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## Nata

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|                             |                     |
|-----------------------------|---------------------|
| LumCAT: 3-2031-M            |                     |
| Luminaire: 92.70.126.00     |                     |
| Report No: NATA0100         | Voltage(V): 35.3000 |
| Test No: GC2018090804       | Current(A): 0.4100  |
| LampCAT: LUMINUS CHM-9-XD20 | Power (W): 14.4730  |
| Lamp flux(lm): 1946.0       | PF: 0.0000          |
| Number of Lamps: 1          | Ballast type: DC    |
| Length(mm): 79              | Width(mm): 79       |
| Phm Type: C                 | Height(mm): 0       |

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## Photometric Results

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Lumens(lm): 1757.93  
Efficiency(%): 90.34%  
Lumens(lm)/Power(W): 121.80  
Central intensity(cd): 20821.640  
Maximum intensity(cd): 20821.640  
Angle of maximum intensity:  $C=0.0$   $\gamma=0.0$   
Beam Angle(50%Imax): [C0/180]Total=11.1  
[C90/270]Total=11.1  
Field angle(10%Imax): [C0/180]Total=22.1  
[C90/270]Total=22.1  
Maximum s/h(1/2): C0\_180=0.19 C90\_270=0.19  
Maximum s/h(1/4): C0\_180=0.20 C90\_270=0.20  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 90.59%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.342%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 20821.641     | 4.981       | 4.981     | .256%       | .283%      |
| 1.0                | 20359.688     | 38.965      | 43.947    | 2.002%      | 2.500%     |
| 2.0                | 18890.156     | 72.295      | 116.241   | 3.715%      | 6.612%     |
| 3.0                | 16748.438     | 96.123      | 212.364   | 4.940%      | 12.080%    |
| 4.0                | 14107.008     | 107.912     | 320.277   | 5.545%      | 18.219%    |
| 5.0                | 11681.016     | 111.642     | 431.919   | 5.737%      | 24.570%    |
| 6.0                | 9412.805      | 107.896     | 539.815   | 5.545%      | 30.707%    |
| 7.0                | 7059.938      | 94.351      | 634.166   | 4.848%      | 36.074%    |
| 8.0                | 5312.742      | 81.082      | 715.248   | 4.167%      | 40.687%    |
| 9.0                | 3785.906      | 64.946      | 780.194   | 3.337%      | 44.381%    |
| 10.0               | 2731.008      | 52.005      | 832.199   | 2.672%      | 47.340%    |
| 11.0               | 2095.594      | 43.849      | 876.048   | 2.253%      | 49.834%    |
| 12.0               | 1579.992      | 36.023      | 912.072   | 1.851%      | 51.883%    |
| 13.0               | 1290.375      | 31.831      | 943.903   | 1.636%      | 53.694%    |
| 14.0               | 1115.923      | 29.605      | 973.508   | 1.521%      | 55.378%    |
| 15.0               | 1012.613      | 28.740      | 1002.248  | 1.477%      | 57.013%    |
| 16.0               | 931.064       | 28.143      | 1030.391  | 1.446%      | 58.614%    |
| 17.0               | 882.844       | 28.306      | 1058.696  | 1.455%      | 60.224%    |
| 18.0               | 849.748       | 28.795      | 1087.492  | 1.480%      | 61.862%    |
| 19.0               | 822.206       | 29.354      | 1116.846  | 1.508%      | 63.532%    |
| 20.0               | 800.198       | 30.012      | 1146.859  | 1.542%      | 65.239%    |
| 21.0               | 781.671       | 30.719      | 1177.578  | 1.579%      | 66.986%    |
| 22.0               | 763.938       | 31.382      | 1208.96   | 1.613%      | 68.772%    |
| 23.0               | 750.206       | 32.145      | 1241.105  | 1.652%      | 70.600%    |
| 24.0               | 737.114       | 32.878      | 1273.982  | 1.689%      | 72.470%    |
| 25.0               | 723.143       | 33.514      | 1307.496  | 1.722%      | 74.377%    |
| 26.0               | 712.441       | 34.249      | 1341.745  | 1.760%      | 76.325%    |
| 27.0               | 701.655       | 34.932      | 1376.677  | 1.795%      | 78.312%    |
| 28.0               | 688.697       | 35.456      | 1412.133  | 1.822%      | 80.329%    |
| 29.0               | 677.630       | 36.026      | 1448.159  | 1.851%      | 82.378%    |
| 30.0               | 665.536       | 36.492      | 1484.65   | 1.875%      | 84.454%    |
| 31.0               | 652.528       | 36.854      | 1521.505  | 1.894%      | 86.551%    |
| 32.0               | 639.577       | 37.167      | 1558.671  | 1.910%      | 88.665%    |
| 33.0               | 613.083       | 36.617      | 1595.288  | 1.882%      | 90.748%    |
| 34.0               | 550.568       | 33.762      | 1629.05   | 1.735%      | 92.668%    |
| 35.0               | 458.606       | 28.846      | 1657.896  | 1.482%      | 94.309%    |
| 36.0               | 351.541       | 22.659      | 1680.555  | 1.164%      | 95.598%    |
| 37.0               | 237.361       | 15.665      | 1696.22   | .805%       | 96.489%    |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 156.762       | 10.584      | 1706.803  | .544%       | 97.091%    |
| 39.0               | 66.902        | 4.617       | 1711.42   | .237%       | 97.354%    |
| 40.0               | 32.850        | 2.316       | 1713.736  | .119%       | 97.486%    |
| 41.0               | 22.444        | 1.615       | 1715.351  | .083%       | 97.578%    |
| 42.0               | 17.395        | 1.276       | 1716.627  | .066%       | 97.650%    |
| 43.0               | 14.885        | 1.113       | 1717.74   | .057%       | 97.714%    |
| 44.0               | 13.957        | 1.063       | 1718.804  | .055%       | 97.774%    |
| 45.0               | 13.303        | 1.032       | 1719.835  | .053%       | 97.833%    |
| 46.0               | 12.832        | 1.012       | 1720.847  | .052%       | 97.890%    |
| 47.0               | 12.403        | 0.995       | 1721.842  | .051%       | 97.947%    |
| 48.0               | 12.030        | 0.980       | 1722.822  | .050%       | 98.003%    |
| 49.0               | 11.651        | 0.964       | 1723.787  | .050%       | 98.057%    |
| 50.0               | 11.292        | 0.949       | 1724.735  | .049%       | 98.111%    |
| 51.0               | 10.990        | 0.937       | 1725.672  | .048%       | 98.165%    |
| 52.0               | 10.695        | 0.924       | 1726.596  | .047%       | 98.217%    |
| 53.0               | 10.413        | 0.912       | 1727.508  | .047%       | 98.269%    |
| 54.0               | 10.153        | 0.901       | 1728.409  | .046%       | 98.320%    |
| 55.0               | 9.886         | 0.888       | 1729.297  | .046%       | 98.371%    |
| 56.0               | 9.675         | 0.880       | 1730.176  | .045%       | 98.421%    |
| 57.0               | 9.464         | 0.870       | 1731.047  | .045%       | 98.470%    |
| 58.0               | 9.288         | 0.864       | 1731.911  | .044%       | 98.520%    |
| 59.0               | 9.120         | 0.857       | 1732.768  | .044%       | 98.568%    |
| 60.0               | 8.965         | 0.851       | 1733.619  | .044%       | 98.617%    |
| 61.0               | 8.803         | 0.844       | 1734.464  | .043%       | 98.665%    |
| 62.0               | 8.677         | 0.840       | 1735.304  | .043%       | 98.713%    |
| 63.0               | 8.571         | 0.837       | 1736.141  | .043%       | 98.760%    |
| 64.0               | 8.445         | 0.832       | 1736.973  | .043%       | 98.808%    |
| 65.0               | 8.346         | 0.829       | 1737.803  | .043%       | 98.855%    |
| 66.0               | 8.262         | 0.828       | 1738.631  | .043%       | 98.902%    |
| 67.0               | 8.177         | 0.825       | 1739.456  | .042%       | 98.949%    |
| 68.0               | 8.107         | 0.824       | 1740.28   | .042%       | 98.996%    |
| 69.0               | 8.037         | 0.823       | 1741.103  | .042%       | 99.043%    |
| 70.0               | 7.980         | 0.822       | 1741.925  | .042%       | 99.089%    |
| 71.0               | 7.910         | 0.820       | 1742.746  | .042%       | 99.136%    |
| 72.0               | 7.882         | 0.822       | 1743.568  | .042%       | 99.183%    |
| 73.0               | 7.840         | 0.822       | 1744.39   | .042%       | 99.229%    |
| 74.0               | 7.798         | 0.822       | 1745.212  | .042%       | 99.276%    |
| 75.0               | 7.755         | 0.821       | 1746.033  | .042%       | 99.323%    |

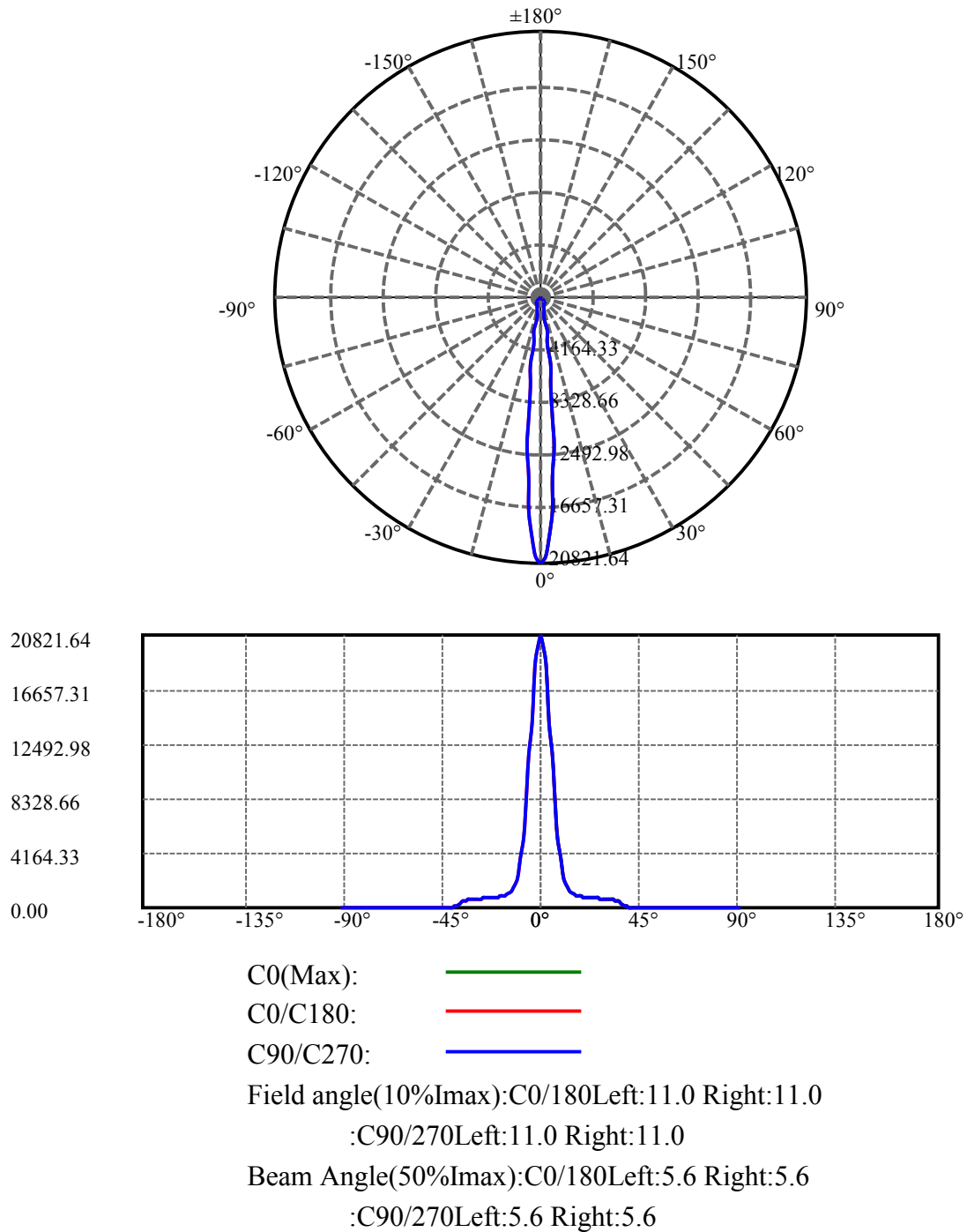
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 7.727         | 0.822       | 1746.856  | .042%       | 99.370%    |
| 77.0               | 7.692         | 0.822       | 1747.677  | .042%       | 99.417%    |
| 78.0               | 7.671         | 0.823       | 1748.5    | .042%       | 99.463%    |
| 79.0               | 7.657         | 0.824       | 1749.325  | .042%       | 99.510%    |
| 80.0               | 7.629         | 0.824       | 1750.148  | .042%       | 99.557%    |
| 81.0               | 7.608         | 0.824       | 1750.972  | .042%       | 99.604%    |
| 82.0               | 7.594         | 0.825       | 1751.797  | .042%       | 99.651%    |
| 83.0               | 7.580         | 0.825       | 1752.622  | .042%       | 99.698%    |
| 84.0               | 7.566         | 0.825       | 1753.447  | .042%       | 99.745%    |
| 85.0               | 7.523         | 0.822       | 1754.269  | .042%       | 99.791%    |
| 86.0               | 7.495         | 0.820       | 1755.089  | .042%       | 99.838%    |
| 87.0               | 7.439         | 0.815       | 1755.904  | .042%       | 99.884%    |
| 88.0               | 7.411         | 0.812       | 1756.716  | .042%       | 99.931%    |
| 89.0               | 7.411         | 0.813       | 1757.528  | .042%       | 99.977%    |
| 90.0               | 7.411         | 0.406       | 1757.935  | .021%       | 100.000%   |

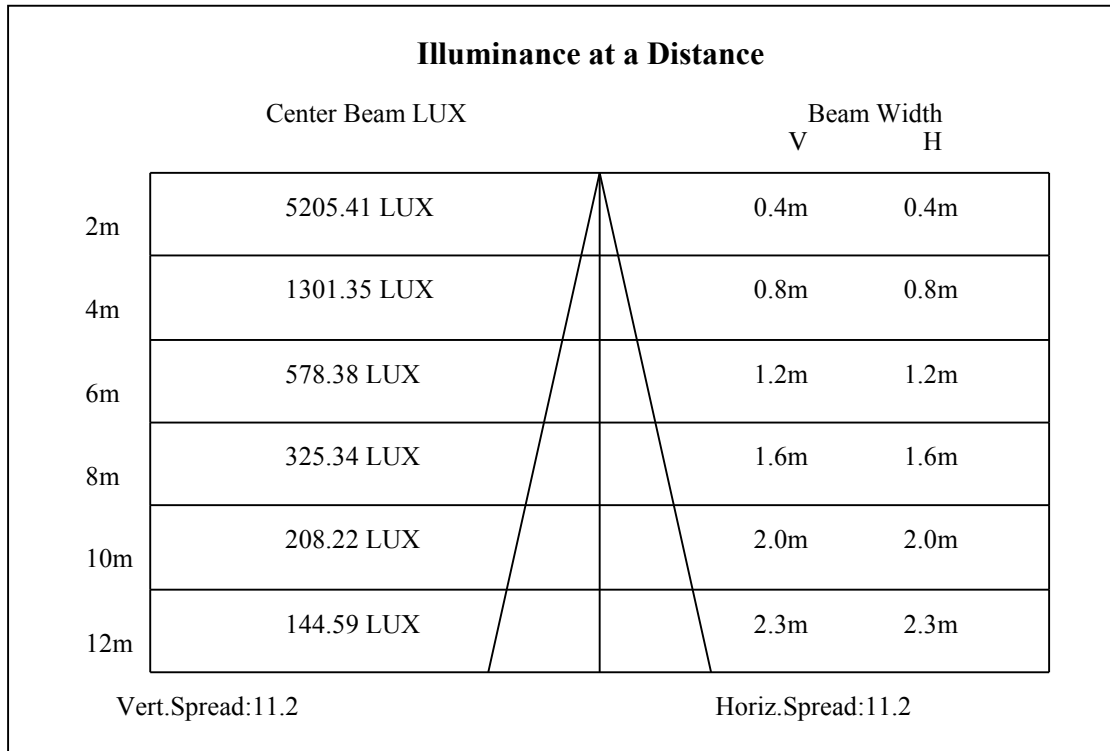
## ZONAL LUMEN SUMMARY

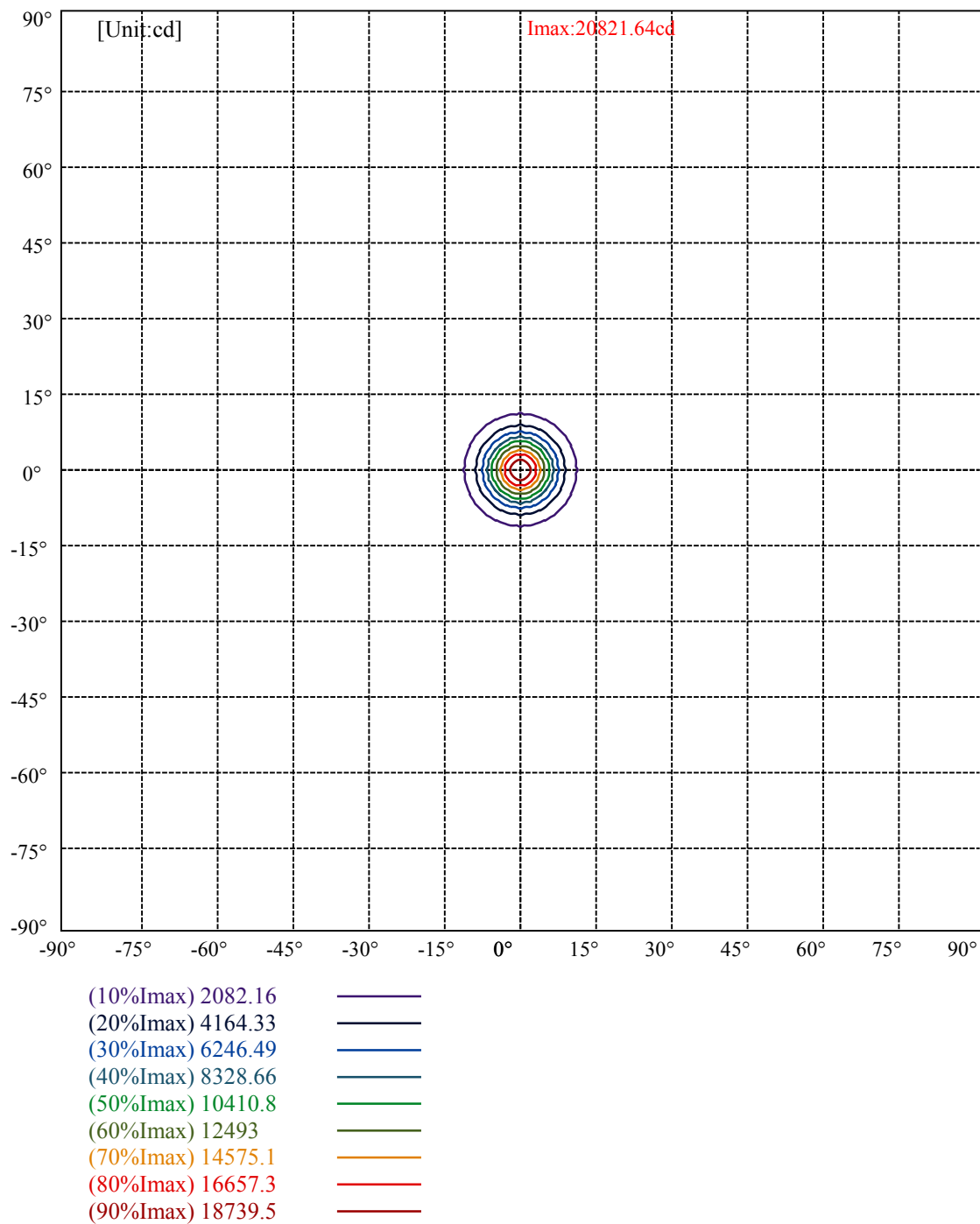
| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 1484.65 | 76.29% | 84.45%  |
| 0-40    | 1713.74 | 88.06% | 97.49%  |
| 0-60    | 1733.62 | 89.09% | 98.62%  |
| 0-90    | 1757.53 | 90.31% | 99.98%  |
| 0-120   | 1757.53 | 90.31% | 99.98%  |
| 0-180   | 1757.93 | 90.34% | 100.00% |
| 60-90   | 24.76   | 1.27%  | 1.41%   |
| 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%   |
| 0-27.84 | 1406.35 | 72.27% | 80.00%  |

## ZONAL LUMEN SUMMARY

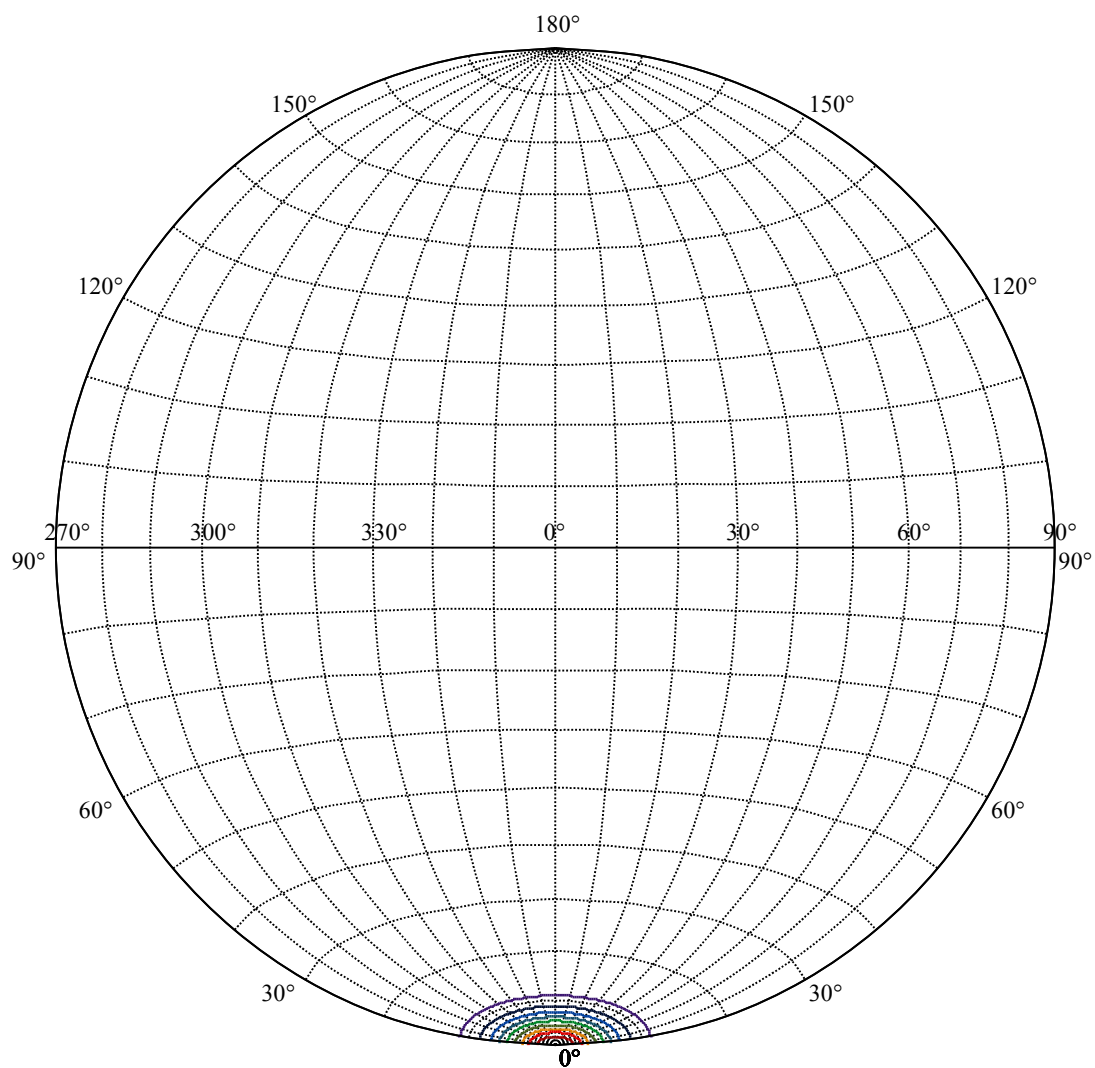
|         |        |
|---------|--------|
| 0-10    | 832.20 |
| 10-20   | 314.66 |
| 20-30   | 337.79 |
| 30-40   | 229.09 |
| 40-50   | 11.00  |
| 50-60   | 8.88   |
| 60-70   | 8.31   |
| 70-80   | 8.22   |
| 80-90   | 7.38   |
| 90-100  | 0.00   |
| 100-110 | 0.00   |
| 110-120 | 0.00   |
| 120-130 | 0.00   |
| 130-140 | 0.00   |
| 140-150 | 0.00   |
| 150-160 | 0.00   |
| 160-170 | 0.00   |
| 170-180 | 0.00   |











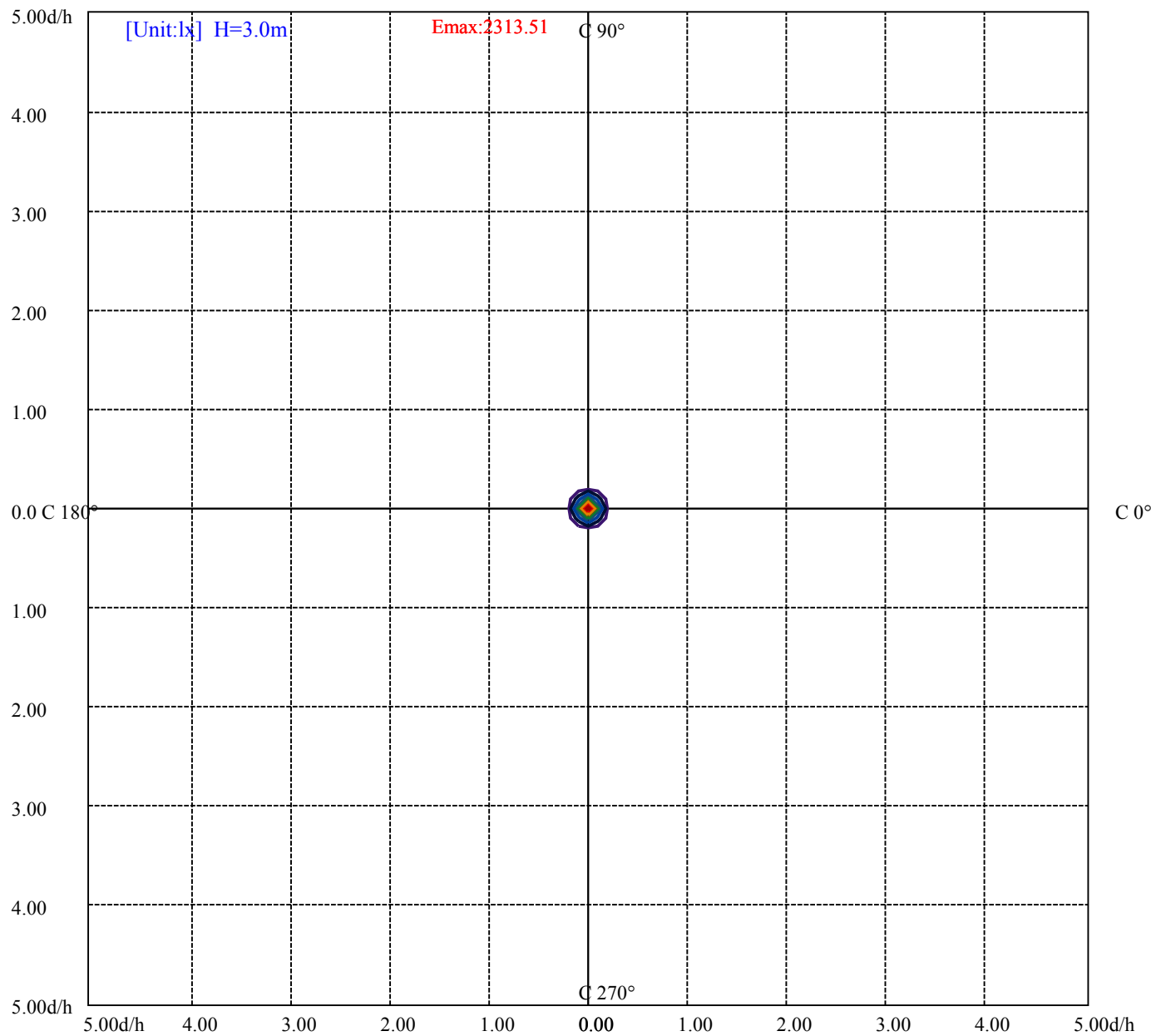
House

[Unit:cd]

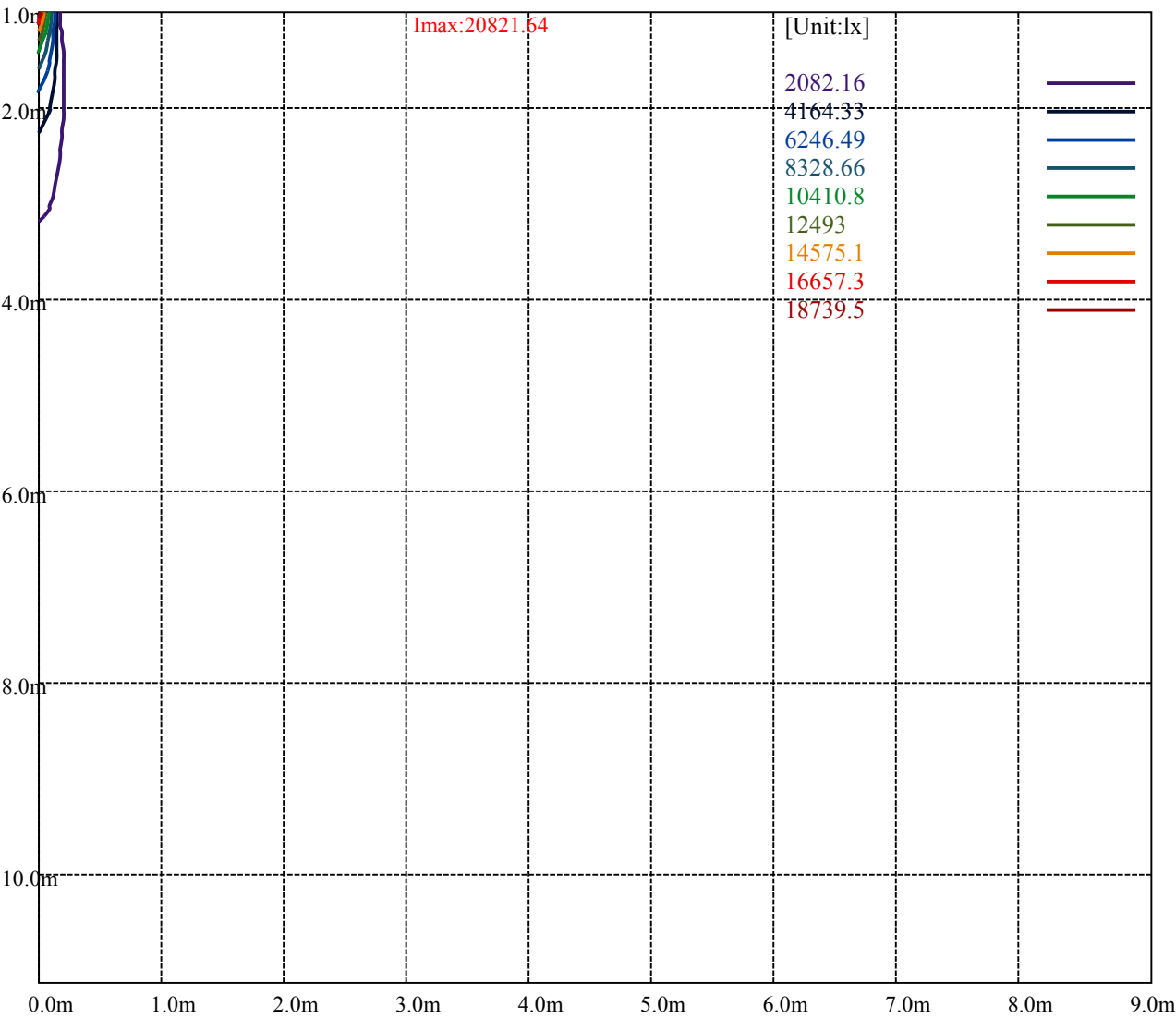
Road

**Imax:20821.64**

|           |         |   |
|-----------|---------|---|
| (10%Imax) | 2082.16 | — |
| (20%Imax) | 4164.33 | — |
| (30%Imax) | 6246.49 | — |
| (40%Imax) | 8328.66 | — |
| (50%Imax) | 10410.8 | — |
| (60%Imax) | 12493   | — |
| (70%Imax) | 14575.1 | — |
| (80%Imax) | 16657.3 | — |
| (90%Imax) | 18739.5 | — |



|                                 |   |
|---------------------------------|---|
| (10%E <sub>max</sub> ) 231.3511 | — |
| (20%E <sub>max</sub> ) 462.7011 | — |
| (30%E <sub>max</sub> ) 694.0522 | — |
| (40%E <sub>max</sub> ) 925.4033 | — |
| (50%E <sub>max</sub> ) 1156.755 | — |
| (60%E <sub>max</sub> ) 1388.1   | — |
| (70%E <sub>max</sub> ) 1619.456 | — |
| (80%E <sub>max</sub> ) 1850.811 | — |
| (90%E <sub>max</sub> ) 2082.156 | — |



Luminance Table

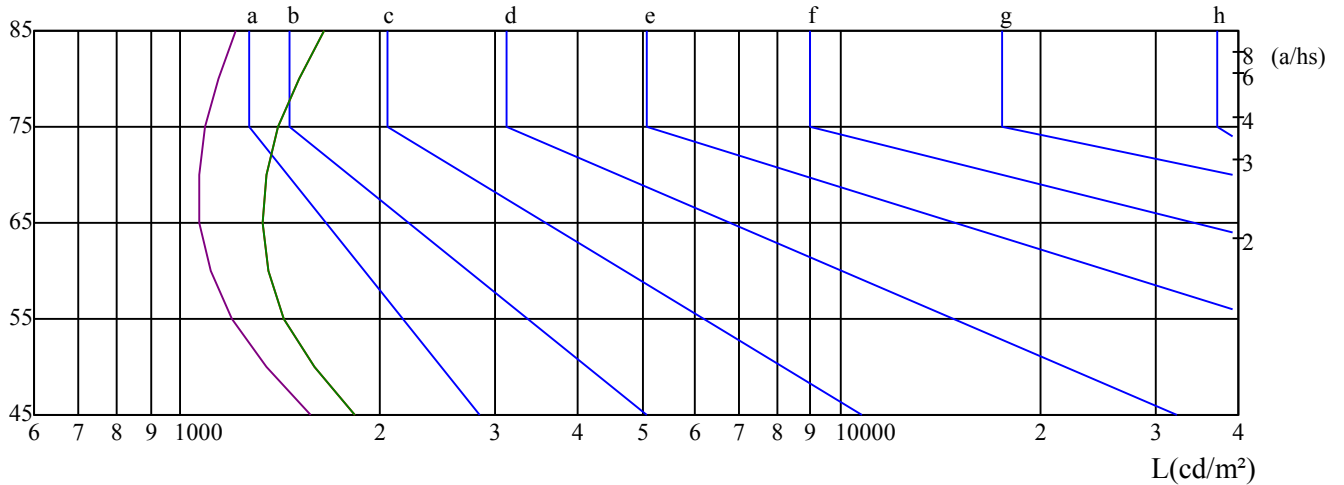
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85   |
|----------|------|------|------|------|------|------|------|------|------|
| C0       | 1832 | 1591 | 1437 | 1356 | 1327 | 1348 | 1408 | 1510 | 1651 |
| C45      | 1576 | 1348 | 1199 | 1113 | 1070 | 1066 | 1089 | 1139 | 1210 |
| C90      | 1832 | 1591 | 1437 | 1356 | 1327 | 1348 | 1408 | 1510 | 1651 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 3164       | 3164       | 3164    | 4801       | 4801       | 4801    | 13831      | 13831      | 13831   |

Glare Table

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

Luminance Limiting Curve

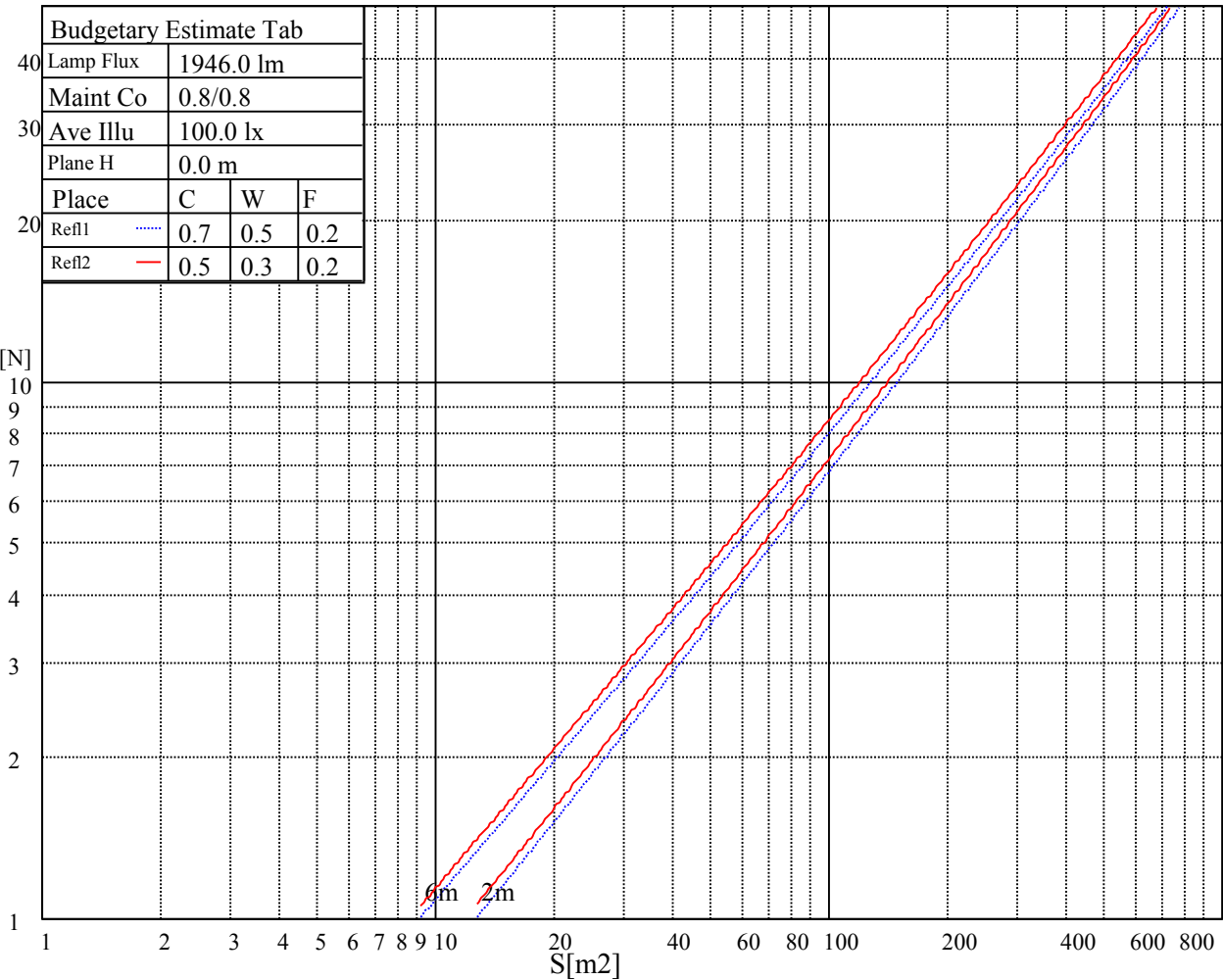
 $\gamma(^{\circ})$ 

C0 ———

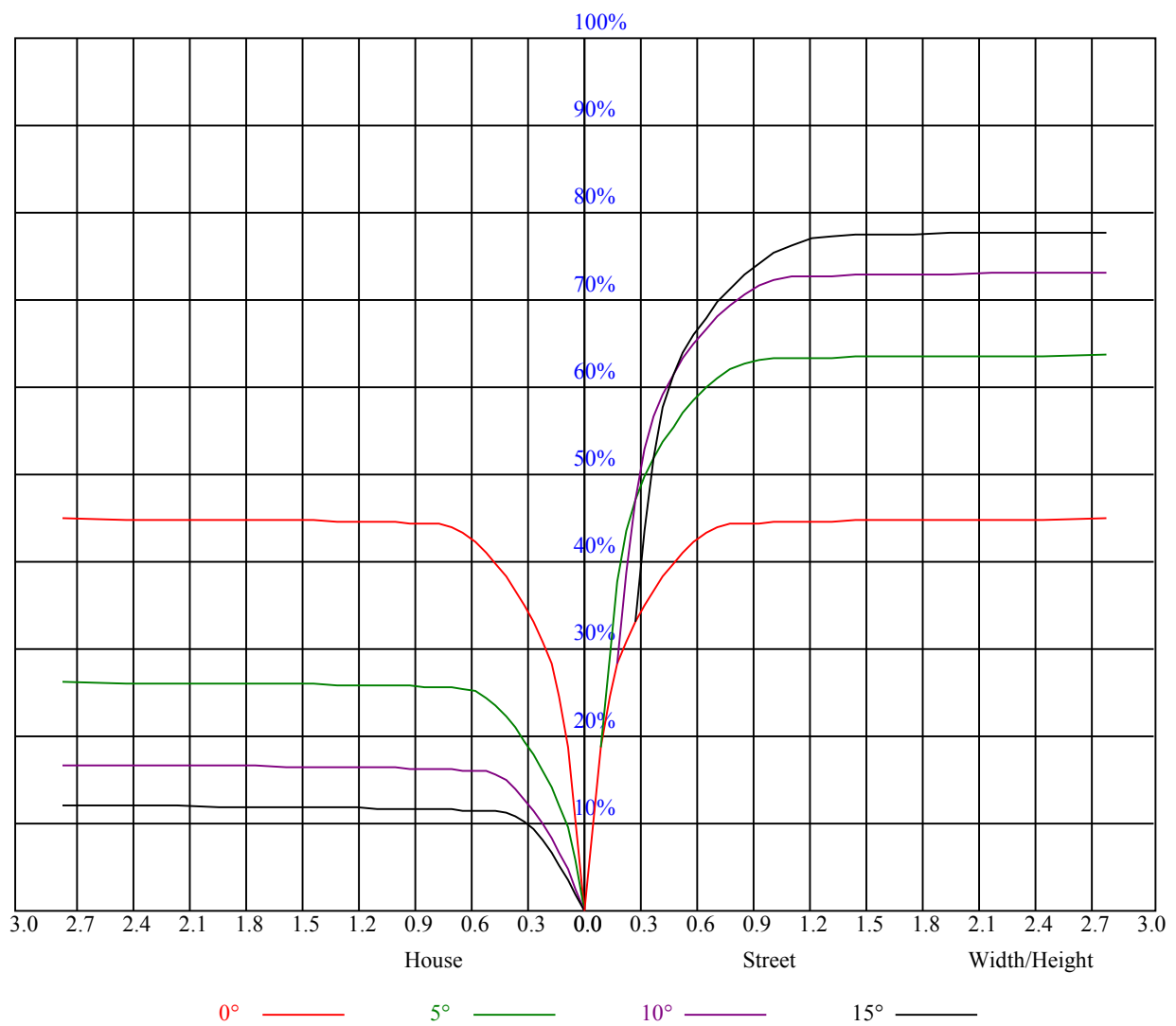
C45 ———

C90 ———

| 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  | 0.80             | 1.71 | 1.17 | 2.02 | 2.34  | 0.73           | 1.64 | 1.09 | 1.95 | 2.26 |
|                                                   | 3H  | 2.77             | 3.58 | 3.16 | 3.91 | 4.28  | 2.72           | 3.52 | 3.10 | 3.86 | 4.23 |
|                                                   | 4H  | 3.88             | 4.62 | 4.29 | 4.98 | 5.37  | 3.82           | 4.56 | 4.23 | 4.92 | 5.31 |
|                                                   | 6H  | 5.08             | 5.76 | 5.50 | 6.14 | 6.54  | 5.01           | 5.69 | 5.43 | 6.06 | 6.46 |
|                                                   | 8H  | 5.70             | 6.33 | 6.14 | 6.73 | 7.14  | 5.61           | 6.24 | 6.04 | 6.64 | 7.05 |
|                                                   | 12H | 6.66             | 7.27 | 7.10 | 7.65 | 8.08  | 6.54           | 7.15 | 6.98 | 7.53 | 7.97 |
| 4H                                                | 2H  | 1.19             | 1.93 | 1.59 | 2.28 | 2.67  | 1.13           | 1.87 | 1.53 | 2.22 | 2.61 |
|                                                   | 3H  | 3.47             | 4.07 | 3.88 | 4.48 | 4.89  | 3.42           | 4.03 | 3.84 | 4.44 | 4.85 |
|                                                   | 4H  | 4.75             | 5.30 | 5.19 | 5.72 | 6.17  | 4.71           | 5.25 | 5.15 | 5.68 | 6.13 |
|                                                   | 6H  | 6.06             | 6.53 | 6.54 | 6.98 | 7.46  | 6.00           | 6.47 | 6.48 | 6.92 | 7.40 |
|                                                   | 8H  | 6.80             | 7.23 | 7.28 | 7.68 | 8.16  | 6.72           | 7.15 | 7.20 | 7.60 | 8.08 |
|                                                   | 12H | 7.77             | 8.14 | 8.26 | 8.63 | 9.11  | 7.66           | 8.03 | 8.15 | 8.52 | 9.00 |
| 8H                                                | 4H  | 5.14             | 5.57 | 5.62 | 6.02 | 6.50  | 5.10           | 5.53 | 5.58 | 5.99 | 6.46 |
|                                                   | 6H  | 6.70             | 7.04 | 7.21 | 7.54 | 8.03  | 6.64           | 6.98 | 7.15 | 7.48 | 7.97 |
|                                                   | 8H  | 7.58             | 7.89 | 8.12 | 8.41 | 8.91  | 7.50           | 7.80 | 8.04 | 8.33 | 8.83 |
|                                                   | 12H | 8.70             | 8.96 | 9.22 | 9.46 | 10.04 | 8.59           | 8.85 | 9.11 | 9.35 | 9.93 |
| 12H                                               | 4H  | 5.21             | 5.59 | 5.71 | 6.08 | 6.55  | 5.18           | 5.55 | 5.67 | 6.04 | 6.52 |
|                                                   | 6H  | 7.04             | 7.15 | 7.39 | 7.62 | 8.17  | 6.99           | 7.10 | 7.33 | 7.57 | 8.12 |
|                                                   | 8H  | 7.83             | 8.09 | 8.36 | 8.59 | 9.17  | 7.76           | 8.02 | 8.28 | 8.51 | 9.10 |
| Variation with the observer position at spacings: |     |                  |      |      |      |       |                |      |      |      |      |
| S = 1.0H                                          |     | 5.9/-8.7         |      |      |      |       | 5.9/-8.7       |      |      |      |      |
| S = 1.5H                                          |     | 8.4/-7.0         |      |      |      |       | 8.4/-7.0       |      |      |      |      |
| S = 2.0H                                          |     | 10.2/-5.7        |      |      |      |       | 10.2/-5.7      |      |      |      |      |
| Standard tables:                                  |     | BK1              |      |      |      |       | BK1            |      |      |      |      |
| Uncorrected UGR                                   |     | -3.3             |      |      |      |       | -3.3           |      |      |      |      |
|                                                   |     |                  |      |      |      |       |                |      |      |      |      |



| 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     | 1.08                                    | 1.08 | 1.08 | 1.05 | 1.05 | 1.05 | 1.01 | 1.01 | 1.01 | 0.96 | 0.96 | 0.96 | 0.92 | 0.92 | 0.92 | 0.91 |
| 1     | 1.01                                    | 0.99 | 0.98 | 1.00 | 0.98 | 0.96 | 0.96 | 0.95 | 0.93 | 0.93 | 0.91 | 0.90 | 0.89 | 0.89 | 0.88 | 0.86 |
| 2     | 0.96                                    | 0.93 | 0.91 | 0.95 | 0.92 | 0.90 | 0.92 | 0.90 | 0.88 | 0.89 | 0.88 | 0.86 | 0.87 | 0.86 | 0.84 | 0.83 |
| 3     | 0.92                                    | 0.88 | 0.86 | 0.91 | 0.87 | 0.85 | 0.88 | 0.86 | 0.84 | 0.86 | 0.84 | 0.82 | 0.84 | 0.83 | 0.81 | 0.80 |
| 4     | 0.88                                    | 0.84 | 0.81 | 0.87 | 0.84 | 0.81 | 0.85 | 0.82 | 0.80 | 0.84 | 0.81 | 0.79 | 0.82 | 0.80 | 0.78 | 0.77 |
| 5     | 0.85                                    | 0.81 | 0.78 | 0.84 | 0.80 | 0.77 | 0.82 | 0.79 | 0.77 | 0.81 | 0.78 | 0.76 | 0.80 | 0.77 | 0.76 | 0.74 |
| 6     | 0.82                                    | 0.78 | 0.75 | 0.81 | 0.77 | 0.75 | 0.80 | 0.76 | 0.74 | 0.79 | 0.76 | 0.74 | 0.78 | 0.75 | 0.73 | 0.72 |
| 7     | 0.79                                    | 0.75 | 0.72 | 0.78 | 0.75 | 0.72 | 0.77 | 0.74 | 0.72 | 0.76 | 0.73 | 0.71 | 0.76 | 0.73 | 0.71 | 0.70 |
| 8     | 0.76                                    | 0.73 | 0.70 | 0.76 | 0.72 | 0.70 | 0.75 | 0.72 | 0.69 | 0.74 | 0.71 | 0.69 | 0.74 | 0.71 | 0.69 | 0.68 |
| 9     | 0.74                                    | 0.70 | 0.68 | 0.74 | 0.70 | 0.68 | 0.73 | 0.70 | 0.68 | 0.72 | 0.69 | 0.67 | 0.72 | 0.69 | 0.67 | 0.66 |
| 10    | 0.72                                    | 0.68 | 0.66 | 0.72 | 0.68 | 0.66 | 0.71 | 0.68 | 0.66 | 0.71 | 0.68 | 0.66 | 0.70 | 0.67 | 0.65 | 0.65 |





## 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    | 20553.75 | 21358.13 | 20868.75 | 19490.63 | 17201.25 | 14428.13 | 11953.13 | 9360.00 | 7284.38 |
| 45.0   | 21088.13 | 20705.63 | 19276.88 | 17308.13 | 14720.63 | 11970.00 | 9624.38  | 7216.88 | 5377.50 |
| 90.0   | 20593.13 | 19451.25 | 17302.50 | 14445.00 | 11147.63 | 9997.31  | 7623.00  | 5536.13 | 4022.44 |
| 135.0  | 21009.38 | 19811.25 | 17668.13 | 15378.75 | 12656.25 | 10350.00 | 7965.00  | 5855.63 | 4320.00 |
| 180.0  | 20553.75 | 18916.88 | 16790.63 | 13792.50 | 11050.31 | 9111.38  | 6831.00  | 4866.19 | 3488.06 |
| 225.0  | 21088.13 | 20317.50 | 18765.00 | 16413.75 | 13786.88 | 11091.94 | 9159.75  | 6743.81 | 5046.75 |
| 270.0  | 20593.13 | 21116.25 | 20295.00 | 18945.00 | 16295.63 | 13843.13 | 11401.88 | 8606.25 | 6648.75 |
| 315.0  | 21093.75 | 21200.63 | 20154.38 | 18213.75 | 15997.50 | 12656.25 | 10744.31 | 8294.63 | 6314.06 |
| 360.0  | 20553.75 | 21358.13 | 20868.75 | 19490.63 | 17201.25 | 14428.13 | 11953.13 | 9360.00 | 7284.38 |
| C/γ(°) | 9.0      | 10.0     | 11.0     | 12.0     | 13.0     | 14.0     | 15.0     | 16.0    | 17.0    |
| 0.0    | 5225.63  | 3577.50  | 2896.88  | 1906.31  | 1501.31  | 1271.81  | 1114.31  | 987.19  | 925.31  |
| 45.0   | 3538.13  | 2874.38  | 1940.63  | 1551.38  | 1252.69  | 1099.69  | 997.31   | 914.63  | 873.56  |
| 90.0   | 2885.06  | 2024.44  | 1617.19  | 1349.44  | 1109.87  | 1014.98  | 938.64   | 881.55  | 844.43  |
| 135.0  | 3009.38  | 2468.25  | 1740.94  | 1425.38  | 1172.81  | 1046.25  | 960.19   | 897.19  | 856.69  |
| 180.0  | 2557.13  | 1861.31  | 1513.13  | 1217.81  | 1103.01  | 988.59   | 924.13   | 874.13  | 842.74  |
| 225.0  | 3690.56  | 2548.69  | 1972.13  | 1585.69  | 1302.19  | 1120.56  | 1018.52  | 936.62  | 890.55  |
| 270.0  | 4950.00  | 3324.38  | 2846.25  | 1904.63  | 1479.94  | 1264.50  | 1114.88  | 1003.50 | 929.81  |
| 315.0  | 4431.38  | 3169.13  | 2237.63  | 1699.31  | 1401.19  | 1121.01  | 1032.92  | 953.72  | 899.66  |
| 360.0  | 5225.63  | 3577.50  | 2896.88  | 1906.31  | 1501.31  | 1271.81  | 1114.31  | 987.19  | 925.31  |
| C/γ(°) | 18.0     | 19.0     | 20.0     | 21.0     | 22.0     | 23.0     | 24.0     | 25.0    | 26.0    |
| 0.0    | 883.13   | 847.13   | 819.56   | 798.19   | 777.94   | 761.06   | 745.31   | 729.56  | 717.75  |
| 45.0   | 842.63   | 817.88   | 795.94   | 777.94   | 761.63   | 745.88   | 735.19   | 723.38  | 712.13  |
| 90.0   | 822.43   | 802.80   | 782.21   | 768.15   | 754.37   | 741.43   | 729.84   | 719.38  | 707.57  |
| 135.0  | 831.38   | 808.31   | 790.31   | 776.25   | 758.25   | 749.25   | 735.19   | 723.38  | 714.94  |
| 180.0  | 816.58   | 793.52   | 776.03   | 760.44   | 744.69   | 732.60   | 723.38   | 709.93  | 699.69  |
| 225.0  | 852.81   | 824.63   | 803.36   | 780.58   | 761.63   | 748.97   | 734.79   | 719.83  | 709.59  |
| 270.0  | 887.06   | 851.63   | 824.63   | 804.38   | 784.13   | 768.38   | 752.06   | 736.31  | 726.19  |
| 315.0  | 861.98   | 831.77   | 809.55   | 787.44   | 768.88   | 754.09   | 741.15   | 723.38  | 711.68  |
| 360.0  | 883.13   | 847.13   | 819.56   | 798.19   | 777.94   | 761.06   | 745.31   | 729.56  | 717.75  |
| C/γ(°) | 27.0     | 28.0     | 29.0     | 30.0     | 31.0     | 32.0     | 33.0     | 34.0    | 35.0    |
| 0.0    | 704.81   | 691.31   | 682.88   | 672.75   | 657.56   | 646.88   | 636.75   | 619.88  | 571.50  |
| 45.0   | 700.88   | 688.50   | 680.06   | 666.56   | 653.06   | 644.06   | 629.44   | 566.44  | 475.31  |
| 90.0   | 696.83   | 682.93   | 672.69   | 661.39   | 648.39   | 625.05   | 557.89   | 455.96  | 338.18  |
| 135.0  | 705.38   | 692.44   | 680.06   | 668.25   | 655.88   | 642.94   | 601.88   | 510.75  | 393.75  |
| 180.0  | 691.31   | 679.84   | 667.80   | 656.10   | 646.76   | 631.01   | 593.21   | 503.27  | 401.34  |
| 225.0  | 700.20   | 688.56   | 675.06   | 663.47   | 650.98   | 638.83   | 623.31   | 556.76  | 463.73  |
| 270.0  | 714.94   | 699.19   | 687.94   | 673.88   | 659.25   | 649.69   | 637.31   | 604.69  | 522.56  |
| 315.0  | 698.91   | 686.81   | 674.55   | 661.89   | 648.34   | 638.16   | 624.88   | 586.80  | 502.48  |
| 360.0  | 704.81   | 691.31   | 682.88   | 672.75   | 657.56   | 646.88   | 636.75   | 619.88  | 571.50  |
| C/γ(°) | 36.0     | 37.0     | 38.0     | 39.0     | 40.0     | 41.0     | 42.0     | 43.0    | 44.0    |
| 0.0    | 486.56   | 367.88   | 295.88   | 136.74   | 64.41    | 31.67    | 22.95    | 17.44   | 15.30   |
| 45.0   | 373.50   | 284.63   | 146.31   | 68.18    | 30.43    | 23.12    | 17.10    | 14.51   | 13.61   |
| 90.0   | 232.31   | 117.06   | 56.76    | 28.41    | 21.09    | 15.98    | 14.51    | 13.84   | 13.44   |
| 135.0  | 284.06   | 165.83   | 80.94    | 31.44    | 23.29    | 17.89    | 15.19    | 13.78   | 13.16   |
| 180.0  | 277.31   | 161.27   | 80.78    | 32.91    | 22.56    | 16.65    | 14.34    | 13.44   | 12.99   |
| 225.0  | 347.85   | 234.06   | 139.22   | 57.43    | 30.54    | 21.94    | 17.10    | 14.79   | 14.12   |
| 270.0  | 424.13   | 302.06   | 288.00   | 97.26    | 38.36    | 27.68    | 19.46    | 16.37   | 14.91   |
| 315.0  | 386.61   | 266.12   | 166.22   | 82.86    | 32.12    | 24.64    | 18.51    | 14.91   | 14.12   |
| 360.0  | 486.56   | 367.88   | 295.88   | 136.74   | 64.41    | 31.67    | 22.95    | 17.44   | 15.30   |

## Nata 3-2031-M

| Intensity data(cd) |       |       |       |       |       |       |       |       |       | Appendix Page: 18 Total:19 |  |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------------|--|
| C/γ(°)             | 45.0  | 46.0  | 47.0  | 48.0  | 49.0  | 50.0  | 51.0  | 52.0  | 53.0  |                            |  |
| 0.0                | 13.73 | 13.22 | 12.71 | 12.32 | 11.93 | 11.48 | 11.14 | 10.91 | 10.58 |                            |  |
| 45.0               | 13.16 | 12.71 | 12.32 | 11.98 | 11.59 | 11.25 | 10.97 | 10.69 | 10.41 |                            |  |
| 90.0               | 13.05 | 12.54 | 12.15 | 11.81 | 11.48 | 11.14 | 10.80 | 10.46 | 10.24 |                            |  |
| 135.0              | 12.77 | 12.26 | 11.93 | 11.53 | 11.19 | 10.86 | 10.63 | 10.29 | 10.01 |                            |  |
| 180.0              | 12.60 | 12.21 | 11.81 | 11.48 | 11.19 | 10.86 | 10.58 | 10.29 | 10.07 |                            |  |
| 225.0              | 13.67 | 13.22 | 12.77 | 12.38 | 11.93 | 11.59 | 11.31 | 11.03 | 10.74 |                            |  |
| 270.0              | 13.84 | 13.39 | 12.88 | 12.49 | 12.09 | 11.64 | 11.31 | 11.03 | 10.69 |                            |  |
| 315.0              | 13.61 | 13.11 | 12.66 | 12.26 | 11.81 | 11.53 | 11.19 | 10.86 | 10.58 |                            |  |
| 360.0              | 13.73 | 13.22 | 12.71 | 12.32 | 11.93 | 11.48 | 11.14 | 10.91 | 10.58 |                            |  |
| C/γ(°)             | 54.0  | 55.0  | 56.0  | 57.0  | 58.0  | 59.0  | 60.0  | 61.0  | 62.0  |                            |  |
| 0.0                | 10.29 | 10.07 | 9.84  | 9.62  | 9.45  | 9.23  | 9.06  | 8.94  | 8.83  |                            |  |
| 45.0               | 10.18 | 9.90  | 9.68  | 9.51  | 9.34  | 9.17  | 9.00  | 8.83  | 8.72  |                            |  |
| 90.0               | 10.01 | 9.68  | 9.51  | 9.28  | 9.17  | 9.00  | 8.89  | 8.66  | 8.61  |                            |  |
| 135.0              | 9.79  | 9.51  | 9.34  | 9.17  | 9.06  | 8.89  | 8.78  | 8.66  | 8.49  |                            |  |
| 180.0              | 9.79  | 9.51  | 9.28  | 9.11  | 8.94  | 8.83  | 8.72  | 8.55  | 8.44  |                            |  |
| 225.0              | 10.41 | 10.18 | 9.96  | 9.68  | 9.45  | 9.28  | 9.06  | 8.83  | 8.66  |                            |  |
| 270.0              | 10.46 | 10.24 | 9.96  | 9.73  | 9.51  | 9.34  | 9.17  | 9.06  | 8.89  |                            |  |
| 315.0              | 10.29 | 10.01 | 9.84  | 9.62  | 9.39  | 9.23  | 9.06  | 8.89  | 8.78  |                            |  |
| 360.0              | 10.29 | 10.07 | 9.84  | 9.62  | 9.45  | 9.23  | 9.06  | 8.94  | 8.83  |                            |  |
| C/γ(°)             | 63.0  | 64.0  | 65.0  | 66.0  | 67.0  | 68.0  | 69.0  | 70.0  | 71.0  |                            |  |
| 0.0                | 8.72  | 8.61  | 8.44  | 8.38  | 8.27  | 8.21  | 8.10  | 8.10  | 7.99  |                            |  |
| 45.0               | 8.61  | 8.44  | 8.38  | 8.27  | 8.21  | 8.16  | 8.10  | 7.99  | 7.93  |                            |  |
| 90.0               | 8.49  | 8.38  | 8.33  | 8.21  | 8.16  | 8.10  | 8.04  | 7.99  | 7.93  |                            |  |
| 135.0              | 8.44  | 8.27  | 8.21  | 8.16  | 8.04  | 7.99  | 7.93  | 7.88  | 7.82  |                            |  |
| 180.0              | 8.33  | 8.27  | 8.16  | 8.10  | 7.99  | 7.93  | 7.88  | 7.82  | 7.76  |                            |  |
| 225.0              | 8.55  | 8.44  | 8.27  | 8.21  | 8.16  | 8.10  | 7.99  | 7.93  | 7.88  |                            |  |
| 270.0              | 8.78  | 8.61  | 8.55  | 8.44  | 8.33  | 8.21  | 8.16  | 8.16  | 8.04  |                            |  |
| 315.0              | 8.66  | 8.55  | 8.44  | 8.33  | 8.27  | 8.16  | 8.10  | 7.99  | 7.93  |                            |  |
| 360.0              | 8.72  | 8.61  | 8.44  | 8.38  | 8.27  | 8.21  | 8.10  | 8.10  | 7.99  |                            |  |
| C/γ(°)             | 72.0  | 73.0  | 74.0  | 75.0  | 76.0  | 77.0  | 78.0  | 79.0  | 80.0  |                            |  |
| 0.0                | 7.93  | 7.88  | 7.82  | 7.76  | 7.76  | 7.71  | 7.71  | 7.65  | 7.65  |                            |  |
| 45.0               | 7.88  | 7.88  | 7.82  | 7.76  | 7.71  | 7.71  | 7.65  | 7.65  | 7.65  |                            |  |
| 90.0               | 7.93  | 7.88  | 7.88  | 7.82  | 7.76  | 7.76  | 7.76  | 7.76  | 7.71  |                            |  |
| 135.0              | 7.82  | 7.76  | 7.71  | 7.71  | 7.65  | 7.59  | 7.59  | 7.59  | 7.54  |                            |  |
| 180.0              | 7.76  | 7.71  | 7.65  | 7.65  | 7.65  | 7.59  | 7.54  | 7.54  | 7.54  |                            |  |
| 225.0              | 7.82  | 7.82  | 7.76  | 7.71  | 7.71  | 7.65  | 7.65  | 7.65  | 7.59  |                            |  |
| 270.0              | 7.99  | 7.99  | 7.93  | 7.88  | 7.88  | 7.82  | 7.82  | 7.76  | 7.76  |                            |  |
| 315.0              | 7.93  | 7.82  | 7.82  | 7.76  | 7.71  | 7.71  | 7.65  | 7.65  | 7.59  |                            |  |
| 360.0              | 7.93  | 7.88  | 7.82  | 7.76  | 7.76  | 7.71  | 7.71  | 7.65  | 7.65  |                            |  |
| C/γ(°)             | 81.0  | 82.0  | 83.0  | 84.0  | 85.0  | 86.0  | 87.0  | 88.0  | 89.0  |                            |  |
| 0.0                | 7.59  | 7.54  | 7.54  | 7.48  | 7.48  | 7.48  | 7.48  | 7.43  | 7.43  |                            |  |
| 45.0               | 7.59  | 7.59  | 7.54  | 7.54  | 7.48  | 7.48  | 7.43  | 7.37  | 7.43  |                            |  |
| 90.0               | 7.71  | 7.71  | 7.76  | 7.65  | 7.59  | 7.48  | 7.43  | 7.43  | 7.43  |                            |  |
| 135.0              | 7.54  | 7.54  | 7.48  | 7.48  | 7.48  | 7.43  | 7.43  | 7.37  | 7.37  |                            |  |
| 180.0              | 7.48  | 7.48  | 7.48  | 7.48  | 7.43  | 7.43  | 7.43  | 7.37  | 7.43  |                            |  |
| 225.0              | 7.59  | 7.59  | 7.54  | 7.54  | 7.48  | 7.48  | 7.43  | 7.43  | 7.37  |                            |  |
| 270.0              | 7.76  | 7.71  | 7.76  | 7.82  | 7.76  | 7.71  | 7.48  | 7.48  | 7.43  |                            |  |
| 315.0              | 7.59  | 7.59  | 7.54  | 7.54  | 7.48  | 7.48  | 7.43  | 7.43  | 7.43  |                            |  |
| 360.0              | 7.59  | 7.54  | 7.54  | 7.48  | 7.48  | 7.48  | 7.48  | 7.43  | 7.43  |                            |  |

## Intensity data(cd)

Appendix Page: 19 Total:19

|                       |      |
|-----------------------|------|
| C/ $\gamma(^{\circ})$ | 90.0 |
| 0.0                   | 7.43 |
| 45.0                  | 7.43 |
| 90.0                  | 7.43 |
| 135.0                 | 7.43 |
| 180.0                 | 7.37 |
| 225.0                 | 7.43 |
| 270.0                 | 7.43 |
| 315.0                 | 7.37 |
| 360.0                 | 7.43 |