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## Nata

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|                         |                      |
|-------------------------|----------------------|
| LumCAT: 2-1746-N        |                      |
| Luminaire: 92.70.127.00 |                      |
| Report No: 200407-B026  | Voltage(V): 220.4000 |
| Test No: 200407-C026    | Current(A): 0.0420   |
| LampCAT: CREE CXA1512   | Power (W): 8.3300    |
| Lamp flux(lm): 932.0    | PF: 0.8970           |
| Number of Lamps: 1      | Ballast type: AC     |
| Length(mm): 0           | Width(mm): 0         |
| Phm Type: C             | Height(mm): 0        |

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## Photometric Results

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Lumens(lm): 761.03  
Efficiency(%): 81.66%  
Lumens(lm)/Power(W): 91.36  
Central intensity(cd): 2901.763  
Maximum intensity(cd): 2901.763  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=23.1  
[C90/270]Total=23.1  
Field angle(10%Imax): [C0/180]Total=57.9  
[C90/270]Total=57.9  
Maximum s/h(1/2): C0\_180=0.39 C90\_270=0.39  
Maximum s/h(1/4): C0\_180=0.41 C90\_270=0.41  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 81.66%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 98.274%

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0                | 2901.764      | 0.000       | 0         | .000%       | .000%      |
| 1.0                | 2888.075      | 2.770       | 2.77      | .297%       | .364%      |
| 2.0                | 2857.970      | 8.247       | 11.018    | .885%       | 1.448%     |
| 3.0                | 2789.583      | 13.507      | 24.525    | 1.449%      | 3.223%     |
| 4.0                | 2703.099      | 18.386      | 42.91     | 1.973%      | 5.638%     |
| 5.0                | 2591.441      | 22.777      | 65.687    | 2.444%      | 8.631%     |
| 6.0                | 2450.549      | 26.497      | 92.184    | 2.843%      | 12.113%    |
| 7.0                | 2288.775      | 29.417      | 121.601   | 3.156%      | 15.978%    |
| 8.0                | 2123.289      | 31.576      | 153.178   | 3.388%      | 20.128%    |
| 9.0                | 1941.562      | 32.943      | 186.121   | 3.535%      | 24.456%    |
| 10.0               | 1753.107      | 33.435      | 219.556   | 3.587%      | 28.850%    |
| 11.0               | 1563.665      | 33.141      | 252.698   | 3.556%      | 33.204%    |
| 12.0               | 1358.371      | 31.942      | 284.64    | 3.427%      | 37.402%    |
| 13.0               | 1194.335      | 30.294      | 314.934   | 3.250%      | 41.382%    |
| 14.0               | 1020.572      | 28.351      | 343.285   | 3.042%      | 45.108%    |
| 15.0               | 909.105       | 26.491      | 369.776   | 2.842%      | 48.589%    |
| 16.0               | 825.365       | 25.415      | 395.191   | 2.727%      | 51.928%    |
| 17.0               | 731.067       | 24.238      | 419.429   | 2.601%      | 55.113%    |
| 18.0               | 651.868       | 22.802      | 442.23    | 2.447%      | 58.109%    |
| 19.0               | 584.462       | 21.510      | 463.74    | 2.308%      | 60.935%    |
| 20.0               | 527.310       | 20.349      | 484.088   | 2.183%      | 63.609%    |
| 21.0               | 478.546       | 19.314      | 503.403   | 2.072%      | 66.147%    |
| 22.0               | 438.019       | 18.419      | 521.822   | 1.976%      | 68.567%    |
| 23.0               | 405.977       | 17.709      | 539.531   | 1.900%      | 70.894%    |
| 24.0               | 376.575       | 17.109      | 556.64    | 1.836%      | 73.143%    |
| 25.0               | 356.615       | 16.671      | 573.311   | 1.789%      | 75.333%    |
| 26.0               | 337.979       | 16.396      | 589.707   | 1.759%      | 77.488%    |
| 27.0               | 320.937       | 16.121      | 605.828   | 1.730%      | 79.606%    |
| 28.0               | 305.833       | 15.868      | 621.696   | 1.703%      | 81.691%    |
| 29.0               | 289.766       | 15.583      | 637.279   | 1.672%      | 83.739%    |
| 30.0               | 271.750       | 15.161      | 652.44    | 1.627%      | 85.731%    |
| 31.0               | 247.307       | 14.445      | 666.884   | 1.550%      | 87.629%    |
| 32.0               | 222.933       | 13.472      | 680.356   | 1.445%      | 89.399%    |
| 33.0               | 183.920       | 11.986      | 692.342   | 1.286%      | 90.974%    |
| 34.0               | 141.797       | 9.857       | 702.199   | 1.058%      | 92.269%    |
| 35.0               | 101.699       | 7.562       | 709.761   | .811%       | 93.263%    |
| 36.0               | 72.604        | 5.550       | 715.311   | .595%       | 93.992%    |
| 37.0               | 48.584        | 3.952       | 719.264   | .424%       | 94.511%    |

| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 38.0               | 38.787        | 2.916       | 722.18    | .313%       | 94.895%    |
| 39.0               | 30.702        | 2.372       | 724.552   | .254%       | 95.206%    |
| 40.0               | 26.398        | 1.991       | 726.543   | .214%       | 95.468%    |
| 41.0               | 23.010        | 1.759       | 728.303   | .189%       | 95.699%    |
| 42.0               | 20.644        | 1.586       | 729.889   | .170%       | 95.907%    |
| 43.0               | 18.689        | 1.457       | 731.346   | .156%       | 96.099%    |
| 44.0               | 17.163        | 1.353       | 732.699   | .145%       | 96.277%    |
| 45.0               | 15.841        | 1.268       | 733.967   | .136%       | 96.443%    |
| 46.0               | 14.623        | 1.191       | 735.159   | .128%       | 96.600%    |
| 47.0               | 13.689        | 1.126       | 736.285   | .121%       | 96.748%    |
| 48.0               | 12.912        | 1.075       | 737.36    | .115%       | 96.889%    |
| 49.0               | 12.175        | 1.030       | 738.39    | .111%       | 97.025%    |
| 50.0               | 11.514        | 0.988       | 739.378   | .106%       | 97.154%    |
| 51.0               | 10.986        | 0.952       | 740.33    | .102%       | 97.279%    |
| 52.0               | 10.563        | 0.925       | 741.255   | .099%       | 97.401%    |
| 53.0               | 10.157        | 0.901       | 742.156   | .097%       | 97.519%    |
| 54.0               | 9.849         | 0.882       | 743.038   | .095%       | 97.635%    |
| 55.0               | 9.513         | 0.864       | 743.902   | .093%       | 97.749%    |
| 56.0               | 9.188         | 0.845       | 744.747   | .091%       | 97.860%    |
| 57.0               | 8.851         | 0.825       | 745.572   | .088%       | 97.968%    |
| 58.0               | 8.399         | 0.798       | 746.369   | .086%       | 98.073%    |
| 59.0               | 8.150         | 0.774       | 747.143   | .083%       | 98.175%    |
| 60.0               | 7.813         | 0.754       | 747.897   | .081%       | 98.274%    |
| 61.0               | 7.599         | 0.735       | 748.633   | .079%       | 98.370%    |
| 62.0               | 7.320         | 0.719       | 749.352   | .077%       | 98.465%    |
| 63.0               | 7.042         | 0.698       | 750.05    | .075%       | 98.557%    |
| 64.0               | 6.781         | 0.678       | 750.728   | .073%       | 98.646%    |
| 65.0               | 6.496         | 0.657       | 751.385   | .071%       | 98.732%    |
| 66.0               | 6.276         | 0.637       | 752.023   | .068%       | 98.816%    |
| 67.0               | 5.998         | 0.617       | 752.64    | .066%       | 98.897%    |
| 68.0               | 5.713         | 0.593       | 753.233   | .064%       | 98.975%    |
| 69.0               | 5.423         | 0.568       | 753.801   | .061%       | 99.050%    |
| 70.0               | 5.197         | 0.545       | 754.347   | .059%       | 99.121%    |
| 71.0               | 4.954         | 0.525       | 754.871   | .056%       | 99.190%    |
| 72.0               | 4.693         | 0.502       | 755.373   | .054%       | 99.256%    |
| 73.0               | 4.449         | 0.478       | 755.851   | .051%       | 99.319%    |
| 74.0               | 4.229         | 0.456       | 756.307   | .049%       | 99.379%    |
| 75.0               | 4.020         | 0.436       | 756.743   | .047%       | 99.436%    |

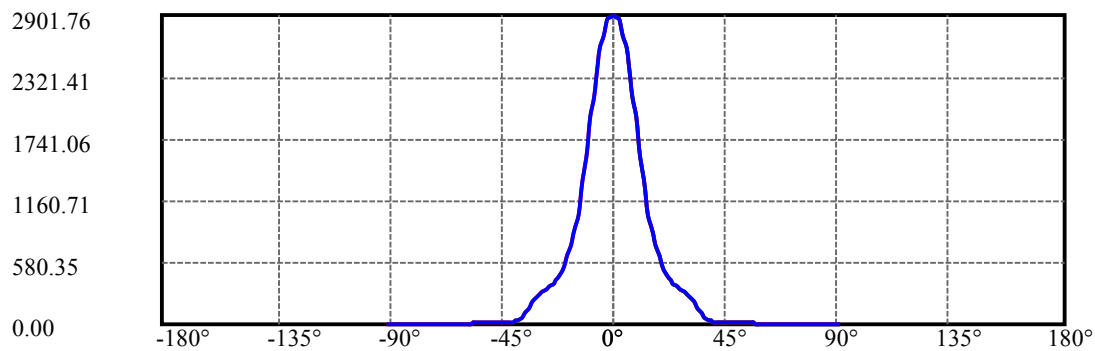
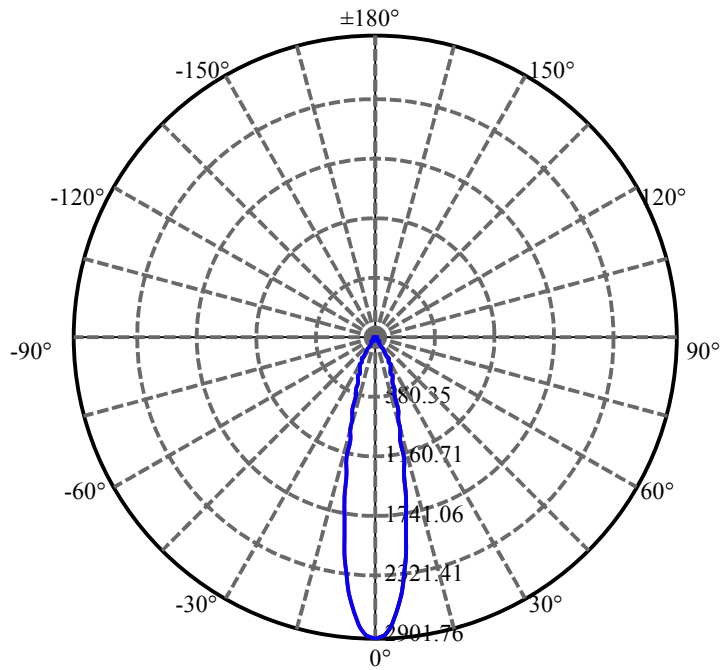
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 76.0               | 3.805         | 0.415       | 757.158   | .045%       | 99.491%    |
| 77.0               | 3.585         | 0.394       | 757.552   | .042%       | 99.542%    |
| 78.0               | 3.416         | 0.375       | 757.927   | .040%       | 99.592%    |
| 79.0               | 3.219         | 0.357       | 758.284   | .038%       | 99.639%    |
| 80.0               | 3.039         | 0.337       | 758.621   | .036%       | 99.683%    |
| 81.0               | 2.825         | 0.317       | 758.938   | .034%       | 99.725%    |
| 82.0               | 2.680         | 0.299       | 759.237   | .032%       | 99.764%    |
| 83.0               | 2.523         | 0.283       | 759.519   | .030%       | 99.801%    |
| 84.0               | 2.355         | 0.266       | 759.785   | .029%       | 99.836%    |
| 85.0               | 2.175         | 0.247       | 760.032   | .027%       | 99.868%    |
| 86.0               | 2.024         | 0.230       | 760.262   | .025%       | 99.898%    |
| 87.0               | 1.885         | 0.214       | 760.476   | .023%       | 99.927%    |
| 88.0               | 1.752         | 0.199       | 760.675   | .021%       | 99.953%    |
| 89.0               | 1.630         | 0.185       | 760.861   | .020%       | 99.977%    |
| 90.0               | 1.543         | 0.174       | 761.035   | .019%       | 100.000%   |

## ZONAL LUMEN SUMMARY

| Zone    | Lumens | %Lamp  | %Fixt   |
|---------|--------|--------|---------|
| 0-30    | 652.44 | 70.00% | 85.73%  |
| 0-40    | 726.54 | 77.96% | 95.47%  |
| 0-60    | 747.90 | 80.25% | 98.27%  |
| 0-90    | 760.86 | 81.64% | 99.98%  |
| 0-120   | 760.86 | 81.64% | 99.98%  |
| 0-180   | 761.03 | 81.66% | 100.00% |
| 60-90   | 13.72  | 1.47%  | 1.80%   |
| 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%   |
| 0-27.19 | 608.83 | 65.32% | 80.00%  |

## ZONAL LUMEN SUMMARY

|         |        |
|---------|--------|
| 0-10    | 219.56 |
| 10-20   | 264.53 |
| 20-30   | 168.35 |
| 30-40   | 74.10  |
| 40-50   | 12.83  |
| 50-60   | 8.52   |
| 60-70   | 6.45   |
| 70-80   | 4.27   |
| 80-90   | 2.24   |
| 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:

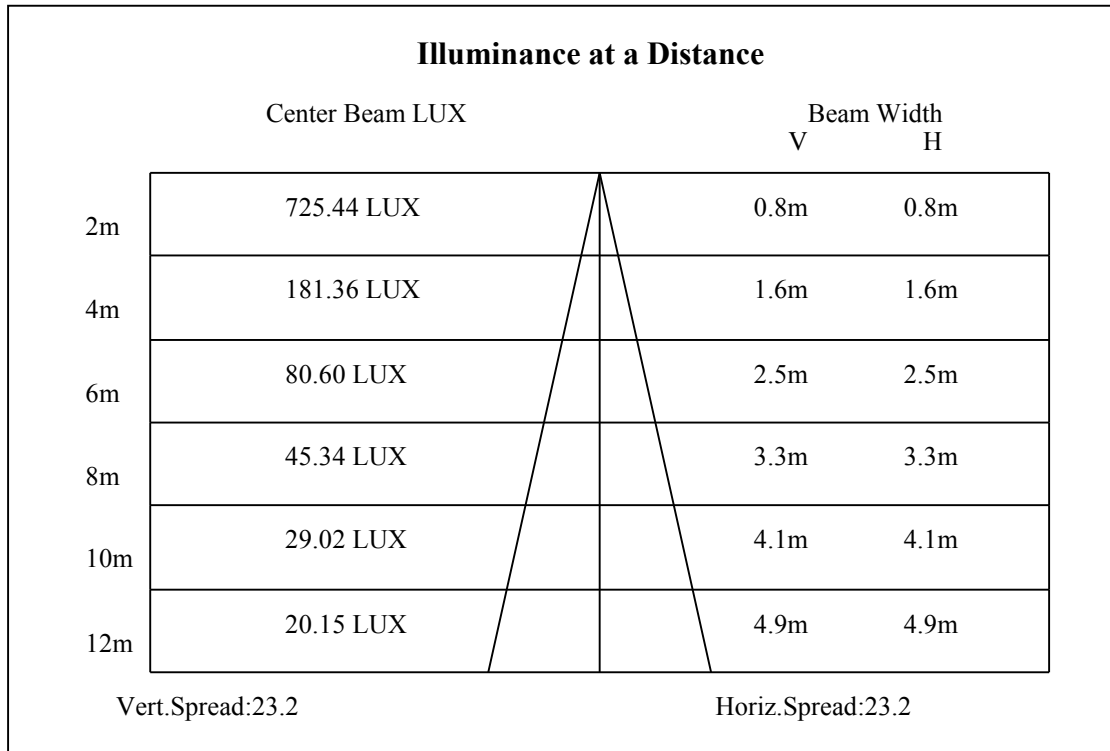
C90/C270:

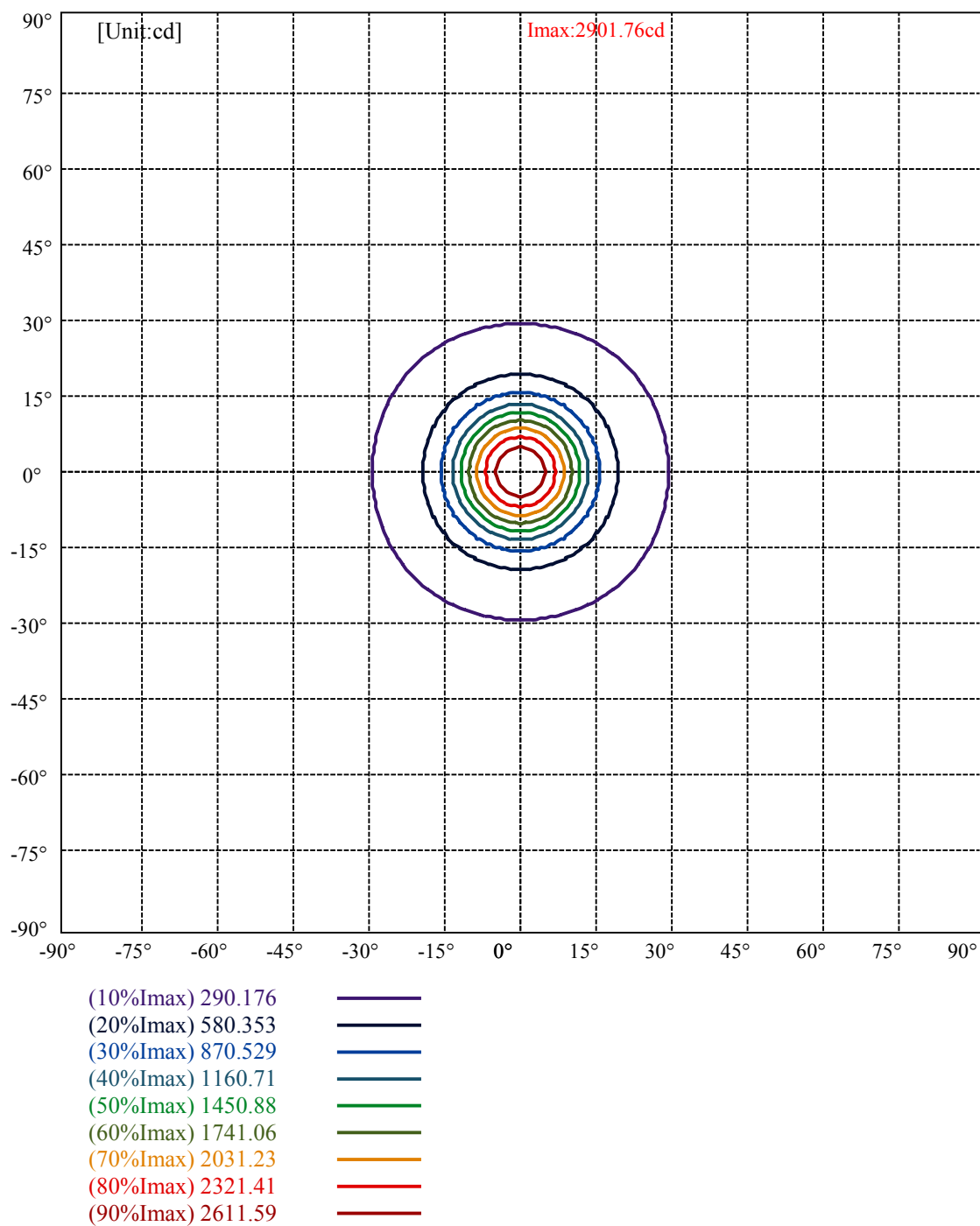
Field angle(10%Imax):C0/180Left:29.0 Right:29.0

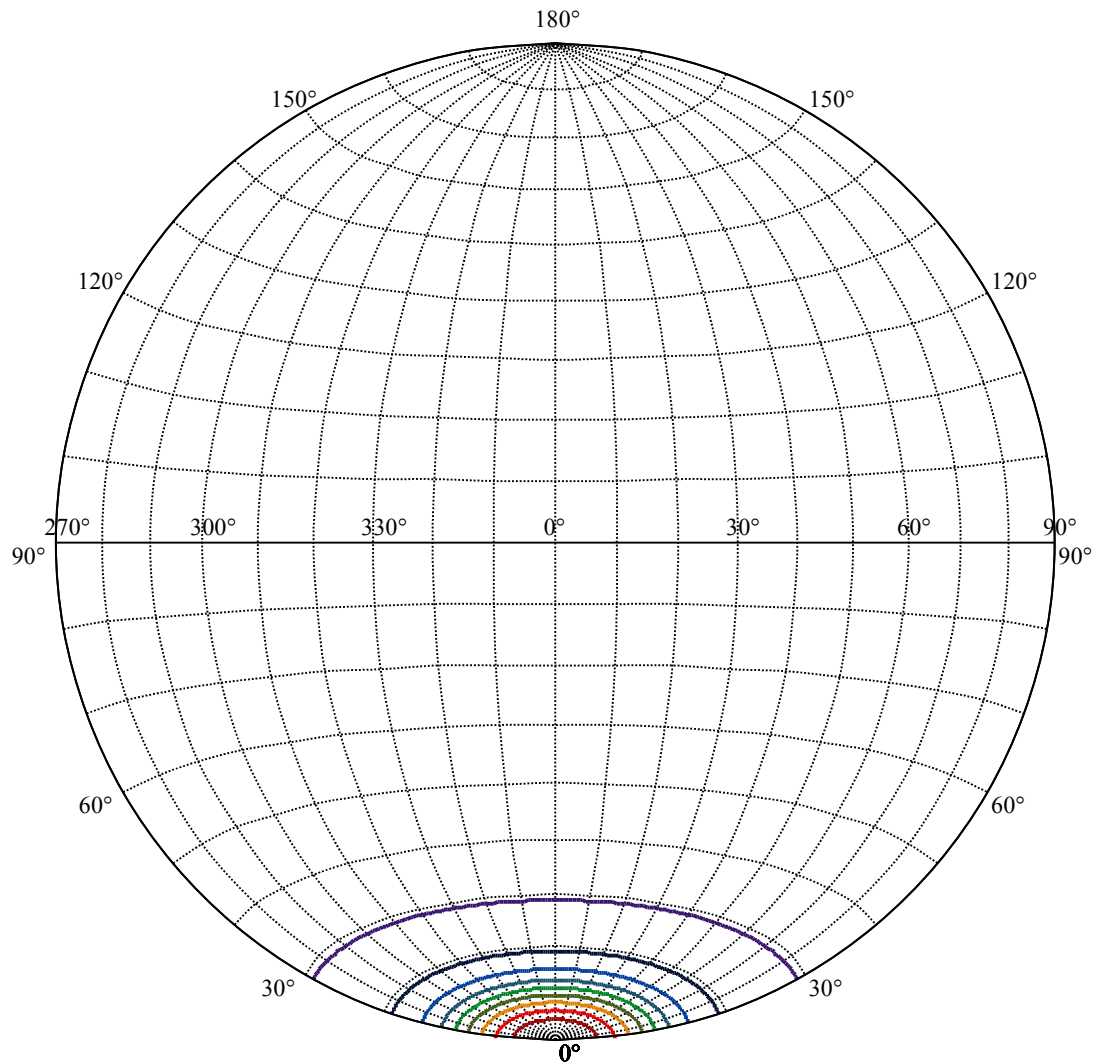
:C90/270Left:29.0 Right:29.0

Beam Angle(50%Imax):C0/180Left:11.5 Right:11.5

:C90/270Left:11.5 Right:11.5







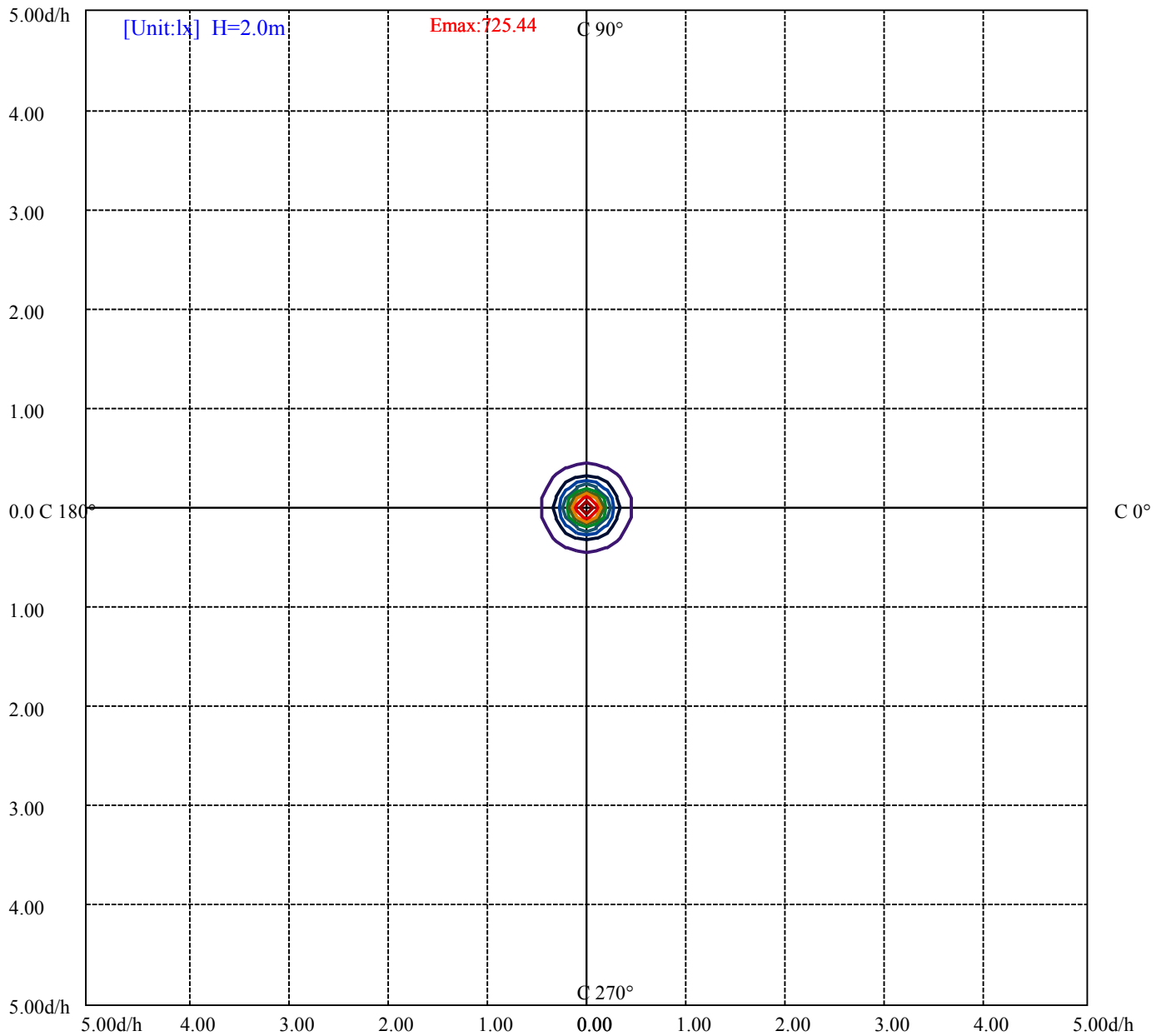
House

[Unit:cd]

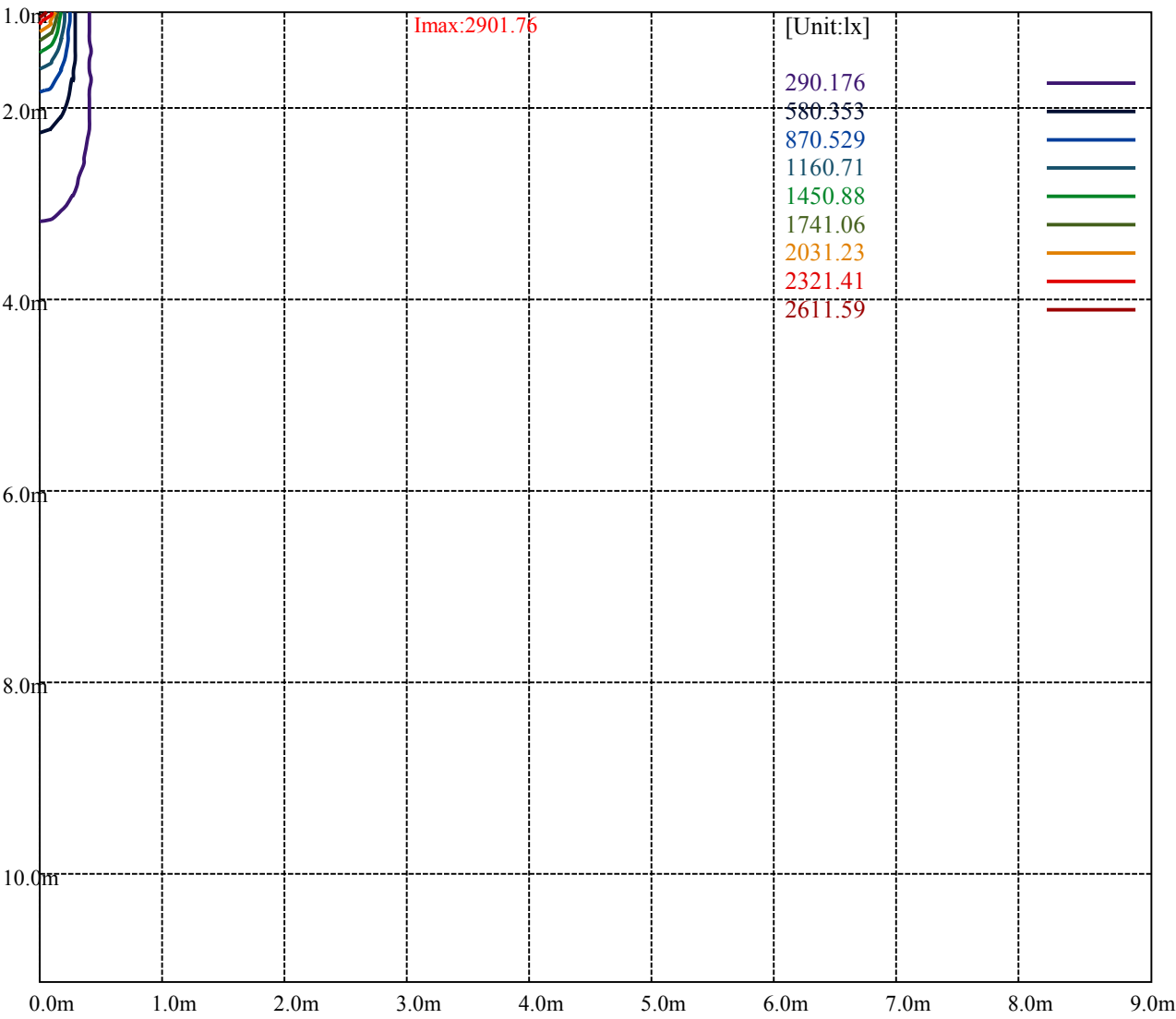
Road

**Imax:2901.76**

|           |         |   |
|-----------|---------|---|
| (10%Imax) | 290.176 | — |
| (20%Imax) | 580.353 | — |
| (30%Imax) | 870.529 | — |
| (40%Imax) | 1160.71 | — |
| (50%Imax) | 1450.88 | — |
| (60%Imax) | 1741.06 | — |
| (70%Imax) | 2031.23 | — |
| (80%Imax) | 2321.41 | — |
| (90%Imax) | 2611.59 | — |



|           |          |   |
|-----------|----------|---|
| (10%Emax) | 72.544   | — |
| (20%Emax) | 145.088  | — |
| (30%Emax) | 217.632  | — |
| (40%Emax) | 290.175  | — |
| (50%Emax) | 362.72   | — |
| (60%Emax) | 435.265  | — |
| (70%Emax) | 507.8075 | — |
| (80%Emax) | 580.3525 | — |
| (90%Emax) | 652.8975 | — |



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  |

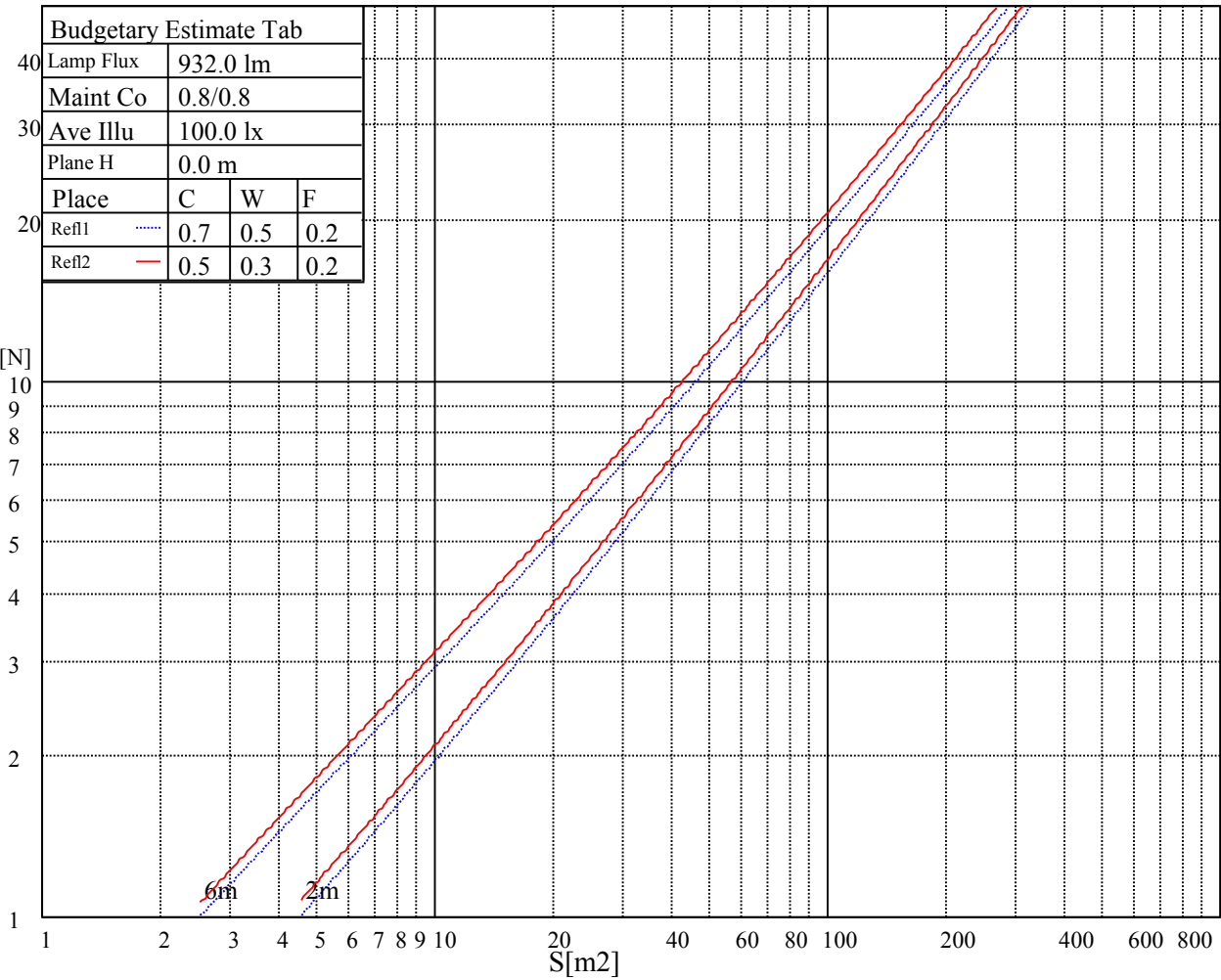
| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 0          | 0          | 0       | 0          | 0          | 0       | 0     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

Glare Table

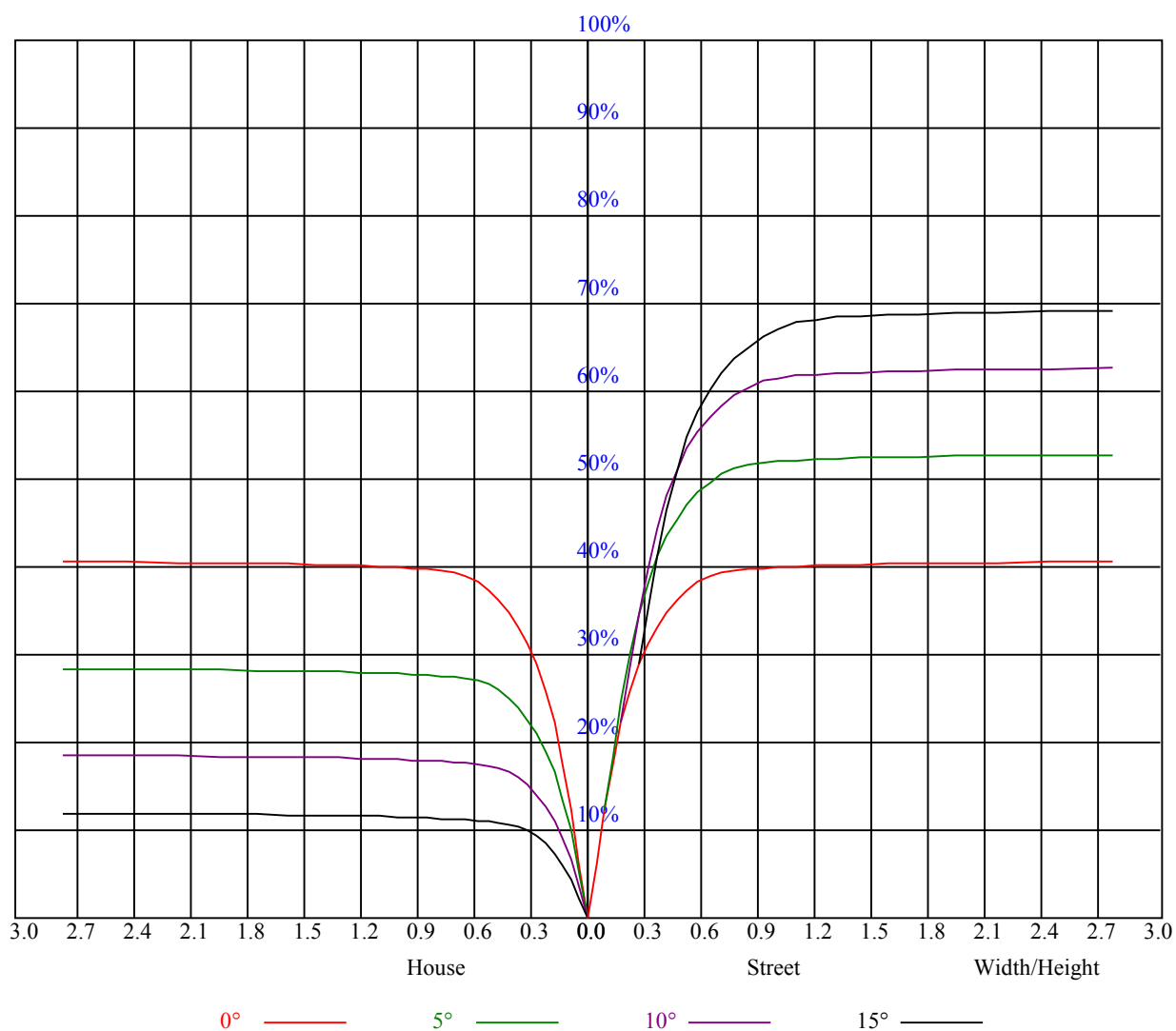
| Glare | Quality | Service Values Illuminance(lx) |      |      |            |            |            |            |            |
|-------|---------|--------------------------------|------|------|------------|------------|------------|------------|------------|
| 1.15  | A       | 2000            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





| 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    | 0.97                                    | 0.97 | 0.97 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.87 | 0.87 | 0.87 | 0.83 | 0.83 | 0.83 | 0.82 |
| 1    | 0.91                                    | 0.89 | 0.88 | 0.90 | 0.88 | 0.86 | 0.86 | 0.85 | 0.84 | 0.83 | 0.82 | 0.81 | 0.80 | 0.80 | 0.79 | 0.78 |
| 2    | 0.86                                    | 0.83 | 0.81 | 0.85 | 0.82 | 0.80 | 0.82 | 0.80 | 0.78 | 0.80 | 0.78 | 0.77 | 0.78 | 0.76 | 0.75 | 0.74 |
| 3    | 0.82                                    | 0.78 | 0.76 | 0.81 | 0.77 | 0.75 | 0.78 | 0.76 | 0.74 | 0.77 | 0.74 | 0.73 | 0.75 | 0.73 | 0.72 | 0.70 |
| 4    | 0.78                                    | 0.74 | 0.71 | 0.77 | 0.73 | 0.71 | 0.75 | 0.72 | 0.70 | 0.74 | 0.71 | 0.69 | 0.72 | 0.70 | 0.68 | 0.67 |
| 5    | 0.74                                    | 0.70 | 0.67 | 0.73 | 0.70 | 0.67 | 0.72 | 0.69 | 0.67 | 0.71 | 0.68 | 0.66 | 0.70 | 0.67 | 0.65 | 0.64 |
| 6    | 0.71                                    | 0.67 | 0.64 | 0.70 | 0.67 | 0.64 | 0.69 | 0.66 | 0.64 | 0.68 | 0.65 | 0.63 | 0.67 | 0.65 | 0.63 | 0.62 |
| 7    | 0.68                                    | 0.64 | 0.61 | 0.68 | 0.64 | 0.61 | 0.67 | 0.63 | 0.61 | 0.66 | 0.63 | 0.61 | 0.65 | 0.62 | 0.60 | 0.59 |
| 8    | 0.66                                    | 0.62 | 0.59 | 0.65 | 0.61 | 0.59 | 0.64 | 0.61 | 0.59 | 0.64 | 0.61 | 0.58 | 0.63 | 0.60 | 0.58 | 0.57 |
| 9    | 0.63                                    | 0.59 | 0.57 | 0.63 | 0.59 | 0.57 | 0.62 | 0.59 | 0.56 | 0.61 | 0.58 | 0.56 | 0.61 | 0.58 | 0.56 | 0.55 |
| 10   | 0.61                                    | 0.57 | 0.55 | 0.61 | 0.57 | 0.55 | 0.60 | 0.57 | 0.54 | 0.59 | 0.56 | 0.54 | 0.59 | 0.56 | 0.54 | 0.53 |



## Intensity data(cd)

| C/ $\gamma$ (°) | 0.0     | 1.0     | 2.0     | 3.0     | 4.0     | 5.0     | 6.0     | 7.0     | 8.0     |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.0             | 2912.32 | 2917.89 | 2897.01 | 2845.96 | 2769.40 | 2675.66 | 2548.52 | 2390.28 | 2219.05 |
| 45.0            | 2890.05 | 2906.29 | 2908.14 | 2873.81 | 2841.79 | 2768.01 | 2671.49 | 2546.20 | 2397.71 |
| 90.0            | 2895.15 | 2871.02 | 2819.98 | 2742.02 | 2640.86 | 2520.21 | 2377.75 | 2218.59 | 2042.72 |
| 135.0           | 2909.54 | 2887.26 | 2842.25 | 2775.89 | 2676.13 | 2545.27 | 2459.89 | 2234.37 | 2131.82 |
| 180.0           | 2912.32 | 2888.19 | 2859.88 | 2754.08 | 2647.36 | 2567.08 | 2348.98 | 2245.04 | 2062.68 |
| 225.0           | 2890.05 | 2822.30 | 2778.21 | 2685.41 | 2558.73 | 2394.46 | 2210.70 | 2011.17 | 1811.63 |
| 270.0           | 2895.15 | 2899.33 | 2880.77 | 2830.19 | 2768.93 | 2658.03 | 2524.39 | 2364.76 | 2191.21 |
| 315.0           | 2909.54 | 2912.32 | 2877.52 | 2809.30 | 2721.60 | 2602.81 | 2462.67 | 2299.80 | 2129.50 |
| 360.0           | 2912.32 | 2917.89 | 2897.01 | 2845.96 | 2769.40 | 2675.66 | 2548.52 | 2390.28 | 2219.05 |
| C/ $\gamma$ (°) | 9.0     | 10.0    | 11.0    | 12.0    | 13.0    | 14.0    | 15.0    | 16.0    | 17.0    |
| 0.0             | 2033.44 | 1846.90 | 1652.93 | 1459.43 | 1272.89 | 918.74  | 873.08  | 873.08  | 773.31  |
| 45.0            | 2236.22 | 2056.18 | 1869.17 | 1677.06 | 1484.49 | 1290.99 | 1116.51 | 967.56  | 843.66  |
| 90.0            | 1862.21 | 1673.35 | 1482.17 | 1295.16 | 1061.29 | 921.80  | 921.80  | 815.17  | 725.42  |
| 135.0           | 1959.20 | 1777.29 | 1589.36 | 1405.60 | 1232.06 | 1075.21 | 943.89  | 830.67  | 735.08  |
| 180.0           | 1873.81 | 1683.56 | 1496.09 | 1309.55 | 1141.57 | 994.47  | 876.61  | 774.98  | 689.60  |
| 225.0           | 1608.85 | 1401.89 | 1207.00 | 879.25  | 879.25  | 813.87  | 691.36  | 648.07  | 580.46  |
| 270.0           | 2006.53 | 1815.81 | 1629.27 | 1441.33 | 1260.36 | 1096.56 | 960.60  | 848.30  | 751.78  |
| 315.0           | 1952.24 | 1769.87 | 1583.33 | 1399.57 | 1222.77 | 1052.94 | 889.00  | 845.10  | 749.23  |
| 360.0           | 2033.44 | 1846.90 | 1652.93 | 1459.43 | 1272.89 | 918.74  | 873.08  | 873.08  | 773.31  |
| C/ $\gamma$ (°) | 18.0    | 19.0    | 20.0    | 21.0    | 22.0    | 23.0    | 24.0    | 25.0    | 26.0    |
| 0.0             | 691.73  | 625.33  | 567.79  | 517.21  | 473.92  | 436.05  | 402.83  | 375.64  | 352.71  |
| 45.0            | 741.57  | 657.12  | 588.90  | 530.44  | 482.64  | 457.12  | 409.32  | 392.15  | 367.56  |
| 90.0            | 649.93  | 585.70  | 531.64  | 485.33  | 446.17  | 413.55  | 385.84  | 363.06  | 343.34  |
| 135.0           | 655.26  | 587.98  | 532.76  | 484.50  | 445.05  | 410.72  | 383.34  | 361.06  | 341.58  |
| 180.0           | 618.14  | 559.21  | 509.09  | 467.79  | 434.85  | 406.54  | 381.48  | 358.74  | 342.50  |
| 225.0           | 517.54  | 457.44  | 402.97  | 356.10  | 317.91  | 289.00  | 270.58  | 258.10  | 247.56  |
| 270.0           | 670.57  | 599.58  | 540.65  | 491.92  | 449.23  | 413.96  | 385.19  | 371.27  | 353.64  |
| 315.0           | 670.20  | 603.34  | 544.68  | 495.08  | 454.38  | 420.88  | 394.01  | 372.90  | 354.94  |
| 360.0           | 691.73  | 625.33  | 567.79  | 517.21  | 473.92  | 436.05  | 402.83  | 375.64  | 352.71  |
| C/ $\gamma$ (°) | 27.0    | 28.0    | 29.0    | 30.0    | 31.0    | 32.0    | 33.0    | 34.0    | 35.0    |
| 0.0             | 333.22  | 316.42  | 303.48  | 290.62  | 271.37  | 239.07  | 198.70  | 156.43  | 115.82  |
| 45.0            | 346.22  | 329.05  | 315.59  | 303.52  | 291.00  | 277.07  | 249.70  | 249.70  | 162.23  |
| 90.0            | 325.89  | 309.93  | 293.55  | 272.02  | 237.54  | 196.89  | 162.69  | 112.57  | 82.92   |
| 135.0           | 326.73  | 309.09  | 289.14  | 274.75  | 245.98  | 239.02  | 197.54  | 128.35  | 91.83   |
| 180.0           | 320.23  | 306.77  | 289.14  | 267.33  | 235.31  | 235.31  | 153.60  | 113.73  | 79.30   |
| 225.0           | 237.45  | 224.45  | 204.41  | 177.26  | 146.91  | 116.33  | 89.09   | 66.77   | 56.66   |
| 270.0           | 339.25  | 327.65  | 315.59  | 300.74  | 278.93  | 244.13  | 244.13  | 156.52  | 115.31  |
| 315.0           | 338.51  | 323.29  | 307.24  | 287.75  | 271.41  | 235.64  | 175.92  | 150.30  | 109.51  |
| 360.0           | 333.22  | 316.42  | 303.48  | 290.62  | 271.37  | 239.07  | 198.70  | 156.43  | 115.82  |
| C/ $\gamma$ (°) | 36.0    | 37.0    | 38.0    | 39.0    | 40.0    | 41.0    | 42.0    | 43.0    | 44.0    |
| 0.0             | 92.48   | 51.88   | 42.37   | 34.43   | 28.63   | 24.18   | 21.21   | 19.07   | 17.22   |
| 45.0            | 120.23  | 81.99   | 62.55   | 37.12   | 33.09   | 27.75   | 23.48   | 20.97   | 19.07   |
| 90.0            | 53.87   | 35.92   | 31.00   | 26.08   | 22.51   | 20.23   | 18.42   | 16.89   | 15.59   |
| 135.0           | 61.62   | 42.37   | 33.74   | 28.58   | 24.32   | 21.62   | 20.32   | 17.73   | 16.94   |
| 180.0           | 53.74   | 39.07   | 32.95   | 27.84   | 23.94   | 21.35   | 19.30   | 18.14   | 16.71   |
| 225.0           | 45.29   | 35.41   | 32.16   | 27.84   | 24.73   | 22.13   | 20.05   | 18.38   | 16.98   |
| 270.0           | 79.67   | 52.99   | 38.56   | 32.39   | 27.42   | 23.71   | 21.62   | 19.54   | 17.54   |
| 315.0           | 73.92   | 49.05   | 36.98   | 31.32   | 26.54   | 23.11   | 20.74   | 18.79   | 17.26   |
| 360.0           | 92.48   | 51.88   | 42.37   | 34.43   | 28.63   | 24.18   | 21.21   | 19.07   | 17.22   |

| Intensity data(cd) |       |       |       |       |       |       |       |       |       | Appendix Page: 17 Total:18 |  |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------------|--|
| C/ $\gamma$ (°)    | 45.0  | 46.0  | 47.0  | 48.0  | 49.0  | 50.0  | 51.0  | 52.0  | 53.0  |                            |  |
| 0.0                | 15.78 | 14.52 | 13.46 | 12.67 | 11.93 | 11.18 | 10.63 | 10.12 | 9.70  |                            |  |
| 45.0               | 17.45 | 16.10 | 14.94 | 13.97 | 13.09 | 12.39 | 11.79 | 11.23 | 10.67 |                            |  |
| 90.0               | 14.43 | 13.41 | 12.67 | 11.97 | 11.37 | 10.77 | 10.30 | 9.93  | 9.51  |                            |  |
| 135.0              | 15.55 | 14.06 | 13.50 | 12.71 | 12.02 | 11.46 | 10.90 | 10.44 | 10.02 |                            |  |
| 180.0              | 15.41 | 14.25 | 13.36 | 12.67 | 11.97 | 11.32 | 10.81 | 10.39 | 10.07 |                            |  |
| 225.0              | 15.78 | 14.71 | 13.74 | 12.99 | 12.30 | 11.65 | 11.23 | 10.86 | 10.49 |                            |  |
| 270.0              | 16.43 | 15.17 | 14.06 | 13.27 | 12.48 | 11.79 | 11.23 | 10.77 | 10.39 |                            |  |
| 315.0              | 15.92 | 14.76 | 13.78 | 13.04 | 12.25 | 11.55 | 11.00 | 10.77 | 10.39 |                            |  |
| 360.0              | 15.78 | 14.52 | 13.46 | 12.67 | 11.93 | 11.18 | 10.63 | 10.12 | 9.70  |                            |  |
| C/ $\gamma$ (°)    | 54.0  | 55.0  | 56.0  | 57.0  | 58.0  | 59.0  | 60.0  | 61.0  | 62.0  |                            |  |
| 0.0                | 9.37  | 9.19  | 8.96  | 8.63  | 7.98  | 7.84  | 7.52  | 7.33  | 7.10  |                            |  |
| 45.0               | 10.26 | 10.02 | 9.74  | 9.56  | 9.10  | 8.68  | 8.12  | 7.98  | 7.61  |                            |  |
| 90.0               | 9.37  | 9.00  | 8.63  | 8.35  | 7.89  | 7.75  | 7.42  | 7.24  | 7.01  |                            |  |
| 135.0              | 9.70  | 9.42  | 9.10  | 8.77  | 8.40  | 8.21  | 7.93  | 7.75  | 7.56  |                            |  |
| 180.0              | 9.74  | 9.42  | 9.05  | 8.58  | 8.21  | 7.93  | 7.66  | 7.42  | 7.10  |                            |  |
| 225.0              | 10.16 | 9.51  | 9.10  | 8.82  | 8.35  | 8.07  | 7.70  | 7.38  | 7.10  |                            |  |
| 270.0              | 10.07 | 9.74  | 9.42  | 9.05  | 8.58  | 8.26  | 7.98  | 7.80  | 7.42  |                            |  |
| 315.0              | 10.12 | 9.79  | 9.51  | 9.05  | 8.68  | 8.45  | 8.17  | 7.89  | 7.66  |                            |  |
| 360.0              | 9.37  | 9.19  | 8.96  | 8.63  | 7.98  | 7.84  | 7.52  | 7.33  | 7.10  |                            |  |
| C/ $\gamma$ (°)    | 63.0  | 64.0  | 65.0  | 66.0  | 67.0  | 68.0  | 69.0  | 70.0  | 71.0  |                            |  |
| 0.0                | 6.82  | 6.50  | 6.26  | 6.08  | 5.80  | 5.52  | 5.24  | 5.06  | 4.83  |                            |  |
| 45.0               | 7.33  | 7.05  | 6.77  | 6.50  | 6.22  | 5.94  | 5.61  | 5.38  | 5.15  |                            |  |
| 90.0               | 6.73  | 6.50  | 6.22  | 6.03  | 5.75  | 5.48  | 5.15  | 4.92  | 4.69  |                            |  |
| 135.0              | 7.33  | 7.05  | 6.77  | 6.59  | 6.31  | 6.13  | 5.80  | 5.57  | 5.34  |                            |  |
| 180.0              | 6.82  | 6.59  | 6.31  | 6.03  | 5.80  | 5.48  | 5.15  | 4.97  | 4.69  |                            |  |
| 225.0              | 6.68  | 6.36  | 6.13  | 5.80  | 5.48  | 5.15  | 4.97  | 4.73  | 4.45  |                            |  |
| 270.0              | 7.15  | 6.96  | 6.59  | 6.45  | 6.17  | 5.85  | 5.57  | 5.29  | 5.01  |                            |  |
| 315.0              | 7.47  | 7.24  | 6.91  | 6.73  | 6.45  | 6.17  | 5.89  | 5.66  | 5.48  |                            |  |
| 360.0              | 6.82  | 6.50  | 6.26  | 6.08  | 5.80  | 5.52  | 5.24  | 5.06  | 4.83  |                            |  |
| C/ $\gamma$ (°)    | 72.0  | 73.0  | 74.0  | 75.0  | 76.0  | 77.0  | 78.0  | 79.0  | 80.0  |                            |  |
| 0.0                | 4.55  | 4.32  | 4.13  | 3.94  | 3.71  | 3.53  | 3.29  | 3.16  | 3.02  |                            |  |
| 45.0               | 4.87  | 4.59  | 4.32  | 4.13  | 3.90  | 3.67  | 3.48  | 3.34  | 3.16  |                            |  |
| 90.0               | 4.45  | 4.18  | 3.94  | 3.81  | 3.57  | 3.34  | 3.29  | 3.02  | 2.83  |                            |  |
| 135.0              | 5.15  | 4.87  | 4.64  | 4.45  | 4.22  | 4.04  | 3.85  | 3.71  | 3.48  |                            |  |
| 180.0              | 4.45  | 4.18  | 3.99  | 3.76  | 3.62  | 3.29  | 3.11  | 2.92  | 2.78  |                            |  |
| 225.0              | 4.22  | 3.99  | 3.76  | 3.57  | 3.29  | 3.11  | 2.97  | 2.74  | 2.51  |                            |  |
| 270.0              | 4.73  | 4.50  | 4.32  | 3.99  | 3.81  | 3.62  | 3.43  | 3.16  | 2.97  |                            |  |
| 315.0              | 5.10  | 4.97  | 4.73  | 4.50  | 4.32  | 4.08  | 3.90  | 3.71  | 3.57  |                            |  |
| 360.0              | 4.55  | 4.32  | 4.13  | 3.94  | 3.71  | 3.53  | 3.29  | 3.16  | 3.02  |                            |  |
| C/ $\gamma$ (°)    | 81.0  | 82.0  | 83.0  | 84.0  | 85.0  | 86.0  | 87.0  | 88.0  | 89.0  |                            |  |
| 0.0                | 2.69  | 2.60  | 2.46  | 2.23  | 2.04  | 1.86  | 1.76  | 1.67  | 1.58  |                            |  |
| 45.0               | 2.88  | 2.69  | 2.60  | 2.32  | 2.13  | 1.95  | 1.72  | 1.62  | 1.48  |                            |  |
| 90.0               | 2.64  | 2.46  | 2.27  | 2.23  | 2.09  | 1.90  | 1.81  | 1.72  | 1.62  |                            |  |
| 135.0              | 3.29  | 3.16  | 3.02  | 2.88  | 2.69  | 2.51  | 2.37  | 2.23  | 2.09  |                            |  |
| 180.0              | 2.60  | 2.41  | 2.27  | 2.13  | 1.90  | 1.81  | 1.67  | 1.58  | 1.44  |                            |  |
| 225.0              | 2.37  | 2.27  | 2.09  | 1.90  | 1.72  | 1.58  | 1.48  | 1.39  | 1.30  |                            |  |
| 270.0              | 2.78  | 2.64  | 2.41  | 2.23  | 2.09  | 1.95  | 1.86  | 1.67  | 1.53  |                            |  |
| 315.0              | 3.34  | 3.20  | 3.06  | 2.92  | 2.74  | 2.64  | 2.41  | 2.13  | 2.00  |                            |  |
| 360.0              | 2.69  | 2.60  | 2.46  | 2.23  | 2.04  | 1.86  | 1.76  | 1.67  | 1.58  |                            |  |

## Intensity data(cd)

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|                       |      |
|-----------------------|------|
| C/ $\gamma(^{\circ})$ | 90.0 |
| 0.0                   | 1.48 |
| 45.0                  | 1.44 |
| 90.0                  | 1.48 |
| 135.0                 | 1.86 |
| 180.0                 | 1.39 |
| 225.0                 | 1.30 |
| 270.0                 | 1.48 |
| 315.0                 | 1.90 |
| 360.0                 | 1.48 |