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## Nata

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LumCAT: 1426-N

Luminaire: 92.70.043.00+92.70.147.00

Report No: NATA0100

Voltage(V): 34.7000

Test No: GC2018080606

Current(A): 0.2000

LampCAT: LUMINUS CXM-6-AC30

Power (W): 6.9400

Lamp flux(lm): 983.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 46

Width(mm): 46

Phm Type: C

Height(mm): 0

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## Photometric Results

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Lumens(lm): 794.23

Efficiency(%): 80.80%

Lumens(lm)/Power(W): 114.44

Central intensity(cd): 4628.454

Maximum intensity(cd): 4628.454

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

Beam Angle(50%Imax): [C0/180]Total=16.6

[C90/270]Total=16.6

Field angle(10%Imax): [C0/180]Total=37.7

[C90/270]Total=37.7

Maximum s/h(1/2): C0\_180=0.28 C90\_270=0.28

Maximum s/h(1/4): C0\_180=0.30 C90\_270=0.30

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 81.23%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 96.157%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 4628.454      | 4.429       | 4.429     | .451%       | .558%      |
| 2.0                | 4455.714      | 34.104      | 38.533    | 3.469%      | 4.852%     |
| 4.0                | 3921.392      | 59.992      | 98.524    | 6.103%      | 12.405%    |
| 6.0                | 3177.511      | 72.843      | 171.367   | 7.410%      | 21.577%    |
| 8.0                | 2414.843      | 73.707      | 245.074   | 7.498%      | 30.857%    |
| 10.0               | 1705.854      | 64.965      | 310.039   | 6.609%      | 39.036%    |
| 12.0               | 1213.567      | 55.336      | 365.375   | 5.629%      | 46.004%    |
| 14.0               | 844.545       | 44.809      | 410.184   | 4.558%      | 51.645%    |
| 16.0               | 624.938       | 37.778      | 447.962   | 3.843%      | 56.402%    |
| 18.0               | 499.850       | 33.876      | 481.838   | 3.446%      | 60.667%    |
| 20.0               | 411.010       | 30.830      | 512.667   | 3.136%      | 64.549%    |
| 22.0               | 343.869       | 28.251      | 540.918   | 2.874%      | 68.106%    |
| 24.0               | 293.747       | 26.203      | 567.121   | 2.666%      | 71.405%    |
| 26.0               | 250.864       | 24.118      | 591.24    | 2.454%      | 74.442%    |
| 28.0               | 209.620       | 21.583      | 612.822   | 2.196%      | 77.159%    |
| 30.0               | 178.107       | 19.531      | 632.353   | 1.987%      | 79.618%    |
| 32.0               | 150.813       | 17.527      | 649.88    | 1.783%      | 81.825%    |
| 34.0               | 128.839       | 15.801      | 665.681   | 1.607%      | 83.815%    |
| 36.0               | 110.409       | 14.233      | 679.914   | 1.448%      | 85.607%    |
| 38.0               | 95.365        | 12.876      | 692.79    | 1.310%      | 87.228%    |
| 40.0               | 82.165        | 11.583      | 704.373   | 1.178%      | 88.686%    |
| 42.0               | 70.968        | 10.414      | 714.787   | 1.059%      | 89.998%    |
| 44.0               | 61.236        | 9.329       | 724.117   | .949%       | 91.172%    |
| 46.0               | 53.047        | 8.369       | 732.485   | .851%       | 92.226%    |
| 48.0               | 46.123        | 7.517       | 740.003   | .765%       | 93.172%    |
| 50.0               | 39.228        | 6.590       | 746.593   | .670%       | 94.002%    |
| 52.0               | 33.233        | 5.743       | 752.336   | .584%       | 94.725%    |
| 54.0               | 27.576        | 4.893       | 757.229   | .498%       | 95.341%    |
| 56.0               | 22.676        | 4.123       | 761.352   | .419%       | 95.860%    |
| 58.0               | 18.712        | 3.480       | 764.833   | .354%       | 96.299%    |
| 60.0               | 15.891        | 3.018       | 767.851   | .307%       | 96.679%    |
| 62.0               | 13.730        | 2.659       | 770.509   | .270%       | 97.013%    |
| 64.0               | 12.099        | 2.385       | 772.894   | .243%       | 97.314%    |
| 66.0               | 10.984        | 2.201       | 775.095   | .224%       | 97.591%    |
| 68.0               | 10.275        | 2.089       | 777.184   | .213%       | 97.854%    |
| 70.0               | 9.814         | 2.022       | 779.207   | .206%       | 98.108%    |
| 72.0               | 9.435         | 1.968       | 781.175   | .200%       | 98.356%    |
| 74.0               | 9.036         | 1.905       | 783.08    | .194%       | 98.596%    |

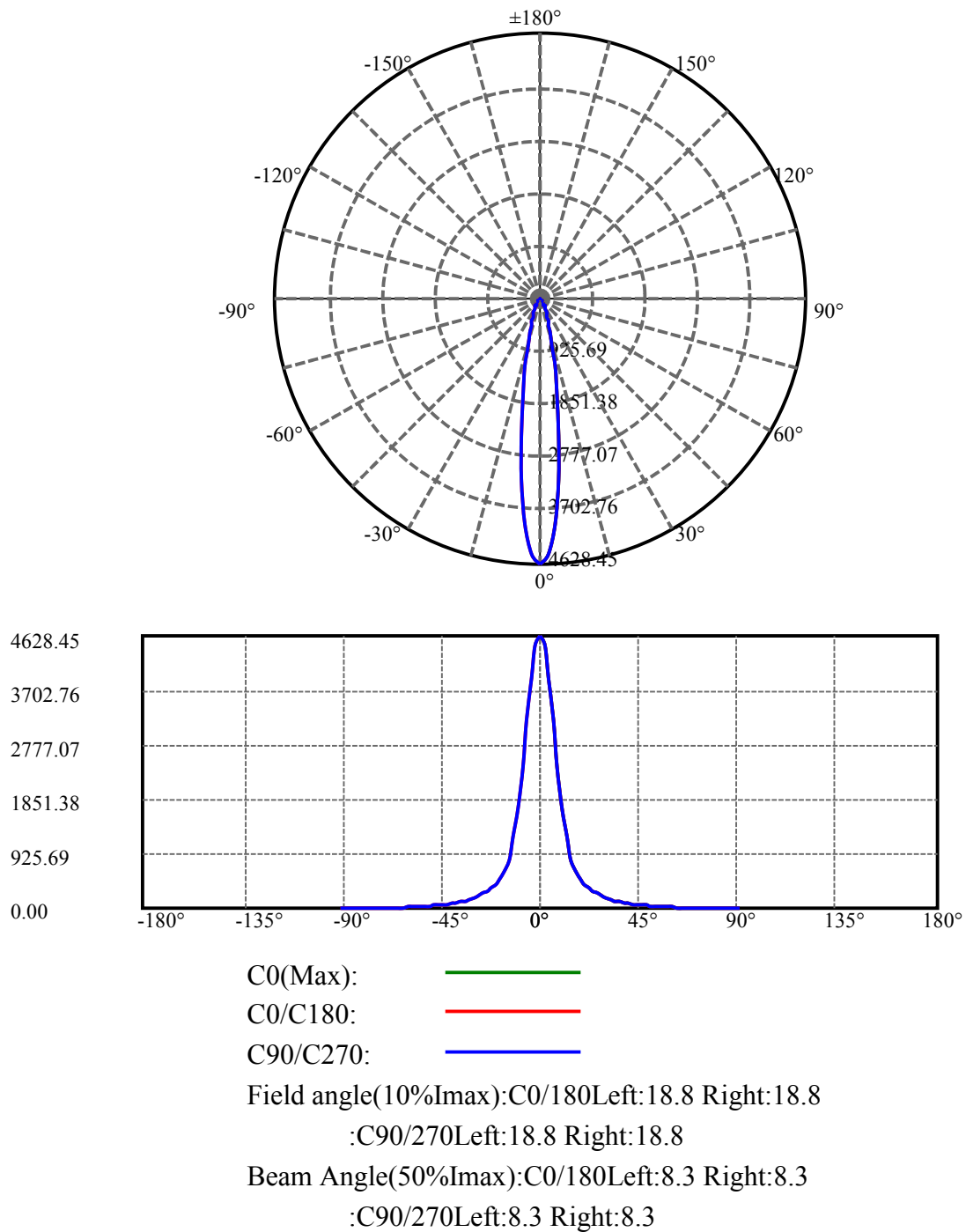
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 8.603         | 1.831       | 784.91    | .186%       | 98.827%    |
| 78.0               | 8.197         | 1.758       | 786.669   | .179%       | 99.048%    |
| 80.0               | 7.880         | 1.702       | 788.371   | .173%       | 99.262%    |
| 82.0               | 7.680         | 1.668       | 790.039   | .170%       | 99.472%    |
| 84.0               | 7.398         | 1.614       | 791.652   | .164%       | 99.675%    |
| 86.0               | 6.166         | 1.349       | 793.001   | .137%       | 99.845%    |
| 88.0               | 3.826         | 0.839       | 793.84    | .085%       | 99.951%    |
| 90.0               | 3.558         | 0.390       | 794.23    | .040%       | 100.000%   |

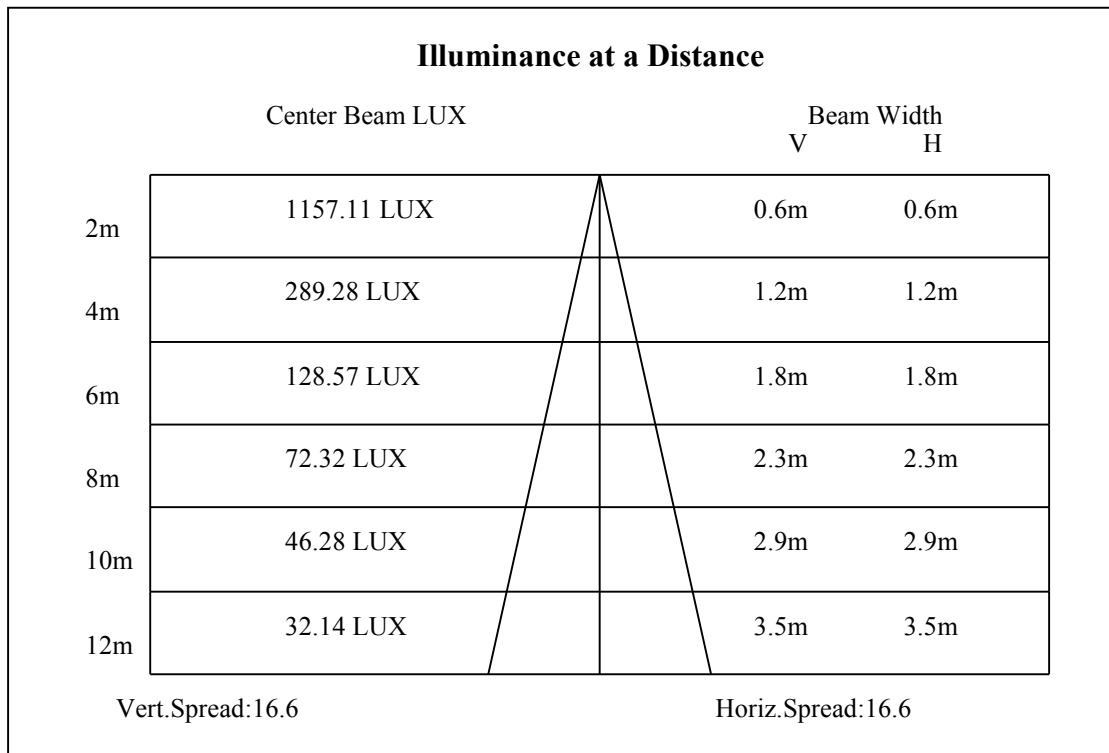
## ZONAL LUMEN SUMMARY

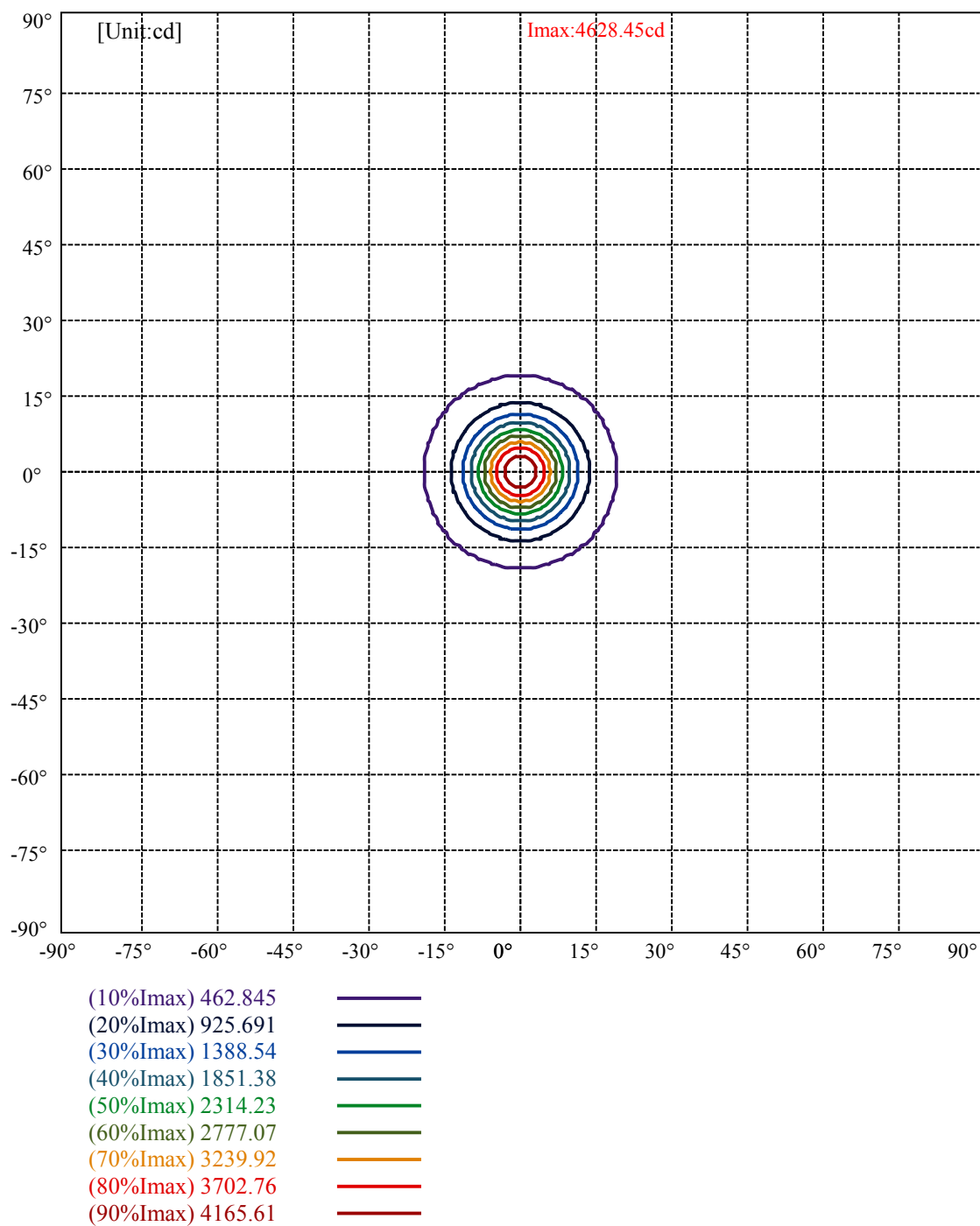
| Zone    | Lumens | %Lamp  | %Fixt   |
|---------|--------|--------|---------|
| 0-30    | 632.35 | 64.33% | 79.62%  |
| 0-40    | 704.37 | 71.66% | 88.69%  |
| 0-60    | 767.85 | 78.11% | 96.68%  |
| 0-90    | 793.84 | 80.76% | 99.95%  |
| 0-120   | 793.84 | 80.76% | 99.95%  |
| 0-180   | 794.23 | 80.80% | 100.00% |
| 60-90   | 29.01  | 2.95%  | 3.65%   |
| 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%   |
| 0-30.35 | 635.38 | 64.64% | 80.00%  |

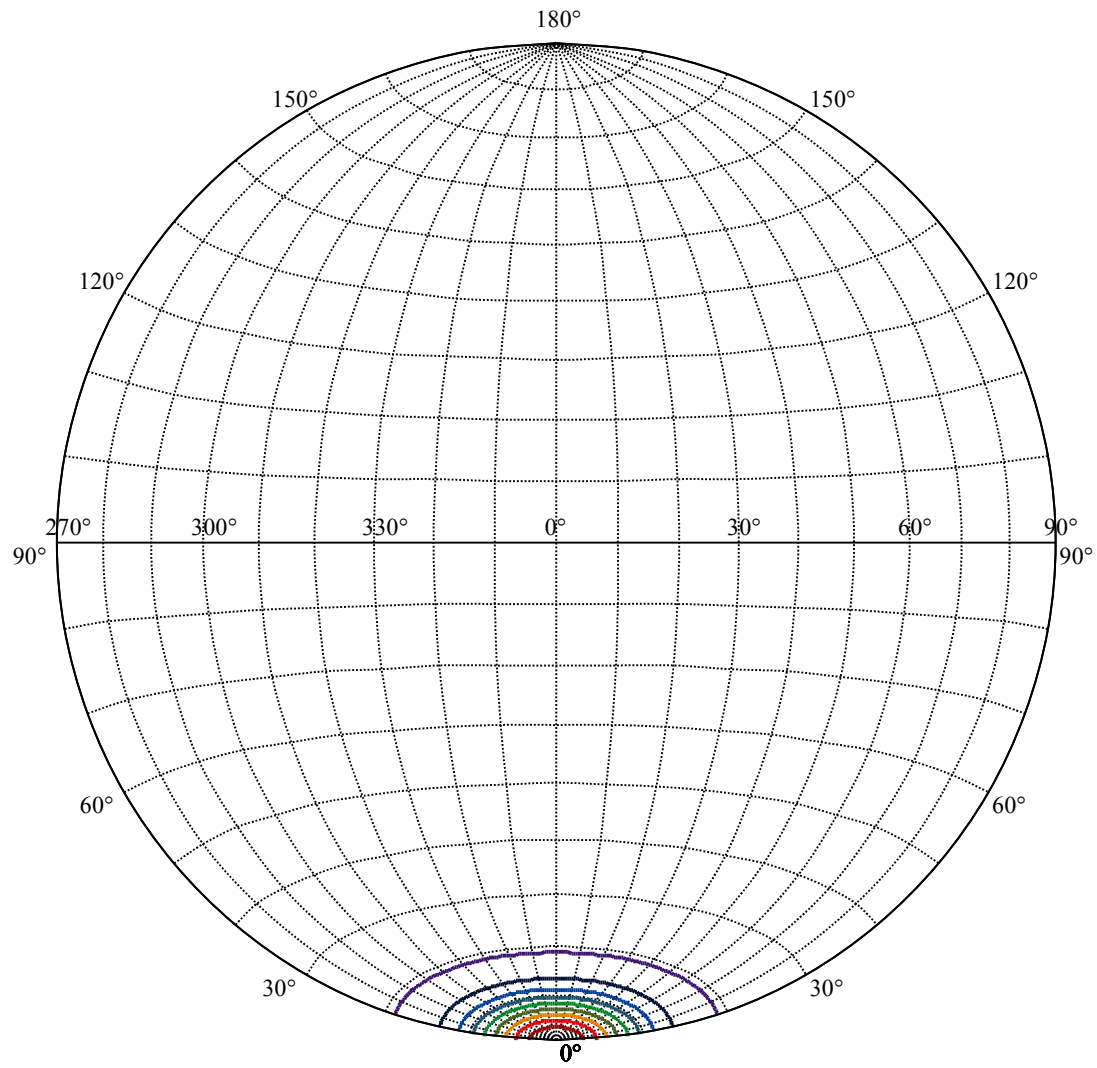
## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 310.04 |
| 10-20   | 202.63 |
| 20-30   | 119.69 |
| 30-40   | 72.02  |
| 40-50   | 42.22  |
| 50-60   | 21.26  |
| 60-70   | 11.36  |
| 70-80   | 9.16   |
| 80-90   | 5.47   |
| 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   |







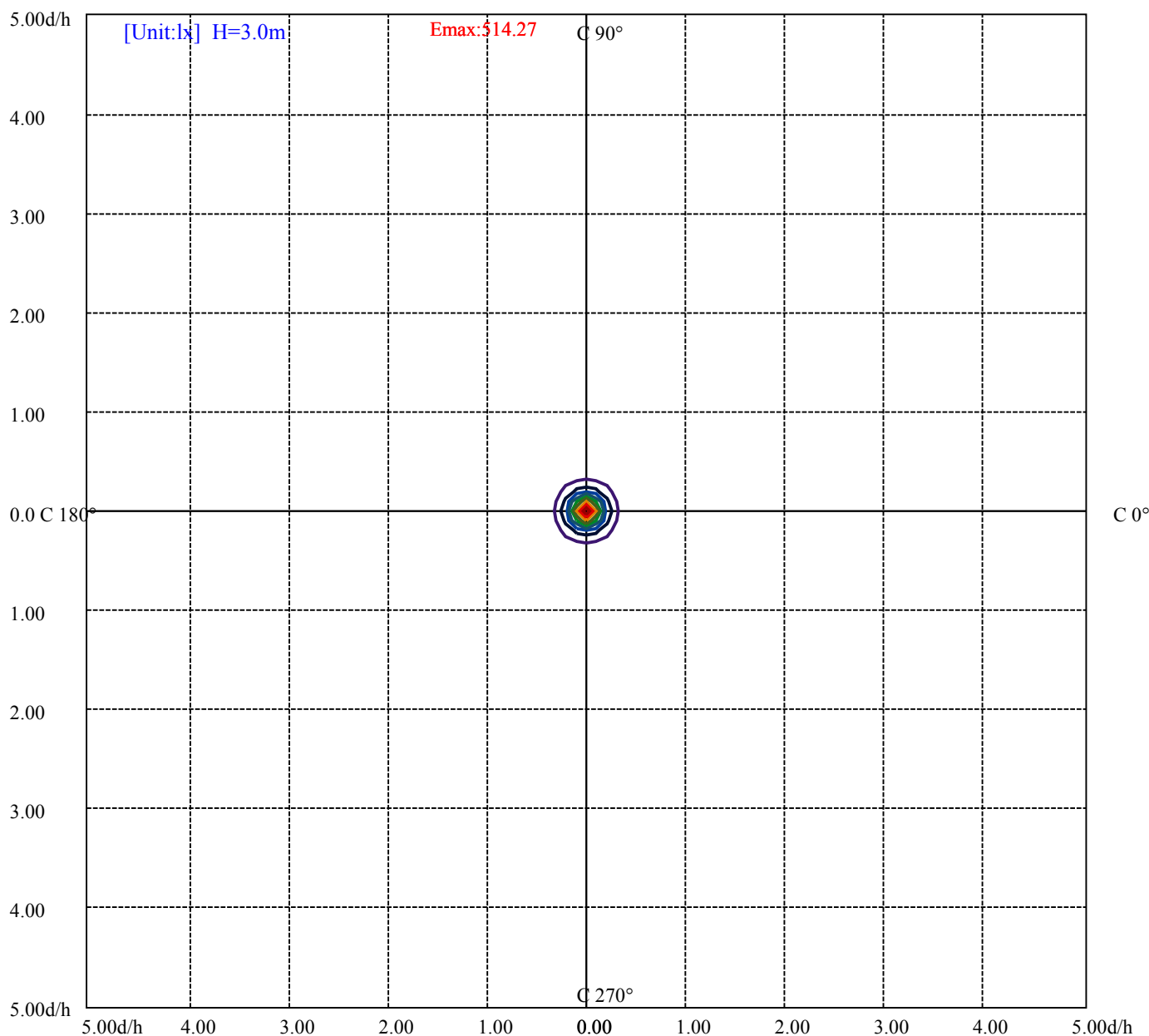


House

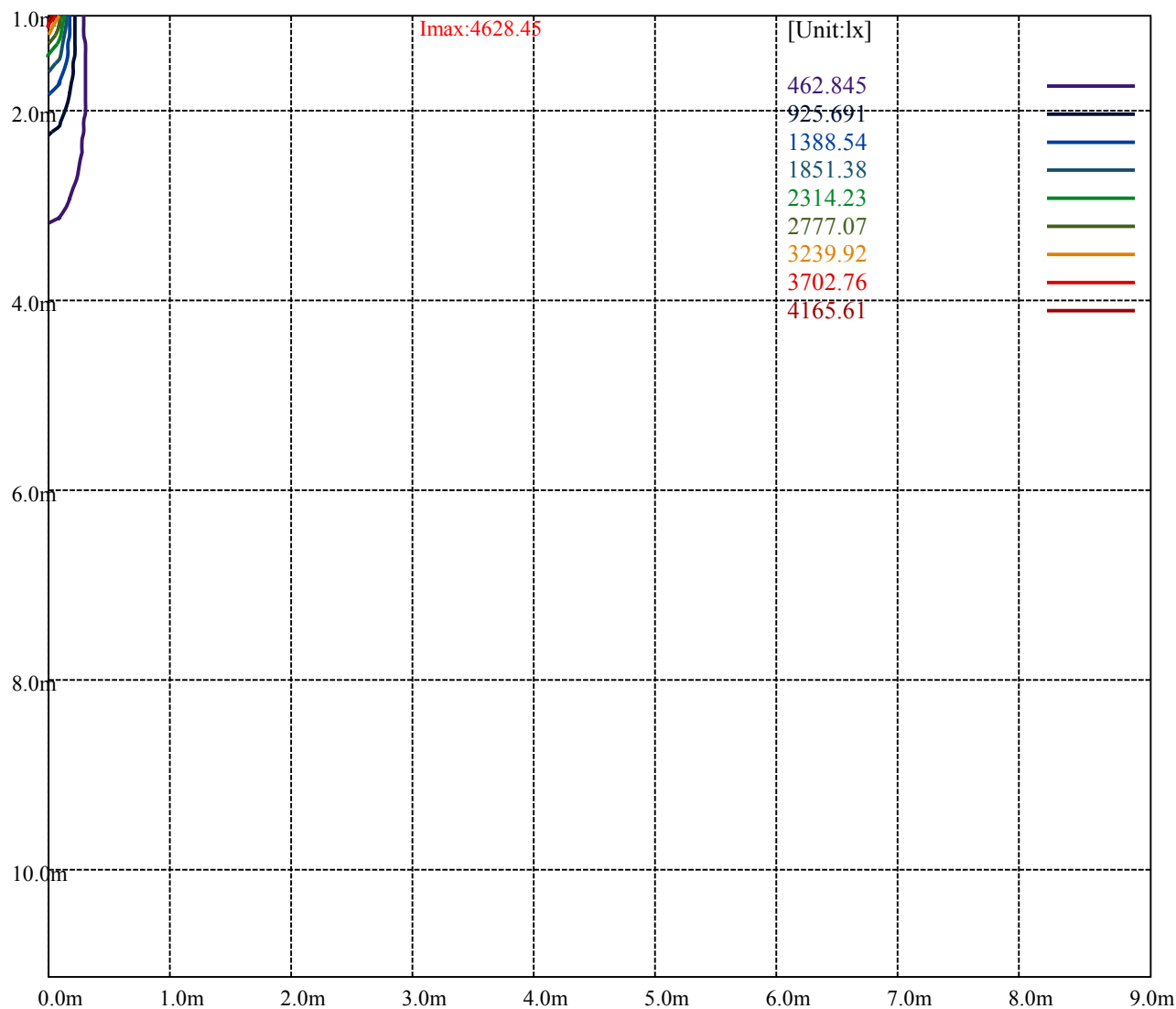
[Unit:cd]

Road

|                   |   |
|-------------------|---|
| Imax:4628.45      |   |
| (10%Imax) 462.845 | — |
| (20%Imax) 925.691 | — |
| (30%Imax) 1388.54 | — |
| (40%Imax) 1851.38 | — |
| (50%Imax) 2314.23 | — |
| (60%Imax) 2777.07 | — |
| (70%Imax) 3239.92 | — |
| (80%Imax) 3702.76 | — |
| (90%Imax) 4165.61 | — |



|           |          |   |
|-----------|----------|---|
| (10%Emax) | 51.42711 | — |
| (20%Emax) | 102.8542 | — |
| (30%Emax) | 154.2811 | — |
| (40%Emax) | 205.7089 | — |
| (50%Emax) | 257.1356 | — |
| (60%Emax) | 308.5622 | — |
| (70%Emax) | 359.99   | — |
| (80%Emax) | 411.4167 | — |
| (90%Emax) | 462.8445 | — |



Luminance Table

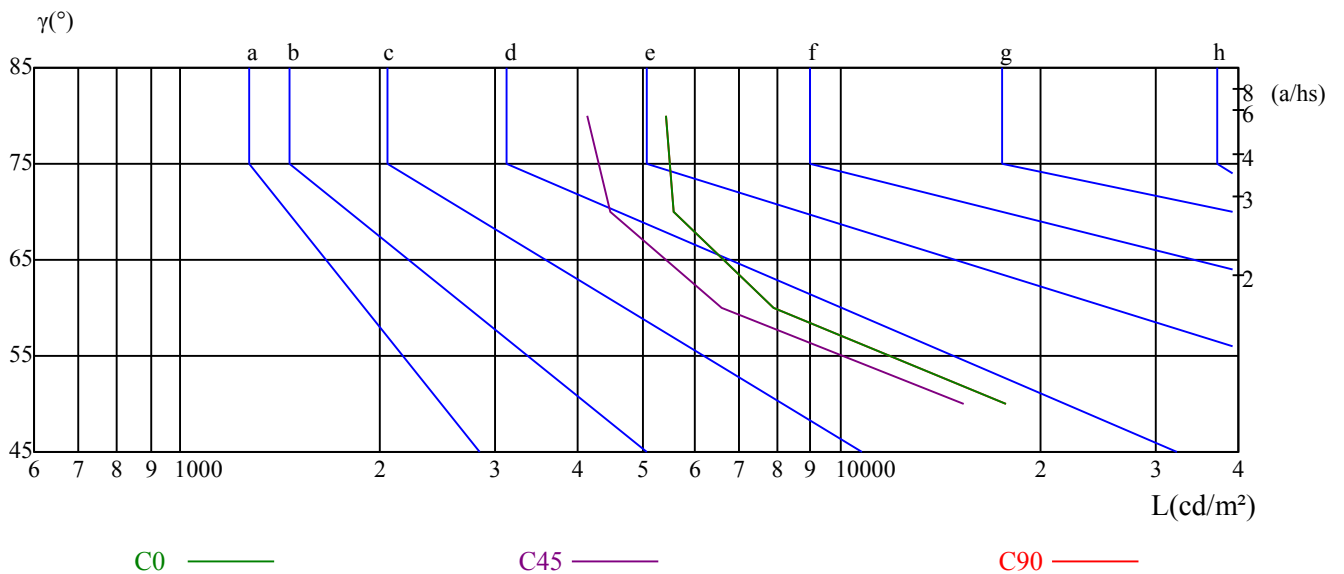
| $\gamma$ | 45 | 50    | 55 | 60   | 65 | 70   | 75 | 80   | 85 |
|----------|----|-------|----|------|----|------|----|------|----|
| C0       | 0  | 17783 | 0  | 7890 | 0  | 5572 | 0  | 5417 | 0  |
| C45      | 0  | 15346 | 0  | 6593 | 0  | 4479 | 0  | 4136 | 0  |
| C90      | 0  | 17783 | 0  | 7890 | 0  | 5572 | 0  | 5417 | 0  |

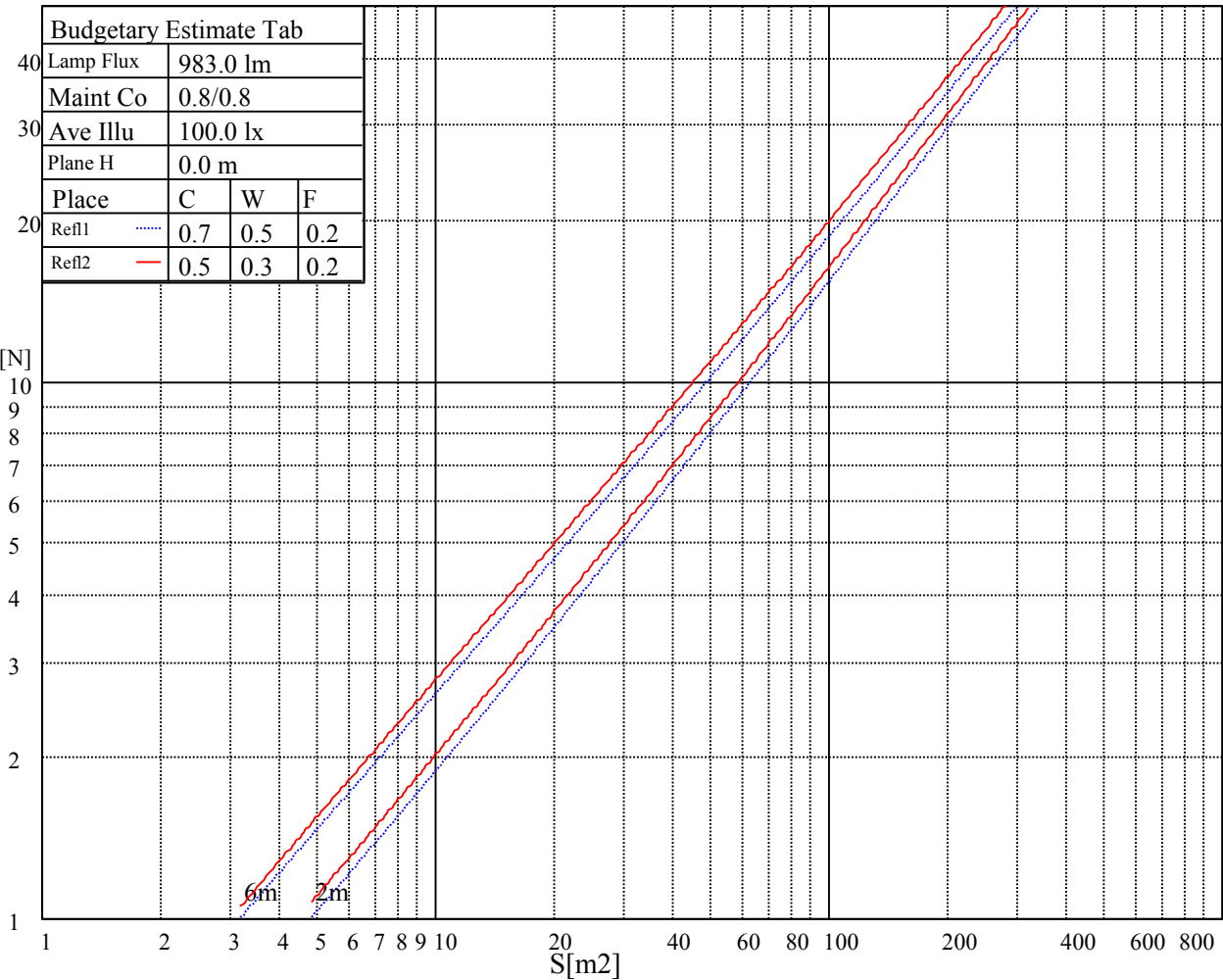
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 29814      | 29814      | 29814   | 24253      | 24253      | 24253   | 29928      | 29928      | 29928   |

Glare Table

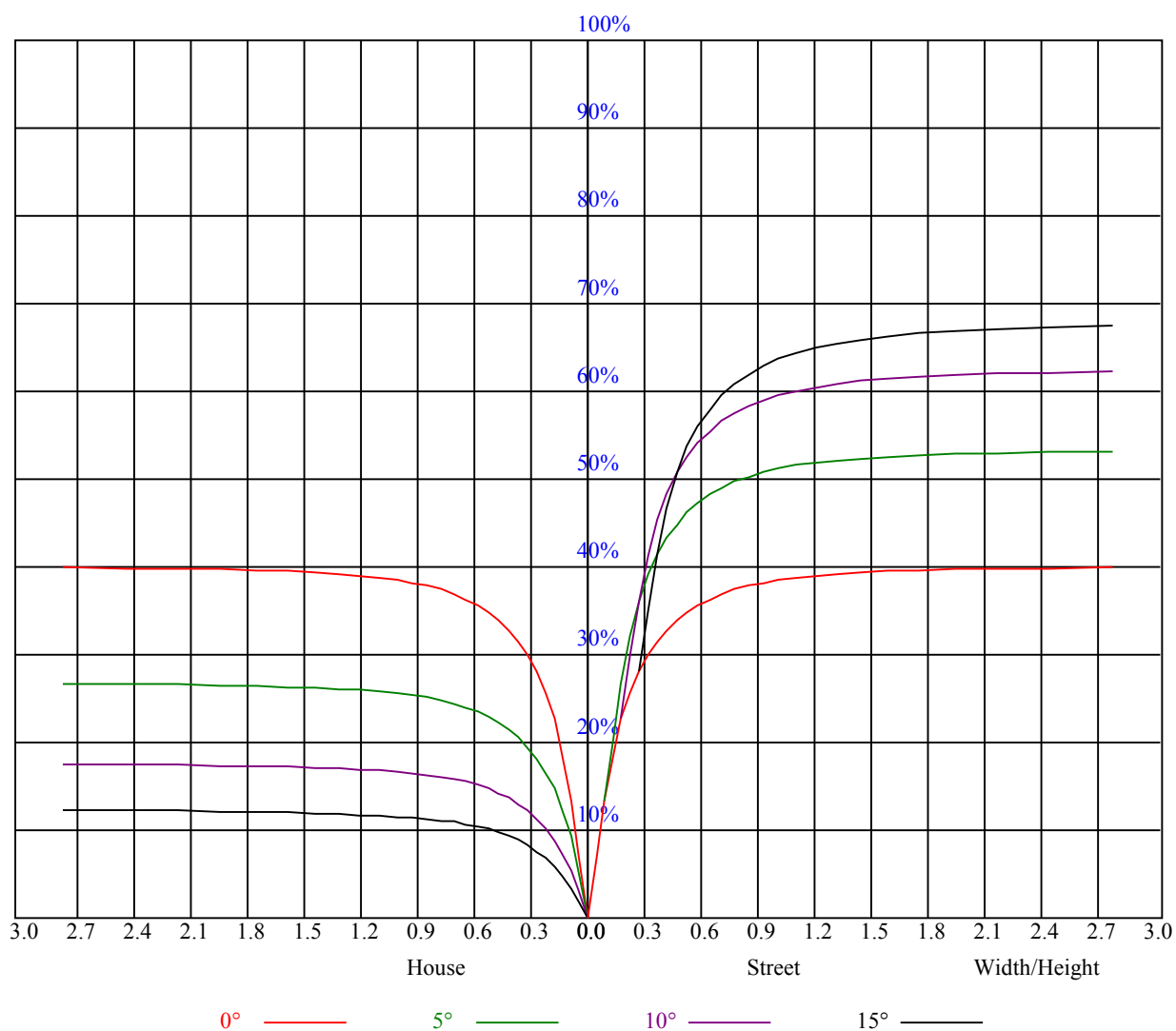
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000            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





| RHOC | 80                                      |      |      | 70   |      |      | 50   |      |      | 30   |      |      | 10   |      |      | 0    |
|------|-----------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RHOW | 50                                      | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 50   | 30   | 10   | 0    |
| RCR  | COEFFICIENTS OF UTILIZATION RHOFC=20 CU |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 0    | 0.97                                    | 0.97 | 0.97 | 0.94 | 0.94 | 0.94 | 0.90 | 0.90 | 0.90 | 0.86 | 0.86 | 0.86 | 0.83 | 0.83 | 0.83 | 0.81 |
| 1    | 0.90                                    | 0.88 | 0.86 | 0.88 | 0.86 | 0.85 | 0.85 | 0.83 | 0.82 | 0.82 | 0.81 | 0.80 | 0.79 | 0.78 | 0.77 | 0.76 |
| 2    | 0.85                                    | 0.81 | 0.79 | 0.83 | 0.80 | 0.78 | 0.81 | 0.78 | 0.76 | 0.78 | 0.76 | 0.75 | 0.76 | 0.74 | 0.73 | 0.72 |
| 3    | 0.80                                    | 0.76 | 0.74 | 0.79 | 0.76 | 0.73 | 0.77 | 0.74 | 0.72 | 0.75 | 0.73 | 0.71 | 0.73 | 0.71 | 0.70 | 0.68 |
| 4    | 0.76                                    | 0.72 | 0.69 | 0.75 | 0.72 | 0.69 | 0.74 | 0.70 | 0.68 | 0.72 | 0.69 | 0.67 | 0.71 | 0.68 | 0.67 | 0.65 |
| 5    | 0.73                                    | 0.69 | 0.66 | 0.72 | 0.68 | 0.65 | 0.71 | 0.67 | 0.65 | 0.69 | 0.67 | 0.64 | 0.68 | 0.66 | 0.64 | 0.63 |
| 6    | 0.70                                    | 0.66 | 0.63 | 0.69 | 0.65 | 0.63 | 0.68 | 0.65 | 0.62 | 0.67 | 0.64 | 0.62 | 0.66 | 0.63 | 0.61 | 0.60 |
| 7    | 0.67                                    | 0.63 | 0.60 | 0.67 | 0.63 | 0.60 | 0.66 | 0.62 | 0.60 | 0.65 | 0.62 | 0.60 | 0.64 | 0.61 | 0.59 | 0.58 |
| 8    | 0.65                                    | 0.61 | 0.58 | 0.64 | 0.61 | 0.58 | 0.64 | 0.60 | 0.58 | 0.63 | 0.60 | 0.58 | 0.62 | 0.59 | 0.57 | 0.56 |
| 9    | 0.63                                    | 0.59 | 0.56 | 0.62 | 0.59 | 0.56 | 0.62 | 0.58 | 0.56 | 0.61 | 0.58 | 0.56 | 0.60 | 0.58 | 0.56 | 0.55 |
| 10   | 0.61                                    | 0.57 | 0.55 | 0.60 | 0.57 | 0.54 | 0.60 | 0.57 | 0.54 | 0.59 | 0.56 | 0.54 | 0.59 | 0.56 | 0.54 | 0.53 |



## Intensity data(cd)

| C/γ(°) | 0.0     | 2.0     | 4.0     | 6.0     | 8.0     | 10.0    | 12.0    | 14.0    | 16.0   |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0.0    | 4612.63 | 4707.32 | 4411.67 | 3756.50 | 2975.25 | 2194.00 | 1580.12 | 1107.73 | 771.89 |
| 45.0   | 4603.82 | 4550.41 | 4141.89 | 3434.97 | 2655.37 | 1900.00 | 1358.24 | 919.99  | 658.47 |
| 90.0   | 4604.37 | 4308.71 | 3644.73 | 2818.89 | 2112.51 | 1461.75 | 1006.16 | 713.97  | 551.83 |
| 135.0  | 4684.20 | 4297.70 | 3622.16 | 2884.96 | 2083.33 | 1431.47 | 1003.68 | 700.87  | 543.96 |
| 180.0  | 4630.24 | 4199.70 | 3424.51 | 2661.98 | 1876.32 | 1205.18 | 910.30  | 651.92  | 516.43 |
| 225.0  | 4603.82 | 4332.94 | 3667.86 | 2868.99 | 2120.22 | 1466.70 | 1012.43 | 716.83  | 552.00 |
| 270.0  | 4604.37 | 4578.49 | 4189.79 | 3465.80 | 2696.66 | 1952.30 | 1400.63 | 946.42  | 680.50 |
| 315.0  | 4684.20 | 4670.43 | 4268.52 | 3528.01 | 2799.07 | 2035.44 | 1436.97 | 998.61  | 724.43 |
| 360.0  | 4612.63 | 4707.32 | 4411.67 | 3756.50 | 2975.25 | 2194.00 | 1580.12 | 1107.73 | 771.89 |
|        |         |         |         |         |         |         |         |         |        |
| C/γ(°) | 18.0    | 20.0    | 22.0    | 24.0    | 26.0    | 28.0    | 30.0    | 32.0    | 34.0   |
| 0.0    | 610.58  | 484.50  | 404.11  | 345.20  | 289.05  | 239.99  | 204.86  | 172.66  | 145.95 |
| 45.0   | 525.24  | 427.79  | 357.32  | 300.06  | 253.15  | 216.21  | 179.26  | 151.79  | 130.10 |
| 90.0   | 442.16  | 370.97  | 309.97  | 260.86  | 223.42  | 186.64  | 158.18  | 132.63  | 113.64 |
| 135.0  | 444.31  | 366.68  | 311.62  | 279.14  | 227.05  | 192.42  | 164.45  | 140.78  | 120.19 |
| 180.0  | 425.97  | 358.58  | 303.58  | 263.06  | 223.36  | 190.05  | 162.36  | 137.59  | 118.26 |
| 225.0  | 449.37  | 379.28  | 317.29  | 266.75  | 230.52  | 196.17  | 164.67  | 141.88  | 121.34 |
| 270.0  | 534.05  | 434.39  | 362.27  | 308.32  | 280.24  | 219.07  | 188.73  | 158.56  | 135.38 |
| 315.0  | 567.14  | 465.89  | 384.79  | 326.59  | 280.13  | 236.41  | 202.33  | 170.62  | 145.84 |
| 360.0  | 610.58  | 484.50  | 404.11  | 345.20  | 289.05  | 239.99  | 204.86  | 172.66  | 145.95 |
|        |         |         |         |         |         |         |         |         |        |
| C/γ(°) | 36.0    | 38.0    | 40.0    | 42.0    | 44.0    | 46.0    | 48.0    | 50.0    | 52.0   |
| 0.0    | 126.35  | 107.97  | 94.31   | 82.47   | 72.01   | 62.60   | 55.39   | 48.12   | 41.40  |
| 45.0   | 110.39  | 94.70   | 83.91   | 72.29   | 63.20   | 55.55   | 48.78   | 41.95   | 35.84  |
| 90.0   | 97.45   | 84.02   | 71.13   | 61.33   | 52.52   | 45.09   | 39.15   | 33.20   | 27.86  |
| 135.0  | 103.29  | 89.41   | 75.70   | 64.69   | 55.94   | 48.61   | 42.39   | 35.62   | 30.01  |
| 180.0  | 102.18  | 89.25   | 76.53   | 66.78   | 57.70   | 50.32   | 43.38   | 36.06   | 30.23  |
| 225.0  | 102.74  | 90.68   | 78.35   | 67.61   | 58.80   | 51.20   | 43.94   | 37.22   | 31.05  |
| 270.0  | 116.33  | 100.48  | 86.16   | 73.83   | 62.71   | 53.74   | 46.03   | 38.98   | 33.20  |
| 315.0  | 124.54  | 106.42  | 91.23   | 78.73   | 67.00   | 57.26   | 49.94   | 42.67   | 36.28  |
| 360.0  | 126.35  | 107.97  | 94.31   | 82.47   | 72.01   | 62.60   | 55.39   | 48.12   | 41.40  |
|        |         |         |         |         |         |         |         |         |        |
| C/γ(°) | 54.0    | 56.0    | 58.0    | 60.0    | 62.0    | 64.0    | 66.0    | 68.0    | 70.0   |
| 0.0    | 34.91   | 28.08   | 22.68   | 18.55   | 15.75   | 13.65   | 12.06   | 11.07   | 10.52  |
| 45.0   | 29.57   | 24.28   | 20.10   | 16.68   | 14.37   | 12.66   | 11.34   | 10.57   | 10.08  |
| 90.0   | 23.18   | 18.99   | 15.58   | 13.60   | 11.89   | 10.68   | 10.02   | 9.47    | 9.08   |
| 135.0  | 24.67   | 20.32   | 16.68   | 14.37   | 12.50   | 11.01   | 10.24   | 9.74    | 9.36   |
| 180.0  | 25.11   | 20.59   | 17.07   | 14.98   | 12.99   | 11.45   | 10.57   | 9.97    | 9.36   |
| 225.0  | 25.38   | 21.42   | 17.89   | 15.64   | 13.60   | 12.11   | 11.12   | 10.46   | 9.97   |
| 270.0  | 27.42   | 22.57   | 19.27   | 16.08   | 14.09   | 12.44   | 11.12   | 10.41   | 10.13  |
| 315.0  | 30.39   | 25.16   | 20.43   | 17.23   | 14.65   | 12.77   | 11.40   | 10.52   | 10.02  |
| 360.0  | 34.91   | 28.08   | 22.68   | 18.55   | 15.75   | 13.65   | 12.06   | 11.07   | 10.52  |
|        |         |         |         |         |         |         |         |         |        |
| C/γ(°) | 72.0    | 74.0    | 76.0    | 78.0    | 80.0    | 82.0    | 84.0    | 86.0    | 88.0   |
| 0.0    | 10.08   | 9.63    | 9.08    | 8.64    | 8.26    | 7.93    | 7.76    | 7.54    | 4.29   |
| 45.0   | 9.63    | 9.25    | 8.92    | 8.75    | 8.70    | 8.59    | 8.20    | 7.71    | 4.07   |
| 90.0   | 8.70    | 8.42    | 7.93    | 7.32    | 6.94    | 6.88    | 6.88    | 6.22    | 3.47   |
| 135.0  | 8.97    | 8.59    | 8.26    | 7.87    | 7.54    | 7.54    | 7.43    | 6.44    | 3.63   |
| 180.0  | 8.92    | 8.42    | 7.98    | 7.71    | 7.43    | 7.21    | 6.77    | 4.02    | 3.69   |
| 225.0  | 9.63    | 9.30    | 9.03    | 8.75    | 8.53    | 8.31    | 7.76    | 3.96    | 3.69   |
| 270.0  | 9.86    | 9.30    | 8.70    | 7.98    | 7.60    | 7.21    | 6.72    | 6.00    | 3.63   |
| 315.0  | 9.69    | 9.36    | 8.92    | 8.53    | 8.04    | 7.76    | 7.65    | 7.43    | 4.13   |
| 360.0  | 10.08   | 9.63    | 9.08    | 8.64    | 8.26    | 7.93    | 7.76    | 7.54    | 4.29   |

## Intensity data(cd)

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|                                 |             |
|---------------------------------|-------------|
| <b>C/<math>\gamma</math>(°)</b> | <b>90.0</b> |
| <b>0.0</b>                      | <b>3.96</b> |
| <b>45.0</b>                     | <b>3.69</b> |
| <b>90.0</b>                     | <b>3.41</b> |
| <b>135.0</b>                    | <b>3.41</b> |
| <b>180.0</b>                    | <b>3.41</b> |
| <b>225.0</b>                    | <b>3.36</b> |
| <b>270.0</b>                    | <b>3.41</b> |
| <b>315.0</b>                    | <b>3.80</b> |
| <b>360.0</b>                    | <b>3.96</b> |