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## NATA

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|                            |                     |
|----------------------------|---------------------|
| LumCAT: 3-2042-M           |                     |
| Luminaire: 92.70.134.00    |                     |
| Report No: NATA0100        | Voltage(V): 34.9000 |
| Test No: GC2019010910      | Current(A): 0.7000  |
| LampCAT: OSRAM SOLERIQ S19 | Power (W): 24.4300  |
| Lamp flux(lm): 3440.0      | PF: 0.0000          |
| Number of Lamps: 1         | Ballast type: DC    |
| Length(mm): 84             | Width(mm): 84       |
| Phm Type: C                | Height(mm): 0       |

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## Photometric Results

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Lumens(lm): 2939.34  
Efficiency(%): 85.45%  
Lumens(lm)/Power(W): 120.49  
Central intensity(cd): 17940.940  
Maximum intensity(cd): 17940.940  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=17.3  
                                  [C90/270]Total=17.3  
Field angle(10%Imax): [C0/180]Total=35.3  
                                  [C90/270]Total=35.3  
Maximum s/h(1/2): C0\_180=0.30 C90\_270=0.30  
Maximum s/h(1/4): C0\_180=0.29 C90\_270=0.29  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 85.57%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.553%

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Equipment: GMS1980  
Temperature(°C): 10.0

Date: 2019/1/9  
Humidity(%): 65.0%

Operator: NT07  
Distance(m): 7.50

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 17940.938     | 4.292       | 4.292     | .125%       | .146%      |
| 1.0                | 17895.938     | 34.250      | 38.542    | .996%       | 1.311%     |
| 2.0                | 17729.297     | 67.852      | 106.394   | 1.972%      | 3.620%     |
| 3.0                | 17351.719     | 99.585      | 205.979   | 2.895%      | 7.008%     |
| 4.0                | 16706.953     | 127.801     | 333.78    | 3.715%      | 11.356%    |
| 5.0                | 15619.219     | 149.282     | 483.062   | 4.340%      | 16.434%    |
| 6.0                | 13866.188     | 158.944     | 642.006   | 4.620%      | 21.842%    |
| 7.0                | 11918.883     | 159.288     | 801.293   | 4.630%      | 27.261%    |
| 8.0                | 10287.563     | 157.007     | 958.3     | 4.564%      | 32.603%    |
| 9.0                | 8306.930      | 142.503     | 1100.804  | 4.143%      | 37.451%    |
| 10.0               | 6562.969      | 124.975     | 1225.778  | 3.633%      | 41.702%    |
| 11.0               | 5274.773      | 110.371     | 1336.149  | 3.208%      | 45.457%    |
| 12.0               | 4263.117      | 97.198      | 1433.347  | 2.826%      | 48.764%    |
| 13.0               | 3496.781      | 86.260      | 1519.607  | 2.508%      | 51.699%    |
| 14.0               | 2931.328      | 77.766      | 1597.373  | 2.261%      | 54.345%    |
| 15.0               | 2551.641      | 72.421      | 1669.795  | 2.105%      | 56.808%    |
| 16.0               | 2158.102      | 65.232      | 1735.027  | 1.896%      | 59.028%    |
| 17.0               | 1913.906      | 61.363      | 1796.39   | 1.784%      | 61.115%    |
| 18.0               | 1727.789      | 58.550      | 1854.94   | 1.702%      | 63.107%    |
| 19.0               | 1583.438      | 56.532      | 1911.472  | 1.643%      | 65.031%    |
| 20.0               | 1466.648      | 55.008      | 1966.48   | 1.599%      | 66.902%    |
| 21.0               | 1382.555      | 54.333      | 2020.813  | 1.579%      | 68.750%    |
| 22.0               | 1313.297      | 53.950      | 2074.763  | 1.568%      | 70.586%    |
| 23.0               | 1259.508      | 53.967      | 2128.731  | 1.569%      | 72.422%    |
| 24.0               | 1219.008      | 54.372      | 2183.102  | 1.581%      | 74.272%    |
| 25.0               | 1184.977      | 54.917      | 2238.019  | 1.596%      | 76.140%    |
| 26.0               | 1150.327      | 55.299      | 2293.318  | 1.608%      | 78.021%    |
| 27.0               | 1129.345      | 56.224      | 2349.543  | 1.634%      | 79.934%    |
| 28.0               | 1109.060      | 57.097      | 2406.64   | 1.660%      | 81.877%    |
| 29.0               | 1088.529      | 57.871      | 2464.511  | 1.682%      | 83.846%    |
| 30.0               | 1065.509      | 58.422      | 2522.933  | 1.698%      | 85.833%    |
| 31.0               | 1015.805      | 57.372      | 2580.306  | 1.668%      | 87.785%    |
| 32.0               | 936.422       | 54.417      | 2634.722  | 1.582%      | 89.636%    |
| 33.0               | 843.230       | 50.362      | 2685.085  | 1.464%      | 91.350%    |
| 34.0               | 734.358       | 45.032      | 2730.117  | 1.309%      | 92.882%    |
| 35.0               | 622.695       | 39.167      | 2769.284  | 1.139%      | 94.214%    |
| 36.0               | 509.456       | 32.838      | 2802.122  | .955%       | 95.332%    |
| 37.0               | 396.942       | 26.196      | 2828.318  | .762%       | 96.223%    |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 287.065       | 19.381      | 2847.699  | .563%       | 96.882%    |
| 39.0               | 209.475       | 14.456      | 2862.155  | .420%       | 97.374%    |
| 40.0               | 106.446       | 7.503       | 2869.658  | .218%       | 97.629%    |
| 41.0               | 52.073        | 3.746       | 2873.405  | .109%       | 97.757%    |
| 42.0               | 35.726        | 2.621       | 2876.026  | .076%       | 97.846%    |
| 43.0               | 28.680        | 2.145       | 2878.171  | .062%       | 97.919%    |
| 44.0               | 22.430        | 1.709       | 2879.88   | .050%       | 97.977%    |
| 45.0               | 18.295        | 1.419       | 2881.299  | .041%       | 98.025%    |
| 46.0               | 17.297        | 1.364       | 2882.663  | .040%       | 98.072%    |
| 47.0               | 16.826        | 1.349       | 2884.012  | .039%       | 98.118%    |
| 48.0               | 16.425        | 1.339       | 2885.351  | .039%       | 98.163%    |
| 49.0               | 16.080        | 1.331       | 2886.682  | .039%       | 98.208%    |
| 50.0               | 15.743        | 1.322       | 2888.004  | .038%       | 98.253%    |
| 51.0               | 15.434        | 1.315       | 2889.32   | .038%       | 98.298%    |
| 52.0               | 15.124        | 1.307       | 2890.627  | .038%       | 98.343%    |
| 53.0               | 14.850        | 1.301       | 2891.927  | .038%       | 98.387%    |
| 54.0               | 14.597        | 1.295       | 2893.222  | .038%       | 98.431%    |
| 55.0               | 14.386        | 1.292       | 2894.514  | .038%       | 98.475%    |
| 56.0               | 14.161        | 1.287       | 2895.802  | .037%       | 98.519%    |
| 57.0               | 13.985        | 1.286       | 2897.088  | .037%       | 98.562%    |
| 58.0               | 13.816        | 1.285       | 2898.373  | .037%       | 98.606%    |
| 59.0               | 13.662        | 1.284       | 2899.657  | .037%       | 98.650%    |
| 60.0               | 13.500        | 1.282       | 2900.939  | .037%       | 98.693%    |
| 61.0               | 13.373        | 1.283       | 2902.222  | .037%       | 98.737%    |
| 62.0               | 13.240        | 1.282       | 2903.504  | .037%       | 98.781%    |
| 63.0               | 13.127        | 1.283       | 2904.786  | .037%       | 98.824%    |
| 64.0               | 12.994        | 1.281       | 2906.067  | .037%       | 98.868%    |
| 65.0               | 12.909        | 1.283       | 2907.35   | .037%       | 98.912%    |
| 66.0               | 12.811        | 1.283       | 2908.634  | .037%       | 98.955%    |
| 67.0               | 12.727        | 1.285       | 2909.918  | .037%       | 98.999%    |
| 68.0               | 12.656        | 1.287       | 2911.205  | .037%       | 99.043%    |
| 69.0               | 12.600        | 1.290       | 2912.495  | .037%       | 99.087%    |
| 70.0               | 12.523        | 1.290       | 2913.785  | .038%       | 99.130%    |
| 71.0               | 12.466        | 1.293       | 2915.078  | .038%       | 99.174%    |
| 72.0               | 12.424        | 1.296       | 2916.374  | .038%       | 99.219%    |
| 73.0               | 12.382        | 1.298       | 2917.672  | .038%       | 99.263%    |
| 74.0               | 12.312        | 1.298       | 2918.97   | .038%       | 99.307%    |
| 75.0               | 12.298        | 1.303       | 2920.273  | .038%       | 99.351%    |

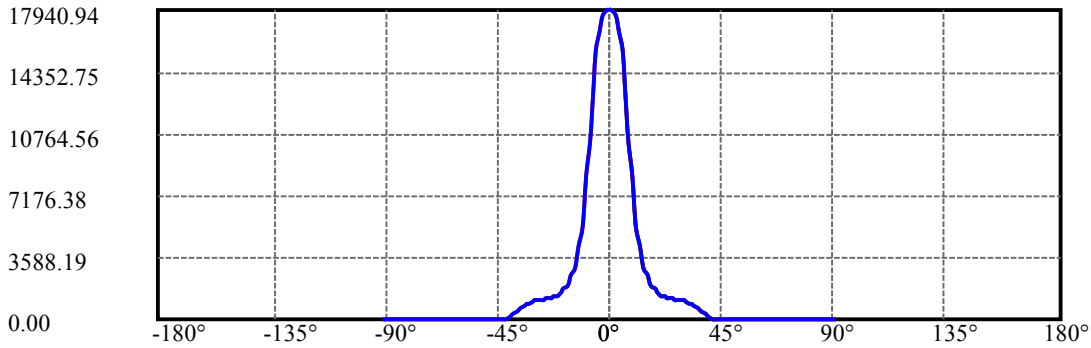
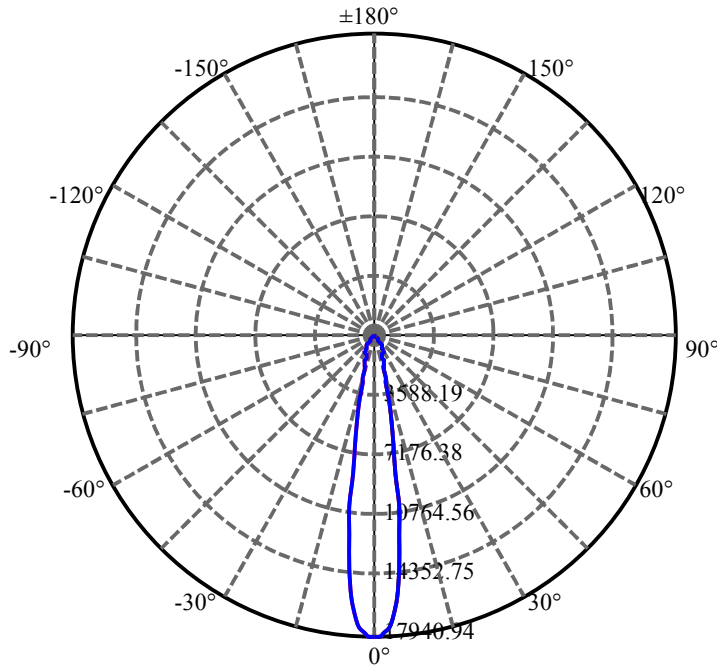
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 12.270        | 1.306       | 2921.578  | .038%       | 99.396%    |
| 77.0               | 12.227        | 1.306       | 2922.885  | .038%       | 99.440%    |
| 78.0               | 12.199        | 1.309       | 2924.193  | .038%       | 99.485%    |
| 79.0               | 12.171        | 1.310       | 2925.503  | .038%       | 99.529%    |
| 80.0               | 12.157        | 1.313       | 2926.816  | .038%       | 99.574%    |
| 81.0               | 12.136        | 1.314       | 2928.131  | .038%       | 99.618%    |
| 82.0               | 12.122        | 1.316       | 2929.447  | .038%       | 99.663%    |
| 83.0               | 12.094        | 1.316       | 2930.763  | .038%       | 99.708%    |
| 84.0               | 12.087        | 1.318       | 2932.082  | .038%       | 99.753%    |
| 85.0               | 12.073        | 1.319       | 2933.401  | .038%       | 99.798%    |
| 86.0               | 12.052        | 1.318       | 2934.719  | .038%       | 99.843%    |
| 87.0               | 12.087        | 1.324       | 2936.042  | .038%       | 99.888%    |
| 88.0               | 12.073        | 1.323       | 2937.366  | .038%       | 99.933%    |
| 89.0               | 12.045        | 1.321       | 2938.686  | .038%       | 99.978%    |
| 90.0               | 12.009        | 0.658       | 2939.345  | .019%       | 100.000%   |

ZONAL LUMEN SUMMARY

| Zone    | Lumens  | %Lamp  | %Fixt   |
|---------|---------|--------|---------|
| 0-30    | 2522.93 | 73.34% | 85.83%  |
| 0-40    | 2869.66 | 83.42% | 97.63%  |
| 0-60    | 2900.94 | 84.33% | 98.69%  |
| 0-90    | 2938.69 | 85.43% | 99.98%  |
| 0-120   | 2938.69 | 85.43% | 99.98%  |
| 0-180   | 2939.34 | 85.45% | 100.00% |
| 60-90   | 39.03   | 1.13%  | 1.33%   |
| 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%   |
| 0-27.03 | 2351.48 | 68.36% | 80.00%  |

ZONAL LUMEN SUMMARY

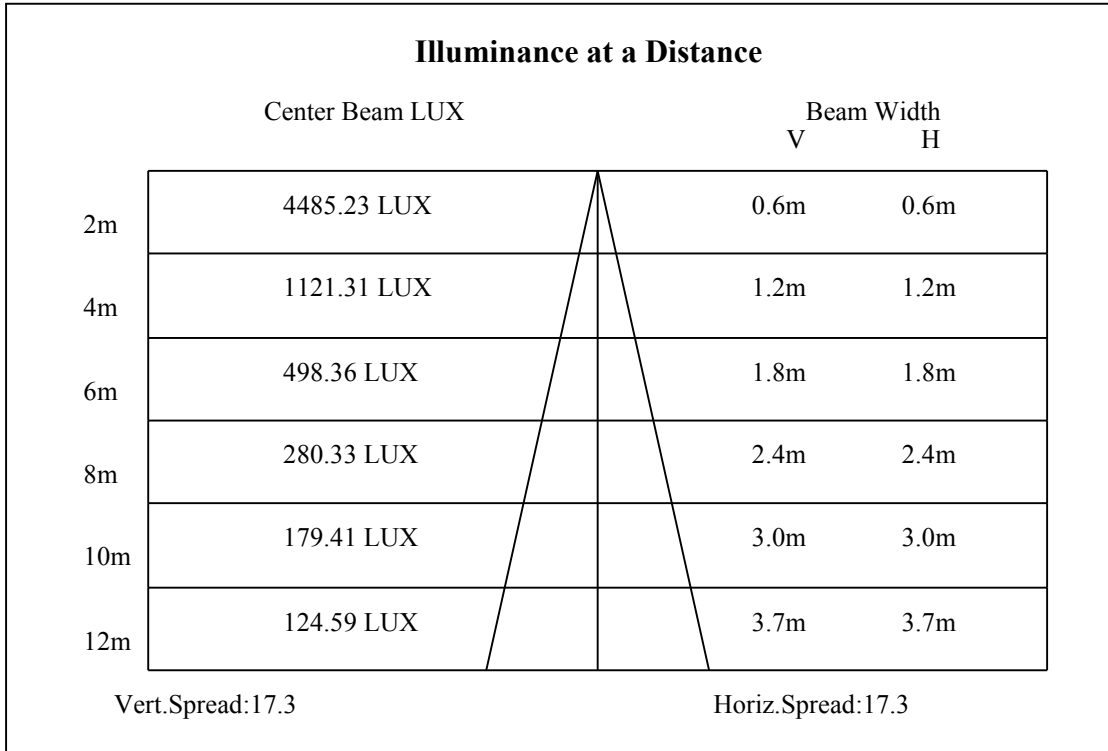
|         |         |
|---------|---------|
| 0-10    | 1225.78 |
| 10-20   | 740.70  |
| 20-30   | 556.45  |
| 30-40   | 346.73  |
| 40-50   | 18.35   |
| 50-60   | 12.93   |
| 60-70   | 12.85   |
| 70-80   | 13.03   |
| 80-90   | 11.87   |
| 90-100  | 0.00    |
| 100-110 | 0.00    |
| 110-120 | 0.00    |
| 120-130 | 0.00    |
| 130-140 | 0.00    |
| 140-150 | 0.00    |
| 150-160 | 0.00    |
| 160-170 | 0.00    |
| 170-180 | 0.00    |

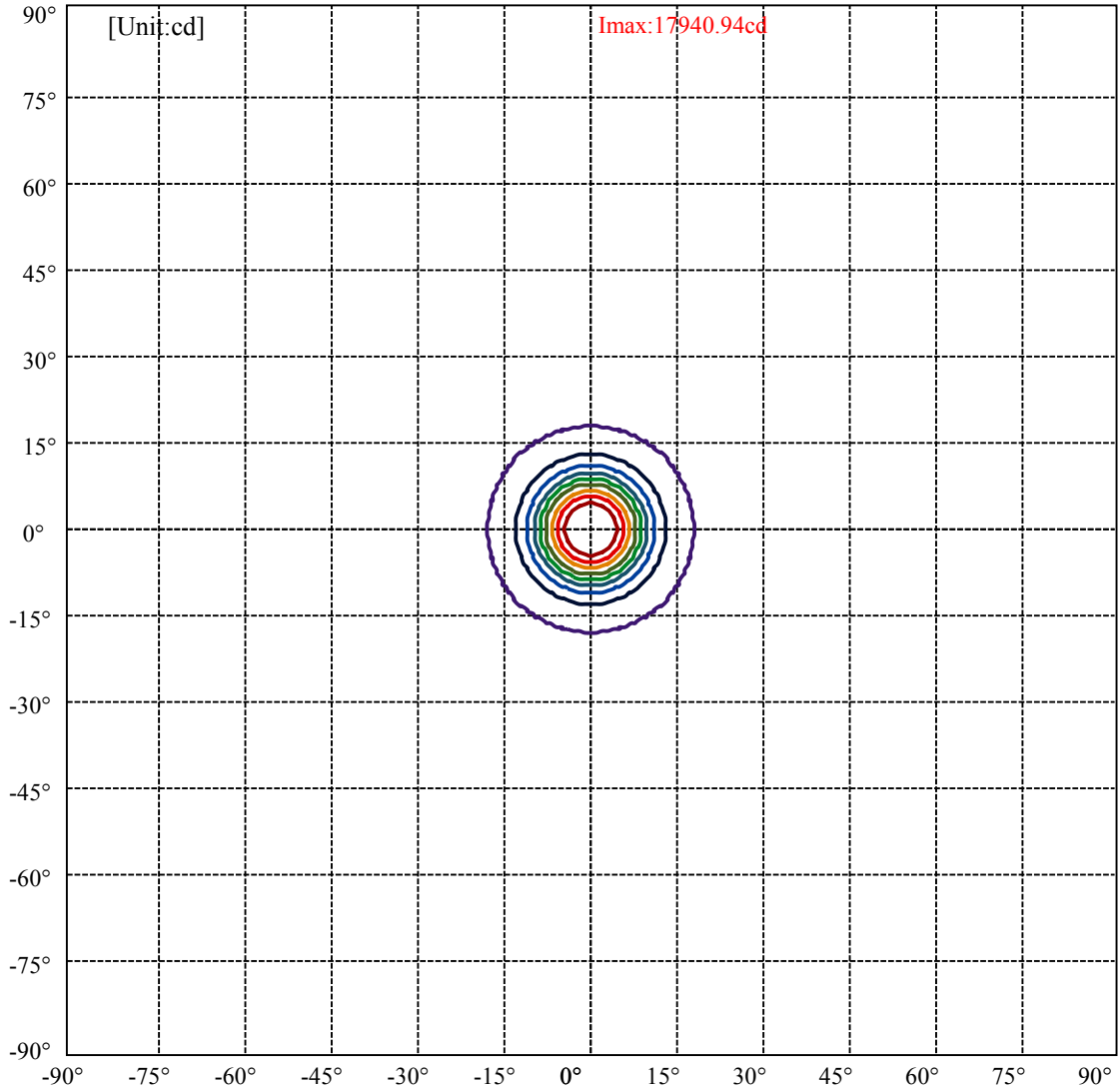


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

Field angle(10%Imax):C0/180Left:17.6 Right:17.6  
:C90/270Left:17.6 Right:17.6

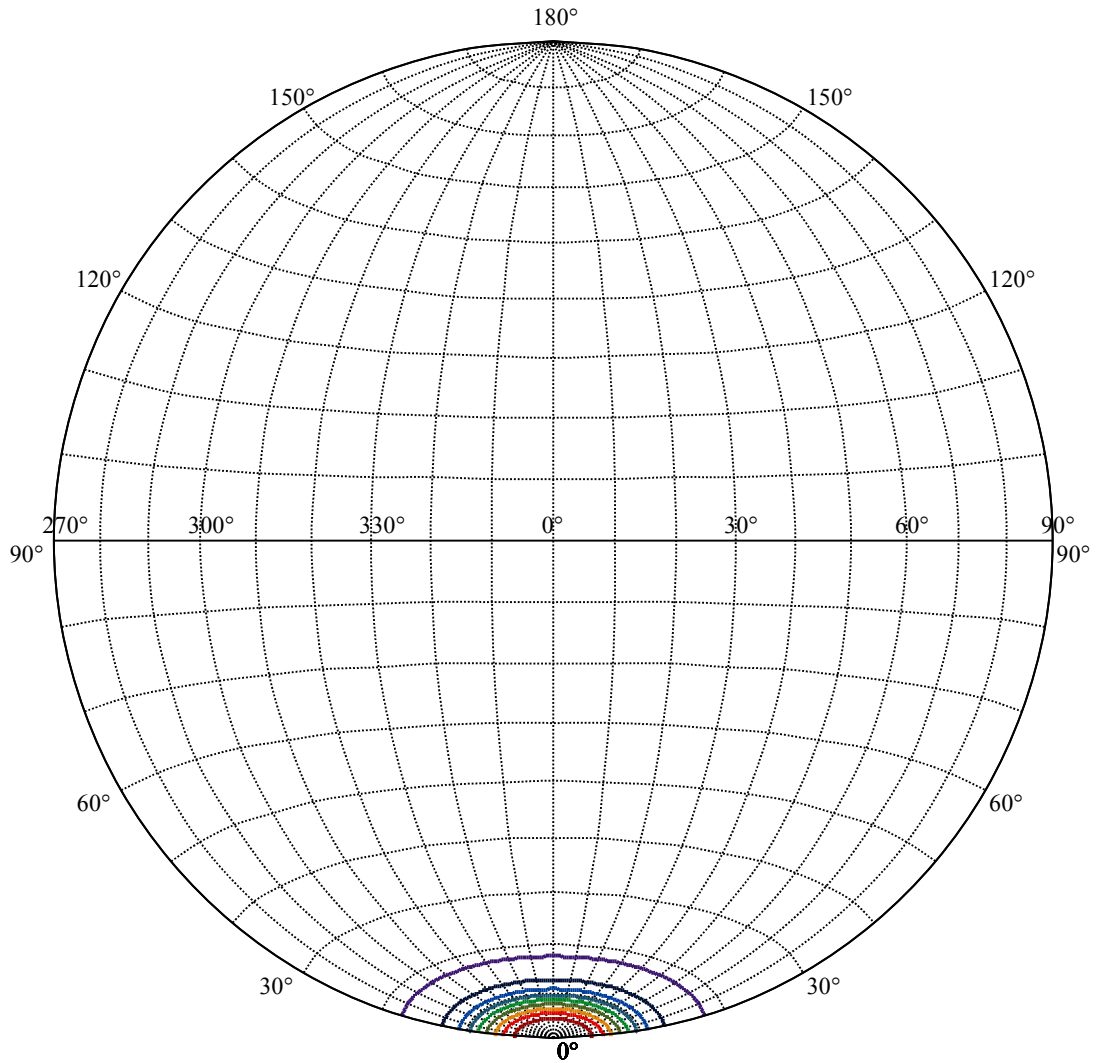
Beam Angle(50%Imax):C0/180Left:8.7 Right:8.7  
:C90/270Left:8.7 Right:8.7





|                   |   |
|-------------------|---|
| (10%Imax) 1794.09 | — |
| (20%Imax) 3588.19 | — |
| (30%Imax) 5382.28 | — |
| (40%Imax) 7176.38 | — |
| (50%Imax) 8970.47 | — |
| (60%Imax) 10764.6 | — |
| (70%Imax) 12558.7 | — |
| (80%Imax) 14352.8 | — |
| (90%Imax) 16146.8 | — |





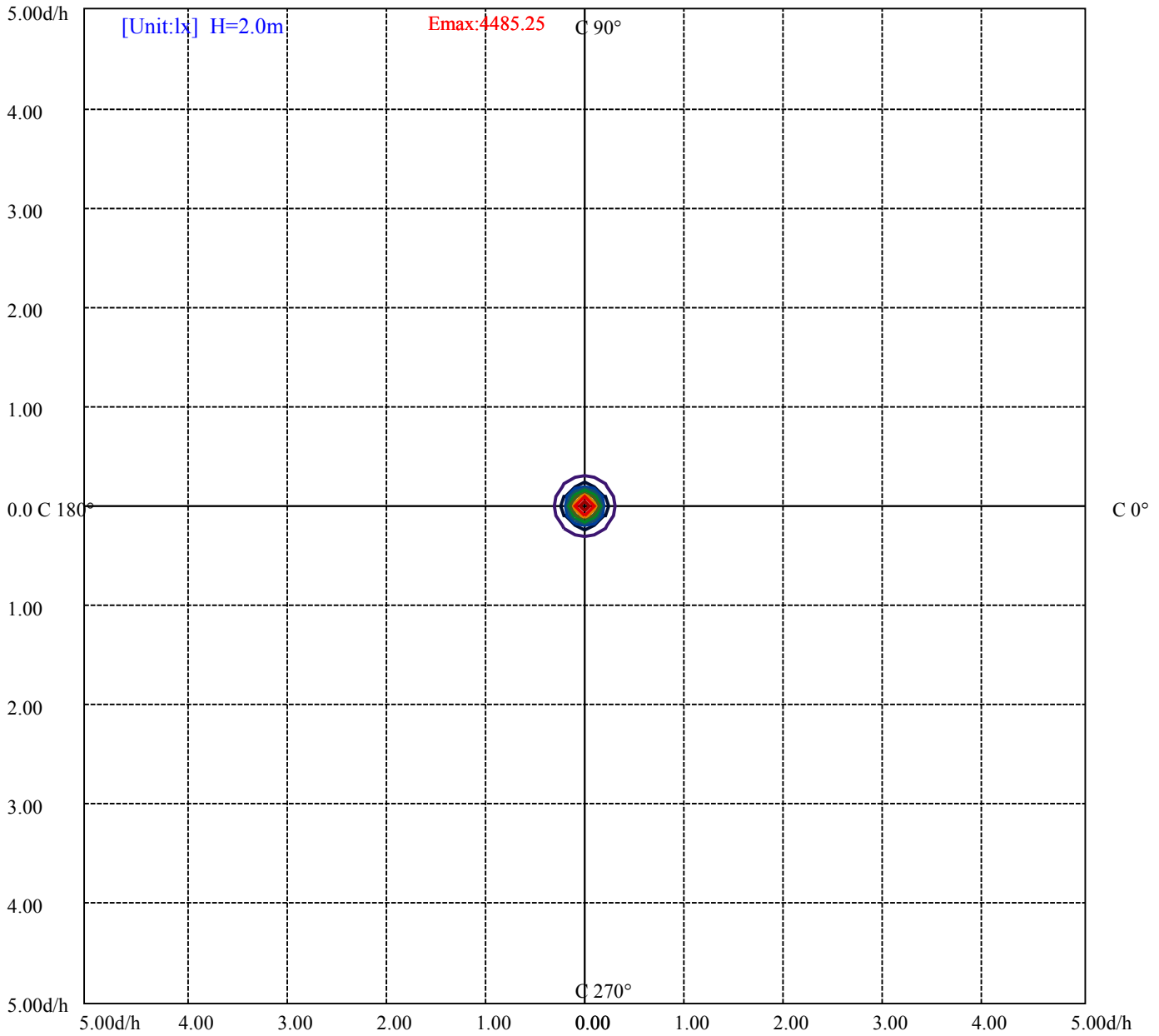
House

[Unit:cd]

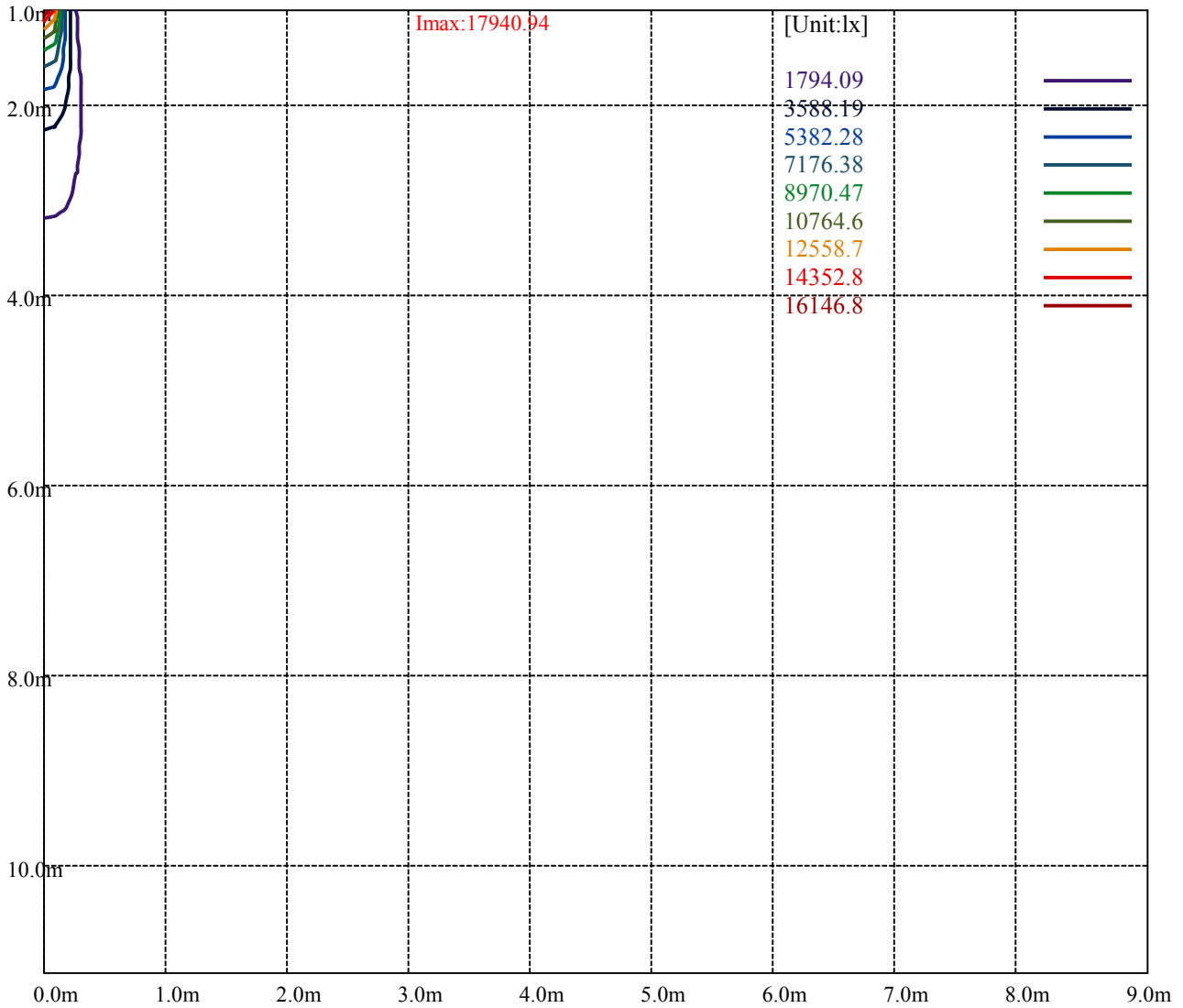
Road

**Imax:17940.94**

|                   |   |
|-------------------|---|
| (10%Imax) 1794.09 | — |
| (20%Imax) 3588.19 | — |
| (30%Imax) 5382.28 | — |
| (40%Imax) 7176.38 | — |
| (50%Imax) 8970.47 | — |
| (60%Imax) 10764.6 | — |
| (70%Imax) 12558.7 | — |
| (80%Imax) 14352.8 | — |
| (90%Imax) 16146.8 | — |



|                    |   |
|--------------------|---|
| (10%Emax) 448.5225 | — |
| (20%Emax) 897.0475 | — |
| (30%Emax) 1345.57  | — |
| (40%Emax) 1794.093 | — |
| (50%Emax) 2242.617 | — |
| (60%Emax) 2691.15  | — |
| (70%Emax) 3139.675 | — |
| (80%Emax) 3588.175 | — |
| (90%Emax) 4036.7   | — |



Luminance Table

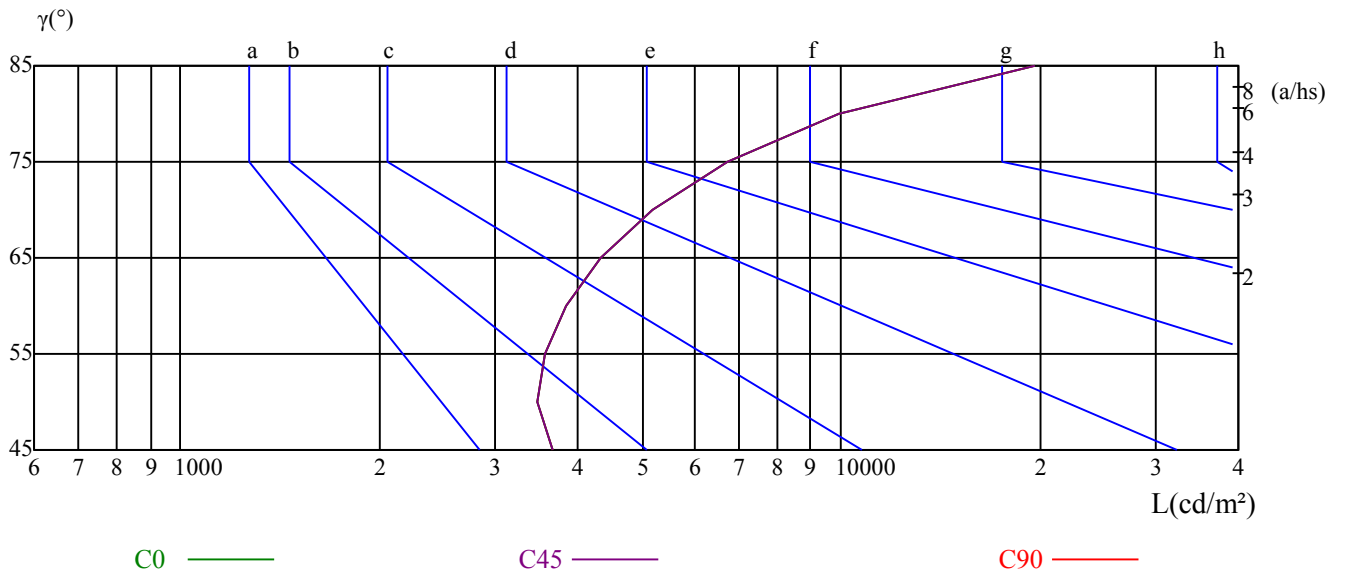
| $\gamma$ | 45   | 50   | 55   | 60   | 65   | 70   | 75   | 80   | 85    |
|----------|------|------|------|------|------|------|------|------|-------|
| C0       | 3667 | 3471 | 3555 | 3827 | 4329 | 5189 | 6734 | 9922 | 19631 |
| C45      | 3667 | 3471 | 3555 | 3827 | 4329 | 5189 | 6734 | 9922 | 19631 |
| C90      | 3667 | 3471 | 3555 | 3827 | 4329 | 5189 | 6734 | 9922 | 19631 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 4329       | 4329       | 4329    | 6734       | 6734       | 6734    | 19631      | 19631      | 19631   |

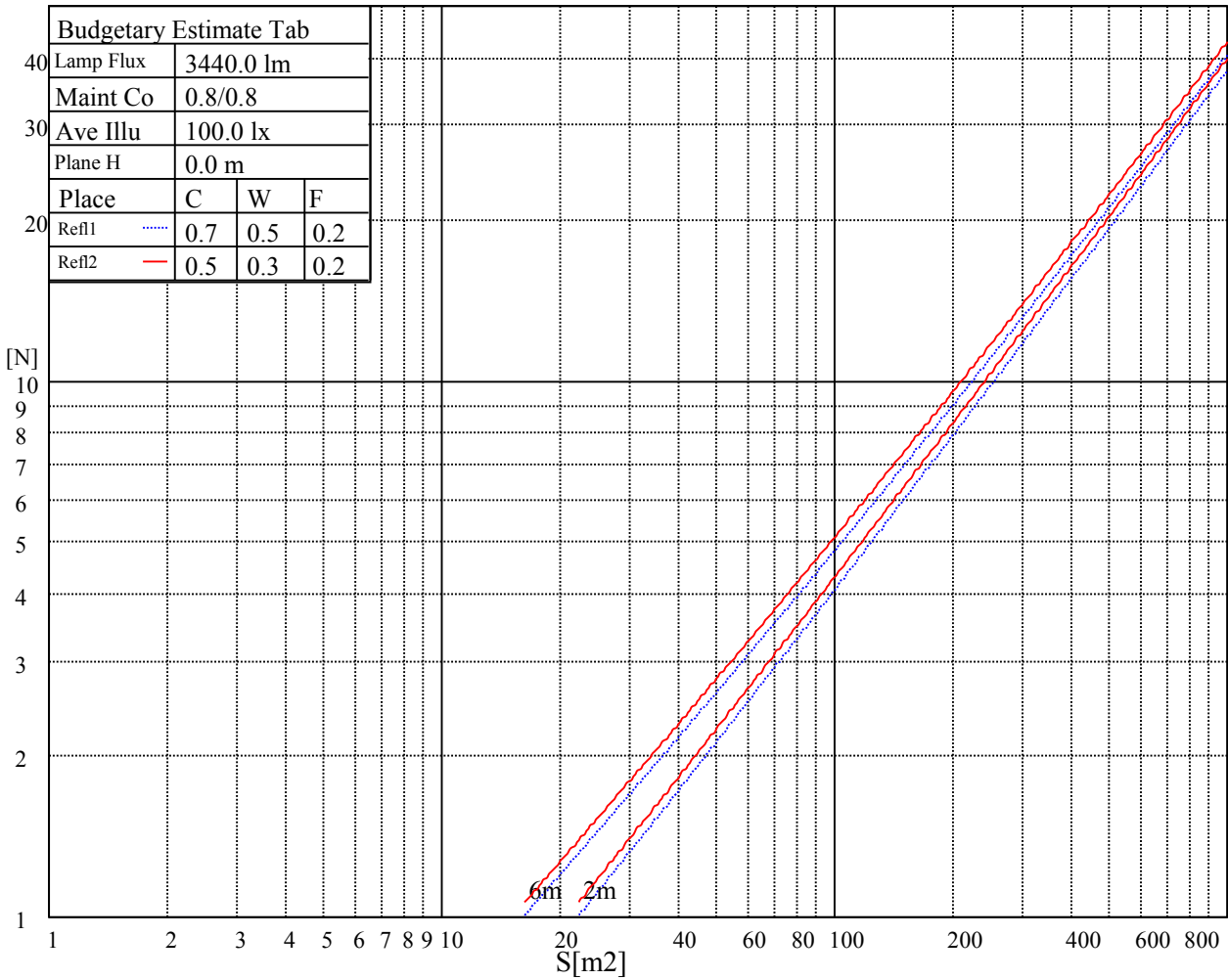
Glare Table

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

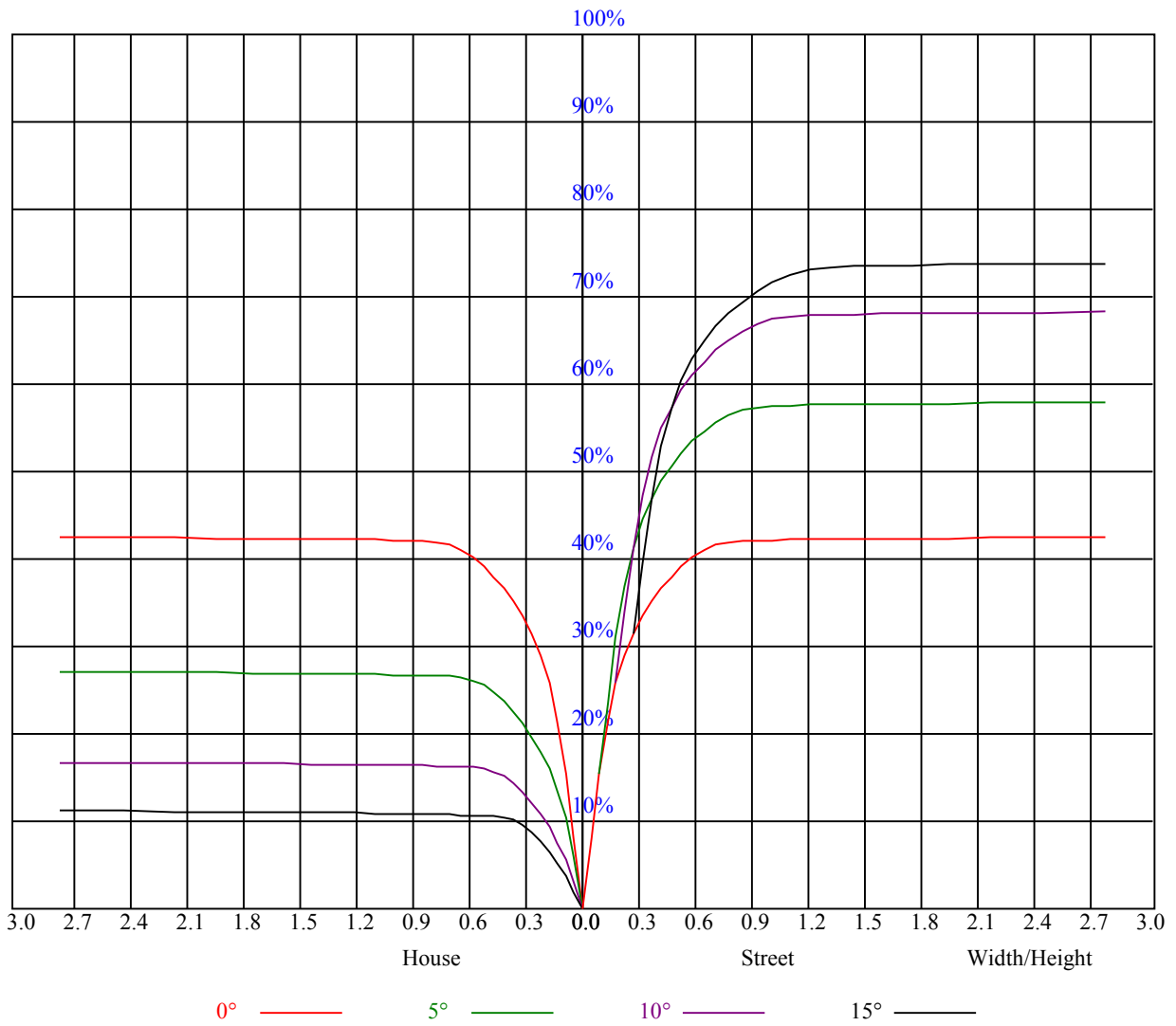
Luminance Limiting Curve



| 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       | 1.58             | 2.49  | 1.95  | 2.80  | 3.12     | 1.55           | 2.46  | 1.92  | 2.77  | 3.09  |
|   | 3H       | 4.67             | 5.47  | 5.05  | 5.80  | 6.17     | 4.64           | 5.45  | 5.03  | 5.78  | 6.15  |
|   | 4H       | 6.37             | 7.11  | 6.78  | 7.47  | 7.86     | 6.35           | 7.09  | 6.76  | 7.44  | 7.83  |
|   | 6H       | 8.29             | 8.97  | 8.71  | 9.35  | 9.75     | 8.28           | 8.96  | 8.70  | 9.33  | 9.73  |
|   | 8H       | 9.37             | 10.00 | 9.81  | 10.40 | 10.81    | 9.36           | 9.99  | 9.79  | 10.38 | 10.80 |
|   | 12H      | 11.12            | 11.73 | 11.56 | 12.11 | 12.54    | 11.12          | 11.72 | 11.55 | 12.11 | 12.54 |
| 4H  | 2H       | 2.44             | 3.18  | 2.85  | 3.53  | 3.92     | 2.41           | 3.16  | 2.82  | 3.51  | 3.90  |
|   | 3H       | 5.79             | 6.40  | 6.21  | 6.81  | 7.22     | 5.77           | 6.38  | 6.19  | 6.79  | 7.20  |
|   | 4H       | 7.66             | 8.21  | 8.10  | 8.63  | 9.08     | 7.64           | 8.19  | 8.08  | 8.61  | 9.06  |
|   | 6H       | 9.76             | 10.22 | 10.23 | 10.67 | 11.15    | 9.74           | 10.21 | 10.22 | 10.66 | 11.14 |
|   | 8H       | 10.93            | 11.36 | 11.41 | 11.81 | 12.29    | 10.92          | 11.35 | 11.40 | 11.81 | 12.28 |
| 8H  | 12H      | 12.58            | 12.95 | 13.07 | 13.44 | 13.92    | 12.58          | 12.95 | 13.07 | 13.44 | 13.92 |
|   | 4H       | 8.37             | 8.81  | 8.85  | 9.26  | 9.73     | 8.36           | 8.79  | 8.84  | 9.24  | 9.72  |
|   | 6H       | 10.74            | 11.08 | 11.25 | 11.58 | 12.07    | 10.73          | 11.07 | 11.25 | 11.58 | 12.06 |
|   | 8H       | 12.10            | 12.40 | 12.63 | 12.92 | 13.42    | 12.10          | 12.40 | 12.64 | 12.93 | 13.43 |
| 12H   | 12H      | 13.90            | 14.15 | 14.42 | 14.65 | 15.23    | 13.90          | 14.16 | 14.43 | 14.66 | 15.24 |
|   | 4H       | 8.58             | 8.95  | 9.07  | 9.44  | 9.92     | 8.56           | 8.93  | 9.05  | 9.42  | 9.90  |
|   | 6H       | 11.25            | 11.35 | 11.59 | 11.83 | 12.38    | 11.24          | 11.35 | 11.58 | 11.82 | 12.37 |
|   | 8H       | 12.55            | 12.80 | 13.07 | 13.30 | 13.88    | 12.55          | 12.81 | 13.07 | 13.31 | 13.89 |
| Variation with the observer position at spacings: |          |                  |       |       |       |          |                |       |       |       |       |
| S = 1.0H  | 5.7/-7.2 |                  |       |       |       | 5.7/-7.2 |                |       |       |       |       |
| S = 1.5H  | 7.8/-5.4 |                  |       |       |       | 7.8/-5.4 |                |       |       |       |       |
| S = 2.0H  | 9.1/-4.0 |                  |       |       |       | 9.1/-4.0 |                |       |       |       |       |
| Standard tables:                                  | BK3      |                  |       |       |       | BK3      |                |       |       |       |       |
| Uncorrected UGR                                   | 0.9      |                  |       |       |       | 0.9      |                |       |       |       |       |



| 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     | 1.02                                    | 1.02 | 1.02 | 0.99 | 0.99 | 0.99 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.87 | 0.87 | 0.87 | 0.86 |
| 1     | 0.96                                    | 0.94 | 0.92 | 0.94 | 0.92 | 0.91 | 0.91 | 0.89 | 0.88 | 0.88 | 0.87 | 0.86 | 0.85 | 0.84 | 0.83 | 0.82 |
| 2     | 0.91                                    | 0.88 | 0.86 | 0.90 | 0.87 | 0.85 | 0.87 | 0.85 | 0.83 | 0.84 | 0.83 | 0.81 | 0.82 | 0.81 | 0.80 | 0.78 |
| 3     | 0.87                                    | 0.83 | 0.81 | 0.86 | 0.83 | 0.80 | 0.84 | 0.81 | 0.79 | 0.82 | 0.79 | 0.78 | 0.80 | 0.78 | 0.77 | 0.75 |
| 4     | 0.83                                    | 0.79 | 0.77 | 0.82 | 0.79 | 0.76 | 0.80 | 0.78 | 0.75 | 0.79 | 0.76 | 0.75 | 0.77 | 0.75 | 0.74 | 0.73 |
| 5     | 0.80                                    | 0.76 | 0.73 | 0.79 | 0.76 | 0.73 | 0.78 | 0.75 | 0.72 | 0.76 | 0.74 | 0.72 | 0.75 | 0.73 | 0.71 | 0.70 |
| 6     | 0.77                                    | 0.73 | 0.70 | 0.76 | 0.73 | 0.70 | 0.75 | 0.72 | 0.70 | 0.74 | 0.71 | 0.69 | 0.73 | 0.71 | 0.69 | 0.68 |
| 7     | 0.74                                    | 0.70 | 0.68 | 0.74 | 0.70 | 0.68 | 0.73 | 0.70 | 0.67 | 0.72 | 0.69 | 0.67 | 0.71 | 0.68 | 0.67 | 0.66 |
| 8     | 0.72                                    | 0.68 | 0.65 | 0.71 | 0.68 | 0.65 | 0.71 | 0.67 | 0.65 | 0.70 | 0.67 | 0.65 | 0.69 | 0.66 | 0.65 | 0.64 |
| 9     | 0.70                                    | 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 |
| 10    | 0.68                                    | 0.64 | 0.62 | 0.67 | 0.64 | 0.61 | 0.67 | 0.64 | 0.61 | 0.66 | 0.63 | 0.61 | 0.66 | 0.63 | 0.61 | 0.60 |





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    | 17926.88 | 17960.63 | 17910.00 | 17730.00 | 17296.88 | 16498.13 | 15373.13 | 13663.13 | 11913.75 |
| 45.0   | 17938.13 | 17943.75 | 17831.25 | 17538.75 | 17060.63 | 16110.00 | 14630.63 | 12954.38 | 11143.13 |
| 90.0   | 17938.13 | 17831.25 | 17606.25 | 17145.00 | 16267.50 | 15058.13 | 13471.88 | 11172.38 | 9298.13  |
| 135.0  | 17960.63 | 17904.38 | 17673.75 | 17246.25 | 16576.88 | 15322.50 | 13578.75 | 11784.38 | 9708.75  |
| 180.0  | 17926.88 | 17797.50 | 17521.88 | 16880.63 | 15975.00 | 14619.38 | 11057.63 | 10581.75 | 8706.94  |
| 225.0  | 17938.13 | 17853.75 | 17651.25 | 17223.75 | 16408.13 | 15210.00 | 13640.63 | 11152.69 | 9520.31  |
| 270.0  | 17938.13 | 17932.50 | 17820.00 | 17544.38 | 17083.13 | 16149.38 | 14698.13 | 13055.63 | 11255.63 |
| 315.0  | 17960.63 | 17943.75 | 17820.00 | 17505.00 | 16987.50 | 15986.25 | 14478.75 | 10986.75 | 10753.88 |
| 360.0  | 17926.88 | 17960.63 | 17910.00 | 17730.00 | 17296.88 | 16498.13 | 15373.13 | 13663.13 | 11913.75 |
| C/γ(°) | 9.0      | 10.0     | 11.0     | 12.0     | 13.0     | 14.0     | 15.0     | 16.0     | 17.0     |
| 0.0    | 9877.50  | 7880.63  | 6356.25  | 5028.75  | 4145.63  | 3375.00  | 2846.25  | 2408.63  | 2081.25  |
| 45.0   | 8859.38  | 7143.75  | 5726.25  | 4449.38  | 3695.63  | 3110.63  | 2868.75  | 2242.69  | 1993.50  |
| 90.0   | 7531.31  | 5733.56  | 4678.88  | 3890.25  | 3208.50  | 2693.25  | 2345.63  | 2051.44  | 1845.56  |
| 135.0  | 7728.75  | 6198.75  | 4888.13  | 4033.13  | 3307.50  | 2863.13  | 2402.44  | 2120.06  | 1882.69  |
| 180.0  | 6802.88  | 5319.56  | 4362.19  | 3560.63  | 3012.75  | 2541.38  | 2188.13  | 1951.88  | 1767.38  |
| 225.0  | 7746.19  | 5887.13  | 4769.44  | 3935.81  | 3155.63  | 2689.31  | 2330.44  | 1998.00  | 1822.50  |
| 270.0  | 8983.13  | 7295.63  | 5878.13  | 4674.38  | 3780.00  | 3161.25  | 2851.88  | 2250.00  | 1991.81  |
| 315.0  | 8926.31  | 7044.75  | 5538.94  | 4532.63  | 3668.63  | 3016.69  | 2579.63  | 2242.13  | 1926.56  |
| 360.0  | 9877.50  | 7880.63  | 6356.25  | 5028.75  | 4145.63  | 3375.00  | 2846.25  | 2408.63  | 2081.25  |
| C/γ(°) | 18.0     | 19.0     | 20.0     | 21.0     | 22.0     | 23.0     | 24.0     | 25.0     | 26.0     |
| 0.0    | 1860.75  | 1711.69  | 1536.75  | 1441.13  | 1366.31  | 1294.88  | 1250.44  | 1220.06  | 1183.50  |
| 45.0   | 1792.13  | 1624.50  | 1497.94  | 1413.56  | 1332.56  | 1272.38  | 1233.00  | 1195.88  | 1171.13  |
| 90.0   | 1670.06  | 1535.06  | 1440.00  | 1356.19  | 1290.38  | 1244.81  | 1207.69  | 1171.69  | 1121.40  |
| 135.0  | 1698.19  | 1574.44  | 1462.50  | 1374.75  | 1312.31  | 1267.88  | 1213.88  | 1185.75  | 1163.81  |
| 180.0  | 1594.13  | 1488.38  | 1402.88  | 1320.75  | 1268.44  | 1228.50  | 1191.38  | 1162.13  | 1121.68  |
| 225.0  | 1650.94  | 1506.94  | 1427.06  | 1347.19  | 1283.63  | 1239.19  | 1203.19  | 1165.50  | 1119.66  |
| 270.0  | 1815.75  | 1627.88  | 1501.88  | 1424.81  | 1336.50  | 1275.19  | 1236.94  | 1193.06  | 1166.06  |
| 315.0  | 1740.38  | 1598.63  | 1464.19  | 1382.06  | 1316.25  | 1253.25  | 1215.56  | 1185.75  | 1155.38  |
| 360.0  | 1860.75  | 1711.69  | 1536.75  | 1441.13  | 1366.31  | 1294.88  | 1250.44  | 1220.06  | 1183.50  |
| C/γ(°) | 27.0     | 28.0     | 29.0     | 30.0     | 31.0     | 32.0     | 33.0     | 34.0     | 35.0     |
| 0.0    | 1155.94  | 1136.81  | 1113.19  | 1096.88  | 1076.63  | 1017.00  | 934.31   | 826.88   | 708.75   |
| 45.0   | 1143.00  | 1119.94  | 1101.38  | 1085.63  | 1033.88  | 963.00   | 883.13   | 754.31   | 646.88   |
| 90.0   | 1118.81  | 1097.10  | 1075.61  | 1047.43  | 978.24   | 882.56   | 788.12   | 676.24   | 573.81   |
| 135.0  | 1128.38  | 1107.00  | 1089.56  | 1066.50  | 1008.00  | 929.25   | 815.63   | 717.19   | 614.81   |
| 180.0  | 1105.88  | 1086.92  | 1064.81  | 1022.91  | 941.74   | 852.86   | 743.96   | 641.93   | 537.36   |
| 225.0  | 1117.24  | 1097.78  | 1074.77  | 1051.37  | 997.76   | 898.82   | 805.28   | 702.90   | 581.18   |
| 270.0  | 1143.56  | 1116.56  | 1097.44  | 1080.00  | 1045.13  | 982.69   | 900.00   | 781.31   | 677.81   |
| 315.0  | 1121.96  | 1110.38  | 1091.48  | 1073.36  | 1045.07  | 965.19   | 875.42   | 774.11   | 640.97   |
| 360.0  | 1155.94  | 1136.81  | 1113.19  | 1096.88  | 1076.63  | 1017.00  | 934.31   | 826.88   | 708.75   |
| C/γ(°) | 36.0     | 37.0     | 38.0     | 39.0     | 40.0     | 41.0     | 42.0     | 43.0     | 44.0     |
| 0.0    | 600.75   | 493.31   | 362.25   | 286.31   | 169.76   | 80.04    | 43.26    | 35.04    | 28.13    |
| 45.0   | 553.50   | 428.06   | 305.44   | 305.44   | 127.74   | 58.67    | 36.34    | 30.21    | 24.13    |
| 90.0   | 457.26   | 343.52   | 247.56   | 160.09   | 80.78    | 38.98    | 32.79    | 24.86    | 18.45    |
| 135.0  | 483.75   | 379.69   | 288.56   | 156.26   | 82.58    | 42.47    | 32.18    | 25.82    | 20.03    |
| 180.0  | 419.29   | 302.68   | 205.59   | 112.11   | 50.46    | 34.65    | 28.86    | 21.04    | 17.61    |
| 225.0  | 457.99   | 353.48   | 244.86   | 157.73   | 80.72    | 40.11    | 33.36    | 26.38    | 19.01    |
| 270.0  | 569.81   | 446.63   | 327.94   | 290.25   | 132.98   | 60.19    | 39.60    | 32.91    | 26.33    |
| 315.0  | 533.31   | 428.18   | 314.33   | 207.62   | 126.56   | 61.48    | 39.43    | 33.19    | 25.76    |
| 360.0  | 600.75   | 493.31   | 362.25   | 286.31   | 169.76   | 80.04    | 43.26    | 35.04    | 28.13    |

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    | 20.42 | 17.72 | 17.16 | 16.71 | 16.31 | 15.86 | 15.58 | 15.19 | 14.96 |
| 45.0   | 17.83 | 17.33 | 16.93 | 16.54 | 16.03 | 15.81 | 15.53 | 15.19 | 14.91 |
| 90.0   | 17.72 | 17.27 | 16.76 | 16.48 | 16.26 | 15.92 | 15.64 | 15.36 | 15.08 |
| 135.0  | 17.72 | 17.21 | 16.82 | 16.43 | 16.09 | 15.75 | 15.41 | 15.13 | 14.85 |
| 180.0  | 17.16 | 16.76 | 16.37 | 15.98 | 15.69 | 15.41 | 15.13 | 14.91 | 14.68 |
| 225.0  | 17.78 | 17.21 | 16.65 | 16.20 | 15.98 | 15.58 | 15.24 | 14.96 | 14.68 |
| 270.0  | 19.46 | 17.49 | 16.99 | 16.59 | 16.14 | 15.86 | 15.53 | 15.19 | 14.85 |
| 315.0  | 18.28 | 17.38 | 16.93 | 16.48 | 16.14 | 15.75 | 15.41 | 15.08 | 14.79 |
| 360.0  | 20.42 | 17.72 | 17.16 | 16.71 | 16.31 | 15.86 | 15.58 | 15.19 | 14.96 |
| C/γ(°) | 54.0  | 55.0  | 56.0  | 57.0  | 58.0  | 59.0  | 60.0  | 61.0  | 62.0  |
| 0.0    | 14.63 | 14.46 | 14.18 | 13.95 | 13.78 | 13.61 | 13.56 | 13.39 | 13.22 |
| 45.0   | 14.74 | 14.46 | 14.23 | 14.06 | 13.89 | 13.73 | 13.50 | 13.44 | 13.28 |
| 90.0   | 14.79 | 14.63 | 14.34 | 14.18 | 14.01 | 13.84 | 13.67 | 13.56 | 13.39 |
| 135.0  | 14.63 | 14.34 | 14.18 | 13.95 | 13.84 | 13.67 | 13.50 | 13.33 | 13.28 |
| 180.0  | 14.34 | 14.23 | 14.01 | 13.84 | 13.73 | 13.56 | 13.39 | 13.28 | 13.16 |
| 225.0  | 14.46 | 14.29 | 14.06 | 13.89 | 13.73 | 13.61 | 13.39 | 13.28 | 13.11 |
| 270.0  | 14.63 | 14.40 | 14.18 | 14.06 | 13.84 | 13.73 | 13.56 | 13.39 | 13.28 |
| 315.0  | 14.57 | 14.29 | 14.12 | 13.95 | 13.73 | 13.56 | 13.44 | 13.33 | 13.22 |
| 360.0  | 14.63 | 14.46 | 14.18 | 13.95 | 13.78 | 13.61 | 13.56 | 13.39 | 13.22 |
| C/γ(°) | 63.0  | 64.0  | 65.0  | 66.0  | 67.0  | 68.0  | 69.0  | 70.0  | 71.0  |
| 0.0    | 13.16 | 12.94 | 12.88 | 12.83 | 12.77 | 12.66 | 12.66 | 12.54 | 12.43 |
| 45.0   | 13.16 | 13.05 | 12.99 | 12.88 | 12.77 | 12.66 | 12.60 | 12.60 | 12.54 |
| 90.0   | 13.16 | 13.05 | 12.88 | 12.83 | 12.71 | 12.66 | 12.54 | 12.49 | 12.49 |
| 135.0  | 13.11 | 12.94 | 12.88 | 12.77 | 12.71 | 12.66 | 12.60 | 12.49 | 12.49 |
| 180.0  | 13.05 | 12.94 | 12.88 | 12.77 | 12.66 | 12.60 | 12.54 | 12.49 | 12.43 |
| 225.0  | 13.05 | 12.94 | 12.88 | 12.71 | 12.66 | 12.66 | 12.60 | 12.49 | 12.43 |
| 270.0  | 13.16 | 13.05 | 12.99 | 12.88 | 12.77 | 12.71 | 12.66 | 12.60 | 12.49 |
| 315.0  | 13.16 | 13.05 | 12.88 | 12.83 | 12.77 | 12.66 | 12.60 | 12.49 | 12.43 |
| 360.0  | 13.16 | 12.94 | 12.88 | 12.83 | 12.77 | 12.66 | 12.66 | 12.54 | 12.43 |
| C/γ(°) | 72.0  | 73.0  | 74.0  | 75.0  | 76.0  | 77.0  | 78.0  | 79.0  | 80.0  |
| 0.0    | 12.43 | 12.38 | 12.32 | 12.32 | 12.32 | 12.26 | 12.21 | 12.21 | 12.15 |
| 45.0   | 12.43 | 12.43 | 12.32 | 12.32 | 12.21 | 12.26 | 12.21 | 12.21 | 12.15 |
| 90.0   | 12.43 | 12.38 | 12.32 | 12.32 | 12.26 | 12.26 | 12.21 | 12.21 | 12.21 |
| 135.0  | 12.38 | 12.38 | 12.32 | 12.26 | 12.26 | 12.21 | 12.15 | 12.09 | 12.15 |
| 180.0  | 12.38 | 12.32 | 12.32 | 12.26 | 12.26 | 12.15 | 12.15 | 12.15 | 12.15 |
| 225.0  | 12.43 | 12.38 | 12.26 | 12.26 | 12.26 | 12.15 | 12.21 | 12.15 | 12.15 |
| 270.0  | 12.49 | 12.38 | 12.32 | 12.32 | 12.32 | 12.26 | 12.26 | 12.21 | 12.21 |
| 315.0  | 12.43 | 12.43 | 12.32 | 12.32 | 12.26 | 12.26 | 12.21 | 12.15 | 12.09 |
| 360.0  | 12.43 | 12.38 | 12.32 | 12.32 | 12.32 | 12.26 | 12.21 | 12.21 | 12.15 |
| C/γ(°) | 81.0  | 82.0  | 83.0  | 84.0  | 85.0  | 86.0  | 87.0  | 88.0  | 89.0  |
| 0.0    | 12.15 | 12.09 | 12.09 | 12.09 | 12.09 | 12.04 | 12.04 | 12.04 | 12.04 |
| 45.0   | 12.09 | 12.15 | 12.04 | 12.09 | 12.09 | 12.04 | 12.09 | 12.09 | 12.09 |
| 90.0   | 12.15 | 12.15 | 12.15 | 12.09 | 12.09 | 12.09 | 12.15 | 12.15 | 11.98 |
| 135.0  | 12.09 | 12.09 | 12.09 | 12.04 | 12.04 | 12.04 | 12.04 | 12.09 | 11.93 |
| 180.0  | 12.15 | 12.09 | 12.09 | 12.09 | 12.09 | 12.04 | 12.21 | 12.04 | 11.98 |
| 225.0  | 12.15 | 12.15 | 12.09 | 12.09 | 12.09 | 12.09 | 12.04 | 12.04 | 12.04 |
| 270.0  | 12.15 | 12.15 | 12.09 | 12.15 | 12.04 | 12.04 | 12.09 | 12.09 | 12.15 |
| 315.0  | 12.15 | 12.09 | 12.09 | 12.04 | 12.04 | 12.04 | 12.04 | 12.04 | 12.15 |
| 360.0  | 12.15 | 12.09 | 12.09 | 12.09 | 12.09 | 12.04 | 12.04 | 12.04 | 12.04 |

Intensity data(cd)

|        |       |
|--------|-------|
| C/γ(°) | 90.0  |
| 0.0    | 12.04 |
| 45.0   | 12.04 |
| 90.0   | 11.98 |
| 135.0  | 11.98 |
| 180.0  | 11.98 |
| 225.0  | 11.98 |
| 270.0  | 12.04 |
| 315.0  | 12.04 |
| 360.0  | 12.04 |