



SGSO

Address: LIT by CARDI

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**Client:**

LumCAT: 0017440228 KAI 20.8W 3000K 2500lm

**Luminaire:**

Report No:

Voltage(V): 230.1900

Test No: KYZ-A251030009-01-002

Current(A): 0.0967

LampCAT: LED

Power (W): 20.8000

Lamp flux(lm): -1.0

PF: 0.9343

Number of Lamps: 1

Ballast type:

Length(mm): -249

Width(mm): -249

Phm Type: C

Height(mm): 0

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**Photometric Results**

Lumens(lm): 2500.00

Efficiency(%): 100.00%

Lumens(lm)/Power(W): 120.19

Central intensity(cd): 1290.034

Maximum intensity(cd): 1290.880

Angle of maximum intensity: C=135.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=84.0

[C90/270]Total=83.9

Field angle(10%Imax): [C0/180]Total=140.3

[C90/270]Total=139.9

Maximum s/h(1/2): C0\_180=1.12 C90\_270=1.10

Maximum s/h(1/4): C0\_180=1.19 C90\_270=1.16

Up flux rate of lamp(%): 0.48%

Down flux rate of lamp(%): 99.52%

Up flux rate of LUM(%): 0.48%

Down flux rate of LUM(%): 99.52%

CIE Type : Direct lighting

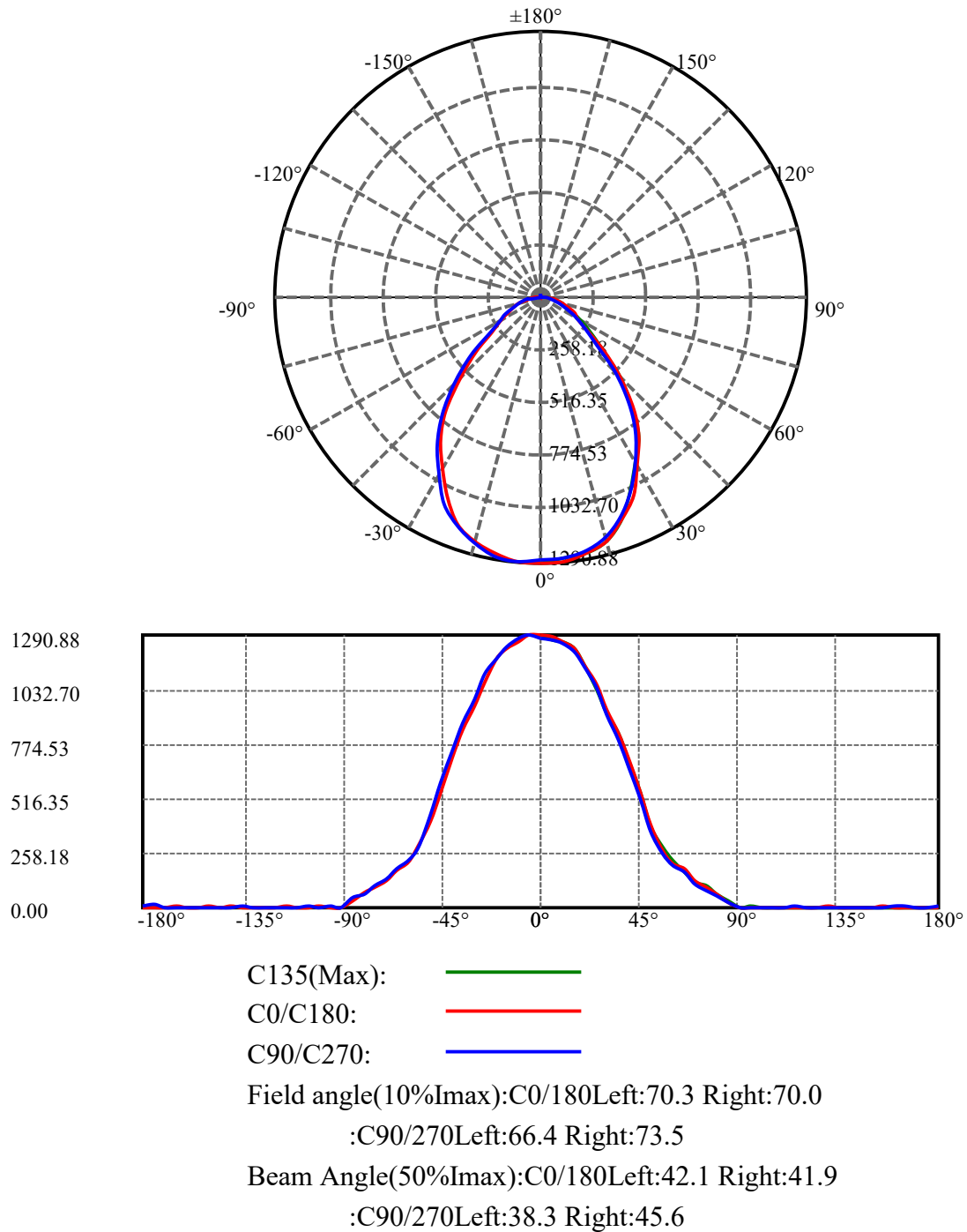
Output flux ratio in  $\pi$  solid angle : 86.804%

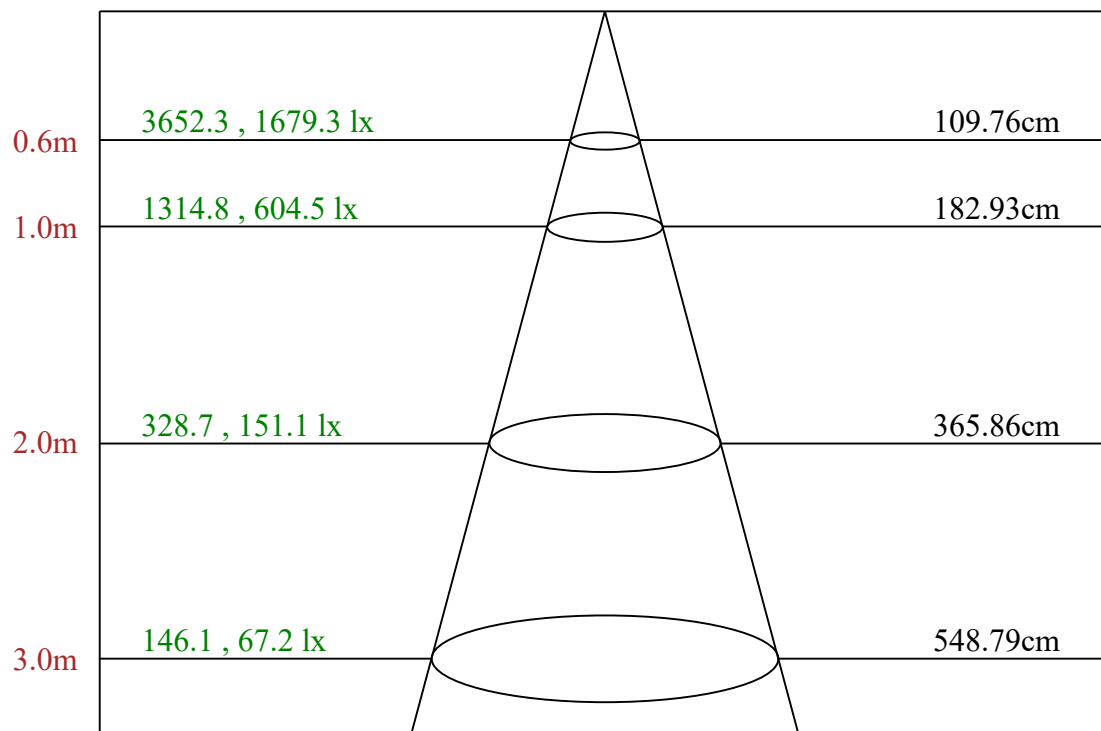
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 1310.734      | 0.000       | 0         | .000%       | .000%      |
| 5.0                | 1301.911      | 30.665      | 30.665    | .000%       | 1.227%     |
| 10.0               | 1286.310      | 90.903      | 121.567   | .000%       | 4.863%     |
| 15.0               | 1250.750      | 147.756     | 269.323   | .000%       | 10.773%    |
| 20.0               | 1180.382      | 196.711     | 466.034   | .000%       | 18.641%    |
| 25.0               | 1084.621      | 233.231     | 699.265   | .000%       | 27.971%    |
| 30.0               | 967.557       | 254.976     | 954.241   | .000%       | 38.170%    |
| 35.0               | 849.201       | 262.659     | 1216.899  | .000%       | 48.676%    |
| 40.0               | 721.808       | 257.338     | 1474.237  | .000%       | 58.969%    |
| 45.0               | 565.955       | 234.098     | 1708.335  | .000%       | 68.333%    |
| 50.0               | 410.264       | 193.667     | 1902.002  | .000%       | 76.080%    |
| 55.0               | 292.661       | 150.056     | 2052.058  | .000%       | 82.082%    |
| 60.0               | 227.512       | 118.047     | 2170.105  | .000%       | 86.804%    |
| 65.0               | 181.514       | 97.624      | 2267.729  | .000%       | 90.709%    |
| 70.0               | 132.182       | 77.983      | 2345.713  | .000%       | 93.828%    |
| 75.0               | 103.185       | 60.401      | 2406.113  | .000%       | 96.244%    |
| 80.0               | 70.314        | 45.578      | 2451.691  | .000%       | 98.068%    |
| 85.0               | 32.010        | 27.298      | 2478.989  | .000%       | 99.159%    |
| 90.0               | 1.883         | 9.111       | 2488.1    | .000%       | 99.524%    |
| 95.0               | 3.927         | 1.562       | 2489.662  | .000%       | 99.586%    |
| 100.0              | 2.582         | 1.737       | 2491.398  | .000%       | 99.656%    |
| 105.0              | 2.421         | 1.314       | 2492.713  | .000%       | 99.708%    |
| 110.0              | 0.968         | 0.870       | 2493.582  | .000%       | 99.743%    |
| 115.0              | 2.851         | 0.950       | 2494.532  | .000%       | 99.781%    |
| 120.0              | 0.753         | 0.860       | 2495.392  | .000%       | 99.816%    |
| 125.0              | 0.269         | 0.232       | 2495.624  | .000%       | 99.825%    |
| 130.0              | 1.775         | 0.436       | 2496.061  | .000%       | 99.842%    |
| 135.0              | 1.453         | 0.640       | 2496.701  | .000%       | 99.868%    |
| 140.0              | 1.453         | 0.528       | 2497.229  | .000%       | 99.889%    |
| 145.0              | 0.646         | 0.344       | 2497.573  | .000%       | 99.903%    |
| 150.0              | 3.228         | 0.560       | 2498.133  | .000%       | 99.925%    |
| 155.0              | 1.184         | 0.548       | 2498.681  | .000%       | 99.947%    |
| 160.0              | 2.152         | 0.343       | 2499.025  | .000%       | 99.961%    |
| 165.0              | 2.744         | 0.396       | 2499.421  | .000%       | 99.977%    |
| 170.0              | 1.506         | 0.248       | 2499.668  | .000%       | 99.987%    |
| 175.0              | 4.842         | 0.223       | 2499.891  | .000%       | 99.996%    |
| 180.0              | 4.627         | 0.111       | 2500.002  | .000%       | 100.000%   |

| ZONAL LUMEN SUMMARY |         |       |         |
|---------------------|---------|-------|---------|
| Zone                | Lumens  | %Lamp | %Fixt   |
| 0-30                | 954.24  | N.A.  | 38.17%  |
| 0-40                | 1474.24 | N.A.  | 58.97%  |
| 0-60                | 2170.10 | N.A.  | 86.80%  |
| 0-90                | 2488.10 | N.A.  | 99.52%  |
| 0-120               | 2495.39 | N.A.  | 99.82%  |
| 0-180               | 2500.00 | N.A.  | 100.00% |
| 60-90               | 436.04  | N.A.  | 17.44%  |
| 90-120              | 16.40   | N.A.  | 0.66%   |
| 90-130              | 17.07   | N.A.  | 0.68%   |
| 90-150              | 19.14   | N.A.  | 0.77%   |
| 90-180              | 20.90   | N.A.  | 0.84%   |
| 0-53.27             | 2000.00 | N.A.  | 80.00%  |

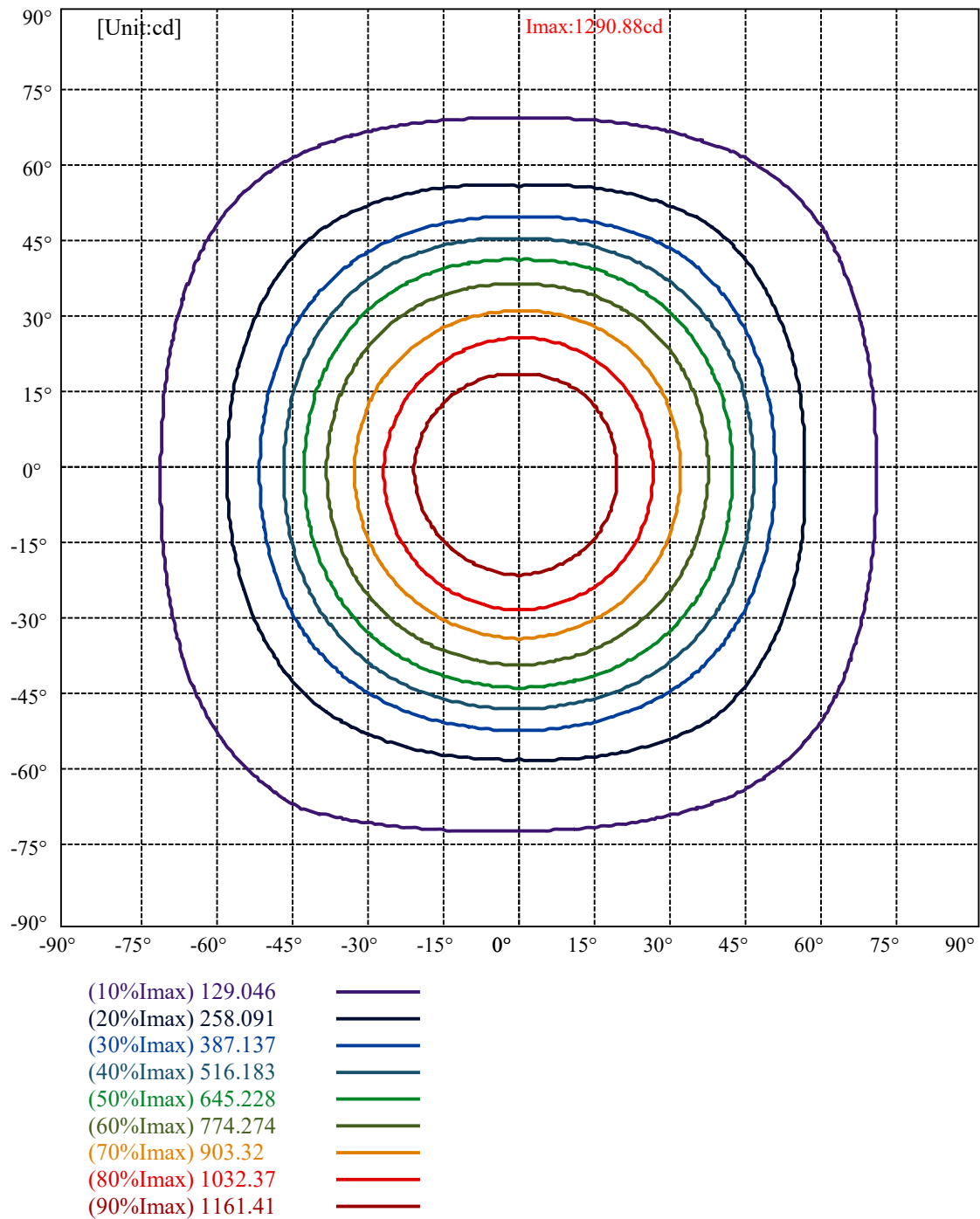
ZONAL LUMEN SUMMARY

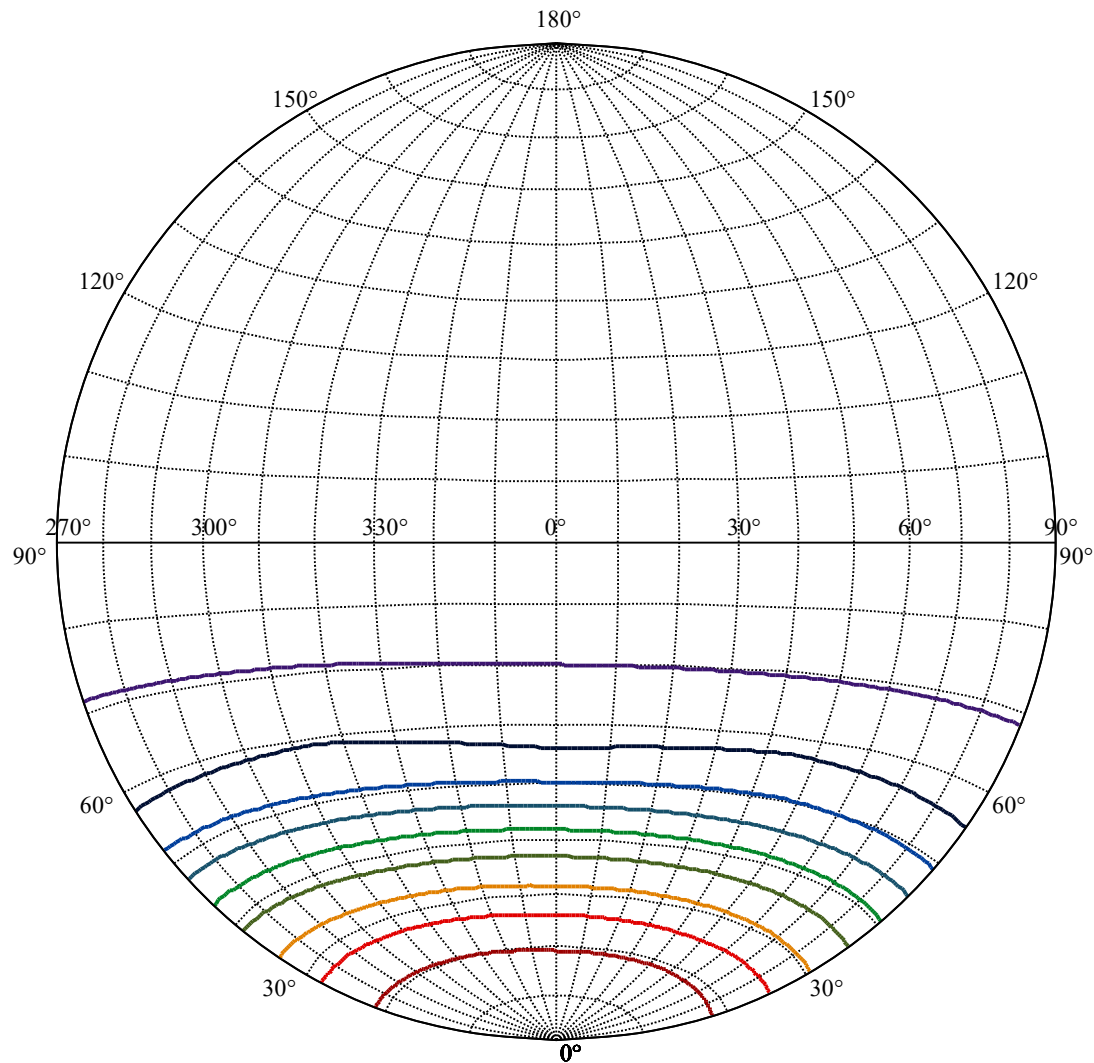
|         |        |
|---------|--------|
| 0-10    | 121.57 |
| 10-20   | 344.47 |
| 20-30   | 488.21 |
| 30-40   | 520.00 |
| 40-50   | 427.76 |
| 50-60   | 268.10 |
| 60-70   | 175.61 |
| 70-80   | 105.98 |
| 80-90   | 36.41  |
| 90-100  | 3.30   |
| 100-110 | 2.18   |
| 110-120 | 1.81   |
| 120-130 | 0.67   |
| 130-140 | 1.17   |
| 140-150 | 0.90   |
| 150-160 | 0.89   |
| 160-170 | 0.64   |
| 170-180 | 0.22   |





Max , Ave      Beam angle of C135 plane 84.90



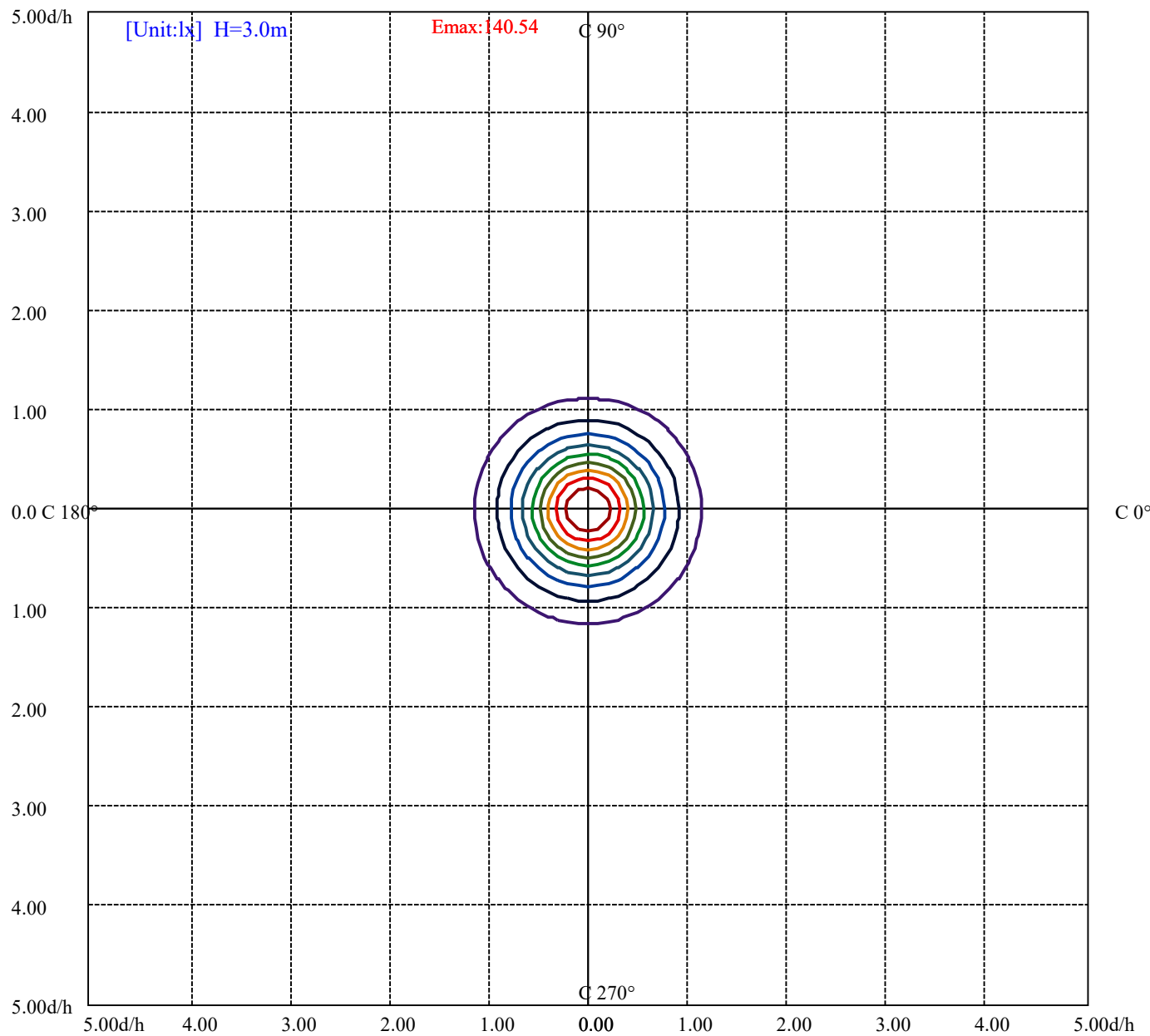


House

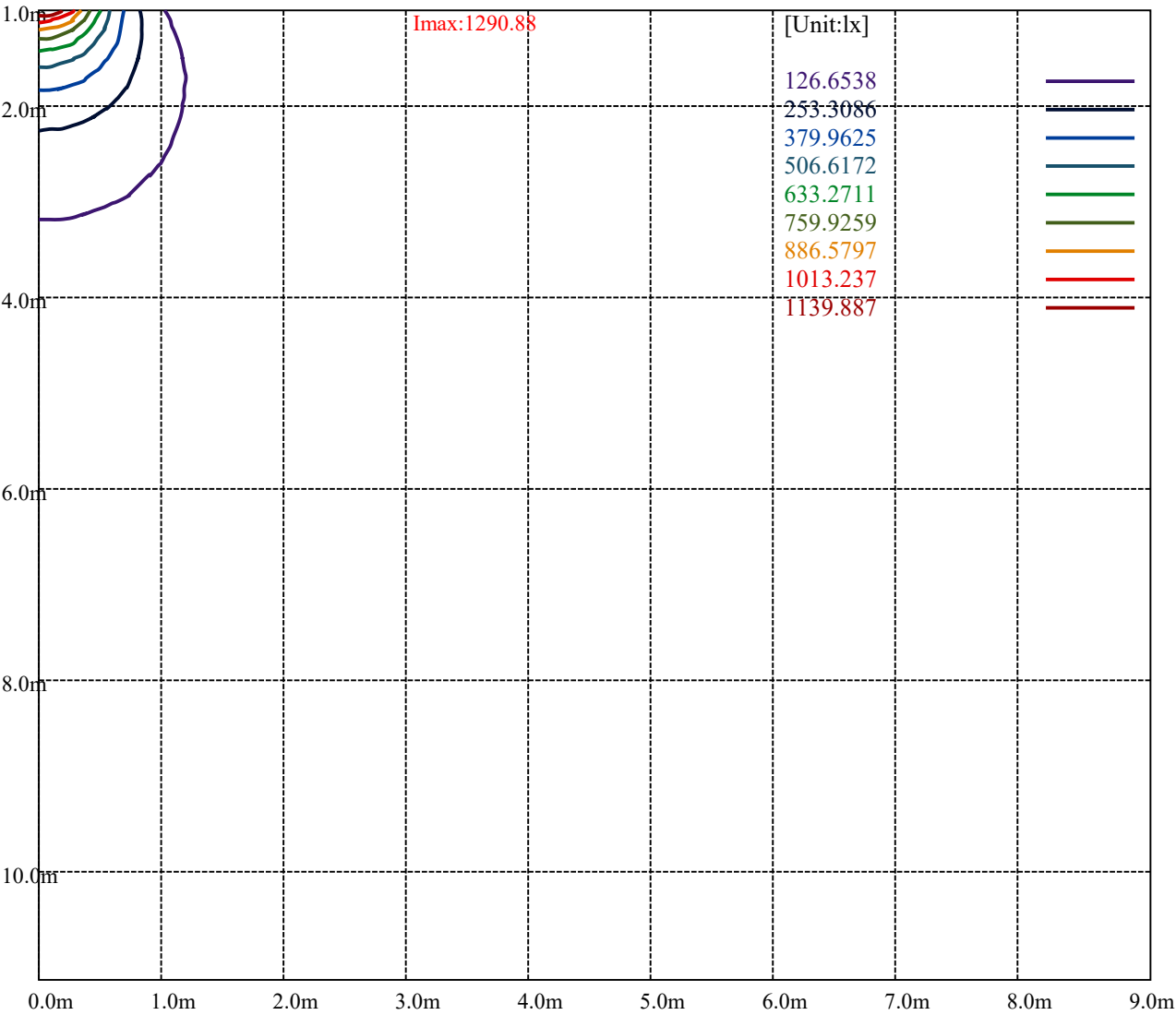
[Unit:cd]

Road

|                    |             |
|--------------------|-------------|
| Imax:1290.88       |             |
| (10%Imax) 126.7373 | <div></div> |
| (20%Imax) 253.4745 | <div></div> |
| (30%Imax) 380.2119 | <div></div> |
| (40%Imax) 506.9491 | <div></div> |
| (50%Imax) 633.6864 | <div></div> |
| (60%Imax) 760.4237 | <div></div> |
| (70%Imax) 887.1609 | <div></div> |
| (80%Imax) 1013.894 | <div></div> |
| (90%Imax) 1140.634 | <div></div> |



|           |          |  |
|-----------|----------|--|
| (10%Emax) | 14.05421 |  |
| (20%Emax) | 28.10842 |  |
| (30%Emax) | 42.16274 |  |
| (40%Emax) | 56.21695 |  |
| (50%Emax) | 70.27116 |  |
| (60%Emax) | 84.32538 |  |
| (70%Emax) | 98.3797  |  |
| (80%Emax) | 112.4335 |  |
| (90%Emax) | 126.4883 |  |



Luminance Table

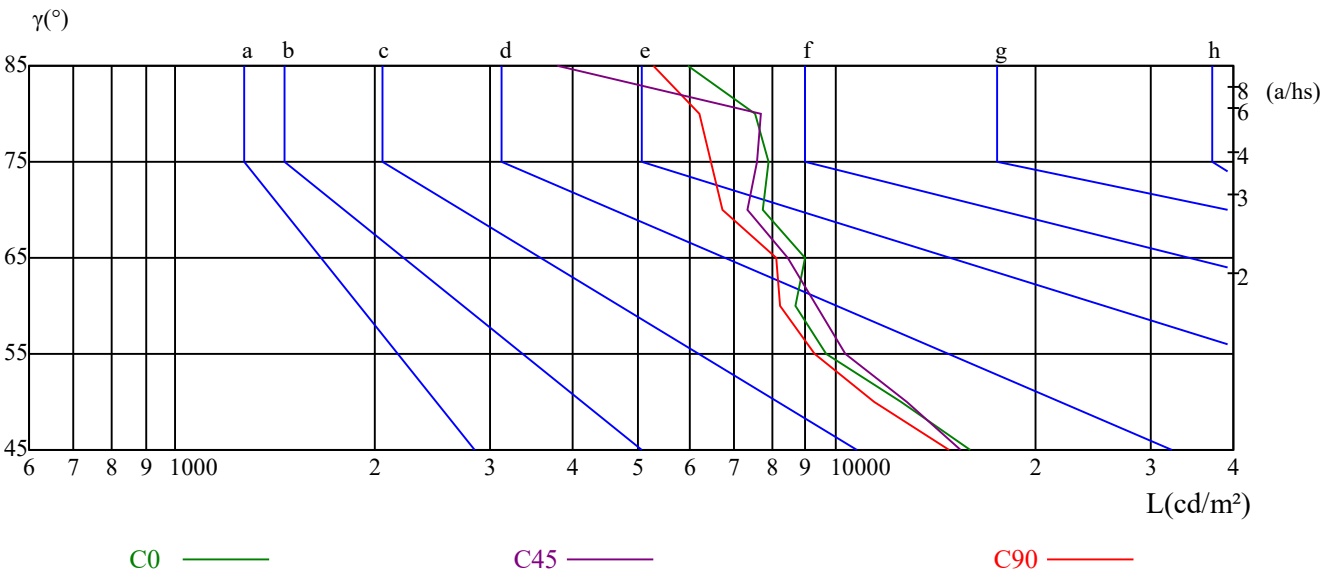
| $\gamma$ | 45    | 50    | 55    | 60   | 65   | 70   | 75   | 80   | 85   |
|----------|-------|-------|-------|------|------|------|------|------|------|
| C0       | 15941 | 12541 | 9637  | 8695 | 8952 | 7763 | 7912 | 7546 | 5974 |
| C45      | 15450 | 12798 | 10333 | 9354 | 8439 | 7358 | 7577 | 7695 | 3783 |
| C90      | 14861 | 11461 | 9289  | 8226 | 8131 | 6723 | 6471 | 6196 | 5277 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 8675       | 8593       | 8685    | 7896       | 7409       | 8424    | 6770       | 8363       | 7243    |

Glare Table

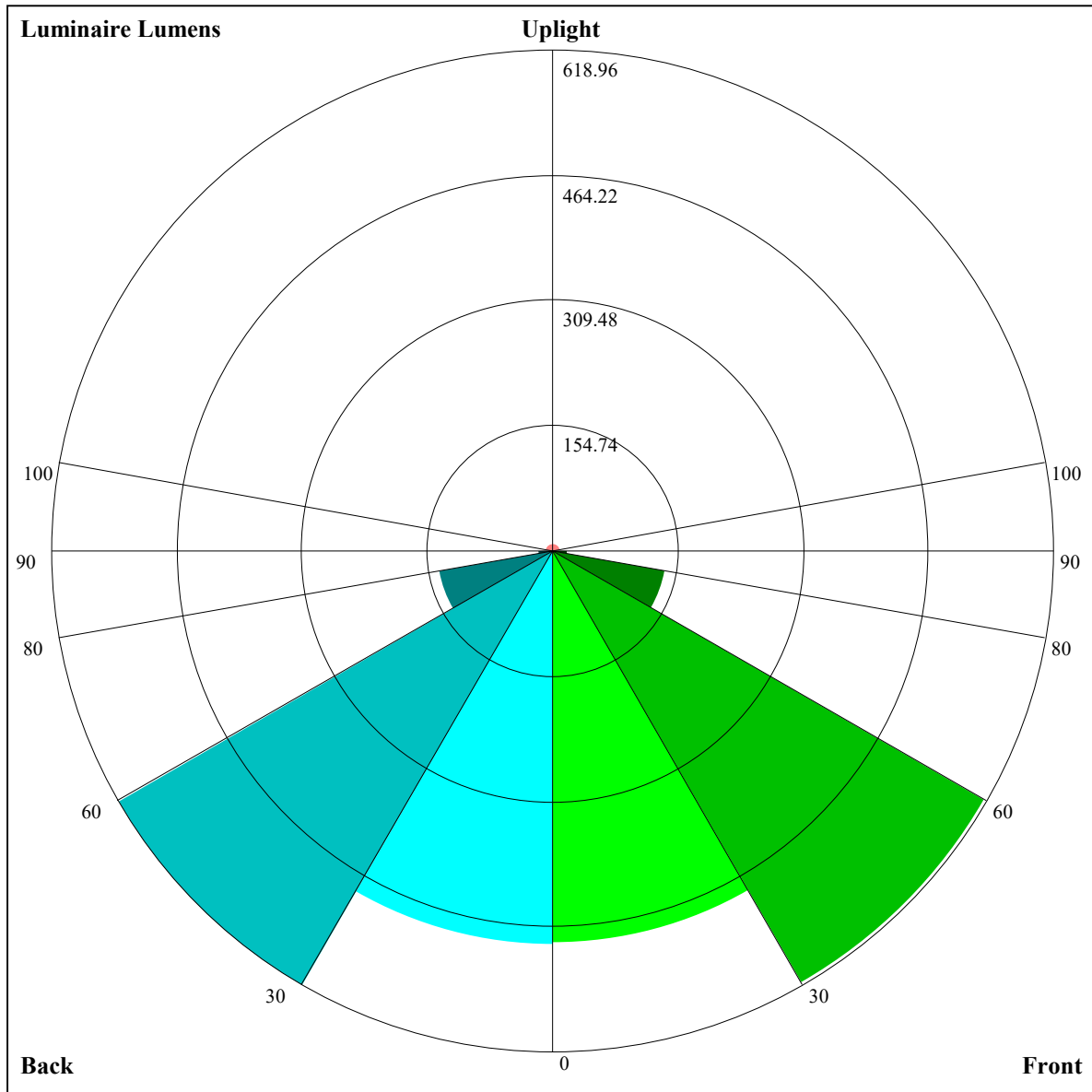
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000                           | 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  | 15.28            | 16.72 | 15.65 | 17.05 | 17.37 | 15.05          | 16.49 | 15.42 | 16.81 | 17.14 |
|                                                   | 3H  | 16.38            | 17.67 | 16.77 | 18.02 | 18.38 | 16.03          | 17.33 | 16.42 | 17.67 | 18.03 |
|                                                   | 4H  | 16.86            | 18.08 | 17.27 | 18.44 | 18.81 | 16.42          | 17.63 | 16.82 | 17.99 | 18.37 |
|                                                   | 6H  | 17.31            | 18.43 | 17.73 | 18.81 | 19.22 | 16.77          | 17.90 | 17.19 | 18.28 | 18.68 |
|                                                   | 8H  | 17.44            | 18.52 | 17.86 | 18.90 | 19.32 | 16.87          | 17.95 | 17.29 | 18.34 | 18.75 |
|                                                   | 12H | 17.50            | 18.53 | 17.92 | 18.93 | 19.35 | 16.92          | 17.95 | 17.34 | 18.35 | 18.77 |
| 4H                                                | 2H  | 15.69            | 16.90 | 16.09 | 17.26 | 17.64 | 15.50          | 16.71 | 15.90 | 17.07 | 17.45 |
|                                                   | 3H  | 16.96            | 17.98 | 17.38 | 18.38 | 18.80 | 16.65          | 17.67 | 17.07 | 18.07 | 18.49 |
|                                                   | 4H  | 17.63            | 18.54 | 18.08 | 18.96 | 19.41 | 17.22          | 18.13 | 17.67 | 18.55 | 19.00 |
|                                                   | 6H  | 18.18            | 18.99 | 18.66 | 19.44 | 19.89 | 17.68          | 18.48 | 18.15 | 18.93 | 19.39 |
|                                                   | 8H  | 18.39            | 19.14 | 18.87 | 19.60 | 20.07 | 17.85          | 18.60 | 18.33 | 19.05 | 19.53 |
|                                                   | 12H | 18.51            | 19.21 | 19.00 | 19.66 | 20.17 | 17.95          | 18.65 | 18.44 | 19.10 | 19.62 |
| 8H                                                | 4H  | 17.83            | 18.58 | 18.31 | 19.04 | 19.51 | 17.46          | 18.21 | 17.94 | 18.67 | 19.14 |
|                                                   | 6H  | 18.52            | 19.15 | 19.02 | 19.63 | 20.14 | 18.06          | 18.68 | 18.56 | 19.16 | 19.67 |
|                                                   | 8H  | 18.84            | 19.39 | 19.37 | 19.91 | 20.41 | 18.34          | 18.89 | 18.87 | 19.41 | 19.91 |
|                                                   | 12H | 19.01            | 19.47 | 19.54 | 19.99 | 20.51 | 18.49          | 18.95 | 19.03 | 19.47 | 19.99 |
| 12H                                               | 4H  | 17.85            | 18.54 | 18.34 | 19.00 | 19.51 | 17.49          | 18.19 | 17.98 | 18.64 | 19.16 |
|                                                   | 6H  | 18.61            | 19.16 | 19.14 | 19.68 | 20.18 | 18.17          | 18.71 | 18.69 | 19.23 | 19.73 |
|                                                   | 8H  | 18.92            | 19.38 | 19.46 | 19.90 | 20.42 | 18.44          | 18.90 | 18.98 | 19.42 | 19.94 |
| Variation with the observer position at spacings: |     |                  |       |       |       |       |                |       |       |       |       |
| S = 1.0H                                          |     | 0.3/-0.8         |       |       |       |       | 0.3/-0.8       |       |       |       |       |
| S = 1.5H                                          |     | 1.0/-1.2         |       |       |       |       | 0.9/-1.1       |       |       |       |       |
| S = 2.0H                                          |     | 1.5/-1.3         |       |       |       |       | 1.4/-1.1       |       |       |       |       |
| Standard tables:                                  |     | BK3              |       |       |       |       | BK3            |       |       |       |       |
| Uncorrected UGR                                   |     | 4.5              |       |       |       |       | 4.8            |       |       |       |       |

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



Luminaire Lumens:

FL=484.97,FM=614.89,FH=141.76,FVH=17.78

BL=485.84,BM=618.96,BH=142.27,BVH=19.17

UL=3.36,UH=8.75

BUG Rating:B1-U1-G1

## Intensity data(cd)

| C/γ(°) | 0.0     | 5.0     | 10.0    | 15.0    | 20.0    | 25.0    | 30.0   | 35.0   | 40.0   |
|--------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| 0.0    | 1290.03 | 1286.65 | 1260.88 | 1227.92 | 1148.48 | 1061.86 | 941.86 | 824.81 | 704.39 |
| 45.0   | 1288.34 | 1266.37 | 1253.70 | 1217.36 | 1146.37 | 1044.53 | 930.02 | 814.25 | 690.86 |
| 90.0   | 1278.20 | 1270.60 | 1253.27 | 1208.91 | 1134.96 | 1040.31 | 917.35 | 796.92 | 664.67 |
| 135.0  | 1290.88 | 1268.91 | 1260.88 | 1226.23 | 1146.37 | 1036.93 | 920.73 | 827.77 | 694.67 |
| 180.0  | 1290.03 | 1287.08 | 1258.34 | 1229.19 | 1174.68 | 1066.51 | 952.84 | 844.67 | 716.22 |
| 225.0  | 1288.34 | 1280.32 | 1273.13 | 1238.06 | 1171.72 | 1083.83 | 973.12 | 846.36 | 734.81 |
| 270.0  | 1278.20 | 1290.46 | 1278.20 | 1238.06 | 1181.02 | 1103.27 | 988.34 | 875.94 | 745.37 |
| 315.0  | 1290.88 | 1275.24 | 1264.68 | 1238.06 | 1167.50 | 1081.72 | 975.24 | 839.18 | 718.33 |
| 360.0  | 1290.03 | 1286.65 | 1260.88 | 1227.92 | 1148.48 | 1061.86 | 941.86 | 824.81 | 704.39 |
|        |         |         |         |         |         |         |        |        |        |
| C/γ(°) | 45.0    | 50.0    | 55.0    | 60.0    | 65.0    | 70.0    | 75.0   | 80.0   | 85.0   |
| 0.0    | 548.89  | 392.55  | 269.16  | 211.70  | 184.23  | 129.30  | 99.72  | 63.80  | 25.35  |
| 45.0   | 531.99  | 400.57  | 288.60  | 227.75  | 173.67  | 122.54  | 95.50  | 65.07  | 16.06  |
| 90.0   | 511.70  | 358.74  | 259.44  | 200.29  | 167.33  | 111.98  | 81.55  | 52.40  | 22.39  |
| 135.0  | 548.89  | 385.36  | 289.44  | 227.75  | 168.60  | 124.23  | 102.68 | 60.42  | 35.92  |
| 180.0  | 548.04  | 406.91  | 294.09  | 213.81  | 172.82  | 130.99  | 99.30  | 72.26  | 32.11  |
| 225.0  | 579.73  | 423.39  | 303.39  | 231.56  | 185.50  | 143.67  | 121.69 | 84.09  | 37.61  |
| 270.0  | 594.94  | 440.29  | 288.18  | 225.64  | 186.34  | 138.17  | 105.21 | 66.34  | 48.59  |
| 315.0  | 581.00  | 414.52  | 306.35  | 248.46  | 187.19  | 137.33  | 104.79 | 87.89  | 33.38  |
| 360.0  | 548.89  | 392.55  | 269.16  | 211.70  | 184.23  | 129.30  | 99.72  | 63.80  | 25.35  |
|        |         |         |         |         |         |         |        |        |        |
| C/γ(°) | 90.0    | 95.0    | 100.0   | 105.0   | 110.0   | 115.0   | 120.0  | 125.0  | 130.0  |
| 0.0    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 2.11    | 2.96   | 0.00   | 6.76   |
| 45.0   | 0.00    | 6.76    | 2.96    | 0.00    | 0.00    | 3.38    | 0.00   | 0.00   | 5.07   |
| 90.0   | 0.00    | 2.53    | 1.69    | 0.00    | 0.00    | 5.07    | 0.00   | 2.11   | 0.00   |
| 135.0  | 0.00    | 7.18    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00   | 0.00   | 0.00   |
| 180.0  | 0.00    | 0.00    | 7.61    | 0.00    | 3.80    | 8.03    | 0.00   | 0.00   | 0.00   |
| 225.0  | 0.00    | 2.96    | 2.53    | 2.53    | 0.00    | 0.42    | 0.00   | 0.00   | 0.00   |
| 270.0  | 2.96    | 6.76    | 0.00    | 10.56   | 3.80    | 2.96    | 2.96   | 0.00   | 0.00   |
| 315.0  | 11.83   | 4.65    | 5.49    | 5.92    | 0.00    | 0.42    | 0.00   | 0.00   | 2.11   |
| 360.0  | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 2.11    | 2.96   | 0.00   | 6.76   |
|        |         |         |         |         |         |         |        |        |        |
| C/γ(°) | 135.0   | 140.0   | 145.0   | 150.0   | 155.0   | 160.0   | 165.0  | 170.0  | 175.0  |
| 0.0    | 0.00    | 0.00    | 2.96    | 3.80    | 6.76    | 2.11    | 0.42   | 1.27   | 0.00   |
| 45.0   | 4.23    | 0.00    | 0.00    | 0.00    | 0.00    | 0.00    | 5.49   | 0.00   | 5.92   |
| 90.0   | 0.00    | 2.96    | 0.00    | 0.00    | 0.00    | 5.92    | 4.23   | 1.27   | 0.00   |
| 135.0  | 0.00    | 0.42    | 0.85    | 0.00    | 0.42    | 2.11    | 0.00   | 0.00   | 2.11   |
| 180.0  | 0.00    | 6.34    | 0.00    | 8.45    | 0.00    | 0.00    | 8.03   | 0.00   | 0.00   |
| 225.0  | 2.11    | 0.00    | 1.27    | 4.23    | 2.11    | 3.80    | 0.00   | 0.00   | 16.48  |
| 270.0  | 5.07    | 1.69    | 0.00    | 0.00    | 0.00    | 2.96    | 0.00   | 0.00   | 13.52  |
| 315.0  | 0.00    | 0.00    | 0.00    | 8.87    | 0.00    | 0.00    | 3.38   | 9.30   | 0.00   |
| 360.0  | 0.00    | 0.00    | 2.96    | 3.80    | 6.76    | 2.11    | 0.42   | 1.27   | 0.00   |
|        |         |         |         |         |         |         |        |        |        |
| C/γ(°) | 180.0   |         |         |         |         |         |        |        |        |
| 0.0    | 0.00    |         |         |         |         |         |        |        |        |
| 45.0   | 10.99   |         |         |         |         |         |        |        |        |
| 90.0   | 7.18    |         |         |         |         |         |        |        |        |
| 135.0  | 0.00    |         |         |         |         |         |        |        |        |
| 180.0  | 0.00    |         |         |         |         |         |        |        |        |
| 225.0  | 10.99   |         |         |         |         |         |        |        |        |
| 270.0  | 7.18    |         |         |         |         |         |        |        |        |
| 315.0  | 0.00    |         |         |         |         |         |        |        |        |
| 360.0  | 0.00    |         |         |         |         |         |        |        |        |