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NT

Client: NT

LumCAT: 3-2947-L

Luminaire: 92.70.412.00

Report No: 20250415-B006

Ballast type: AC

Test No: 20250415-C006

LampCAT: CITIZEN CLU038

Lamp flux(lm): 3321.5

Number of Lamps: 1

Length(mm): 92

Phm Type: C

Voltage(V): 36.800

Current(A): 0.705

Power (W): 25.940

PF: 0.000

Width(mm): 92

Height(mm): 52

#### Photometric Results

Lumens(lm): 3203.29, Efficiency(%): 96.44% , Luminous Efficacy(lm/W): 123.49

Central intensity(cd): 3356.364, Maximum intensity(cd): 3379.279

Angle of maximum intensity: C=135.0  $\gamma$ =8.0

Beam Angle(50%Imax): [C0/180]Total=62.9

[C90/270]Total=63.3

Field angle(10%Imax): [C0/180]Total=83.7

[C90/270]Total=83.0

Maximum s/h(1/2): C0\_180=1.04 C90\_270=0.97

Maximum s/h(1/4): C0\_180=0.96 C90\_270=0.92

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 96.37%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 99.959%

Equipment: GMS 1800  
Temperature(°C): 25.0

Date: 2025/5/27  
Humidity(%): 60.0%

Operator: NT  
Distance(m): 7.30

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 3360.094      | 0.000       | 0         | 0.00%       | 0.00%      |
| 1.0                | 3357.630      | 3.214       | 3.214     | 0.10%       | 0.10%      |
| 2.0                | 3353.500      | 9.632       | 12.847    | 0.29%       | 0.40%      |
| 3.0                | 3345.639      | 16.022      | 28.869    | 0.48%       | 0.90%      |
| 4.0                | 3337.046      | 22.369      | 51.238    | 0.67%       | 1.60%      |
| 5.0                | 3323.591      | 28.654      | 79.892    | 0.86%       | 2.49%      |
| 6.0                | 3309.669      | 34.860      | 114.751   | 1.05%       | 3.58%      |
| 7.0                | 3298.944      | 41.020      | 155.771   | 1.23%       | 4.86%      |
| 8.0                | 3284.223      | 47.114      | 202.885   | 1.42%       | 6.33%      |
| 9.0                | 3271.367      | 53.129      | 256.015   | 1.60%       | 7.99%      |
| 10.0               | 3256.912      | 59.079      | 315.093   | 1.78%       | 9.84%      |
| 11.0               | 3241.990      | 64.937      | 380.031   | 1.96%       | 11.86%     |
| 12.0               | 3226.869      | 70.714      | 450.745   | 2.13%       | 14.07%     |
| 13.0               | 3210.083      | 76.390      | 527.135   | 2.30%       | 16.46%     |
| 14.0               | 3189.500      | 81.914      | 609.049   | 2.47%       | 19.01%     |
| 15.0               | 3169.116      | 87.294      | 696.343   | 2.63%       | 21.74%     |
| 16.0               | 3143.137      | 92.492      | 788.835   | 2.78%       | 24.63%     |
| 17.0               | 3105.968      | 97.315      | 886.15    | 2.93%       | 27.66%     |
| 18.0               | 3065.068      | 101.747     | 987.897   | 3.06%       | 30.84%     |
| 19.0               | 3010.579      | 105.704     | 1093.601  | 3.18%       | 34.14%     |
| 20.0               | 2951.094      | 109.115     | 1202.716  | 3.29%       | 37.55%     |
| 21.0               | 2886.613      | 112.096     | 1314.812  | 3.37%       | 41.05%     |
| 22.0               | 2816.736      | 114.611     | 1429.423  | 3.45%       | 44.62%     |
| 23.0               | 2728.541      | 116.355     | 1545.778  | 3.50%       | 48.26%     |
| 24.0               | 2633.419      | 117.232     | 1663.01   | 3.53%       | 51.92%     |
| 25.0               | 2533.433      | 117.483     | 1780.493  | 3.54%       | 55.58%     |
| 26.0               | 2403.339      | 116.533     | 1897.026  | 3.51%       | 59.22%     |
| 27.0               | 2271.846      | 114.379     | 2011.405  | 3.44%       | 62.79%     |
| 28.0               | 2143.817      | 111.795     | 2123.201  | 3.37%       | 66.28%     |
| 29.0               | 2011.458      | 108.714     | 2231.914  | 3.27%       | 69.68%     |
| 30.0               | 1864.844      | 104.659     | 2336.574  | 3.15%       | 72.94%     |
| 31.0               | 1736.814      | 100.229     | 2436.803  | 3.02%       | 76.07%     |
| 32.0               | 1609.451      | 95.867      | 2532.669  | 2.89%       | 79.06%     |
| 33.0               | 1489.882      | 91.308      | 2623.977  | 2.75%       | 81.91%     |
| 34.0               | 1340.770      | 85.664      | 2709.641  | 2.58%       | 84.59%     |
| 35.0               | 1238.586      | 80.105      | 2789.746  | 2.41%       | 87.09%     |
| 36.0               | 1113.348      | 74.886      | 2864.632  | 2.25%       | 89.43%     |
| 37.0               | 989.775       | 68.592      | 2933.224  | 2.07%       | 91.57%     |

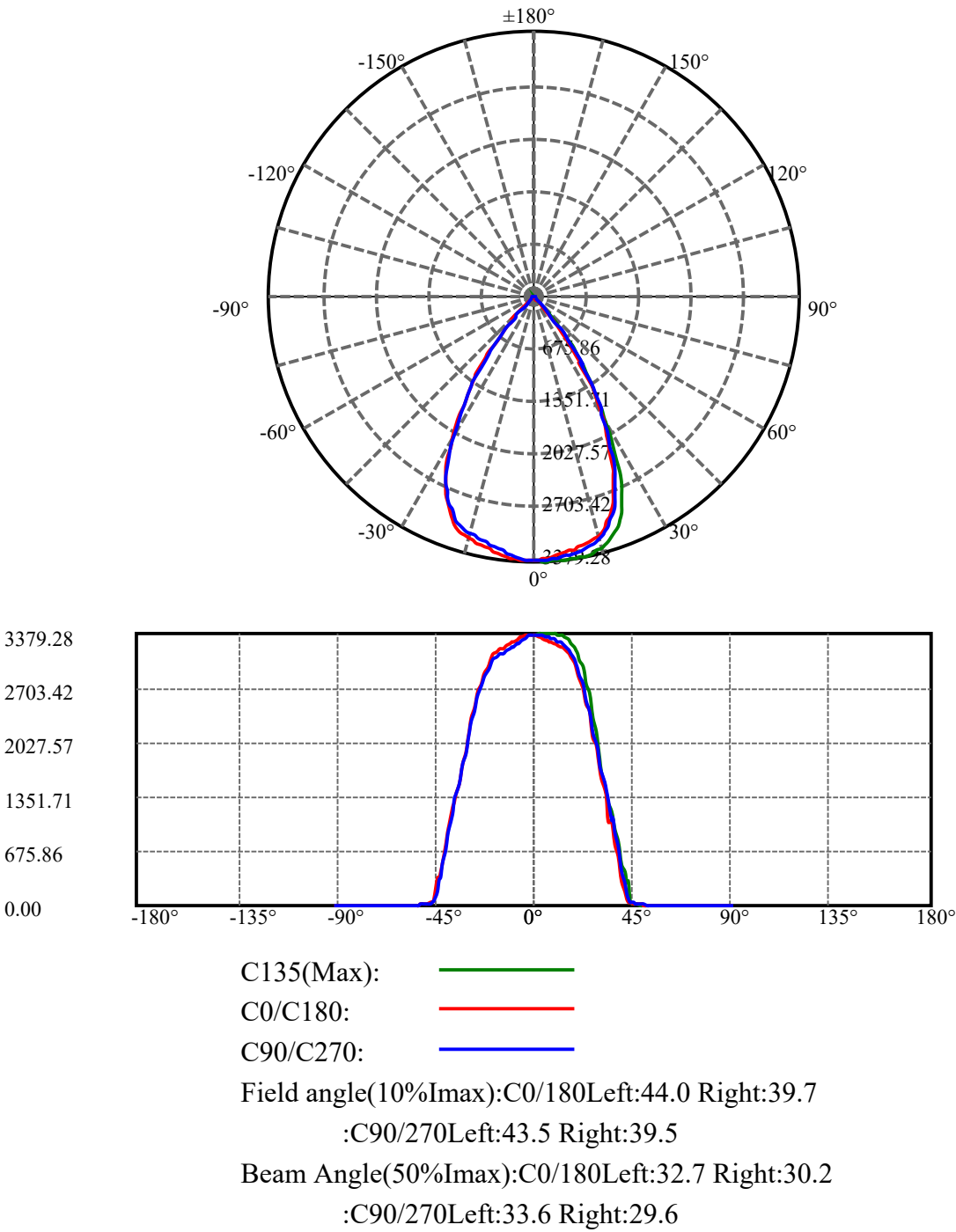
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 832.476       | 60.824      | 2994.048  | 1.83%       | 93.47%     |
| 39.0               | 688.733       | 51.923      | 3045.971  | 1.56%       | 95.09%     |
| 40.0               | 525.752       | 42.357      | 3088.328  | 1.28%       | 96.41%     |
| 41.0               | 381.503       | 32.307      | 3120.635  | 0.97%       | 97.42%     |
| 42.0               | 258.383       | 23.248      | 3143.883  | 0.70%       | 98.15%     |
| 43.0               | 204.447       | 17.145      | 3161.028  | 0.52%       | 98.68%     |
| 44.0               | 131.680       | 12.686      | 3173.714  | 0.38%       | 99.08%     |
| 45.0               | 53.477        | 7.116       | 3180.83   | 0.21%       | 99.30%     |
| 46.0               | 39.415        | 3.633       | 3184.463  | 0.11%       | 99.41%     |
| 47.0               | 30.109        | 2.765       | 3187.228  | 0.08%       | 99.50%     |
| 48.0               | 24.307        | 2.200       | 3189.428  | 0.07%       | 99.57%     |
| 49.0               | 19.431        | 1.796       | 3191.224  | 0.05%       | 99.62%     |
| 50.0               | 15.867        | 1.472       | 3192.696  | 0.04%       | 99.67%     |
| 51.0               | 13.589        | 1.246       | 3193.942  | 0.04%       | 99.71%     |
| 52.0               | 11.211        | 1.064       | 3195.006  | 0.03%       | 99.74%     |
| 53.0               | 9.199         | 0.888       | 3195.894  | 0.03%       | 99.77%     |
| 54.0               | 8.040         | 0.760       | 3196.654  | 0.02%       | 99.79%     |
| 55.0               | 6.788         | 0.662       | 3197.316  | 0.02%       | 99.81%     |
| 56.0               | 5.862         | 0.572       | 3197.887  | 0.02%       | 99.83%     |
| 57.0               | 5.063         | 0.499       | 3198.387  | 0.02%       | 99.85%     |
| 58.0               | 4.390         | 0.437       | 3198.824  | 0.01%       | 99.86%     |
| 59.0               | 3.877         | 0.386       | 3199.21   | 0.01%       | 99.87%     |
| 60.0               | 3.424         | 0.345       | 3199.555  | 0.01%       | 99.88%     |
| 61.0               | 3.038         | 0.308       | 3199.864  | 0.01%       | 99.89%     |
| 62.0               | 2.704         | 0.277       | 3200.14   | 0.01%       | 99.90%     |
| 63.0               | 2.451         | 0.251       | 3200.391  | 0.01%       | 99.91%     |
| 64.0               | 2.252         | 0.231       | 3200.622  | 0.01%       | 99.92%     |
| 65.0               | 2.018         | 0.211       | 3200.833  | 0.01%       | 99.92%     |
| 66.0               | 1.858         | 0.193       | 3201.026  | 0.01%       | 99.93%     |
| 67.0               | 1.719         | 0.180       | 3201.206  | 0.01%       | 99.93%     |
| 68.0               | 1.592         | 0.168       | 3201.374  | 0.01%       | 99.94%     |
| 69.0               | 1.452         | 0.155       | 3201.529  | 0.00%       | 99.94%     |
| 70.0               | 1.359         | 0.144       | 3201.674  | 0.00%       | 99.95%     |
| 71.0               | 1.266         | 0.136       | 3201.809  | 0.00%       | 99.95%     |
| 72.0               | 1.186         | 0.127       | 3201.937  | 0.00%       | 99.96%     |
| 73.0               | 1.099         | 0.119       | 3202.056  | 0.00%       | 99.96%     |
| 74.0               | 1.013         | 0.111       | 3202.167  | 0.00%       | 99.96%     |
| 75.0               | 0.973         | 0.105       | 3202.272  | 0.00%       | 99.97%     |

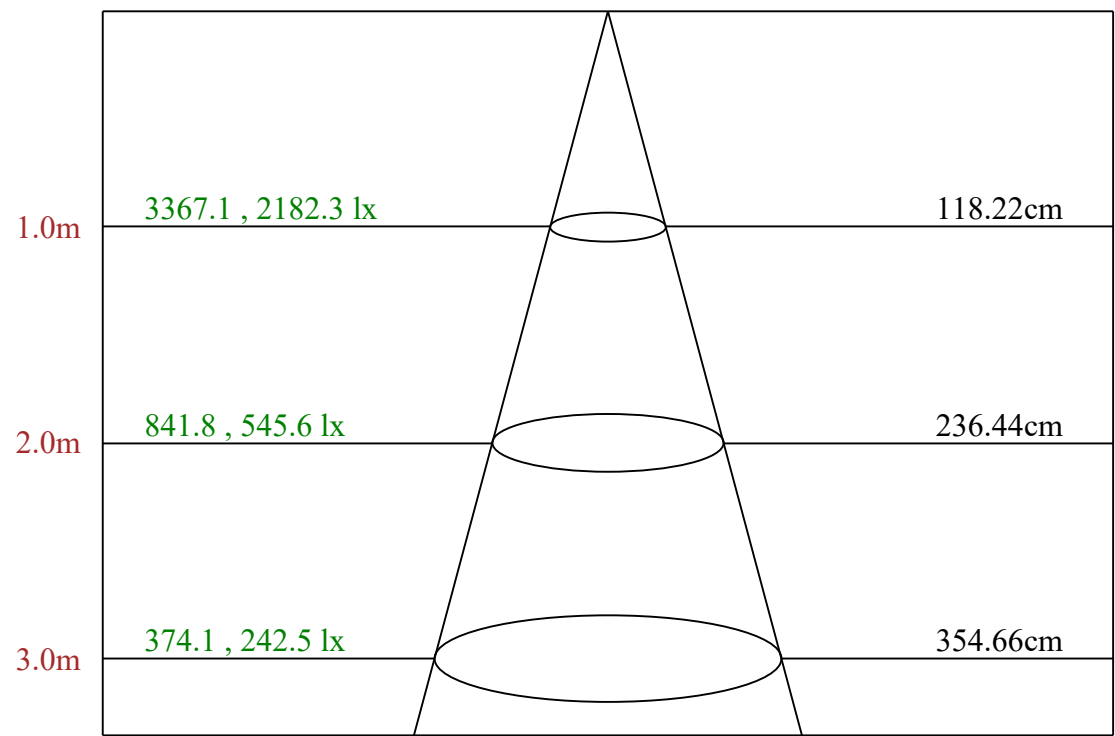
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 0.906         | 0.100       | 3202.372  | 0.00%       | 99.97%     |
| 77.0               | 0.846         | 0.093       | 3202.465  | 0.00%       | 99.97%     |
| 78.0               | 0.806         | 0.088       | 3202.554  | 0.00%       | 99.98%     |
| 79.0               | 0.766         | 0.084       | 3202.638  | 0.00%       | 99.98%     |
| 80.0               | 0.713         | 0.080       | 3202.718  | 0.00%       | 99.98%     |
| 81.0               | 0.659         | 0.074       | 3202.792  | 0.00%       | 99.98%     |
| 82.0               | 0.613         | 0.069       | 3202.861  | 0.00%       | 99.99%     |
| 83.0               | 0.593         | 0.066       | 3202.927  | 0.00%       | 99.99%     |
| 84.0               | 0.560         | 0.063       | 3202.989  | 0.00%       | 99.99%     |
| 85.0               | 0.520         | 0.059       | 3203.048  | 0.00%       | 99.99%     |
| 86.0               | 0.506         | 0.056       | 3203.104  | 0.00%       | 99.99%     |
| 87.0               | 0.466         | 0.053       | 3203.158  | 0.00%       | 100.00%    |
| 88.0               | 0.426         | 0.049       | 3203.207  | 0.00%       | 100.00%    |
| 89.0               | 0.413         | 0.046       | 3203.253  | 0.00%       | 100.00%    |
| 90.0               | 0.360         | 0.042       | 3203.295  | 0.00%       | 100.00%    |

| ZONAL LUMEN SUMMARY |         |        |         |
|---------------------|---------|--------|---------|
| Zone                | Lumens  | %Lamp  | %Fixt   |
| 0-30                | 2336.57 | 70.35% | 72.94%  |
| 0-40                | 3088.33 | 92.98% | 96.41%  |
| 0-60                | 3199.56 | 96.33% | 99.88%  |
| 0-90                | 3203.25 | 96.44% | 100.00% |
| 0-120               | 3203.25 | 96.44% | 100.00% |
| 0-180               | 3203.29 | 96.44% | 100.00% |
| 60-90               | 3.70    | 0.11%  | 0.12%   |
| 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%   |
| 0-32.33             | 2562.64 | 77.15% | 80.00%  |

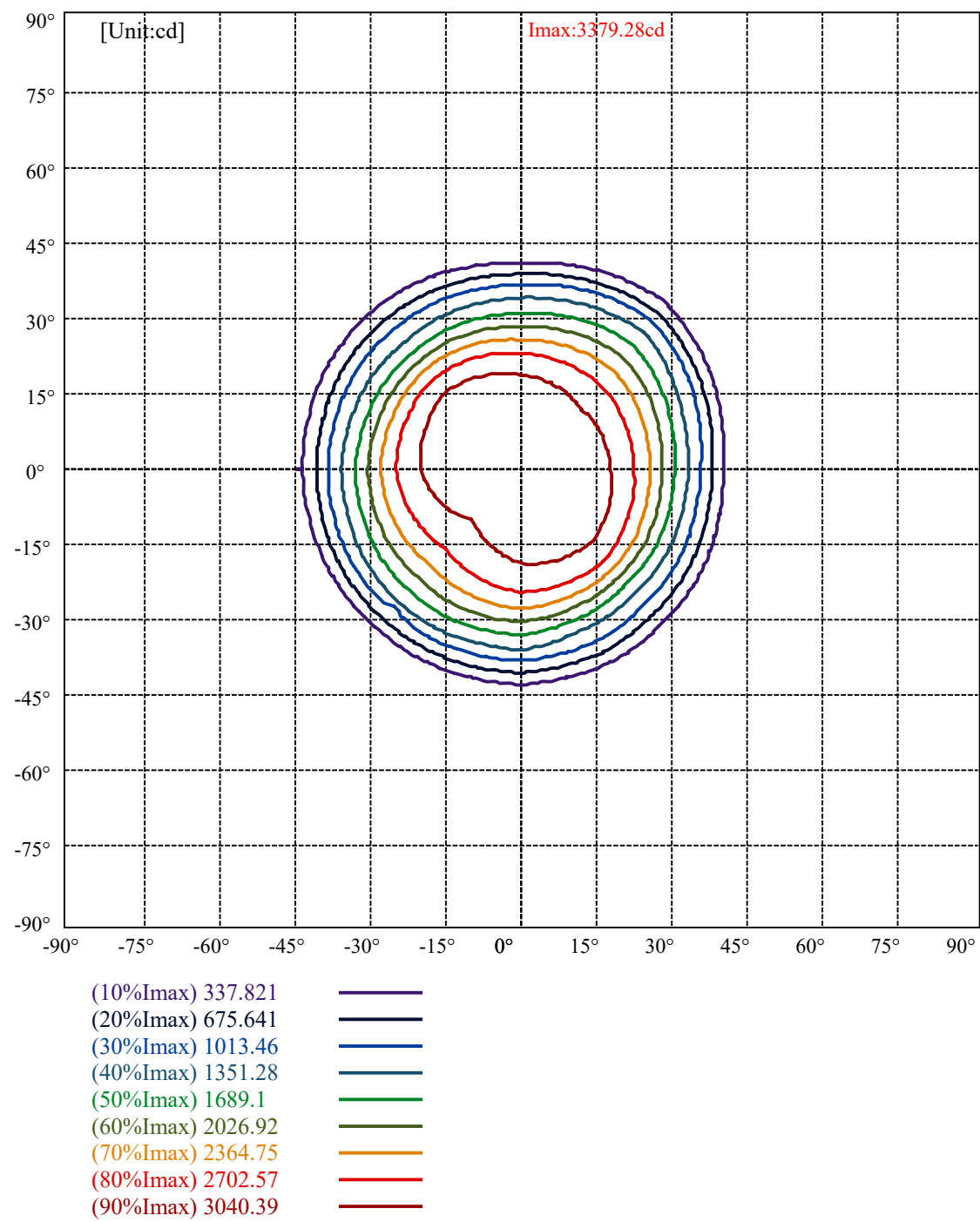
ZONAL LUMEN SUMMARY

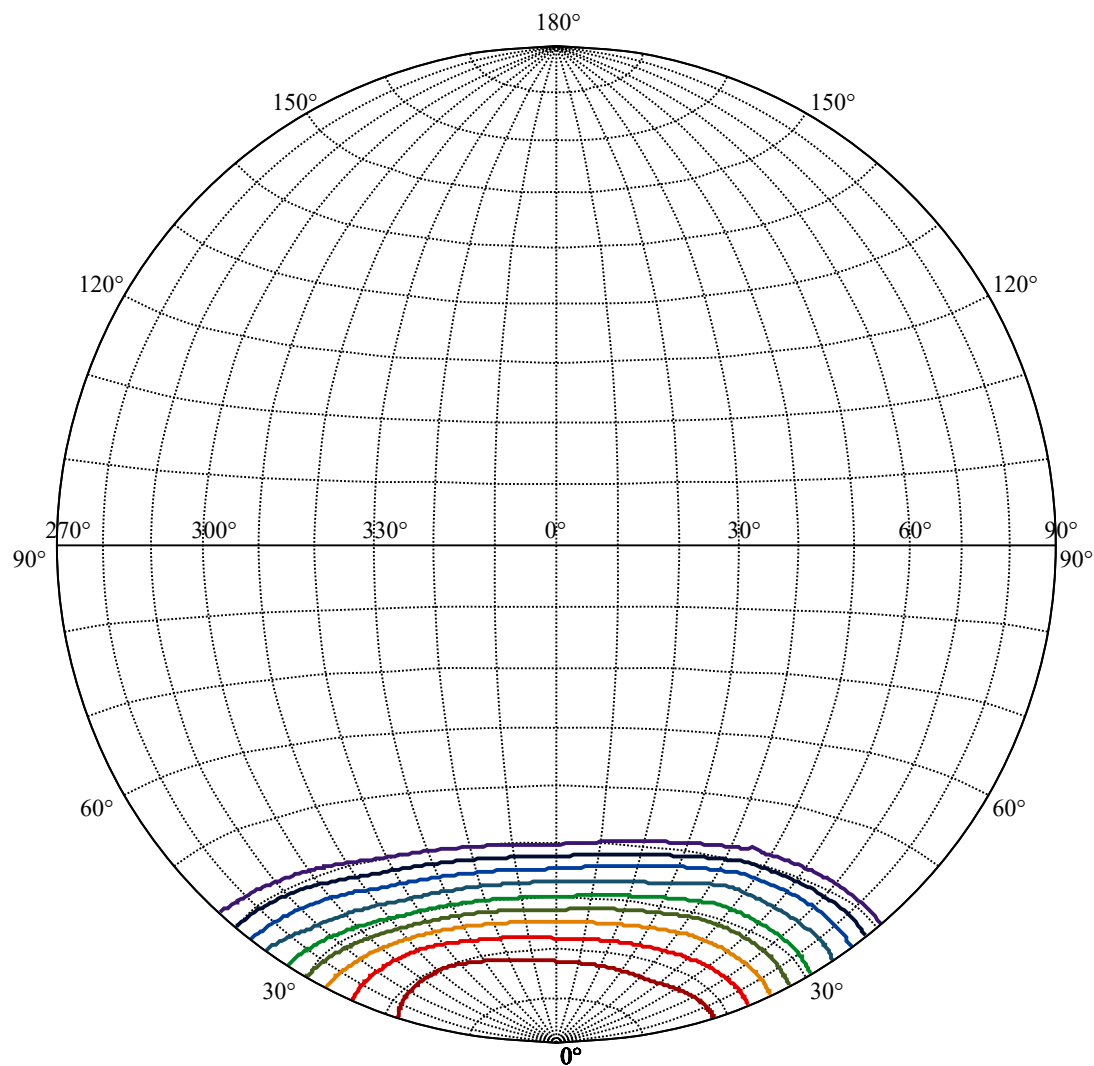
|         |         |
|---------|---------|
| 0-10    | 315.09  |
| 10-20   | 887.62  |
| 20-30   | 1133.86 |
| 30-40   | 751.75  |
| 40-50   | 104.37  |
| 50-60   | 6.86    |
| 60-70   | 2.12    |
| 70-80   | 1.04    |
| 80-90   | 0.53    |
| 90-100  | 0.00    |
| 100-110 | 0.00    |
| 110-120 | 0.00    |
| 120-130 | 0.00    |
| 130-140 | 0.00    |
| 140-150 | 0.00    |
| 150-160 | 0.00    |
| 160-170 | 0.00    |
| 170-180 | 0.00    |





Max , Ave      Beam angle of C135 plane 61.18



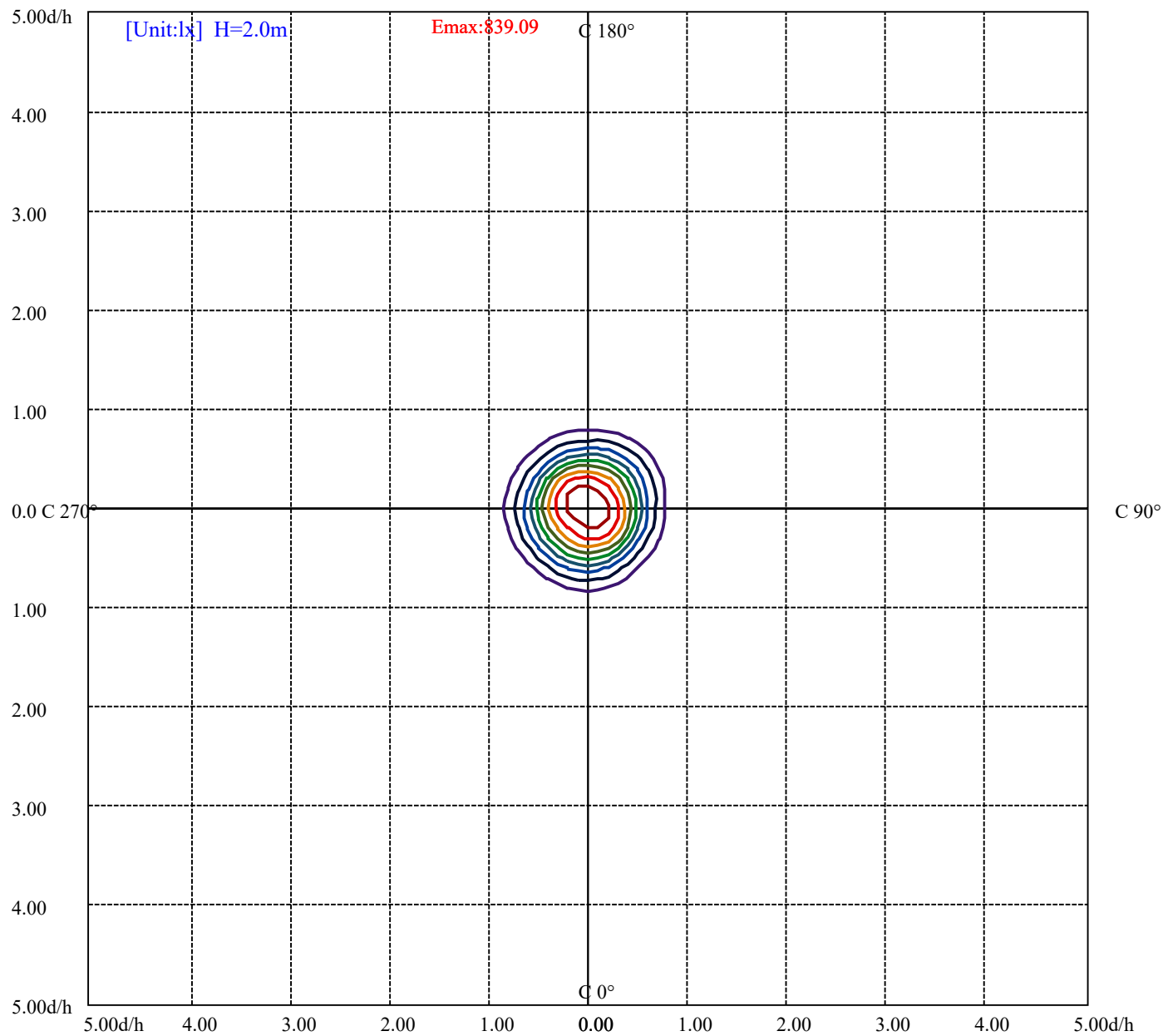


House

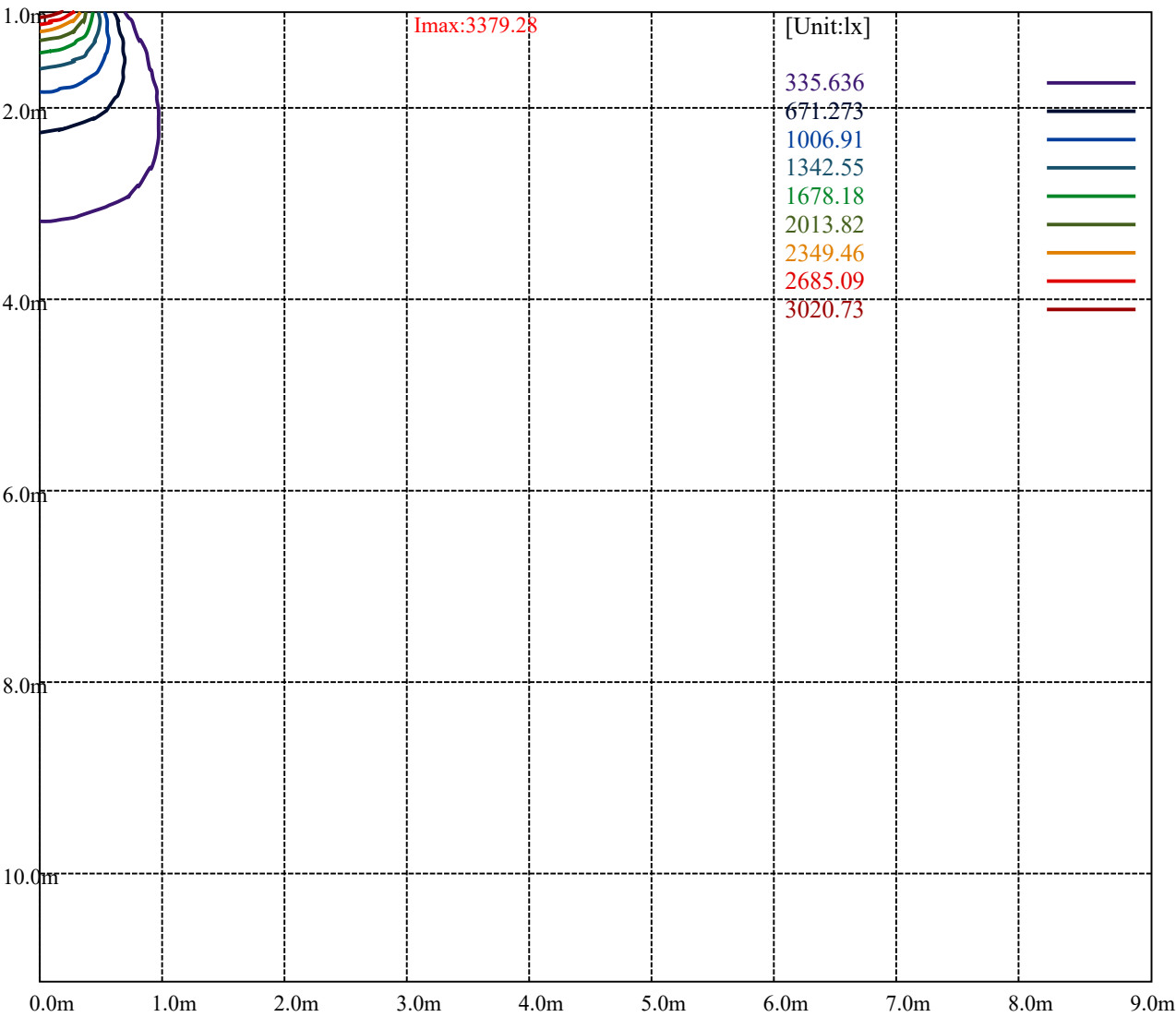
[Unit:cd]

Road

|           |              |  |
|-----------|--------------|--|
|           | Imax:3379.28 |  |
| (10%Imax) | 337.859      |  |
| (20%Imax) | 675.717      |  |
| (30%Imax) | 1013.58      |  |
| (40%Imax) | 1351.43      |  |
| (50%Imax) | 1689.29      |  |
| (60%Imax) | 2027.15      |  |
| (70%Imax) | 2365.01      |  |
| (80%Imax) | 2702.87      |  |
| (90%Imax) | 3040.73      |  |



|           |          |                                                                                     |
|-----------|----------|-------------------------------------------------------------------------------------|
| (10%Emax) | 83.90925 |  |
| (20%Emax) | 167.8183 |  |
| (30%Emax) | 251.7275 |  |
| (40%Emax) | 335.6375 |  |
| (50%Emax) | 419.545  |  |
| (60%Emax) | 503.455  |  |
| (70%Emax) | 587.365  |  |
| (80%Emax) | 671.2725 |  |
| (90%Emax) | 755.1825 |  |



Luminance Table

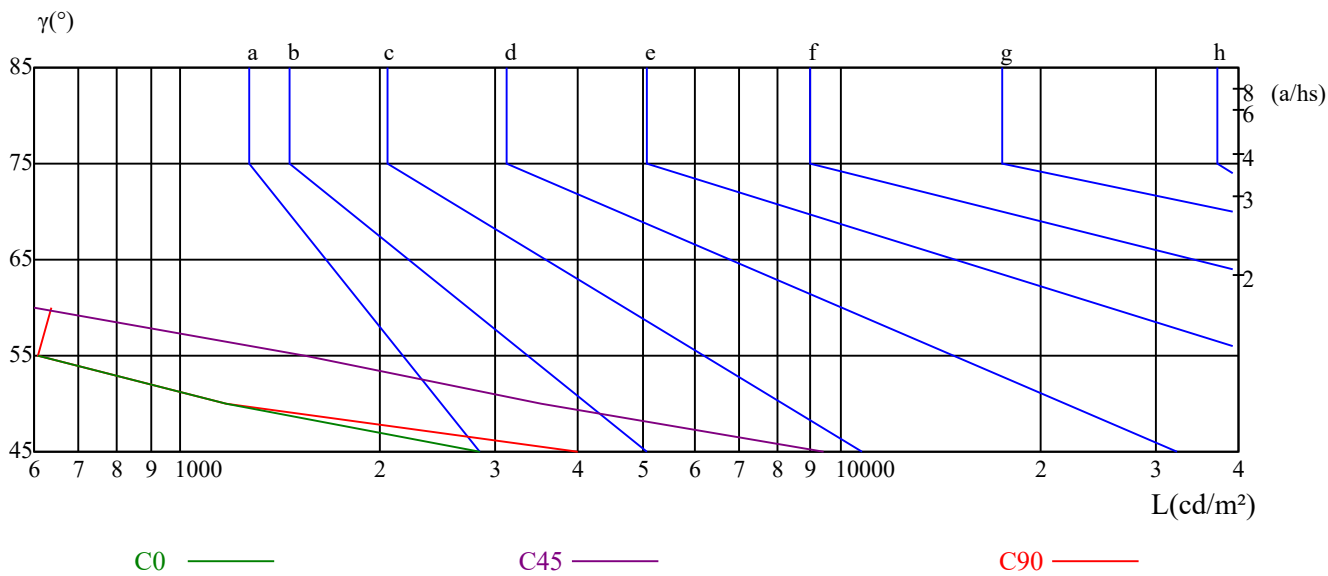
| $\gamma$ | 45   | 50   | 55   | 60  | 65  | 70 | 75 | 80 | 85 |
|----------|------|------|------|-----|-----|----|----|----|----|
| C0       | 2844 | 1171 | 607  | 0   | 0   | 0  | 0  | 0  | 0  |
| C45      | 9402 | 3511 | 1538 | 528 | 549 | 0  | 0  | 0  | 0  |
| C90      | 3982 | 1171 | 607  | 636 | 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          | 372     | 0          | 0          | 0       | 0          | 0          | 0       |

Glare Table

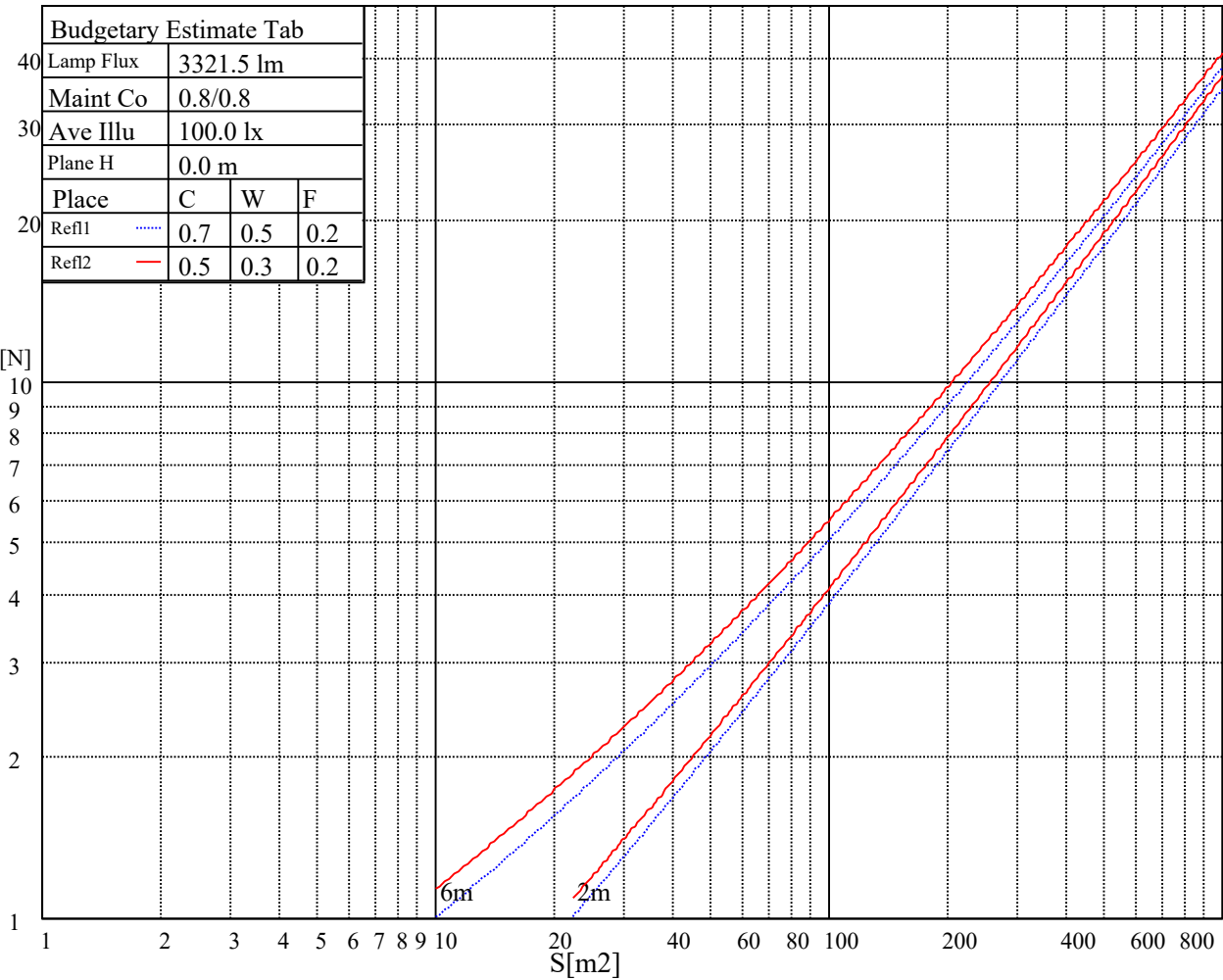
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000            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

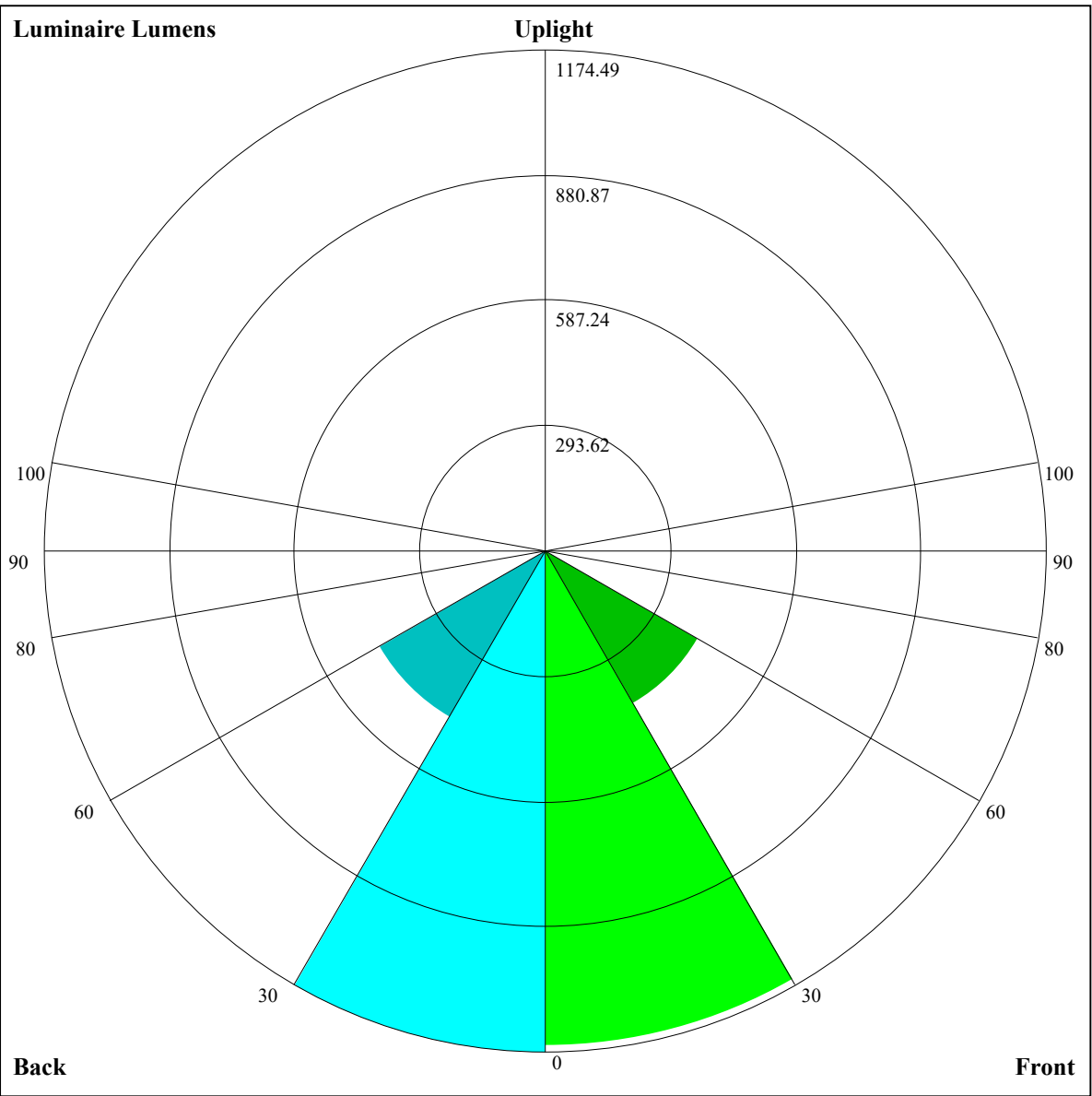


| Illumination assessment according UGR             |     |                  |       |       |       |       |                |       |       |       |       |
|---------------------------------------------------|-----|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| 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  | 19.22            | 20.14 | 19.58 | 20.45 | 20.77 | 19.54          | 20.46 | 19.90 | 20.77 | 21.09 |
|                                                   | 3H  | 19.00            | 19.82 | 19.39 | 20.16 | 20.50 | 19.32          | 20.14 | 19.71 | 20.48 | 20.82 |
|                                                   | 4H  | 18.89            | 19.65 | 19.29 | 20.00 | 20.37 | 19.21          | 19.97 | 19.61 | 20.32 | 20.69 |
|                                                   | 6H  | 18.80            | 19.49 | 19.22 | 19.86 | 20.26 | 19.12          | 19.81 | 19.54 | 20.18 | 20.58 |
|                                                   | 8H  | 18.72            | 19.37 | 19.14 | 19.76 | 20.17 | 19.04          | 19.70 | 19.46 | 20.08 | 20.49 |
|                                                   | 12H | 18.65            | 19.27 | 19.07 | 19.66 | 20.08 | 18.97          | 19.59 | 19.39 | 19.98 | 20.40 |
| 4H                                                | 2H  | 18.89            | 19.65 | 19.29 | 20.00 | 20.37 | 19.21          | 19.97 | 19.61 | 20.32 | 20.69 |
|                                                   | 3H  | 18.63            | 19.26 | 19.06 | 19.66 | 20.08 | 18.95          | 19.59 | 19.38 | 19.98 | 20.40 |
|                                                   | 4H  | 18.55            | 19.09 | 18.99 | 19.52 | 19.97 | 18.87          | 19.41 | 19.31 | 19.84 | 20.29 |
|                                                   | 6H  | 18.40            | 18.88 | 18.88 | 19.33 | 19.79 | 18.72          | 19.20 | 19.20 | 19.65 | 20.11 |
|                                                   | 8H  | 18.34            | 18.78 | 18.82 | 19.24 | 19.71 | 18.66          | 19.10 | 19.15 | 19.56 | 20.03 |
|                                                   | 12H | 18.28            | 18.69 | 18.77 | 19.14 | 19.66 | 18.60          | 19.01 | 19.09 | 19.46 | 19.98 |
| 8H                                                | 4H  | 18.34            | 18.78 | 18.82 | 19.24 | 19.71 | 18.66          | 19.10 | 19.15 | 19.56 | 20.03 |
|                                                   | 6H  | 18.17            | 18.53 | 18.68 | 19.01 | 19.53 | 18.49          | 18.85 | 19.00 | 19.33 | 19.85 |
|                                                   | 8H  | 18.15            | 18.45 | 18.69 | 18.98 | 19.47 | 18.47          | 18.77 | 19.01 | 19.30 | 19.79 |
|                                                   | 12H | 18.09            | 18.32 | 18.64 | 18.84 | 19.36 | 18.41          | 18.64 | 18.96 | 19.16 | 19.68 |
| 12H                                               | 4H  | 18.28            | 18.69 | 18.77 | 19.14 | 19.66 | 18.60          | 19.01 | 19.09 | 19.46 | 19.98 |
|                                                   | 6H  | 18.15            | 18.45 | 18.69 | 18.98 | 19.47 | 18.47          | 18.77 | 19.01 | 19.30 | 19.79 |
|                                                   | 8H  | 18.09            | 18.32 | 18.64 | 18.84 | 19.36 | 18.41          | 18.64 | 18.96 | 19.16 | 19.68 |
| Variation with the observer position at spacings: |     |                  |       |       |       |       |                |       |       |       |       |
| S = 1.0H                                          |     | 5.0/-22.0        |       |       |       |       | 5.1/-22.2      |       |       |       |       |
| S = 1.5H                                          |     | 7.8/-25.3        |       |       |       |       | 7.9/-25.1      |       |       |       |       |
| S = 2.0H                                          |     | 9.8/-26.0        |       |       |       |       | 9.9/-25.6      |       |       |       |       |
| Standard tables:                                  |     | BK0              |       |       |       |       | BK0            |       |       |       |       |
| Uncorrected UGR                                   |     | 0.3              |       |       |       |       | 0.0            |       |       |       |       |

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



| 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   | COEFFCIENTS OF UTILIZATION RHOFC=20 CU |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0     | 1.15                                   | 1.15 | 1.15 | 1.12 | 1.12 | 1.12 | 1.07 | 1.07 | 1.07 | 1.03 | 1.03 | 1.03 | 0.98 | 0.98 | 0.98 | 0.96 |
| 1     | 1.07                                   | 1.05 | 1.03 | 1.05 | 1.03 | 1.01 | 1.01 | 0.99 | 0.98 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.90 |
| 2     | 1.00                                   | 0.96 | 0.93 | 0.98 | 0.95 | 0.92 | 0.95 | 0.92 | 0.90 | 0.92 | 0.90 | 0.88 | 0.89 | 0.88 | 0.86 | 0.84 |
| 3     | 0.93                                   | 0.88 | 0.85 | 0.92 | 0.87 | 0.84 | 0.89 | 0.86 | 0.83 | 0.87 | 0.84 | 0.81 | 0.85 | 0.82 | 0.80 | 0.79 |
| 4     | 0.87                                   | 0.82 | 0.78 | 0.86 | 0.81 | 0.77 | 0.84 | 0.80 | 0.77 | 0.82 | 0.79 | 0.76 | 0.80 | 0.77 | 0.75 | 0.73 |
| 5     | 0.82                                   | 0.76 | 0.72 | 0.81 | 0.76 | 0.72 | 0.79 | 0.75 | 0.71 | 0.77 | 0.74 | 0.70 | 0.76 | 0.73 | 0.70 | 0.68 |
| 6     | 0.77                                   | 0.71 | 0.67 | 0.76 | 0.71 | 0.67 | 0.74 | 0.70 | 0.66 | 0.73 | 0.69 | 0.66 | 0.72 | 0.68 | 0.65 | 0.64 |
| 7     | 0.72                                   | 0.66 | 0.62 | 0.71 | 0.66 | 0.62 | 0.70 | 0.65 | 0.62 | 0.69 | 0.65 | 0.62 | 0.68 | 0.64 | 0.61 | 0.60 |
| 8     | 0.68                                   | 0.62 | 0.58 | 0.67 | 0.62 | 0.58 | 0.66 | 0.61 | 0.58 | 0.65 | 0.61 | 0.58 | 0.64 | 0.60 | 0.57 | 0.56 |
| 9     | 0.64                                   | 0.58 | 0.55 | 0.64 | 0.58 | 0.55 | 0.63 | 0.58 | 0.54 | 0.62 | 0.57 | 0.54 | 0.61 | 0.57 | 0.54 | 0.53 |
| 10    | 0.61                                   | 0.55 | 0.51 | 0.60 | 0.55 | 0.51 | 0.59 | 0.55 | 0.51 | 0.59 | 0.54 | 0.51 | 0.58 | 0.54 | 0.51 | 0.50 |



Luminaire Lumens:  
FL=1158.9,FM=414.65,FH=1.61,FVH=0.29  
BL=1174.49,BM=452.22,BH=1.53,BVH=0.28  
UL=0,UH=0  
BUG Rating:B3-U0-G0

## Intensity data(cd)

Appendix Page: 17 Total:19

| C/ $\gamma$ (°) | 0.0     | 1.0     | 2.0     | 3.0     | 4.0     | 5.0     | 6.0     | 7.0     | 8.0     |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.0             | 3356.36 | 3349.97 | 3340.91 | 3330.25 | 3322.79 | 3304.67 | 3291.35 | 3283.89 | 3270.57 |
| 45.0            | 3356.36 | 3360.09 | 3359.56 | 3352.10 | 3342.51 | 3328.65 | 3309.47 | 3291.35 | 3269.50 |
| 90.0            | 3364.89 | 3365.42 | 3364.89 | 3363.82 | 3354.77 | 3346.77 | 3335.58 | 3328.65 | 3318.53 |
| 135.0           | 3362.76 | 3367.02 | 3371.82 | 3373.42 | 3374.48 | 3375.55 | 3374.48 | 3375.55 | 3379.28 |
| 180.0           | 3356.36 | 3359.03 | 3358.50 | 3355.30 | 3348.90 | 3338.78 | 3327.05 | 3312.67 | 3297.75 |
| 225.0           | 3356.36 | 3347.30 | 3333.98 | 3314.80 | 3300.94 | 3267.37 | 3240.19 | 3224.74 | 3184.77 |
| 270.0           | 3364.89 | 3358.50 | 3351.04 | 3334.52 | 3321.19 | 3302.54 | 3283.36 | 3262.57 | 3242.86 |
| 315.0           | 3362.76 | 3353.70 | 3347.30 | 3340.91 | 3330.78 | 3324.39 | 3315.86 | 3312.13 | 3310.53 |
| 360.0           | 3356.36 | 3349.97 | 3340.91 | 3330.25 | 3322.79 | 3304.67 | 3291.35 | 3283.89 | 3270.57 |
| C/ $\gamma$ (°) | 9.0     | 10.0    | 11.0    | 12.0    | 13.0    | 14.0    | 15.0    | 16.0    | 17.0    |
| 0.0             | 3258.31 | 3245.52 | 3232.73 | 3218.34 | 3202.36 | 3183.17 | 3158.66 | 3124.55 | 3076.06 |
| 45.0            | 3248.19 | 3227.40 | 3202.89 | 3179.44 | 3163.45 | 3126.15 | 3108.03 | 3077.66 | 3021.17 |
| 90.0            | 3306.80 | 3291.88 | 3278.56 | 3265.24 | 3246.59 | 3227.94 | 3199.69 | 3168.25 | 3124.02 |
| 135.0           | 3377.68 | 3375.55 | 3367.55 | 3367.02 | 3353.70 | 3333.45 | 3315.33 | 3295.08 | 3260.44 |
| 180.0           | 3282.29 | 3265.77 | 3250.85 | 3233.80 | 3217.28 | 3200.76 | 3183.17 | 3168.25 | 3141.61 |
| 225.0           | 3168.78 | 3140.54 | 3114.96 | 3088.85 | 3064.33 | 3038.76 | 3012.11 | 2981.74 | 2942.83 |
| 270.0           | 3221.54 | 3205.02 | 3186.90 | 3169.85 | 3151.20 | 3137.88 | 3124.02 | 3102.70 | 3090.45 |
| 315.0           | 3307.34 | 3303.61 | 3301.48 | 3292.42 | 3281.76 | 3267.90 | 3251.92 | 3226.87 | 3191.17 |
| 360.0           | 3258.31 | 3245.52 | 3232.73 | 3218.34 | 3202.36 | 3183.17 | 3158.66 | 3124.55 | 3076.06 |
| C/ $\gamma$ (°) | 18.0    | 19.0    | 20.0    | 21.0    | 22.0    | 23.0    | 24.0    | 25.0    | 26.0    |
| 0.0             | 3015.84 | 2950.29 | 2881.02 | 2803.75 | 2715.29 | 2612.44 | 2494.66 | 2417.93 | 2225.55 |
| 45.0            | 2991.33 | 2931.64 | 2867.69 | 2803.75 | 2735.00 | 2664.13 | 2580.99 | 2490.40 | 2389.68 |
| 90.0            | 3070.73 | 3004.65 | 2938.04 | 2859.70 | 2770.17 | 2666.26 | 2547.42 | 2420.59 | 2285.24 |
| 135.0           | 3221.01 | 3169.85 | 3121.36 | 3037.69 | 2982.80 | 2891.68 | 2752.59 | 2645.48 | 2497.33 |
| 180.0           | 3118.16 | 3079.79 | 3027.03 | 2964.15 | 2899.67 | 2831.99 | 2754.72 | 2665.73 | 2562.34 |
| 225.0           | 2893.27 | 2837.85 | 2780.83 | 2723.81 | 2664.13 | 2596.45 | 2517.05 | 2429.12 | 2332.66 |
| 270.0           | 3063.80 | 3021.17 | 2967.88 | 2911.93 | 2855.97 | 2792.56 | 2719.02 | 2632.69 | 2529.30 |
| 315.0           | 3146.40 | 3089.38 | 3024.90 | 2988.13 | 2910.86 | 2772.84 | 2700.90 | 2565.54 | 2404.60 |
| 360.0           | 3015.84 | 2950.29 | 2881.02 | 2803.75 | 2715.29 | 2612.44 | 2494.66 | 2417.93 | 2225.55 |
| C/ $\gamma$ (°) | 27.0    | 28.0    | 29.0    | 30.0    | 31.0    | 32.0    | 33.0    | 34.0    | 35.0    |
| 0.0             | 2081.67 | 1993.74 | 1848.26 | 1707.04 | 1574.35 | 1451.25 | 1341.47 | 1048.75 | 1048.75 |
| 45.0            | 2283.64 | 2170.13 | 2057.15 | 1942.05 | 1830.14 | 1720.36 | 1612.72 | 1530.65 | 1415.54 |
| 90.0            | 2146.15 | 2006.00 | 1922.33 | 1732.08 | 1656.41 | 1536.51 | 1424.60 | 1322.28 | 1060.63 |
| 135.0           | 2335.86 | 2165.33 | 1990.54 | 1823.21 | 1663.87 | 1521.59 | 1388.90 | 1276.46 | 1180.00 |
| 180.0           | 2447.77 | 2323.60 | 2190.38 | 2050.76 | 1909.54 | 1771.52 | 1638.83 | 1510.93 | 1394.76 |
| 225.0           | 2227.15 | 2140.29 | 2029.44 | 1915.40 | 1800.83 | 1688.39 | 1579.68 | 1477.89 | 1365.45 |
| 270.0           | 2417.93 | 2293.23 | 2168.53 | 2030.51 | 1896.22 | 1763.53 | 1631.90 | 1509.87 | 1394.23 |
| 315.0           | 2234.61 | 2058.22 | 1885.03 | 1717.70 | 1563.16 | 1422.47 | 1300.97 | 1049.33 | 1049.33 |
| 360.0           | 2081.67 | 1993.74 | 1848.26 | 1707.04 | 1574.35 | 1451.25 | 1341.47 | 1048.75 | 1048.75 |
| C/ $\gamma$ (°) | 36.0    | 37.0    | 38.0    | 39.0    | 40.0    | 41.0    | 42.0    | 43.0    | 44.0    |
| 0.0             | 923.04  | 762.21  | 598.71  | 439.70  | 296.83  | 173.89  | 84.14   | 44.44   | 32.67   |
| 45.0            | 1298.84 | 1186.93 | 1024.39 | 817.10  | 673.21  | 503.22  | 350.81  | 321.50  | 270.34  |
| 90.0            | 1060.63 | 896.55  | 732.84  | 567.38  | 410.44  | 270.18  | 152.68  | 87.77   | 49.24   |
| 135.0           | 1076.08 | 942.86  | 800.58  | 654.03  | 506.41  | 421.15  | 287.93  | 287.93  | 72.53   |
| 180.0           | 1286.58 | 1214.11 | 1006.81 | 909.82  | 746.22  | 516.54  | 423.82  | 338.02  | 338.02  |
| 225.0           | 1001.53 | 1001.53 | 895.38  | 712.70  | 534.29  | 374.52  | 241.35  | 177.94  | 95.12   |
| 270.0           | 1324.42 | 1123.51 | 958.85  | 854.40  | 684.40  | 517.07  | 365.73  | 307.64  | 167.81  |
| 315.0           | 935.67  | 790.50  | 642.25  | 554.75  | 354.22  | 275.46  | 160.62  | 70.34   | 27.71   |
| 360.0           | 923.04  | 762.21  | 598.71  | 439.70  | 296.83  | 173.89  | 84.14   | 44.44   | 32.67   |

## Intensity data(cd)

Appendix Page: 18 Total:19

| C/ $\gamma$ (°) | 45.0   | 46.0  | 47.0  | 48.0  | 49.0  | 50.0  | 51.0  | 52.0  | 53.0  |
|-----------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.0             | 27.39  | 21.10 | 14.49 | 12.74 | 10.50 | 8.74  | 7.35  | 6.29  | 5.33  |
| 45.0            | 100.24 | 82.12 | 67.25 | 54.73 | 44.98 | 37.46 | 33.63 | 27.98 | 21.74 |
| 90.0            | 39.91  | 30.70 | 23.87 | 18.76 | 15.19 | 12.42 | 10.34 | 8.63  | 7.25  |
| 135.0           | 27.66  | 18.65 | 13.48 | 10.39 | 7.94  | 6.61  | 5.76  | 5.01  | 4.42  |
| 180.0           | 74.93  | 42.21 | 32.19 | 24.35 | 18.65 | 14.39 | 11.72 | 9.65  | 7.99  |
| 225.0           | 82.33  | 65.71 | 48.12 | 41.83 | 33.73 | 27.50 | 22.54 | 18.39 | 15.13 |
| 270.0           | 56.59  | 41.30 | 31.23 | 24.03 | 18.17 | 14.44 | 12.68 | 9.59  | 7.99  |
| 315.0           | 18.76  | 13.54 | 10.23 | 7.62  | 6.29  | 5.38  | 4.69  | 4.16  | 3.73  |
| 360.0           | 27.39  | 21.10 | 14.49 | 12.74 | 10.50 | 8.74  | 7.35  | 6.29  | 5.33  |
| C/ $\gamma$ (°) | 54.0   | 55.0  | 56.0  | 57.0  | 58.0  | 59.0  | 60.0  | 61.0  | 62.0  |
| 0.0             | 4.69   | 4.16  | 3.68  | 3.30  | 2.98  | 2.72  | 2.45  | 2.24  | 2.08  |
| 45.0            | 19.56  | 16.41 | 13.70 | 11.46 | 9.65  | 8.21  | 6.93  | 5.86  | 5.06  |
| 90.0            | 6.13   | 5.33  | 4.64  | 4.00  | 3.52  | 3.20  | 2.88  | 2.56  | 2.34  |
| 135.0           | 4.00   | 3.62  | 3.36  | 3.04  | 2.82  | 2.66  | 2.45  | 2.34  | 2.13  |
| 180.0           | 6.98   | 5.76  | 4.96  | 4.42  | 3.89  | 3.46  | 3.09  | 2.82  | 2.50  |
| 225.0           | 12.42  | 10.34 | 8.58  | 7.14  | 5.97  | 5.12  | 4.37  | 3.73  | 3.20  |
| 270.0           | 7.14   | 5.65  | 5.17  | 4.42  | 3.84  | 3.41  | 3.04  | 2.77  | 2.45  |
| 315.0           | 3.41   | 3.04  | 2.82  | 2.72  | 2.45  | 2.24  | 2.18  | 1.97  | 1.87  |
| 360.0           | 4.69   | 4.16  | 3.68  | 3.30  | 2.98  | 2.72  | 2.45  | 2.24  | 2.08  |
| C/ $\gamma$ (°) | 63.0   | 64.0  | 65.0  | 66.0  | 67.0  | 68.0  | 69.0  | 70.0  | 71.0  |
| 0.0             | 1.97   | 1.87  | 1.71  | 1.65  | 1.55  | 1.44  | 1.33  | 1.28  | 1.17  |
| 45.0            | 4.37   | 3.78  | 3.25  | 2.88  | 2.50  | 2.24  | 1.97  | 1.76  | 1.60  |
| 90.0            | 2.13   | 1.97  | 1.76  | 1.65  | 1.55  | 1.49  | 1.33  | 1.28  | 1.17  |
| 135.0           | 2.03   | 1.97  | 1.81  | 1.65  | 1.60  | 1.49  | 1.39  | 1.33  | 1.28  |
| 180.0           | 2.29   | 2.13  | 1.97  | 1.81  | 1.65  | 1.60  | 1.49  | 1.39  | 1.28  |
| 225.0           | 2.77   | 2.50  | 2.18  | 1.97  | 1.81  | 1.60  | 1.44  | 1.33  | 1.23  |
| 270.0           | 2.24   | 2.08  | 1.92  | 1.76  | 1.65  | 1.55  | 1.39  | 1.33  | 1.28  |
| 315.0           | 1.81   | 1.71  | 1.55  | 1.49  | 1.44  | 1.33  | 1.28  | 1.17  | 1.12  |
| 360.0           | 1.97   | 1.87  | 1.71  | 1.65  | 1.55  | 1.44  | 1.33  | 1.28  | 1.17  |
| C/ $\gamma$ (°) | 72.0   | 73.0  | 74.0  | 75.0  | 76.0  | 77.0  | 78.0  | 79.0  | 80.0  |
| 0.0             | 1.12   | 1.07  | 1.01  | 0.96  | 0.91  | 0.85  | 0.85  | 0.80  | 0.69  |
| 45.0            | 1.49   | 1.33  | 1.17  | 1.12  | 1.01  | 0.96  | 0.91  | 0.80  | 0.75  |
| 90.0            | 1.17   | 1.07  | 0.96  | 0.91  | 0.91  | 0.80  | 0.75  | 0.75  | 0.69  |
| 135.0           | 1.17   | 1.12  | 1.07  | 1.01  | 0.96  | 0.91  | 0.80  | 0.80  | 0.75  |
| 180.0           | 1.17   | 1.12  | 1.07  | 1.01  | 0.91  | 0.91  | 0.85  | 0.80  | 0.80  |
| 225.0           | 1.12   | 1.01  | 0.96  | 0.91  | 0.80  | 0.69  | 0.75  | 0.69  | 0.64  |
| 270.0           | 1.17   | 1.07  | 1.01  | 1.01  | 0.91  | 0.91  | 0.85  | 0.80  | 0.75  |
| 315.0           | 1.07   | 1.01  | 0.85  | 0.85  | 0.85  | 0.75  | 0.69  | 0.69  | 0.64  |
| 360.0           | 1.12   | 1.07  | 1.01  | 0.96  | 0.91  | 0.85  | 0.85  | 0.80  | 0.69  |
| C/ $\gamma$ (°) | 81.0   | 82.0  | 83.0  | 84.0  | 85.0  | 86.0  | 87.0  | 88.0  | 89.0  |
| 0.0             | 0.64   | 0.64  | 0.59  | 0.59  | 0.53  | 0.53  | 0.53  | 0.43  | 0.37  |
| 45.0            | 0.75   | 0.69  | 0.64  | 0.59  | 0.59  | 0.59  | 0.53  | 0.48  | 0.48  |
| 90.0            | 0.64   | 0.59  | 0.59  | 0.59  | 0.53  | 0.48  | 0.48  | 0.48  | 0.37  |
| 135.0           | 0.69   | 0.64  | 0.59  | 0.53  | 0.53  | 0.53  | 0.48  | 0.43  | 0.48  |
| 180.0           | 0.69   | 0.64  | 0.64  | 0.53  | 0.48  | 0.48  | 0.43  | 0.43  | 0.43  |
| 225.0           | 0.59   | 0.53  | 0.53  | 0.53  | 0.43  | 0.48  | 0.43  | 0.37  | 0.37  |
| 270.0           | 0.69   | 0.64  | 0.64  | 0.59  | 0.53  | 0.48  | 0.43  | 0.43  | 0.43  |
| 315.0           | 0.59   | 0.53  | 0.53  | 0.53  | 0.53  | 0.48  | 0.43  | 0.37  | 0.37  |
| 360.0           | 0.64   | 0.64  | 0.59  | 0.59  | 0.53  | 0.53  | 0.53  | 0.43  | 0.37  |

Intensity data(cd)

|                       |      |
|-----------------------|------|
| C/ $\gamma(^{\circ})$ | 90.0 |
| 0.0                   | 0.37 |
| 45.0                  | 0.43 |
| 90.0                  | 0.37 |
| 135.0                 | 0.37 |
| 180.0                 | 0.37 |
| 225.0                 | 0.32 |
| 270.0                 | 0.37 |
| 315.0                 | 0.27 |
| 360.0                 | 0.37 |