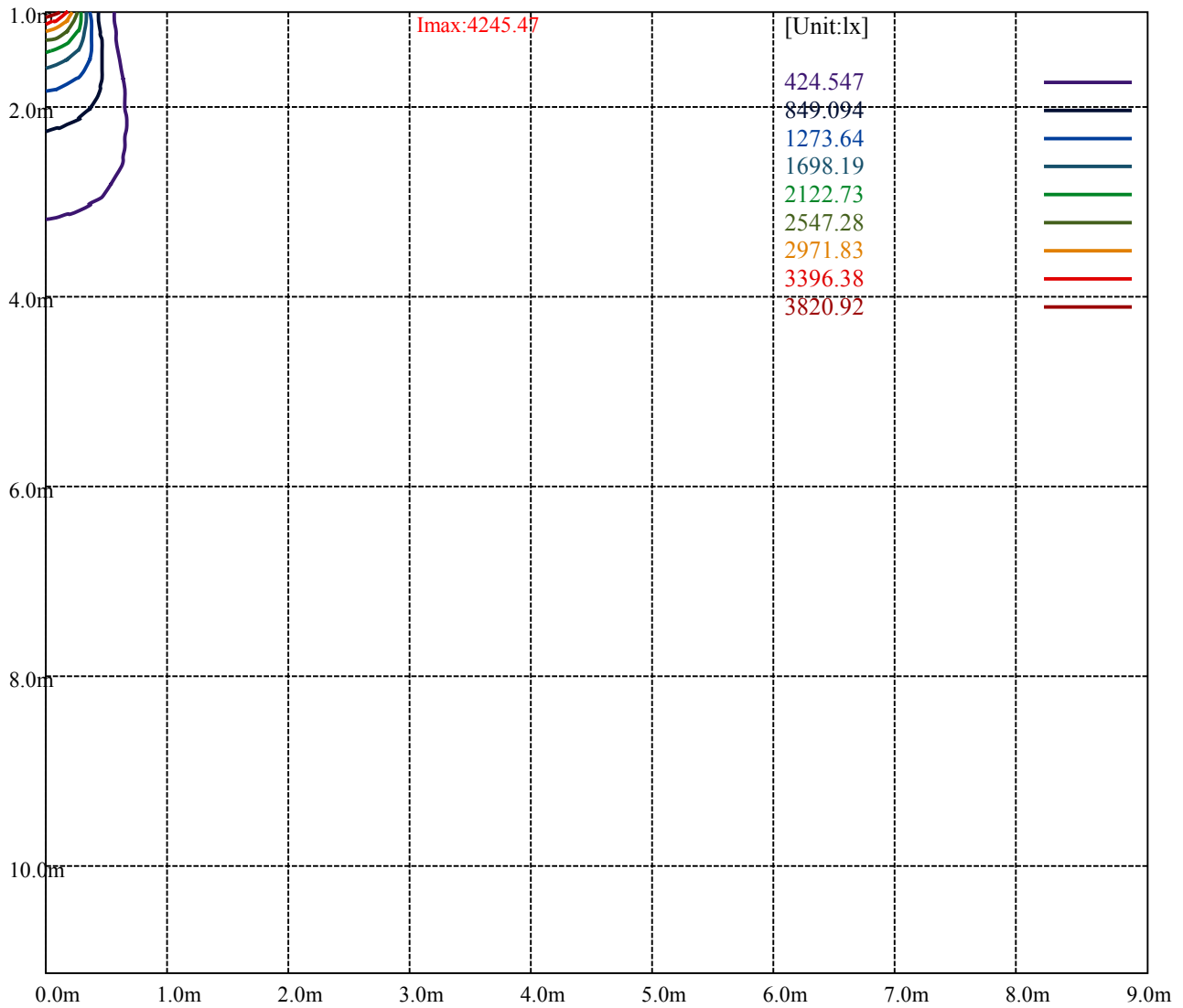
(80%Imax) 3396.38

(90%Imax) 3820.92



|                                 |   |
|---------------------------------|---|
| (10%E <sub>max</sub> ) 106.1365 | — |
| (20%E <sub>max</sub> ) 212.2733 | — |
| (30%E <sub>max</sub> ) 318.41   | — |
| (40%E <sub>max</sub> ) 424.5475 | — |
| (50%E <sub>max</sub> ) 530.6825 | — |
| (60%E <sub>max</sub> ) 636.82   | — |
| (70%E <sub>max</sub> ) 742.955  | — |
| (80%E <sub>max</sub> ) 849.0925 | — |
| (90%E <sub>max</sub> ) 955.23   | — |





Luminance Table

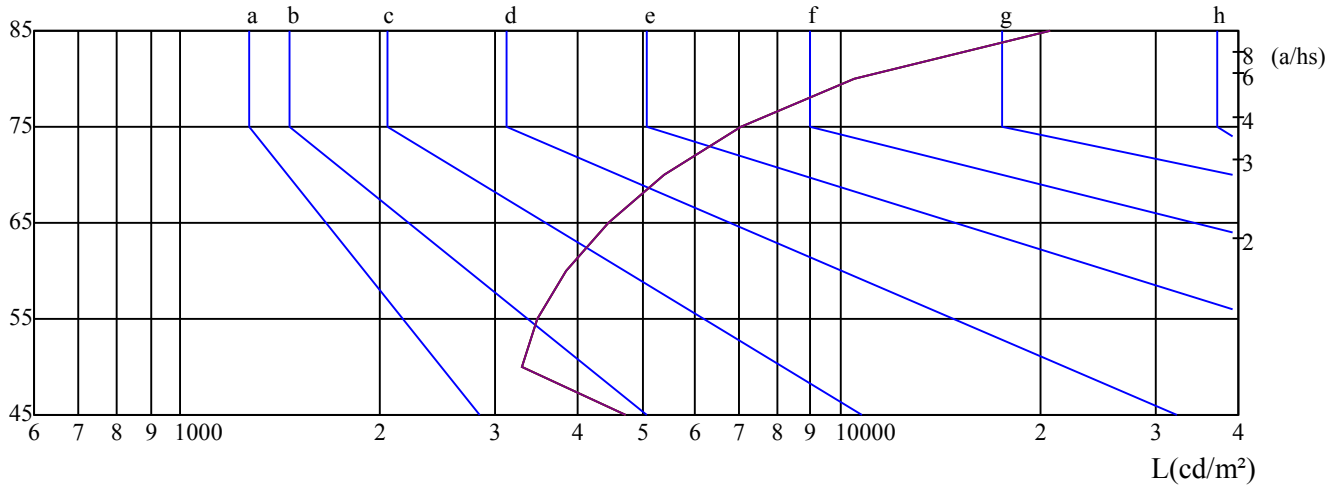
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80    | 85    |
|----------|------|------|------|------|------|------|------|-------|-------|
| C0       | 4712 | 3299 | 3462 | 3837 | 4445 | 5408 | 7074 | 10478 | 20794 |
| C45      | 4712 | 3299 | 3462 | 3837 | 4445 | 5408 | 7074 | 10478 | 20794 |
| C90      | 4712 | 3299 | 3462 | 3837 | 4445 | 5408 | 7074 | 10478 | 20794 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 4445       | 4445       | 4445    | 7074       | 7074       | 7074    | 20794      | 20794      | 20794   |

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

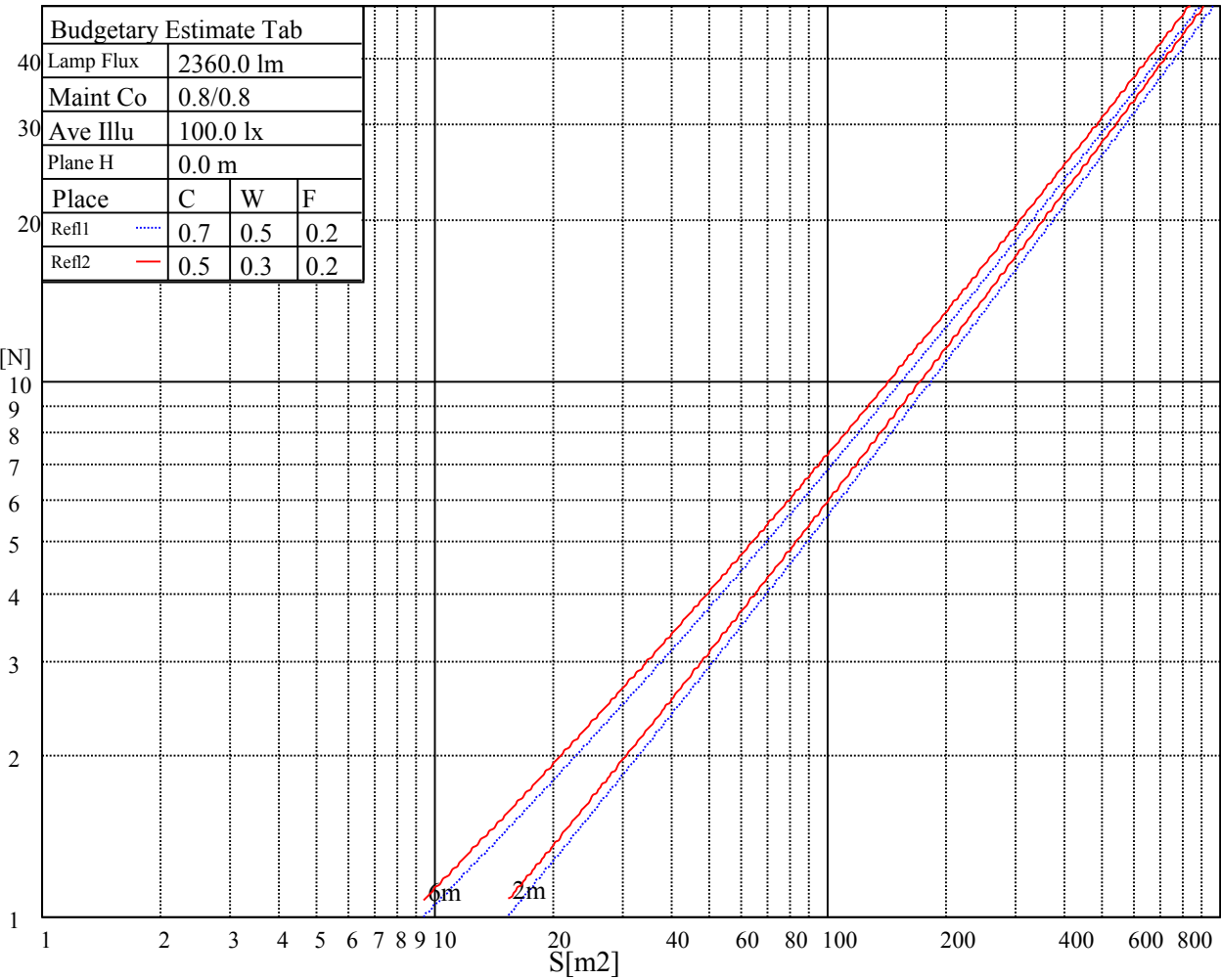
 $\gamma(^{\circ})$ 

C0 ———

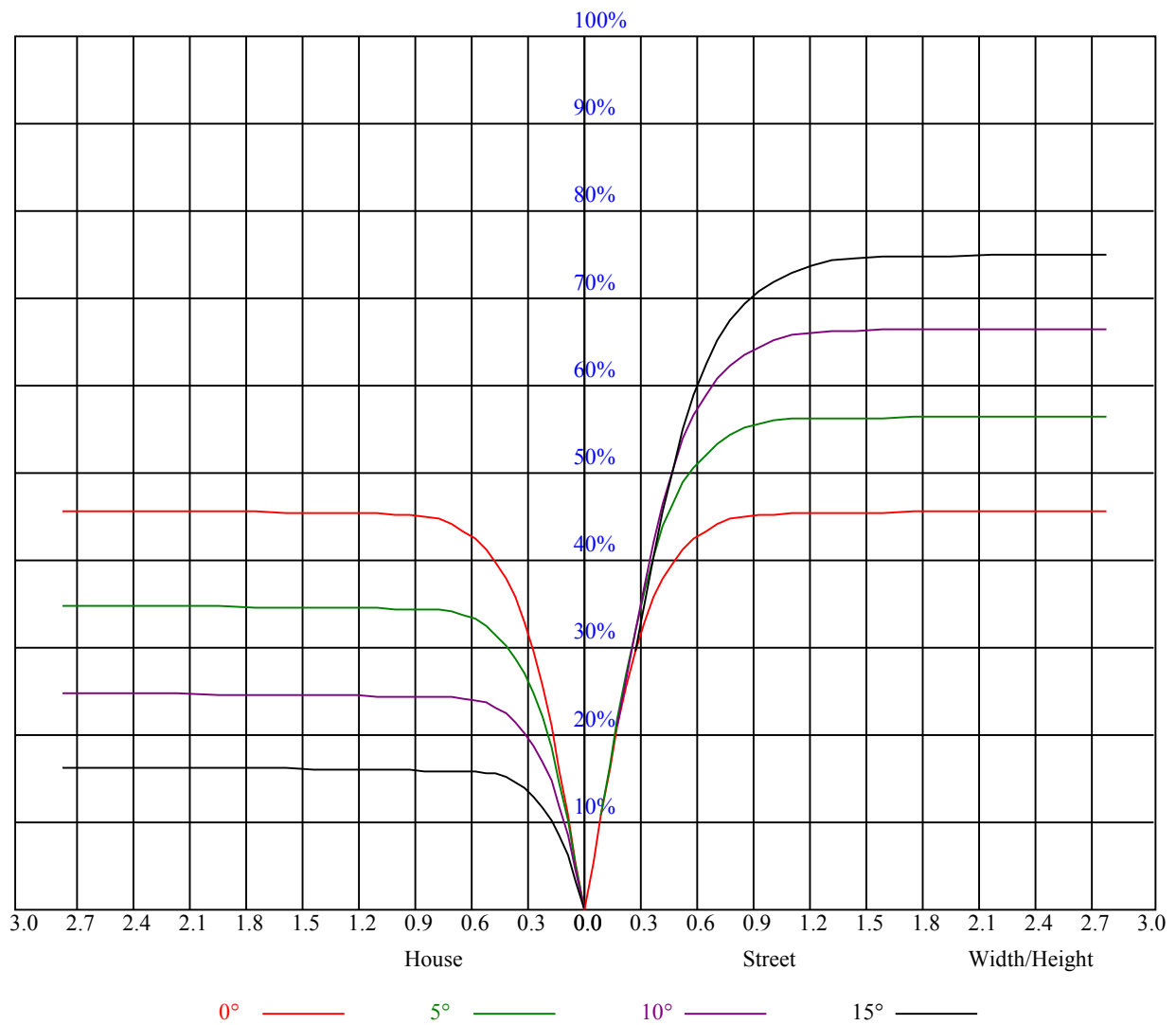
C45 ———

C90 ———

| Illumination assessment according UGR             |     |                  |       |       |       |       |                |       |       |       |       |
|---------------------------------------------------|-----|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Rf of Ceiling                                     |     | 70               | 70    | 50    | 50    | 30    | 70             | 70    | 50    | 50    | 30    |
| Rf of Wall                                        |     | 50               | 30    | 50    | 30    | 30    | 50             | 30    | 50    | 30    | 30    |
| Rf of Floor                                       |     | 20               | 20    | 20    | 20    | 20    | 20             | 20    | 20    | 20    | 20    |
| Room dimensions                                   |     | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X                                                 | Y   |                  |       |       |       |       |                |       |       |       |       |
| 2H                                                | 2H  | 2.37             | 3.29  | 2.74  | 3.60  | 3.91  | 2.34           | 3.25  | 2.70  | 3.56  | 3.88  |
|                                                   | 3H  | 5.66             | 6.47  | 6.05  | 6.80  | 7.17  | 5.63           | 6.43  | 6.01  | 6.77  | 7.14  |
|                                                   | 4H  | 7.44             | 8.18  | 7.85  | 8.54  | 8.93  | 7.40           | 8.15  | 7.81  | 8.50  | 8.89  |
|                                                   | 6H  | 9.44             | 10.12 | 9.86  | 10.50 | 10.90 | 9.41           | 10.09 | 9.82  | 10.46 | 10.86 |
|                                                   | 8H  | 10.55            | 11.19 | 10.99 | 11.58 | 11.99 | 10.51          | 11.15 | 10.95 | 11.54 | 11.95 |
|                                                   | 12H | 12.34            | 12.95 | 12.77 | 13.33 | 13.76 | 12.30          | 12.91 | 12.74 | 13.29 | 13.73 |
| 4H                                                | 2H  | 3.31             | 4.05  | 3.72  | 4.41  | 4.80  | 3.28           | 4.03  | 3.69  | 4.38  | 4.77  |
|                                                   | 3H  | 6.83             | 7.44  | 7.25  | 7.85  | 8.26  | 6.80           | 7.42  | 7.22  | 7.83  | 8.23  |
|                                                   | 4H  | 8.77             | 9.32  | 9.21  | 9.74  | 10.19 | 8.75           | 9.29  | 9.18  | 9.72  | 10.17 |
|                                                   | 6H  | 10.93            | 11.40 | 11.40 | 11.85 | 12.33 | 10.91          | 11.37 | 11.38 | 11.82 | 12.30 |
|                                                   | 8H  | 12.13            | 12.57 | 12.61 | 13.02 | 13.49 | 12.10          | 12.54 | 12.58 | 12.99 | 13.47 |
|                                                   | 12H | 13.81            | 14.18 | 14.30 | 14.67 | 15.15 | 13.78          | 14.16 | 14.27 | 14.64 | 15.12 |
| 8H                                                | 4H  | 9.51             | 9.94  | 9.99  | 10.39 | 10.87 | 9.49           | 9.93  | 9.97  | 10.38 | 10.85 |
|                                                   | 6H  | 11.94            | 12.28 | 12.45 | 12.78 | 13.27 | 11.92          | 12.26 | 12.43 | 12.76 | 13.25 |
|                                                   | 8H  | 13.33            | 13.63 | 13.86 | 14.15 | 14.65 | 13.30          | 13.61 | 13.84 | 14.13 | 14.63 |
|                                                   | 12H | 15.14            | 15.40 | 15.66 | 15.90 | 16.48 | 15.11          | 15.37 | 15.64 | 15.87 | 16.45 |
| 12H                                               | 4H  | 9.72             | 10.09 | 10.21 | 10.58 | 11.06 | 9.70           | 10.08 | 10.20 | 10.57 | 11.04 |
|                                                   | 6H  | 12.46            | 12.56 | 12.80 | 13.04 | 13.59 | 12.44          | 12.54 | 12.78 | 13.02 | 13.57 |
|                                                   | 8H  | 13.78            | 14.04 | 14.30 | 14.54 | 15.12 | 13.76          | 14.02 | 14.28 | 14.52 | 15.10 |
| Variation with the observer position at spacings: |     |                  |       |       |       |       |                |       |       |       |       |
| S = 1.0H                                          |     | 4.9/-8.2         |       |       |       |       | 4.9/-8.2       |       |       |       |       |
| S = 1.5H                                          |     | 7.2/-6.2         |       |       |       |       | 7.2/-6.2       |       |       |       |       |
| S = 2.0H                                          |     | 8.6/-4.7         |       |       |       |       | 8.6/-4.7       |       |       |       |       |
| Standard tables:                                  |     | BK2              |       |       |       |       | BK2            |       |       |       |       |
| Uncorrected UGR                                   |     | 1.6              |       |       |       |       | 1.6            |       |       |       |       |



| 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    | 1.10                                    | 1.10 | 1.10 | 1.08 | 1.08 | 1.08 | 1.03 | 1.03 | 1.03 | 0.98 | 0.98 | 0.98 | 0.94 | 0.94 | 0.94 | 0.93 |
| 1    | 1.02                                    | 1.00 | 0.98 | 1.00 | 0.98 | 0.96 | 0.96 | 0.95 | 0.93 | 0.93 | 0.92 | 0.90 | 0.90 | 0.89 | 0.88 | 0.86 |
| 2    | 0.96                                    | 0.93 | 0.90 | 0.95 | 0.92 | 0.89 | 0.92 | 0.89 | 0.87 | 0.89 | 0.87 | 0.85 | 0.87 | 0.85 | 0.84 | 0.82 |
| 3    | 0.91                                    | 0.87 | 0.84 | 0.90 | 0.86 | 0.83 | 0.88 | 0.85 | 0.82 | 0.86 | 0.83 | 0.81 | 0.84 | 0.81 | 0.80 | 0.78 |
| 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 | 0.81 | 0.77 | 0.74 | 0.79 | 0.76 | 0.73 | 0.78 | 0.75 | 0.73 | 0.72 |
| 6    | 0.79                                    | 0.75 | 0.71 | 0.79 | 0.74 | 0.71 | 0.77 | 0.74 | 0.71 | 0.76 | 0.73 | 0.70 | 0.75 | 0.72 | 0.70 | 0.69 |
| 7    | 0.76                                    | 0.72 | 0.68 | 0.76 | 0.71 | 0.68 | 0.75 | 0.71 | 0.68 | 0.74 | 0.70 | 0.67 | 0.73 | 0.69 | 0.67 | 0.66 |
| 8    | 0.73                                    | 0.69 | 0.65 | 0.73 | 0.68 | 0.65 | 0.72 | 0.68 | 0.65 | 0.71 | 0.67 | 0.65 | 0.70 | 0.67 | 0.65 | 0.64 |
| 9    | 0.70                                    | 0.66 | 0.63 | 0.70 | 0.66 | 0.63 | 0.69 | 0.65 | 0.63 | 0.68 | 0.65 | 0.62 | 0.68 | 0.65 | 0.62 | 0.61 |
| 10   | 0.68                                    | 0.63 | 0.61 | 0.68 | 0.63 | 0.60 | 0.67 | 0.63 | 0.60 | 0.66 | 0.63 | 0.60 | 0.66 | 0.62 | 0.60 | 0.59 |



# NATA 3-1568-M

| Intensity data(cd) |         |         |         |         |         |         |        |        |        | Appendix Page: 15 Total:15 |  |
|--------------------|---------|---------|---------|---------|---------|---------|--------|--------|--------|----------------------------|--|
| C/ $\gamma$ (°)    | 0.0     | 5.0     | 10.0    | 15.0    | 20.0    | 25.0    | 30.0   | 35.0   | 40.0   |                            |  |
| 0.0                | 4244.63 | 4034.81 | 3776.06 | 3159.56 | 1971.56 | 1013.06 | 767.25 | 561.38 | 190.18 |                            |  |
| 45.0               | 4248.56 | 4099.50 | 3828.38 | 3228.75 | 2130.75 | 1062.00 | 759.38 | 595.69 | 291.38 |                            |  |
| 90.0               | 4255.31 | 4111.31 | 3835.69 | 3141.00 | 2040.19 | 1035.23 | 744.41 | 576.84 | 159.30 |                            |  |
| 135.0              | 4233.38 | 4206.38 | 3909.94 | 3495.94 | 2362.50 | 1197.56 | 808.31 | 663.75 | 303.75 |                            |  |
| 180.0              | 4244.63 | 4123.69 | 3847.50 | 3216.94 | 2040.75 | 1078.59 | 771.75 | 576.06 | 173.14 |                            |  |
| 225.0              | 4248.56 | 4068.56 | 3744.00 | 3067.31 | 1960.88 | 1022.57 | 766.13 | 547.65 | 119.70 |                            |  |
| 270.0              | 4255.31 | 4074.75 | 3742.31 | 3171.94 | 2111.63 | 1064.25 | 780.19 | 573.19 | 302.06 |                            |  |
| 315.0              | 4233.38 | 3972.38 | 3657.38 | 2869.31 | 1670.63 | 938.87  | 741.88 | 440.61 | 58.39  |                            |  |
| 360.0              | 4244.63 | 4034.81 | 3776.06 | 3159.56 | 1971.56 | 1013.06 | 767.25 | 561.38 | 190.18 |                            |  |
| C/ $\gamma$ (°)    | 45.0    | 50.0    | 55.0    | 60.0    | 65.0    | 70.0    | 75.0   | 80.0   | 85.0   |                            |  |
| 0.0                | 15.75   | 10.18   | 9.56    | 9.28    | 9.11    | 9.00    | 8.94   | 8.89   | 8.83   |                            |  |
| 45.0               | 16.43   | 10.35   | 9.73    | 9.39    | 9.23    | 9.06    | 9.00   | 8.94   | 8.94   |                            |  |
| 90.0               | 16.26   | 10.24   | 9.73    | 9.39    | 9.23    | 9.06    | 8.94   | 8.94   | 8.89   |                            |  |
| 135.0              | 19.97   | 11.08   | 9.90    | 9.51    | 9.28    | 9.11    | 9.00   | 8.89   | 8.89   |                            |  |
| 180.0              | 16.65   | 10.46   | 9.73    | 9.39    | 9.17    | 9.06    | 8.94   | 8.89   | 8.83   |                            |  |
| 225.0              | 15.58   | 10.29   | 9.73    | 9.45    | 9.23    | 9.11    | 9.00   | 8.94   | 8.94   |                            |  |
| 270.0              | 16.26   | 10.41   | 9.79    | 9.45    | 9.23    | 9.11    | 9.00   | 8.94   | 8.89   |                            |  |
| 315.0              | 13.73   | 10.13   | 9.68    | 9.34    | 9.17    | 9.00    | 8.94   | 8.89   | 8.83   |                            |  |
| 360.0              | 15.75   | 10.18   | 9.56    | 9.28    | 9.11    | 9.00    | 8.94   | 8.89   | 8.83   |                            |  |
| C/ $\gamma$ (°)    | 90.0    |         |         |         |         |         |        |        |        |                            |  |
| 0.0                | 8.83    |         |         |         |         |         |        |        |        |                            |  |
| 45.0               | 8.89    |         |         |         |         |         |        |        |        |                            |  |
| 90.0               | 8.83    |         |         |         |         |         |        |        |        |                            |  |
| 135.0              | 8.83    |         |         |         |         |         |        |        |        |                            |  |
| 180.0              | 8.83    |         |         |         |         |         |        |        |        |                            |  |
| 225.0              | 8.89    |         |         |         |         |         |        |        |        |                            |  |
| 270.0              | 8.89    |         |         |         |         |         |        |        |        |                            |  |
| 315.0              | 8.83    |         |         |         |         |         |        |        |        |                            |  |
| 360.0              | 8.83    |         |         |         |         |         |        |        |        |                            |  |