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## Nata

Client:

LumCAT: 2-2760-L

Luminaire: 92.70.412.00

Report No: 2024819-B009

Ballast type: AC

Test No: 2024819-C009

LampCAT: CREE CXA1830 LES14

Lamp flux(lm): 3681.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 36.610

Current(A): 0.795

Power (W): 29.100

PF: 0.000

Width(mm): 0

Height(mm): 0

## Photometric Results

Lumens(lm): 3417.99, Efficiency(%): 92.85% , Luminous Efficacy(lm/W): 117.46

Central intensity(cd): 5023.877, Maximum intensity(cd): 5025.132

Angle of maximum intensity: C=0.0  $\gamma$ =1.0

Beam Angle(50%Imax): [C0/180]Total=50.6

[C90/270]Total=50.6

Field angle(10%Imax): [C0/180]Total=73.2

[C90/270]Total=73.2

Maximum s/h(1/2): C0\_180=0.81 C90\_270=0.81

Maximum s/h(1/4): C0\_180=0.77 C90\_270=0.77

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 92.85%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 99.113%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 5023.878      | 0.000       | 0         | 0.00%       | 0.00%      |
| 1.0                | 5025.133      | 4.808       | 4.808     | 0.13%       | 0.14%      |
| 2.0                | 5023.188      | 14.422      | 19.231    | 0.39%       | 0.56%      |
| 3.0                | 5022.137      | 24.025      | 43.256    | 0.65%       | 1.27%      |
| 4.0                | 5020.474      | 33.616      | 76.872    | 0.91%       | 2.25%      |
| 5.0                | 5012.307      | 43.161      | 120.032   | 1.17%       | 3.51%      |
| 6.0                | 4994.134      | 52.587      | 172.619   | 1.43%       | 5.05%      |
| 7.0                | 4971.920      | 61.859      | 234.478   | 1.68%       | 6.86%      |
| 8.0                | 4938.359      | 70.926      | 305.404   | 1.93%       | 8.94%      |
| 9.0                | 4889.121      | 79.646      | 385.05    | 2.16%       | 11.27%     |
| 10.0               | 4821.144      | 87.874      | 472.924   | 2.39%       | 13.84%     |
| 11.0               | 4736.939      | 95.505      | 568.429   | 2.59%       | 16.63%     |
| 12.0               | 4639.652      | 102.500     | 670.929   | 2.78%       | 19.63%     |
| 13.0               | 4532.392      | 108.849     | 779.778   | 2.96%       | 22.81%     |
| 14.0               | 4413.161      | 114.502     | 894.28    | 3.11%       | 26.16%     |
| 15.0               | 4281.531      | 119.365     | 1013.645  | 3.24%       | 29.66%     |
| 16.0               | 4135.000      | 123.326     | 1136.97   | 3.35%       | 33.26%     |
| 17.0               | 3988.528      | 126.505     | 1263.476  | 3.44%       | 36.97%     |
| 18.0               | 3822.989      | 128.795     | 1392.271  | 3.50%       | 40.73%     |
| 19.0               | 3658.830      | 130.168     | 1522.439  | 3.54%       | 44.54%     |
| 20.0               | 3481.030      | 130.679     | 1653.118  | 3.55%       | 48.37%     |
| 21.0               | 3300.084      | 130.211     | 1783.329  | 3.54%       | 52.17%     |
| 22.0               | 3148.408      | 129.585     | 1912.914  | 3.52%       | 55.97%     |
| 23.0               | 2931.601      | 127.575     | 2040.489  | 3.47%       | 59.70%     |
| 24.0               | 2765.760      | 124.565     | 2165.054  | 3.38%       | 63.34%     |
| 25.0               | 2571.949      | 121.368     | 2286.422  | 3.30%       | 66.89%     |
| 26.0               | 2375.897      | 116.794     | 2403.216  | 3.17%       | 70.31%     |
| 27.0               | 2175.877      | 111.360     | 2514.577  | 3.03%       | 73.57%     |
| 28.0               | 1975.640      | 105.108     | 2619.684  | 2.86%       | 76.64%     |
| 29.0               | 1774.241      | 98.107      | 2717.792  | 2.67%       | 79.51%     |
| 30.0               | 1514.122      | 88.785      | 2806.577  | 2.41%       | 82.11%     |
| 31.0               | 1310.225      | 78.597      | 2885.174  | 2.14%       | 84.41%     |
| 32.0               | 1134.601      | 70.041      | 2955.216  | 1.90%       | 86.46%     |
| 33.0               | 965.343       | 61.865      | 3017.081  | 1.68%       | 88.27%     |
| 34.0               | 805.152       | 53.580      | 3070.661  | 1.46%       | 89.84%     |
| 35.0               | 674.955       | 45.967      | 3116.628  | 1.25%       | 91.18%     |
| 36.0               | 568.102       | 39.579      | 3156.207  | 1.08%       | 92.34%     |
| 37.0               | 465.888       | 33.723      | 3189.93   | 0.92%       | 93.33%     |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 388.641       | 28.523      | 3218.453  | 0.77%       | 94.16%     |
| 39.0               | 326.899       | 24.423      | 3242.876  | 0.66%       | 94.88%     |
| 40.0               | 277.458       | 21.078      | 3263.954  | 0.57%       | 95.49%     |
| 41.0               | 242.385       | 18.511      | 3282.466  | 0.50%       | 96.03%     |
| 42.0               | 196.288       | 15.938      | 3298.403  | 0.43%       | 96.50%     |
| 43.0               | 159.409       | 13.176      | 3311.579  | 0.36%       | 96.89%     |
| 44.0               | 123.890       | 10.692      | 3322.272  | 0.29%       | 97.20%     |
| 45.0               | 102.057       | 8.683       | 3330.955  | 0.24%       | 97.45%     |
| 46.0               | 85.099        | 7.319       | 3338.275  | 0.20%       | 97.67%     |
| 47.0               | 72.142        | 6.254       | 3344.528  | 0.17%       | 97.85%     |
| 48.0               | 62.162        | 5.429       | 3349.958  | 0.15%       | 98.01%     |
| 49.0               | 54.461        | 4.789       | 3354.747  | 0.13%       | 98.15%     |
| 50.0               | 48.463        | 4.291       | 3359.038  | 0.12%       | 98.28%     |
| 51.0               | 43.528        | 3.892       | 3362.93   | 0.11%       | 98.39%     |
| 52.0               | 39.442        | 3.560       | 3366.49   | 0.10%       | 98.49%     |
| 53.0               | 36.176        | 3.289       | 3369.78   | 0.09%       | 98.59%     |
| 54.0               | 33.226        | 3.059       | 3372.839  | 0.08%       | 98.68%     |
| 55.0               | 30.697        | 2.853       | 3375.692  | 0.08%       | 98.76%     |
| 56.0               | 28.476        | 2.674       | 3378.366  | 0.07%       | 98.84%     |
| 57.0               | 26.551        | 2.516       | 3380.882  | 0.07%       | 98.91%     |
| 58.0               | 24.974        | 2.383       | 3383.265  | 0.06%       | 98.98%     |
| 59.0               | 23.371        | 2.260       | 3385.525  | 0.06%       | 99.05%     |
| 60.0               | 22.175        | 2.152       | 3387.676  | 0.06%       | 99.11%     |
| 61.0               | 20.940        | 2.058       | 3389.734  | 0.06%       | 99.17%     |
| 62.0               | 19.757        | 1.961       | 3391.695  | 0.05%       | 99.23%     |
| 63.0               | 18.771        | 1.874       | 3393.569  | 0.05%       | 99.29%     |
| 64.0               | 17.746        | 1.792       | 3395.361  | 0.05%       | 99.34%     |
| 65.0               | 16.886        | 1.714       | 3397.075  | 0.05%       | 99.39%     |
| 66.0               | 16.005        | 1.641       | 3398.716  | 0.04%       | 99.44%     |
| 67.0               | 15.177        | 1.568       | 3400.284  | 0.04%       | 99.48%     |
| 68.0               | 14.376        | 1.497       | 3401.781  | 0.04%       | 99.53%     |
| 69.0               | 13.633        | 1.429       | 3403.21   | 0.04%       | 99.57%     |
| 70.0               | 12.871        | 1.361       | 3404.571  | 0.04%       | 99.61%     |
| 71.0               | 12.129        | 1.292       | 3405.863  | 0.04%       | 99.65%     |
| 72.0               | 11.426        | 1.225       | 3407.088  | 0.03%       | 99.68%     |
| 73.0               | 10.742        | 1.159       | 3408.247  | 0.03%       | 99.71%     |
| 74.0               | 10.072        | 1.094       | 3409.341  | 0.03%       | 99.75%     |
| 75.0               | 9.435         | 1.031       | 3410.372  | 0.03%       | 99.78%     |

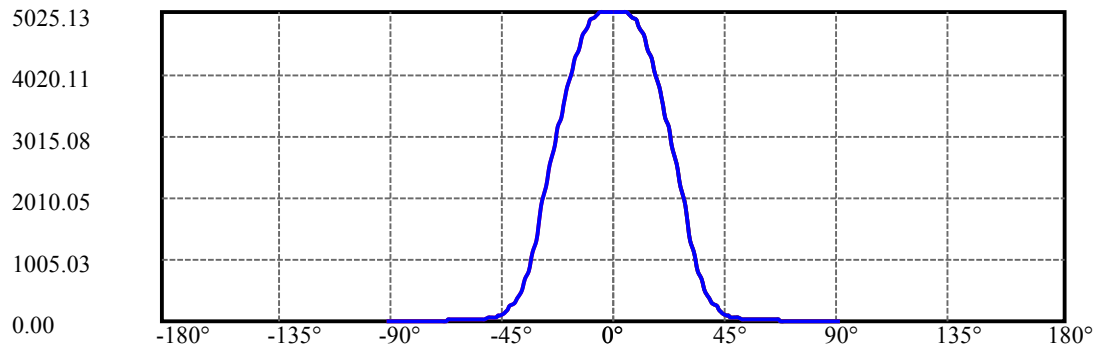
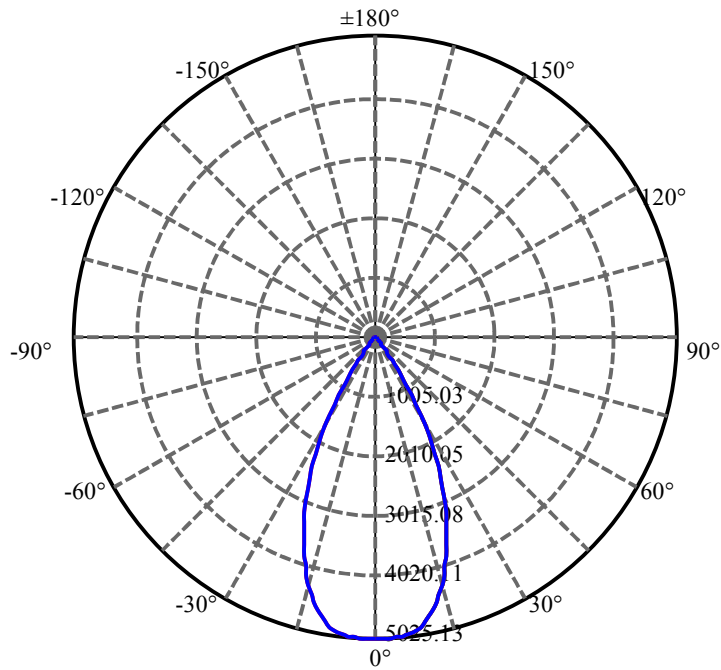
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 8.719         | 0.964       | 3411.336  | 0.03%       | 99.81%     |
| 77.0               | 8.081         | 0.896       | 3412.231  | 0.02%       | 99.83%     |
| 78.0               | 7.372         | 0.827       | 3413.059  | 0.02%       | 99.86%     |
| 79.0               | 6.695         | 0.756       | 3413.814  | 0.02%       | 99.88%     |
| 80.0               | 5.992         | 0.684       | 3414.498  | 0.02%       | 99.90%     |
| 81.0               | 5.375         | 0.615       | 3415.113  | 0.02%       | 99.92%     |
| 82.0               | 4.757         | 0.549       | 3415.662  | 0.01%       | 99.93%     |
| 83.0               | 4.100         | 0.481       | 3416.144  | 0.01%       | 99.95%     |
| 84.0               | 3.541         | 0.416       | 3416.56   | 0.01%       | 99.96%     |
| 85.0               | 3.022         | 0.358       | 3416.918  | 0.01%       | 99.97%     |
| 86.0               | 2.589         | 0.307       | 3417.225  | 0.01%       | 99.98%     |
| 87.0               | 2.129         | 0.258       | 3417.483  | 0.01%       | 99.99%     |
| 88.0               | 1.682         | 0.209       | 3417.692  | 0.01%       | 99.99%     |
| 89.0               | 1.334         | 0.165       | 3417.857  | 0.00%       | 100.00%    |
| 90.0               | 1.078         | 0.132       | 3417.99   | 0.00%       | 100.00%    |

## ZONAL LUMEN SUMMARY

| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 2806.58 | 76.24% | 82.11%  |
| 0-40    | 3263.95 | 88.67% | 95.49%  |
| 0-60    | 3387.68 | 92.03% | 99.11%  |
| 0-90    | 3417.86 | 92.85% | 100.00% |
| 0-120   | 3417.86 | 92.85% | 100.00% |
| 0-180   | 3417.99 | 92.85% | 100.00% |
| 60-90   | 30.18   | 0.82%  | 0.88%   |
| 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%   |
| 0-29.19 | 2734.39 | 74.28% | 80.00%  |

## ZONAL LUMEN SUMMARY

|         |         |
|---------|---------|
| 0-10    | 472.92  |
| 10-20   | 1180.19 |
| 20-30   | 1153.46 |
| 30-40   | 457.38  |
| 40-50   | 95.08   |
| 50-60   | 28.64   |
| 60-70   | 16.89   |
| 70-80   | 9.93    |
| 80-90   | 3.36    |
| 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: —————

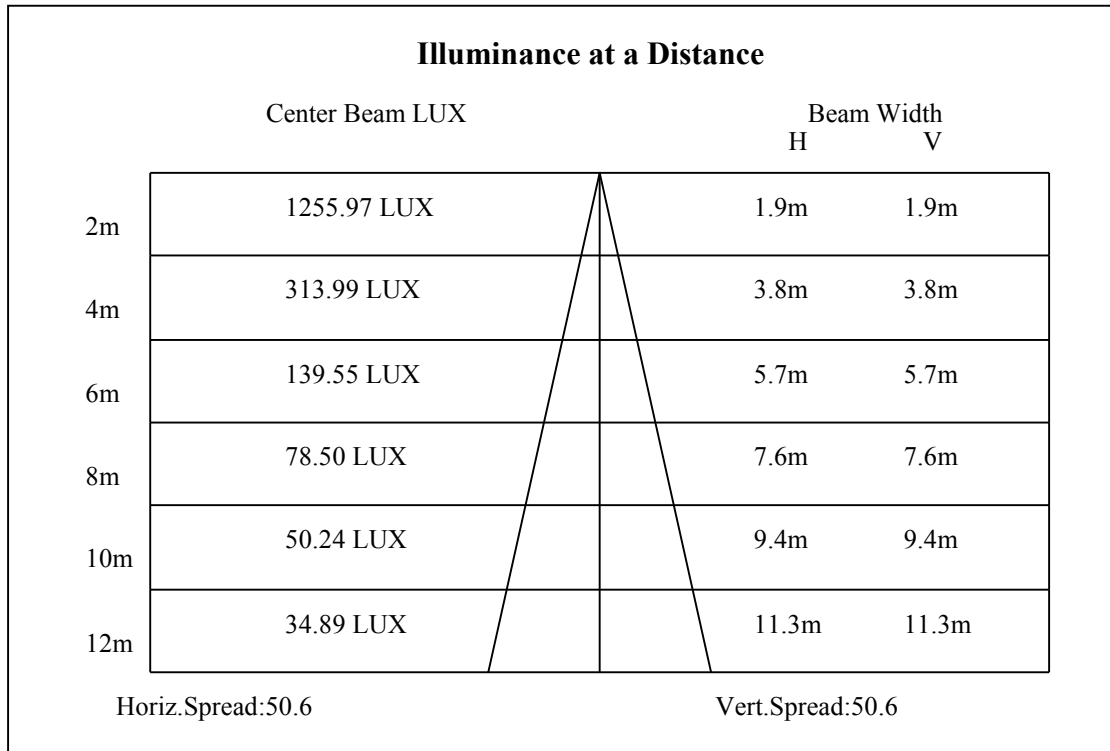
C90/C270: —————

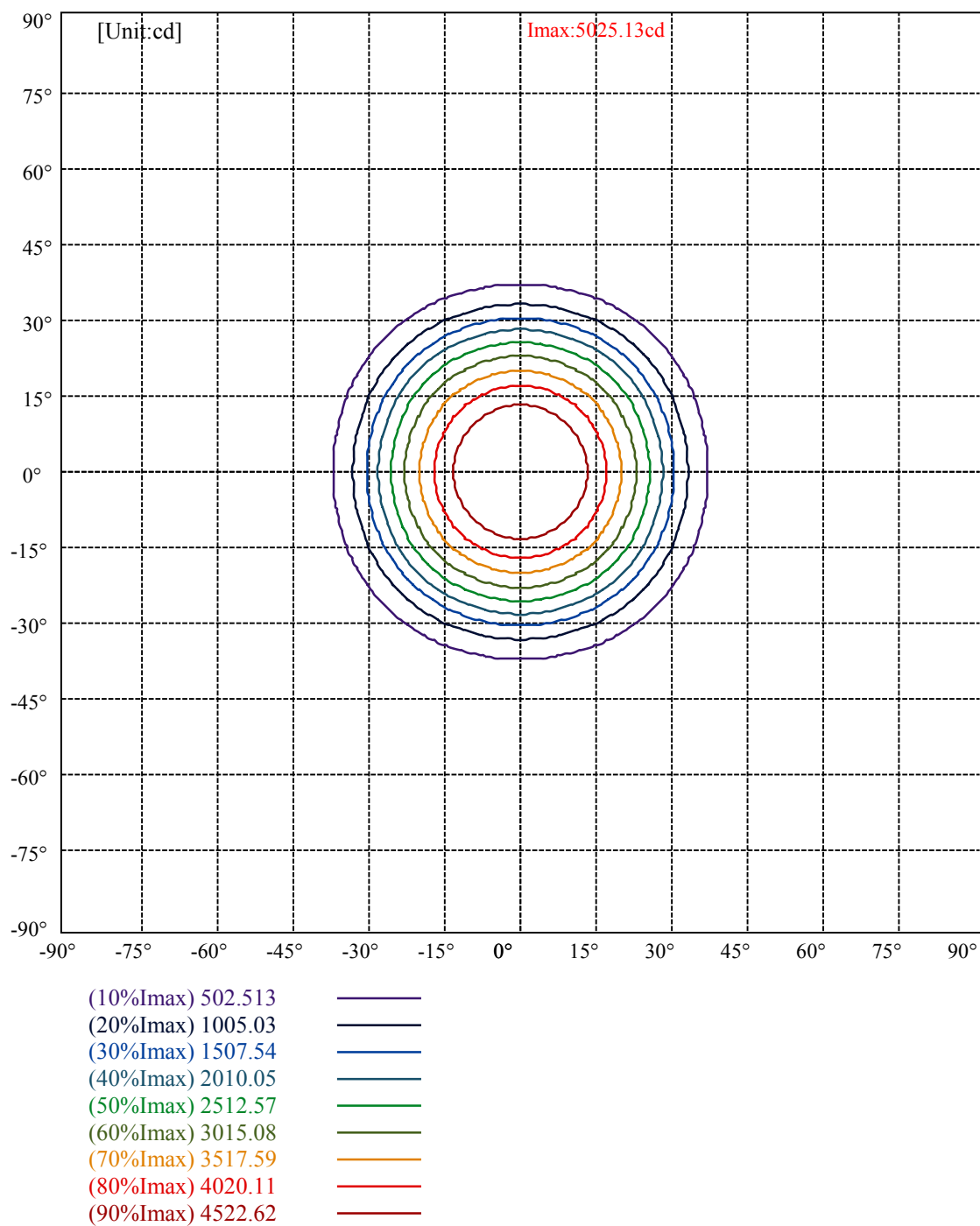
Field angle(10%Imax):C0/180Left:37.6 Right:35.6

:C90/270Left:37.6 Right:35.6

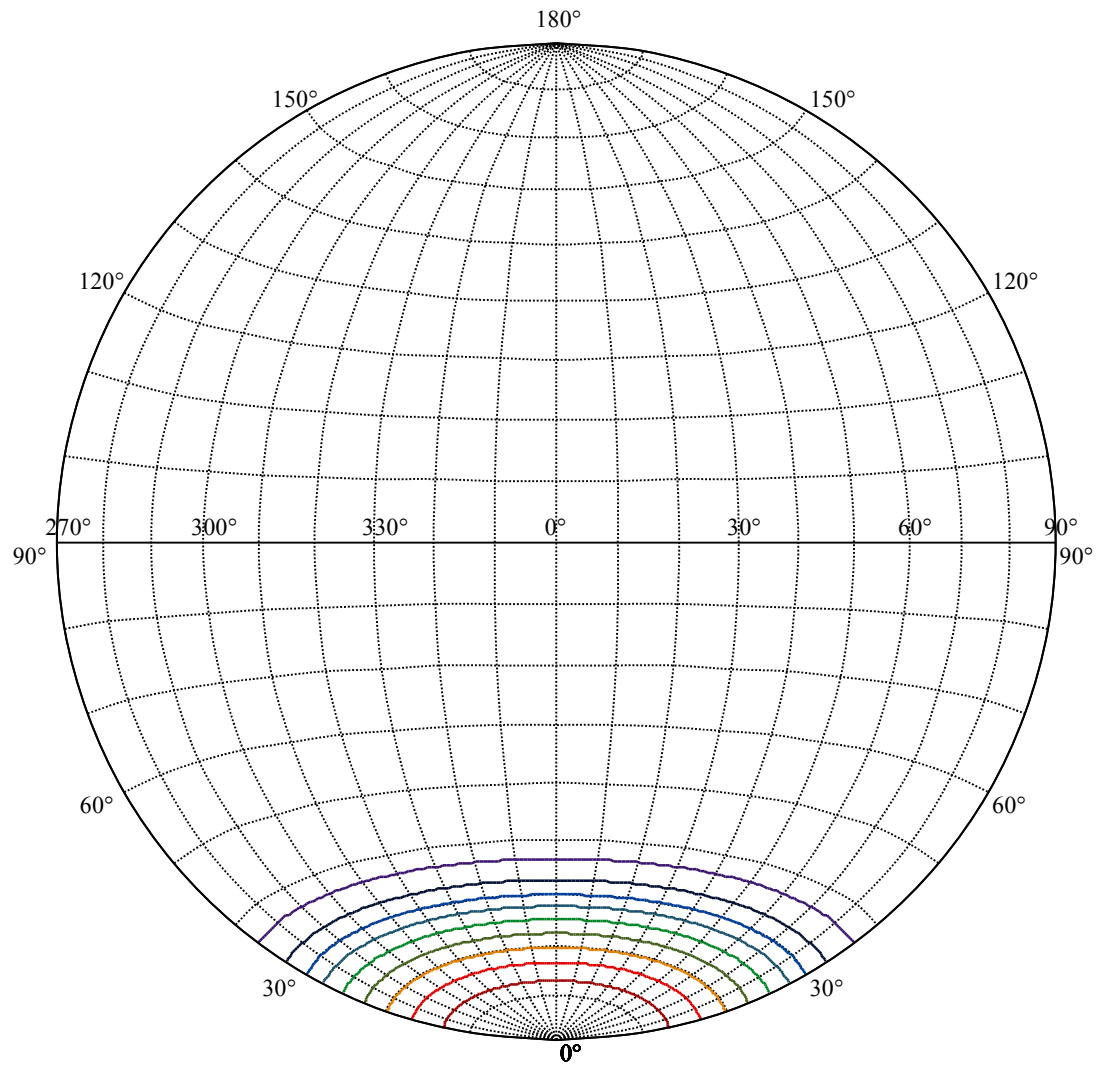
Beam Angle(50%Imax):C0/180Left:26.3 Right:24.3

:C90/270Left:26.3 Right:24.3









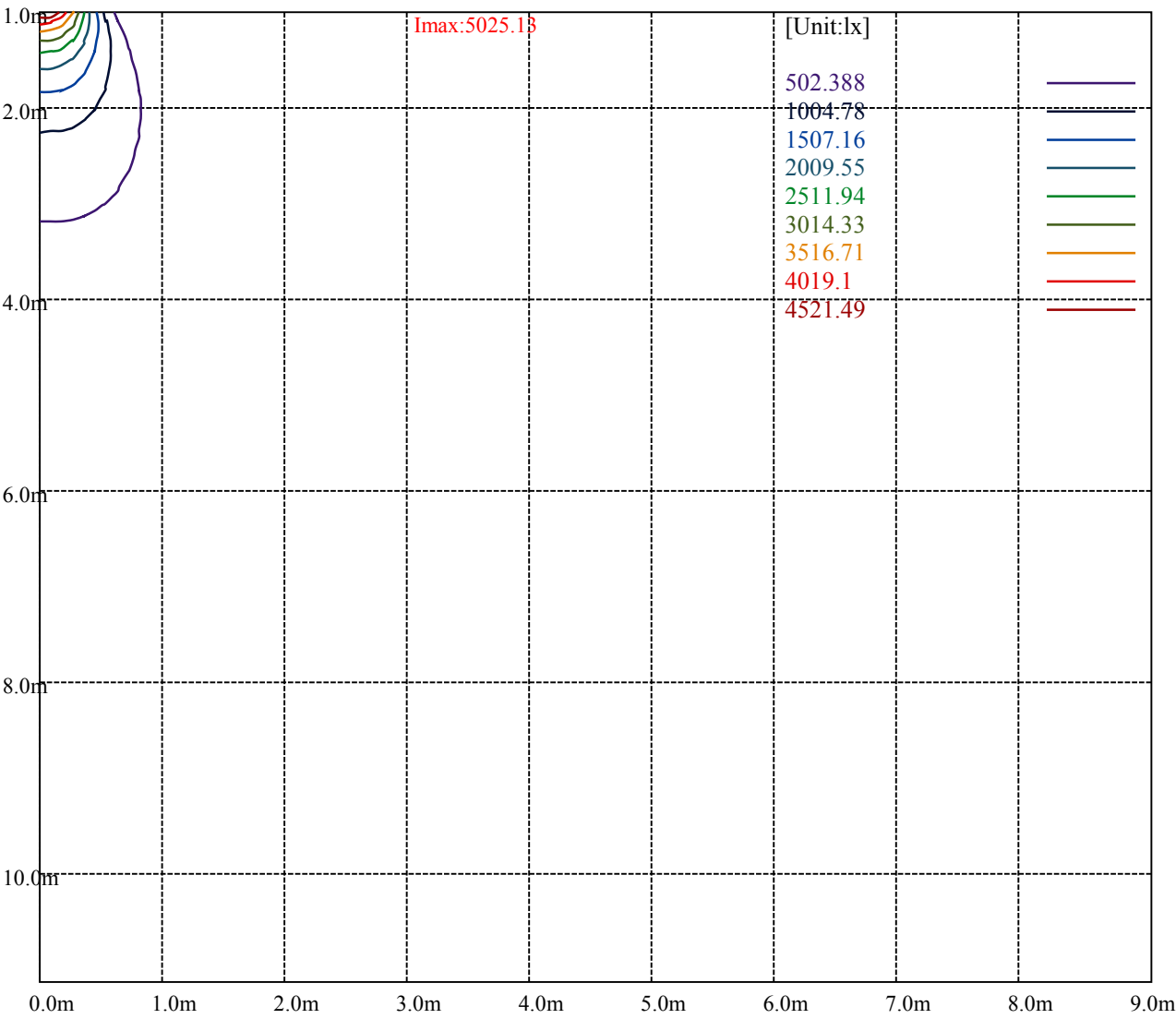
House

[Unit:cd]

Road

|              |         |
|--------------|---------|
| Imax:5025.13 |         |
| (10%Imax)    | 502.513 |
| (20%Imax)    | 1005.03 |
| (30%Imax)    | 1507.54 |
| (40%Imax)    | 2010.05 |
| (50%Imax)    | 2512.57 |
| (60%Imax)    | 3015.08 |
| (70%Imax)    | 3517.59 |
| (80%Imax)    | 4020.11 |
| (90%Imax)    | 4522.62 |





Luminance Limiting Curve(no luminous side)

Appendix Page: 12 Total:20

Luminance Table

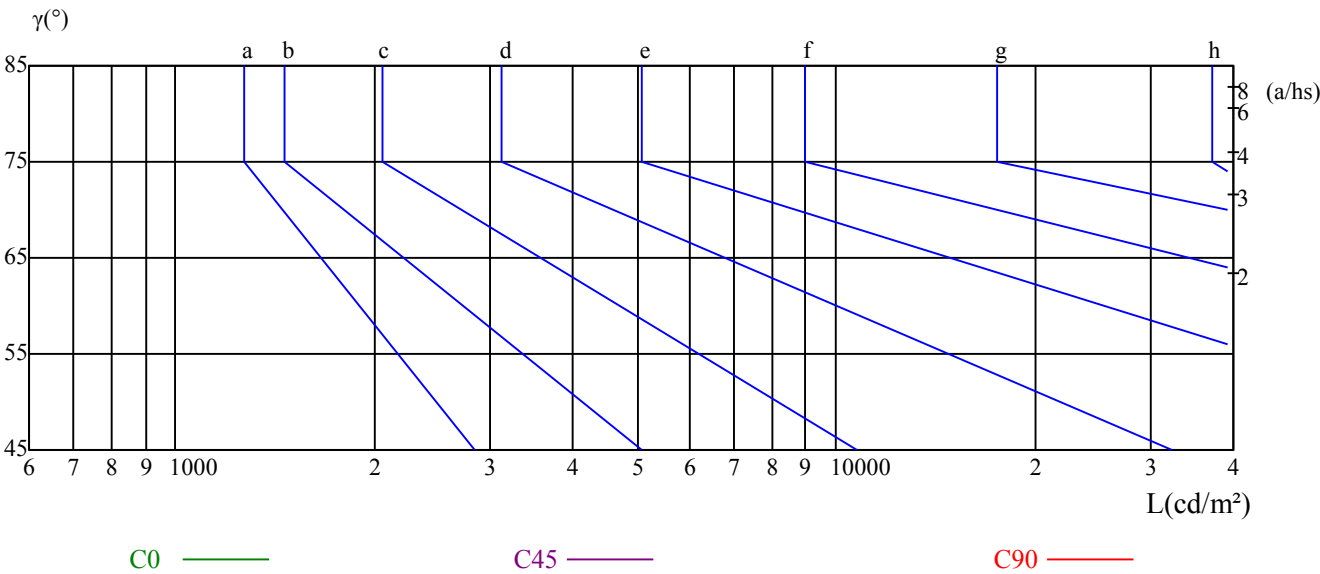
| $\gamma$ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|----------|----|----|----|----|----|----|----|----|----|
| C0       | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C45      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C90      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |

| 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

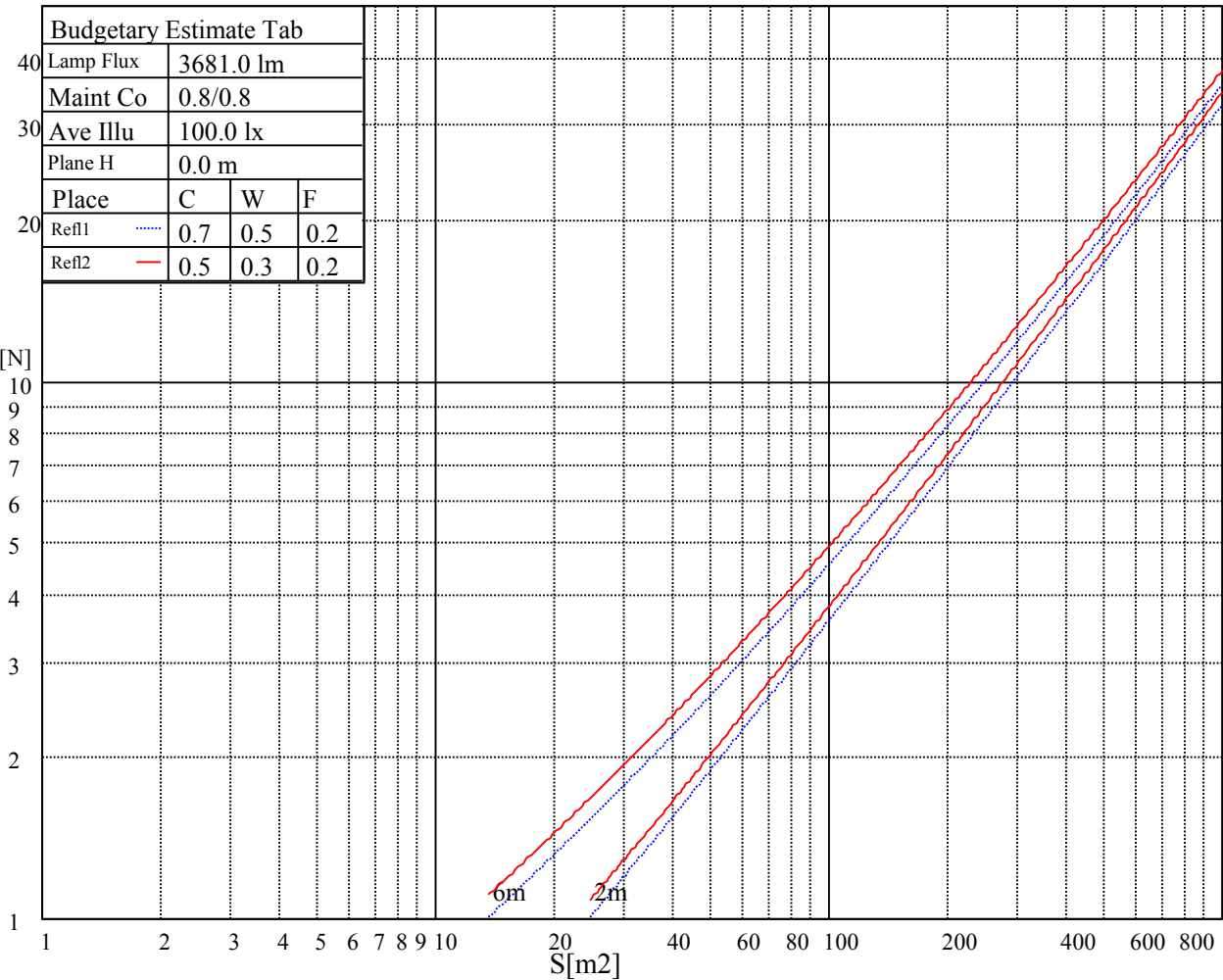
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000            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

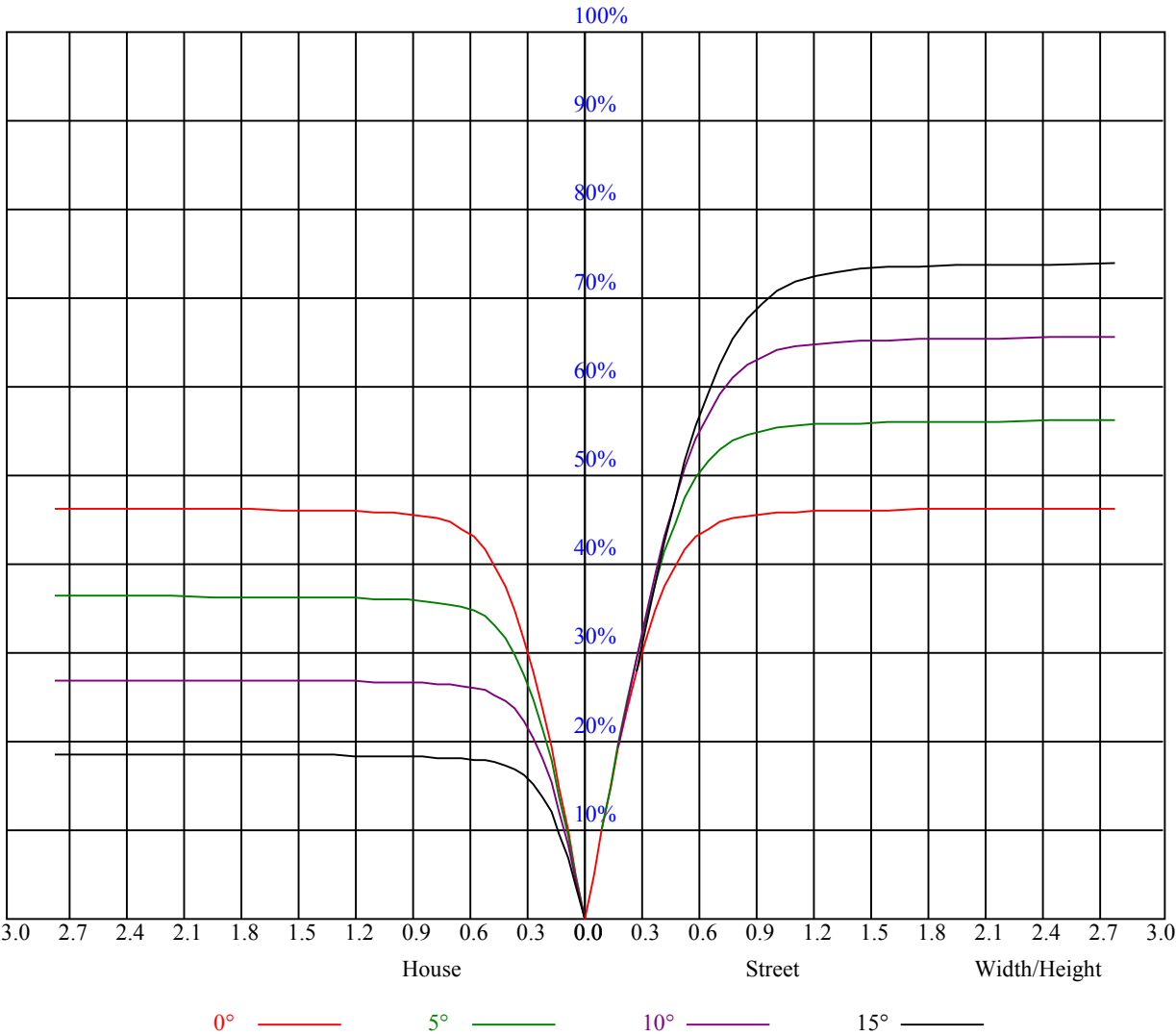


| Illumination assessment according UGR             |     |                  |     |     |     |     |                |     |     |     |  |
|---------------------------------------------------|-----|------------------|-----|-----|-----|-----|----------------|-----|-----|-----|--|
| Rf of Ceiling                                     | 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  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 3H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| 4H                                                | 12H | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 2H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 3H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| 8H                                                | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 12H | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| 12H                                               | 12H | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| Variation with the observer position at spacings: |     |                  |     |     |     |     |                |     |     |     |  |
| S = 1.0H                                          |     | 非数字/非数字          |     |     |     |     | 非数字/非数字        |     |     |     |  |
| S = 1.5H                                          |     | 非数字/非数字          |     |     |     |     | 非数字/非数字        |     |     |     |  |
| S = 2.0H                                          |     | 非数字/非数字          |     |     |     |     | 非数字/非数字        |     |     |     |  |
| Standard tables:                                  |     | BK0              |     |     |     |     | BK0            |     |     |     |  |
| Uncorrected UGR                                   |     | 负无穷大             |     |     |     |     | 负无穷大           |     |     |     |  |
|                                                   |     |                  |     |     |     |     |                |     |     |     |  |

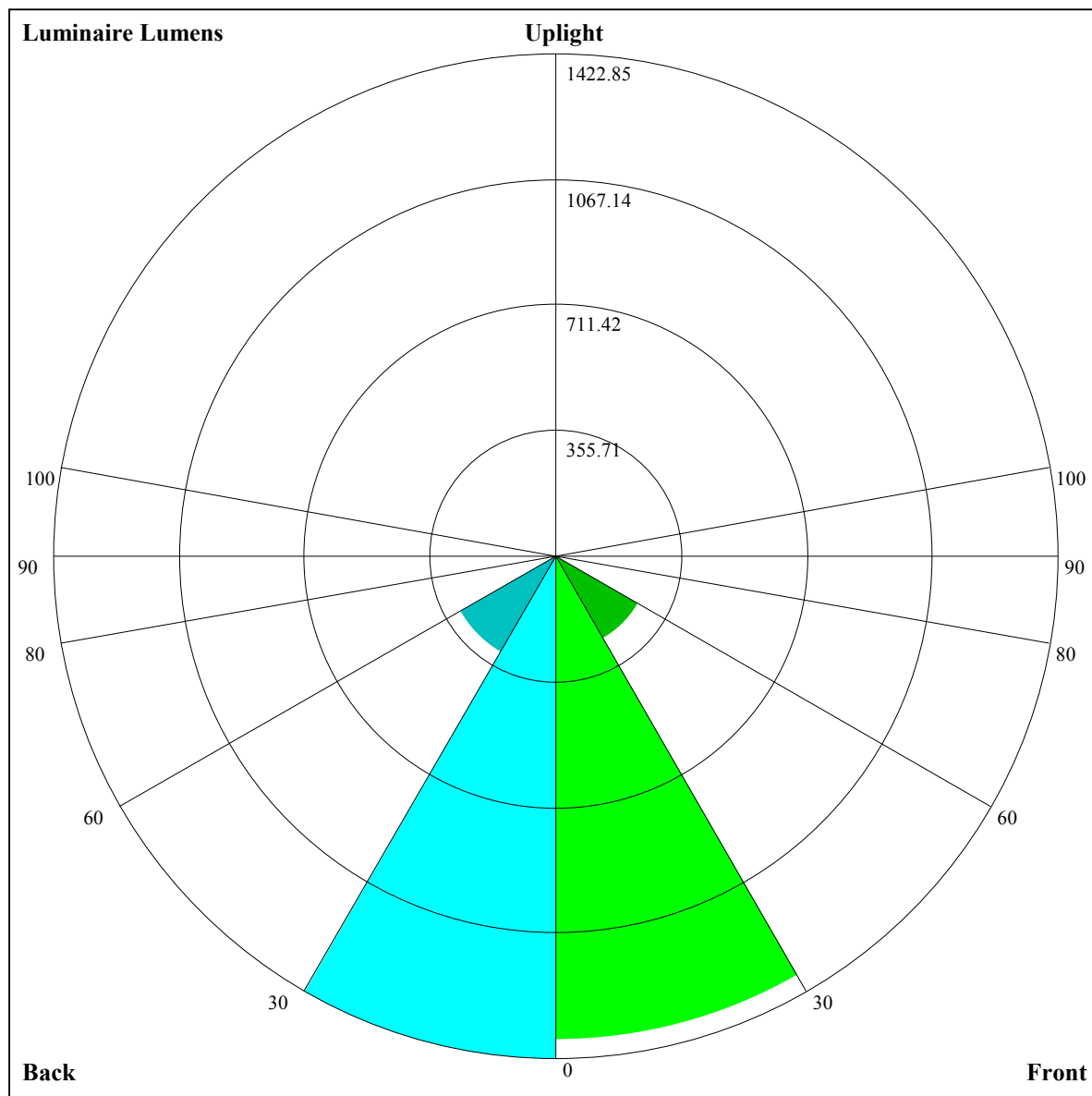
UGR calculation is based on CIE Publ. 117 ,S/H = 0.25



| 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    | 1.11                                    | 1.11 | 1.11 | 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    | 1.03                                    | 1.01 | 0.99 | 1.01 | 0.99 | 0.98 | 0.98 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 | 0.90 | 0.89 | 0.87 |
| 2    | 0.97                                    | 0.93 | 0.90 | 0.95 | 0.92 | 0.89 | 0.92 | 0.90 | 0.87 | 0.89 | 0.87 | 0.85 | 0.87 | 0.85 | 0.84 | 0.82 |
| 3    | 0.91                                    | 0.87 | 0.83 | 0.90 | 0.86 | 0.82 | 0.87 | 0.84 | 0.81 | 0.85 | 0.82 | 0.80 | 0.83 | 0.81 | 0.79 | 0.77 |
| 4    | 0.86                                    | 0.81 | 0.77 | 0.85 | 0.80 | 0.77 | 0.83 | 0.79 | 0.76 | 0.81 | 0.78 | 0.75 | 0.79 | 0.76 | 0.74 | 0.73 |
| 5    | 0.81                                    | 0.76 | 0.72 | 0.80 | 0.75 | 0.72 | 0.78 | 0.74 | 0.71 | 0.77 | 0.73 | 0.71 | 0.75 | 0.72 | 0.70 | 0.69 |
| 6    | 0.76                                    | 0.71 | 0.68 | 0.76 | 0.71 | 0.67 | 0.74 | 0.70 | 0.67 | 0.73 | 0.69 | 0.67 | 0.72 | 0.69 | 0.66 | 0.65 |
| 7    | 0.72                                    | 0.67 | 0.64 | 0.72 | 0.67 | 0.64 | 0.71 | 0.66 | 0.63 | 0.70 | 0.66 | 0.63 | 0.69 | 0.65 | 0.63 | 0.61 |
| 8    | 0.69                                    | 0.64 | 0.60 | 0.68 | 0.63 | 0.60 | 0.67 | 0.63 | 0.60 | 0.66 | 0.62 | 0.60 | 0.66 | 0.62 | 0.59 | 0.58 |
| 9    | 0.65                                    | 0.60 | 0.57 | 0.65 | 0.60 | 0.57 | 0.64 | 0.60 | 0.57 | 0.63 | 0.59 | 0.57 | 0.63 | 0.59 | 0.56 | 0.55 |
| 10   | 0.62                                    | 0.57 | 0.54 | 0.62 | 0.57 | 0.54 | 0.61 | 0.57 | 0.54 | 0.61 | 0.57 | 0.54 | 0.60 | 0.56 | 0.54 | 0.53 |







Luminaire Lumens:

FL=1369.36,FM=270.28,FH=13.09,FVH=1.64

BL=1422.85,BM=316.03,BH=13.84,BVH=1.88

UL=0,UH=0

BUG Rating:B3-U0-G0

## Intensity data(cd)

Appendix Page: 18 Total:20

| C/γ(°) | 0.0     | 1.0     | 2.0     | 3.0     | 4.0     | 5.0     | 6.0     | 7.0     | 8.0     |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.0    | 5043.74 | 5032.60 | 5040.38 | 5033.70 | 5021.98 | 5023.66 | 5000.27 | 4960.69 | 4911.70 |
| 45.0   | 5013.62 | 5022.56 | 5043.74 | 5053.78 | 5063.24 | 5073.28 | 5057.67 | 5038.69 | 4996.38 |
| 90.0   | 5016.99 | 5044.84 | 5045.42 | 5049.31 | 5059.35 | 5049.84 | 5027.02 | 4998.06 | 4937.30 |
| 135.0  | 5018.67 | 5020.88 | 5025.92 | 5022.56 | 5029.81 | 5033.12 | 5005.26 | 4999.69 | 4989.13 |
| 180.0  | 5043.74 | 5021.45 | 5005.26 | 5020.88 | 5020.88 | 5002.48 | 4998.59 | 4981.87 | 4954.59 |
| 225.0  | 5013.62 | 5015.30 | 4998.59 | 4985.76 | 4971.31 | 4969.63 | 4940.09 | 4918.90 | 4904.45 |
| 270.0  | 5021.98 | 5012.52 | 5014.78 | 5009.73 | 4989.71 | 4969.05 | 4963.48 | 4929.52 | 4902.19 |
| 315.0  | 5018.67 | 5030.91 | 5011.41 | 5001.37 | 5007.52 | 4977.41 | 4960.69 | 4947.92 | 4911.12 |
| 360.0  | 5043.74 | 5032.60 | 5040.38 | 5033.70 | 5021.98 | 5023.66 | 5000.27 | 4960.69 | 4911.70 |
| C/γ(°) | 9.0     | 10.0    | 11.0    | 12.0    | 13.0    | 14.0    | 15.0    | 16.0    | 17.0    |
| 0.0    | 4847.63 | 4745.08 | 4640.90 | 4520.53 | 4385.18 | 4233.59 | 4070.91 | 3914.38 | 3762.79 |
| 45.0   | 4943.45 | 4862.08 | 4754.02 | 4649.84 | 4537.83 | 4400.74 | 4255.88 | 4099.35 | 3931.62 |
| 90.0   | 4849.26 | 4756.80 | 4657.04 | 4539.51 | 4411.89 | 4286.00 | 4141.14 | 3971.20 | 3773.93 |
| 135.0  | 4964.63 | 4910.02 | 4826.97 | 4730.05 | 4621.40 | 4499.40 | 4377.35 | 4235.28 | 4073.70 |
| 180.0  | 4929.52 | 4887.16 | 4816.99 | 4734.51 | 4652.04 | 4553.96 | 4436.43 | 4308.81 | 4199.06 |
| 225.0  | 4847.05 | 4781.30 | 4711.12 | 4631.97 | 4536.72 | 4432.54 | 4312.17 | 4165.11 | 4012.41 |
| 270.0  | 4876.01 | 4837.59 | 4779.61 | 4702.77 | 4620.82 | 4522.79 | 4405.79 | 4275.96 | 4140.03 |
| 315.0  | 4855.41 | 4789.13 | 4708.86 | 4608.05 | 4493.25 | 4376.25 | 4252.57 | 4109.91 | 4014.67 |
| 360.0  | 4847.63 | 4745.08 | 4640.90 | 4520.53 | 4385.18 | 4233.59 | 4070.91 | 3914.38 | 3762.79 |
| C/γ(°) | 18.0    | 19.0    | 20.0    | 21.0    | 22.0    | 23.0    | 24.0    | 25.0    | 26.0    |
| 0.0    | 3596.80 | 3418.51 | 3213.46 | 3015.09 | 2897.56 | 2628.44 | 2510.86 | 2314.75 | 2120.84 |
| 45.0   | 3747.76 | 3635.80 | 3461.92 | 3297.56 | 3119.85 | 2936.56 | 2743.18 | 2545.39 | 2343.71 |
| 90.0   | 3570.05 | 3381.14 | 3187.28 | 2984.45 | 2866.34 | 2587.18 | 2383.81 | 2263.50 | 2061.24 |
| 135.0  | 3900.45 | 3719.90 | 3558.32 | 3391.17 | 3219.03 | 3041.84 | 2890.31 | 2665.18 | 2509.18 |
| 180.0  | 4066.45 | 3911.60 | 3741.66 | 3562.79 | 3423.50 | 3254.67 | 3075.27 | 2881.37 | 2683.05 |
| 225.0  | 3866.44 | 3708.76 | 3533.25 | 3351.65 | 3160.53 | 2978.35 | 2823.97 | 2627.34 | 2426.76 |
| 270.0  | 3987.34 | 3890.94 | 3652.52 | 3475.33 | 3374.46 | 3104.81 | 2986.13 | 2783.34 | 2579.40 |
| 315.0  | 3848.63 | 3604.00 | 3499.82 | 3322.63 | 3126.00 | 2920.95 | 2712.54 | 2494.72 | 2283.00 |
| 360.0  | 3596.80 | 3418.51 | 3213.46 | 3015.09 | 2897.56 | 2628.44 | 2510.86 | 2314.75 | 2120.84 |
| C/γ(°) | 27.0    | 28.0    | 29.0    | 30.0    | 31.0    | 32.0    | 33.0    | 34.0    | 35.0    |
| 0.0    | 1919.16 | 1705.76 | 1488.46 | 1026.76 | 1026.76 | 845.21  | 697.66  | 578.24  | 477.74  |
| 45.0   | 2146.49 | 1951.49 | 1750.91 | 1544.18 | 1330.25 | 1126.89 | 938.56  | 776.98  | 647.73  |
| 90.0   | 1847.83 | 1632.22 | 1423.87 | 1049.94 | 1049.94 | 882.73  | 737.82  | 615.56  | 514.53  |
| 135.0  | 2313.07 | 2111.38 | 1900.24 | 1686.84 | 1465.65 | 1242.79 | 1037.74 | 857.77  | 707.33  |
| 180.0  | 2488.05 | 2294.67 | 2098.03 | 1884.05 | 1669.54 | 1448.94 | 1238.85 | 1042.73 | 869.49  |
| 225.0  | 2225.02 | 2030.02 | 1832.80 | 1621.66 | 1296.82 | 1087.99 | 1016.35 | 854.82  | 714.32  |
| 270.0  | 2377.72 | 2181.03 | 1994.96 | 1801.05 | 1603.26 | 1402.68 | 1196.53 | 1005.99 | 836.06  |
| 315.0  | 2089.67 | 1898.56 | 1704.65 | 1498.50 | 1039.58 | 1039.58 | 859.24  | 709.12  | 632.43  |
| 360.0  | 1919.16 | 1705.76 | 1488.46 | 1026.76 | 1026.76 | 845.21  | 697.66  | 578.24  | 477.74  |
| C/γ(°) | 36.0    | 37.0    | 38.0    | 39.0    | 40.0    | 41.0    | 42.0    | 43.0    | 44.0    |
| 0.0    | 395.85  | 327.36  | 268.38  | 237.21  | 177.35  | 156.48  | 127.04  | 103.60  | 85.36   |
| 45.0   | 540.18  | 449.94  | 387.54  | 306.75  | 306.75  | 283.31  | 171.62  | 138.92  | 112.96  |
| 90.0   | 445.41  | 357.48  | 296.19  | 254.03  | 209.15  | 172.41  | 142.29  | 118.11  | 98.71   |
| 135.0  | 583.65  | 484.47  | 400.32  | 330.15  | 293.93  | 293.93  | 181.24  | 160.21  | 130.93  |
| 180.0  | 722.94  | 600.89  | 502.87  | 420.39  | 349.07  | 288.36  | 288.36  | 277.21  | 169.78  |
| 225.0  | 640.47  | 498.61  | 415.19  | 370.78  | 283.63  | 251.56  | 204.78  | 165.78  | 134.19  |
| 270.0  | 692.83  | 575.30  | 478.90  | 398.11  | 355.22  | 293.93  | 293.93  | 181.08  | 153.11  |
| 315.0  | 523.47  | 433.06  | 359.74  | 297.77  | 244.57  | 199.11  | 161.05  | 130.36  | 106.07  |
| 360.0  | 395.85  | 327.36  | 268.38  | 237.21  | 177.35  | 156.48  | 127.04  | 103.60  | 85.36   |

## Intensity data(cd)

|                 |        |        |       |       |       |       |       |       |       |
|-----------------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| C/ $\gamma$ (°) | 45.0   | 46.0   | 47.0  | 48.0  | 49.0  | 50.0  | 51.0  | 52.0  | 53.0  |
| 0.0             | 71.80  | 61.60  | 54.09 | 48.04 | 43.31 | 39.37 | 36.06 | 33.06 | 30.64 |
| 45.0            | 93.30  | 78.21  | 66.96 | 58.19 | 51.46 | 46.10 | 41.68 | 38.00 | 34.69 |
| 90.0            | 83.42  | 71.59  | 62.39 | 55.19 | 49.30 | 44.47 | 40.26 | 36.74 | 33.85 |
| 135.0           | 108.12 | 90.14  | 76.22 | 65.44 | 57.40 | 50.93 | 45.68 | 41.31 | 37.69 |
| 180.0           | 138.19 | 113.27 | 93.88 | 78.58 | 66.96 | 58.24 | 51.41 | 45.94 | 41.47 |
| 225.0           | 110.22 | 91.09  | 76.48 | 65.76 | 57.29 | 51.04 | 45.57 | 41.16 | 37.48 |
| 270.0           | 123.78 | 101.18 | 83.89 | 70.85 | 61.03 | 53.56 | 47.73 | 43.00 | 39.05 |
| 315.0           | 87.62  | 73.69  | 63.23 | 55.24 | 48.94 | 43.99 | 39.84 | 36.32 | 34.53 |
| 360.0           | 71.80  | 61.60  | 54.09 | 48.04 | 43.31 | 39.37 | 36.06 | 33.06 | 30.64 |
| C/ $\gamma$ (°) | 54.0   | 55.0   | 56.0  | 57.0  | 58.0  | 59.0  | 60.0  | 61.0  | 62.0  |
| 0.0             | 28.49  | 26.49  | 24.81 | 23.29 | 21.97 | 20.71 | 20.03 | 18.55 | 17.92 |
| 45.0            | 31.96  | 30.54  | 27.60 | 25.76 | 24.81 | 23.29 | 21.92 | 20.71 | 19.66 |
| 90.0            | 31.17  | 28.96  | 26.91 | 25.23 | 23.65 | 22.23 | 20.97 | 20.29 | 18.76 |
| 135.0           | 34.64  | 32.01  | 29.75 | 27.70 | 25.86 | 24.28 | 22.81 | 21.50 | 20.55 |
| 180.0           | 37.69  | 34.43  | 31.64 | 29.33 | 27.60 | 25.34 | 23.76 | 22.65 | 21.08 |
| 225.0           | 34.32  | 31.64  | 29.33 | 27.28 | 25.44 | 23.81 | 22.76 | 21.24 | 20.29 |
| 270.0           | 35.74  | 32.85  | 30.38 | 28.23 | 26.44 | 24.76 | 23.81 | 22.44 | 20.71 |
| 315.0           | 31.80  | 28.65  | 27.39 | 25.60 | 24.02 | 22.55 | 21.34 | 20.13 | 19.08 |
| 360.0           | 28.49  | 26.49  | 24.81 | 23.29 | 21.97 | 20.71 | 20.03 | 18.55 | 17.92 |
| C/ $\gamma$ (°) | 63.0   | 64.0   | 65.0  | 66.0  | 67.0  | 68.0  | 69.0  | 70.0  | 71.0  |
| 0.0             | 17.03  | 15.82  | 15.30 | 14.51 | 13.77 | 13.04 | 12.30 | 11.56 | 10.88 |
| 45.0            | 18.61  | 17.61  | 16.77 | 15.87 | 15.03 | 14.19 | 13.51 | 12.72 | 11.98 |
| 90.0            | 18.13  | 17.19  | 16.24 | 15.40 | 14.61 | 13.82 | 13.04 | 12.30 | 11.56 |
| 135.0           | 19.13  | 18.13  | 17.35 | 16.45 | 15.61 | 14.77 | 13.98 | 13.25 | 12.46 |
| 180.0           | 20.08  | 18.98  | 17.98 | 17.03 | 16.19 | 15.30 | 14.51 | 13.77 | 12.98 |
| 225.0           | 19.08  | 18.08  | 17.19 | 16.29 | 15.40 | 14.61 | 13.88 | 13.09 | 12.35 |
| 270.0           | 20.03  | 19.08  | 18.03 | 17.08 | 16.24 | 15.40 | 14.72 | 13.88 | 13.14 |
| 315.0           | 18.08  | 17.08  | 16.24 | 15.40 | 14.56 | 13.88 | 13.14 | 12.40 | 11.67 |
| 360.0           | 17.03  | 15.82  | 15.30 | 14.51 | 13.77 | 13.04 | 12.30 | 11.56 | 10.88 |
| C/ $\gamma$ (°) | 72.0   | 73.0   | 74.0  | 75.0  | 76.0  | 77.0  | 78.0  | 79.0  | 80.0  |
| 0.0             | 10.20  | 9.57   | 8.88  | 8.30  | 7.57  | 6.83  | 6.15  | 5.52  | 4.84  |
| 45.0            | 11.30  | 10.62  | 9.93  | 9.25  | 8.57  | 8.04  | 7.10  | 6.57  | 5.89  |
| 90.0            | 10.83  | 10.14  | 9.46  | 8.78  | 8.04  | 7.36  | 6.62  | 5.89  | 5.20  |
| 135.0           | 11.72  | 11.04  | 10.41 | 9.78  | 8.99  | 8.41  | 7.73  | 6.99  | 6.25  |
| 180.0           | 12.30  | 11.56  | 10.88 | 10.20 | 9.57  | 8.94  | 8.30  | 7.57  | 6.89  |
| 225.0           | 11.62  | 10.99  | 10.25 | 9.57  | 8.94  | 8.25  | 7.57  | 6.89  | 6.20  |
| 270.0           | 12.46  | 11.67  | 11.04 | 10.41 | 9.72  | 8.99  | 8.41  | 7.73  | 6.94  |
| 315.0           | 10.99  | 10.35  | 9.72  | 9.20  | 8.36  | 7.83  | 7.10  | 6.41  | 5.73  |
| 360.0           | 10.20  | 9.57   | 8.88  | 8.30  | 7.57  | 6.83  | 6.15  | 5.52  | 4.84  |
| C/ $\gamma$ (°) | 81.0   | 82.0   | 83.0  | 84.0  | 85.0  | 86.0  | 87.0  | 88.0  | 89.0  |
| 0.0             | 4.21   | 3.78   | 3.10  | 2.63  | 2.31  | 1.94  | 1.47  | 1.00  | 1.00  |
| 45.0            | 5.10   | 4.47   | 3.89  | 3.21  | 2.79  | 2.31  | 1.89  | 1.42  | 0.95  |
| 90.0            | 4.63   | 4.05   | 3.42  | 2.94  | 2.52  | 2.10  | 1.79  | 1.26  | 0.95  |
| 135.0           | 5.62   | 5.05   | 4.31  | 3.84  | 3.15  | 2.79  | 2.26  | 1.84  | 1.42  |
| 180.0           | 6.25   | 5.62   | 4.99  | 4.47  | 3.68  | 3.26  | 2.68  | 2.21  | 1.84  |
| 225.0           | 5.57   | 4.94   | 4.36  | 3.73  | 3.31  | 2.84  | 2.37  | 2.00  | 1.52  |
| 270.0           | 6.57   | 5.68   | 4.78  | 4.15  | 3.57  | 3.05  | 2.52  | 2.16  | 1.79  |
| 315.0           | 5.05   | 4.47   | 3.94  | 3.36  | 2.84  | 2.42  | 2.05  | 1.58  | 1.21  |
| 360.0           | 4.21   | 3.78   | 3.10  | 2.63  | 2.31  | 1.94  | 1.47  | 1.00  | 1.00  |

## Intensity data(cd)

Appendix Page: 20 Total:20

|                       |      |
|-----------------------|------|
| C/ $\gamma(^{\circ})$ | 90.0 |
| 0.0                   | 1.00 |
| 45.0                  | 0.95 |
| 90.0                  | 1.00 |
| 135.0                 | 0.89 |
| 180.0                 | 1.37 |
| 225.0                 | 1.21 |
| 270.0                 | 1.26 |
| 315.0                 | 0.95 |
| 360.0                 | 1.00 |