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## Nata

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### Client:

LumCAT: 1-0919-M

Luminaire: 99.02.73.171+92.76.853.00

Report No: 200821-B032

Test No: 200821-C032

LampCAT: SAMSUNG LC009D

Lamp flux(lm): 1377.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 230.9000

Current(A): 0.0980

Power (W): 12.3400

PF: 0.5410

Ballast type: AC

Width(mm): 0

Height(mm): 0

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## Photometric Results

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Lumens(lm): 976.04, Efficiency(%): 70.88% , Luminous Efficacy(lm/W): 79.10

Central intensity(cd): 4961.561, Maximum intensity(cd): 4961.561

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

Beam Angle(50%Imax): [C0/180]Total=24.8

[C90/270]Total=24.8

Field angle(10%Imax): [C0/180]Total=43.6

[C90/270]Total=43.6

Maximum s/h(1/2): C0\_180=0.42 C90\_270=0.42

Maximum s/h(1/4): C0\_180=0.41 C90\_270=0.41

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 70.88%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 99.929%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 4961.562      | 0.000       | 0         | .000%       | .000%      |
| 1.0                | 4942.246      | 4.739       | 4.739     | .344%       | .486%      |
| 2.0                | 4899.787      | 14.126      | 18.865    | 1.026%      | 1.933%     |
| 3.0                | 4815.797      | 23.236      | 42.101    | 1.687%      | 4.313%     |
| 4.0                | 4700.079      | 31.853      | 73.954    | 2.313%      | 7.577%     |
| 5.0                | 4560.057      | 39.837      | 113.791   | 2.893%      | 11.658%    |
| 6.0                | 4374.849      | 46.955      | 160.746   | 3.410%      | 16.469%    |
| 7.0                | 4142.078      | 52.864      | 213.611   | 3.839%      | 21.885%    |
| 8.0                | 3888.194      | 57.471      | 271.082   | 4.174%      | 27.774%    |
| 9.0                | 3596.955      | 60.663      | 331.745   | 4.405%      | 33.989%    |
| 10.0               | 3271.668      | 62.159      | 393.903   | 4.514%      | 40.357%    |
| 11.0               | 2948.468      | 62.152      | 456.055   | 4.514%      | 46.725%    |
| 12.0               | 2617.207      | 60.841      | 516.896   | 4.418%      | 52.958%    |
| 13.0               | 2297.024      | 58.320      | 575.215   | 4.235%      | 58.933%    |
| 14.0               | 1995.982      | 54.950      | 630.166   | 3.991%      | 64.563%    |
| 15.0               | 1733.977      | 51.207      | 681.372   | 3.719%      | 69.810%    |
| 16.0               | 1440.859      | 46.520      | 727.892   | 3.378%      | 74.576%    |
| 17.0               | 1233.975      | 41.654      | 769.547   | 3.025%      | 78.843%    |
| 18.0               | 1049.307      | 37.646      | 807.193   | 2.734%      | 82.701%    |
| 19.0               | 858.439       | 33.191      | 840.384   | 2.410%      | 86.101%    |
| 20.0               | 738.660       | 29.231      | 869.615   | 2.123%      | 89.096%    |
| 21.0               | 594.351       | 25.597      | 895.212   | 1.859%      | 91.718%    |
| 22.0               | 467.525       | 21.339      | 916.551   | 1.550%      | 93.905%    |
| 23.0               | 353.425       | 17.226      | 933.776   | 1.251%      | 95.670%    |
| 24.0               | 264.934       | 13.520      | 947.296   | .982%       | 97.055%    |
| 25.0               | 192.435       | 10.400      | 957.695   | .755%       | 98.120%    |
| 26.0               | 117.070       | 7.306       | 965.001   | .531%       | 98.869%    |
| 27.0               | 66.966        | 4.502       | 969.504   | .327%       | 99.330%    |
| 28.0               | 23.712        | 2.296       | 971.8     | .167%       | 99.565%    |
| 29.0               | 10.545        | 0.896       | 972.696   | .065%       | 99.657%    |
| 30.0               | 5.116         | 0.423       | 973.119   | .031%       | 99.700%    |
| 31.0               | 3.480         | 0.239       | 973.358   | .017%       | 99.725%    |
| 32.0               | 2.796         | 0.180       | 973.538   | .013%       | 99.743%    |
| 33.0               | 2.442         | 0.154       | 973.692   | .011%       | 99.759%    |
| 34.0               | 2.193         | 0.140       | 973.832   | .010%       | 99.773%    |
| 35.0               | 1.949         | 0.129       | 973.961   | .009%       | 99.787%    |
| 36.0               | 1.734         | 0.117       | 974.078   | .009%       | 99.799%    |
| 37.0               | 1.572         | 0.108       | 974.186   | .008%       | 99.810%    |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 1.421         | 0.100       | 974.286   | .007%       | 99.820%    |
| 39.0               | 1.311         | 0.093       | 974.379   | .007%       | 99.829%    |
| 40.0               | 1.177         | 0.087       | 974.466   | .006%       | 99.838%    |
| 41.0               | 1.050         | 0.079       | 974.545   | .006%       | 99.847%    |
| 42.0               | 0.963         | 0.073       | 974.618   | .005%       | 99.854%    |
| 43.0               | 0.899         | 0.069       | 974.687   | .005%       | 99.861%    |
| 44.0               | 0.806         | 0.064       | 974.752   | .005%       | 99.868%    |
| 45.0               | 0.719         | 0.059       | 974.81    | .004%       | 99.874%    |
| 46.0               | 0.661         | 0.054       | 974.864   | .004%       | 99.879%    |
| 47.0               | 0.632         | 0.051       | 974.916   | .004%       | 99.884%    |
| 48.0               | 0.580         | 0.049       | 974.965   | .004%       | 99.889%    |
| 49.0               | 0.516         | 0.045       | 975.01    | .003%       | 99.894%    |
| 50.0               | 0.470         | 0.041       | 975.051   | .003%       | 99.898%    |
| 51.0               | 0.441         | 0.039       | 975.089   | .003%       | 99.902%    |
| 52.0               | 0.429         | 0.037       | 975.127   | .003%       | 99.906%    |
| 53.0               | 0.383         | 0.035       | 975.162   | .003%       | 99.910%    |
| 54.0               | 0.348         | 0.032       | 975.194   | .002%       | 99.913%    |
| 55.0               | 0.325         | 0.030       | 975.224   | .002%       | 99.916%    |
| 56.0               | 0.296         | 0.028       | 975.252   | .002%       | 99.919%    |
| 57.0               | 0.302         | 0.027       | 975.28    | .002%       | 99.922%    |
| 58.0               | 0.267         | 0.026       | 975.306   | .002%       | 99.924%    |
| 59.0               | 0.238         | 0.024       | 975.33    | .002%       | 99.927%    |
| 60.0               | 0.244         | 0.023       | 975.352   | .002%       | 99.929%    |
| 61.0               | 0.238         | 0.023       | 975.375   | .002%       | 99.932%    |
| 62.0               | 0.244         | 0.023       | 975.399   | .002%       | 99.934%    |
| 63.0               | 0.209         | 0.022       | 975.421   | .002%       | 99.936%    |
| 64.0               | 0.203         | 0.020       | 975.441   | .001%       | 99.938%    |
| 65.0               | 0.197         | 0.020       | 975.461   | .001%       | 99.940%    |
| 66.0               | 0.203         | 0.020       | 975.481   | .001%       | 99.942%    |
| 67.0               | 0.186         | 0.020       | 975.5     | .001%       | 99.944%    |
| 68.0               | 0.180         | 0.019       | 975.519   | .001%       | 99.946%    |
| 69.0               | 0.174         | 0.018       | 975.537   | .001%       | 99.948%    |
| 70.0               | 0.186         | 0.018       | 975.555   | .001%       | 99.950%    |
| 71.0               | 0.180         | 0.019       | 975.574   | .001%       | 99.952%    |
| 72.0               | 0.174         | 0.018       | 975.592   | .001%       | 99.954%    |
| 73.0               | 0.168         | 0.018       | 975.61    | .001%       | 99.956%    |
| 74.0               | 0.168         | 0.018       | 975.628   | .001%       | 99.957%    |
| 75.0               | 0.168         | 0.018       | 975.646   | .001%       | 99.959%    |

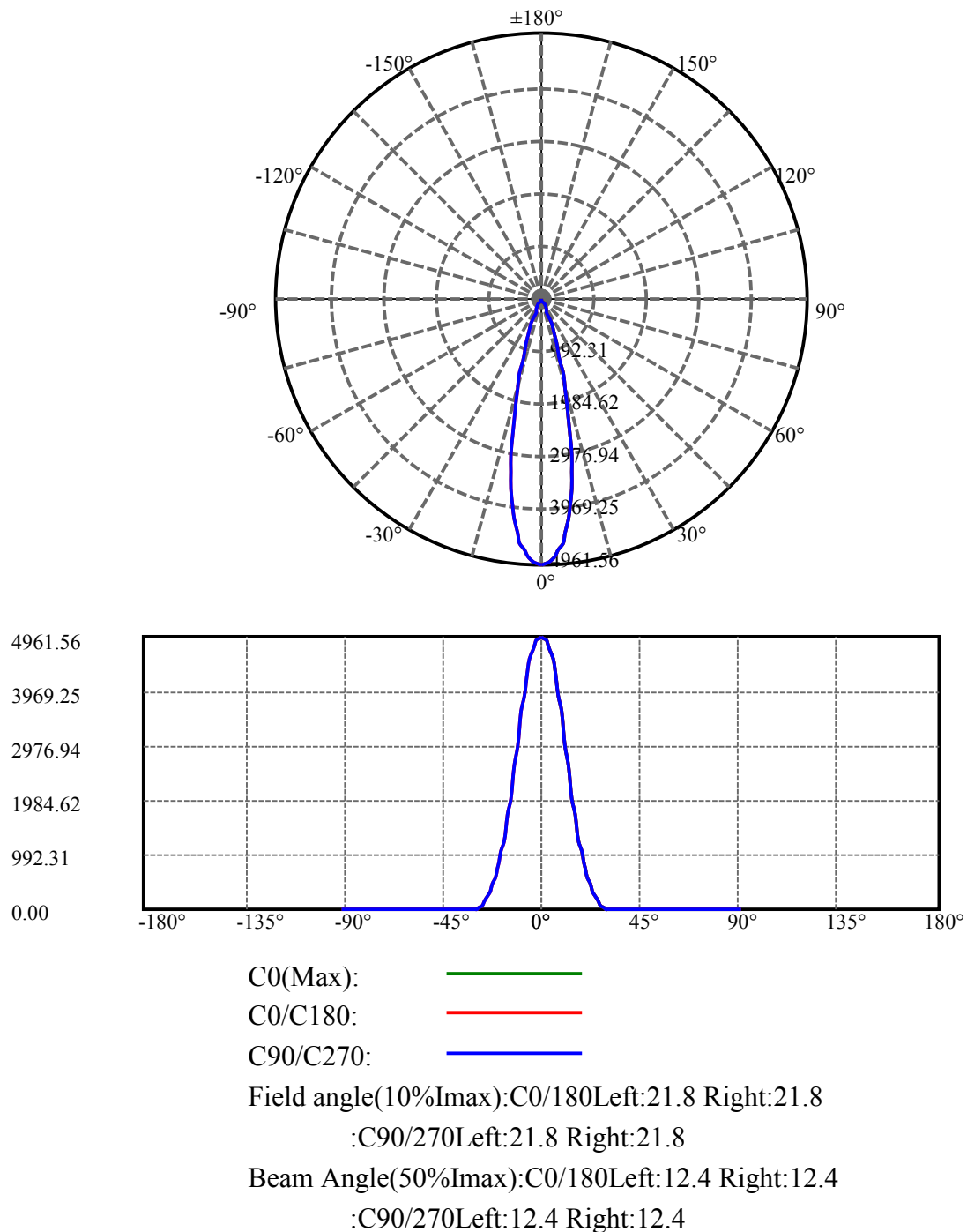
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 0.162         | 0.018       | 975.663   | .001%       | 99.961%    |
| 77.0               | 0.180         | 0.018       | 975.682   | .001%       | 99.963%    |
| 78.0               | 0.162         | 0.018       | 975.7     | .001%       | 99.965%    |
| 79.0               | 0.157         | 0.017       | 975.717   | .001%       | 99.967%    |
| 80.0               | 0.157         | 0.017       | 975.734   | .001%       | 99.968%    |
| 81.0               | 0.180         | 0.018       | 975.752   | .001%       | 99.970%    |
| 82.0               | 0.168         | 0.019       | 975.771   | .001%       | 99.972%    |
| 83.0               | 0.209         | 0.020       | 975.791   | .001%       | 99.974%    |
| 84.0               | 0.215         | 0.023       | 975.814   | .002%       | 99.977%    |
| 85.0               | 0.238         | 0.025       | 975.839   | .002%       | 99.979%    |
| 86.0               | 0.290         | 0.029       | 975.868   | .002%       | 99.982%    |
| 87.0               | 0.354         | 0.035       | 975.903   | .003%       | 99.986%    |
| 88.0               | 0.400         | 0.041       | 975.945   | .003%       | 99.990%    |
| 89.0               | 0.470         | 0.048       | 975.992   | .003%       | 99.995%    |
| 90.0               | 0.464         | 0.051       | 976.043   | .004%       | 100.000%   |

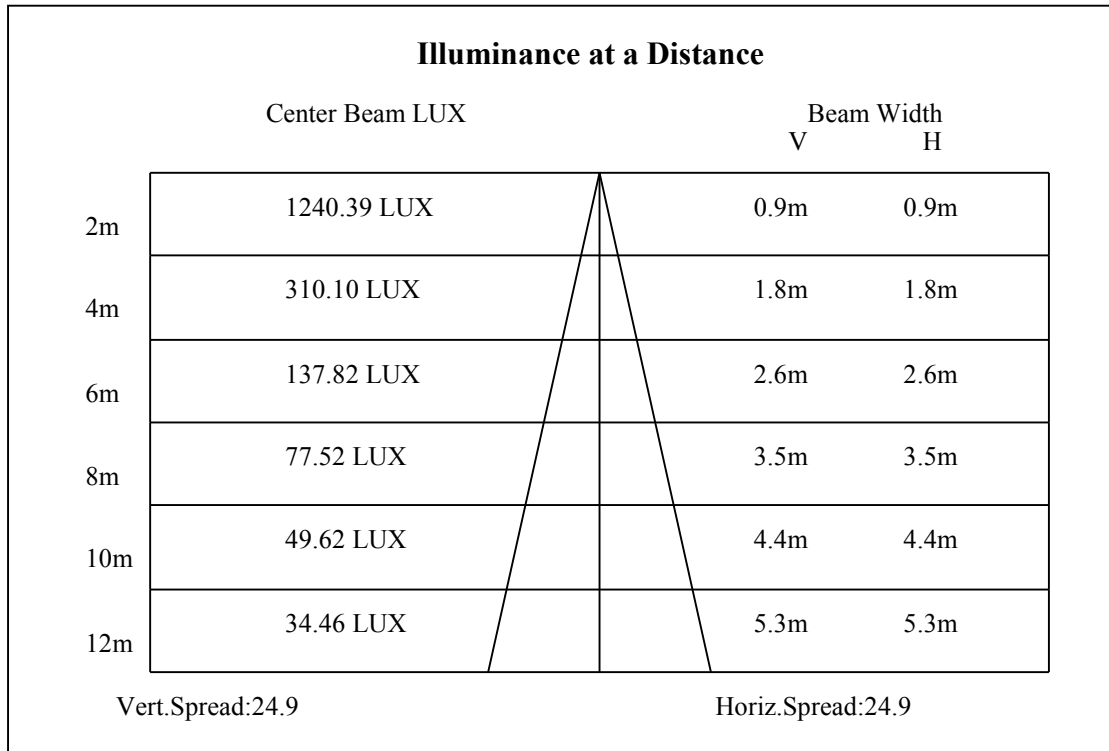
## ZONAL LUMEN SUMMARY

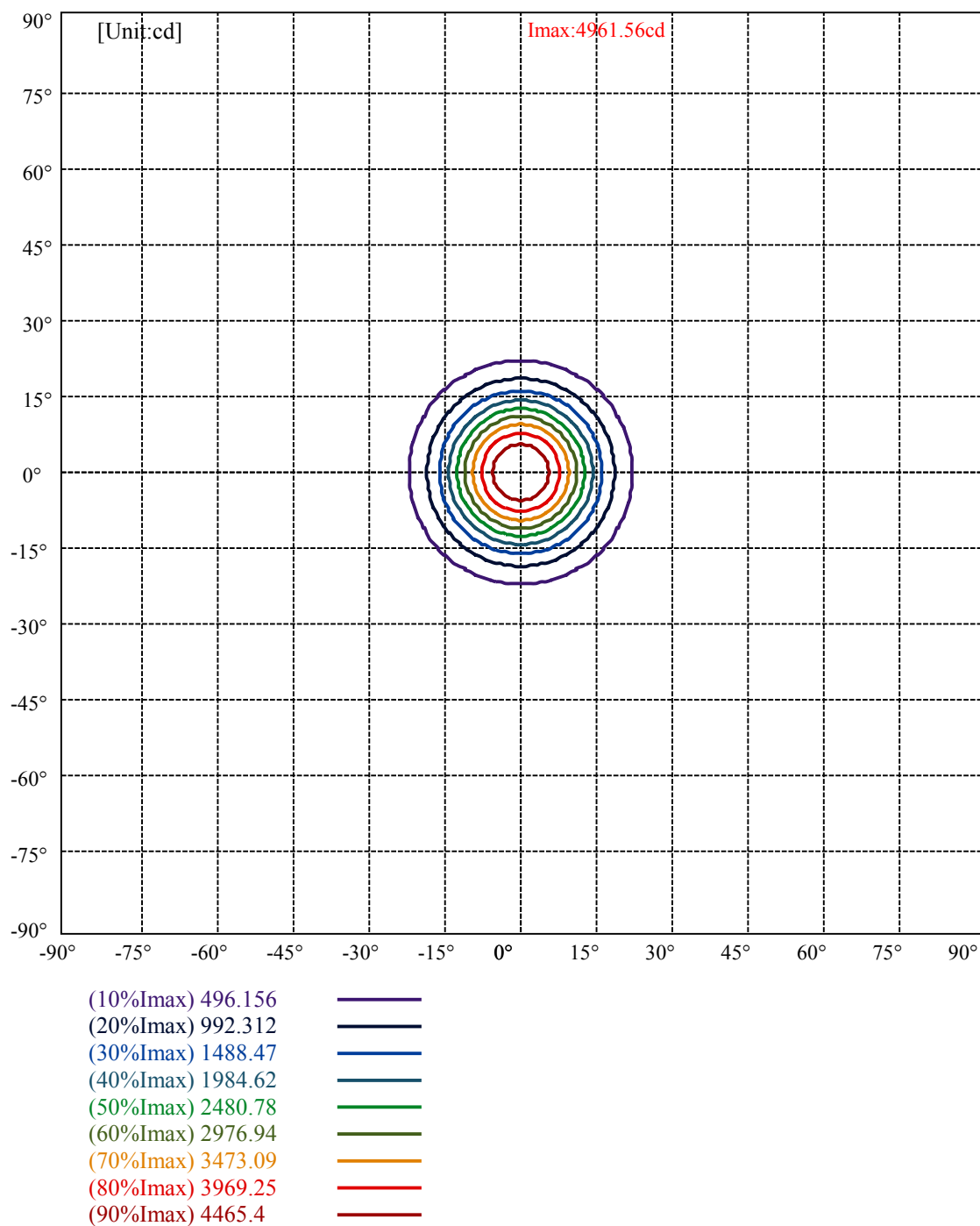
| Zone    | Lumens | %Lamp  | %Fixt   |
|---------|--------|--------|---------|
| 0-30    | 973.12 | 70.67% | 99.70%  |
| 0-40    | 974.47 | 70.77% | 99.84%  |
| 0-60    | 975.35 | 70.83% | 99.93%  |
| 0-90    | 975.99 | 70.88% | 99.99%  |
| 0-120   | 975.99 | 70.88% | 99.99%  |
| 0-180   | 976.04 | 70.88% | 100.00% |
| 60-90   | 0.66   | 0.05%  | 0.07%   |
| 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%   |
| 0-17.30 | 780.83 | 56.71% | 80.00%  |

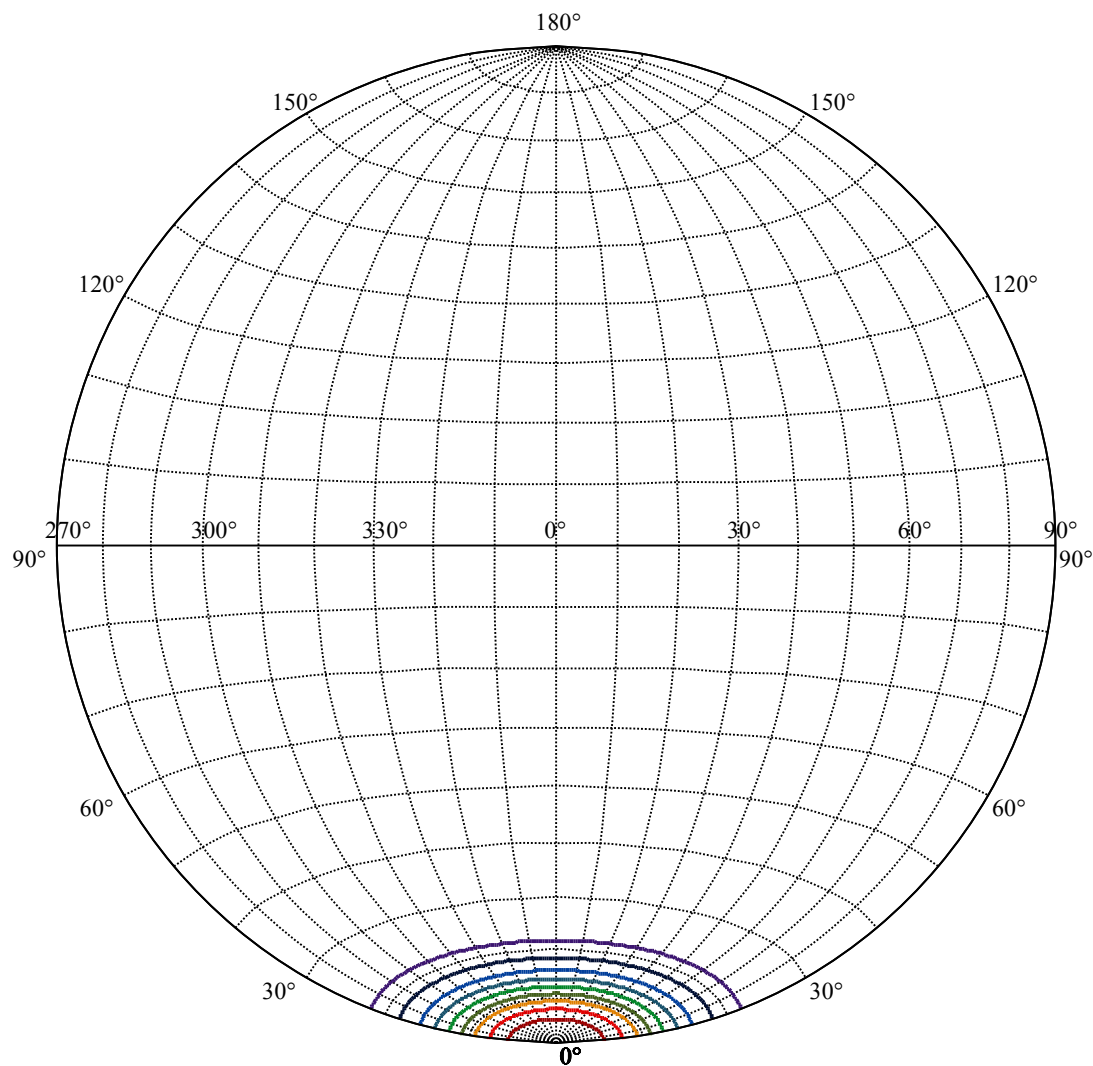
## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 393.90 |
| 10-20   | 475.71 |
| 20-30   | 103.50 |
| 30-40   | 1.35   |
| 40-50   | 0.58   |
| 50-60   | 0.30   |
| 60-70   | 0.20   |
| 70-80   | 0.18   |
| 80-90   | 0.26   |
| 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   |







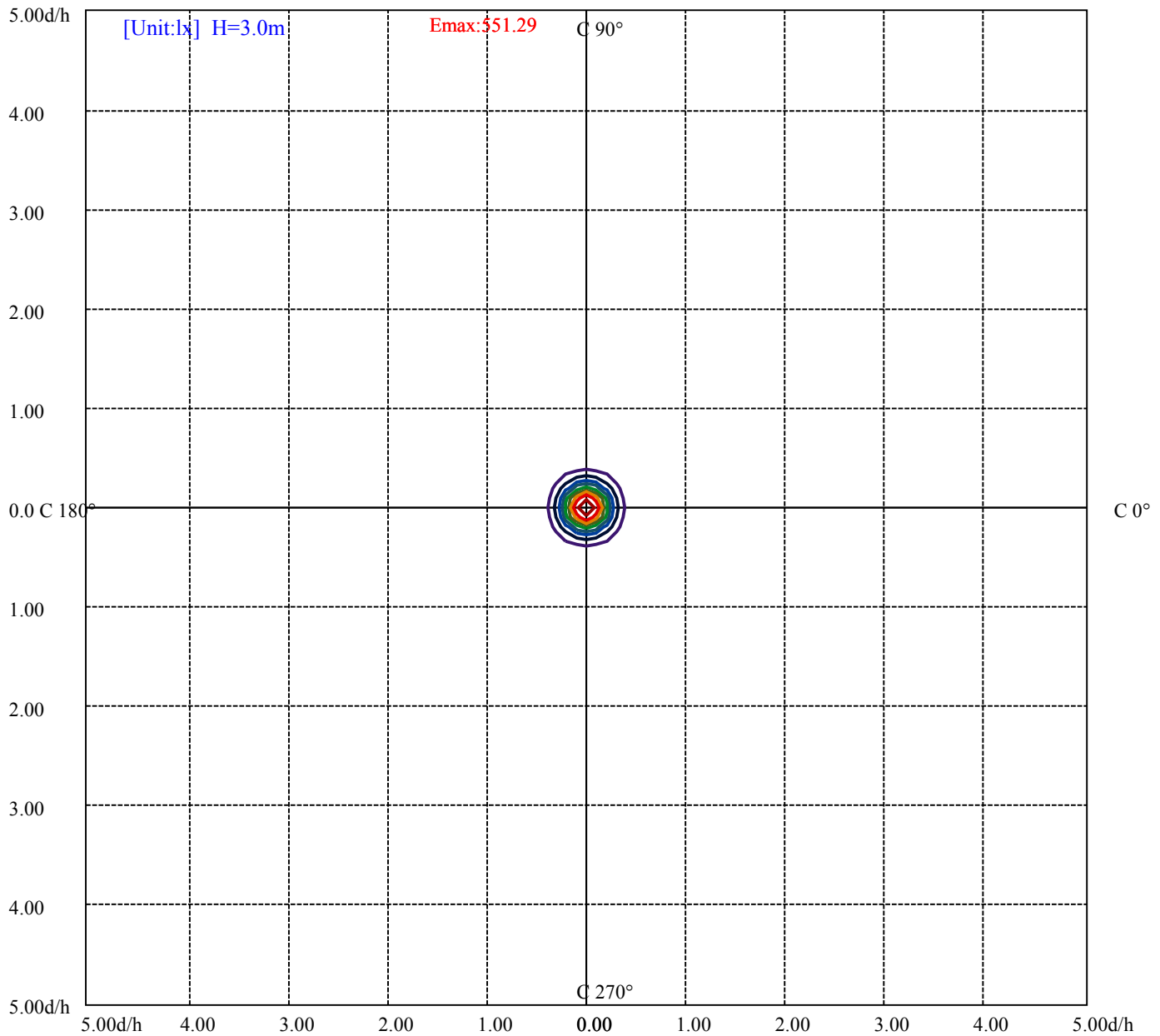


House

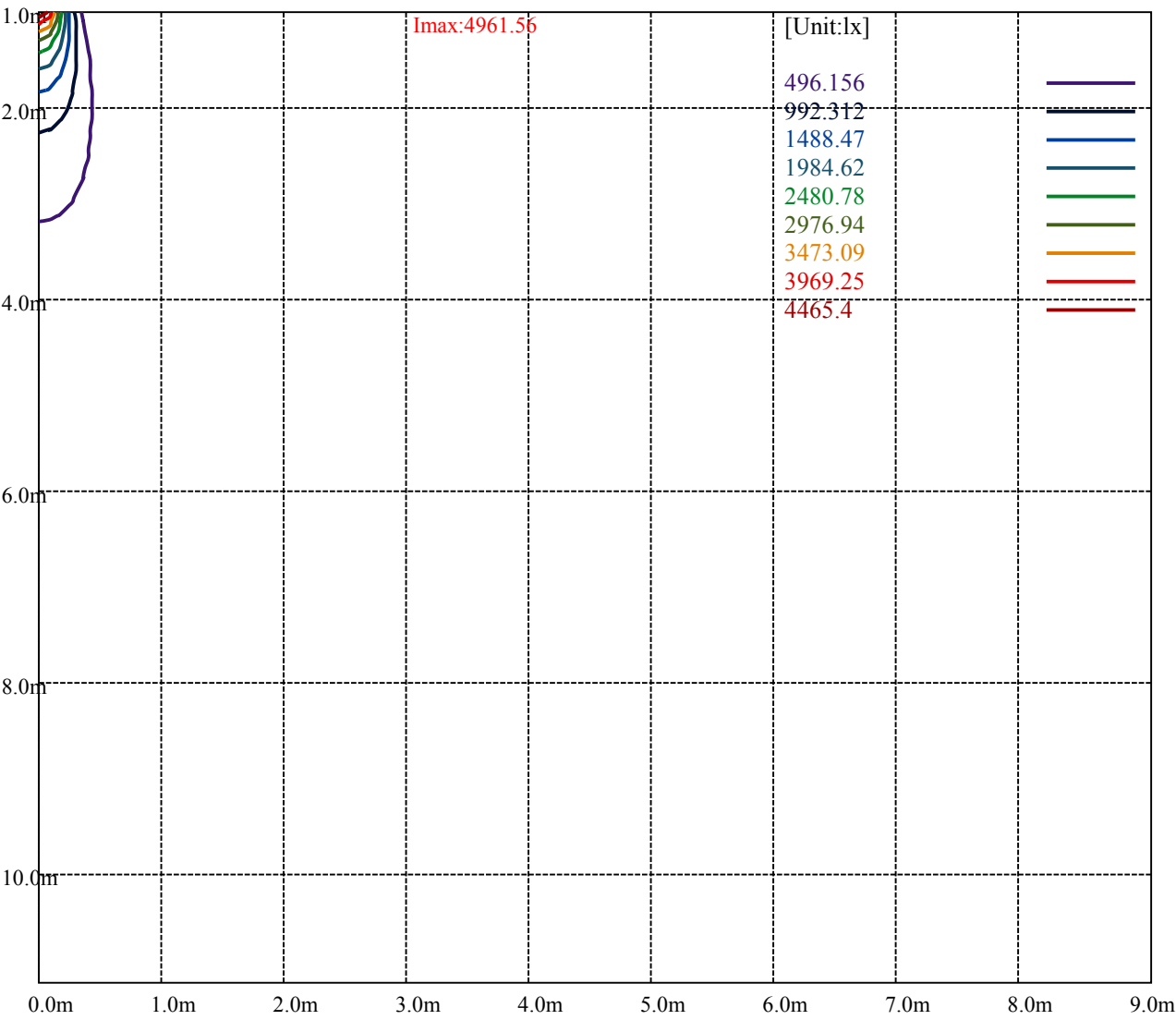
[Unit:cd]

Road

|                   |  |
|-------------------|--|
| Imax:4961.56      |  |
| (10%Imax) 496.156 |  |
| (20%Imax) 992.312 |  |
| (30%Imax) 1488.47 |  |
| (40%Imax) 1984.62 |  |
| (50%Imax) 2480.78 |  |
| (60%Imax) 2976.94 |  |
| (70%Imax) 3473.09 |  |
| (80%Imax) 3969.25 |  |
| (90%Imax) 4465.4  |  |



|                    |   |
|--------------------|---|
| (10%Emax) 55.12844 | — |
| (20%Emax) 110.2569 | — |
| (30%Emax) 165.3856 | — |
| (40%Emax) 220.5133 | — |
| (50%Emax) 275.6422 | — |
| (60%Emax) 330.77   | — |
| (70%Emax) 385.8989 | — |
| (80%Emax) 441.0278 | — |
| (90%Emax) 496.1555 | — |



Luminance Table

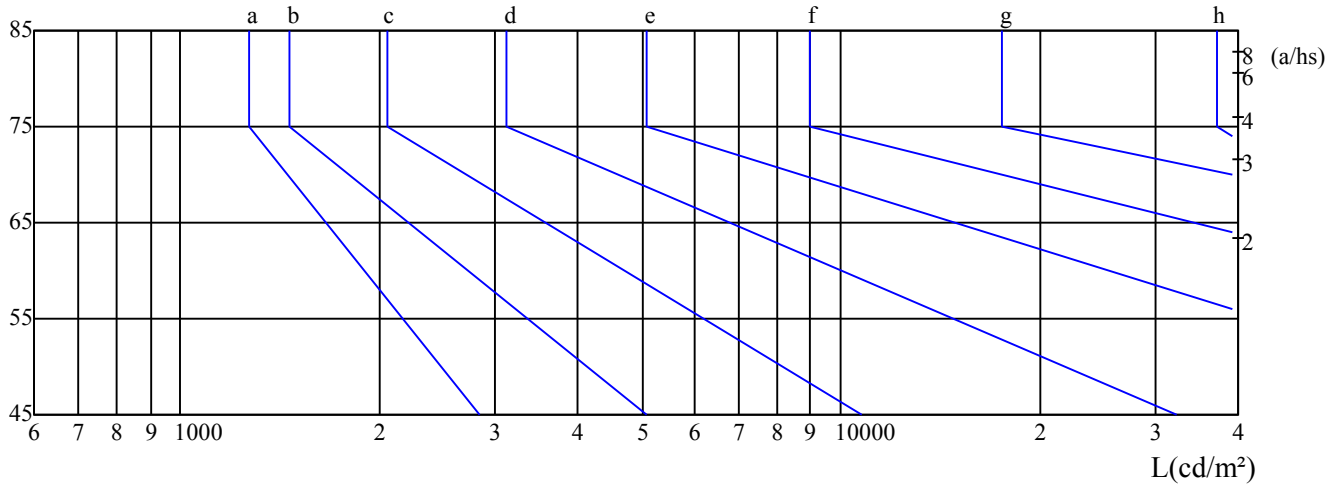
| $\gamma$ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|----------|----|----|----|----|----|----|----|----|----|
| C0       | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C45      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C90      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |

| 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

 $\gamma(^{\circ})$ 

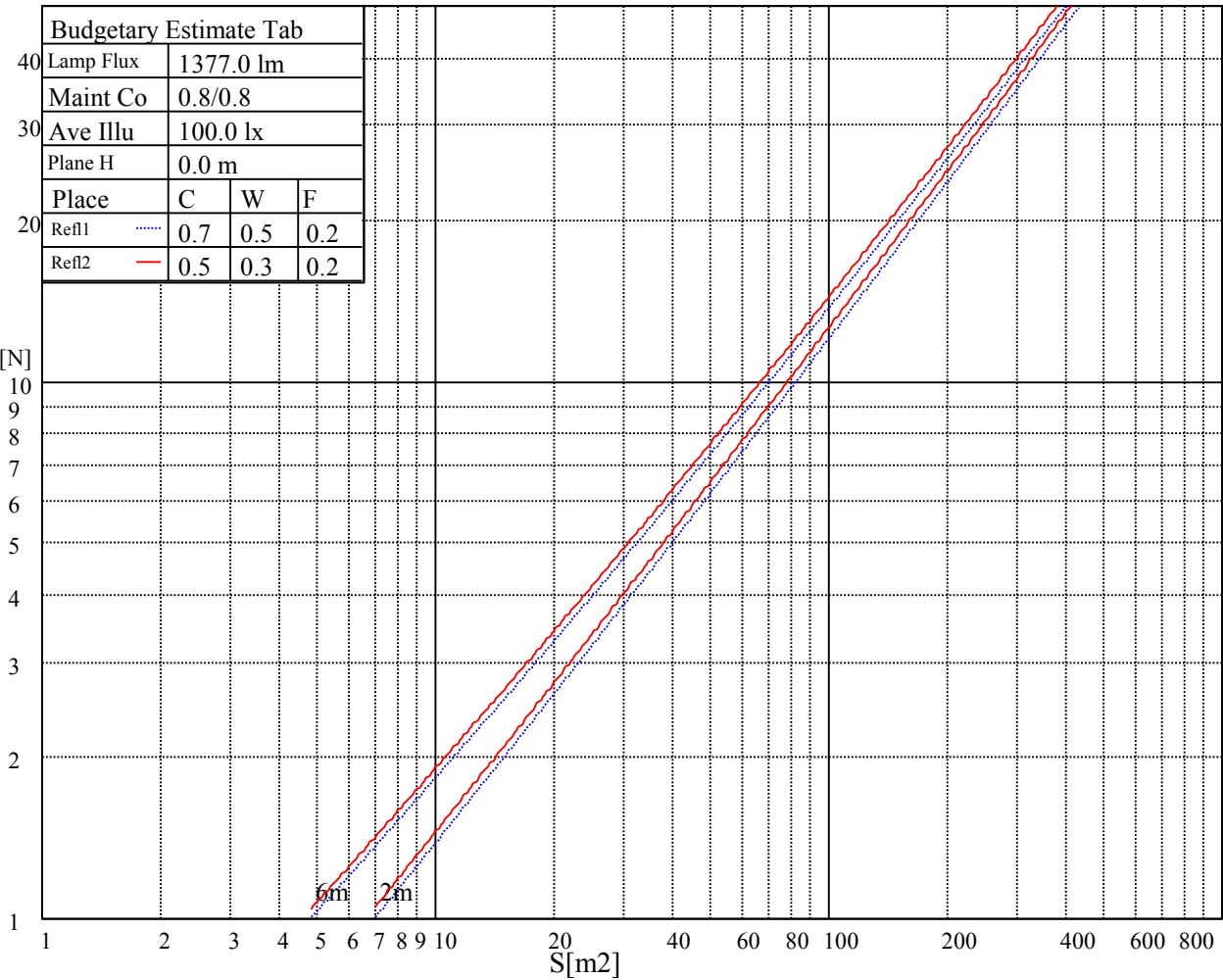
C0 ———

C45 ———

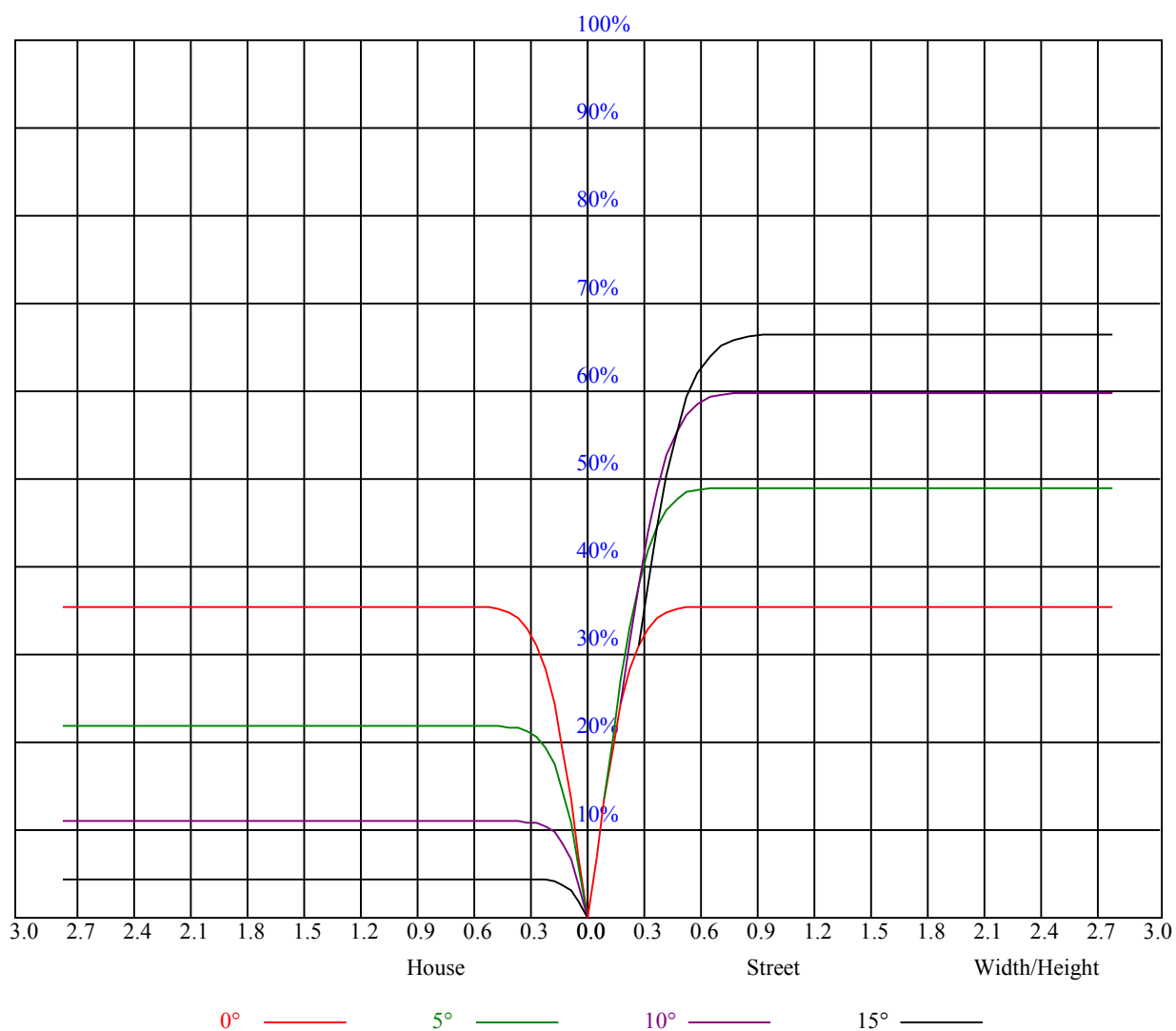
C90 ———

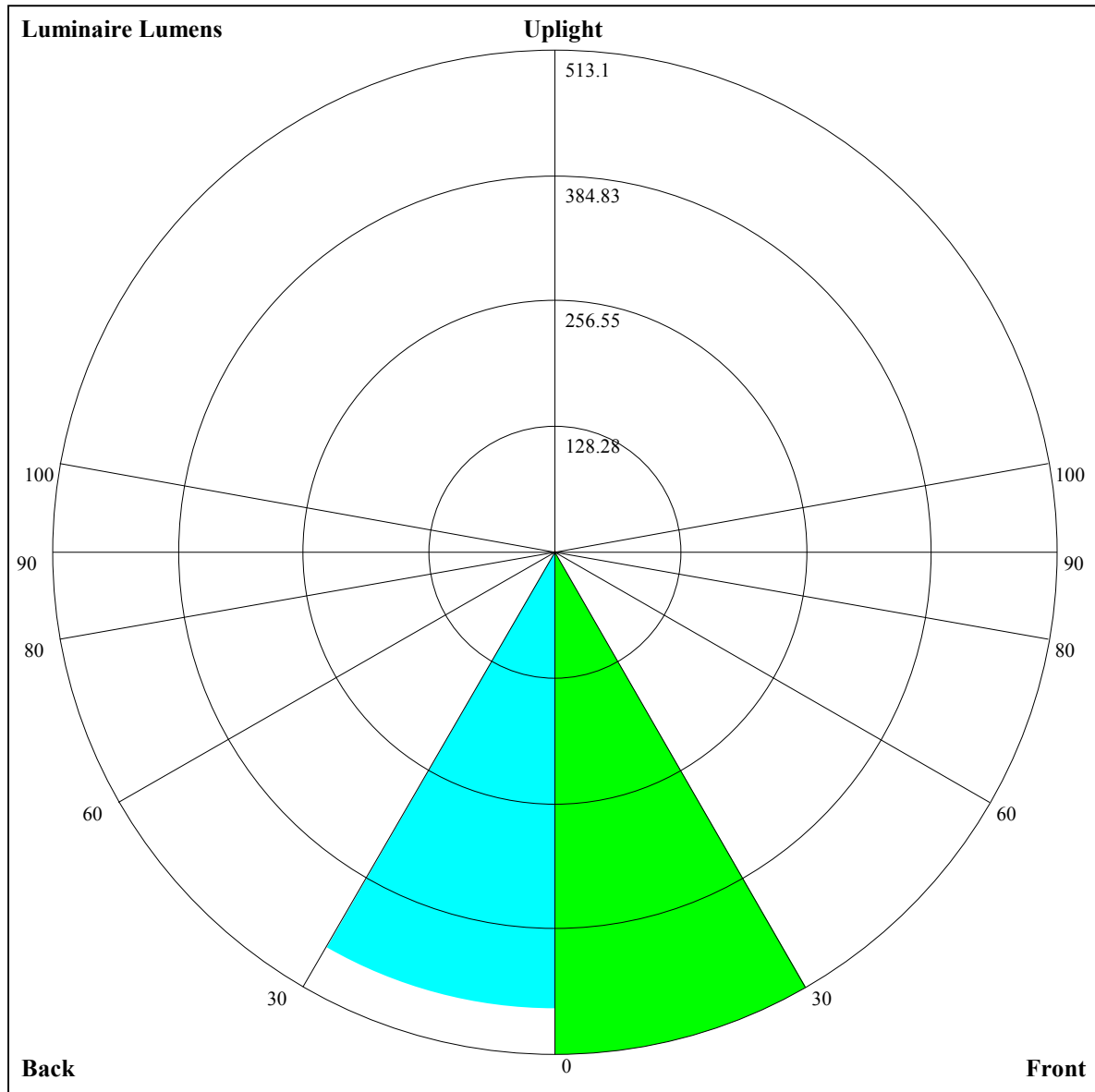
| Illumination assessment according UGR             |     |                  |     |     |     |     |                |     |     |     |  |
|---------------------------------------------------|-----|------------------|-----|-----|-----|-----|----------------|-----|-----|-----|--|
| Rf of Ceiling                                     | 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  | 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



| 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     | 0.84                                    | 0.84 | 0.84 | 0.82 | 0.82 | 0.82 | 0.79 | 0.79 | 0.79 | 0.75 | 0.75 | 0.75 | 0.72 | 0.72 | 0.72 | 0.71 |
| 1     | 0.80                                    | 0.79 | 0.78 | 0.79 | 0.78 | 0.77 | 0.76 | 0.75 | 0.74 | 0.73 | 0.73 | 0.72 | 0.71 | 0.71 | 0.70 | 0.69 |
| 2     | 0.77                                    | 0.75 | 0.73 | 0.76 | 0.74 | 0.73 | 0.74 | 0.72 | 0.71 | 0.72 | 0.70 | 0.70 | 0.70 | 0.69 | 0.68 | 0.67 |
| 3     | 0.74                                    | 0.72 | 0.70 | 0.73 | 0.71 | 0.69 | 0.71 | 0.70 | 0.68 | 0.70 | 0.68 | 0.67 | 0.68 | 0.67 | 0.66 | 0.65 |
| 4     | 0.72                                    | 0.69 | 0.67 | 0.71 | 0.68 | 0.67 | 0.69 | 0.67 | 0.66 | 0.68 | 0.67 | 0.65 | 0.67 | 0.66 | 0.65 | 0.64 |
| 5     | 0.69                                    | 0.67 | 0.65 | 0.69 | 0.66 | 0.64 | 0.68 | 0.66 | 0.64 | 0.67 | 0.65 | 0.63 | 0.66 | 0.64 | 0.63 | 0.62 |
| 6     | 0.67                                    | 0.65 | 0.63 | 0.67 | 0.64 | 0.62 | 0.66 | 0.64 | 0.62 | 0.65 | 0.63 | 0.62 | 0.64 | 0.63 | 0.61 | 0.61 |
| 7     | 0.65                                    | 0.63 | 0.61 | 0.65 | 0.63 | 0.61 | 0.64 | 0.62 | 0.60 | 0.64 | 0.62 | 0.60 | 0.63 | 0.61 | 0.60 | 0.59 |
| 8     | 0.64                                    | 0.61 | 0.59 | 0.63 | 0.61 | 0.59 | 0.63 | 0.61 | 0.59 | 0.62 | 0.60 | 0.59 | 0.62 | 0.60 | 0.59 | 0.58 |
| 9     | 0.62                                    | 0.60 | 0.58 | 0.62 | 0.59 | 0.58 | 0.61 | 0.59 | 0.58 | 0.61 | 0.59 | 0.57 | 0.60 | 0.59 | 0.57 | 0.57 |
| 10    | 0.61                                    | 0.58 | 0.56 | 0.60 | 0.58 | 0.56 | 0.60 | 0.58 | 0.56 | 0.60 | 0.58 | 0.56 | 0.59 | 0.57 | 0.56 | 0.55 |





Luminaire Lumens:

FL=513.1,FM=1.23,FH=0.19,FVH=0.1

BL=466.36,BM=1.09,BH=0.19,BVH=0.19

UL=0.51,UH=2.41

BUG Rating:B1-U1-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    | 4996.48 | 4998.80 | 4967.71 | 4893.93 | 4770.50 | 4622.01 | 4428.97 | 4201.59 | 3937.56 |
| 45.0   | 4954.25 | 4967.25 | 4956.11 | 4902.75 | 4813.19 | 4682.79 | 4526.88 | 4330.13 | 4100.90 |
| 90.0   | 4927.80 | 4861.91 | 4759.82 | 4631.75 | 4469.80 | 4264.70 | 4026.65 | 3752.87 | 3452.18 |
| 135.0  | 4967.71 | 4909.71 | 4813.65 | 4703.67 | 4565.39 | 4423.40 | 4191.85 | 3878.62 | 3642.89 |
| 180.0  | 4996.48 | 4959.36 | 4902.75 | 4778.85 | 4684.65 | 4534.30 | 4351.01 | 4120.38 | 3854.96 |
| 225.0  | 4954.25 | 4894.39 | 4854.49 | 4741.26 | 4542.66 | 4430.82 | 4220.15 | 3964.93 | 3673.98 |
| 270.0  | 4927.80 | 4951.00 | 4953.79 | 4923.16 | 4890.22 | 4797.87 | 4673.05 | 4510.17 | 4303.21 |
| 315.0  | 4967.71 | 4995.55 | 4989.98 | 4951.00 | 4864.23 | 4724.56 | 4580.24 | 4377.92 | 4139.87 |
| 360.0  | 4996.48 | 4998.80 | 4967.71 | 4893.93 | 4770.50 | 4622.01 | 4428.97 | 4201.59 | 3937.56 |
| C/γ(°) | 9.0     | 10.0    | 11.0    | 12.0    | 13.0    | 14.0    | 15.0    | 16.0    | 17.0    |
| 0.0    | 3645.21 | 3317.61 | 2976.54 | 2635.01 | 2310.19 | 2003.93 | 1731.54 | 1487.46 | 1266.12 |
| 45.0   | 3836.86 | 3541.27 | 3222.02 | 2886.06 | 2551.49 | 2224.81 | 1923.19 | 1651.26 | 1411.82 |
| 90.0   | 3133.85 | 2799.28 | 2466.11 | 2146.39 | 1851.73 | 1583.51 | 1346.86 | 878.46  | 878.46  |
| 135.0  | 3329.67 | 2938.96 | 2671.67 | 2344.53 | 2035.48 | 1753.35 | 1488.85 | 1264.72 | 1057.30 |
| 180.0  | 3551.94 | 3233.15 | 2899.05 | 2565.41 | 2245.23 | 1945.92 | 1672.61 | 1426.67 | 1208.11 |
| 225.0  | 3357.98 | 3027.12 | 2689.77 | 2366.80 | 2059.15 | 1782.58 | 1525.51 | 1298.13 | 924.73  |
| 270.0  | 4057.74 | 3769.58 | 3449.86 | 3120.39 | 2784.43 | 2454.50 | 2145.46 | 1861.47 | 1608.57 |
| 315.0  | 3862.38 | 3546.38 | 3212.74 | 2873.06 | 2538.49 | 2219.24 | 2037.80 | 1658.69 | 1516.69 |
| 360.0  | 3645.21 | 3317.61 | 2976.54 | 2635.01 | 2310.19 | 2003.93 | 1731.54 | 1487.46 | 1266.12 |
| C/γ(°) | 18.0    | 19.0    | 20.0    | 21.0    | 22.0    | 23.0    | 24.0    | 25.0    | 26.0    |
| 0.0    | 904.45  | 836.33  | 803.33  | 648.35  | 504.64  | 377.72  | 267.33  | 172.53  | 97.91   |
| 45.0   | 1193.73 | 1004.86 | 866.58  | 672.15  | 528.77  | 423.89  | 309.74  | 287.93  | 245.71  |
| 90.0   | 808.25  | 650.95  | 510.81  | 384.45  | 275.68  | 183.06  | 110.25  | 59.16   | 30.07   |
| 135.0  | 875.86  | 712.06  | 565.42  | 434.57  | 312.53  | 255.91  | 255.91  | 94.89   | 49.00   |
| 180.0  | 1012.29 | 834.56  | 673.54  | 531.09  | 402.55  | 332.94  | 269.37  | 269.37  | 77.12   |
| 225.0  | 924.73  | 790.85  | 634.06  | 493.59  | 368.44  | 259.63  | 166.31  | 95.22   | 47.80   |
| 270.0  | 1377.48 | 1171.45 | 989.09  | 820.18  | 726.44  | 519.02  | 390.02  | 319.49  | 238.28  |
| 315.0  | 1297.67 | 866.44  | 866.44  | 770.43  | 621.16  | 475.22  | 350.53  | 240.88  | 150.67  |
| 360.0  | 904.45  | 836.33  | 803.33  | 648.35  | 504.64  | 377.72  | 267.33  | 172.53  | 97.91   |
| C/γ(°) | 27.0    | 28.0    | 29.0    | 30.0    | 31.0    | 32.0    | 33.0    | 34.0    | 35.0    |
| 0.0    | 46.59   | 18.65   | 7.98    | 4.41    | 3.39    | 2.88    | 2.55    | 2.32    | 2.09    |
| 45.0   | 66.54   | 31.32   | 14.62   | 6.13    | 3.76    | 3.06    | 2.69    | 2.41    | 2.23    |
| 90.0   | 14.29   | 5.94    | 3.62    | 3.06    | 2.64    | 2.37    | 2.09    | 1.90    | 1.67    |
| 135.0  | 25.38   | 11.00   | 4.97    | 3.43    | 3.02    | 2.64    | 2.32    | 2.09    | 1.90    |
| 180.0  | 38.42   | 19.21   | 7.80    | 3.94    | 3.11    | 2.64    | 2.32    | 2.13    | 1.86    |
| 225.0  | 21.11   | 9.14    | 4.32    | 3.06    | 2.69    | 2.27    | 2.04    | 1.81    | 1.58    |
| 270.0  | 238.28  | 57.49   | 24.41   | 10.49   | 5.06    | 3.29    | 2.78    | 2.41    | 2.13    |
| 315.0  | 85.10   | 36.94   | 16.66   | 6.40    | 4.18    | 3.20    | 2.74    | 2.46    | 2.13    |
| 360.0  | 46.59   | 18.65   | 7.98    | 4.41    | 3.39    | 2.88    | 2.55    | 2.32    | 2.09    |
| C/γ(°) | 36.0    | 37.0    | 38.0    | 39.0    | 40.0    | 41.0    | 42.0    | 43.0    | 44.0    |
| 0.0    | 1.81    | 1.62    | 1.48    | 1.39    | 1.25    | 1.07    | 0.97    | 0.93    | 0.84    |
| 45.0   | 1.90    | 1.81    | 1.58    | 1.44    | 1.30    | 1.25    | 1.07    | 0.97    | 0.97    |
| 90.0   | 1.58    | 1.39    | 1.30    | 1.21    | 1.11    | 0.97    | 0.88    | 0.84    | 0.74    |
| 135.0  | 1.72    | 1.53    | 1.39    | 1.30    | 1.16    | 1.02    | 0.93    | 0.88    | 0.84    |
| 180.0  | 1.67    | 1.48    | 1.35    | 1.21    | 1.11    | 0.97    | 0.93    | 0.88    | 0.74    |
| 225.0  | 1.39    | 1.25    | 1.16    | 1.11    | 0.93    | 0.88    | 0.79    | 0.74    | 0.70    |
| 270.0  | 1.95    | 1.76    | 1.53    | 1.48    | 1.30    | 1.11    | 1.11    | 0.97    | 0.84    |
| 315.0  | 1.86    | 1.72    | 1.58    | 1.35    | 1.25    | 1.11    | 1.02    | 0.97    | 0.79    |
| 360.0  | 1.81    | 1.62    | 1.48    | 1.39    | 1.25    | 1.07    | 0.97    | 0.93    | 0.84    |

| Intensity data(cd) |      |      |      |      |      |      |      |      |      | Appendix Page: 19 Total:20 |  |
|--------------------|------|------|------|------|------|------|------|------|------|----------------------------|--|
| C/ $\gamma$ (°)    | 45.0 | 46.0 | 47.0 | 48.0 | 49.0 | 50.0 | 51.0 | 52.0 | 53.0 |                            |  |
| 0.0                | 0.74 | 0.70 | 0.65 | 0.65 | 0.51 | 0.46 | 0.46 | 0.46 | 0.37 |                            |  |
| 45.0               | 0.88 | 0.74 | 0.70 | 0.70 | 0.60 | 0.51 | 0.46 | 0.51 | 0.46 |                            |  |
| 90.0               | 0.65 | 0.65 | 0.65 | 0.51 | 0.51 | 0.42 | 0.42 | 0.42 | 0.37 |                            |  |
| 135.0              | 0.74 | 0.65 | 0.60 | 0.60 | 0.56 | 0.46 | 0.42 | 0.46 | 0.42 |                            |  |
| 180.0              | 0.65 | 0.60 | 0.60 | 0.51 | 0.46 | 0.46 | 0.42 | 0.37 | 0.32 |                            |  |
| 225.0              | 0.60 | 0.51 | 0.56 | 0.51 | 0.42 | 0.37 | 0.42 | 0.37 | 0.28 |                            |  |
| 270.0              | 0.79 | 0.74 | 0.65 | 0.60 | 0.56 | 0.56 | 0.46 | 0.42 | 0.42 |                            |  |
| 315.0              | 0.70 | 0.70 | 0.65 | 0.56 | 0.51 | 0.51 | 0.46 | 0.42 | 0.42 |                            |  |
| 360.0              | 0.74 | 0.70 | 0.65 | 0.65 | 0.51 | 0.46 | 0.46 | 0.46 | 0.37 |                            |  |
| C/ $\gamma$ (°)    | 54.0 | 55.0 | 56.0 | 57.0 | 58.0 | 59.0 | 60.0 | 61.0 | 62.0 |                            |  |
| 0.0                | 0.32 | 0.32 | 0.32 | 0.28 | 0.23 | 0.23 | 0.23 | 0.23 | 0.28 |                            |  |
| 45.0               | 0.37 | 0.37 | 0.32 | 0.32 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |                            |  |
| 90.0               | 0.37 | 0.32 | 0.23 | 0.28 | 0.28 | 0.23 | 0.23 | 0.23 | 0.23 |                            |  |
| 135.0              | 0.32 | 0.32 | 0.32 | 0.32 | 0.28 | 0.23 | 0.28 | 0.28 | 0.23 |                            |  |
| 180.0              | 0.32 | 0.32 | 0.28 | 0.23 | 0.28 | 0.23 | 0.23 | 0.23 | 0.28 |                            |  |
| 225.0              | 0.28 | 0.32 | 0.28 | 0.28 | 0.23 | 0.23 | 0.23 | 0.19 | 0.19 |                            |  |
| 270.0              | 0.42 | 0.32 | 0.32 | 0.37 | 0.28 | 0.23 | 0.23 | 0.23 | 0.23 |                            |  |
| 315.0              | 0.37 | 0.28 | 0.28 | 0.32 | 0.28 | 0.23 | 0.23 | 0.23 | 0.23 |                            |  |
| 360.0              | 0.32 | 0.32 | 0.32 | 0.28 | 0.23 | 0.23 | 0.23 | 0.23 | 0.28 |                            |  |
| C/ $\gamma$ (°)    | 63.0 | 64.0 | 65.0 | 66.0 | 67.0 | 68.0 | 69.0 | 70.0 | 71.0 |                            |  |
| 0.0                | 0.19 | 0.19 | 0.14 | 0.23 | 0.19 | 0.14 | 0.14 | 0.19 | 0.19 |                            |  |
| 45.0               | 0.23 | 0.23 | 0.23 | 0.23 | 0.19 | 0.19 | 0.23 | 0.19 | 0.19 |                            |  |
| 90.0               | 0.19 | 0.19 | 0.19 | 0.23 | 0.19 | 0.19 | 0.19 | 0.23 | 0.19 |                            |  |
| 135.0              | 0.19 | 0.23 | 0.23 | 0.23 | 0.19 | 0.19 | 0.19 | 0.23 | 0.19 |                            |  |
| 180.0              | 0.23 | 0.23 | 0.19 | 0.14 | 0.23 | 0.19 | 0.14 | 0.14 | 0.19 |                            |  |
| 225.0              | 0.19 | 0.19 | 0.19 | 0.14 | 0.19 | 0.19 | 0.14 | 0.09 | 0.14 |                            |  |
| 270.0              | 0.23 | 0.19 | 0.19 | 0.23 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 |                            |  |
| 315.0              | 0.23 | 0.19 | 0.23 | 0.19 | 0.14 | 0.19 | 0.19 | 0.23 | 0.19 |                            |  |
| 360.0              | 0.19 | 0.19 | 0.14 | 0.23 | 0.19 | 0.14 | 0.14 | 0.19 | 0.19 |                            |  |
| C/ $\gamma$ (°)    | 72.0 | 73.0 | 74.0 | 75.0 | 76.0 | 77.0 | 78.0 | 79.0 | 80.0 |                            |  |
| 0.0                | 0.14 | 0.14 | 0.14 | 0.19 | 0.14 | 0.14 | 0.19 | 0.19 | 0.14 |                            |  |
| 45.0               | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.23 | 0.14 | 0.14 | 0.14 |                            |  |
| 90.0               | 0.14 | 0.23 | 0.19 | 0.19 | 0.19 | 0.23 | 0.23 | 0.14 | 0.19 |                            |  |
| 135.0              | 0.19 | 0.19 | 0.23 | 0.19 | 0.19 | 0.23 | 0.23 | 0.19 | 0.19 |                            |  |
| 180.0              | 0.23 | 0.14 | 0.14 | 0.14 | 0.19 | 0.19 | 0.14 | 0.19 | 0.19 |                            |  |
| 225.0              | 0.19 | 0.14 | 0.09 | 0.19 | 0.14 | 0.14 | 0.09 | 0.14 | 0.14 |                            |  |
| 270.0              | 0.14 | 0.19 | 0.23 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |                            |  |
| 315.0              | 0.19 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |                            |  |
| 360.0              | 0.14 | 0.14 | 0.14 | 0.19 | 0.14 | 0.14 | 0.19 | 0.19 | 0.14 |                            |  |
| C/ $\gamma$ (°)    | 81.0 | 82.0 | 83.0 | 84.0 | 85.0 | 86.0 | 87.0 | 88.0 | 89.0 |                            |  |
| 0.0                | 0.14 | 0.14 | 0.14 | 0.14 | 0.19 | 0.14 | 0.14 | 0.19 | 0.23 |                            |  |
| 45.0               | 0.19 | 0.19 | 0.19 | 0.19 | 0.09 | 0.19 | 0.14 | 0.19 | 0.28 |                            |  |
| 90.0               | 0.23 | 0.23 | 0.28 | 0.28 | 0.28 | 0.37 | 0.37 | 0.42 | 0.37 |                            |  |
| 135.0              | 0.28 | 0.28 | 0.46 | 0.56 | 0.79 | 1.02 | 1.25 | 1.35 | 1.44 |                            |  |
| 180.0              | 0.19 | 0.14 | 0.19 | 0.19 | 0.19 | 0.28 | 0.42 | 0.65 | 0.84 |                            |  |
| 225.0              | 0.09 | 0.09 | 0.09 | 0.14 | 0.09 | 0.09 | 0.14 | 0.14 | 0.28 |                            |  |
| 270.0              | 0.19 | 0.14 | 0.19 | 0.14 | 0.14 | 0.09 | 0.19 | 0.14 | 0.14 |                            |  |
| 315.0              | 0.14 | 0.14 | 0.14 | 0.09 | 0.14 | 0.14 | 0.19 | 0.14 | 0.19 |                            |  |
| 360.0              | 0.14 | 0.14 | 0.14 | 0.14 | 0.19 | 0.14 | 0.14 | 0.19 | 0.23 |                            |  |

Intensity data(cd)

Appendix Page: 20 Total:20

|                                 |             |
|---------------------------------|-------------|
| <b>C/<math>\gamma</math>(°)</b> | <b>90.0</b> |
| <b>0.0</b>                      | <b>0.19</b> |
| <b>45.0</b>                     | <b>0.28</b> |
| <b>90.0</b>                     | <b>0.19</b> |
| <b>135.0</b>                    | <b>1.39</b> |
| <b>180.0</b>                    | <b>0.93</b> |
| <b>225.0</b>                    | <b>0.46</b> |
| <b>270.0</b>                    | <b>0.09</b> |
| <b>315.0</b>                    | <b>0.19</b> |
| <b>360.0</b>                    | <b>0.19</b> |