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## NATA

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Client:

LumCAT: 2-2004-M

Luminaire: 92.70.135.00

Report No: GC2019031803

Test No: GC2019041213

LampCAT: LUMILEDS LUXEON1205

Lamp flux(lm): 2032.0

Number of Lamps: 1

Length(mm): 75

Phm Type: C

Voltage(V): 35.5100

Current(A): 0.5010

Power (W): 17.7910

PF: 0.0000

Ballast type: DC

Width(mm): 75

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1774.86, Efficiency(%): 87.35% , Luminous Efficacy(lm/W): 99.76

Central intensity(cd): 10262.110, Maximum intensity(cd): 10262.110

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=38.4

[C90/270]Total=38.4

Maximum s/h(1/2): C0\_180=0.29 C90\_270=0.29

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(%): 87.35%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 98.822%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 10262.109     | 0.000       | 0         | .000%       | .000%      |
| 1.0                | 10172.672     | 9.778       | 9.778     | .481%       | .551%      |
| 2.0                | 9865.266      | 28.760      | 38.538    | 1.415%      | 2.171%     |
| 3.0                | 9412.383      | 46.106      | 84.644    | 2.269%      | 4.769%     |
| 4.0                | 8827.945      | 61.056      | 145.7     | 3.005%      | 8.209%     |
| 5.0                | 8074.266      | 72.712      | 218.412   | 3.578%      | 12.306%    |
| 6.0                | 7215.398      | 80.351      | 298.764   | 3.954%      | 16.833%    |
| 7.0                | 6316.523      | 83.992      | 382.756   | 4.133%      | 21.565%    |
| 8.0                | 5420.320      | 83.998      | 466.754   | 4.134%      | 26.298%    |
| 9.0                | 4543.805      | 80.754      | 547.508   | 3.974%      | 30.848%    |
| 10.0               | 3778.734      | 75.316      | 622.824   | 3.706%      | 35.091%    |
| 11.0               | 3158.578      | 69.318      | 692.142   | 3.411%      | 38.997%    |
| 12.0               | 2660.414      | 63.610      | 755.752   | 3.130%      | 42.581%    |
| 13.0               | 2236.781      | 58.117      | 813.869   | 2.860%      | 45.855%    |
| 14.0               | 1897.805      | 52.922      | 866.792   | 2.604%      | 48.837%    |
| 15.0               | 1647.773      | 48.675      | 915.467   | 2.395%      | 51.580%    |
| 16.0               | 1448.332      | 45.367      | 960.834   | 2.233%      | 54.136%    |
| 17.0               | 1264.317      | 42.243      | 1003.077  | 2.079%      | 56.516%    |
| 18.0               | 1140.827      | 39.656      | 1042.733  | 1.952%      | 58.750%    |
| 19.0               | 1043.564      | 38.004      | 1080.736  | 1.870%      | 60.891%    |
| 20.0               | 965.658       | 36.774      | 1117.511  | 1.810%      | 62.963%    |
| 21.0               | 896.161       | 35.751      | 1153.262  | 1.759%      | 64.978%    |
| 22.0               | 845.712       | 35.004      | 1188.265  | 1.723%      | 66.950%    |
| 23.0               | 798.307       | 34.496      | 1222.761  | 1.698%      | 68.893%    |
| 24.0               | 758.377       | 34.035      | 1256.796  | 1.675%      | 70.811%    |
| 25.0               | 727.678       | 33.790      | 1290.585  | 1.663%      | 72.715%    |
| 26.0               | 700.889       | 33.721      | 1324.307  | 1.660%      | 74.615%    |
| 27.0               | 680.238       | 33.790      | 1358.097  | 1.663%      | 76.518%    |
| 28.0               | 663.567       | 34.022      | 1392.119  | 1.674%      | 78.435%    |
| 29.0               | 648.204       | 34.320      | 1426.438  | 1.689%      | 80.369%    |
| 30.0               | 635.991       | 34.673      | 1461.111  | 1.706%      | 82.323%    |
| 31.0               | 621.190       | 34.986      | 1496.097  | 1.722%      | 84.294%    |
| 32.0               | 597.888       | 34.925      | 1531.022  | 1.719%      | 86.261%    |
| 33.0               | 565.010       | 34.259      | 1565.282  | 1.686%      | 88.192%    |
| 34.0               | 519.068       | 32.807      | 1598.089  | 1.615%      | 90.040%    |
| 35.0               | 460.631       | 30.426      | 1628.515  | 1.497%      | 91.754%    |
| 36.0               | 393.602       | 27.199      | 1655.714  | 1.339%      | 93.287%    |
| 37.0               | 329.597       | 23.587      | 1679.3    | 1.161%      | 94.616%    |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 256.598       | 19.566      | 1698.867  | .963%       | 95.718%    |
| 39.0               | 181.934       | 14.968      | 1713.835  | .737%       | 96.562%    |
| 40.0               | 130.838       | 10.908      | 1724.744  | .537%       | 97.176%    |
| 41.0               | 79.791        | 7.500       | 1732.244  | .369%       | 97.599%    |
| 42.0               | 46.287        | 4.581       | 1736.824  | .225%       | 97.857%    |
| 43.0               | 27.148        | 2.720       | 1739.545  | .134%       | 98.010%    |
| 44.0               | 17.761        | 1.695       | 1741.24   | .083%       | 98.106%    |
| 45.0               | 14.449        | 1.238       | 1742.478  | .061%       | 98.175%    |
| 46.0               | 12.762        | 1.064       | 1743.542  | .052%       | 98.235%    |
| 47.0               | 11.109        | 0.949       | 1744.491  | .047%       | 98.289%    |
| 48.0               | 9.963         | 0.852       | 1745.343  | .042%       | 98.337%    |
| 49.0               | 9.316         | 0.792       | 1746.135  | .039%       | 98.381%    |
| 50.0               | 8.888         | 0.759       | 1746.894  | .037%       | 98.424%    |
| 51.0               | 8.585         | 0.739       | 1747.633  | .036%       | 98.466%    |
| 52.0               | 8.381         | 0.728       | 1748.361  | .036%       | 98.507%    |
| 53.0               | 8.149         | 0.719       | 1749.08   | .035%       | 98.547%    |
| 54.0               | 7.973         | 0.711       | 1749.791  | .035%       | 98.587%    |
| 55.0               | 7.819         | 0.705       | 1750.496  | .035%       | 98.627%    |
| 56.0               | 7.664         | 0.700       | 1751.195  | .034%       | 98.667%    |
| 57.0               | 7.530         | 0.695       | 1751.89   | .034%       | 98.706%    |
| 58.0               | 7.418         | 0.691       | 1752.581  | .034%       | 98.745%    |
| 59.0               | 7.313         | 0.689       | 1753.27   | .034%       | 98.783%    |
| 60.0               | 7.221         | 0.687       | 1753.957  | .034%       | 98.822%    |
| 61.0               | 7.137         | 0.685       | 1754.642  | .034%       | 98.861%    |
| 62.0               | 7.066         | 0.684       | 1755.326  | .034%       | 98.899%    |
| 63.0               | 6.996         | 0.684       | 1756.01   | .034%       | 98.938%    |
| 64.0               | 6.940         | 0.684       | 1756.694  | .034%       | 98.976%    |
| 65.0               | 6.884         | 0.684       | 1757.378  | .034%       | 99.015%    |
| 66.0               | 6.848         | 0.685       | 1758.063  | .034%       | 99.054%    |
| 67.0               | 6.806         | 0.687       | 1758.75   | .034%       | 99.092%    |
| 68.0               | 6.757         | 0.687       | 1759.437  | .034%       | 99.131%    |
| 69.0               | 6.729         | 0.688       | 1760.125  | .034%       | 99.170%    |
| 70.0               | 6.694         | 0.689       | 1760.814  | .034%       | 99.209%    |
| 71.0               | 6.673         | 0.691       | 1761.505  | .034%       | 99.247%    |
| 72.0               | 6.652         | 0.693       | 1762.198  | .034%       | 99.286%    |
| 73.0               | 6.623         | 0.694       | 1762.892  | .034%       | 99.326%    |
| 74.0               | 6.602         | 0.695       | 1763.587  | .034%       | 99.365%    |
| 75.0               | 6.595         | 0.697       | 1764.285  | .034%       | 99.404%    |

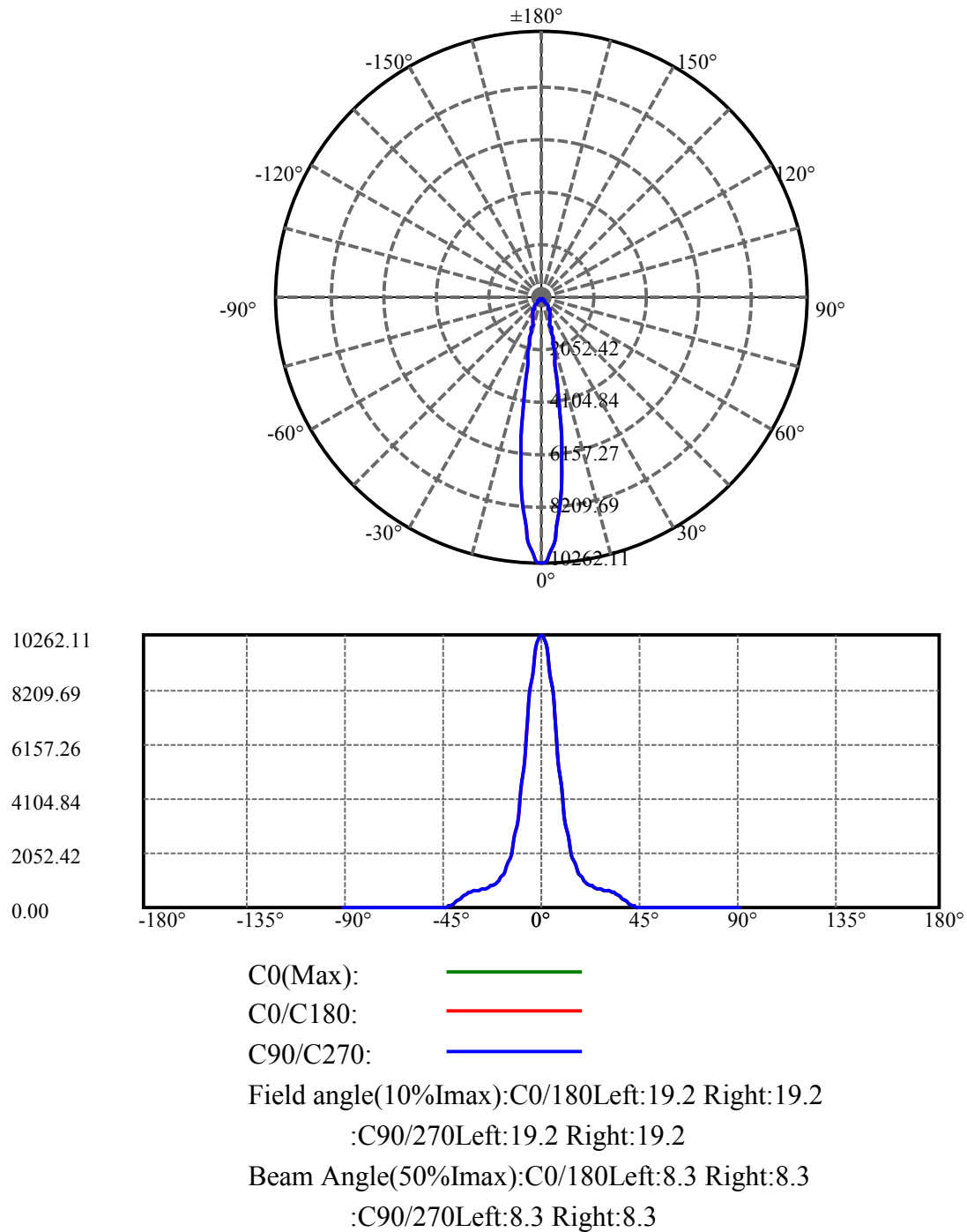
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 6.574         | 0.699       | 1764.984  | .034%       | 99.443%    |
| 77.0               | 6.560         | 0.700       | 1765.684  | .034%       | 99.483%    |
| 78.0               | 6.539         | 0.701       | 1766.385  | .035%       | 99.522%    |
| 79.0               | 6.518         | 0.702       | 1767.087  | .035%       | 99.562%    |
| 80.0               | 6.518         | 0.703       | 1767.79   | .035%       | 99.602%    |
| 81.0               | 6.525         | 0.705       | 1768.495  | .035%       | 99.641%    |
| 82.0               | 6.497         | 0.706       | 1769.201  | .035%       | 99.681%    |
| 83.0               | 6.490         | 0.706       | 1769.907  | .035%       | 99.721%    |
| 84.0               | 6.483         | 0.707       | 1770.614  | .035%       | 99.761%    |
| 85.0               | 6.476         | 0.707       | 1771.321  | .035%       | 99.801%    |
| 86.0               | 6.476         | 0.708       | 1772.029  | .035%       | 99.840%    |
| 87.0               | 6.462         | 0.708       | 1772.737  | .035%       | 99.880%    |
| 88.0               | 6.462         | 0.708       | 1773.445  | .035%       | 99.920%    |
| 89.0               | 6.462         | 0.708       | 1774.153  | .035%       | 99.960%    |
| 90.0               | 6.462         | 0.709       | 1774.862  | .035%       | 100.000%   |

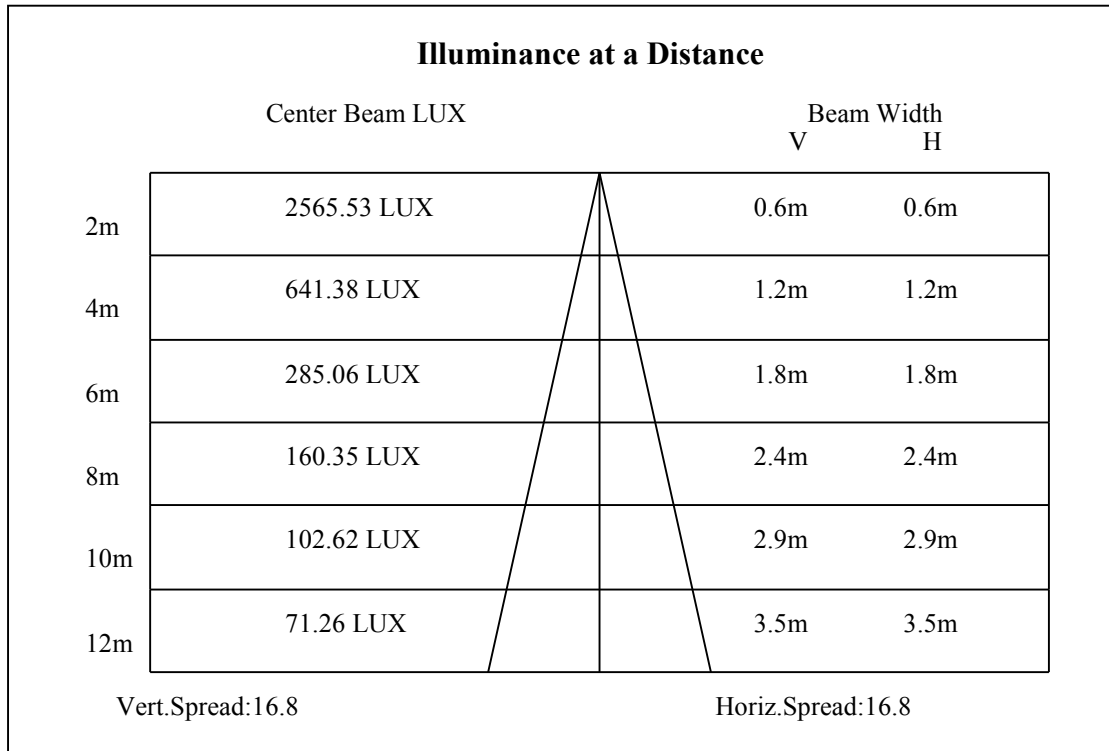
## ZONAL LUMEN SUMMARY

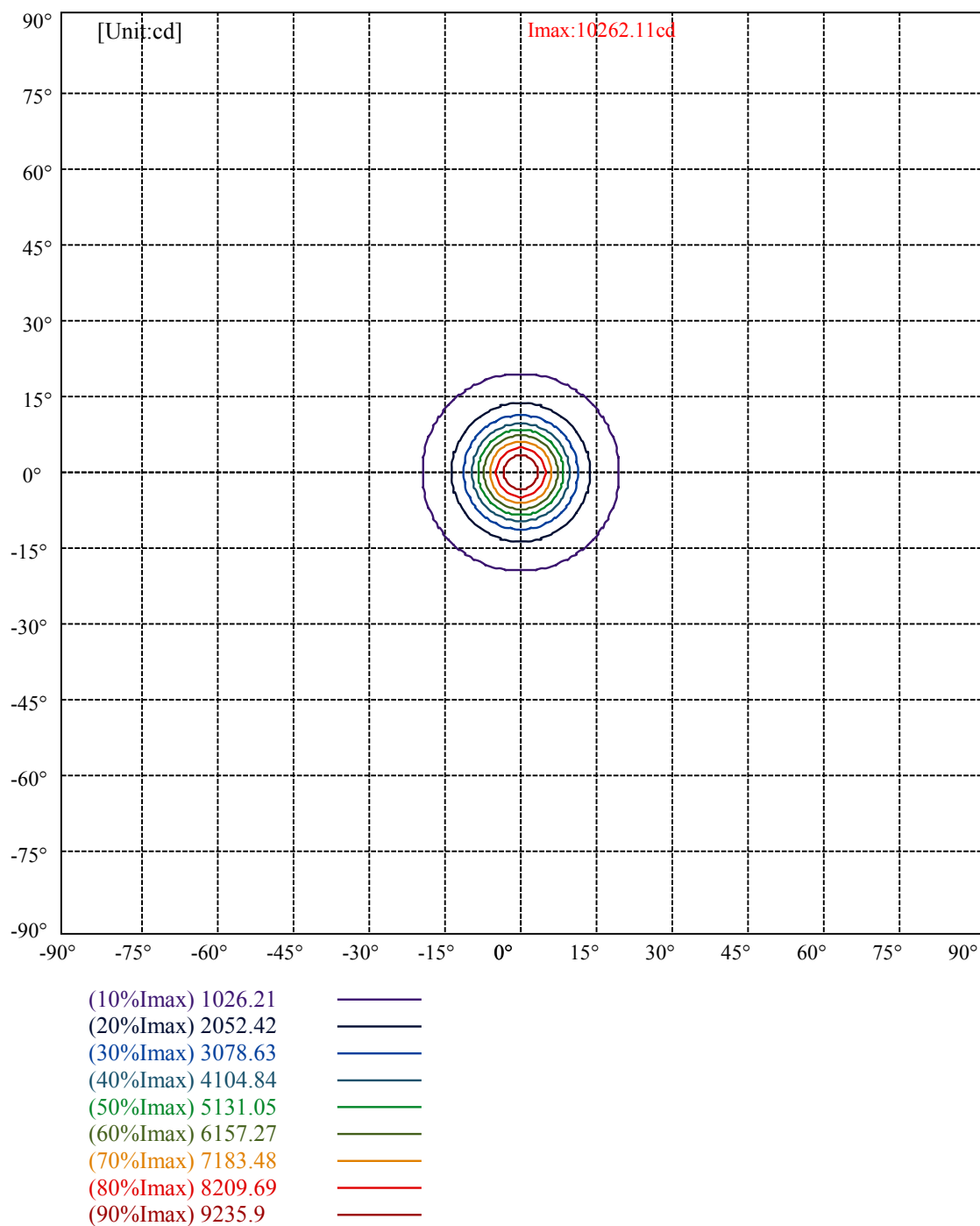
| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 1461.11 | 71.91% | 82.32%  |
| 0-40    | 1724.74 | 84.88% | 97.18%  |
| 0-60    | 1753.96 | 86.32% | 98.82%  |
| 0-90    | 1774.15 | 87.31% | 99.96%  |
| 0-120   | 1774.15 | 87.31% | 99.96%  |
| 0-180   | 1774.86 | 87.35% | 100.00% |
| 60-90   | 20.88   | 1.03%  | 1.18%   |
| 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%   |
| 0-28.81 | 1419.89 | 69.88% | 80.00%  |

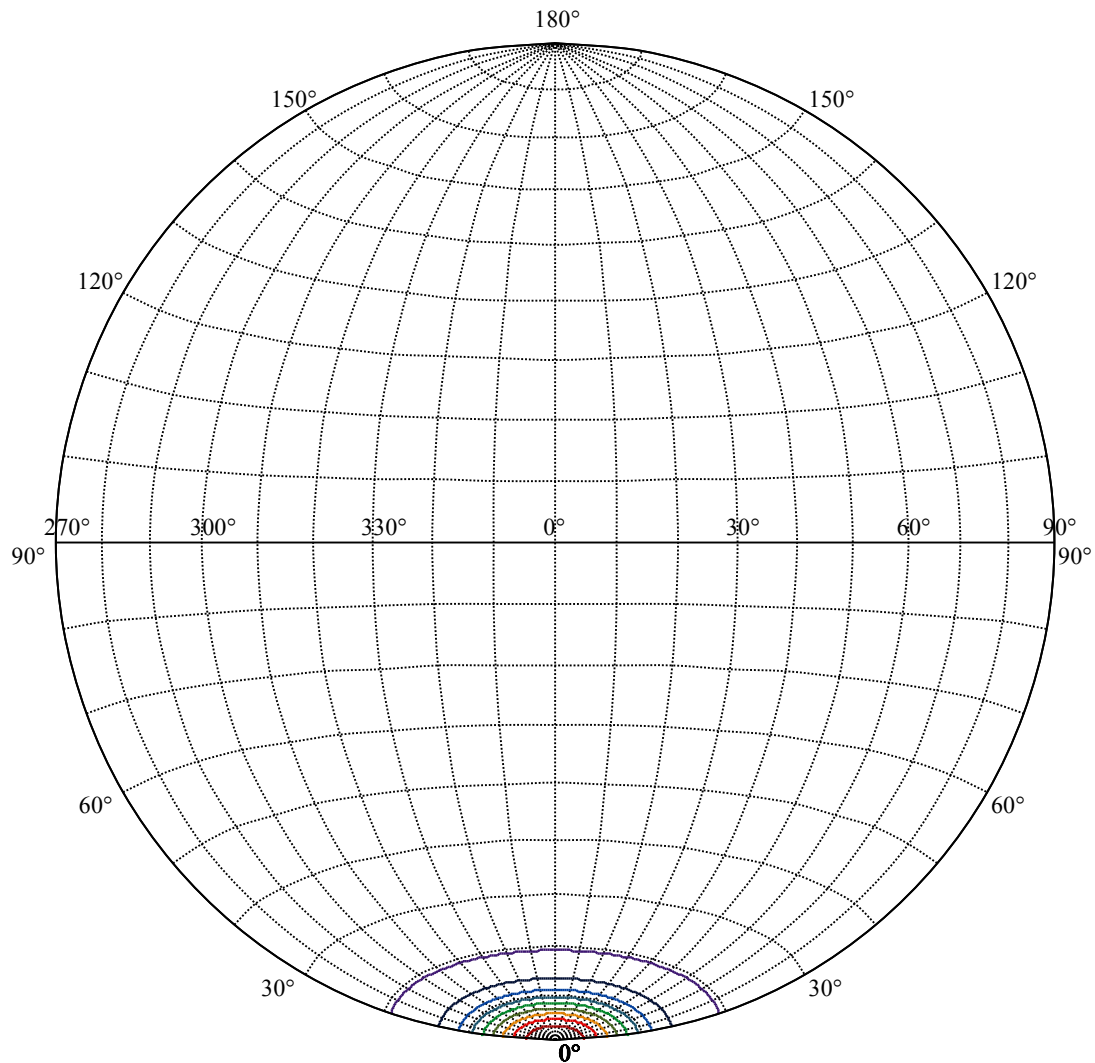
## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 622.82 |
| 10-20   | 494.69 |
| 20-30   | 343.60 |
| 30-40   | 263.63 |
| 40-50   | 22.15  |
| 50-60   | 7.06   |
| 60-70   | 6.86   |
| 70-80   | 6.98   |
| 80-90   | 6.36   |
| 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   |









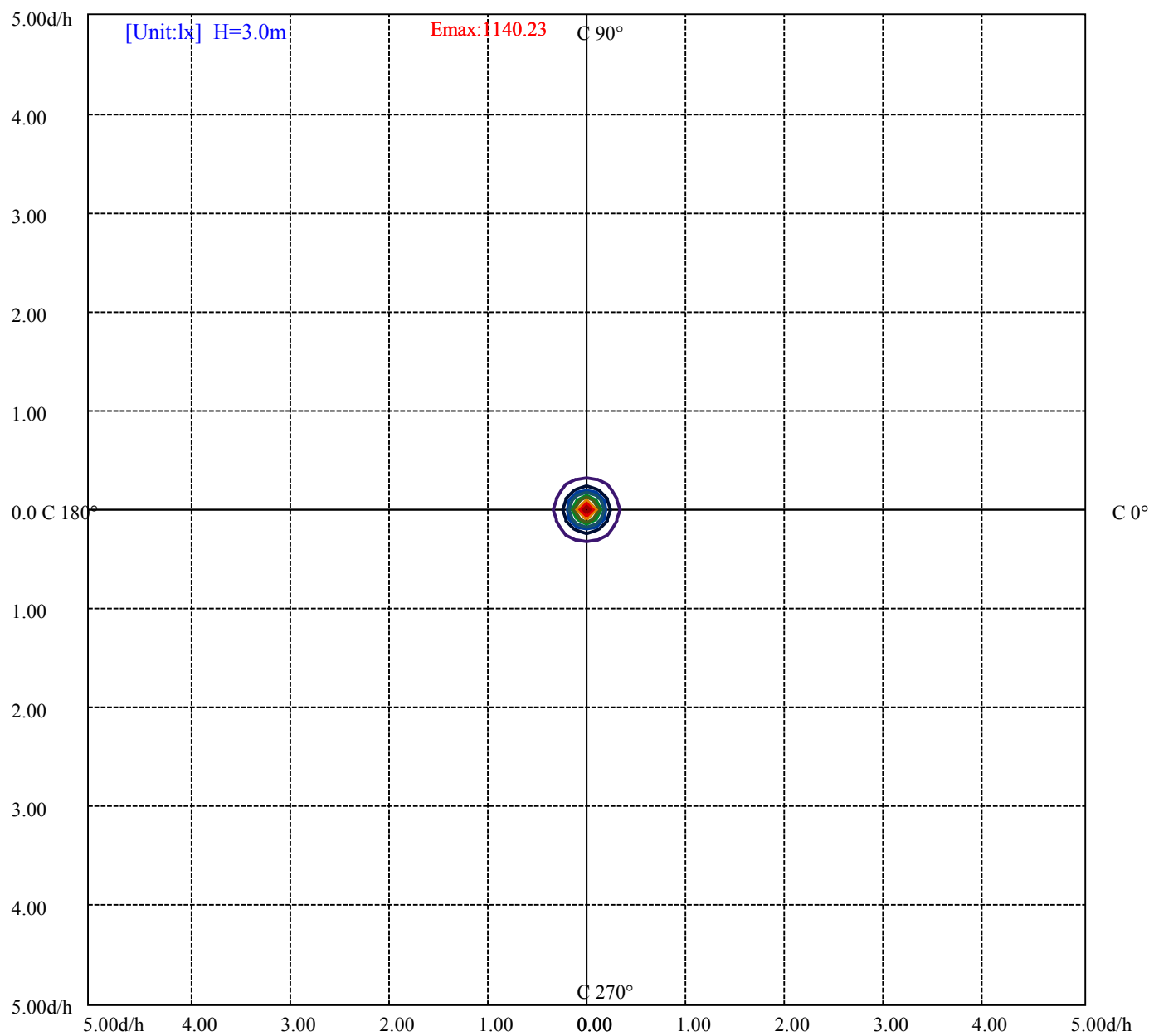
House

[Unit:cd]

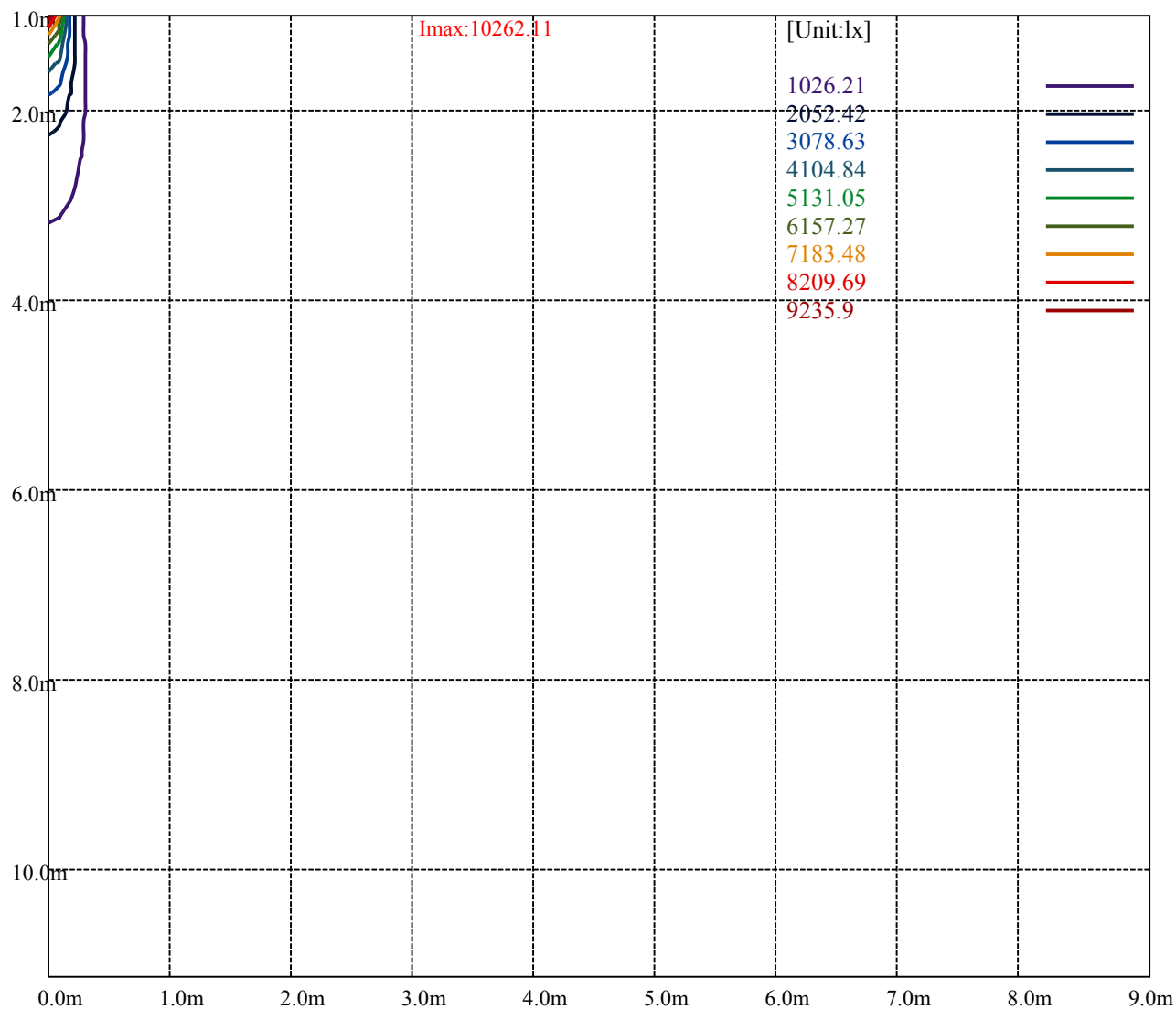
Road

Imax:10262.11

|           |         |       |
|-----------|---------|-------|
| (10%Imax) | 1026.21 | _____ |
| (20%Imax) | 2052.42 | _____ |
| (30%Imax) | 3078.63 | _____ |
| (40%Imax) | 4104.84 | _____ |
| (50%Imax) | 5131.05 | _____ |
| (60%Imax) | 6157.27 | _____ |
| (70%Imax) | 7183.48 | _____ |
| (80%Imax) | 8209.69 | _____ |
| (90%Imax) | 9235.9  | _____ |



|           |          |  |
|-----------|----------|--|
| (10%Emax) | 114.0233 |  |
| (20%Emax) | 228.0467 |  |
| (30%Emax) | 342.07   |  |
| (40%Emax) | 456.0933 |  |
| (50%Emax) | 570.1166 |  |
| (60%Emax) | 684.14   |  |
| (70%Emax) | 798.1633 |  |
| (80%Emax) | 912.1866 |  |
| (90%Emax) | 1026.209 |  |



Luminance Table

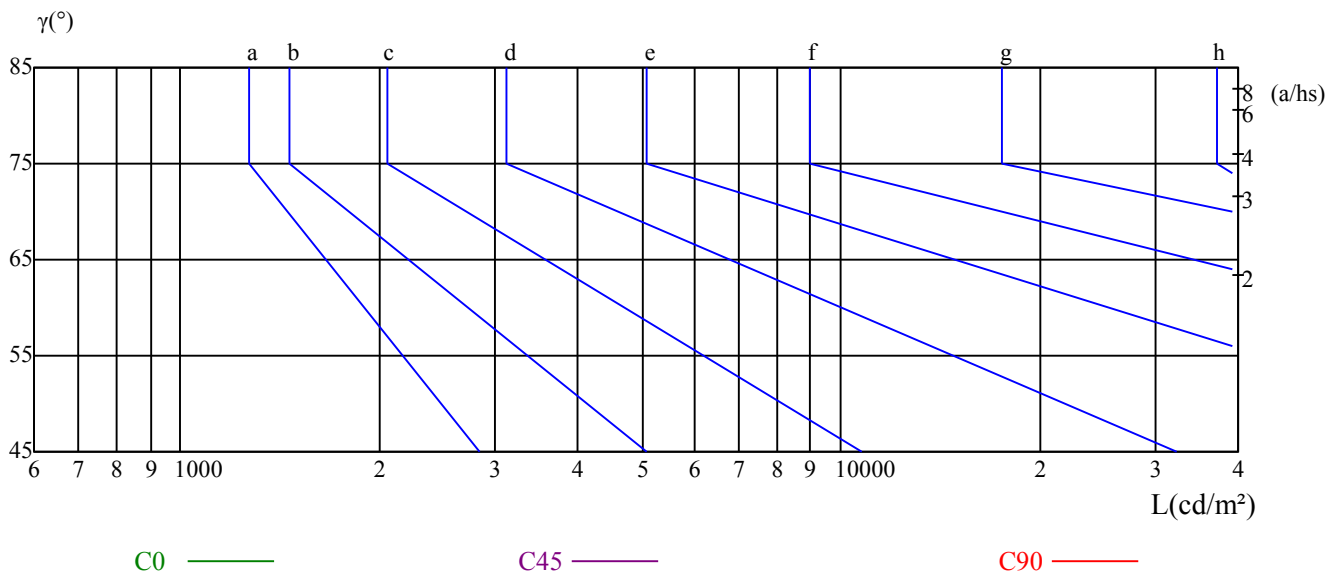
| $\gamma$ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|----------|----|----|----|----|----|----|----|----|----|
| C0       | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C45      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| C90      | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 0          | 0          | 0       | 0          | 0          | 0       | 0          | 0          | 0       |

Glare Table

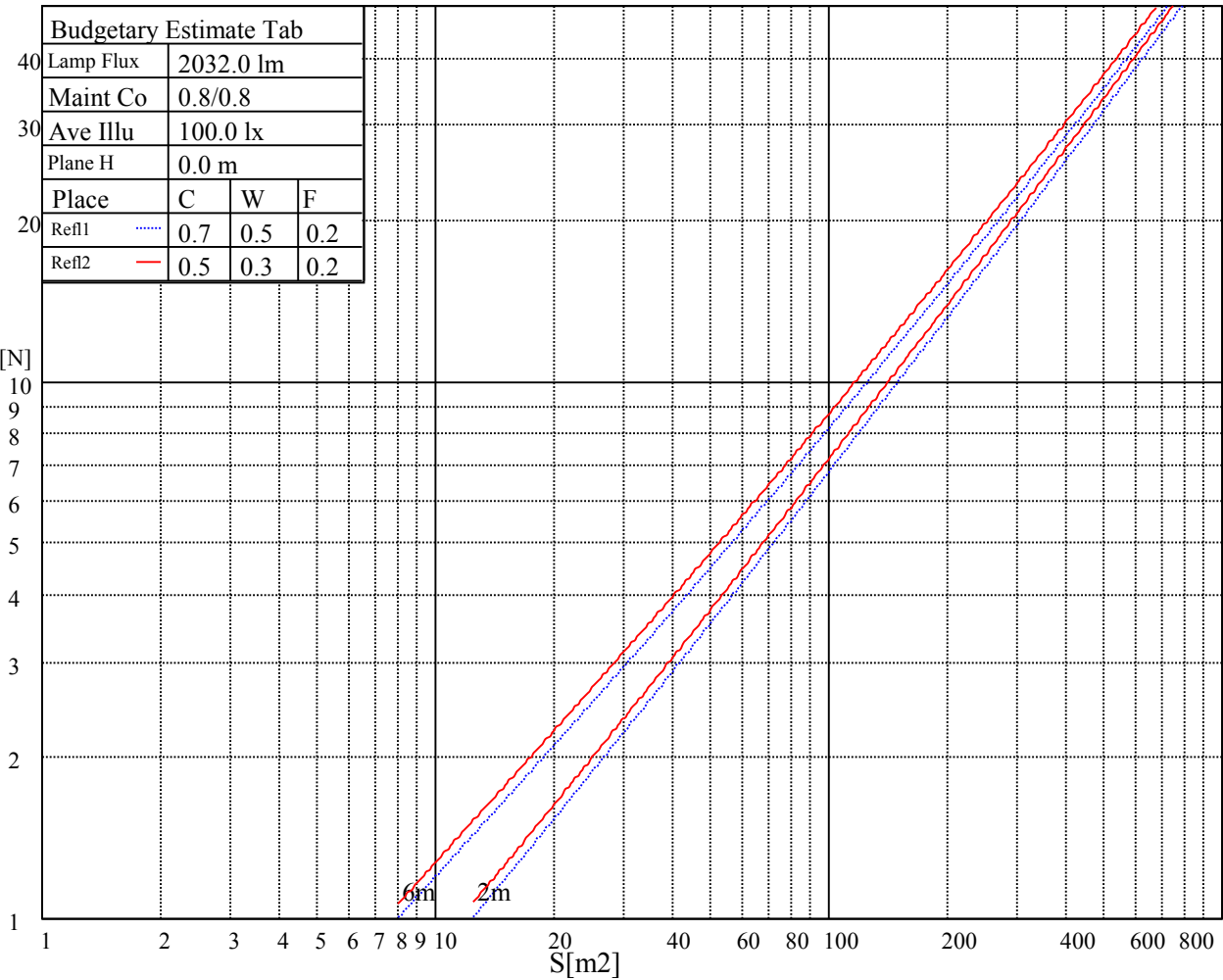
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000                           | 1000 | 500  | $\leq 300$ |            |            |            |            |
| 1.5   | B       |                                | 2000 | 1000 | 500        | $\leq 300$ |            |            |            |
| 1.85  | C       |                                |      | 2000 | 1000       | 500        | $\leq 300$ |            |            |
| 2.2   | D       |                                |      |      | 2000       | 1000       | 500        | $\leq 300$ |            |
| 2.55  | E       |                                |      |      |            | 2000       | 1000       | 500        | $\leq 300$ |
|       |         | a                              | b    | c    | d          | e          | f          | g          | h          |

Luminance Limiting Curve

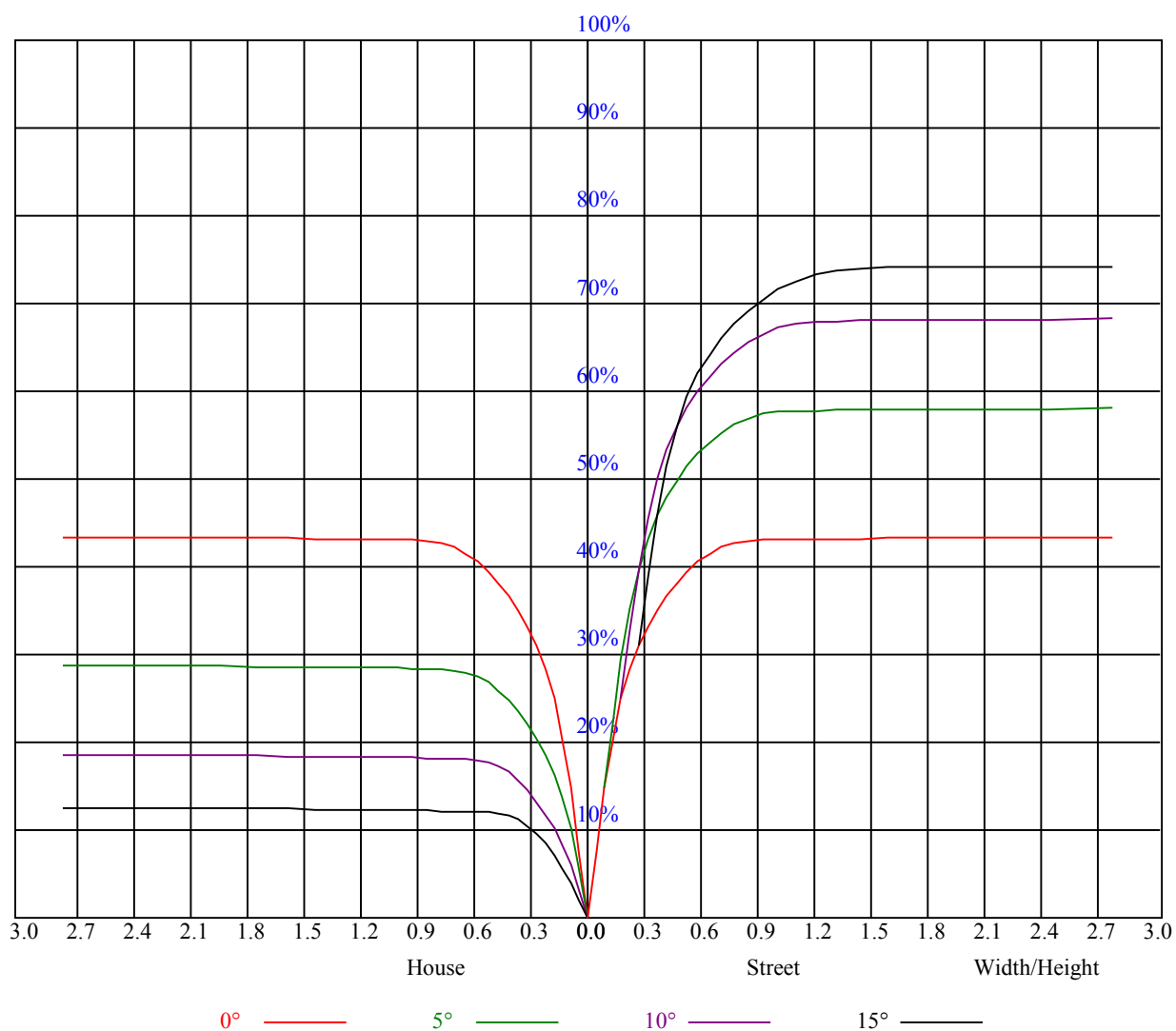


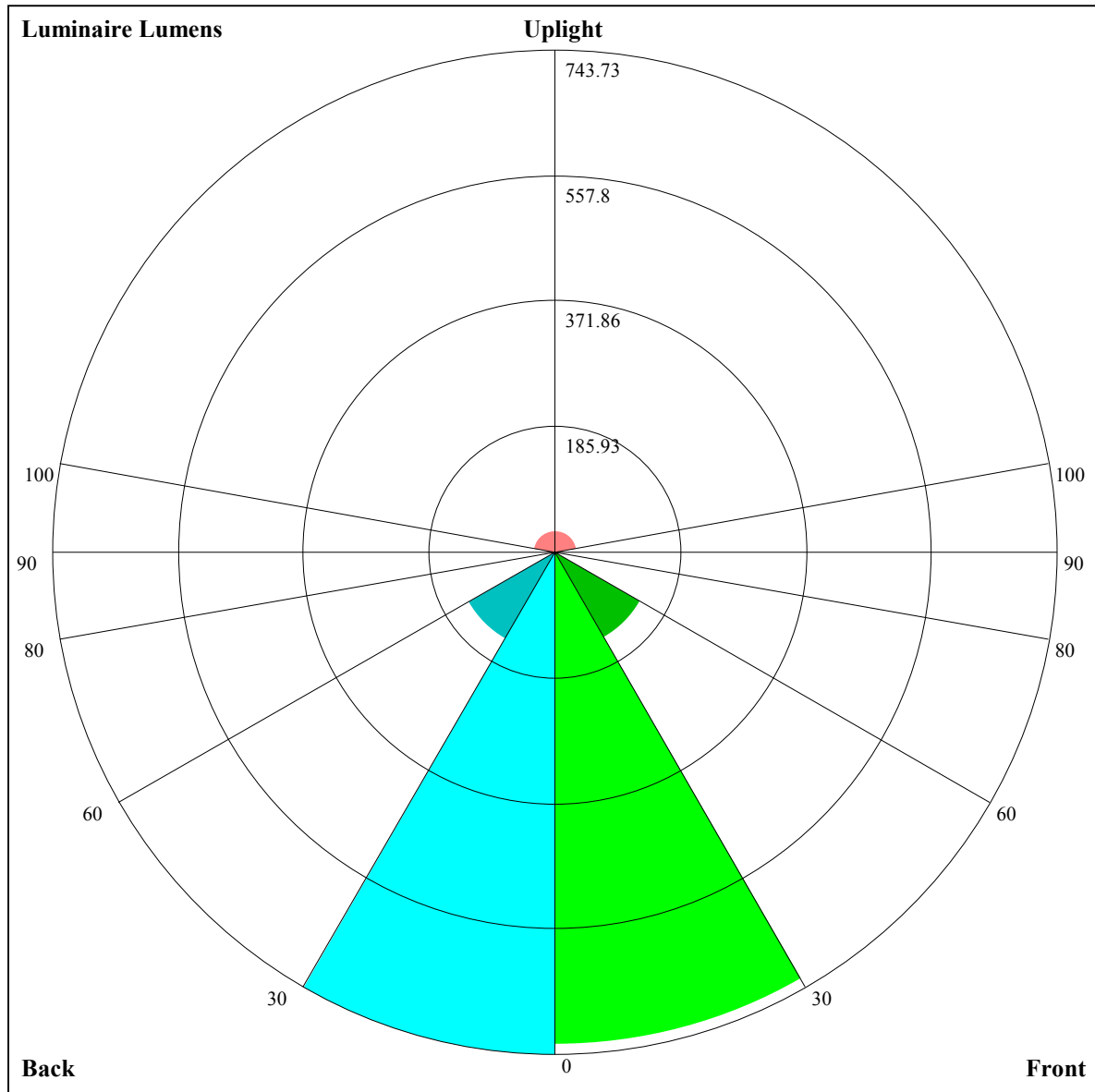
| Illumination assessment according UGR             |     |                  |     |     |     |     |                |     |     |     |  |
|---------------------------------------------------|-----|------------------|-----|-----|-----|-----|----------------|-----|-----|-----|--|
| Rf of Ceiling                                     | 70  | 70               | 50  | 50  | 30  | 70  | 70             | 50  | 50  | 30  |  |
| Rf of Wall                                        | 50  | 30               | 50  | 30  | 30  | 50  | 30             | 50  | 30  | 30  |  |
| Rf of Floor                                       | 20  | 20               | 20  | 20  | 20  | 20  | 20             | 20  | 20  | 20  |  |
| Room dimensions                                   |     | Viewed crosswise |     |     |     |     | Viewed endwise |     |     |     |  |
| X                                                 | Y   |                  |     |     |     |     |                |     |     |     |  |
| 2H                                                | 2H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 3H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| 4H                                                | 12H | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 2H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 3H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| 8H                                                | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 12H | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| 12H                                               | 12H | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 4H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 6H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
|                                                   | 8H  | 非数字              | 非数字 | 非数字 | 非数字 | 非数字 | 非数字            | 非数字 | 非数字 | 非数字 |  |
| Variation with the observer position at spacings: |     |                  |     |     |     |     |                |     |     |     |  |
| S = 1.0H                                          |     | 非数字/非数字          |     |     |     |     | 非数字/非数字        |     |     |     |  |
| S = 1.5H                                          |     | 非数字/非数字          |     |     |     |     | 非数字/非数字        |     |     |     |  |
| S = 2.0H                                          |     | 非数字/非数字          |     |     |     |     | 非数字/非数字        |     |     |     |  |
| Standard tables:                                  |     | BK0              |     |     |     |     | BK0            |     |     |     |  |
| Uncorrected UGR                                   |     | 负无穷大             |     |     |     |     | 负无穷大           |     |     |     |  |
|                                                   |     |                  |     |     |     |     |                |     |     |     |  |

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



| 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    | 1.04                                    | 1.04 | 1.04 | 1.02 | 1.02 | 1.02 | 0.97 | 0.97 | 0.97 | 0.93 | 0.93 | 0.93 | 0.89 | 0.89 | 0.89 | 0.87 |
| 1    | 0.98                                    | 0.96 | 0.94 | 0.96 | 0.94 | 0.93 | 0.92 | 0.91 | 0.90 | 0.89 | 0.88 | 0.87 | 0.86 | 0.85 | 0.85 | 0.83 |
| 2    | 0.93                                    | 0.90 | 0.87 | 0.91 | 0.88 | 0.86 | 0.88 | 0.86 | 0.84 | 0.86 | 0.84 | 0.82 | 0.83 | 0.82 | 0.81 | 0.79 |
| 3    | 0.88                                    | 0.84 | 0.81 | 0.87 | 0.83 | 0.81 | 0.85 | 0.82 | 0.80 | 0.82 | 0.80 | 0.78 | 0.81 | 0.79 | 0.77 | 0.76 |
| 4    | 0.84                                    | 0.80 | 0.77 | 0.83 | 0.79 | 0.76 | 0.81 | 0.78 | 0.76 | 0.79 | 0.77 | 0.75 | 0.78 | 0.76 | 0.74 | 0.73 |
| 5    | 0.80                                    | 0.76 | 0.73 | 0.79 | 0.76 | 0.73 | 0.78 | 0.75 | 0.72 | 0.77 | 0.74 | 0.71 | 0.75 | 0.73 | 0.71 | 0.70 |
| 6    | 0.77                                    | 0.73 | 0.70 | 0.76 | 0.72 | 0.69 | 0.75 | 0.72 | 0.69 | 0.74 | 0.71 | 0.69 | 0.73 | 0.70 | 0.68 | 0.67 |
| 7    | 0.74                                    | 0.70 | 0.67 | 0.73 | 0.69 | 0.67 | 0.72 | 0.69 | 0.66 | 0.71 | 0.68 | 0.66 | 0.70 | 0.68 | 0.66 | 0.65 |
| 8    | 0.71                                    | 0.67 | 0.64 | 0.71 | 0.67 | 0.64 | 0.70 | 0.66 | 0.64 | 0.69 | 0.66 | 0.64 | 0.68 | 0.65 | 0.63 | 0.62 |
| 9    | 0.69                                    | 0.65 | 0.62 | 0.68 | 0.64 | 0.62 | 0.68 | 0.64 | 0.62 | 0.67 | 0.64 | 0.61 | 0.66 | 0.63 | 0.61 | 0.60 |
| 10   | 0.66                                    | 0.62 | 0.60 | 0.66 | 0.62 | 0.60 | 0.65 | 0.62 | 0.60 | 0.65 | 0.62 | 0.59 | 0.64 | 0.61 | 0.59 | 0.58 |





Luminaire Lumens:

FL=728.45,FM=146.79,FH=6.93,FVH=3.54

BL=743.73,BM=148.65,BH=6.94,BVH=3.54

UL=7.05,UH=33.55

BUG Rating:B2-U2-G0

## NATA 2-2004-M

| Intensity data(cd) |          |          |          |          |          |         |         |         |         | Appendix Page: 18 Total:20 |  |
|--------------------|----------|----------|----------|----------|----------|---------|---------|---------|---------|----------------------------|--|
| C/γ(°)             | 0.0      | 1.0      | 2.0      | 3.0      | 4.0      | 5.0     | 6.0     | 7.0     | 8.0     |                            |  |
| 0.0                | 10339.88 | 10301.63 | 10005.75 | 9579.38  | 8934.75  | 8125.31 | 7307.44 | 6337.13 | 5448.94 |                            |  |
| 45.0               | 10300.50 | 9926.44  | 9255.38  | 8578.69  | 7806.38  | 6747.19 | 5826.94 | 4900.50 | 3999.38 |                            |  |
| 90.0               | 10081.69 | 9622.13  | 8854.31  | 8109.56  | 7281.00  | 6397.88 | 5242.50 | 4372.31 | 3648.38 |                            |  |
| 135.0              | 10326.38 | 10041.75 | 9576.56  | 9012.38  | 8225.44  | 7326.00 | 6452.44 | 5545.13 | 4568.06 |                            |  |
| 180.0              | 10339.88 | 10212.75 | 9937.13  | 9367.31  | 8758.69  | 8027.44 | 7076.25 | 6045.75 | 5118.19 |                            |  |
| 225.0              | 10300.50 | 10487.81 | 10494.56 | 10316.25 | 9988.88  | 9420.75 | 8757.00 | 7881.75 | 6894.56 |                            |  |
| 270.0              | 10081.69 | 10405.69 | 10553.06 | 10479.38 | 10241.44 | 9767.25 | 9110.25 | 8398.69 | 7491.38 |                            |  |
| 315.0              | 10326.38 | 10383.19 | 10245.38 | 9856.13  | 9387.00  | 8782.31 | 7950.38 | 7050.94 | 6193.69 |                            |  |
| 360.0              | 10339.88 | 10301.63 | 10005.75 | 9579.38  | 8934.75  | 8125.31 | 7307.44 | 6337.13 | 5448.94 |                            |  |
| C/γ(°)             | 9.0      | 10.0     | 11.0     | 12.0     | 13.0     | 14.0    | 15.0    | 16.0    | 17.0    |                            |  |
| 0.0                | 4486.50  | 3683.25  | 3113.44  | 2652.75  | 2181.94  | 1881.00 | 1641.38 | 1408.50 | 1265.63 |                            |  |
| 45.0               | 3289.50  | 2780.44  | 2316.38  | 1987.88  | 1696.50  | 1470.38 | 1314.00 | 1174.50 | 1065.94 |                            |  |
| 90.0               | 3006.00  | 2504.81  | 2145.94  | 1821.94  | 1570.50  | 1395.56 | 1241.44 | 1116.28 | 1030.28 |                            |  |
| 135.0              | 3740.06  | 3073.50  | 2602.69  | 2220.19  | 1842.19  | 1605.38 | 1420.31 | 1259.44 | 1132.88 |                            |  |
| 180.0              | 4170.38  | 3414.94  | 2880.00  | 2401.31  | 2058.75  | 1744.88 | 1503.00 | 1336.50 | 1119.26 |                            |  |
| 225.0              | 5960.81  | 4920.75  | 4026.38  | 3379.50  | 2850.19  | 2332.69 | 2008.69 | 1741.50 | 1500.75 |                            |  |
| 270.0              | 6509.81  | 5596.88  | 4612.50  | 3864.38  | 3178.69  | 2636.44 | 2250.00 | 1970.44 | 1620.00 |                            |  |
| 315.0              | 5187.38  | 4255.31  | 3571.31  | 2955.38  | 2515.50  | 2116.13 | 1803.38 | 1579.50 | 1379.81 |                            |  |
| 360.0              | 4486.50  | 3683.25  | 3113.44  | 2652.75  | 2181.94  | 1881.00 | 1641.38 | 1408.50 | 1265.63 |                            |  |
| C/γ(°)             | 18.0     | 19.0     | 20.0     | 21.0     | 22.0     | 23.0    | 24.0    | 25.0    | 26.0    |                            |  |
| 0.0                | 1149.75  | 1050.75  | 969.75   | 907.88   | 850.50   | 805.50  | 763.88  | 730.13  | 704.81  |                            |  |
| 45.0               | 984.38   | 916.88   | 852.75   | 803.81   | 764.44   | 735.19  | 702.00  | 681.19  | 664.88  |                            |  |
| 90.0               | 948.88   | 888.30   | 838.01   | 784.35   | 749.70   | 721.74  | 692.21  | 674.44  | 660.21  |                            |  |
| 135.0              | 1041.19  | 971.44   | 890.44   | 842.06   | 801.00   | 752.63  | 725.06  | 703.69  | 678.38  |                            |  |
| 180.0              | 1060.43  | 990.45   | 921.77   | 846.17   | 807.41   | 768.21  | 733.11  | 704.64  | 682.88  |                            |  |
| 225.0              | 1318.50  | 1112.40  | 1078.31  | 988.59   | 921.60   | 859.28  | 813.54  | 769.16  | 732.04  |                            |  |
| 270.0              | 1430.44  | 1299.38  | 1139.63  | 1049.63  | 983.25   | 905.06  | 847.13  | 807.75  | 761.63  |                            |  |
| 315.0              | 1193.06  | 1118.93  | 1034.61  | 946.80   | 887.79   | 838.86  | 790.09  | 750.43  | 722.31  |                            |  |
| 360.0              | 1149.75  | 1050.75  | 969.75   | 907.88   | 850.50   | 805.50  | 763.88  | 730.13  | 704.81  |                            |  |
| C/γ(°)             | 27.0     | 28.0     | 29.0     | 30.0     | 31.0     | 32.0    | 33.0    | 34.0    | 35.0    |                            |  |
| 0.0                | 682.31   | 666.56   | 653.63   | 641.81   | 628.31   | 618.75  | 599.63  | 542.25  | 485.44  |                            |  |
| 45.0               | 649.13   | 636.75   | 623.81   | 612.56   | 593.44   | 553.50  | 496.69  | 420.19  | 351.00  |                            |  |
| 90.0               | 645.86   | 632.59   | 621.62   | 609.41   | 580.61   | 525.88  | 457.71  | 391.22  | 315.90  |                            |  |
| 135.0              | 662.06   | 650.25   | 636.19   | 625.50   | 613.69   | 586.13  | 543.94  | 484.31  | 401.06  |                            |  |
| 180.0              | 664.48   | 651.38   | 638.04   | 625.28   | 615.09   | 601.48  | 558.90  | 505.74  | 447.75  |                            |  |
| 225.0              | 709.54   | 685.86   | 666.84   | 655.71   | 644.34   | 629.04  | 620.04  | 601.82  | 554.85  |                            |  |
| 270.0              | 732.94   | 707.63   | 683.44   | 669.38   | 657.00   | 642.94  | 632.25  | 622.13  | 591.75  |                            |  |
| 315.0              | 695.59   | 677.53   | 662.06   | 648.28   | 637.03   | 625.39  | 610.93  | 584.89  | 537.30  |                            |  |
| 360.0              | 682.31   | 666.56   | 653.63   | 641.81   | 628.31   | 618.75  | 599.63  | 542.25  | 485.44  |                            |  |
| C/γ(°)             | 36.0     | 37.0     | 38.0     | 39.0     | 40.0     | 41.0    | 42.0    | 43.0    | 44.0    |                            |  |
| 0.0                | 423.56   | 345.38   | 290.81   | 193.78   | 141.02   | 72.68   | 30.66   | 19.63   | 17.21   |                            |  |
| 45.0               | 284.63   | 213.08   | 142.88   | 82.52    | 41.63    | 21.43   | 18.34   | 15.98   | 13.50   |                            |  |
| 90.0               | 242.16   | 177.58   | 118.35   | 57.88    | 28.52    | 19.74   | 17.55   | 14.79   | 12.49   |                            |  |
| 135.0              | 331.88   | 291.94   | 176.18   | 117.96   | 68.79    | 29.64   | 18.34   | 16.59   | 14.23   |                            |  |
| 180.0              | 366.53   | 296.94   | 229.05   | 150.36   | 94.84    | 48.94   | 23.79   | 17.27   | 15.58   |                            |  |
| 225.0              | 491.29   | 427.22   | 353.59   | 277.03   | 211.56   | 140.34  | 84.60   | 38.81   | 19.91   |                            |  |
| 270.0              | 546.75   | 487.13   | 412.88   | 335.81   | 284.06   | 189.23  | 120.88  | 68.23   | 30.83   |                            |  |
| 315.0              | 462.04   | 397.52   | 329.06   | 240.13   | 176.29   | 116.33  | 56.14   | 25.88   | 18.34   |                            |  |
| 360.0              | 423.56   | 345.38   | 290.81   | 193.78   | 141.02   | 72.68   | 30.66   | 19.63   | 17.21   |                            |  |

## Intensity data(cd)

| C/γ(°) | 45.0  | 46.0  | 47.0  | 48.0  | 49.0  | 50.0  | 51.0 | 52.0 | 53.0 |
|--------|-------|-------|-------|-------|-------|-------|------|------|------|
| 0.0    | 14.63 | 12.54 | 10.80 | 9.28  | 8.94  | 8.61  | 8.38 | 8.16 | 7.93 |
| 45.0   | 11.36 | 10.29 | 9.45  | 9.11  | 8.83  | 8.61  | 8.38 | 8.21 | 7.99 |
| 90.0   | 10.97 | 9.79  | 9.39  | 9.11  | 8.83  | 8.61  | 8.38 | 8.16 | 7.99 |
| 135.0  | 11.81 | 10.69 | 9.17  | 8.89  | 8.61  | 8.38  | 8.16 | 8.04 | 7.82 |
| 180.0  | 13.39 | 11.19 | 10.18 | 9.00  | 8.72  | 8.49  | 8.27 | 8.04 | 7.88 |
| 225.0  | 17.89 | 15.98 | 13.05 | 11.36 | 10.07 | 9.39  | 9.11 | 8.83 | 8.55 |
| 270.0  | 19.52 | 17.55 | 15.13 | 12.94 | 11.42 | 10.18 | 9.51 | 9.23 | 8.89 |
| 315.0  | 16.03 | 14.06 | 11.70 | 10.01 | 9.11  | 8.83  | 8.49 | 8.38 | 8.16 |
| 360.0  | 14.63 | 12.54 | 10.80 | 9.28  | 8.94  | 8.61  | 8.38 | 8.16 | 7.93 |
| C/γ(°) | 54.0  | 55.0  | 56.0  | 57.0  | 58.0  | 59.0  | 60.0 | 61.0 | 62.0 |
| 0.0    | 7.82  | 7.65  | 7.48  | 7.37  | 7.31  | 7.20  | 7.09 | 7.03 | 6.98 |
| 45.0   | 7.82  | 7.71  | 7.59  | 7.48  | 7.37  | 7.26  | 7.14 | 7.09 | 7.03 |
| 90.0   | 7.82  | 7.65  | 7.54  | 7.43  | 7.31  | 7.26  | 7.20 | 7.09 | 7.03 |
| 135.0  | 7.71  | 7.59  | 7.43  | 7.31  | 7.26  | 7.14  | 7.09 | 7.03 | 6.98 |
| 180.0  | 7.71  | 7.59  | 7.48  | 7.37  | 7.20  | 7.20  | 7.09 | 7.03 | 6.92 |
| 225.0  | 8.33  | 8.16  | 7.99  | 7.82  | 7.65  | 7.48  | 7.37 | 7.26 | 7.20 |
| 270.0  | 8.66  | 8.44  | 8.21  | 7.99  | 7.88  | 7.71  | 7.59 | 7.48 | 7.37 |
| 315.0  | 7.93  | 7.76  | 7.59  | 7.48  | 7.37  | 7.26  | 7.20 | 7.09 | 7.03 |
| 360.0  | 7.82  | 7.65  | 7.48  | 7.37  | 7.31  | 7.20  | 7.09 | 7.03 | 6.98 |
| C/γ(°) | 63.0  | 64.0  | 65.0  | 66.0  | 67.0  | 68.0  | 69.0 | 70.0 | 71.0 |
| 0.0    | 6.92  | 6.86  | 6.81  | 6.81  | 6.69  | 6.69  | 6.64 | 6.64 | 6.64 |
| 45.0   | 6.98  | 6.92  | 6.86  | 6.86  | 6.81  | 6.75  | 6.69 | 6.64 | 6.64 |
| 90.0   | 6.98  | 6.92  | 6.86  | 6.81  | 6.81  | 6.75  | 6.75 | 6.69 | 6.69 |
| 135.0  | 6.92  | 6.86  | 6.81  | 6.81  | 6.75  | 6.69  | 6.69 | 6.64 | 6.64 |
| 180.0  | 6.86  | 6.81  | 6.81  | 6.81  | 6.75  | 6.69  | 6.69 | 6.64 | 6.58 |
| 225.0  | 7.09  | 7.03  | 6.98  | 6.92  | 6.92  | 6.81  | 6.75 | 6.75 | 6.69 |
| 270.0  | 7.26  | 7.20  | 7.09  | 6.98  | 6.98  | 6.92  | 6.86 | 6.86 | 6.81 |
| 315.0  | 6.98  | 6.92  | 6.86  | 6.81  | 6.75  | 6.75  | 6.75 | 6.69 | 6.69 |
| 360.0  | 6.92  | 6.86  | 6.81  | 6.81  | 6.69  | 6.69  | 6.64 | 6.64 | 6.64 |
| C/γ(°) | 72.0  | 73.0  | 74.0  | 75.0  | 76.0  | 77.0  | 78.0 | 79.0 | 80.0 |
| 0.0    | 6.64  | 6.58  | 6.58  | 6.53  | 6.53  | 6.53  | 6.53 | 6.47 | 6.53 |
| 45.0   | 6.64  | 6.58  | 6.58  | 6.58  | 6.58  | 6.53  | 6.53 | 6.53 | 6.53 |
| 90.0   | 6.64  | 6.64  | 6.58  | 6.58  | 6.58  | 6.58  | 6.53 | 6.53 | 6.47 |
| 135.0  | 6.64  | 6.64  | 6.58  | 6.58  | 6.58  | 6.53  | 6.58 | 6.53 | 6.53 |
| 180.0  | 6.58  | 6.58  | 6.58  | 6.58  | 6.53  | 6.53  | 6.47 | 6.47 | 6.53 |
| 225.0  | 6.69  | 6.69  | 6.64  | 6.64  | 6.58  | 6.58  | 6.53 | 6.53 | 6.53 |
| 270.0  | 6.75  | 6.69  | 6.69  | 6.69  | 6.64  | 6.64  | 6.64 | 6.58 | 6.53 |
| 315.0  | 6.64  | 6.58  | 6.58  | 6.58  | 6.58  | 6.58  | 6.53 | 6.53 | 6.53 |
| 360.0  | 6.64  | 6.58  | 6.58  | 6.53  | 6.53  | 6.53  | 6.53 | 6.47 | 6.53 |
| C/γ(°) | 81.0  | 82.0  | 83.0  | 84.0  | 85.0  | 86.0  | 87.0 | 88.0 | 89.0 |
| 0.0    | 6.53  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47 | 6.47 | 6.47 |
| 45.0   | 6.53  | 6.53  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47 | 6.47 | 6.47 |
| 90.0   | 6.53  | 6.53  | 6.53  | 6.53  | 6.47  | 6.47  | 6.47 | 6.47 | 6.47 |
| 135.0  | 6.53  | 6.47  | 6.53  | 6.47  | 6.47  | 6.47  | 6.47 | 6.47 | 6.47 |
| 180.0  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47  | 6.41 | 6.41 | 6.41 |
| 225.0  | 6.53  | 6.53  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47 | 6.47 | 6.47 |
| 270.0  | 6.58  | 6.53  | 6.53  | 6.53  | 6.53  | 6.53  | 6.47 | 6.47 | 6.47 |
| 315.0  | 6.53  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47 | 6.47 | 6.47 |
| 360.0  | 6.53  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47  | 6.47 | 6.47 | 6.47 |

## Intensity data(cd)

|                       |      |
|-----------------------|------|
| C/ $\gamma(^{\circ})$ | 90.0 |
| 0.0                   | 6.47 |
| 45.0                  | 6.47 |
| 90.0                  | 6.47 |
| 135.0                 | 6.47 |
| 180.0                 | 6.41 |
| 225.0                 | 6.47 |
| 270.0                 | 6.47 |
| 315.0                 | 6.47 |
| 360.0                 | 6.47 |