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## Nata

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### Client:

LumCAT: 3-2322-M

Luminaire: 92.70.129.00

Report No: GC2019091909

Test No: NATA07

LampCAT: CREE CXA1830

Lamp flux(lm): 1602.0

Number of Lamps: 1

Length(mm): 78

Phm Type: C

Voltage(V): 220.4000

Current(A): 0.0700

Power (W): 14.2300

PF: 0.9180

Ballast type: AC

Width(mm): 78

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1406.84, Efficiency(%): 87.82% , Luminous Efficacy(lm/W): 98.86

Central intensity(cd): 9325.285, Maximum intensity(cd): 9383.718

Angle of maximum intensity: C=0.0  $\gamma=1.0$

Beam Angle(50%Imax): [C0/180]Total=16.2

[C90/270]Total=16.2

Field angle(10%Imax): [C0/180]Total=34.0

[C90/270]Total=34.0

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

Maximum s/h(1/4): C0\_180=0.28 C90\_270=0.28

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 87.82%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 99.647%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 9325.286      | 0.000       | 0         | .000%       | .000%      |
| 1.0                | 9383.719      | 8.952       | 8.952     | .559%       | .636%      |
| 2.0                | 9204.092      | 26.679      | 35.631    | 1.665%      | 2.533%     |
| 3.0                | 8741.323      | 42.920      | 78.55     | 2.679%      | 5.583%     |
| 4.0                | 8185.643      | 56.660      | 135.21    | 3.537%      | 9.611%     |
| 5.0                | 7450.440      | 67.266      | 202.476   | 4.199%      | 14.392%    |
| 6.0                | 6564.368      | 73.652      | 276.128   | 4.597%      | 19.628%    |
| 7.0                | 5626.556      | 75.669      | 351.796   | 4.723%      | 25.006%    |
| 8.0                | 4769.254      | 74.401      | 426.197   | 4.644%      | 30.295%    |
| 9.0                | 3892.231      | 70.197      | 496.394   | 4.382%      | 35.284%    |
| 10.0               | 3166.947      | 63.883      | 560.277   | 3.988%      | 39.825%    |
| 11.0               | 2613.123      | 57.755      | 618.032   | 3.605%      | 43.931%    |
| 12.0               | 2198.799      | 52.601      | 670.633   | 3.283%      | 47.670%    |
| 13.0               | 1789.162      | 47.327      | 717.96    | 2.954%      | 51.034%    |
| 14.0               | 1535.011      | 42.549      | 760.509   | 2.656%      | 54.058%    |
| 15.0               | 1254.955      | 38.302      | 798.811   | 2.391%      | 56.781%    |
| 16.0               | 1054.052      | 33.833      | 832.644   | 2.112%      | 59.186%    |
| 17.0               | 929.749       | 30.893      | 863.537   | 1.928%      | 61.382%    |
| 18.0               | 847.371       | 29.301      | 892.838   | 1.829%      | 63.464%    |
| 19.0               | 769.031       | 28.122      | 920.96    | 1.755%      | 65.463%    |
| 20.0               | 710.928       | 27.087      | 948.048   | 1.691%      | 67.389%    |
| 21.0               | 664.299       | 26.407      | 974.455   | 1.648%      | 69.266%    |
| 22.0               | 628.121       | 25.972      | 1000.426  | 1.621%      | 71.112%    |
| 23.0               | 602.194       | 25.815      | 1026.242  | 1.611%      | 72.947%    |
| 24.0               | 577.414       | 25.790      | 1052.032  | 1.610%      | 74.780%    |
| 25.0               | 561.741       | 25.902      | 1077.934  | 1.617%      | 76.621%    |
| 26.0               | 547.536       | 26.185      | 1104.119  | 1.634%      | 78.482%    |
| 27.0               | 536.684       | 26.526      | 1130.644  | 1.656%      | 80.368%    |
| 28.0               | 525.721       | 26.898      | 1157.542  | 1.679%      | 82.280%    |
| 29.0               | 516.788       | 27.275      | 1184.817  | 1.703%      | 84.219%    |
| 30.0               | 502.537       | 27.522      | 1212.339  | 1.718%      | 86.175%    |
| 31.0               | 480.025       | 27.343      | 1239.682  | 1.707%      | 88.119%    |
| 32.0               | 449.735       | 26.637      | 1266.319  | 1.663%      | 90.012%    |
| 33.0               | 412.305       | 25.396      | 1291.715  | 1.585%      | 91.817%    |
| 34.0               | 357.625       | 23.300      | 1315.015  | 1.454%      | 93.473%    |
| 35.0               | 302.155       | 20.490      | 1335.505  | 1.279%      | 94.930%    |
| 36.0               | 250.149       | 17.585      | 1353.091  | 1.098%      | 96.180%    |
| 37.0               | 189.059       | 14.324      | 1367.415  | .894%       | 97.198%    |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 141.559       | 11.036      | 1378.451  | .689%       | 97.982%    |
| 39.0               | 97.412        | 8.157       | 1386.608  | .509%       | 98.562%    |
| 40.0               | 56.838        | 5.380       | 1391.987  | .336%       | 98.945%    |
| 41.0               | 27.105        | 2.989       | 1394.977  | .187%       | 99.157%    |
| 42.0               | 12.448        | 1.437       | 1396.414  | .090%       | 99.259%    |
| 43.0               | 7.831         | 0.751       | 1397.165  | .047%       | 99.313%    |
| 44.0               | 5.992         | 0.522       | 1397.686  | .033%       | 99.350%    |
| 45.0               | 4.832         | 0.416       | 1398.102  | .026%       | 99.379%    |
| 46.0               | 4.368         | 0.360       | 1398.462  | .022%       | 99.405%    |
| 47.0               | 3.898         | 0.329       | 1398.791  | .021%       | 99.428%    |
| 48.0               | 3.579         | 0.302       | 1399.093  | .019%       | 99.450%    |
| 49.0               | 3.370         | 0.285       | 1399.379  | .018%       | 99.470%    |
| 50.0               | 3.190         | 0.274       | 1399.652  | .017%       | 99.489%    |
| 51.0               | 3.005         | 0.262       | 1399.914  | .016%       | 99.508%    |
| 52.0               | 2.842         | 0.251       | 1400.165  | .016%       | 99.526%    |
| 53.0               | 2.686         | 0.240       | 1400.406  | .015%       | 99.543%    |
| 54.0               | 2.570         | 0.232       | 1400.637  | .014%       | 99.559%    |
| 55.0               | 2.425         | 0.223       | 1400.86   | .014%       | 99.575%    |
| 56.0               | 2.320         | 0.214       | 1401.074  | .013%       | 99.591%    |
| 57.0               | 2.216         | 0.207       | 1401.282  | .013%       | 99.605%    |
| 58.0               | 2.106         | 0.200       | 1401.482  | .012%       | 99.619%    |
| 59.0               | 2.042         | 0.194       | 1401.676  | .012%       | 99.633%    |
| 60.0               | 1.966         | 0.189       | 1401.865  | .012%       | 99.647%    |
| 61.0               | 1.891         | 0.184       | 1402.049  | .011%       | 99.660%    |
| 62.0               | 1.821         | 0.179       | 1402.228  | .011%       | 99.673%    |
| 63.0               | 1.775         | 0.175       | 1402.403  | .011%       | 99.685%    |
| 64.0               | 1.717         | 0.171       | 1402.574  | .011%       | 99.697%    |
| 65.0               | 1.682         | 0.168       | 1402.742  | .011%       | 99.709%    |
| 66.0               | 1.642         | 0.166       | 1402.908  | .010%       | 99.721%    |
| 67.0               | 1.613         | 0.164       | 1403.072  | .010%       | 99.732%    |
| 68.0               | 1.589         | 0.162       | 1403.234  | .010%       | 99.744%    |
| 69.0               | 1.543         | 0.160       | 1403.394  | .010%       | 99.755%    |
| 70.0               | 1.514         | 0.157       | 1403.551  | .010%       | 99.767%    |
| 71.0               | 1.497         | 0.156       | 1403.706  | .010%       | 99.778%    |
| 72.0               | 1.491         | 0.155       | 1403.862  | .010%       | 99.789%    |
| 73.0               | 1.473         | 0.155       | 1404.017  | .010%       | 99.800%    |
| 74.0               | 1.456         | 0.154       | 1404.171  | .010%       | 99.811%    |
| 75.0               | 1.444         | 0.153       | 1404.324  | .010%       | 99.821%    |

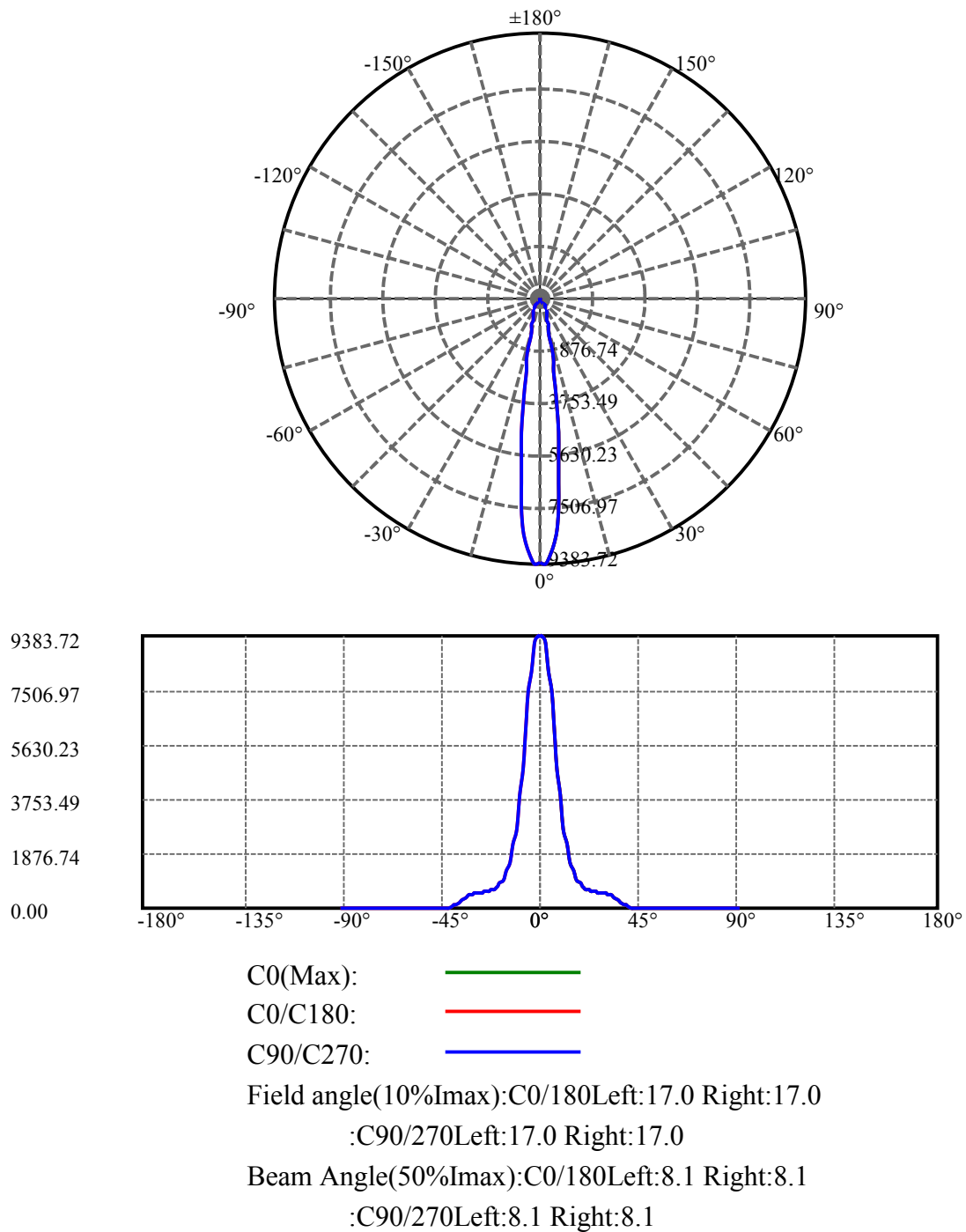
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 1.462         | 0.154       | 1404.478  | .010%       | 99.832%    |
| 77.0               | 1.456         | 0.156       | 1404.634  | .010%       | 99.844%    |
| 78.0               | 1.444         | 0.155       | 1404.789  | .010%       | 99.855%    |
| 79.0               | 1.444         | 0.155       | 1404.944  | .010%       | 99.866%    |
| 80.0               | 1.473         | 0.157       | 1405.102  | .010%       | 99.877%    |
| 81.0               | 1.462         | 0.159       | 1405.26   | .010%       | 99.888%    |
| 82.0               | 1.450         | 0.158       | 1405.418  | .010%       | 99.899%    |
| 83.0               | 1.468         | 0.159       | 1405.577  | .010%       | 99.911%    |
| 84.0               | 1.468         | 0.160       | 1405.737  | .010%       | 99.922%    |
| 85.0               | 1.473         | 0.161       | 1405.897  | .010%       | 99.933%    |
| 86.0               | 1.537         | 0.165       | 1406.062  | .010%       | 99.945%    |
| 87.0               | 1.665         | 0.175       | 1406.237  | .011%       | 99.957%    |
| 88.0               | 1.827         | 0.191       | 1406.428  | .012%       | 99.971%    |
| 89.0               | 1.856         | 0.202       | 1406.63   | .013%       | 99.985%    |
| 90.0               | 1.885         | 0.205       | 1406.835  | .013%       | 100.000%   |

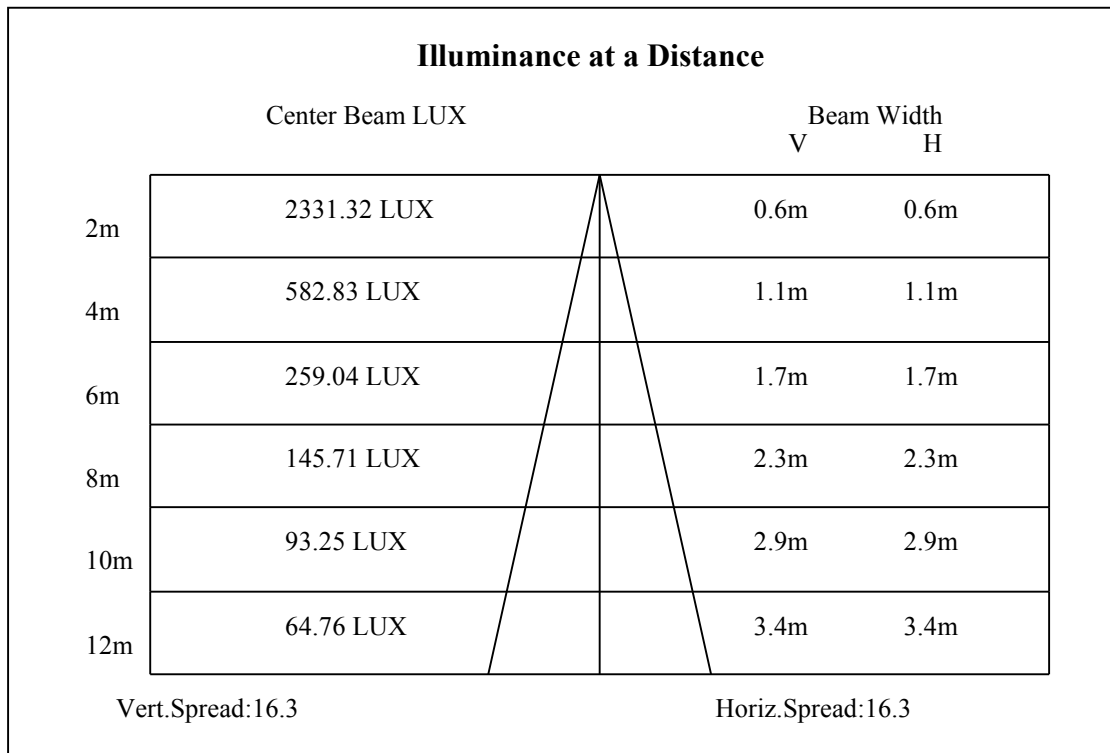
## ZONAL LUMEN SUMMARY

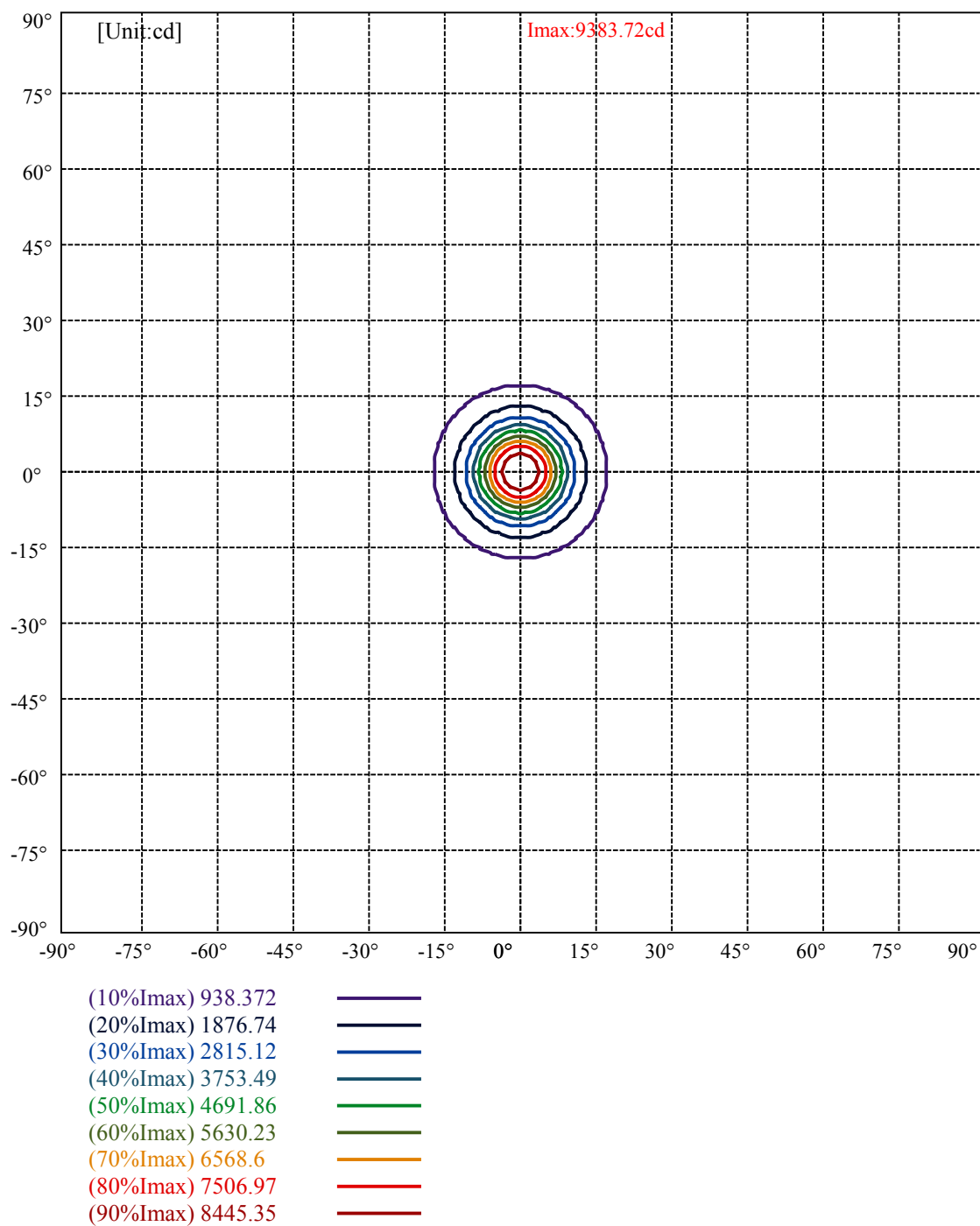
| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 1212.34 | 75.68% | 86.17%  |
| 0-40    | 1391.99 | 86.89% | 98.94%  |
| 0-60    | 1401.86 | 87.51% | 99.65%  |
| 0-90    | 1406.63 | 87.80% | 99.99%  |
| 0-120   | 1406.63 | 87.80% | 99.99%  |
| 0-180   | 1406.84 | 87.82% | 100.00% |
| 60-90   | 4.95    | 0.31%  | 0.35%   |
| 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%   |
| 0-26.80 | 1125.47 | 70.25% | 80.00%  |

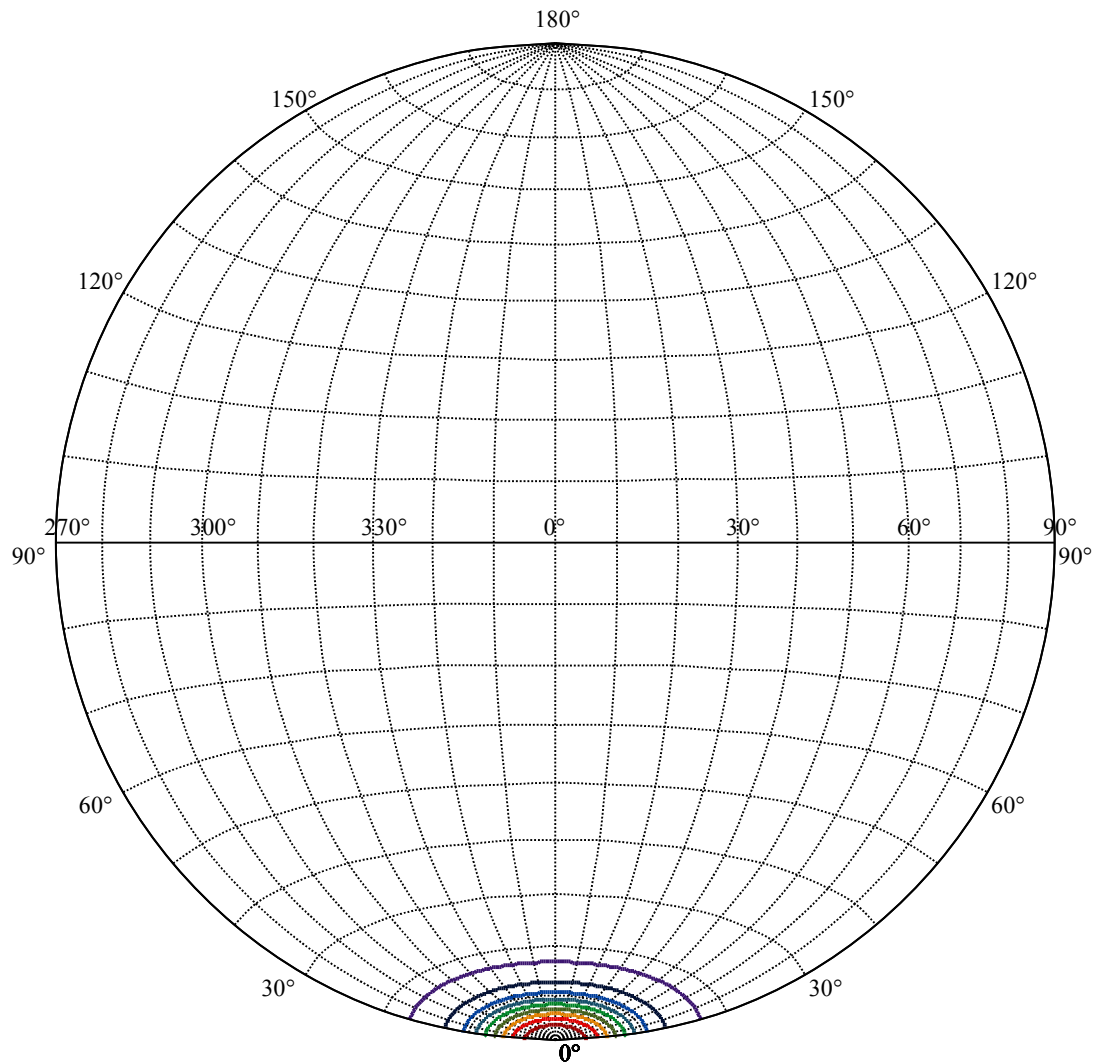
## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 560.28 |
| 10-20   | 387.77 |
| 20-30   | 264.29 |
| 30-40   | 179.65 |
| 40-50   | 7.66   |
| 50-60   | 2.21   |
| 60-70   | 1.69   |
| 70-80   | 1.55   |
| 80-90   | 1.53   |
| 90-100  | 0.00   |
| 100-110 | 0.00   |
| 110-120 | 0.00   |
| 120-130 | 0.00   |
| 130-140 | 0.00   |
| 140-150 | 0.00   |
| 150-160 | 0.00   |
| 160-170 | 0.00   |
| 170-180 | 0.00   |









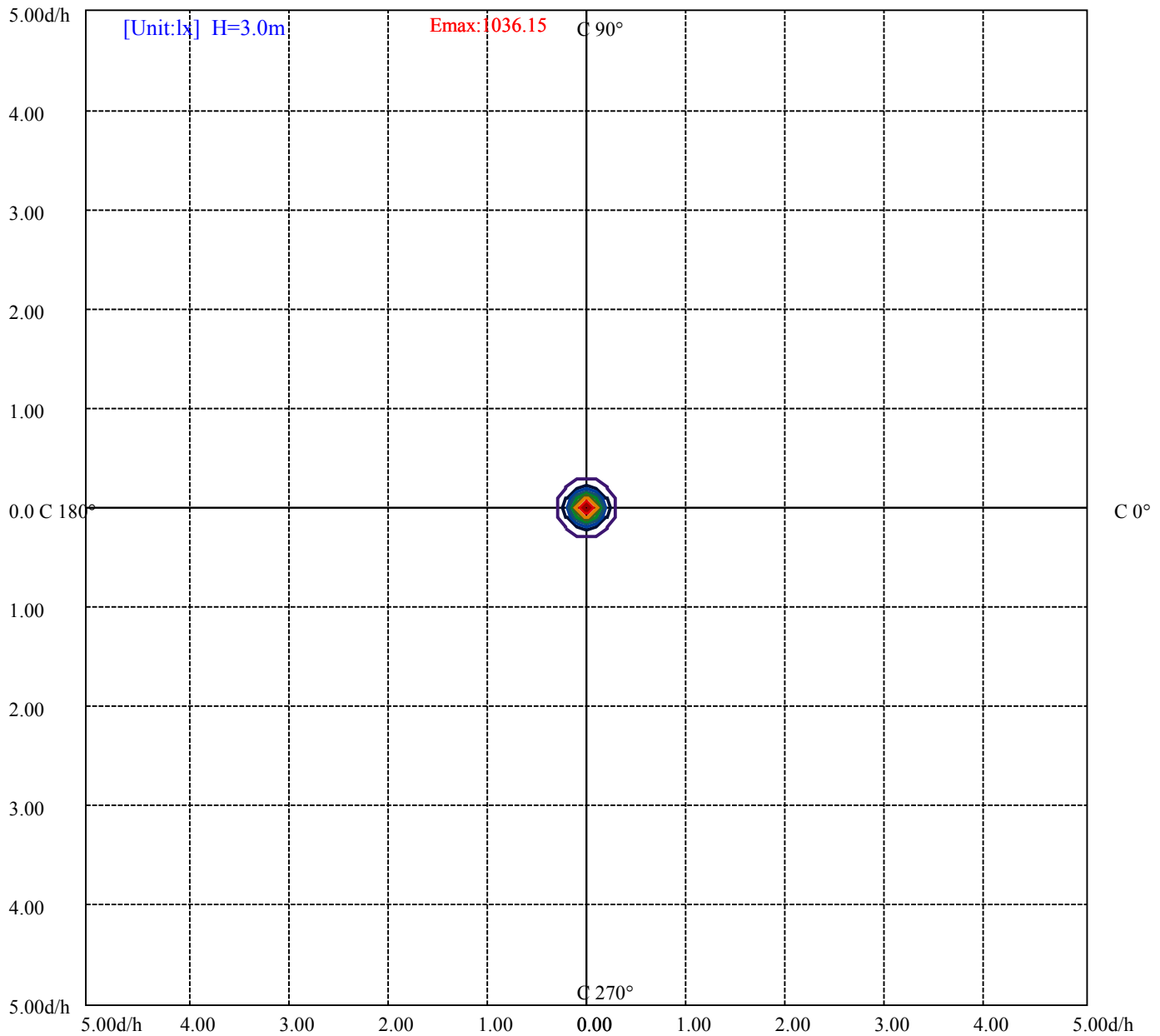
House

[Unit:cd]

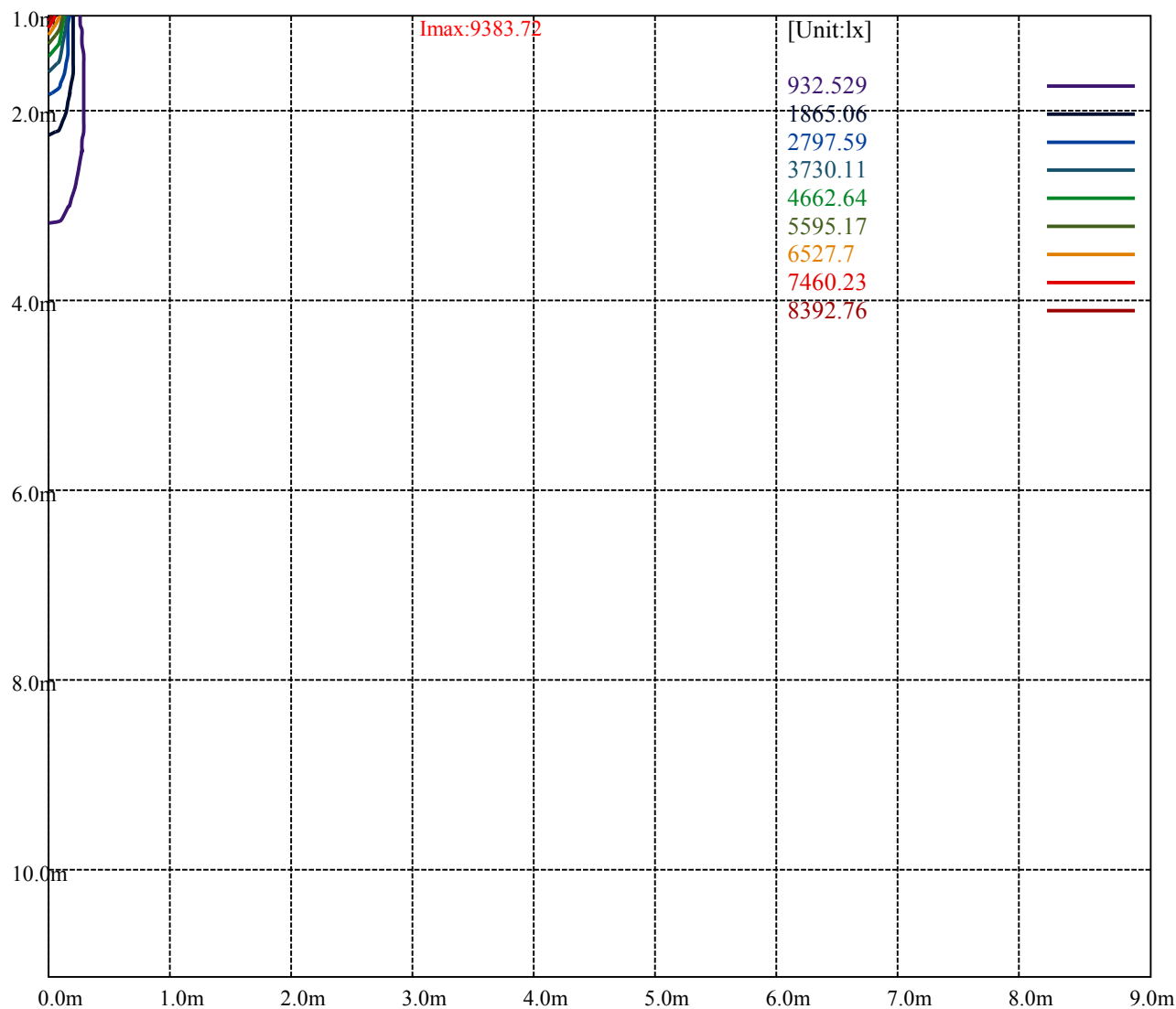
Road

**Imax:9383.72**

|           |         |   |
|-----------|---------|---|
| (10%Imax) | 938.372 | — |
| (20%Imax) | 1876.74 | — |
| (30%Imax) | 2815.12 | — |
| (40%Imax) | 3753.49 | — |
| (50%Imax) | 4691.86 | — |
| (60%Imax) | 5630.23 | — |
| (70%Imax) | 6568.6  | — |
| (80%Imax) | 7506.97 | — |
| (90%Imax) | 8445.35 | — |



|           |          |   |
|-----------|----------|---|
| (10%Emax) | 103.6143 | — |
| (20%Emax) | 207.2289 | — |
| (30%Emax) | 310.8434 | — |
| (40%Emax) | 414.4578 | — |
| (50%Emax) | 518.0722 | — |
| (60%Emax) | 621.6867 | — |
| (70%Emax) | 725.3011 | — |
| (80%Emax) | 828.9156 | — |
| (90%Emax) | 932.5289 | — |



Luminance Table

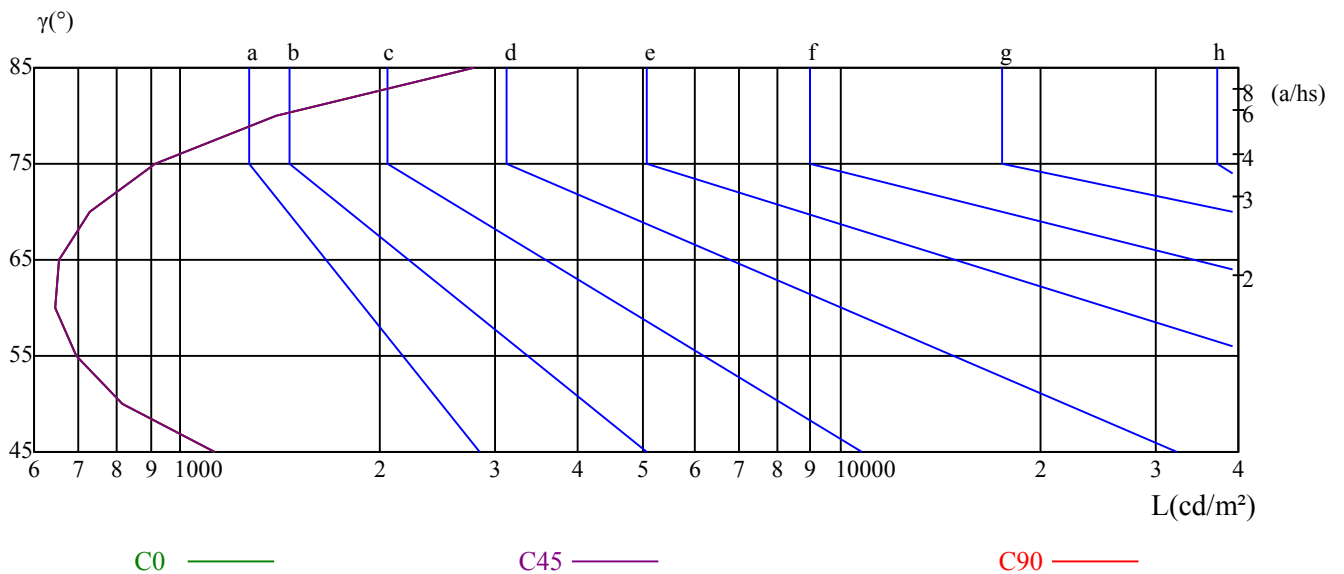
| $\gamma$ | 45   | 50  | 55  | 60  | 65  | 70  | 75  | 80   | 85   |
|----------|------|-----|-----|-----|-----|-----|-----|------|------|
| C0       | 1123 | 816 | 695 | 646 | 654 | 728 | 917 | 1395 | 2778 |
| C45      | 1123 | 816 | 695 | 646 | 654 | 728 | 917 | 1395 | 2778 |
| C90      | 1123 | 816 | 695 | 646 | 654 | 728 | 917 | 1395 | 2778 |

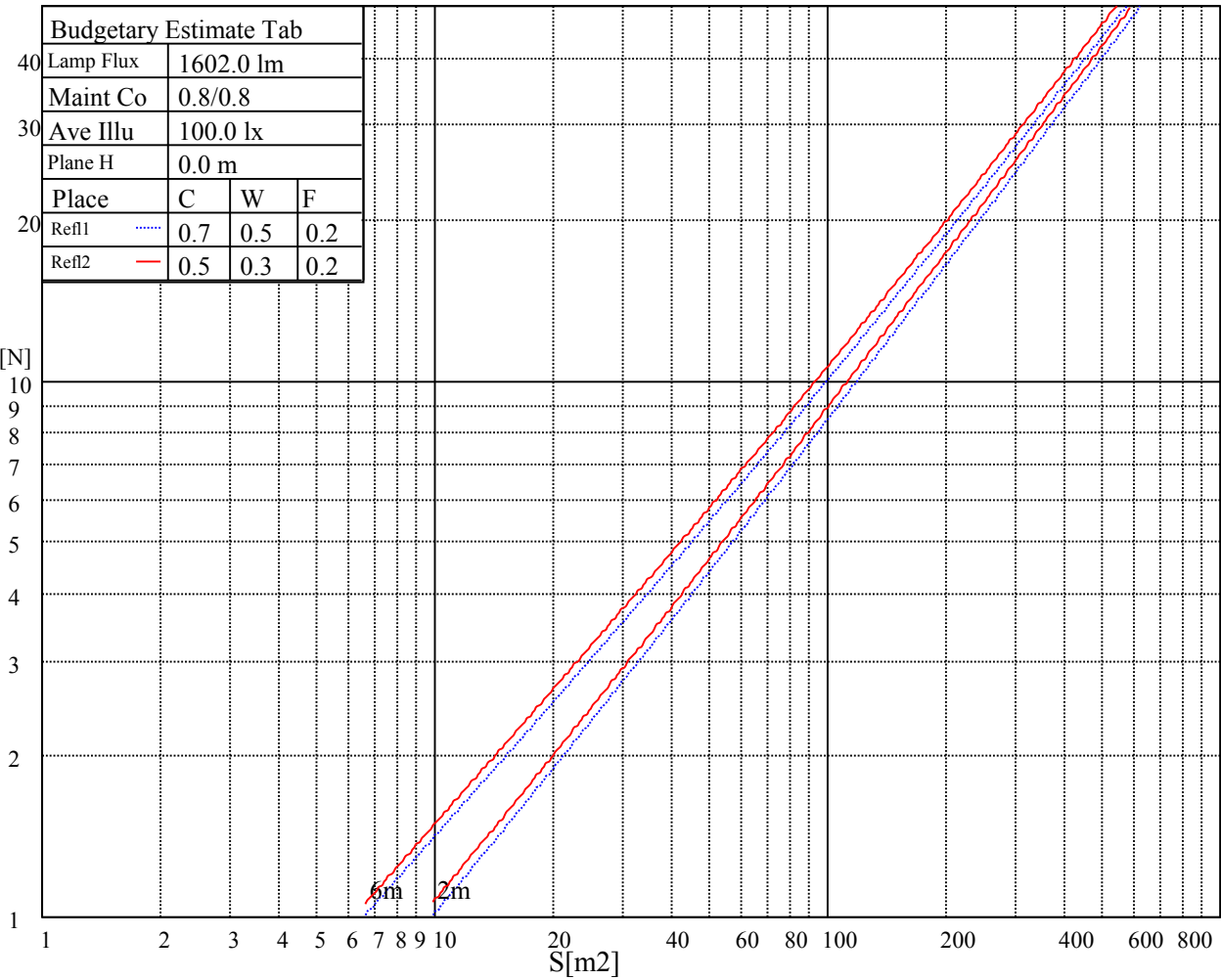
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 654        | 654        | 654     | 917        | 917        | 917     | 2778       | 2778       | 2778    |

Glare Table

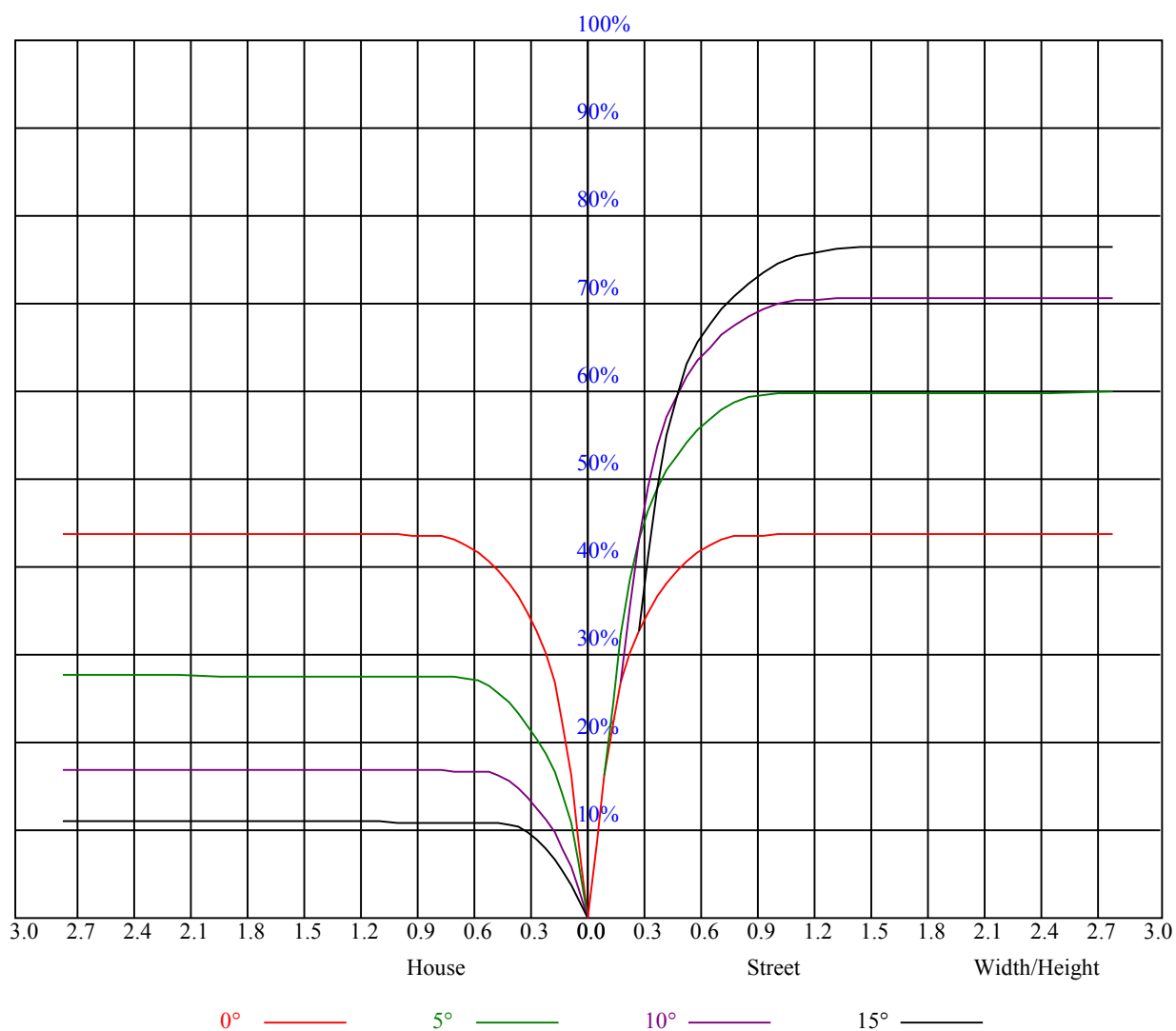
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000            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

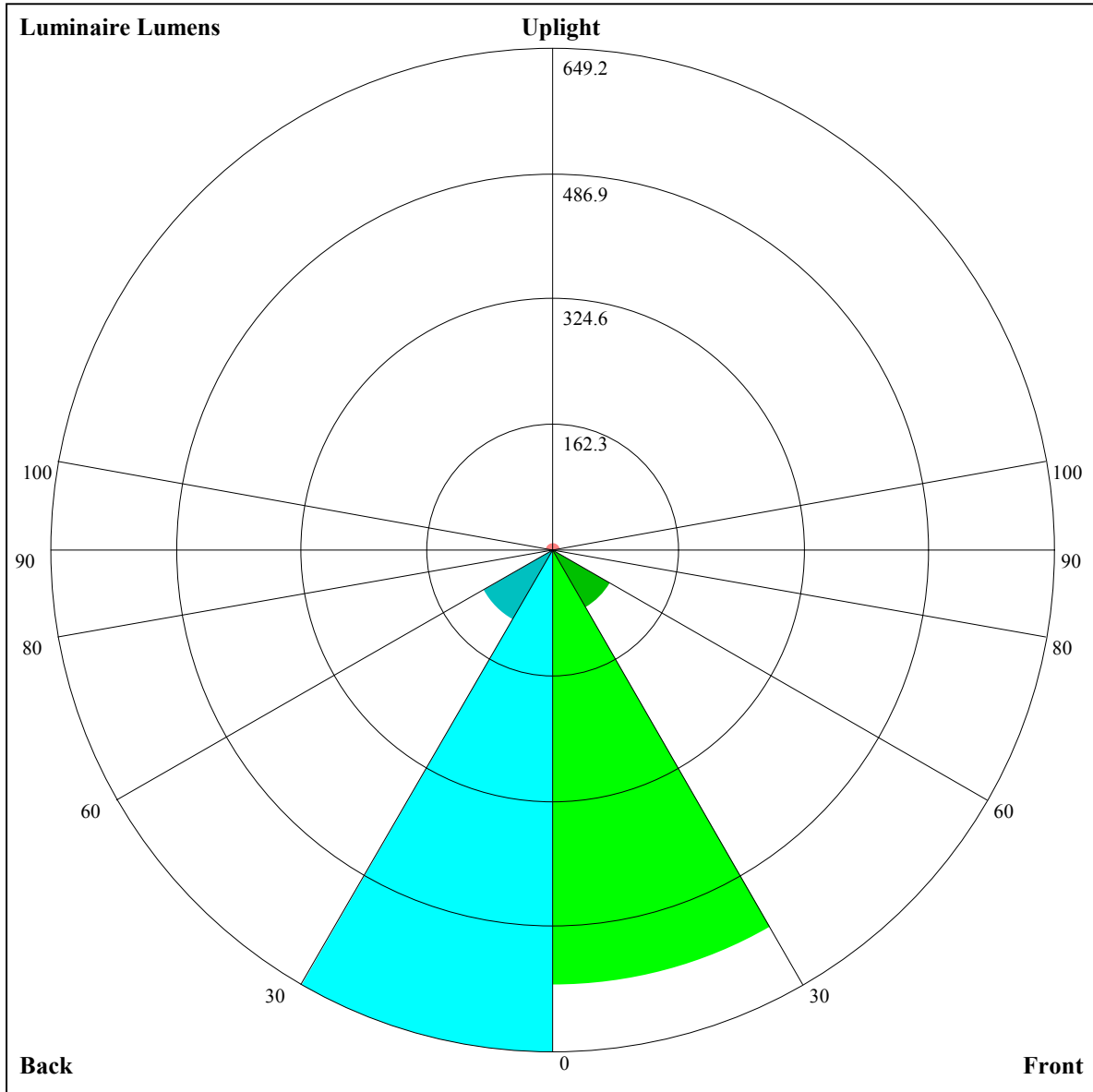
Luminance Limiting Curve





| 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     | 1.05                                    | 1.05 | 1.05 | 1.02 | 1.02 | 1.02 | 0.98 | 0.98 | 0.98 | 0.93 | 0.93 | 0.93 | 0.90 | 0.90 | 0.90 | 0.88 |
| 1     | 0.99                                    | 0.97 | 0.96 | 0.97 | 0.95 | 0.94 | 0.93 | 0.92 | 0.91 | 0.90 | 0.89 | 0.88 | 0.87 | 0.87 | 0.86 | 0.84 |
| 2     | 0.94                                    | 0.91 | 0.89 | 0.92 | 0.90 | 0.88 | 0.90 | 0.88 | 0.86 | 0.87 | 0.86 | 0.84 | 0.85 | 0.84 | 0.82 | 0.81 |
| 3     | 0.90                                    | 0.86 | 0.84 | 0.88 | 0.85 | 0.83 | 0.86 | 0.84 | 0.82 | 0.84 | 0.82 | 0.80 | 0.82 | 0.81 | 0.79 | 0.78 |
| 4     | 0.86                                    | 0.82 | 0.79 | 0.85 | 0.81 | 0.79 | 0.83 | 0.80 | 0.78 | 0.81 | 0.79 | 0.77 | 0.80 | 0.78 | 0.76 | 0.75 |
| 5     | 0.82                                    | 0.78 | 0.76 | 0.82 | 0.78 | 0.75 | 0.80 | 0.77 | 0.75 | 0.79 | 0.76 | 0.74 | 0.78 | 0.75 | 0.73 | 0.72 |
| 6     | 0.79                                    | 0.75 | 0.73 | 0.79 | 0.75 | 0.72 | 0.77 | 0.74 | 0.72 | 0.76 | 0.74 | 0.71 | 0.75 | 0.73 | 0.71 | 0.70 |
| 7     | 0.76                                    | 0.73 | 0.70 | 0.76 | 0.72 | 0.70 | 0.75 | 0.72 | 0.69 | 0.74 | 0.71 | 0.69 | 0.73 | 0.71 | 0.69 | 0.68 |
| 8     | 0.74                                    | 0.70 | 0.67 | 0.73 | 0.70 | 0.67 | 0.73 | 0.69 | 0.67 | 0.72 | 0.69 | 0.67 | 0.71 | 0.68 | 0.67 | 0.66 |
| 9     | 0.72                                    | 0.68 | 0.65 | 0.71 | 0.68 | 0.65 | 0.70 | 0.67 | 0.65 | 0.70 | 0.67 | 0.65 | 0.69 | 0.67 | 0.65 | 0.64 |
| 10    | 0.69                                    | 0.66 | 0.63 | 0.69 | 0.66 | 0.63 | 0.69 | 0.65 | 0.63 | 0.68 | 0.65 | 0.63 | 0.67 | 0.65 | 0.63 | 0.62 |





Luminaire Lumens:

FL=563.01,FM=84.95,FH=1.6,FVH=0.94

BL=649.2,BM=104.32,BH=1.65,BVH=0.83

UL=2.06,UH=9.79

BUG Rating:B2-U1-G0

## Intensity data(cd)

| C/γ(°) | 0.0     | 1.0     | 2.0     | 3.0     | 4.0     | 5.0     | 6.0     | 7.0     | 8.0     |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.0    | 9248.23 | 8899.28 | 8549.40 | 7769.82 | 6787.93 | 5722.97 | 4708.13 | 3809.30 | 3063.13 |
| 45.0   | 9238.02 | 9527.21 | 9452.96 | 9230.23 | 8840.44 | 8492.42 | 7350.89 | 6330.02 | 5698.93 |
| 90.0   | 9689.62 | 9763.87 | 9722.10 | 9042.20 | 9042.20 | 8678.40 | 7848.24 | 6791.18 | 5671.00 |
| 135.0  | 9125.26 | 9768.51 | 9861.31 | 9856.67 | 9736.02 | 9443.68 | 8928.61 | 8153.67 | 7137.44 |
| 180.0  | 9248.23 | 9248.23 | 9601.46 | 9508.65 | 9276.63 | 8868.28 | 8246.48 | 7388.02 | 6343.94 |
| 225.0  | 9238.02 | 9238.02 | 8833.39 | 8200.91 | 7365.65 | 6348.95 | 5304.41 | 4328.09 | 3648.28 |
| 270.0  | 9689.62 | 9499.37 | 9137.42 | 8548.10 | 7726.76 | 6701.25 | 5601.49 | 4575.97 | 3680.39 |
| 315.0  | 9125.26 | 9125.26 | 8474.69 | 7774.00 | 6709.51 | 5347.57 | 4526.69 | 3636.21 | 2910.93 |
| 360.0  | 9248.23 | 8899.28 | 8549.40 | 7769.82 | 6787.93 | 5722.97 | 4708.13 | 3809.30 | 3063.13 |
| C/γ(°) | 9.0     | 10.0    | 11.0    | 12.0    | 13.0    | 14.0    | 15.0    | 16.0    | 17.0    |
| 0.0    | 2469.17 | 2008.38 | 1656.65 | 1390.29 | 1188.44 | 924.63  | 924.63  | 850.67  | 773.87  |
| 45.0   | 4691.98 | 3801.04 | 3044.66 | 2450.70 | 2450.70 | 1586.58 | 1331.36 | 1138.78 | 996.79  |
| 90.0   | 4615.32 | 3703.03 | 2955.48 | 2366.15 | 1915.11 | 1574.98 | 1319.76 | 1052.47 | 900.22  |
| 135.0  | 5991.27 | 4882.24 | 3912.41 | 3411.25 | 2487.82 | 2487.82 | 1978.22 | 1417.20 | 1200.96 |
| 180.0  | 5272.02 | 4292.91 | 3448.37 | 2761.60 | 2427.50 | 2427.50 | 1622.77 | 1361.06 | 1162.91 |
| 225.0  | 2806.06 | 2365.69 | 1931.82 | 1599.11 | 1347.14 | 1153.63 | 900.83  | 900.83  | 812.71  |
| 270.0  | 2951.86 | 2381.09 | 2381.09 | 2283.65 | 1354.56 | 1230.66 | 1067.79 | 901.66  | 847.84  |
| 315.0  | 2340.17 | 1901.19 | 1574.51 | 1327.65 | 1142.03 | 894.29  | 894.29  | 809.74  | 742.69  |
| 360.0  | 2469.17 | 2008.38 | 1656.65 | 1390.29 | 1188.44 | 924.63  | 924.63  | 850.67  | 773.87  |
| C/γ(°) | 18.0    | 19.0    | 20.0    | 21.0    | 22.0    | 23.0    | 24.0    | 25.0    | 26.0    |
| 0.0    | 717.02  | 670.48  | 633.03  | 604.36  | 582.69  | 565.66  | 552.85  | 542.41  | 532.39  |
| 45.0   | 886.81  | 803.75  | 738.32  | 686.35  | 645.98  | 627.42  | 588.90  | 577.30  | 560.60  |
| 90.0   | 900.22  | 812.24  | 743.61  | 690.06  | 648.81  | 615.87  | 590.71  | 571.27  | 556.05  |
| 135.0  | 1038.55 | 916.05  | 823.24  | 750.85  | 695.63  | 652.01  | 617.67  | 591.23  | 569.88  |
| 180.0  | 1012.57 | 899.34  | 811.64  | 742.04  | 689.14  | 646.44  | 612.57  | 587.05  | 567.10  |
| 225.0  | 743.20  | 690.53  | 647.19  | 614.19  | 587.37  | 574.52  | 551.60  | 543.99  | 533.68  |
| 270.0  | 770.81  | 711.41  | 663.61  | 626.96  | 598.19  | 574.98  | 556.89  | 543.89  | 532.76  |
| 315.0  | 709.79  | 648.44  | 626.77  | 599.58  | 577.16  | 560.65  | 548.12  | 536.79  | 527.84  |
| 360.0  | 717.02  | 670.48  | 633.03  | 604.36  | 582.69  | 565.66  | 552.85  | 542.41  | 532.39  |
| C/γ(°) | 27.0    | 28.0    | 29.0    | 30.0    | 31.0    | 32.0    | 33.0    | 34.0    | 35.0    |
| 0.0    | 523.24  | 515.54  | 504.82  | 475.22  | 428.67  | 370.11  | 305.89  | 239.39  | 200.56  |
| 45.0   | 548.53  | 536.93  | 529.51  | 518.84  | 511.41  | 500.74  | 470.58  | 422.32  | 362.92  |
| 90.0   | 543.85  | 534.15  | 524.91  | 516.24  | 507.88  | 495.45  | 477.49  | 411.37  | 350.76  |
| 135.0  | 560.13  | 541.57  | 535.08  | 525.80  | 512.80  | 508.63  | 499.81  | 481.25  | 439.02  |
| 180.0  | 550.85  | 538.33  | 528.12  | 519.30  | 510.48  | 502.13  | 491.46  | 458.98  | 411.18  |
| 225.0  | 523.85  | 514.47  | 506.45  | 497.63  | 476.28  | 430.72  | 373.78  | 311.00  | 245.29  |
| 270.0  | 523.94  | 514.66  | 505.84  | 497.03  | 473.82  | 430.67  | 384.73  | 306.77  | 241.81  |
| 315.0  | 519.07  | 510.11  | 499.58  | 470.25  | 418.84  | 359.44  | 294.71  | 229.93  | 165.71  |
| 360.0  | 523.24  | 515.54  | 504.82  | 475.22  | 428.67  | 370.11  | 305.89  | 239.39  | 200.56  |
| C/γ(°) | 36.0    | 37.0    | 38.0    | 39.0    | 40.0    | 41.0    | 42.0    | 43.0    | 44.0    |
| 0.0    | 114.15  | 63.02   | 38.84   | 15.41   | 10.58   | 7.15    | 5.57    | 4.92    | 4.41    |
| 45.0   | 299.35  | 260.37  | 260.37  | 108.77  | 65.52   | 26.91   | 11.00   | 8.86    | 6.26    |
| 90.0   | 311.13  | 221.58  | 181.72  | 119.02  | 65.99   | 28.12   | 12.06   | 9.00    | 5.75    |
| 135.0  | 382.87  | 320.69  | 257.12  | 231.60  | 170.44  | 72.67   | 30.81   | 13.69   | 9.88    |
| 180.0  | 364.78  | 301.20  | 234.38  | 234.38  | 108.54  | 58.79   | 24.13   | 12.76   | 9.37    |
| 225.0  | 180.65  | 120.05  | 65.80   | 26.54   | 11.83   | 8.77    | 5.75    | 4.78    | 4.22    |
| 270.0  | 241.81  | 170.39  | 72.02   | 31.32   | 13.27   | 9.37    | 5.75    | 4.64    | 4.27    |
| 315.0  | 106.45  | 55.17   | 22.23   | 12.25   | 8.54    | 5.06    | 4.50    | 3.99    | 3.76    |
| 360.0  | 114.15  | 63.02   | 38.84   | 15.41   | 10.58   | 7.15    | 5.57    | 4.92    | 4.41    |

## Intensity data(cd)

|                 |      |      |      |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|------|------|------|
| C/ $\gamma$ (°) | 45.0 | 46.0 | 47.0 | 48.0 | 49.0 | 50.0 | 51.0 | 52.0 | 53.0 |
| 0.0             | 4.22 | 3.99 | 3.76 | 3.48 | 3.25 | 3.11 | 2.92 | 2.74 | 2.55 |
| 45.0            | 5.20 | 4.69 | 4.13 | 3.85 | 3.57 | 3.43 | 3.25 | 3.02 | 2.83 |
| 90.0            | 4.78 | 4.18 | 3.71 | 3.57 | 3.39 | 3.16 | 2.92 | 2.83 | 2.69 |
| 135.0           | 6.50 | 5.43 | 4.87 | 3.99 | 3.76 | 3.48 | 3.34 | 3.16 | 2.92 |
| 180.0           | 6.68 | 6.03 | 4.83 | 4.45 | 4.13 | 3.90 | 3.76 | 3.48 | 3.34 |
| 225.0           | 4.04 | 3.85 | 3.57 | 3.29 | 3.16 | 3.02 | 2.83 | 2.64 | 2.55 |
| 270.0           | 3.71 | 3.48 | 3.20 | 3.06 | 2.97 | 2.78 | 2.55 | 2.55 | 2.37 |
| 315.0           | 3.53 | 3.29 | 3.11 | 2.92 | 2.74 | 2.64 | 2.46 | 2.32 | 2.23 |
| 360.0           | 4.22 | 3.99 | 3.76 | 3.48 | 3.25 | 3.11 | 2.92 | 2.74 | 2.55 |
| C/ $\gamma$ (°) | 54.0 | 55.0 | 56.0 | 57.0 | 58.0 | 59.0 | 60.0 | 61.0 | 62.0 |
| 0.0             | 2.46 | 2.37 | 2.23 | 2.23 | 2.04 | 1.95 | 1.90 | 1.86 | 1.76 |
| 45.0            | 2.74 | 2.60 | 2.46 | 2.32 | 2.23 | 2.18 | 2.09 | 2.04 | 1.95 |
| 90.0            | 2.60 | 2.37 | 2.32 | 2.18 | 2.09 | 2.09 | 2.00 | 1.86 | 1.86 |
| 135.0           | 2.78 | 2.64 | 2.51 | 2.37 | 2.23 | 2.18 | 2.09 | 1.95 | 1.90 |
| 180.0           | 3.16 | 2.92 | 2.83 | 2.69 | 2.51 | 2.37 | 2.27 | 2.18 | 2.04 |
| 225.0           | 2.46 | 2.32 | 2.18 | 2.13 | 2.09 | 2.00 | 1.90 | 1.86 | 1.86 |
| 270.0           | 2.27 | 2.18 | 2.13 | 1.95 | 1.90 | 1.86 | 1.81 | 1.72 | 1.67 |
| 315.0           | 2.09 | 2.00 | 1.90 | 1.86 | 1.76 | 1.72 | 1.67 | 1.67 | 1.53 |
| 360.0           | 2.46 | 2.37 | 2.23 | 2.23 | 2.04 | 1.95 | 1.90 | 1.86 | 1.76 |
| C/ $\gamma$ (°) | 63.0 | 64.0 | 65.0 | 66.0 | 67.0 | 68.0 | 69.0 | 70.0 | 71.0 |
| 0.0             | 1.67 | 1.62 | 1.62 | 1.58 | 1.53 | 1.48 | 1.48 | 1.48 | 1.44 |
| 45.0            | 1.90 | 1.81 | 1.81 | 1.76 | 1.67 | 1.62 | 1.67 | 1.62 | 1.53 |
| 90.0            | 1.81 | 1.76 | 1.72 | 1.67 | 1.67 | 1.62 | 1.58 | 1.53 | 1.62 |
| 135.0           | 1.86 | 1.76 | 1.67 | 1.67 | 1.62 | 1.62 | 1.58 | 1.48 | 1.44 |
| 180.0           | 1.95 | 1.95 | 1.86 | 1.76 | 1.76 | 1.76 | 1.62 | 1.58 | 1.58 |
| 225.0           | 1.81 | 1.72 | 1.72 | 1.72 | 1.67 | 1.67 | 1.62 | 1.58 | 1.58 |
| 270.0           | 1.67 | 1.62 | 1.58 | 1.53 | 1.58 | 1.53 | 1.44 | 1.48 | 1.48 |
| 315.0           | 1.53 | 1.48 | 1.48 | 1.44 | 1.39 | 1.39 | 1.35 | 1.35 | 1.30 |
| 360.0           | 1.67 | 1.62 | 1.62 | 1.58 | 1.53 | 1.48 | 1.48 | 1.48 | 1.44 |
| C/ $\gamma$ (°) | 72.0 | 73.0 | 74.0 | 75.0 | 76.0 | 77.0 | 78.0 | 79.0 | 80.0 |
| 0.0             | 1.39 | 1.39 | 1.39 | 1.39 | 1.35 | 1.30 | 1.35 | 1.35 | 1.35 |
| 45.0            | 1.58 | 1.62 | 1.62 | 1.58 | 1.58 | 1.67 | 1.76 | 1.76 | 1.76 |
| 90.0            | 1.62 | 1.58 | 1.58 | 1.62 | 1.62 | 1.58 | 1.58 | 1.58 | 1.67 |
| 135.0           | 1.44 | 1.44 | 1.35 | 1.35 | 1.39 | 1.35 | 1.30 | 1.30 | 1.35 |
| 180.0           | 1.53 | 1.48 | 1.44 | 1.44 | 1.48 | 1.44 | 1.39 | 1.39 | 1.39 |
| 225.0           | 1.62 | 1.62 | 1.53 | 1.53 | 1.58 | 1.58 | 1.53 | 1.53 | 1.53 |
| 270.0           | 1.44 | 1.39 | 1.39 | 1.44 | 1.44 | 1.44 | 1.39 | 1.39 | 1.48 |
| 315.0           | 1.30 | 1.25 | 1.35 | 1.21 | 1.25 | 1.30 | 1.25 | 1.25 | 1.25 |
| 360.0           | 1.39 | 1.39 | 1.39 | 1.39 | 1.35 | 1.30 | 1.35 | 1.35 | 1.35 |
| C/ $\gamma$ (°) | 81.0 | 82.0 | 83.0 | 84.0 | 85.0 | 86.0 | 87.0 | 88.0 | 89.0 |
| 0.0             | 1.25 | 1.35 | 1.35 | 1.30 | 1.25 | 1.30 | 1.72 | 2.09 | 1.58 |
| 45.0            | 1.81 | 1.76 | 1.67 | 1.81 | 2.00 | 2.23 | 2.51 | 2.69 | 2.74 |
| 90.0            | 1.67 | 1.62 | 1.76 | 1.72 | 1.86 | 1.90 | 1.95 | 2.55 | 3.43 |
| 135.0           | 1.30 | 1.25 | 1.25 | 1.30 | 1.25 | 1.25 | 1.25 | 1.30 | 1.25 |
| 180.0           | 1.39 | 1.39 | 1.39 | 1.35 | 1.30 | 1.30 | 1.30 | 1.35 | 1.25 |
| 225.0           | 1.58 | 1.53 | 1.53 | 1.48 | 1.44 | 1.44 | 1.44 | 1.58 | 1.39 |
| 270.0           | 1.44 | 1.44 | 1.53 | 1.53 | 1.39 | 1.39 | 1.35 | 1.44 | 1.53 |
| 315.0           | 1.25 | 1.25 | 1.25 | 1.25 | 1.30 | 1.48 | 1.81 | 1.62 | 1.67 |
| 360.0           | 1.25 | 1.35 | 1.35 | 1.30 | 1.25 | 1.30 | 1.72 | 2.09 | 1.58 |

## Intensity data(cd)

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|                       |      |
|-----------------------|------|
| C/ $\gamma(^{\circ})$ | 90.0 |
| 0.0                   | 2.27 |
| 45.0                  | 2.55 |
| 90.0                  | 3.02 |
| 135.0                 | 1.21 |
| 180.0                 | 1.30 |
| 225.0                 | 1.35 |
| 270.0                 | 1.58 |
| 315.0                 | 1.81 |
| 360.0                 | 2.27 |