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# Indoor Luminaire Photometric Data

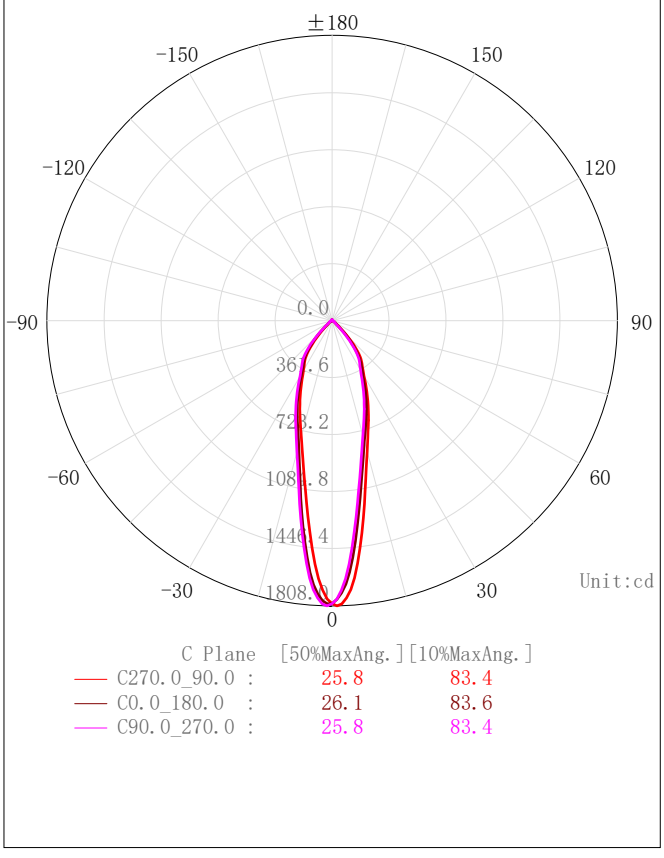
## Description Information

| | | | |
|---|---|---|---|
| Luminary Name: HCP-813024-5000K RA90 28D | | Lum. Catelog: | Test ID: 01 |
| Lamp Name: | | Lamp Catelog: LED | Test Date: 2020/09/27 |
| Manufacture: Havit Commercial | | Shld.Ang(° ): | Test Machine:GON-2000 |
| Test Lab: Quality Department | | Frequency(Hz): | Lamp CCT(K): Ra: |
| Lum.Size(W*L*H):0.050m*0.000m*0.080m | | Lum.Area(m2):0.016 | Lum.W(kg): 0.000 |
| Test System: C,γ | Test Step: C=90.0 γ=1.0 | Temp.(℃): 25 | Humidity(%): 50.0 |

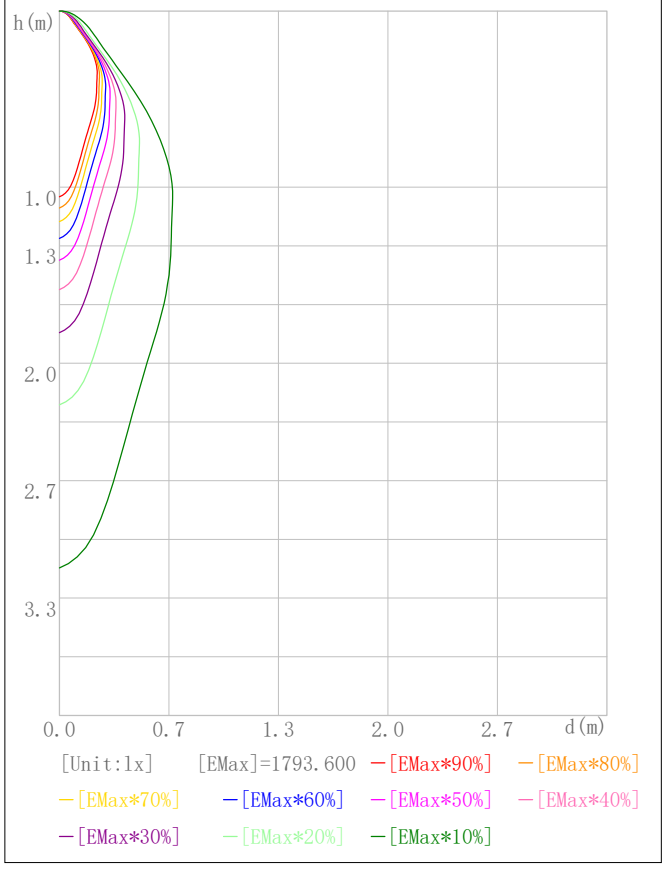
## Character Parameter

| Lamp Speciality Parameter | Luminaire Speciality Parameter | |
|---|---|---|
| Rated Flux(lm): 925.170 | Luminary Flux(lm): 925.172 | Field Angle(10%Imax): 83.4(° ) |
| Rated Power(W): | Luminary Efficiency: 100.00% | Down Lumens&Percent: 913.061lm 98.69% |
| Rated Voltage(V): | Luminary EER(lm/W): 75.034 | Up Lumens&Percent: 12.111lm 1.31% |
| Tested Power(W): 12.330 | Max.Candela(cd): 1808.033 | S/MH: C0_a180=0.424 C90_270=0.423 |
| Lamps' Inside: 1 | Max Cand@Ang.(° ): C=270.0 γ=1.0 | CIE Type: Semi-Direct |
| Tested Electrics(V,A,pf):240.3,0.054,0.944 | Beam Angle(50%Imax): 25.8(° ) | ErP Φuse(90° ): 832.444lm |
| Lamp Size(W*L*H):0.050m*0.000m*0.080m | Left=-11.8° ,Right=14.1° | IRF(%): 434.191 |

## C Plane Distribution Diagram



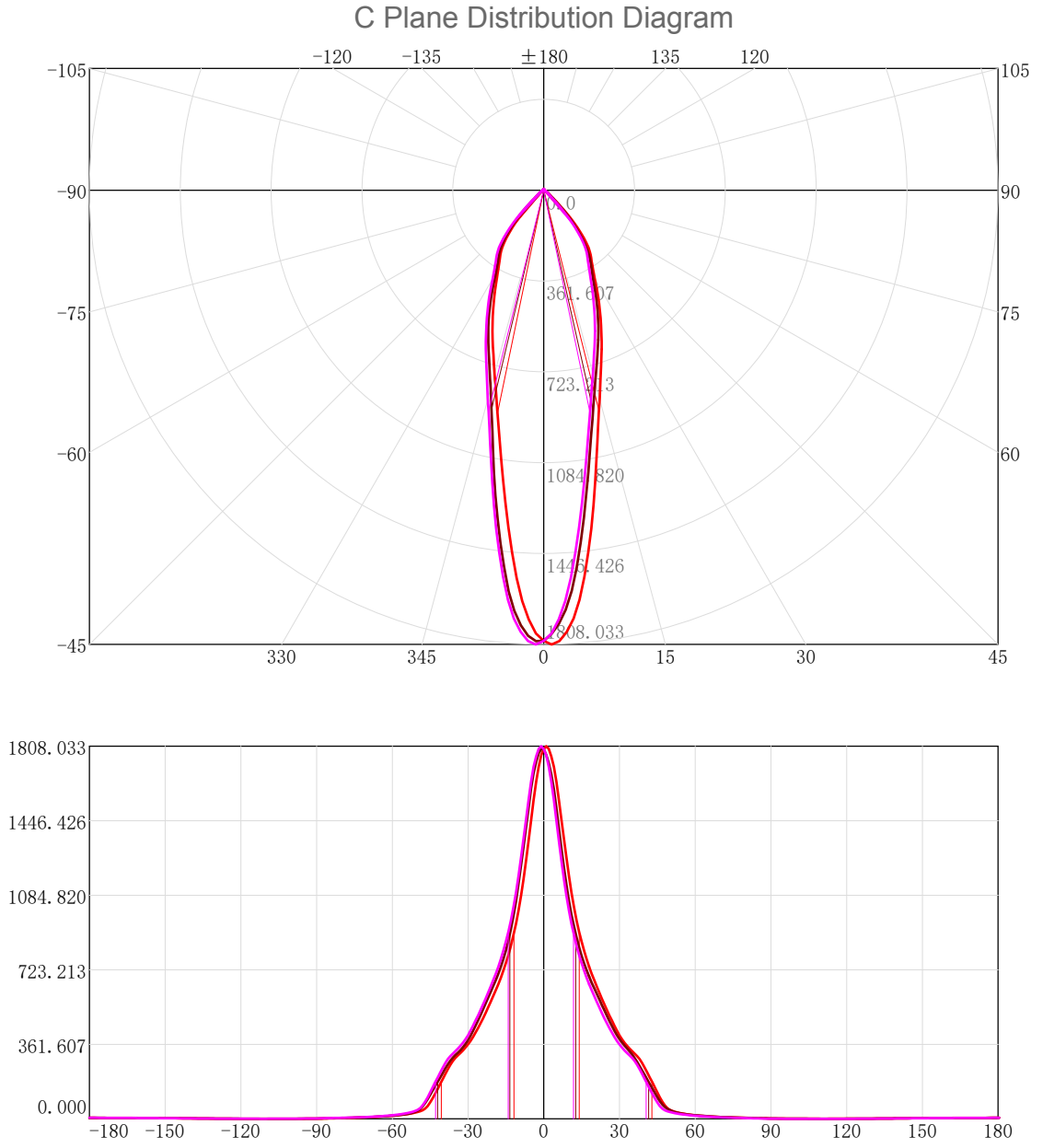

## C0 Space ISO Illuminance Curve



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# 2D Plane Light Intensity Distribution Curve

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |



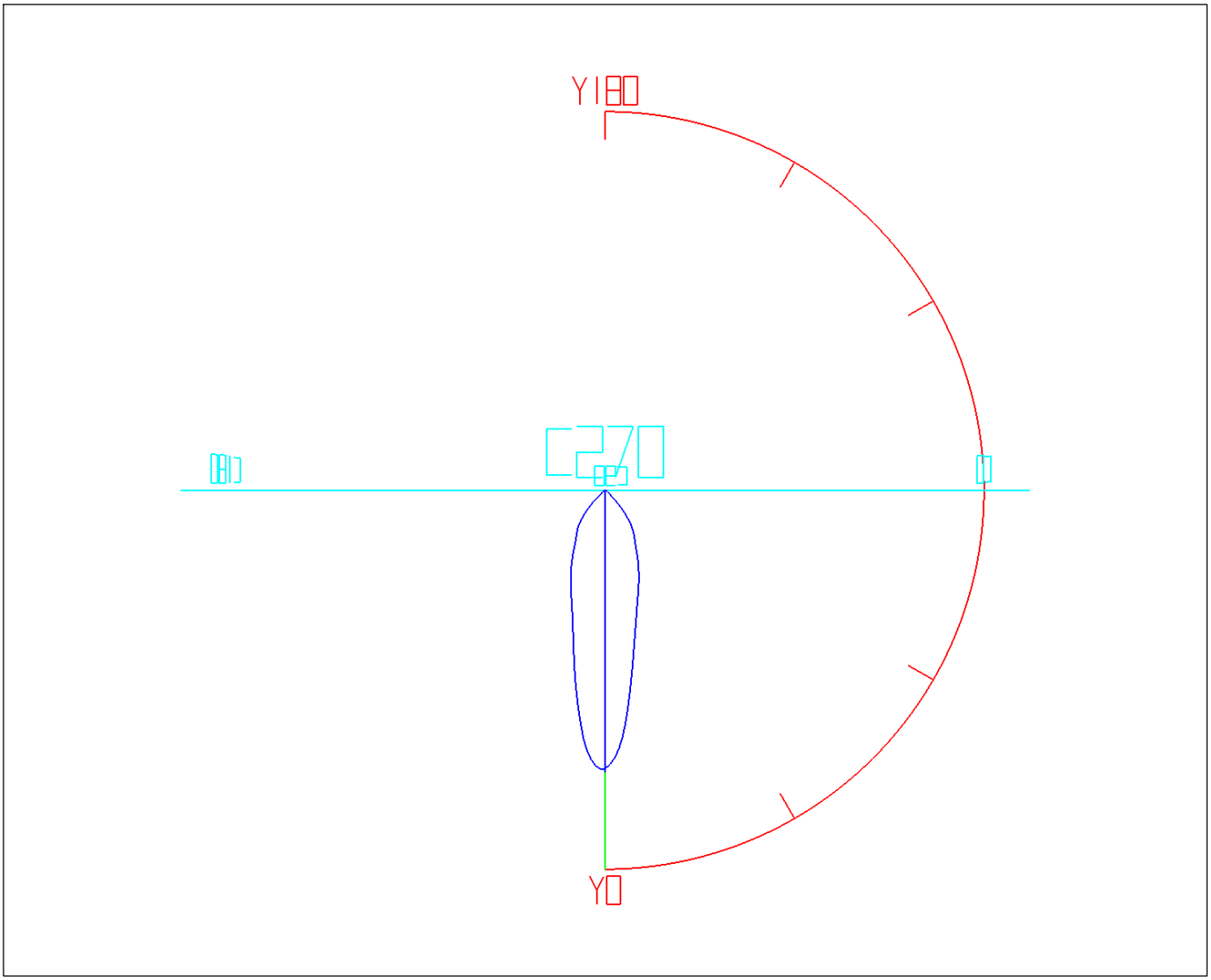

| C Plane | [50%MaxAng.] | [10%MaxAng.] | Unit:cd |
|---|---|---|---|
| C270.0_90.0 : | 25.8 | 83.4 | |
| C0.0_180.0 : | 26.1 | 83.6 | |
| C90.0_270.0 : | 25.8 | 83.4 | |

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# 3D Light Intensity Distribution Modal

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |

3D Light Intensity Distribution Modal




Curves: 3D Model Fixture Vert. HUD Hori. HUD
View Angles: Orient:0 Tilt:0 Roll:0 Spin:0

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# Zonal Flux Tabulation

| Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp | Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp |
|---|---|---|---|---|---|---|---|---|---|
| 0.0-1.0 | 1.71 | 1.71 | 0.18 | 0.18 | 47.0-48.0 | 5.13 | 859.72 | 0.55 | 92.93 |
| 1.0-2.0 | 5.07 | 6.78 | 0.55 | 0.73 | 48.0-49.0 | 4.25 | 863.97 | 0.46 | 93.38 |
| 2.0-3.0 | 8.26 | 15.04 | 0.89 | 1.63 | 49.0-50.0 | 3.63 | 867.60 | 0.39 | 93.78 |
| 3.0-4.0 | 11.16 | 26.20 | 1.21 | 2.83 | 50.0-51.0 | 3.19 | 870.78 | 0.34 | 94.12 |
| 4.0-5.0 | 13.68 | 39.88 | 1.48 | 4.31 | 51.0-52.0 | 2.86 | 873.64 | 0.31 | 94.43 |
| 5.0-6.0 | 15.77 | 55.65 | 1.70 | 6.02 | 52.0-53.0 | 2.59 | 876.23 | 0.28 | 94.71 |
| 6.0-7.0 | 17.44 | 73.09 | 1.89 | 7.90 | 53.0-54.0 | 2.38 | 878.61 | 0.26 | 94.97 |
| 7.0-8.0 | 18.77 | 91.87 | 2.03 | 9.93 | 54.0-55.0 | 2.22 | 880.83 | 0.24 | 95.21 |
| 8.0-9.0 | 19.81 | 111.68 | 2.14 | 12.07 | 55.0-56.0 | 2.08 | 882.91 | 0.22 | 95.43 |
| 9.0-10.0 | 20.61 | 132.29 | 2.23 | 14.30 | 56.0-57.0 | 1.94 | 884.85 | 0.21 | 95.64 |
| 10.0-11.0 | 21.20 | 153.48 | 2.29 | 16.59 | 57.0-58.0 | 1.83 | 886.68 | 0.20 | 95.84 |
| 11.0-12.0 | 21.66 | 175.14 | 2.34 | 18.93 | 58.0-59.0 | 1.72 | 888.40 | 0.19 | 96.03 |
| 12.0-13.0 | 22.05 | 197.19 | 2.38 | 21.31 | 59.0-60.0 | 1.63 | 890.03 | 0.18 | 96.20 |
| 13.0-14.0 | 22.40 | 219.59 | 2.42 | 23.74 | 60.0-61.0 | 1.55 | 891.58 | 0.17 | 96.37 |
| 14.0-15.0 | 22.74 | 242.33 | 2.46 | 26.19 | 61.0-62.0 | 1.47 | 893.05 | 0.16 | 96.53 |
| 15.0-16.0 | 23.04 | 265.36 | 2.49 | 28.68 | 62.0-63.0 | 1.40 | 894.45 | 0.15 | 96.68 |
| 16.0-17.0 | 23.30 | 288.67 | 2.52 | 31.20 | 63.0-64.0 | 1.33 | 895.78 | 0.14 | 96.82 |
| 17.0-18.0 | 23.53 | 312.19 | 2.54 | 33.74 | 64.0-65.0 | 1.26 | 897.04 | 0.14 | 96.96 |
| 18.0-19.0 | 23.72 | 335.91 | 2.56 | 36.31 | 65.0-66.0 | 1.19 | 898.23 | 0.13 | 97.09 |
| 19.0-20.0 | 23.85 | 359.76 | 2.58 | 38.89 | 66.0-67.0 | 1.12 | 899.35 | 0.12 | 97.21 |
| 20.0-21.0 | 23.91 | 383.67 | 2.58 | 41.47 | 67.0-68.0 | 1.05 | 900.40 | 0.11 | 97.32 |
| 21.0-22.0 | 23.90 | 407.57 | 2.58 | 44.05 | 68.0-69.0 | 0.98 | 901.38 | 0.11 | 97.43 |
| 22.0-23.0 | 23.79 | 431.37 | 2.57 | 46.63 | 69.0-70.0 | 0.92 | 902.29 | 0.10 | 97.53 |
| 23.0-24.0 | 23.61 | 454.98 | 2.55 | 49.18 | 70.0-71.0 | 0.87 | 903.16 | 0.09 | 97.62 |
| 24.0-25.0 | 23.36 | 478.33 | 2.52 | 51.70 | 71.0-72.0 | 0.83 | 903.99 | 0.09 | 97.71 |
| 25.0-26.0 | 23.02 | 501.35 | 2.49 | 54.19 | 72.0-73.0 | 0.79 | 904.78 | 0.09 | 97.80 |
| 26.0-27.0 | 22.62 | 523.97 | 2.45 | 56.64 | 73.0-74.0 | 0.75 | 905.53 | 0.08 | 97.88 |
| 27.0-28.0 | 22.17 | 546.14 | 2.40 | 59.03 | 74.0-75.0 | 0.72 | 906.25 | 0.08 | 97.95 |
| 28.0-29.0 | 21.70 | 567.85 | 2.35 | 61.38 | 75.0-76.0 | 0.68 | 906.93 | 0.07 | 98.03 |
| 29.0-30.0 | 21.27 | 589.11 | 2.30 | 63.68 | 76.0-77.0 | 0.65 | 907.57 | 0.07 | 98.10 |
| 30.0-31.0 | 20.90 | 610.01 | 2.26 | 65.94 | 77.0-78.0 | 0.61 | 908.19 | 0.07 | 98.16 |
| 31.0-32.0 | 20.59 | 630.60 | 2.23 | 68.16 | 78.0-79.0 | 0.58 | 908.77 | 0.06 | 98.23 |
| 32.0-33.0 | 20.31 | 650.91 | 2.20 | 70.36 | 79.0-80.0 | 0.55 | 909.31 | 0.06 | 98.29 |
| 33.0-34.0 | 20.06 | 670.97 | 2.17 | 72.52 | 80.0-81.0 | 0.51 | 909.83 | 0.06 | 98.34 |
| 34.0-35.0 | 19.78 | 690.74 | 2.14 | 74.66 | 81.0-82.0 | 0.48 | 910.31 | 0.05 | 98.39 |
| 35.0-36.0 | 19.40 | 710.14 | 2.10 | 76.76 | 82.0-83.0 | 0.46 | 910.77 | 0.05 | 98.44 |
| 36.0-37.0 | 18.88 | 729.03 | 2.04 | 78.80 | 83.0-84.0 | 0.43 | 911.19 | 0.05 | 98.49 |
| 37.0-38.0 | 18.16 | 747.19 | 1.96 | 80.76 | 84.0-85.0 | 0.40 | 911.59 | 0.04 | 98.53 |
| 38.0-39.0 | 17.23 | 764.42 | 1.86 | 82.62 | 85.0-86.0 | 0.37 | 911.96 | 0.04 | 98.57 |
| 39.0-40.0 | 16.11 | 780.53 | 1.74 | 84.37 | 86.0-87.0 | 0.33 | 912.30 | 0.04 | 98.61 |
| 40.0-41.0 | 14.86 | 795.40 | 1.61 | 85.97 | 87.0-88.0 | 0.29 | 912.59 | 0.03 | 98.64 |
| 41.0-42.0 | 13.51 | 808.91 | 1.46 | 87.43 | 88.0-89.0 | 0.25 | 912.84 | 0.03 | 98.67 |
| 42.0-43.0 | 12.09 | 821.00 | 1.31 | 88.74 | 89.0-90.0 | 0.22 | 913.06 | 0.02 | 98.69 |
| 43.0-44.0 | 10.61 | 831.61 | 1.15 | 89.89 | 90.0-91.0 | 0.20 | 913.26 | 0.02 | 98.71 |
| 44.0-45.0 | 9.10 | 840.70 | 0.98 | 90.87 | 91.0-92.0 | 0.19 | 913.45 | 0.02 | 98.73 |
| 45.0-46.0 | 7.62 | 848.32 | 0.82 | 91.69 | 92.0-93.0 | 0.18 | 913.63 | 0.02 | 98.75 |
| 46.0-47.0 | 6.26 | 854.58 | 0.68 | 92.37 | 93.0-94.0 | 0.17 | 913.79 | 0.02 | 98.77 |

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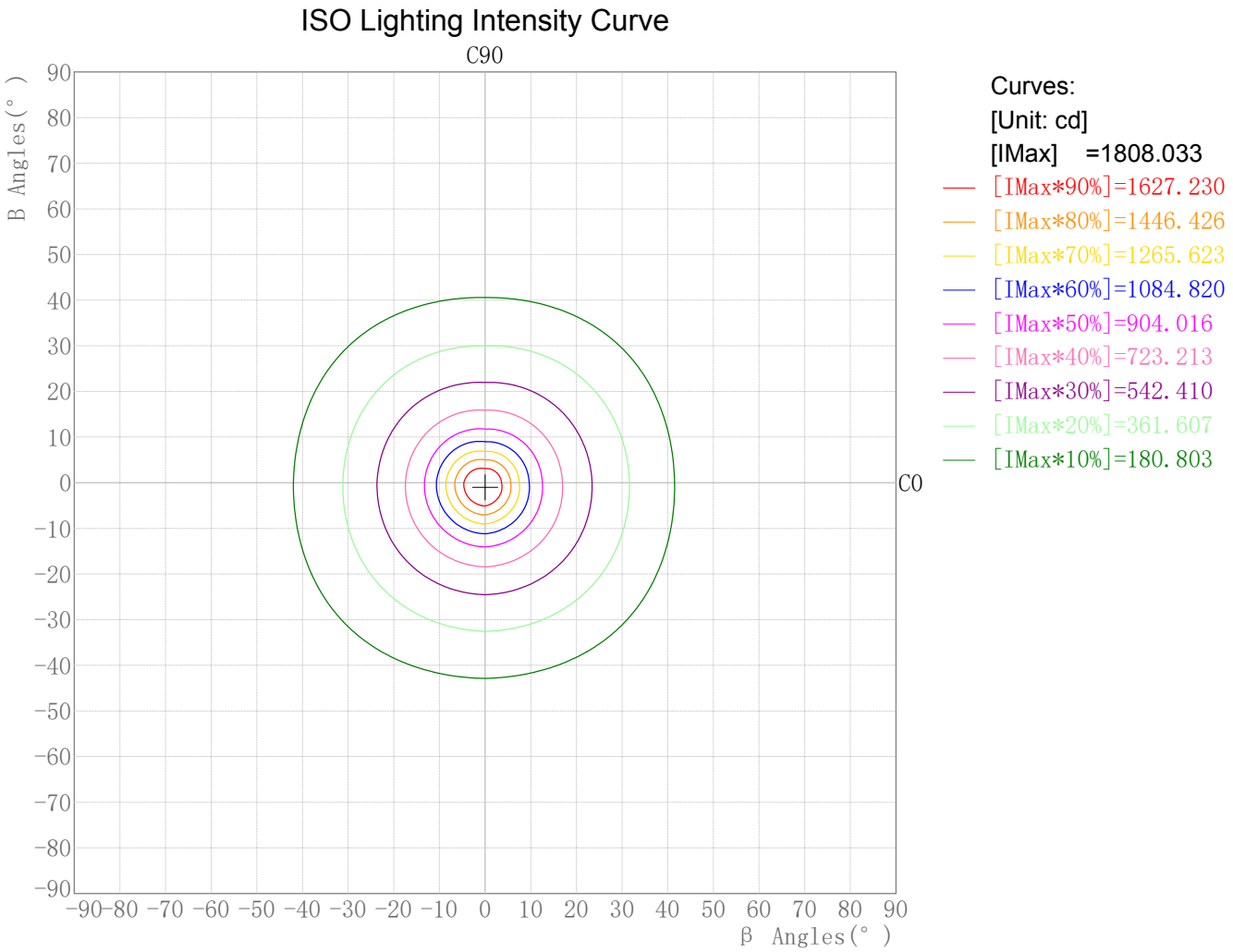
# Zonal Flux Tabulation - (Cont.)

| Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp |
|---|---|---|---|---|
| 94.0-95.0 | 0.16 | 913.95 | 0.02 | 98.79 |
| 95.0-96.0 | 0.15 | 914.10 | 0.02 | 98.80 |
| 96.0-97.0 | 0.14 | 914.24 | 0.02 | 98.82 |
| 97.0-98.0 | 0.13 | 914.38 | 0.01 | 98.83 |
| 98.0-99.0 | 0.13 | 914.51 | 0.01 | 98.85 |
| 99.0-100.0 | 0.12 | 914.63 | 0.01 | 98.86 |
| 100.0-101.0 | 0.12 | 914.74 | 0.01 | 98.87 |
| 101.0-102.0 | 0.11 | 914.85 | 0.01 | 98.88 |
| 102.0-103.0 | 0.11 | 914.96 | 0.01 | 98.90 |
| 103.0-104.0 | 0.10 | 915.06 | 0.01 | 98.91 |
| 104.0-105.0 | 0.10 | 915.16 | 0.01 | 98.92 |
| 105.0-106.0 | 0.10 | 915.26 | 0.01 | 98.93 |
| 106.0-107.0 | 0.09 | 915.35 | 0.01 | 98.94 |
| 107.0-108.0 | 0.09 | 915.45 | 0.01 | 98.95 |
| 108.0-109.0 | 0.09 | 915.54 | 0.01 | 98.96 |
| 109.0-110.0 | 0.09 | 915.63 | 0.01 | 98.97 |
| 110.0-111.0 | 0.09 | 915.72 | 0.01 | 98.98 |
| 111.0-112.0 | 0.09 | 915.81 | 0.01 | 98.99 |
| 112.0-113.0 | 0.09 | 915.89 | 0.01 | 99.00 |
| 113.0-114.0 | 0.09 | 915.98 | 0.01 | 99.01 |
| 114.0-115.0 | 0.09 | 916.07 | 0.01 | 99.02 |
| 115.0-116.0 | 0.09 | 916.17 | 0.01 | 99.03 |
| 116.0-117.0 | 0.09 | 916.26 | 0.01 | 99.04 |
| 117.0-118.0 | 0.09 | 916.35 | 0.01 | 99.05 |
| 118.0-119.0 | 0.10 | 916.45 | 0.01 | 99.06 |
| 119.0-120.0 | 0.10 | 916.55 | 0.01 | 99.07 |
| 120.0-121.0 | 0.10 | 916.65 | 0.01 | 99.08 |
| 121.0-122.0 | 0.11 | 916.76 | 0.01 | 99.09 |
| 122.0-123.0 | 0.11 | 916.86 | 0.01 | 99.10 |
| 123.0-124.0 | 0.11 | 916.98 | 0.01 | 99.11 |
| 124.0-125.0 | 0.12 | 917.09 | 0.01 | 99.13 |
| 125.0-126.0 | 0.12 | 917.21 | 0.01 | 99.14 |
| 126.0-127.0 | 0.12 | 917.33 | 0.01 | 99.15 |
| 127.0-128.0 | 0.13 | 917.46 | 0.01 | 99.17 |
| 128.0-129.0 | 0.13 | 917.59 | 0.01 | 99.18 |
| 129.0-130.0 | 0.14 | 917.73 | 0.01 | 99.20 |
| 130.0-131.0 | 0.14 | 917.87 | 0.02 | 99.21 |
| 131.0-132.0 | 0.15 | 918.02 | 0.02 | 99.23 |
| 132.0-133.0 | 0.15 | 918.17 | 0.02 | 99.24 |
| 133.0-134.0 | 0.16 | 918.33 | 0.02 | 99.26 |
| 134.0-135.0 | 0.16 | 918.49 | 0.02 | 99.28 |
| 135.0-136.0 | 0.17 | 918.65 | 0.02 | 99.30 |
| 136.0-137.0 | 0.17 | 918.83 | 0.02 | 99.31 |
| 137.0-138.0 | 0.18 | 919.00 | 0.02 | 99.33 |
| 138.0-139.0 | 0.18 | 919.18 | 0.02 | 99.35 |
| 139.0-140.0 | 0.19 | 919.37 | 0.02 | 99.37 |
| 140.0-141.0 | 0.19 | 919.56 | 0.02 | 99.39 |
| 141.0-142.0 | 0.19 | 919.75 | 0.02 | 99.41 |
| 142.0-143.0 | 0.20 | 919.95 | 0.02 | 99.44 |
| 143.0-144.0 | 0.20 | 920.15 | 0.02 | 99.46 |
| 144.0-145.0 | 0.20 | 920.35 | 0.02 | 99.48 |
| 145.0-146.0 | 0.20 | 920.56 | 0.02 | 99.50 |
| 146.0-147.0 | 0.21 | 920.76 | 0.02 | 99.52 |
| 147.0-148.0 | 0.21 | 920.97 | 0.02 | 99.55 |
| 148.0-149.0 | 0.21 | 921.17 | 0.02 | 99.57 |
| 149.0-150.0 | 0.21 | 921.38 | 0.02 | 99.59 |
| 150.0-151.0 | 0.20 | 921.58 | 0.02 | 99.61 |
| 151.0-152.0 | 0.20 | 921.79 | 0.02 | 99.63 |
| 152.0-153.0 | 0.20 | 921.99 | 0.02 | 99.66 |
| 153.0-154.0 | 0.20 | 922.18 | 0.02 | 99.68 |
| 154.0-155.0 | 0.19 | 922.38 | 0.02 | 99.70 |
| 155.0-156.0 | 0.19 | 922.57 | 0.02 | 99.72 |
| 156.0-157.0 | 0.19 | 922.76 | 0.02 | 99.74 |
| 157.0-158.0 | 0.18 | 922.94 | 0.02 | 99.76 |
| 158.0-159.0 | 0.18 | 923.12 | 0.02 | 99.78 |
| 159.0-160.0 | 0.17 | 923.29 | 0.02 | 99.80 |
| 160.0-161.0 | 0.17 | 923.46 | 0.02 | 99.82 |
| 161.0-162.0 | 0.16 | 923.62 | 0.02 | 99.83 |
| 162.0-163.0 | 0.16 | 923.78 | 0.02 | 99.85 |
| 163.0-164.0 | 0.15 | 923.93 | 0.02 | 99.87 |
| 164.0-165.0 | 0.14 | 924.07 | 0.02 | 99.88 |
| 165.0-166.0 | 0.14 | 924.21 | 0.01 | 99.90 |
| 166.0-167.0 | 0.13 | 924.33 | 0.01 | 99.91 |
| 167.0-168.0 | 0.12 | 924.45 | 0.01 | 99.92 |
| 168.0-169.0 | 0.11 | 924.56 | 0.01 | 99.93 |
| 169.0-170.0 | 0.10 | 924.67 | 0.01 | 99.95 |
| 170.0-171.0 | 0.09 | 924.76 | 0.01 | 99.96 |
| 171.0-172.0 | 0.08 | 924.85 | 0.01 | 99.97 |
| 172.0-173.0 | 0.08 | 924.92 | 0.01 | 99.97 |
| 173.0-174.0 | 0.07 | 924.99 | 0.01 | 99.98 |
| 174.0-175.0 | 0.06 | 925.04 | 0.01 | 99.99 |
| 175.0-176.0 | 0.05 | 925.09 | 0.00 | 99.99 |
| 176.0-177.0 | 0.04 | 925.13 | 0.00 | 100.00 |
| 177.0-178.0 | 0.03 | 925.15 | 0.00 | 100.00 |
| 178.0-179.0 | 0.02 | 925.17 | 0.00 | 100.00 |
| 179.0-180.0 | 0.01 | 925.17 | 0.00 | 100.00 |

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# Rectangle ISO Lighting Intensity Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |



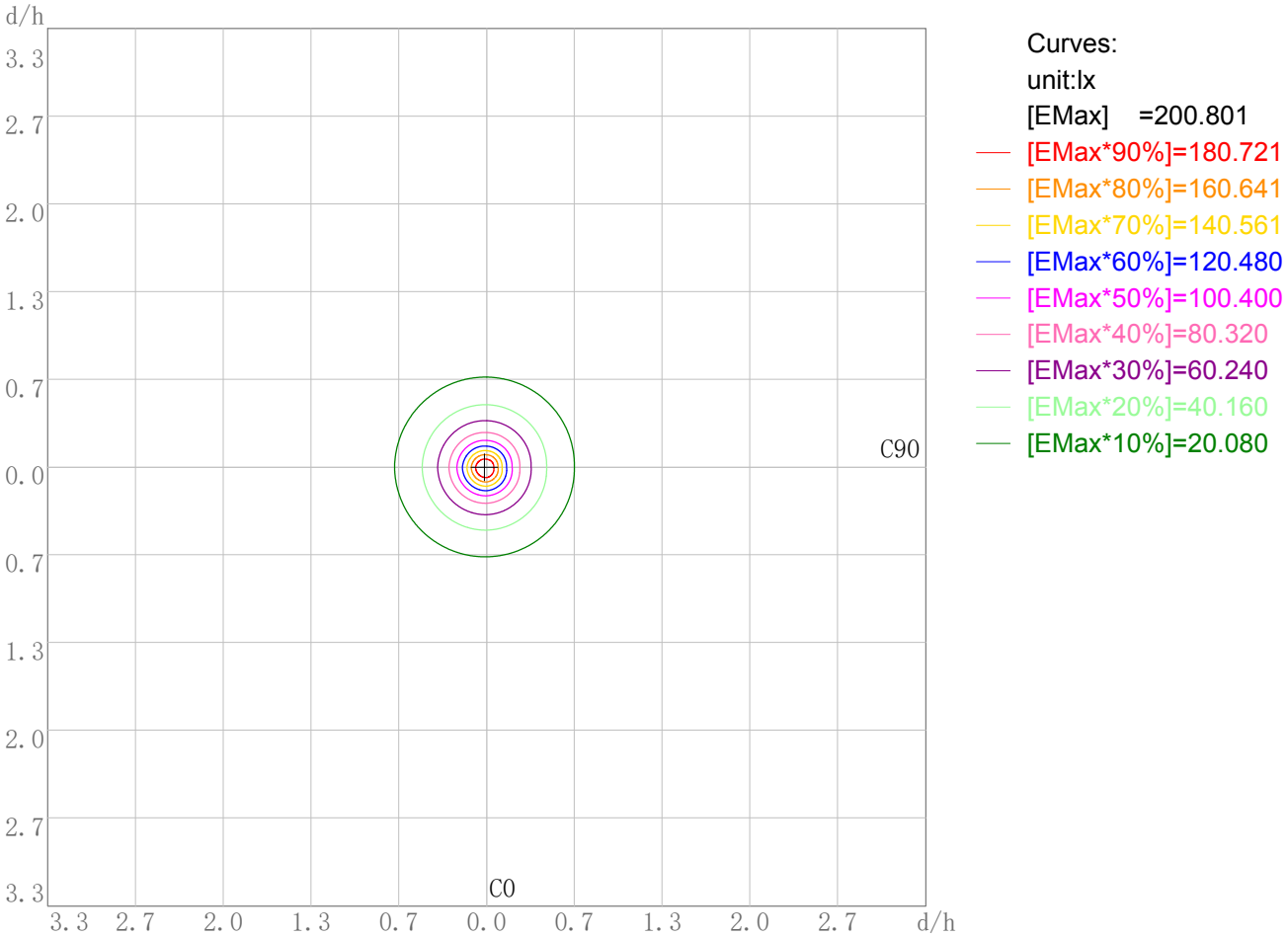

Maximum Light Intensity(cd): 1808.03
Maximum Cand.@Angle: H=-0.0°,V=-1.0°

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# Plane ISO-Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |

## Plane ISO-Illuminance Curve



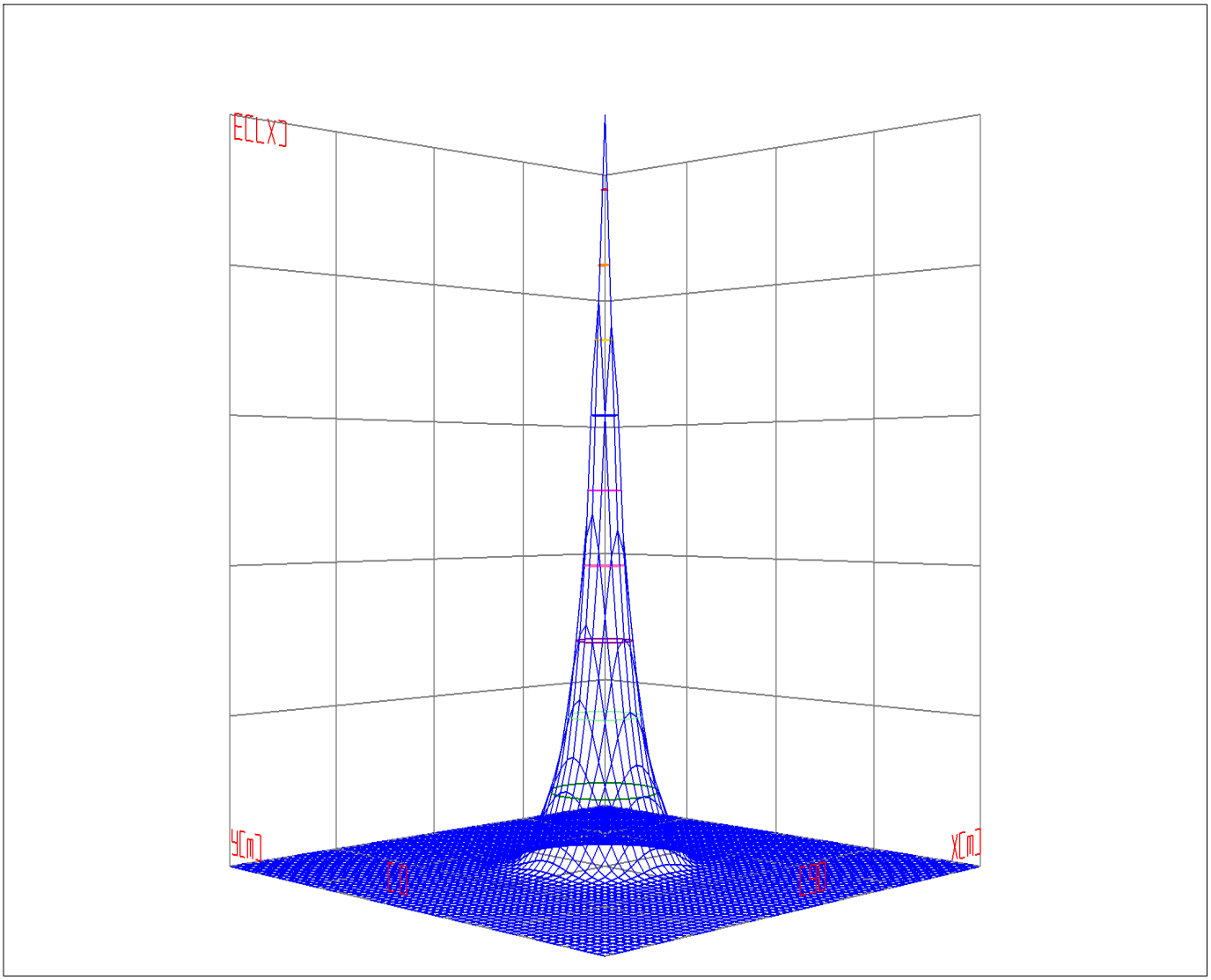

Working Plane Luminaire Mounting Height(m): 3.00
Working Plane Maximum Illuminance(lx): 200.80
Working Plane Maximum Illuminance Position(d/h):H-0.0 V-0.0

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# 3D Plane ISO Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |

## 3D Plane Illuminance Modal



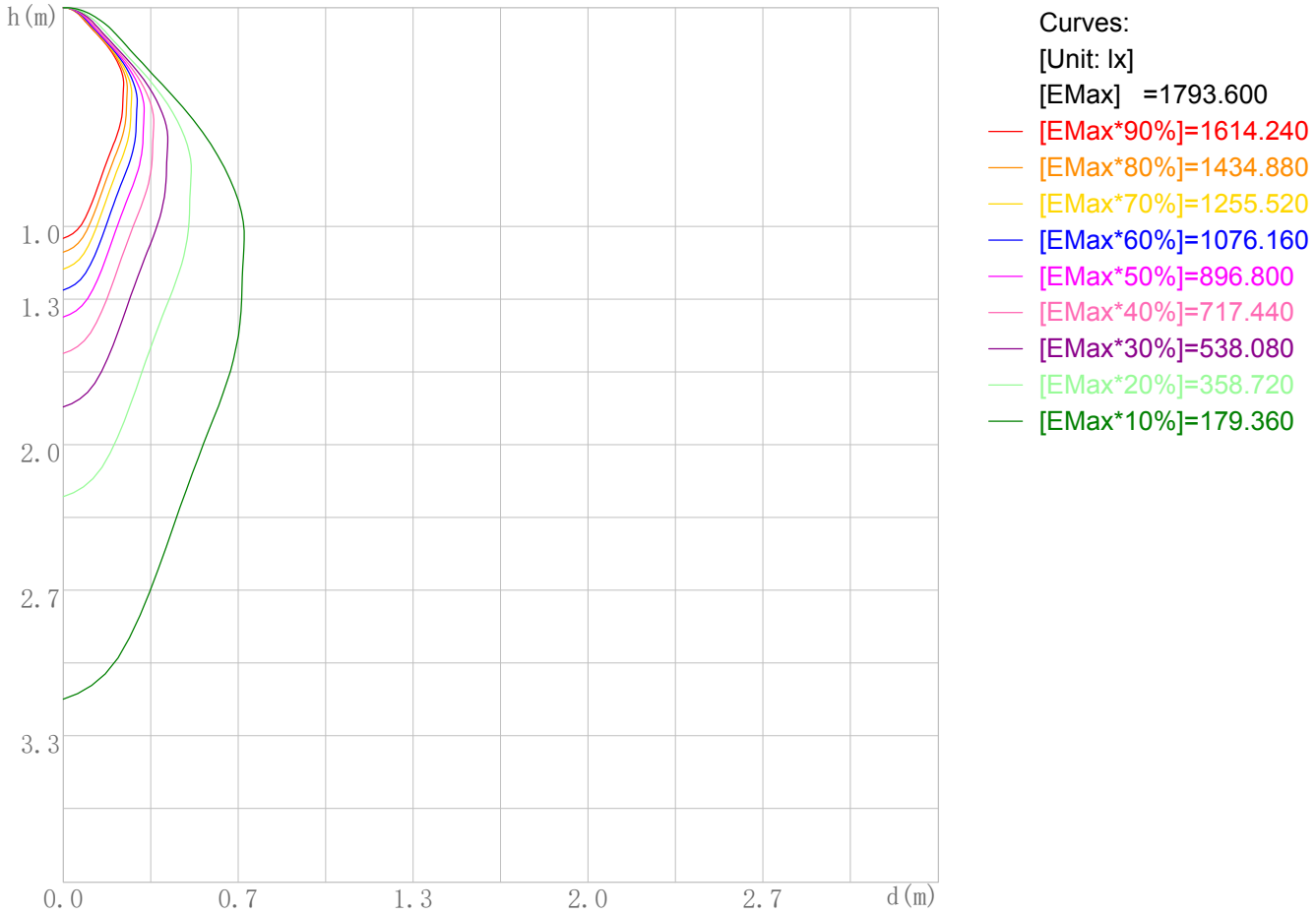

Curves: 3D Model 90% 80% 70% 60% 50% 40% 30% 20% 10%
View Angles(deg): 0 Height(m): 3.0 Distance(m): 10.0

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# Space ISO Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |

## Space ISO Illuminance Curve

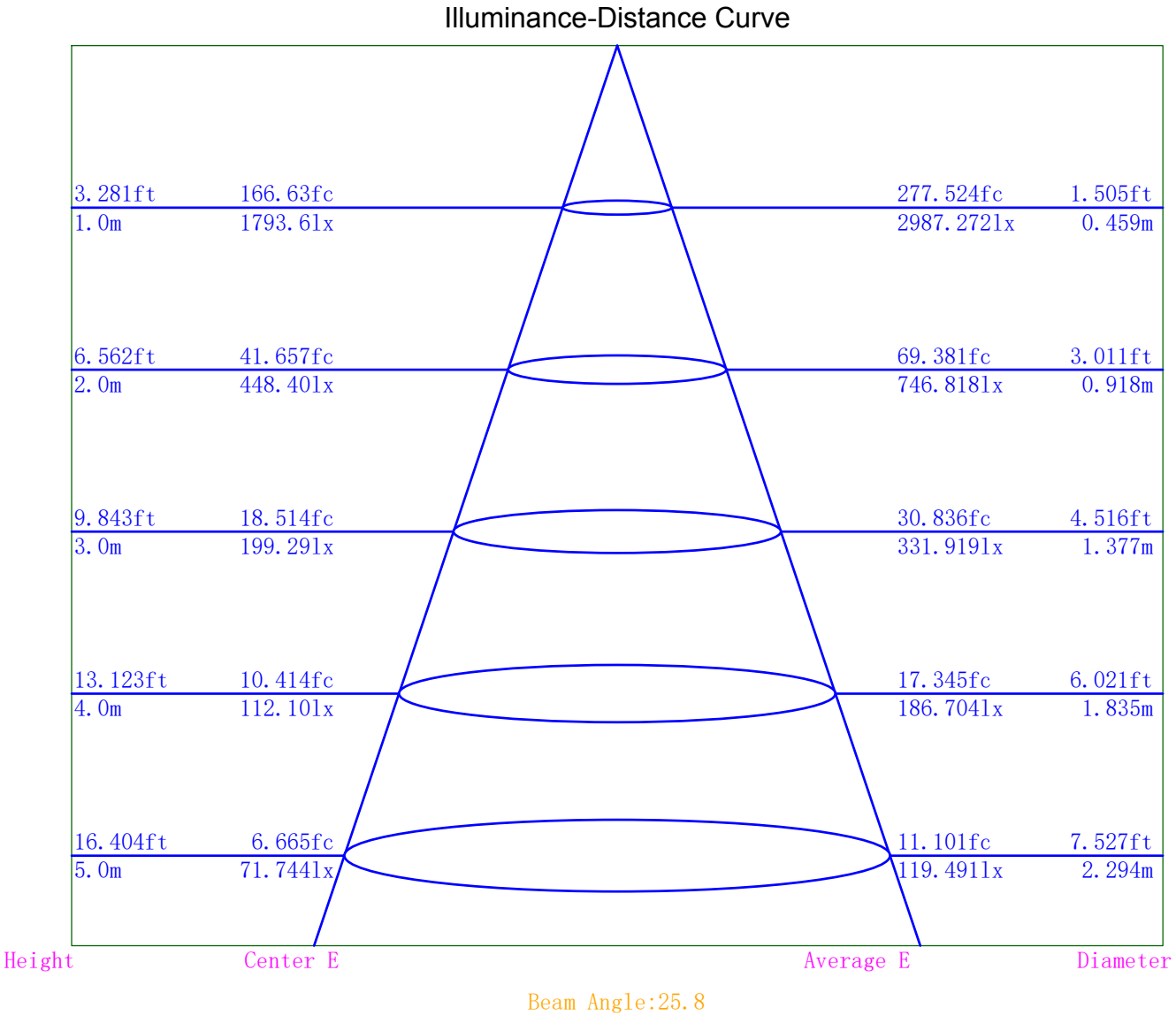



Space Plane Maximum Illuminance and @Angle:1793.60lx,0.0deg
Plane Maximum Lighting Intensity and @Angle:1793.600cd,0eg

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# Illuminance-Distance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |




Beam Angle:25.8

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# Indoor Luminance Limiting Curves

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |

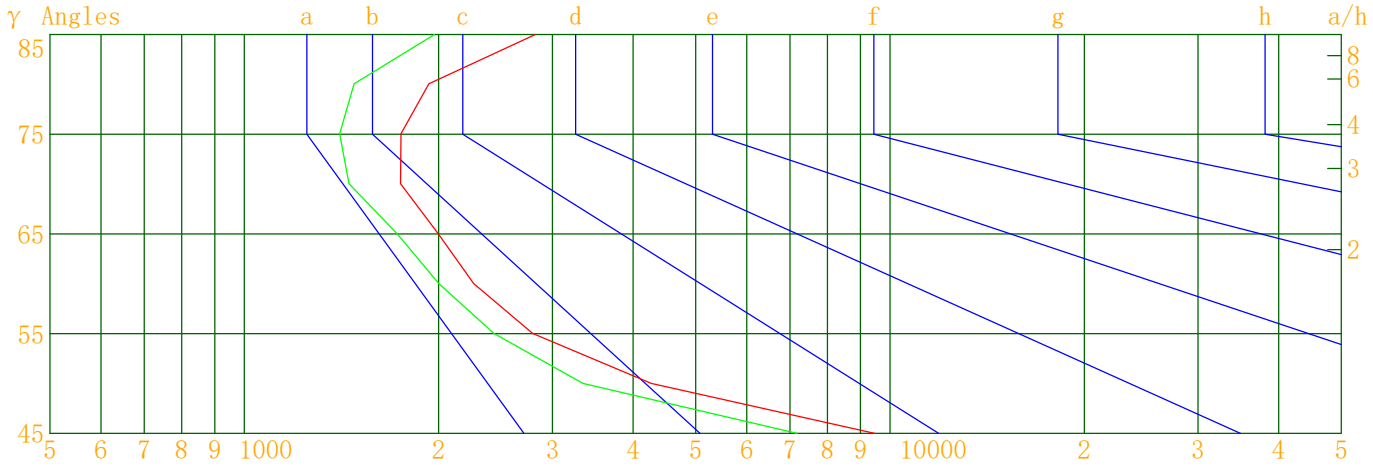
Glare Grade Table

| GI | Quality | Using Illuminace | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 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 | a | | | | 2000 | 1000 | 500 | <=300 |
| | | | b | c | d | e | f | g | h |

Luminance Table

| Gama(deg) | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|---|---|---|---|---|---|---|---|---|---|
| C0 | 9471 | 4270 | 2796 | 2265 | 1996 | 1745 | 1748 | 1931 | 2822 |
| C90 | 7179 | 3346 | 2436 | 2001 | 1724 | 1452 | 1405 | 1479 | 1970 |

Luminance Limiting Curve

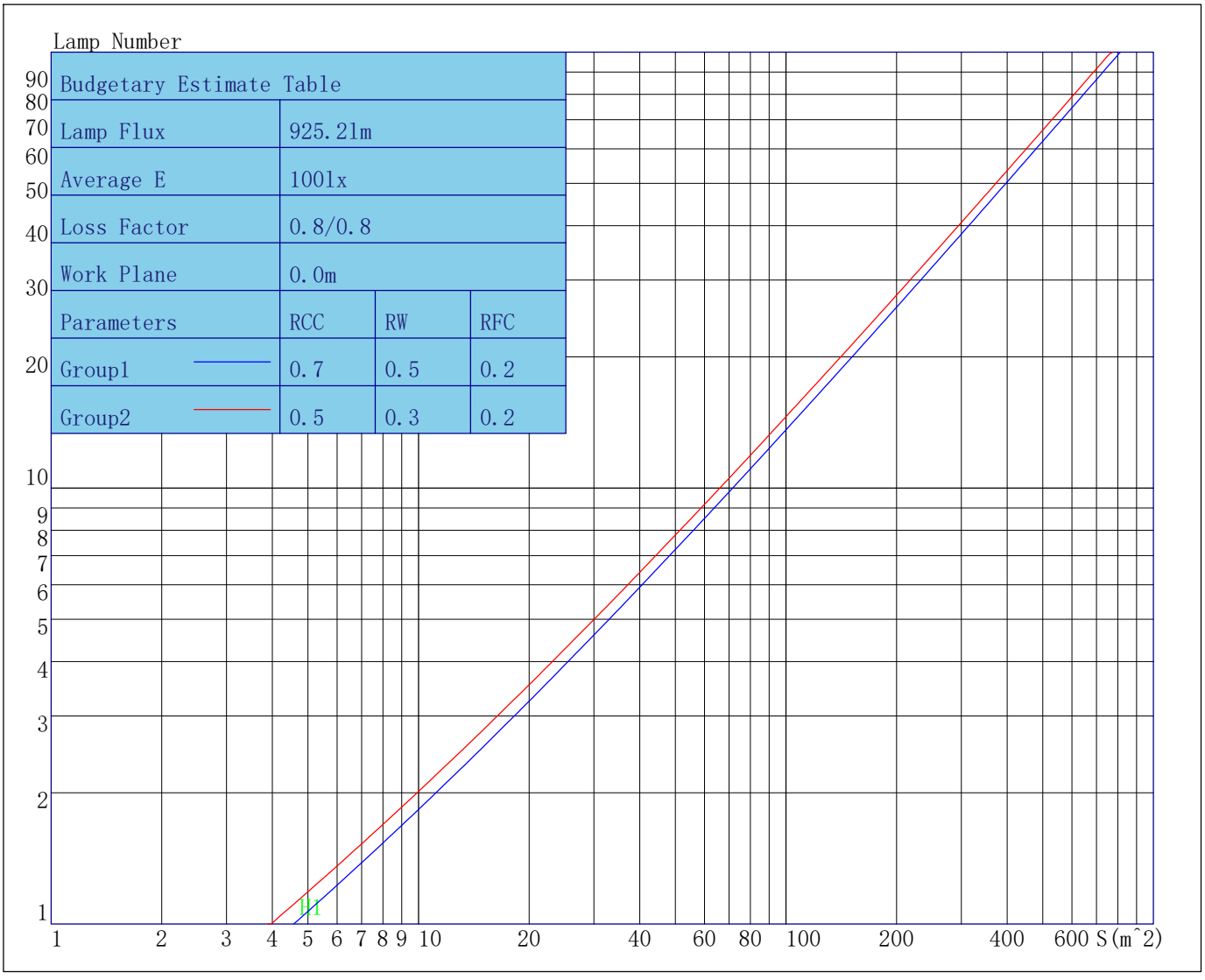



Luminous Size: Length(m)=0.000 Width(m)=-0.050 Height(m)=0.080 Area(m^2)=0.015708
Luminous Type: Without Luminous Side
Luminous Curves: C0-C180 Color: C90-C270 Color:

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# Indoor Budgetary Estimate Table

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |




Parameters1: Rhocc = 0.7 Rhow = 0.5 Rhofc = 0.2 LLF = 0.8
Parameters2: Rhocc = 0.5 Rhow = 0.3 Rhofc = 0.2 LLF = 0.8
Average Illuminance(lx): 100 Cavity Height: H1(m) = 2

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# Indoor Coefficient of Utilization Table

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |

| Coefficients of Utilization - Zonal Cavity Method | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coef. | Effective Floor Cavity Reflectance RFC=0.20 | | | | | | | | | | | | | | | | | |
| RhoCC(%) | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| RhoW(%) | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | Coefficient of Utilization(%) | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 110 | 110 | 110 | 105 | 105 | 105 | 101 | 101 | 101 | 99 |
| 1 | 113 | 110 | 107 | 105 | 110 | 107 | 105 | 103 | 103 | 101 | 99 | 99 | 98 | 96 | 96 | 94 | 93 | 91 |
| 2 | 107 | 102 | 97 | 94 | 104 | 100 | 96 | 93 | 96 | 93 | 90 | 93 | 90 | 88 | 90 | 88 | 86 | 84 |
| 3 | 101 | 94 | 89 | 85 | 99 | 93 | 88 | 84 | 90 | 86 | 83 | 87 | 84 | 81 | 85 | 82 | 80 | 78 |
| 4 | 96 | 88 | 82 | 78 | 94 | 87 | 81 | 77 | 84 | 80 | 76 | 82 | 78 | 75 | 80 | 77 | 74 | 72 |
| 5 | 91 | 82 | 76 | 72 | 89 | 81 | 75 | 71 | 79 | 74 | 70 | 77 | 73 | 70 | 76 | 72 | 69 | 67 |
| 6 | 86 | 77 | 71 | 66 | 85 | 76 | 70 | 66 | 74 | 69 | 65 | 73 | 68 | 65 | 71 | 67 | 64 | 63 |
| 7 | 82 | 72 | 66 | 62 | 80 | 72 | 66 | 62 | 70 | 65 | 61 | 69 | 64 | 61 | 68 | 63 | 60 | 59 |
| 8 | 78 | 68 | 62 | 58 | 77 | 67 | 62 | 58 | 66 | 61 | 57 | 65 | 60 | 57 | 64 | 60 | 57 | 55 |
| 9 | 74 | 64 | 58 | 54 | 73 | 64 | 58 | 54 | 63 | 58 | 54 | 62 | 57 | 54 | 61 | 57 | 53 | 52 |
| 10 | 71 | 61 | 55 | 51 | 70 | 61 | 55 | 51 | 60 | 54 | 51 | 59 | 54 | 51 | 58 | 54 | 50 | 49 |

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# Unified Glare Rating Table

| | | |
|---|---|---|
| Lum.Name: HCP-813024-5000K RA90 28D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/09/27 |

## Unified Glare Rating Table

| Ceiling RCC | | 0.70 | 0.70 | 0.50 | 0.50 | 0.30 | 0.70 | 0.70 | 0.50 | 0.50 | 0.30 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wall RW | | 0.50 | 0.30 | 0.50 | 0.30 | 0.30 | 0.50 | 0.30 | 0.50 | 0.30 | 0.30 |
| Floor RFC | | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Room Size | | Vewed crosswise | | | | | Vewed endwise | | | | |
| X=2H | Y=2H | 16.1 | 17.2 | 16.5 | 17.5 | 17.8 | 15.5 | 16.5 | 15.9 | 16.9 | 17.2 |
| | Y=3H | 16.1 | 17.0 | 16.5 | 17.4 | 17.8 | 15.5 | 16.4 | 15.9 | 16.8 | 17.2 |
| | Y=4H | 16.1 | 17.0 | 16.5 | 17.4 | 17.8 | 15.5 | 16.3 | 15.9 | 16.7 | 17.1 |
| | Y=6H | 16.2 | 17.0 | 16.6 | 17.4 | 17.8 | 15.5 | 16.3 | 15.9 | 16.7 | 17.1 |
| | Y=8H | 16.2 | 16.9 | 16.6 | 17.4 | 17.8 | 15.5 | 16.2 | 15.9 | 16.6 | 17.1 |
| | Y=12H | 16.2 | 16.9 | 16.7 | 17.4 | 17.8 | 15.5 | 16.2 | 15.9 | 16.6 | 17.1 |
| X=4H | Y=2H | 15.9 | 16.8 | 16.3 | 17.2 | 17.6 | 15.3 | 16.2 | 15.7 | 16.6 | 17.0 |
| | Y=3H | 16.0 | 16.7 | 16.4 | 17.2 | 17.6 | 15.4 | 16.1 | 15.8 | 16.5 | 17.0 |
| | Y=4H | 16.1 | 16.7 | 16.5 | 17.2 | 17.6 | 15.4 | 16.0 | 15.9 | 16.5 | 17.0 |
| | Y=6H | 16.2 | 16.7 | 16.7 | 17.2 | 17.7 | 15.5 | 16.0 | 16.0 | 16.5 | 17.0 |
| | Y=8H | 16.2 | 16.8 | 16.7 | 17.2 | 17.8 | 15.5 | 16.0 | 16.0 | 16.5 | 17.0 |
| | Y=12H | 16.4 | 16.8 | 16.9 | 17.3 | 17.8 | 15.6 | 16.0 | 16.1 | 16.5 | 17.0 |
| X=8H | Y=4H | 16.0 | 16.5 | 16.5 | 17.0 | 17.5 | 15.3 | 15.9 | 15.8 | 16.3 | 16.8 |
| | Y=6H | 16.2 | 16.6 | 16.7 | 17.1 | 17.7 | 15.5 | 15.9 | 16.0 | 16.4 | 17.0 |
| | Y=8H | 16.3 | 16.7 | 16.9 | 17.2 | 17.8 | 15.5 | 15.9 | 16.1 | 16.5 | 17.0 |
| | Y=12H | 16.5 | 16.9 | 17.1 | 17.4 | 18.0 | 15.7 | 16.0 | 16.2 | 16.5 | 17.1 |
| X=12H | Y=4H | 16.0 | 16.4 | 16.5 | 16.9 | 17.4 | 15.3 | 15.7 | 15.8 | 16.3 | 16.8 |
| | Y=6H | 16.2 | 16.5 | 16.7 | 17.0 | 17.6 | 15.4 | 15.8 | 16.0 | 16.3 | 16.9 |
| | Y=8H | 16.4 | 16.7 | 16.9 | 17.2 | 17.8 | 15.6 | 15.9 | 16.1 | 16.4 | 17.0 |
| Variations with the observer position at spacings | | | | | | | | | | | |
| S=1.0H | | 0.2/-0.2 | | | | | 0.3/-0.3 | | | | |
| S=1.5H | | 0.4/-0.4 | | | | | 0.5/-0.5 | | | | |
| S=2.0H | | 0.7/-0.6 | | | | | 0.8/-0.8 | | | | |
| Reduced UGR Table: | | | | | | | | | | | |
| Nordic Standard Table: | | BK0 | | | | | BK0 | | | | |
| Correction Value | | 0.8 | | | | | 0.7 | | | | |

o the CIE Pub.117,data has been corrected,refers to the lamp's lumens 8.2flm.

# Candela Tabulation

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 0.0 | 1793.60 | 1793.60 | 1793.60 | 1793.60 |
| γ 1.0 | 1766.18 | 1764.26 | 1794.60 | 1808.03 |
| γ 2.0 | 1726.50 | 1708.77 | 1774.44 | 1795.21 |
| γ 3.0 | 1671.95 | 1637.47 | 1733.98 | 1759.70 |
| γ 4.0 | 1598.59 | 1546.70 | 1677.34 | 1708.31 |
| γ 5.0 | 1506.33 | 1446.51 | 1603.16 | 1636.04 |
| γ 6.0 | 1408.49 | 1347.94 | 1507.42 | 1546.71 |
| γ 7.0 | 1311.71 | 1252.56 | 1414.00 | 1452.06 |
| γ 8.0 | 1219.05 | 1163.71 | 1319.80 | 1359.85 |
| γ 9.0 | 1135.45 | 1082.52 | 1230.05 | 1268.28 |
| γ 10.0 | 1058.49 | 1011.01 | 1142.16 | 1180.20 |
| γ 11.0 | 990.67 | 946.77 | 1057.03 | 1098.65 |
| γ 12.0 | 932.58 | 891.16 | 981.84 | 1025.63 |
| γ 13.0 | 879.62 | 839.02 | 919.92 | 961.59 |
| γ 14.0 | 833.46 | 794.85 | 865.51 | 907.47 |
| γ 15.0 | 791.14 | 755.77 | 815.89 | 860.46 |
| γ 16.0 | 754.36 | 719.46 | 775.67 | 815.94 |
| γ 17.0 | 721.48 | 684.86 | 738.49 | 775.13 |
| γ 18.0 | 691.13 | 654.01 | 704.47 | 737.96 |
| γ 19.0 | 661.39 | 625.17 | 674.07 | 704.57 |
| γ 20.0 | 633.67 | 596.25 | 644.25 | 673.24 |
| γ 21.0 | 607.39 | 567.88 | 615.75 | 642.73 |
| γ 22.0 | 580.68 | 541.50 | 588.27 | 612.81 |
| γ 23.0 | 552.97 | 514.65 | 561.17 | 583.97 |
| γ 24.0 | 528.29 | 489.11 | 533.43 | 556.54 |
| γ 25.0 | 501.63 | 464.98 | 505.38 | 529.30 |
| γ 26.0 | 476.21 | 441.68 | 478.54 | 502.66 |
| γ 27.0 | 450.88 | 418.55 | 452.43 | 477.45 |
| γ 28.0 | 427.29 | 397.06 | 427.35 | 451.90 |
| γ 29.0 | 405.61 | 378.26 | 402.84 | 428.03 |
| γ 30.0 | 387.39 | 361.30 | 381.58 | 405.41 |
| γ 31.0 | 370.96 | 346.39 | 363.89 | 386.83 |
| γ 32.0 | 356.14 | 332.52 | 347.99 | 369.53 |
| γ 33.0 | 342.09 | 320.32 | 334.08 | 354.91 |
| γ 34.0 | 328.33 | 308.43 | 321.84 | 341.36 |
| γ 35.0 | 312.81 | 295.61 | 309.83 | 328.92 |
| γ 36.0 | 295.25 | 280.80 | 297.30 | 316.85 |
| γ 37.0 | 276.78 | 261.95 | 282.42 | 304.43 |
| γ 38.0 | 256.19 | 240.75 | 264.31 | 289.79 |
| γ 39.0 | 234.63 | 218.19 | 244.77 | 270.68 |
| γ 40.0 | 213.81 | 193.96 | 223.30 | 248.88 |
| γ 41.0 | 191.48 | 170.47 | 201.88 | 225.62 |
| γ 42.0 | 169.96 | 146.02 | 180.58 | 201.58 |
| γ 43.0 | 148.01 | 122.48 | 159.31 | 177.67 |
| γ 44.0 | 126.24 | 99.81 | 137.89 | 152.65 |
| γ 45.0 | 105.19 | 79.74 | 116.56 | 128.66 |
| γ 46.0 | 85.94 | 62.47 | 95.99 | 104.58 |

# Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 47.0 | 69.98 | 49.99 | 77.13 | 83.95 |
| γ 48.0 | 57.69 | 42.29 | 60.83 | 65.94 |
| γ 49.0 | 49.56 | 37.38 | 48.16 | 52.50 |
| γ 50.0 | 43.12 | 33.78 | 39.58 | 43.94 |
| γ 51.0 | 37.26 | 30.63 | 34.39 | 38.53 |
| γ 52.0 | 32.69 | 27.83 | 30.17 | 34.66 |
| γ 53.0 | 29.67 | 25.37 | 26.60 | 31.29 |
| γ 54.0 | 27.31 | 23.52 | 23.97 | 28.55 |
| γ 55.0 | 25.19 | 21.95 | 22.15 | 26.27 |
| γ 56.0 | 23.35 | 20.43 | 20.52 | 23.95 |
| γ 57.0 | 21.50 | 19.12 | 19.11 | 22.07 |
| γ 58.0 | 20.01 | 17.91 | 17.77 | 20.41 |
| γ 59.0 | 18.84 | 16.70 | 16.68 | 19.01 |
| γ 60.0 | 17.79 | 15.72 | 15.55 | 17.78 |
| γ 61.0 | 16.86 | 14.85 | 14.66 | 16.52 |
| γ 62.0 | 15.89 | 13.93 | 13.89 | 15.59 |
| γ 63.0 | 15.02 | 13.12 | 13.03 | 14.76 |
| γ 64.0 | 14.06 | 12.22 | 12.29 | 13.89 |
| γ 65.0 | 13.25 | 11.45 | 11.53 | 13.15 |
| γ 66.0 | 12.32 | 10.53 | 10.81 | 12.32 |
| γ 67.0 | 11.51 | 9.78 | 10.10 | 11.61 |
| γ 68.0 | 10.62 | 8.91 | 9.40 | 10.78 |
| γ 69.0 | 9.91 | 8.30 | 8.70 | 10.11 |
| γ 70.0 | 9.38 | 7.80 | 8.04 | 9.32 |
| γ 71.0 | 8.87 | 7.31 | 7.63 | 8.83 |
| γ 72.0 | 8.39 | 6.90 | 7.27 | 8.40 |
| γ 73.0 | 7.94 | 6.49 | 6.91 | 8.03 |
| γ 74.0 | 7.51 | 6.09 | 6.57 | 7.66 |
| γ 75.0 | 7.11 | 5.71 | 6.24 | 7.30 |
| γ 76.0 | 6.71 | 5.35 | 5.91 | 6.96 |
| γ 77.0 | 6.33 | 5.01 | 5.60 | 6.63 |
| γ 78.0 | 5.96 | 4.67 | 5.29 | 6.30 |
| γ 79.0 | 5.60 | 4.34 | 4.99 | 5.98 |
| γ 80.0 | 5.27 | 4.03 | 4.70 | 5.64 |
| γ 81.0 | 4.96 | 3.74 | 4.41 | 5.34 |
| γ 82.0 | 4.70 | 3.45 | 4.12 | 5.02 |
| γ 83.0 | 4.45 | 3.20 | 3.85 | 4.74 |
| γ 84.0 | 4.20 | 2.96 | 3.57 | 4.46 |
| γ 85.0 | 3.86 | 2.70 | 3.28 | 4.21 |
| γ 86.0 | 3.53 | 2.41 | 2.99 | 3.94 |
| γ 87.0 | 3.18 | 2.08 | 2.70 | 3.59 |
| γ 88.0 | 2.52 | 1.65 | 2.40 | 3.26 |
| γ 89.0 | 2.16 | 1.45 | 2.04 | 2.89 |
| γ 90.0 | 2.05 | 1.38 | 1.74 | 2.41 |
| γ 91.0 | 1.95 | 1.29 | 1.58 | 2.20 |
| γ 92.0 | 1.84 | 1.22 | 1.49 | 2.09 |
| γ 93.0 | 1.75 | 1.15 | 1.41 | 1.98 |

## Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 94.0 | 1.66 | 1.08 | 1.33 | 1.88 |
| γ 95.0 | 1.58 | 1.01 | 1.25 | 1.79 |
| γ 96.0 | 1.50 | 0.96 | 1.18 | 1.71 |
| γ 97.0 | 1.43 | 0.90 | 1.11 | 1.61 |
| γ 98.0 | 1.37 | 0.86 | 1.06 | 1.54 |
| γ 99.0 | 1.31 | 0.81 | 1.01 | 1.47 |
| γ 100.0 | 1.25 | 0.77 | 0.96 | 1.40 |
| γ 101.0 | 1.21 | 0.75 | 0.92 | 1.34 |
| γ 102.0 | 1.16 | 0.71 | 0.88 | 1.29 |
| γ 103.0 | 1.12 | 0.69 | 0.86 | 1.24 |
| γ 104.0 | 1.09 | 0.66 | 0.83 | 1.21 |
| γ 105.0 | 1.06 | 0.65 | 0.82 | 1.18 |
| γ 106.0 | 1.04 | 0.64 | 0.80 | 1.15 |
| γ 107.0 | 1.02 | 0.64 | 0.79 | 1.12 |
| γ 108.0 | 1.00 | 0.64 | 0.79 | 1.10 |
| γ 109.0 | 0.98 | 0.63 | 0.78 | 1.08 |
| γ 110.0 | 0.98 | 0.64 | 0.79 | 1.07 |
| γ 111.0 | 0.98 | 0.65 | 0.79 | 1.07 |
| γ 112.0 | 0.97 | 0.65 | 0.81 | 1.07 |
| γ 113.0 | 0.97 | 0.68 | 0.82 | 1.07 |
| γ 114.0 | 0.97 | 0.69 | 0.85 | 1.08 |
| γ 115.0 | 0.98 | 0.70 | 0.88 | 1.09 |
| γ 116.0 | 0.99 | 0.72 | 0.90 | 1.11 |
| γ 117.0 | 1.02 | 0.76 | 0.93 | 1.13 |
| γ 118.0 | 1.03 | 0.80 | 0.97 | 1.15 |
| γ 119.0 | 1.05 | 0.83 | 1.01 | 1.18 |
| γ 120.0 | 1.08 | 0.88 | 1.05 | 1.21 |
| γ 121.0 | 1.12 | 0.93 | 1.11 | 1.25 |
| γ 122.0 | 1.16 | 0.97 | 1.15 | 1.29 |
| γ 123.0 | 1.20 | 1.03 | 1.21 | 1.33 |
| γ 124.0 | 1.25 | 1.09 | 1.27 | 1.38 |
| γ 125.0 | 1.31 | 1.15 | 1.34 | 1.43 |
| γ 126.0 | 1.36 | 1.22 | 1.40 | 1.49 |
| γ 127.0 | 1.42 | 1.30 | 1.47 | 1.55 |
| γ 128.0 | 1.50 | 1.37 | 1.54 | 1.61 |
| γ 129.0 | 1.57 | 1.45 | 1.62 | 1.67 |
| γ 130.0 | 1.64 | 1.54 | 1.70 | 1.74 |
| γ 131.0 | 1.73 | 1.63 | 1.79 | 1.81 |
| γ 132.0 | 1.81 | 1.72 | 1.87 | 1.89 |
| γ 133.0 | 1.91 | 1.82 | 1.97 | 1.98 |
| γ 134.0 | 2.00 | 1.91 | 2.07 | 2.07 |
| γ 135.0 | 2.09 | 2.03 | 2.18 | 2.17 |
| γ 136.0 | 2.20 | 2.14 | 2.28 | 2.25 |
| γ 137.0 | 2.30 | 2.25 | 2.38 | 2.35 |
| γ 138.0 | 2.41 | 2.36 | 2.51 | 2.45 |
| γ 139.0 | 2.53 | 2.48 | 2.63 | 2.57 |
| γ 140.0 | 2.63 | 2.61 | 2.74 | 2.68 |

## Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 141.0 | 2.75 | 2.71 | 2.87 | 2.80 |
| γ 142.0 | 2.86 | 2.84 | 2.99 | 2.91 |
| γ 143.0 | 2.97 | 2.95 | 3.10 | 3.04 |
| γ 144.0 | 3.09 | 3.07 | 3.22 | 3.14 |
| γ 145.0 | 3.20 | 3.18 | 3.32 | 3.25 |
| γ 146.0 | 3.30 | 3.29 | 3.43 | 3.36 |
| γ 147.0 | 3.40 | 3.39 | 3.53 | 3.46 |
| γ 148.0 | 3.49 | 3.49 | 3.63 | 3.55 |
| γ 149.0 | 3.59 | 3.58 | 3.72 | 3.65 |
| γ 150.0 | 3.69 | 3.68 | 3.83 | 3.74 |
| γ 151.0 | 3.79 | 3.76 | 3.91 | 3.83 |
| γ 152.0 | 3.88 | 3.87 | 4.00 | 3.92 |
| γ 153.0 | 3.99 | 3.93 | 4.08 | 4.00 |
| γ 154.0 | 4.07 | 4.03 | 4.17 | 4.09 |
| γ 155.0 | 4.16 | 4.10 | 4.26 | 4.16 |
| γ 156.0 | 4.24 | 4.19 | 4.33 | 4.25 |
| γ 157.0 | 4.32 | 4.26 | 4.41 | 4.33 |
| γ 158.0 | 4.39 | 4.34 | 4.49 | 4.40 |
| γ 159.0 | 4.47 | 4.41 | 4.56 | 4.48 |
| γ 160.0 | 4.54 | 4.49 | 4.63 | 4.53 |
| γ 161.0 | 4.62 | 4.56 | 4.70 | 4.60 |
| γ 162.0 | 4.70 | 4.64 | 4.78 | 4.68 |
| γ 163.0 | 4.77 | 4.70 | 4.84 | 4.73 |
| γ 164.0 | 4.82 | 4.78 | 4.90 | 4.81 |
| γ 165.0 | 4.89 | 4.84 | 4.97 | 4.86 |
| γ 166.0 | 4.96 | 4.91 | 5.02 | 4.92 |
| γ 167.0 | 5.02 | 4.97 | 5.09 | 4.97 |
| γ 168.0 | 5.09 | 5.04 | 5.13 | 5.03 |
| γ 169.0 | 5.14 | 5.09 | 5.18 | 5.08 |
| γ 170.0 | 5.18 | 5.15 | 5.22 | 5.13 |
| γ 171.0 | 5.23 | 5.19 | 5.27 | 5.17 |
| γ 172.0 | 5.28 | 5.22 | 5.31 | 5.22 |
| γ 173.0 | 5.30 | 5.26 | 5.34 | 5.26 |
| γ 174.0 | 5.32 | 5.29 | 5.36 | 5.30 |
| γ 175.0 | 5.35 | 5.31 | 5.38 | 5.32 |
| γ 176.0 | 5.38 | 5.33 | 5.39 | 5.35 |
| γ 177.0 | 5.41 | 5.36 | 5.40 | 5.39 |
| γ 178.0 | 5.41 | 5.36 | 5.42 | 5.41 |
| γ 179.0 | 5.44 | 5.37 | 5.44 | 5.42 |
| γ 180.0 | 5.42 | 5.42 | 5.42 | 5.42 |