



NATA LIGHTING CO.,LTD.  
www.nata.cn  
Email:info@nata.com  
Tel:+86-750-3770000 Fax:+86-750-3771111  
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

---

## Nata

---

Client:

LumCAT: 1654-S

Luminaire: 92.70.043.00

Report No:

Voltage(V): 31.5600

Test No: GC20190824010

Current(A): 0.1970

LampCAT: XICATO XOB LES 6MM

Power (W): 6.2200

Lamp flux(lm): 658.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 32

Width(mm): 32

Phm Type: C

Height(mm): 0

---

## Photometric Results

---

Lumens(lm): 591.60, Efficiency(%): 89.91% , Luminous Efficacy(lm/W): 95.11

Central intensity(cd): 3261.656, Maximum intensity(cd): 3261.656

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

Beam Angle(50%Imax): [C0/180]Total=19.0

[C90/270]Total=19.0

Field angle(10%Imax): [C0/180]Total=38.6

[C90/270]Total=38.6

Maximum s/h(1/2): C0\_180=0.33 C90\_270=0.33

Maximum s/h(1/4): C0\_180=0.33 C90\_270=0.33

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 89.91%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 98.349%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 3261.656      | 0.000       | 0         | .000%       | .000%      |
| 1.0                | 3240.492      | 3.111       | 3.111     | .473%       | .526%      |
| 2.0                | 3178.688      | 9.213       | 12.325    | 1.400%      | 2.083%     |
| 3.0                | 3068.508      | 14.941      | 27.266    | 2.271%      | 4.609%     |
| 4.0                | 2919.727      | 20.045      | 47.31     | 3.046%      | 7.997%     |
| 5.0                | 2720.250      | 24.263      | 71.573    | 3.687%      | 12.098%    |
| 6.0                | 2502.141      | 27.445      | 99.018    | 4.171%      | 16.737%    |
| 7.0                | 2255.133      | 29.528      | 128.547   | 4.488%      | 21.728%    |
| 8.0                | 2016.281      | 30.570      | 159.116   | 4.646%      | 26.896%    |
| 9.0                | 1754.402      | 30.559      | 189.676   | 4.644%      | 32.061%    |
| 10.0               | 1525.838      | 29.685      | 219.361   | 4.511%      | 37.079%    |
| 11.0               | 1291.366      | 28.150      | 247.51    | 4.278%      | 41.837%    |
| 12.0               | 1087.123      | 26.000      | 273.511   | 3.951%      | 46.232%    |
| 13.0               | 906.356       | 23.658      | 297.168   | 3.595%      | 50.231%    |
| 14.0               | 758.243       | 21.307      | 318.475   | 3.238%      | 53.832%    |
| 15.0               | 633.298       | 19.104      | 337.579   | 2.903%      | 57.062%    |
| 16.0               | 527.850       | 17.014      | 354.593   | 2.586%      | 59.937%    |
| 17.0               | 444.445       | 15.141      | 369.734   | 2.301%      | 62.497%    |
| 18.0               | 380.531       | 13.602      | 383.336   | 2.067%      | 64.796%    |
| 19.0               | 337.057       | 12.485      | 395.82    | 1.897%      | 66.906%    |
| 20.0               | 303.173       | 11.718      | 407.538   | 1.781%      | 68.887%    |
| 21.0               | 279.788       | 11.194      | 418.733   | 1.701%      | 70.779%    |
| 22.0               | 264.677       | 10.941      | 429.674   | 1.663%      | 72.629%    |
| 23.0               | 248.534       | 10.769      | 440.442   | 1.637%      | 74.449%    |
| 24.0               | 238.022       | 10.638      | 451.08    | 1.617%      | 76.247%    |
| 25.0               | 229.950       | 10.641      | 461.721   | 1.617%      | 78.046%    |
| 26.0               | 223.847       | 10.712      | 472.433   | 1.628%      | 79.856%    |
| 27.0               | 218.327       | 10.818      | 483.251   | 1.644%      | 81.685%    |
| 28.0               | 213.750       | 10.939      | 494.19    | 1.663%      | 83.534%    |
| 29.0               | 207.745       | 11.028      | 505.217   | 1.676%      | 85.398%    |
| 30.0               | 198.183       | 10.960      | 516.177   | 1.666%      | 87.250%    |
| 31.0               | 183.959       | 10.634      | 526.812   | 1.616%      | 89.048%    |
| 32.0               | 163.498       | 9.954       | 536.766   | 1.513%      | 90.731%    |
| 33.0               | 141.405       | 8.983       | 545.749   | 1.365%      | 92.249%    |
| 34.0               | 118.076       | 7.853       | 553.601   | 1.193%      | 93.576%    |
| 35.0               | 92.967        | 6.554       | 560.155   | .996%       | 94.684%    |
| 36.0               | 69.335        | 5.168       | 565.323   | .785%       | 95.558%    |
| 37.0               | 49.591        | 3.879       | 569.202   | .589%       | 96.213%    |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 30.952        | 2.688       | 571.89    | .409%       | 96.668%    |
| 39.0               | 17.592        | 1.657       | 573.547   | .252%       | 96.948%    |
| 40.0               | 10.877        | 0.993       | 574.54    | .151%       | 97.116%    |
| 41.0               | 7.755         | 0.664       | 575.204   | .101%       | 97.228%    |
| 42.0               | 6.504         | 0.518       | 575.722   | .079%       | 97.315%    |
| 43.0               | 5.702         | 0.452       | 576.174   | .069%       | 97.392%    |
| 44.0               | 5.055         | 0.406       | 576.58    | .062%       | 97.460%    |
| 45.0               | 4.584         | 0.370       | 576.95    | .056%       | 97.523%    |
| 46.0               | 4.324         | 0.348       | 577.299   | .053%       | 97.582%    |
| 47.0               | 4.163         | 0.338       | 577.636   | .051%       | 97.639%    |
| 48.0               | 4.050         | 0.332       | 577.968   | .050%       | 97.695%    |
| 49.0               | 3.973         | 0.329       | 578.298   | .050%       | 97.751%    |
| 50.0               | 3.874         | 0.327       | 578.625   | .050%       | 97.806%    |
| 51.0               | 3.790         | 0.324       | 578.949   | .049%       | 97.861%    |
| 52.0               | 3.741         | 0.323       | 579.272   | .049%       | 97.916%    |
| 53.0               | 3.670         | 0.322       | 579.595   | .049%       | 97.970%    |
| 54.0               | 3.614         | 0.321       | 579.916   | .049%       | 98.024%    |
| 55.0               | 3.565         | 0.320       | 580.236   | .049%       | 98.078%    |
| 56.0               | 3.502         | 0.319       | 580.556   | .049%       | 98.132%    |
| 57.0               | 3.473         | 0.319       | 580.874   | .048%       | 98.186%    |
| 58.0               | 3.452         | 0.320       | 581.195   | .049%       | 98.240%    |
| 59.0               | 3.424         | 0.321       | 581.516   | .049%       | 98.295%    |
| 60.0               | 3.396         | 0.322       | 581.838   | .049%       | 98.349%    |
| 61.0               | 3.354         | 0.322       | 582.161   | .049%       | 98.404%    |
| 62.0               | 3.326         | 0.322       | 582.482   | .049%       | 98.458%    |
| 63.0               | 3.319         | 0.323       | 582.806   | .049%       | 98.513%    |
| 64.0               | 3.298         | 0.325       | 583.13    | .049%       | 98.568%    |
| 65.0               | 3.284         | 0.326       | 583.456   | .049%       | 98.623%    |
| 66.0               | 3.234         | 0.325       | 583.781   | .049%       | 98.678%    |
| 67.0               | 3.213         | 0.324       | 584.105   | .049%       | 98.732%    |
| 68.0               | 3.192         | 0.324       | 584.43    | .049%       | 98.787%    |
| 69.0               | 3.157         | 0.324       | 584.754   | .049%       | 98.842%    |
| 70.0               | 3.157         | 0.324       | 585.078   | .049%       | 98.897%    |
| 71.0               | 3.129         | 0.325       | 585.403   | .049%       | 98.952%    |
| 72.0               | 3.115         | 0.325       | 585.728   | .049%       | 99.007%    |
| 73.0               | 3.101         | 0.325       | 586.053   | .049%       | 99.062%    |
| 74.0               | 3.108         | 0.326       | 586.379   | .050%       | 99.117%    |
| 75.0               | 3.066         | 0.326       | 586.705   | .050%       | 99.172%    |

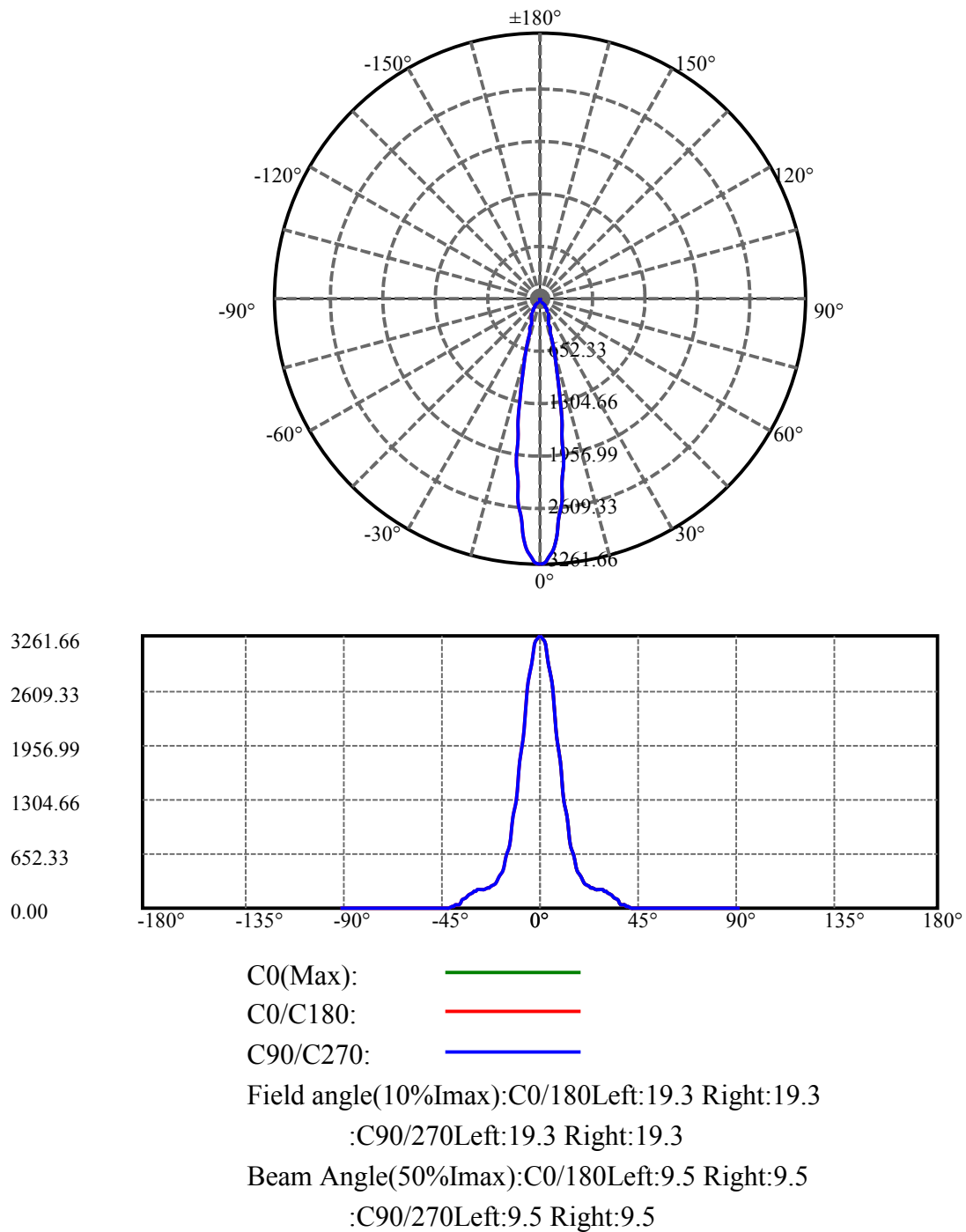
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 3.059         | 0.325       | 587.03    | .049%       | 99.227%    |
| 77.0               | 3.080         | 0.327       | 587.358   | .050%       | 99.282%    |
| 78.0               | 3.080         | 0.330       | 587.687   | .050%       | 99.338%    |
| 79.0               | 3.080         | 0.331       | 588.018   | .050%       | 99.394%    |
| 80.0               | 3.087         | 0.332       | 588.351   | .051%       | 99.450%    |
| 81.0               | 3.101         | 0.335       | 588.685   | .051%       | 99.507%    |
| 82.0               | 3.059         | 0.334       | 589.019   | .051%       | 99.563%    |
| 83.0               | 3.038         | 0.331       | 589.351   | .050%       | 99.619%    |
| 84.0               | 3.045         | 0.331       | 589.682   | .050%       | 99.675%    |
| 85.0               | 3.052         | 0.333       | 590.015   | .051%       | 99.731%    |
| 86.0               | 3.002         | 0.331       | 590.346   | .050%       | 99.787%    |
| 87.0               | 2.897         | 0.323       | 590.669   | .049%       | 99.842%    |
| 88.0               | 2.848         | 0.315       | 590.983   | .048%       | 99.895%    |
| 89.0               | 2.827         | 0.311       | 591.294   | .047%       | 99.948%    |
| 90.0               | 2.827         | 0.310       | 591.604   | .047%       | 100.000%   |

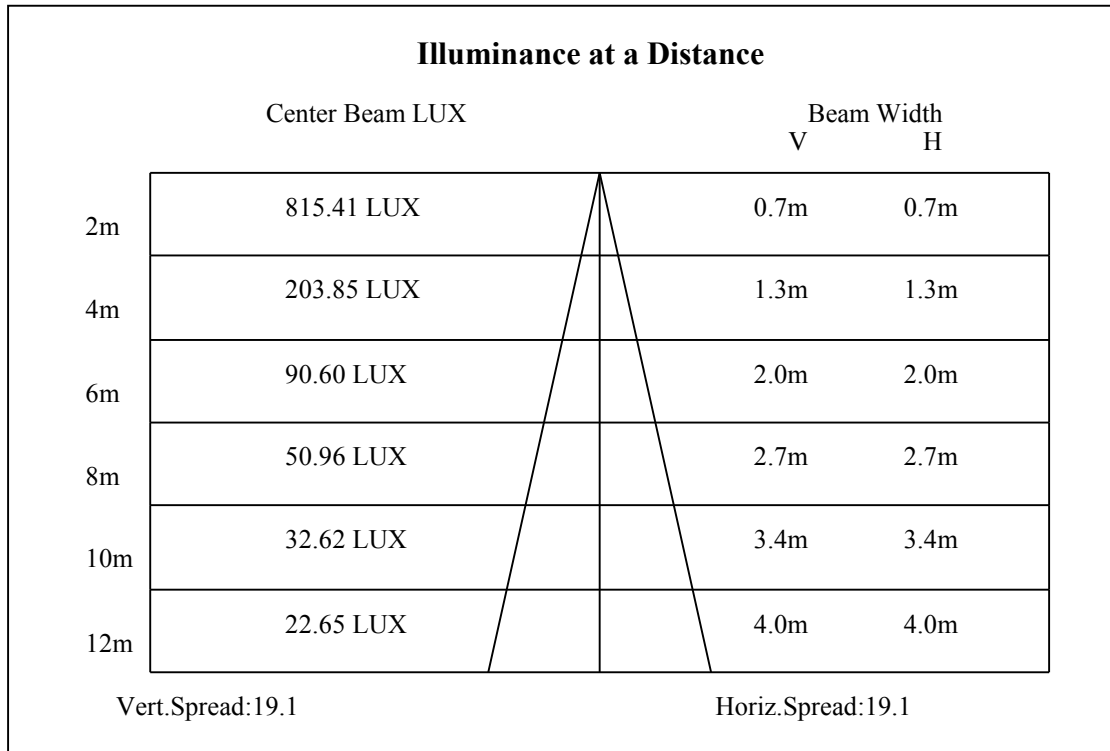
## ZONAL LUMEN SUMMARY

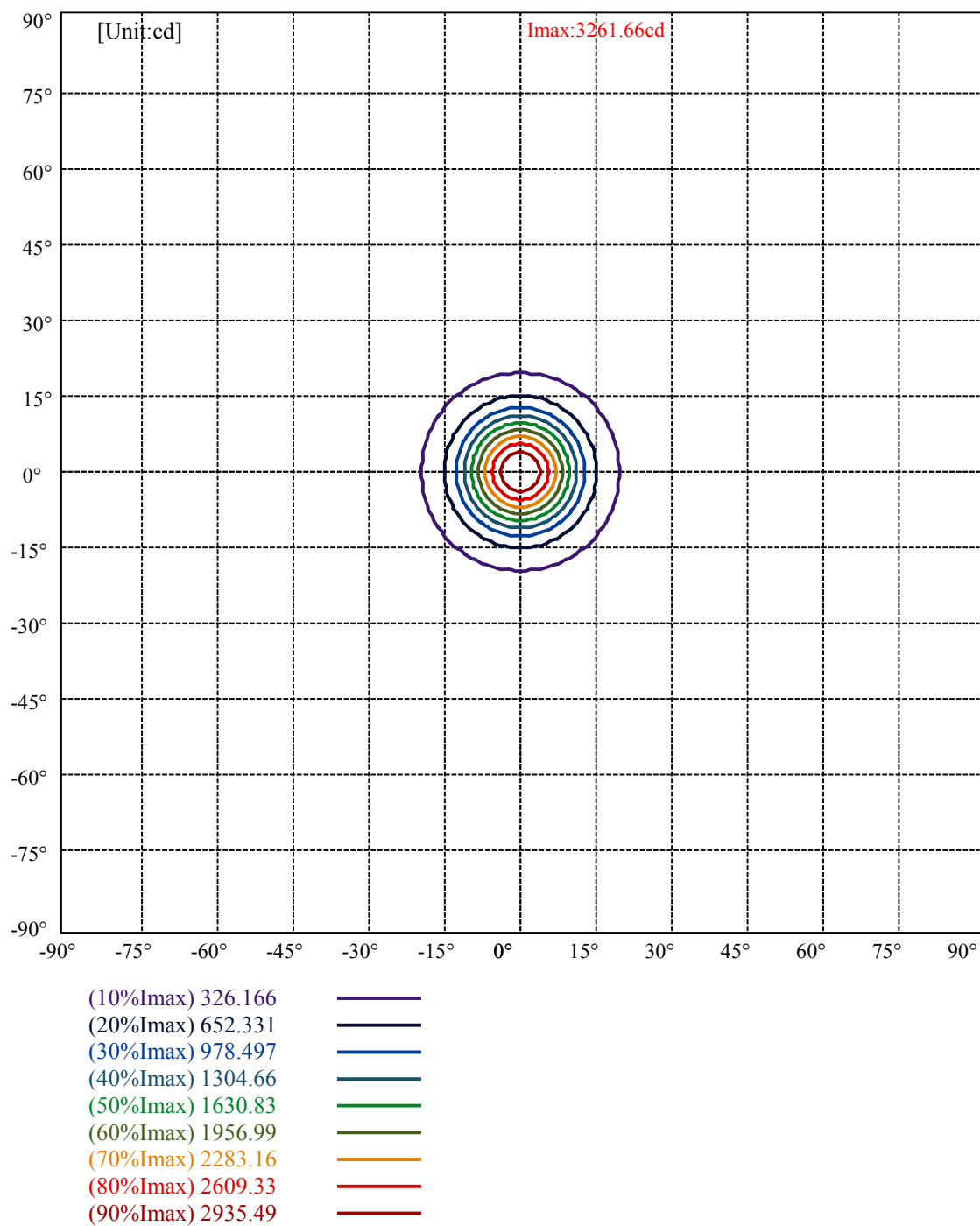
| Zone    | Lumens | %Lamp  | %Fixt   |
|---------|--------|--------|---------|
| 0-30    | 516.18 | 78.45% | 87.25%  |
| 0-40    | 574.54 | 87.32% | 97.12%  |
| 0-60    | 581.84 | 88.43% | 98.35%  |
| 0-90    | 591.29 | 89.86% | 99.95%  |
| 0-120   | 591.29 | 89.86% | 99.95%  |
| 0-180   | 591.60 | 89.91% | 100.00% |
| 60-90   | 9.78   | 1.49%  | 1.65%   |
| 90-120  | 0.00   | 0.00%  | 0.00%   |
| 90-130  | 0.00   | 0.00%  | 0.00%   |
| 90-150  | 0.00   | 0.00%  | 0.00%   |
| 90-180  | 0.00   | 0.00%  | 0.00%   |
| 0-26.08 | 473.28 | 71.93% | 80.00%  |

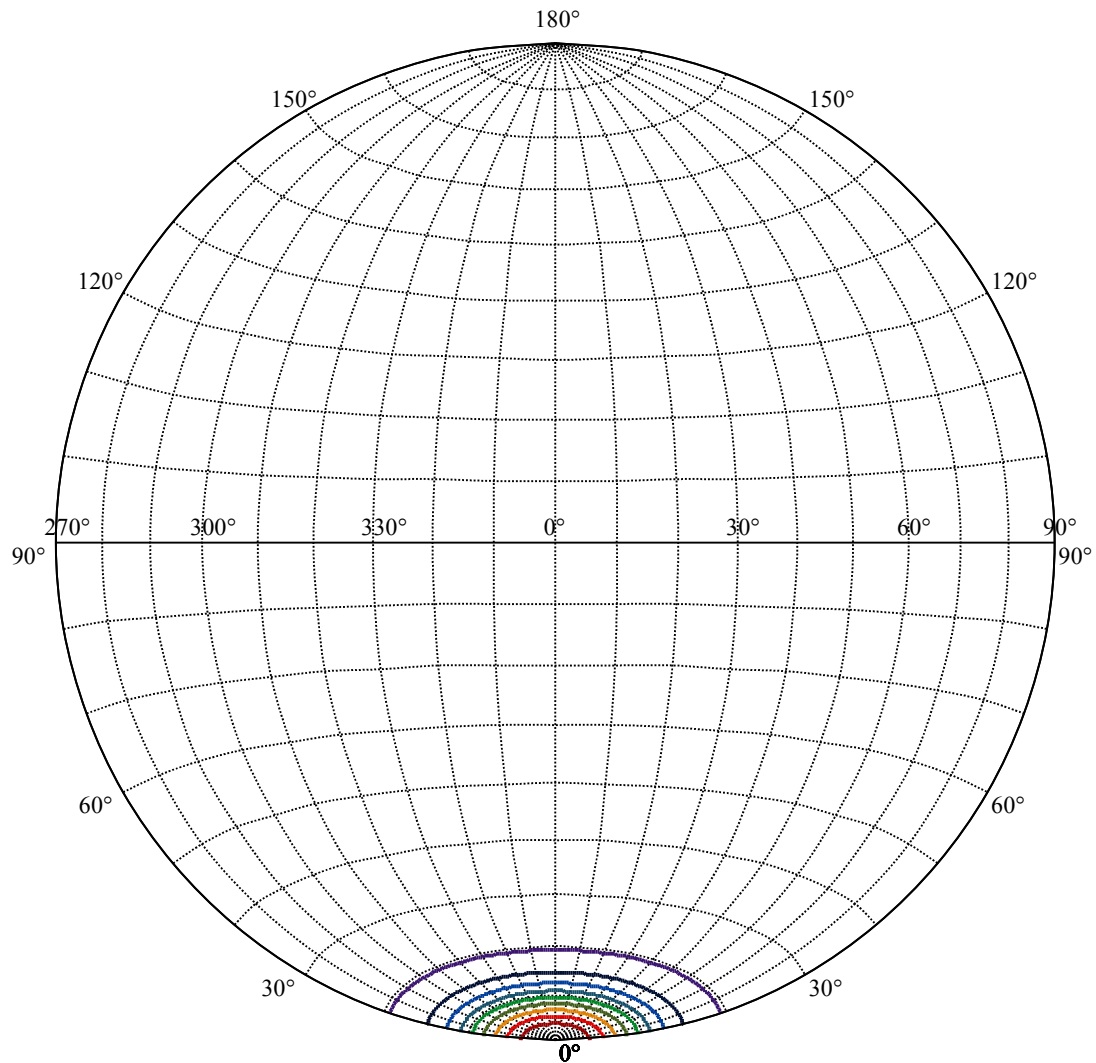
## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 219.36 |
| 10-20   | 188.18 |
| 20-30   | 108.64 |
| 30-40   | 58.36  |
| 40-50   | 4.08   |
| 50-60   | 3.21   |
| 60-70   | 3.24   |
| 70-80   | 3.27   |
| 80-90   | 2.94   |
| 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   |









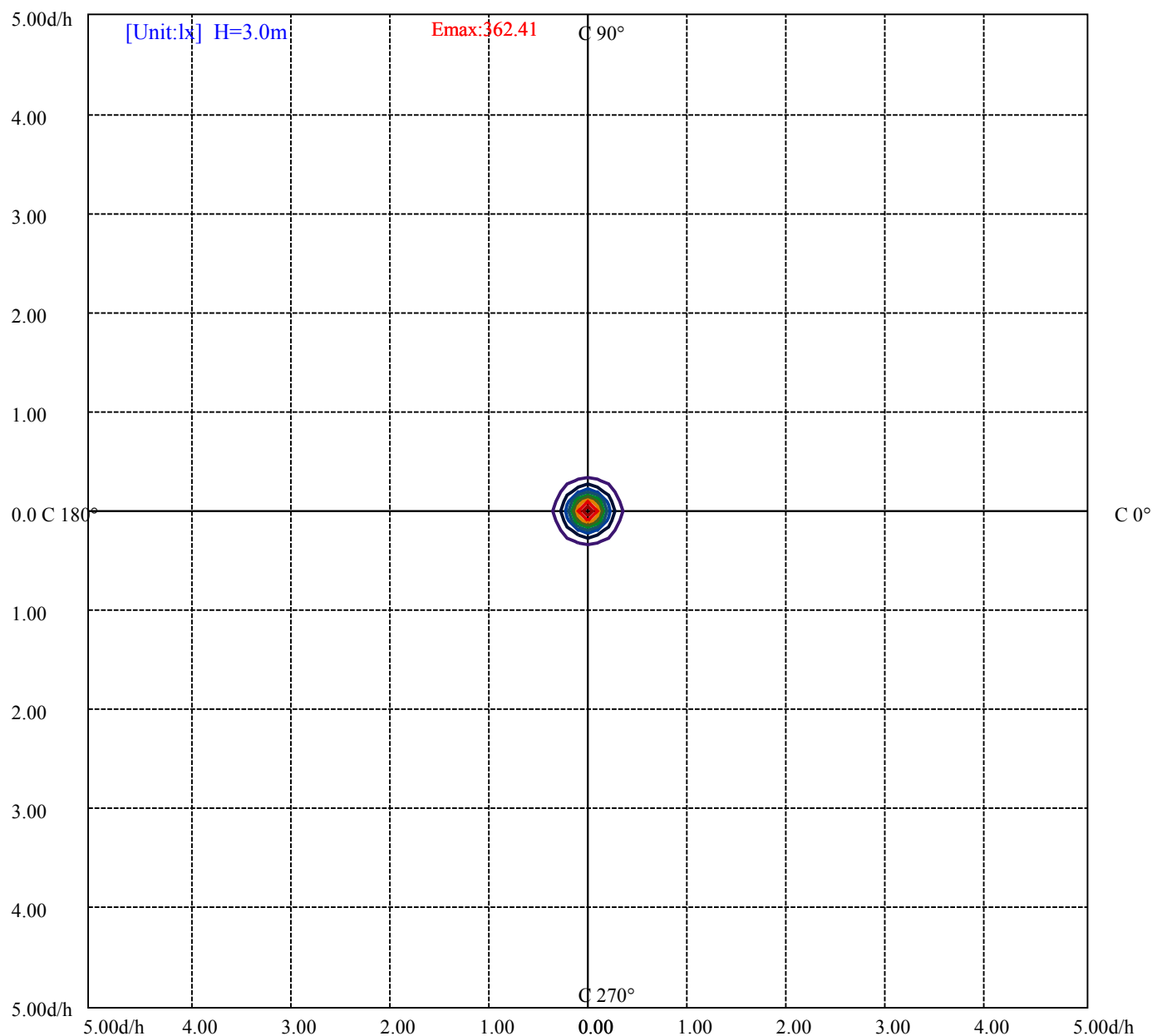
House

[Unit:cd]

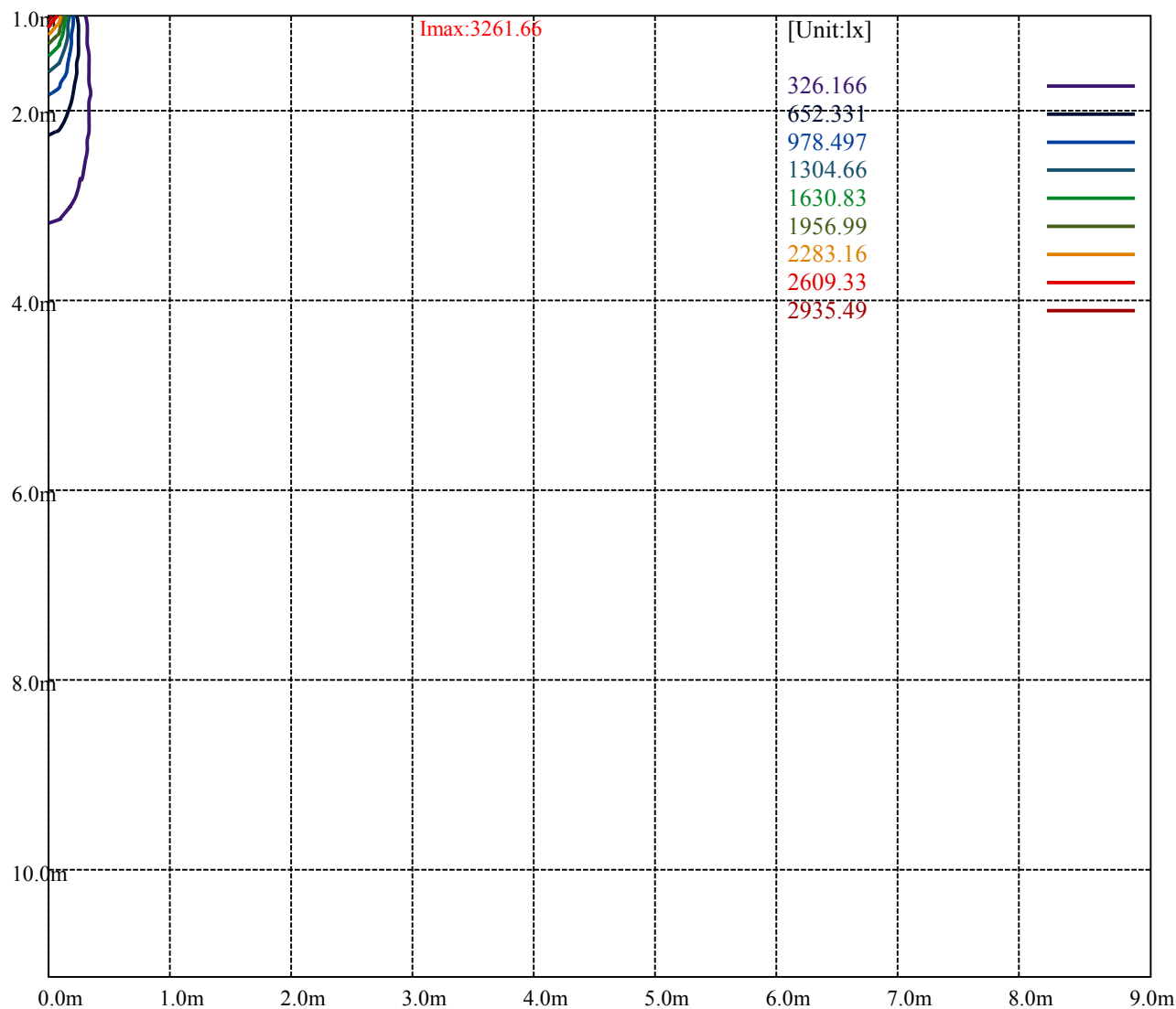
Road

**Imax:3261.66**

|           |         |   |
|-----------|---------|---|
| (10%Imax) | 326.166 | — |
| (20%Imax) | 652.331 | — |
| (30%Imax) | 978.497 | — |
| (40%Imax) | 1304.66 | — |
| (50%Imax) | 1630.83 | — |
| (60%Imax) | 1956.99 | — |
| (70%Imax) | 2283.16 | — |
| (80%Imax) | 2609.33 | — |
| (90%Imax) | 2935.49 | — |



|           |          |   |
|-----------|----------|---|
| (10%Emax) | 36.24055 | — |
| (20%Emax) | 72.48122 | — |
| (30%Emax) | 108.7218 | — |
| (40%Emax) | 144.9622 | — |
| (50%Emax) | 181.2033 | — |
| (60%Emax) | 217.4433 | — |
| (70%Emax) | 253.6844 | — |
| (80%Emax) | 289.9244 | — |
| (90%Emax) | 326.1656 | — |



Luminance Table

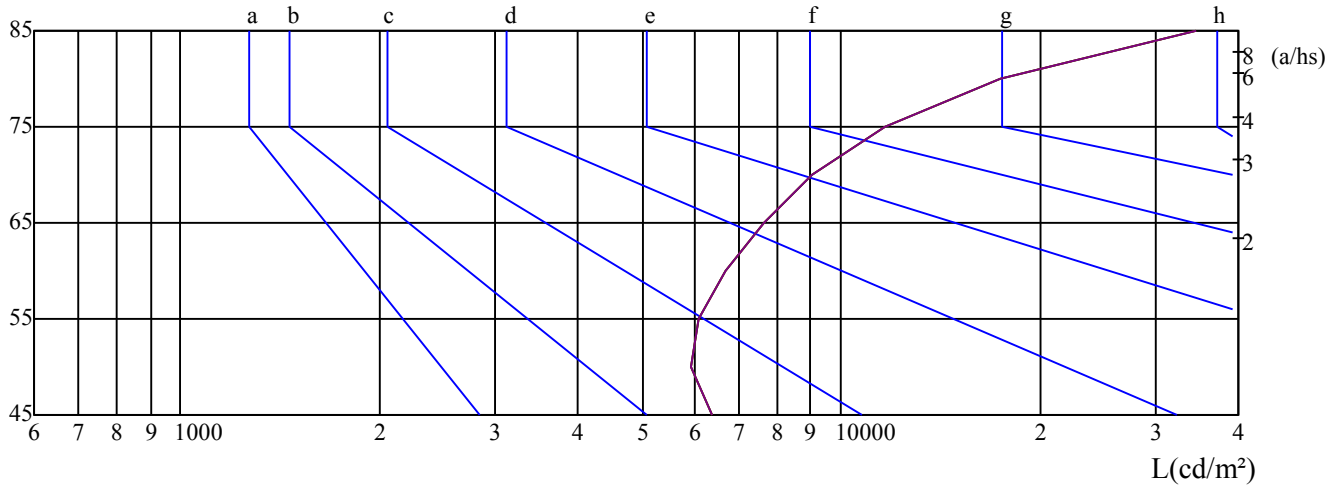
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75    | 80    | 85    |
|----------|------|------|------|------|------|------|-------|-------|-------|
| C0       | 6371 | 5923 | 6108 | 6675 | 7635 | 9071 | 11640 | 17468 | 34407 |
| C45      | 6371 | 5923 | 6108 | 6675 | 7635 | 9071 | 11640 | 17468 | 34407 |
| C90      | 6371 | 5923 | 6108 | 6675 | 7635 | 9071 | 11640 | 17468 | 34407 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 7635       | 7635       | 7635    | 11640      | 11640      | 11640   | 34407      | 34407      | 34407   |

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          |

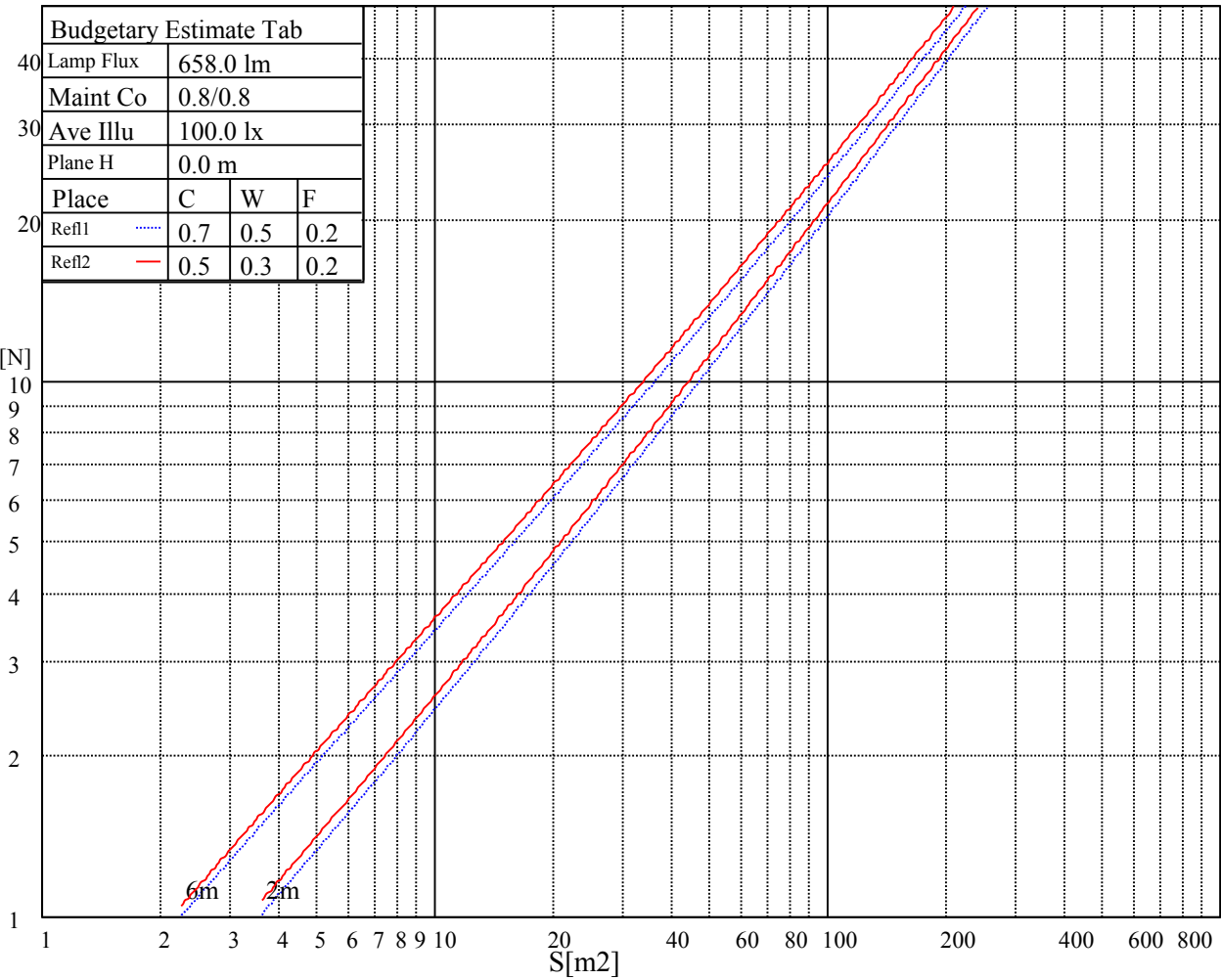
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

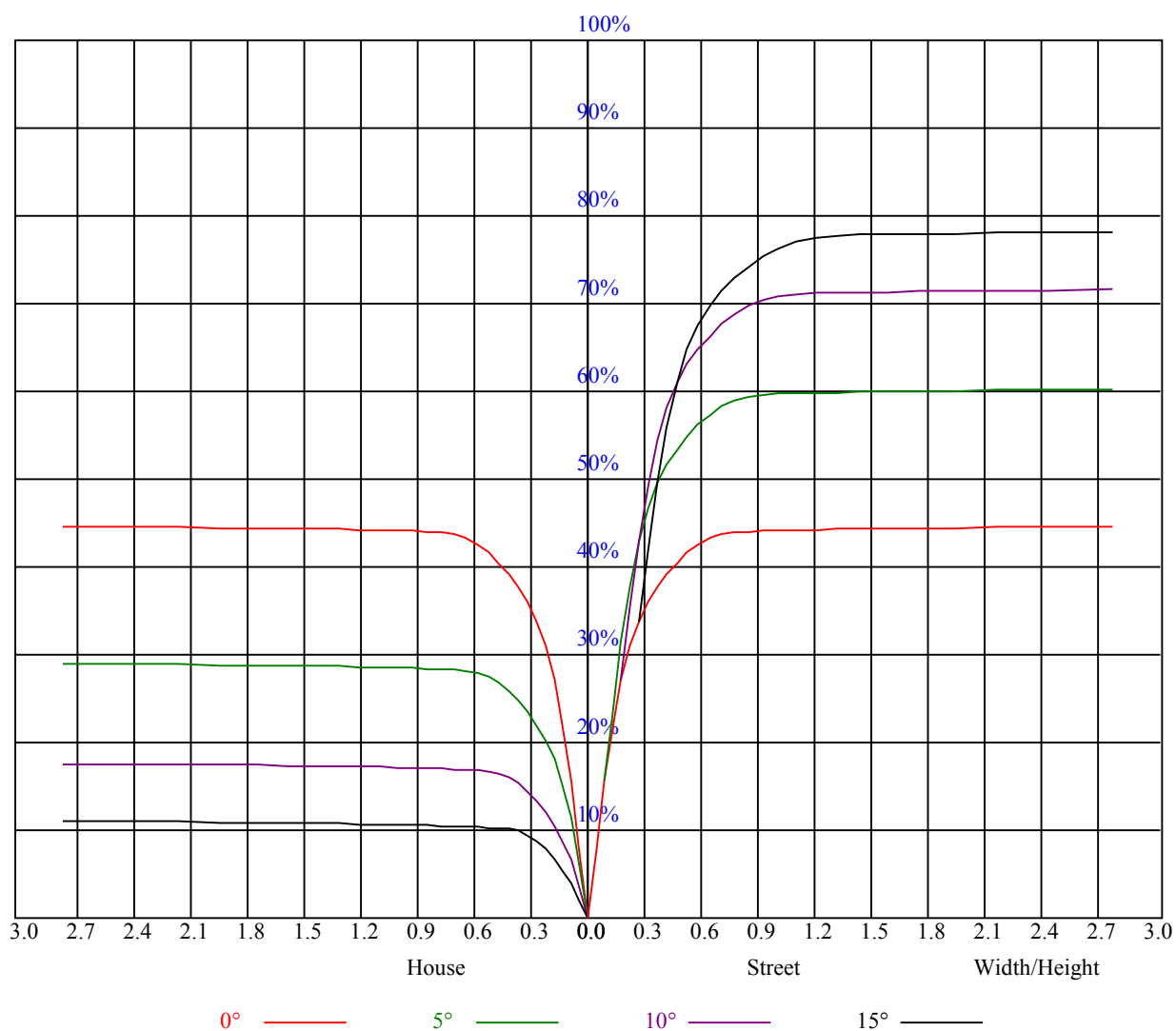
C0 ———

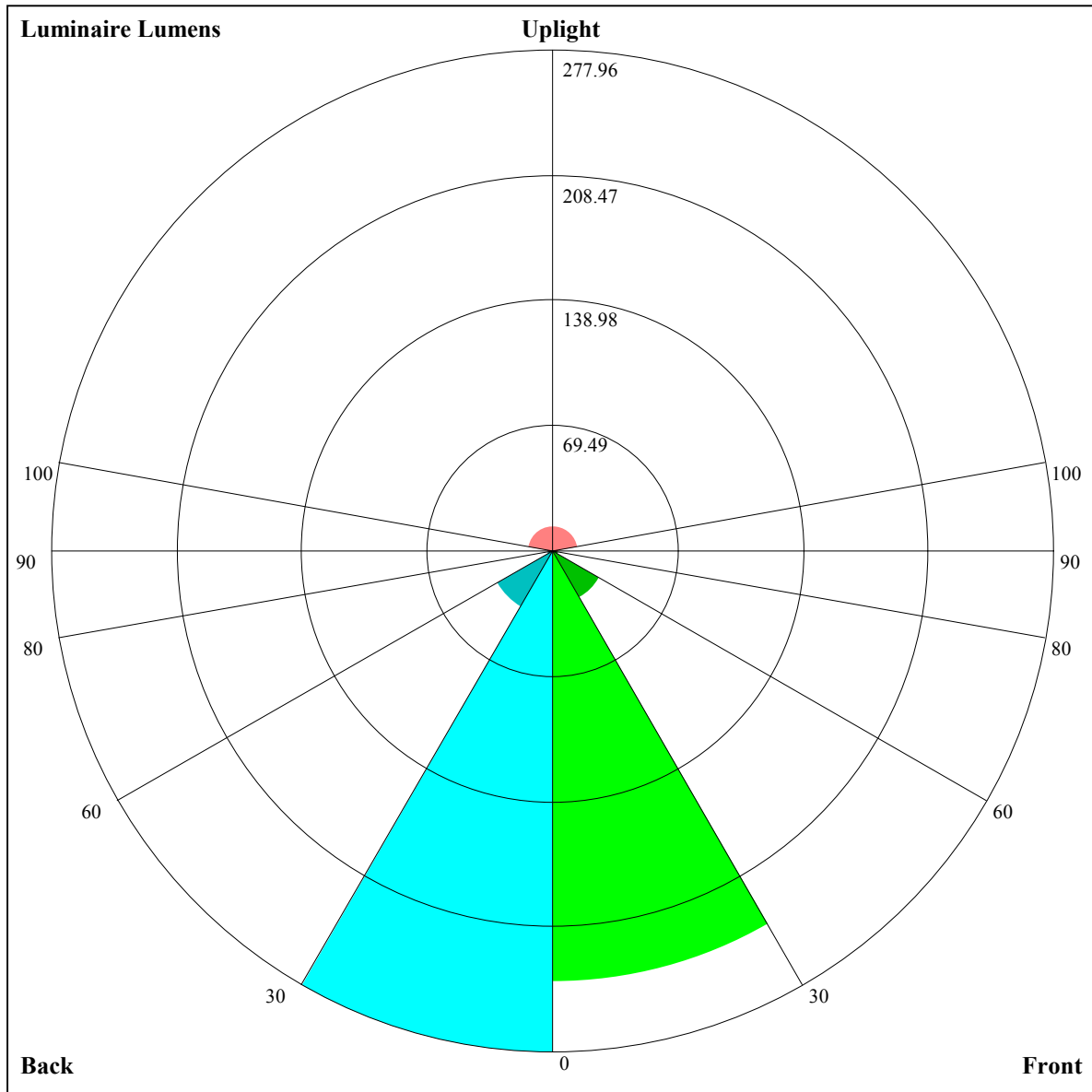
C45 ———

C90 ———



| RHOCC | 80                                      |      |      | 70   |      |      | 50   |      |      | 30   |      |      | 10   |      |      | 0    |
|-------|-----------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RHOW  | 50                                      | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 0    |
| RCR   | COEFFICIENTS OF UTILIZATION RHOFC=20 CU |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0     | 1.07                                    | 1.07 | 1.07 | 1.05 | 1.05 | 1.05 | 1.00 | 1.00 | 1.00 | 0.96 | 0.96 | 0.96 | 0.92 | 0.92 | 0.92 | 0.90 |
| 1     | 1.01                                    | 0.99 | 0.97 | 0.99 | 0.97 | 0.96 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 |
| 2     | 0.96                                    | 0.93 | 0.90 | 0.94 | 0.91 | 0.89 | 0.91 | 0.89 | 0.87 | 0.89 | 0.87 | 0.85 | 0.86 | 0.85 | 0.84 | 0.82 |
| 3     | 0.91                                    | 0.88 | 0.85 | 0.90 | 0.87 | 0.84 | 0.88 | 0.85 | 0.83 | 0.86 | 0.83 | 0.81 | 0.84 | 0.82 | 0.80 | 0.79 |
| 4     | 0.87                                    | 0.83 | 0.80 | 0.86 | 0.83 | 0.80 | 0.84 | 0.81 | 0.79 | 0.83 | 0.80 | 0.78 | 0.81 | 0.79 | 0.77 | 0.76 |
| 5     | 0.84                                    | 0.80 | 0.77 | 0.83 | 0.79 | 0.76 | 0.81 | 0.78 | 0.76 | 0.80 | 0.77 | 0.75 | 0.79 | 0.76 | 0.74 | 0.73 |
| 6     | 0.80                                    | 0.76 | 0.73 | 0.80 | 0.76 | 0.73 | 0.79 | 0.75 | 0.73 | 0.77 | 0.75 | 0.72 | 0.76 | 0.74 | 0.72 | 0.71 |
| 7     | 0.78                                    | 0.74 | 0.71 | 0.77 | 0.73 | 0.71 | 0.76 | 0.73 | 0.70 | 0.75 | 0.72 | 0.70 | 0.74 | 0.72 | 0.70 | 0.69 |
| 8     | 0.75                                    | 0.71 | 0.68 | 0.75 | 0.71 | 0.68 | 0.74 | 0.70 | 0.68 | 0.73 | 0.70 | 0.68 | 0.72 | 0.69 | 0.67 | 0.66 |
| 9     | 0.73                                    | 0.69 | 0.66 | 0.72 | 0.69 | 0.66 | 0.72 | 0.68 | 0.66 | 0.71 | 0.68 | 0.66 | 0.70 | 0.67 | 0.65 | 0.64 |
| 10    | 0.70                                    | 0.67 | 0.64 | 0.70 | 0.66 | 0.64 | 0.70 | 0.66 | 0.64 | 0.69 | 0.66 | 0.64 | 0.68 | 0.66 | 0.64 | 0.63 |





Luminaire Lumens:

FL=239.46,FM=29.86,FH=3.42,FVH=1.69

BL=277.96,BM=36.19,BH=3.04,BVH=1.54

UL=3.08,UH=14.68

BUG Rating:B1-U2-G0

## Nata 1654-S

| 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                | 3267.00 | 3198.38 | 3063.94 | 2907.56 | 2727.56 | 2454.19 | 2230.31 | 1996.88 | 1730.81 |                            |  |
| 45.0               | 3278.25 | 3236.06 | 3149.44 | 3016.13 | 2859.19 | 2649.94 | 2415.38 | 2179.13 | 1945.69 |                            |  |
| 90.0               | 3259.69 | 3236.63 | 3175.88 | 3065.63 | 2909.81 | 2739.38 | 2516.06 | 2258.44 | 2025.56 |                            |  |
| 135.0              | 3241.69 | 3281.06 | 3277.69 | 3222.00 | 3137.06 | 2988.56 | 2821.50 | 2628.00 | 2411.44 |                            |  |
| 180.0              | 3267.00 | 3291.75 | 3289.50 | 3239.44 | 3161.25 | 3024.00 | 2859.19 | 2637.00 | 2381.06 |                            |  |
| 225.0              | 3278.25 | 3274.31 | 3239.44 | 3162.38 | 3035.25 | 2874.38 | 2687.06 | 2417.63 | 2188.13 |                            |  |
| 270.0              | 3259.69 | 3247.31 | 3188.81 | 3084.19 | 2949.75 | 2775.94 | 2508.75 | 2289.94 | 2065.50 |                            |  |
| 315.0              | 3241.69 | 3158.44 | 3044.81 | 2850.75 | 2577.94 | 2255.63 | 1978.88 | 1634.06 | 1382.06 |                            |  |
| 360.0              | 3267.00 | 3198.38 | 3063.94 | 2907.56 | 2727.56 | 2454.19 | 2230.31 | 1996.88 | 1730.81 |                            |  |
| C/ $\gamma$ (°)    | 9.0     | 10.0    | 11.0    | 12.0    | 13.0    | 14.0    | 15.0    | 16.0    | 17.0    |                            |  |
| 0.0                | 1478.81 | 1261.69 | 1046.25 | 880.88  | 721.69  | 591.19  | 500.06  | 420.75  | 364.50  |                            |  |
| 45.0               | 1659.38 | 1435.50 | 1218.94 | 1003.50 | 829.69  | 695.25  | 569.81  | 470.25  | 402.19  |                            |  |
| 90.0               | 1792.13 | 1508.63 | 1118.93 | 1096.09 | 907.76  | 741.04  | 618.81  | 514.07  | 413.44  |                            |  |
| 135.0              | 2132.44 | 1898.44 | 1663.31 | 1403.44 | 1173.38 | 991.13  | 814.50  | 664.88  | 554.63  |                            |  |
| 180.0              | 2139.19 | 1872.56 | 1632.38 | 1378.69 | 1100.31 | 947.59  | 796.28  | 668.53  | 548.27  |                            |  |
| 225.0              | 1951.31 | 1652.63 | 1425.38 | 1120.67 | 1008.39 | 836.61  | 701.49  | 575.04  | 483.47  |                            |  |
| 270.0              | 1774.69 | 1560.94 | 1376.44 | 1132.88 | 938.81  | 785.25  | 640.13  | 522.56  | 443.25  |                            |  |
| 315.0              | 1107.28 | 1016.33 | 849.32  | 680.85  | 570.83  | 477.90  | 425.31  | 386.72  | 345.83  |                            |  |
| 360.0              | 1478.81 | 1261.69 | 1046.25 | 880.88  | 721.69  | 591.19  | 500.06  | 420.75  | 364.50  |                            |  |
| C/ $\gamma$ (°)    | 18.0    | 19.0    | 20.0    | 21.0    | 22.0    | 23.0    | 24.0    | 25.0    | 26.0    |                            |  |
| 0.0                | 331.31  | 307.13  | 284.63  | 265.11  | 253.18  | 242.04  | 235.24  | 228.77  | 223.37  |                            |  |
| 45.0               | 348.75  | 315.56  | 288.00  | 274.50  | 251.61  | 238.89  | 228.88  | 223.20  | 218.64  |                            |  |
| 90.0               | 354.38  | 313.99  | 285.58  | 266.29  | 253.01  | 241.99  | 234.45  | 229.67  | 225.62  |                            |  |
| 135.0              | 450.00  | 379.69  | 318.94  | 293.06  | 284.06  | 256.78  | 242.66  | 232.99  | 226.24  |                            |  |
| 180.0              | 452.98  | 386.21  | 338.85  | 299.19  | 280.58  | 259.54  | 246.21  | 234.23  | 226.01  |                            |  |
| 225.0              | 405.17  | 350.44  | 318.60  | 292.84  | 272.64  | 257.06  | 245.03  | 232.99  | 225.73  |                            |  |
| 270.0              | 378.00  | 339.75  | 308.81  | 285.75  | 274.95  | 254.70  | 241.59  | 233.44  | 226.13  |                            |  |
| 315.0              | 323.66  | 303.69  | 281.98  | 261.56  | 247.39  | 237.26  | 230.12  | 224.33  | 219.04  |                            |  |
| 360.0              | 331.31  | 307.13  | 284.63  | 265.11  | 253.18  | 242.04  | 235.24  | 228.77  | 223.37  |                            |  |
| C/ $\gamma$ (°)    | 27.0    | 28.0    | 29.0    | 30.0    | 31.0    | 32.0    | 33.0    | 34.0    | 35.0    |                            |  |
| 0.0                | 217.69  | 212.23  | 203.12  | 185.12  | 163.52  | 141.75  | 115.93  | 90.39   | 65.53   |                            |  |
| 45.0               | 214.65  | 210.99  | 205.82  | 191.70  | 173.08  | 151.65  | 128.36  | 102.21  | 78.24   |                            |  |
| 90.0               | 221.57  | 216.79  | 210.04  | 199.07  | 182.81  | 158.18  | 135.68  | 112.78  | 85.22   |                            |  |
| 135.0              | 218.81  | 214.43  | 210.26  | 205.76  | 197.38  | 183.15  | 162.96  | 138.88  | 119.19  |                            |  |
| 180.0              | 219.32  | 214.99  | 209.93  | 206.78  | 200.98  | 184.56  | 166.61  | 147.26  | 123.58  |                            |  |
| 225.0              | 219.83  | 215.44  | 211.11  | 206.78  | 196.09  | 175.33  | 155.93  | 134.10  | 108.39  |                            |  |
| 270.0              | 219.88  | 214.37  | 210.60  | 204.13  | 190.74  | 174.04  | 150.08  | 126.96  | 100.24  |                            |  |
| 315.0              | 214.88  | 210.77  | 201.09  | 186.13  | 167.06  | 139.33  | 115.71  | 92.03   | 63.34   |                            |  |
| 360.0              | 217.69  | 212.23  | 203.12  | 185.12  | 163.52  | 141.75  | 115.93  | 90.39   | 65.53   |                            |  |
| C/ $\gamma$ (°)    | 36.0    | 37.0    | 38.0    | 39.0    | 40.0    | 41.0    | 42.0    | 43.0    | 44.0    |                            |  |
| 0.0                | 45.56   | 28.18   | 13.89   | 8.27    | 7.48    | 6.75    | 5.63    | 4.73    | 4.50    |                            |  |
| 45.0               | 55.18   | 37.91   | 20.53   | 10.52   | 8.27    | 7.65    | 6.98    | 6.13    | 5.40    |                            |  |
| 90.0               | 64.63   | 45.79   | 27.79   | 15.47   | 10.58   | 8.33    | 6.75    | 6.02    | 5.12    |                            |  |
| 135.0              | 91.29   | 69.69   | 46.46   | 27.06   | 14.74   | 7.88    | 6.24    | 5.74    | 5.23    |                            |  |
| 180.0              | 99.23   | 77.23   | 56.19   | 33.13   | 18.23   | 9.28    | 6.81    | 6.19    | 5.63    |                            |  |
| 225.0              | 82.69   | 60.69   | 38.59   | 22.33   | 10.86   | 7.48    | 6.86    | 5.96    | 4.95    |                            |  |
| 270.0              | 73.07   | 50.91   | 31.78   | 15.41   | 9.28    | 8.10    | 7.09    | 6.13    | 5.18    |                            |  |
| 315.0              | 43.03   | 26.33   | 12.38   | 8.55    | 7.59    | 6.58    | 5.68    | 4.73    | 4.44    |                            |  |
| 360.0              | 45.56   | 28.18   | 13.89   | 8.27    | 7.48    | 6.75    | 5.63    | 4.73    | 4.50    |                            |  |

## Nata 1654-S

| 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                | 4.33 | 4.22 | 4.11 | 3.94 | 3.94 | 3.83 | 3.77 | 3.71 | 3.66 |                            |  |
| 45.0               | 5.23 | 5.12 | 5.06 | 4.95 | 4.89 | 4.89 | 4.84 | 4.95 | 4.78 |                            |  |
| 90.0               | 4.56 | 4.39 | 4.11 | 3.99 | 3.94 | 3.77 | 3.71 | 3.60 | 3.54 |                            |  |
| 135.0              | 4.56 | 4.11 | 3.94 | 3.83 | 3.71 | 3.66 | 3.54 | 3.49 | 3.43 |                            |  |
| 180.0              | 4.73 | 4.11 | 3.88 | 3.77 | 3.71 | 3.60 | 3.49 | 3.43 | 3.38 |                            |  |
| 225.0              | 4.28 | 4.05 | 3.94 | 3.83 | 3.71 | 3.60 | 3.54 | 3.49 | 3.43 |                            |  |
| 270.0              | 4.73 | 4.50 | 4.33 | 4.22 | 4.11 | 3.99 | 3.88 | 3.77 | 3.71 |                            |  |
| 315.0              | 4.28 | 4.11 | 3.94 | 3.88 | 3.77 | 3.66 | 3.54 | 3.49 | 3.43 |                            |  |
| 360.0              | 4.33 | 4.22 | 4.11 | 3.94 | 3.94 | 3.83 | 3.77 | 3.71 | 3.66 |                            |  |
| C/ $\gamma$ (°)    | 54.0 | 55.0 | 56.0 | 57.0 | 58.0 | 59.0 | 60.0 | 61.0 | 62.0 |                            |  |
| 0.0                | 3.60 | 3.54 | 3.49 | 3.49 | 3.43 | 3.43 | 3.38 | 3.32 | 3.32 |                            |  |
| 45.0               | 4.84 | 4.78 | 4.73 | 4.78 | 4.84 | 4.84 | 4.89 | 4.78 | 4.78 |                            |  |
| 90.0               | 3.49 | 3.43 | 3.32 | 3.32 | 3.26 | 3.26 | 3.21 | 3.21 | 3.15 |                            |  |
| 135.0              | 3.32 | 3.32 | 3.26 | 3.21 | 3.15 | 3.15 | 3.09 | 3.09 | 3.04 |                            |  |
| 180.0              | 3.32 | 3.26 | 3.21 | 3.15 | 3.15 | 3.09 | 3.09 | 3.04 | 3.04 |                            |  |
| 225.0              | 3.38 | 3.32 | 3.26 | 3.21 | 3.21 | 3.15 | 3.09 | 3.09 | 3.04 |                            |  |
| 270.0              | 3.60 | 3.54 | 3.49 | 3.43 | 3.38 | 3.32 | 3.26 | 3.21 | 3.21 |                            |  |
| 315.0              | 3.38 | 3.32 | 3.26 | 3.21 | 3.21 | 3.15 | 3.15 | 3.09 | 3.04 |                            |  |
| 360.0              | 3.60 | 3.54 | 3.49 | 3.49 | 3.43 | 3.43 | 3.38 | 3.32 | 3.32 |                            |  |
| C/ $\gamma$ (°)    | 63.0 | 64.0 | 65.0 | 66.0 | 67.0 | 68.0 | 69.0 | 70.0 | 71.0 |                            |  |
| 0.0                | 3.26 | 3.26 | 3.21 | 3.15 | 3.15 | 3.09 | 3.09 | 3.09 | 3.04 |                            |  |
| 45.0               | 4.84 | 4.84 | 4.89 | 4.73 | 4.67 | 4.61 | 4.56 | 4.44 | 4.50 |                            |  |
| 90.0               | 3.09 | 3.09 | 3.09 | 3.04 | 3.04 | 3.04 | 2.98 | 2.98 | 2.98 |                            |  |
| 135.0              | 3.04 | 2.98 | 2.98 | 2.98 | 2.98 | 2.93 | 2.93 | 2.93 | 2.87 |                            |  |
| 180.0              | 3.04 | 2.98 | 2.98 | 2.93 | 2.93 | 2.93 | 2.87 | 2.93 | 2.87 |                            |  |
| 225.0              | 3.04 | 3.04 | 2.98 | 2.98 | 2.98 | 2.98 | 2.93 | 2.93 | 2.93 |                            |  |
| 270.0              | 3.21 | 3.15 | 3.15 | 3.09 | 3.04 | 3.04 | 3.04 | 3.04 | 2.98 |                            |  |
| 315.0              | 3.04 | 3.04 | 2.98 | 2.98 | 2.93 | 2.93 | 2.87 | 2.93 | 2.87 |                            |  |
| 360.0              | 3.26 | 3.26 | 3.21 | 3.15 | 3.15 | 3.09 | 3.09 | 3.09 | 3.04 |                            |  |
| C/ $\gamma$ (°)    | 72.0 | 73.0 | 74.0 | 75.0 | 76.0 | 77.0 | 78.0 | 79.0 | 80.0 |                            |  |
| 0.0                | 3.04 | 3.04 | 3.04 | 2.98 | 2.98 | 2.98 | 2.98 | 2.98 | 2.93 |                            |  |
| 45.0               | 4.44 | 4.39 | 4.44 | 4.33 | 4.39 | 4.44 | 4.56 | 4.61 | 4.73 |                            |  |
| 90.0               | 2.93 | 2.93 | 2.93 | 2.93 | 2.87 | 2.93 | 2.87 | 2.87 | 2.87 |                            |  |
| 135.0              | 2.87 | 2.87 | 2.87 | 2.81 | 2.81 | 2.81 | 2.81 | 2.81 | 2.81 |                            |  |
| 180.0              | 2.87 | 2.87 | 2.81 | 2.81 | 2.81 | 2.81 | 2.81 | 2.81 | 2.81 |                            |  |
| 225.0              | 2.93 | 2.87 | 2.93 | 2.87 | 2.87 | 2.87 | 2.87 | 2.87 | 2.87 |                            |  |
| 270.0              | 2.98 | 2.98 | 2.98 | 2.93 | 2.93 | 2.93 | 2.93 | 2.87 | 2.87 |                            |  |
| 315.0              | 2.87 | 2.87 | 2.87 | 2.87 | 2.81 | 2.87 | 2.81 | 2.81 | 2.81 |                            |  |
| 360.0              | 3.04 | 3.04 | 3.04 | 2.98 | 2.98 | 2.98 | 2.98 | 2.98 | 2.93 |                            |  |
| C/ $\gamma$ (°)    | 81.0 | 82.0 | 83.0 | 84.0 | 85.0 | 86.0 | 87.0 | 88.0 | 89.0 |                            |  |
| 0.0                | 2.93 | 2.93 | 2.87 | 2.87 | 2.93 | 2.87 | 2.87 | 2.81 | 2.81 |                            |  |
| 45.0               | 4.78 | 4.50 | 4.50 | 4.61 | 4.44 | 4.22 | 3.54 | 3.32 | 3.26 |                            |  |
| 90.0               | 2.87 | 2.87 | 2.81 | 2.81 | 2.81 | 2.87 | 2.81 | 2.81 | 2.76 |                            |  |
| 135.0              | 2.81 | 2.81 | 2.81 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 |                            |  |
| 180.0              | 2.81 | 2.81 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 |                            |  |
| 225.0              | 2.87 | 2.87 | 2.87 | 2.81 | 2.87 | 2.87 | 2.87 | 2.76 | 2.76 |                            |  |
| 270.0              | 2.93 | 2.93 | 2.87 | 2.87 | 2.93 | 2.93 | 2.81 | 2.81 | 2.76 |                            |  |
| 315.0              | 2.81 | 2.76 | 2.81 | 2.87 | 2.93 | 2.76 | 2.76 | 2.76 | 2.76 |                            |  |
| 360.0              | 2.93 | 2.93 | 2.87 | 2.87 | 2.93 | 2.87 | 2.87 | 2.81 | 2.81 |                            |  |

## Intensity data(cd)

Appendix Page: 19 Total:19

|                 |      |
|-----------------|------|
| C/ $\gamma$ (°) | 90.0 |
| 0.0             | 2.81 |
| 45.0            | 3.21 |
| 90.0            | 2.81 |
| 135.0           | 2.76 |
| 180.0           | 2.76 |
| 225.0           | 2.76 |
| 270.0           | 2.81 |
| 315.0           | 2.70 |
| 360.0           | 2.81 |