# IES Indoor Report

# Photometric Filename:HCP-1022222+HCP-1032222 3000K 24D.IES

## Indoor Luminaire Photometric Data

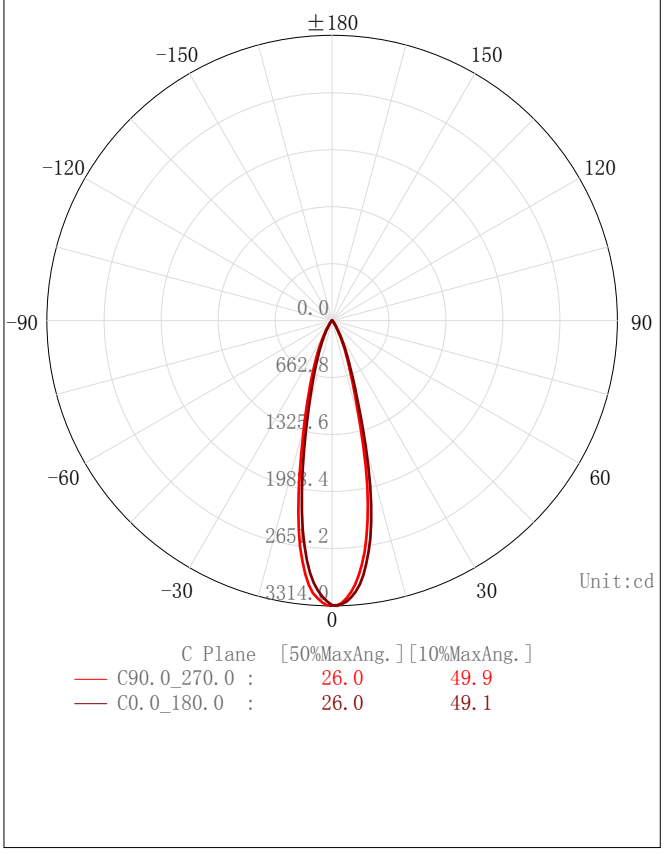
### Description Information

| | | | |
|---|---|---|---|
| Luminary Name: HCP-1022222+HCP-1032222 3000K 24D | | Lum. Catelog: | Test ID: 01 |
| Lamp Name: | | Lamp Catelog: LED | Test Date: 2020/11/24 |
| Manufacture: Havit Commercial | | Shld.Ang(° ): | Test Machine:GON-2000 |
| Test Lab: Quality Department | | Frequency(Hz): | Lamp CCT(K): Ra: |
| Lum.Size(W*L*H):0.000m*0.000m*0.000m | | Lum.Area(m2):0.000 | Lum.W(kg): 0.000 |
| Test System: C, γ | Test Step: C=90.0 γ=1.0 | Temp.(℃): 25 | Humidity(%): 50.0 |

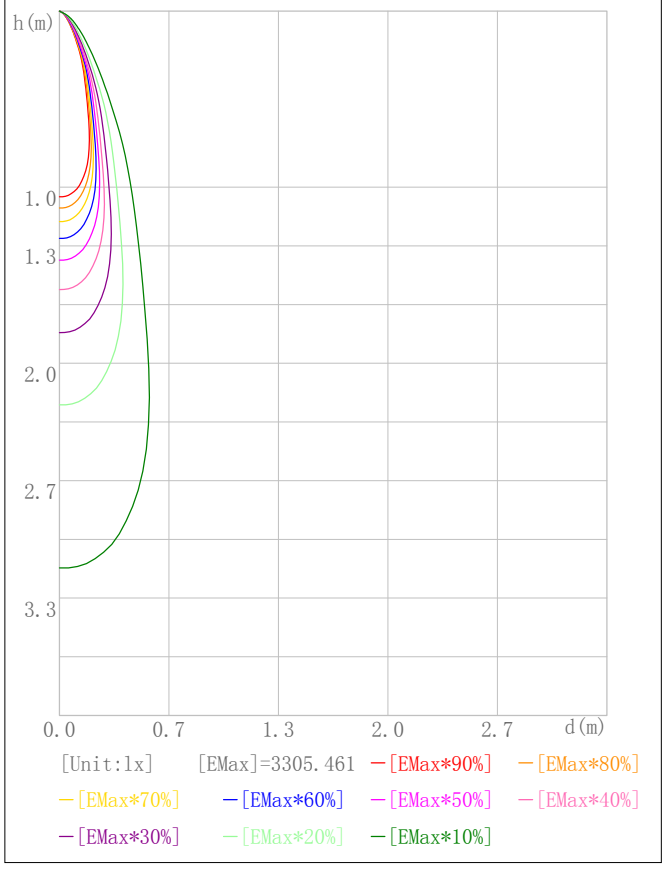
### Character Parameter

| Lamp Speciality Parameter | Luminaire Speciality Parameter | |
|---|---|---|
| Rated Flux(lm): 835.730 | Luminary Flux(lm): 835.726 | Field Angle(10%Imax): 49.9(° ) |
| Rated Power(W): | Luminary Efficiency: 100.00% | Down Lumens&Percent: 835.726lm 100.00% |
| Rated Voltage(V): | Luminary EER(lm/W): 57.876 | Up Lumens&Percent: 0.000lm 0.00% |
| Tested Power(W): 14.440 | Max.Candela(cd): 3314.024 | S/MH: C0_a180=0.442 C90_270=0.443 |
| Lamps' Inside: 1 | Max Cand@Ang.(° ): C=90.0 γ=1.0 | CIE Type: Semi-Direct |
| Tested Electrics(V,A,pf):240.2,0.062,0.965 | Beam Angle(50%Imax): 26.0(° ) | ErP Φuse(90° ): 805.493lm |
| Lamp Size(W*L*H):0.000m*0.000m*0.000m | Left=-12.7° ,Right=13.4° | IRF(%): 774.994 |

### C Plane Distribution Diagram

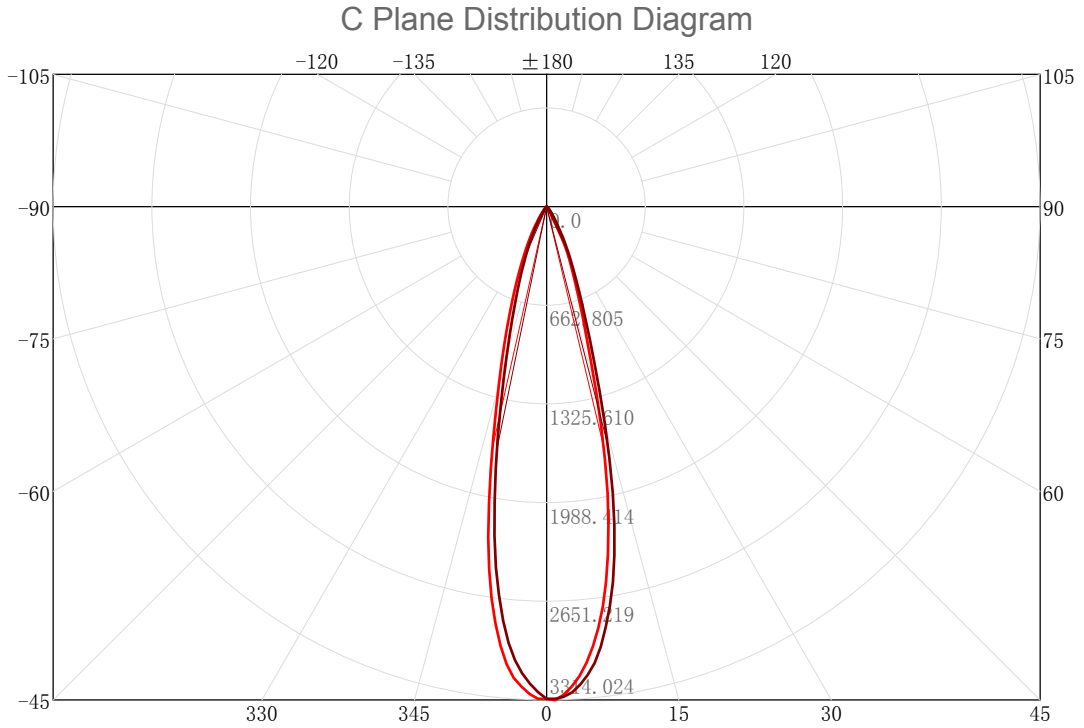


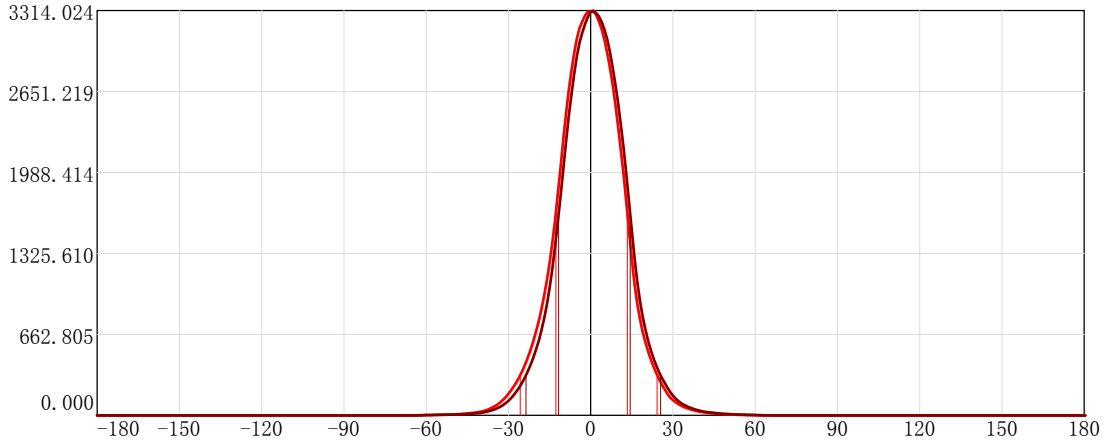

### C0 Space ISO Illuminance Curve



## 2D Plane Light Intensity Distribution Curve

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |



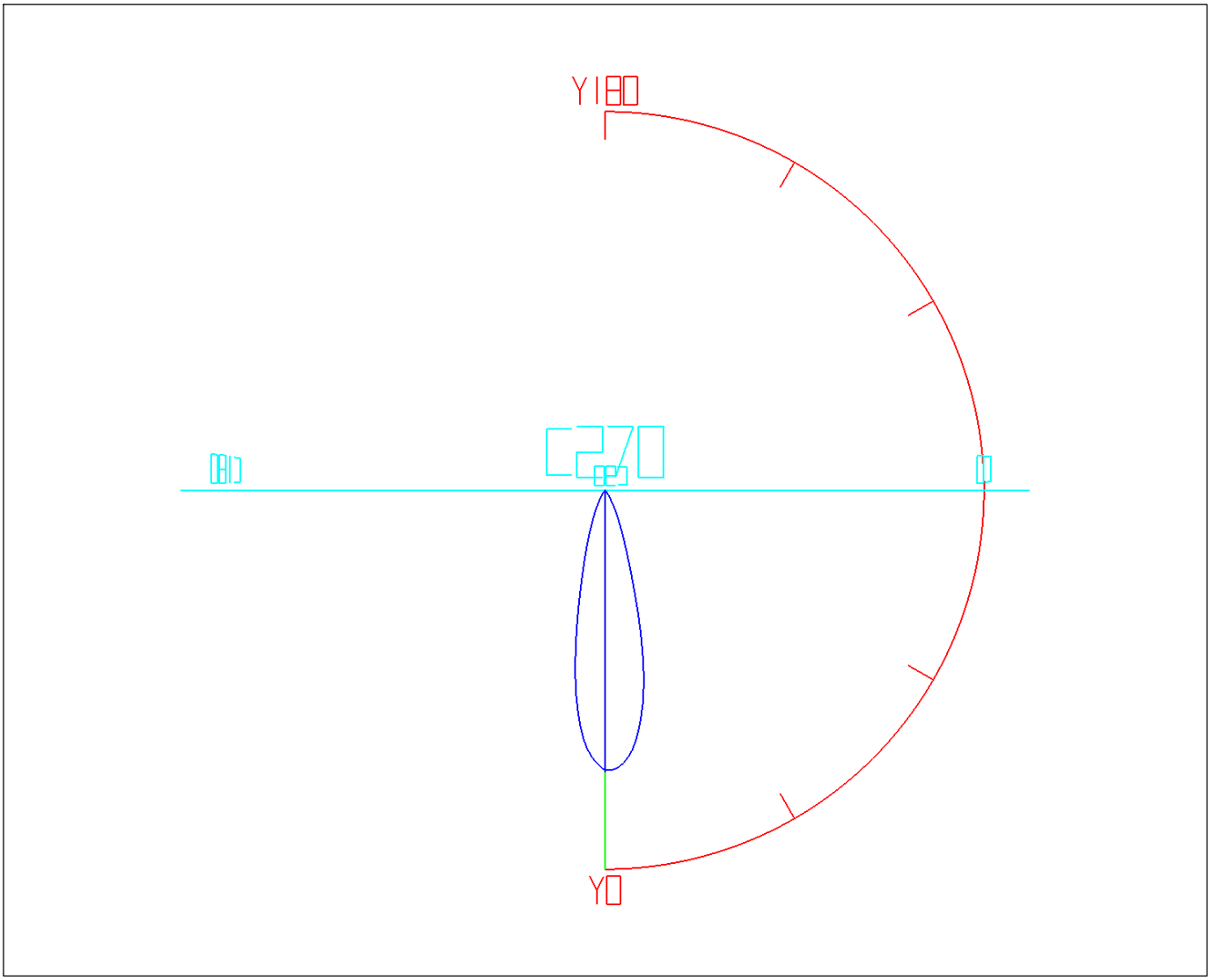




| C Plane | [50%MaxAng.] | [10%MaxAng.] | Unit:cd |
|---|---|---|---|
| C90.0_270.0 : | 26.0 | 49.9 | |
| C0.0_180.0 : | 26.0 | 49.1 | |

# 3D Light Intensity Distribution Modal

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

3D Light Intensity Distribution Modal




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

## 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 | 3.16 | 3.16 | 0.38 | 0.38 | 47.0-48.0 | 0.94 | 828.72 | 0.11 | 99.16 |
| 1.0-2.0 | 9.42 | 12.58 | 1.13 | 1.50 | 48.0-49.0 | 0.84 | 829.57 | 0.10 | 99.26 |
| 2.0-3.0 | 15.50 | 28.07 | 1.85 | 3.36 | 49.0-50.0 | 0.76 | 830.33 | 0.09 | 99.35 |
| 3.0-4.0 | 21.31 | 49.38 | 2.55 | 5.91 | 50.0-51.0 | 0.70 | 831.02 | 0.08 | 99.44 |
| 4.0-5.0 | 26.74 | 76.12 | 3.20 | 9.11 | 51.0-52.0 | 0.64 | 831.67 | 0.08 | 99.51 |
| 5.0-6.0 | 31.62 | 107.74 | 3.78 | 12.89 | 52.0-53.0 | 0.59 | 832.25 | 0.07 | 99.58 |
| 6.0-7.0 | 35.83 | 143.57 | 4.29 | 17.18 | 53.0-54.0 | 0.54 | 832.79 | 0.06 | 99.65 |
| 7.0-8.0 | 39.26 | 182.83 | 4.70 | 21.88 | 54.0-55.0 | 0.49 | 833.29 | 0.06 | 99.71 |
| 8.0-9.0 | 41.82 | 224.65 | 5.00 | 26.88 | 55.0-56.0 | 0.45 | 833.73 | 0.05 | 99.76 |
| 9.0-10.0 | 43.38 | 268.03 | 5.19 | 32.07 | 56.0-57.0 | 0.40 | 834.14 | 0.05 | 99.81 |
| 10.0-11.0 | 43.93 | 311.96 | 5.26 | 37.33 | 57.0-58.0 | 0.36 | 834.50 | 0.04 | 99.85 |
| 11.0-12.0 | 43.50 | 355.46 | 5.20 | 42.53 | 58.0-59.0 | 0.32 | 834.82 | 0.04 | 99.89 |
| 12.0-13.0 | 42.16 | 397.61 | 5.04 | 47.58 | 59.0-60.0 | 0.27 | 835.09 | 0.03 | 99.92 |
| 13.0-14.0 | 40.08 | 437.70 | 4.80 | 52.37 | 60.0-61.0 | 0.23 | 835.32 | 0.03 | 99.95 |
| 14.0-15.0 | 37.49 | 475.19 | 4.49 | 56.86 | 61.0-62.0 | 0.16 | 835.48 | 0.02 | 99.97 |
| 15.0-16.0 | 34.60 | 509.79 | 4.14 | 61.00 | 62.0-63.0 | 0.11 | 835.59 | 0.01 | 99.98 |
| 16.0-17.0 | 31.75 | 541.53 | 3.80 | 64.80 | 63.0-64.0 | 0.07 | 835.66 | 0.01 | 99.99 |
| 17.0-18.0 | 29.13 | 570.67 | 3.49 | 68.28 | 64.0-65.0 | 0.05 | 835.71 | 0.01 | 100.00 |
| 18.0-19.0 | 26.76 | 597.42 | 3.20 | 71.48 | 65.0-66.0 | 0.02 | 835.72 | 0.00 | 100.00 |
| 19.0-20.0 | 24.57 | 621.99 | 2.94 | 74.42 | 66.0-67.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 20.0-21.0 | 22.55 | 644.54 | 2.70 | 77.12 | 67.0-68.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 21.0-22.0 | 20.67 | 665.21 | 2.47 | 79.60 | 68.0-69.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 22.0-23.0 | 18.92 | 684.13 | 2.26 | 81.86 | 69.0-70.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 23.0-24.0 | 17.24 | 701.37 | 2.06 | 83.92 | 70.0-71.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 24.0-25.0 | 15.63 | 717.00 | 1.87 | 85.79 | 71.0-72.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 25.0-26.0 | 14.08 | 731.08 | 1.68 | 87.48 | 72.0-73.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 26.0-27.0 | 12.59 | 743.67 | 1.51 | 88.98 | 73.0-74.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 27.0-28.0 | 11.13 | 754.80 | 1.33 | 90.32 | 74.0-75.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 28.0-29.0 | 9.77 | 764.57 | 1.17 | 91.49 | 75.0-76.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 29.0-30.0 | 8.57 | 773.14 | 1.03 | 92.51 | 76.0-77.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 30.0-31.0 | 7.51 | 780.64 | 0.90 | 93.41 | 77.0-78.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 31.0-32.0 | 6.57 | 787.22 | 0.79 | 94.19 | 78.0-79.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 32.0-33.0 | 5.75 | 792.97 | 0.69 | 94.88 | 79.0-80.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 33.0-34.0 | 5.03 | 798.00 | 0.60 | 95.49 | 80.0-81.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 34.0-35.0 | 4.41 | 802.40 | 0.53 | 96.01 | 81.0-82.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 35.0-36.0 | 3.84 | 806.25 | 0.46 | 96.47 | 82.0-83.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 36.0-37.0 | 3.35 | 809.60 | 0.40 | 96.87 | 83.0-84.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 37.0-38.0 | 2.93 | 812.53 | 0.35 | 97.22 | 84.0-85.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 38.0-39.0 | 2.57 | 815.10 | 0.31 | 97.53 | 85.0-86.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 39.0-40.0 | 2.26 | 817.36 | 0.27 | 97.80 | 86.0-87.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 40.0-41.0 | 2.01 | 819.37 | 0.24 | 98.04 | 87.0-88.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 41.0-42.0 | 1.79 | 821.16 | 0.21 | 98.26 | 88.0-89.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 42.0-43.0 | 1.61 | 822.77 | 0.19 | 98.45 | 89.0-90.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 43.0-44.0 | 1.46 | 824.23 | 0.17 | 98.62 | 90.0-91.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 44.0-45.0 | 1.31 | 825.54 | 0.16 | 98.78 | 91.0-92.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 45.0-46.0 | 1.18 | 826.73 | 0.14 | 98.92 | 92.0-93.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 46.0-47.0 | 1.06 | 827.78 | 0.13 | 99.05 | 93.0-94.0 | 0.00 | 835.73 | 0.00 | 100.00 |

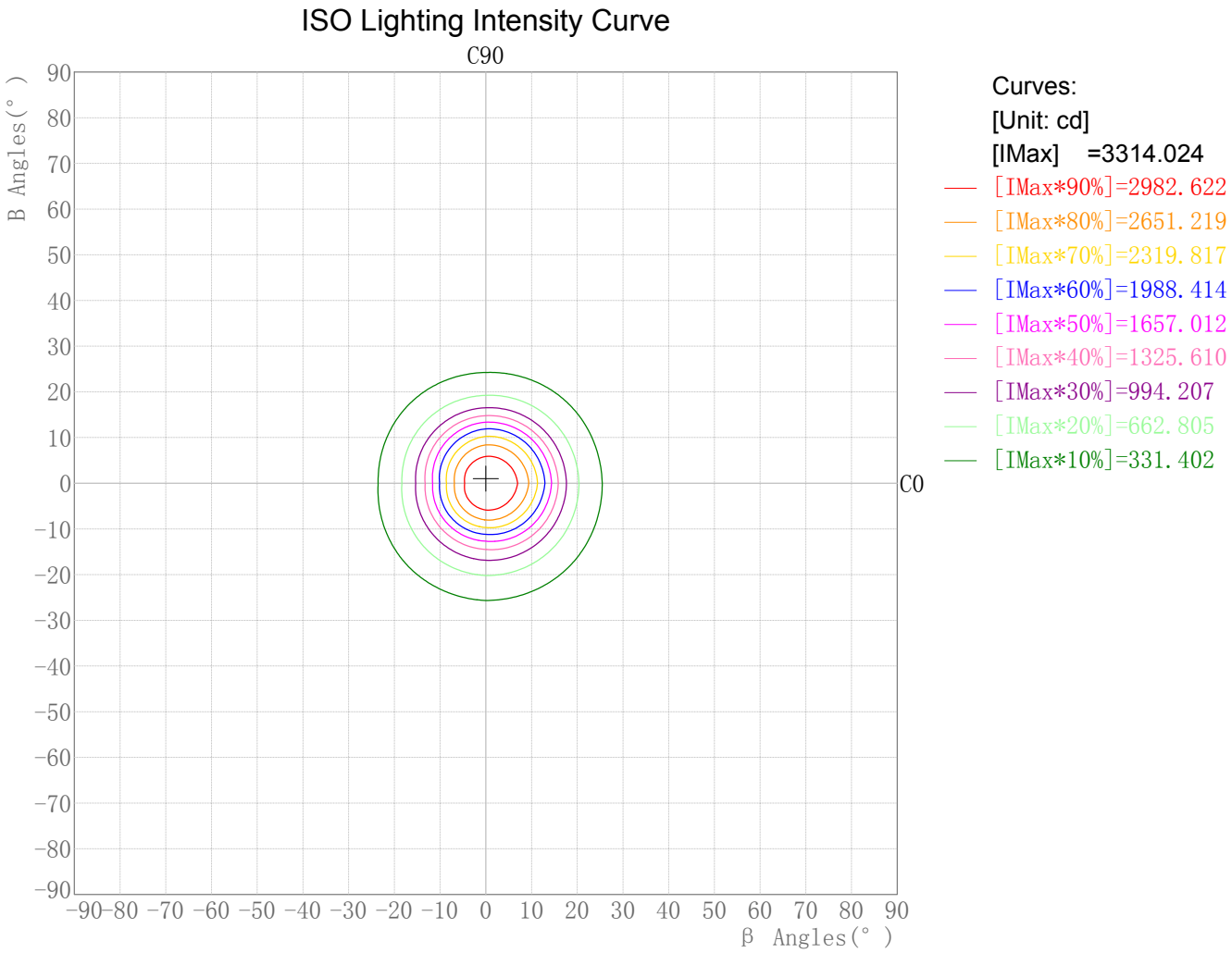
## Zonal Flux Tabulation - (Cont.)

| Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp |
|---|---|---|---|---|
| 94.0-95.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 95.0-96.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 96.0-97.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 97.0-98.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 98.0-99.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 99.0-100.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 100.0-101.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 101.0-102.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 102.0-103.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 103.0-104.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 104.0-105.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 105.0-106.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 106.0-107.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 107.0-108.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 108.0-109.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 109.0-110.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 110.0-111.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 111.0-112.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 112.0-113.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 113.0-114.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 114.0-115.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 115.0-116.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 116.0-117.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 117.0-118.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 118.0-119.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 119.0-120.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 120.0-121.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 121.0-122.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 122.0-123.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 123.0-124.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 124.0-125.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 125.0-126.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 126.0-127.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 127.0-128.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 128.0-129.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 129.0-130.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 130.0-131.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 131.0-132.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 132.0-133.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 133.0-134.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 134.0-135.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 135.0-136.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 136.0-137.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 137.0-138.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 138.0-139.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 139.0-140.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 140.0-141.0 | 0.00 | 835.73 | 0.00 | 100.00 |

| Zone(γ) | Zone Flux (lm) | Sums Flux (lm) | Zone%Lamp | Sums%Lamp |
|---|---|---|---|---|
| 141.0-142.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 142.0-143.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 143.0-144.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 144.0-145.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 145.0-146.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 146.0-147.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 147.0-148.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 148.0-149.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 149.0-150.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 150.0-151.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 151.0-152.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 152.0-153.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 153.0-154.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 154.0-155.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 155.0-156.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 156.0-157.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 157.0-158.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 158.0-159.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 159.0-160.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 160.0-161.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 161.0-162.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 162.0-163.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 163.0-164.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 164.0-165.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 165.0-166.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 166.0-167.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 167.0-168.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 168.0-169.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 169.0-170.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 170.0-171.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 171.0-172.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 172.0-173.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 173.0-174.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 174.0-175.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 175.0-176.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 176.0-177.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 177.0-178.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 178.0-179.0 | 0.00 | 835.73 | 0.00 | 100.00 |
| 179.0-180.0 | 0.00 | 835.73 | 0.00 | 100.00 |

# Rectangle ISO Lighting Intensity Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

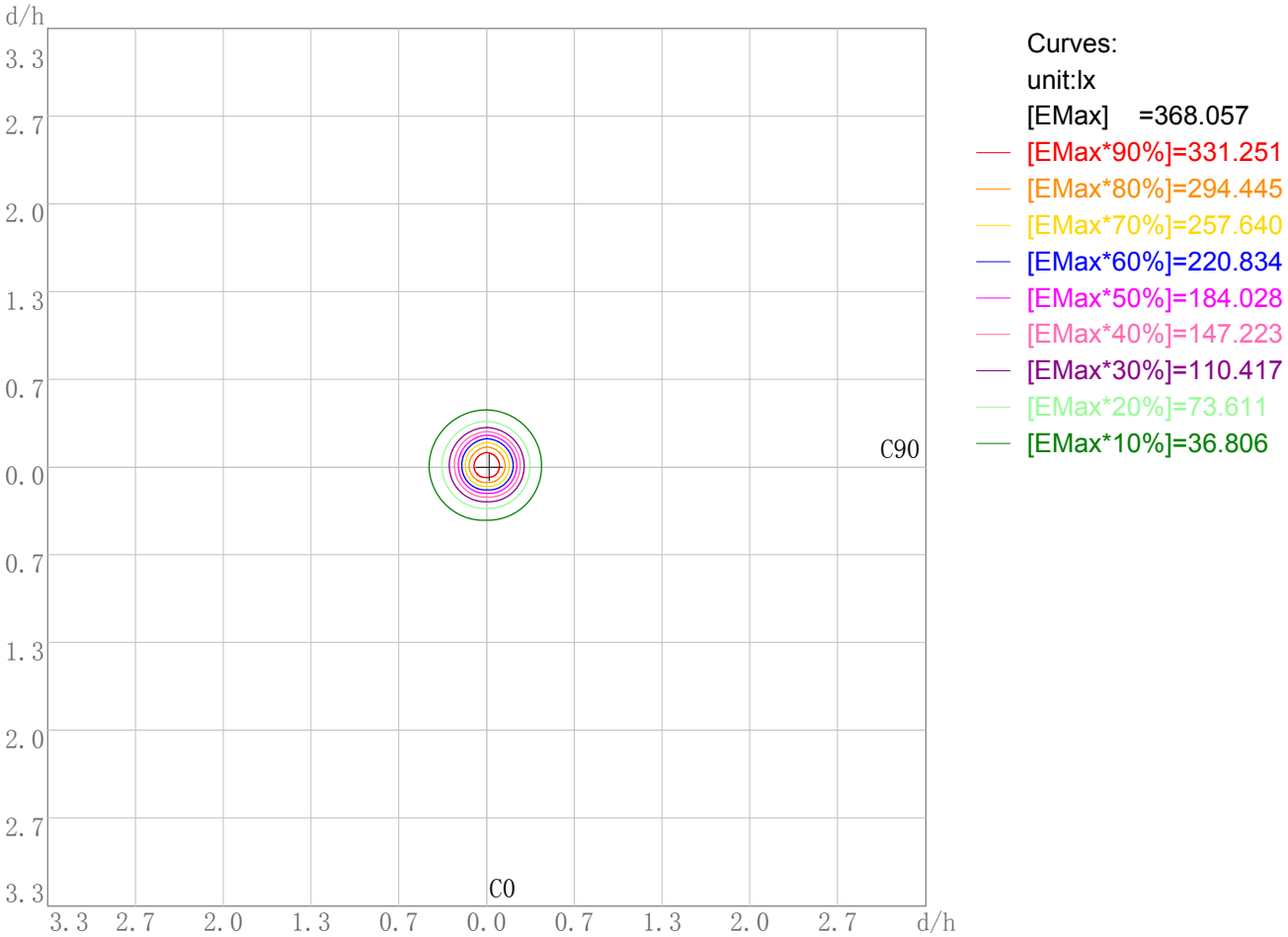



Maximum Light Intensity(cd): 3314.02
Maximum Cand.@Angle: H=0.0°,V=1.0°

# Plane ISO-Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

## Plane ISO-Illuminance Curve

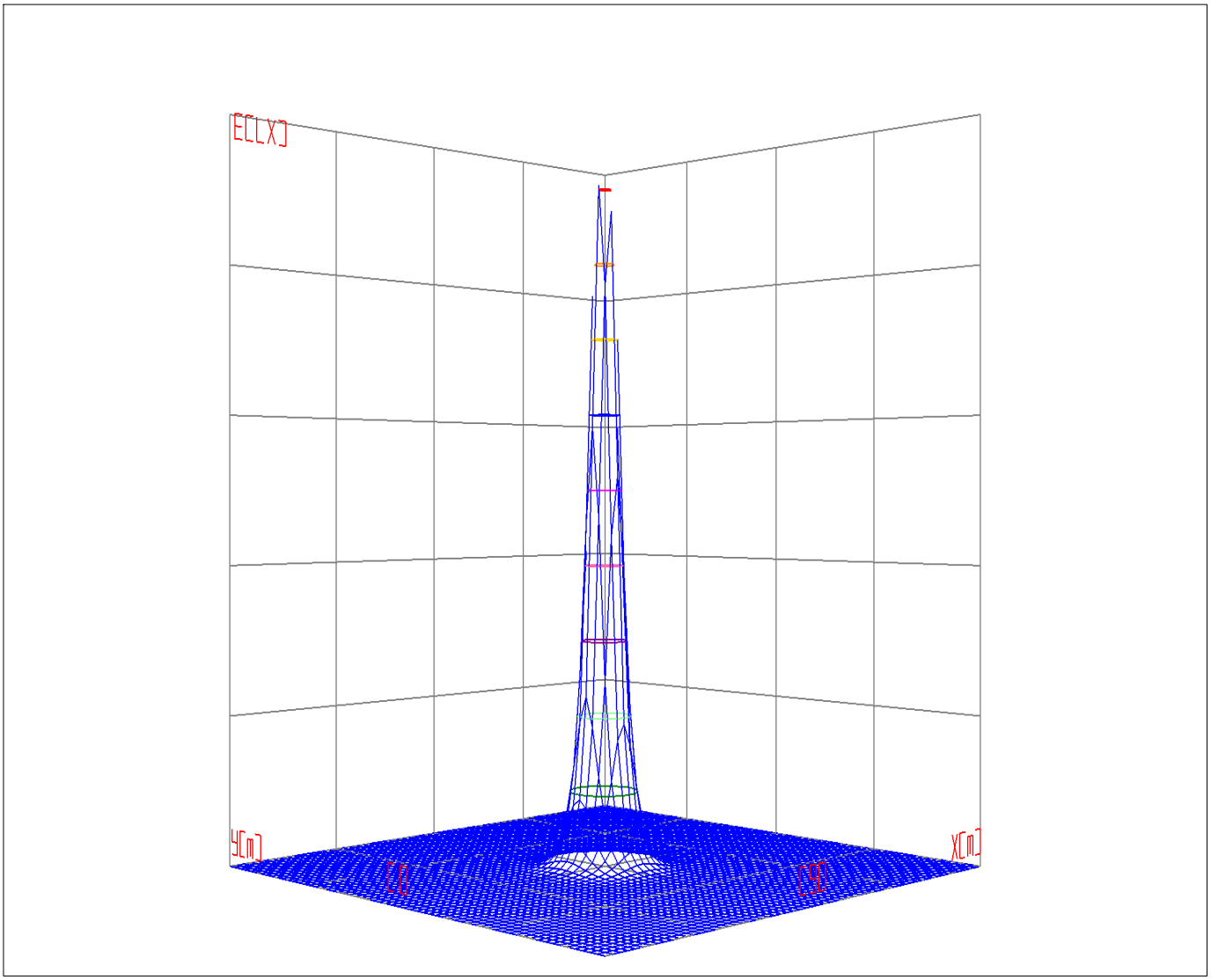



Working Plane Luminaire Mounting Height(m): 3.00
Working Plane Maximum Illuminance(lx): 368.06
Working Plane Maximum Illuminance Position(d/h):H0.0 V0.0

# 3D Plane ISO Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

3D Plane Illuminance Modal

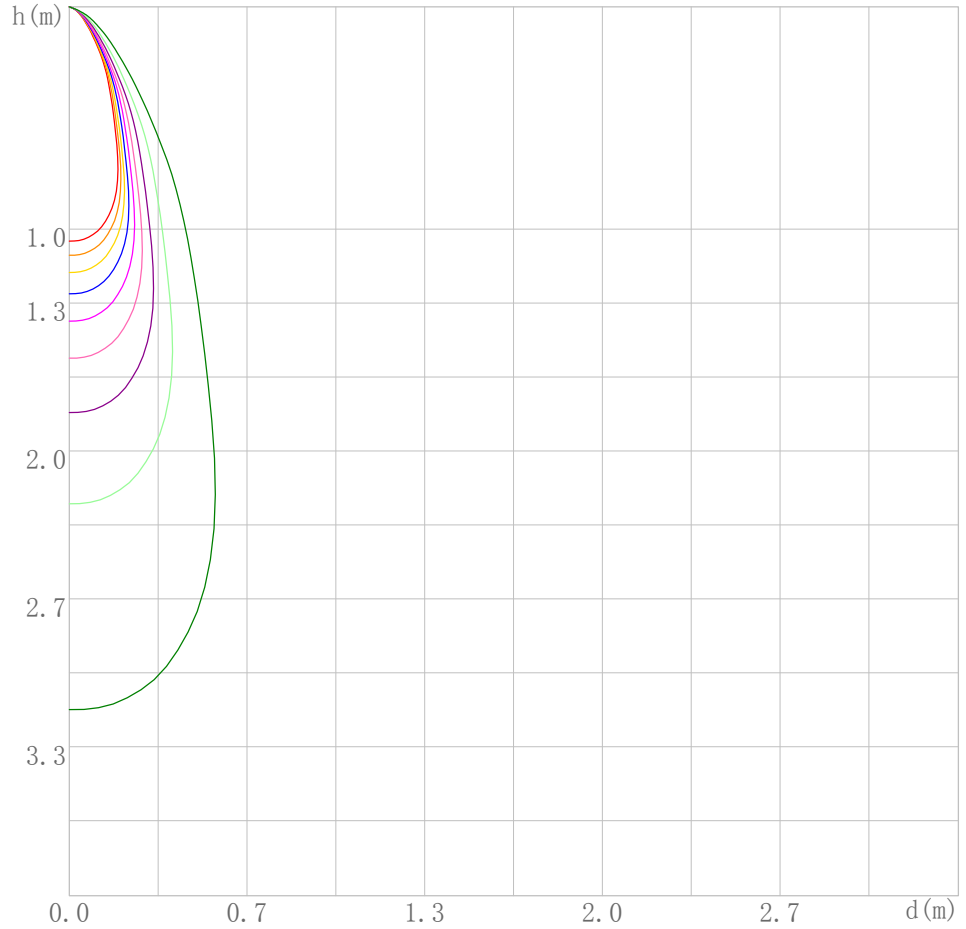



Curves: 3D Model 90% 80% 70% 60% 50% 40% 30% 20% 10%
View Angles(deg): 0 Height(m): 3.0 Distance(m): 10.0

# Space ISO Illuminance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

## Space ISO Illuminance Curve



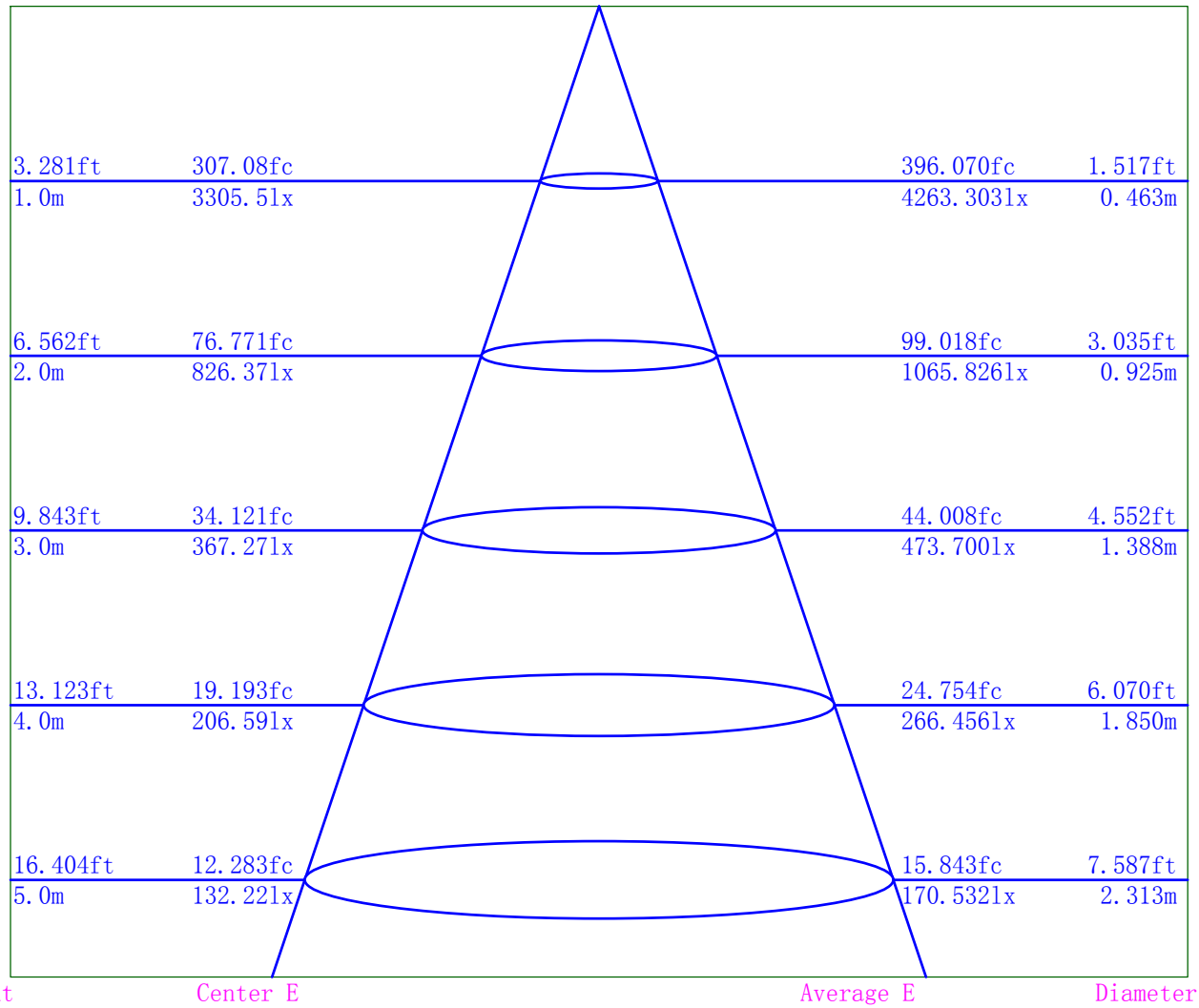

Curves:
[Unit: lx]
[EMax] =3305.461
[EMax*90%]=2974.915
[EMax*80%]=2644.369
[EMax*70%]=2313.823
[EMax*60%]=1983.277
[EMax*50%]=1652.730
[EMax*40%]=1322.184
[EMax*30%]=991.638
[EMax*20%]=661.092
[EMax*10%]=330.546

Space Plane Maximum Illuminance and @Angle:3305.46lx,0.0deg
Plane Maximum Lighting Intensity and @Angle:3305.481cd,0eg

# Illuminance-Distance Diagram

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

Illuminance-Distance Curve




Beam Angle:26.0

# Indoor Luminance Limiting Curves

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

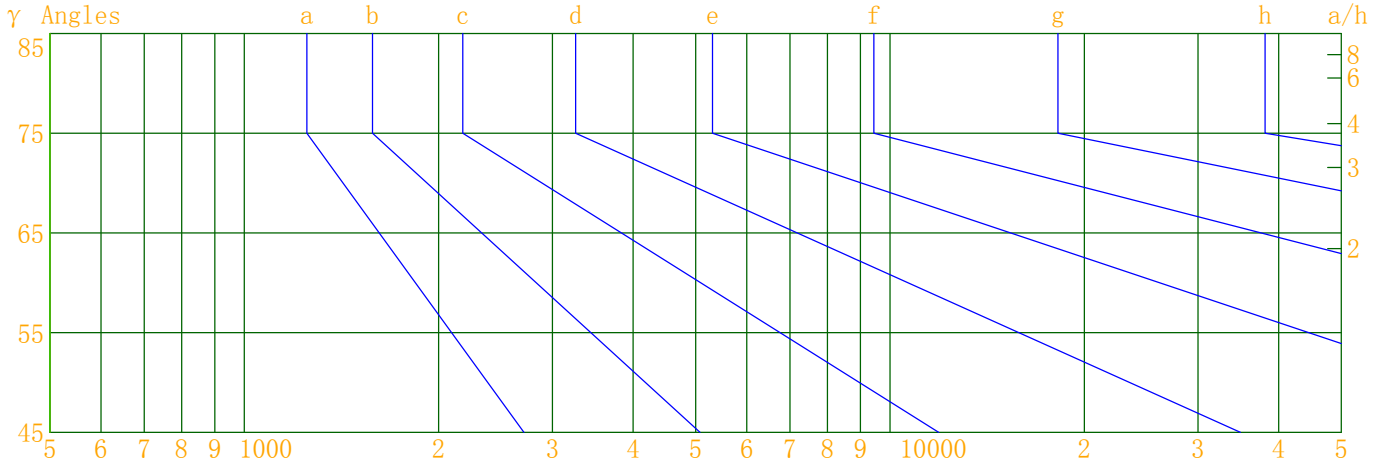
Glare Grade Table

| 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

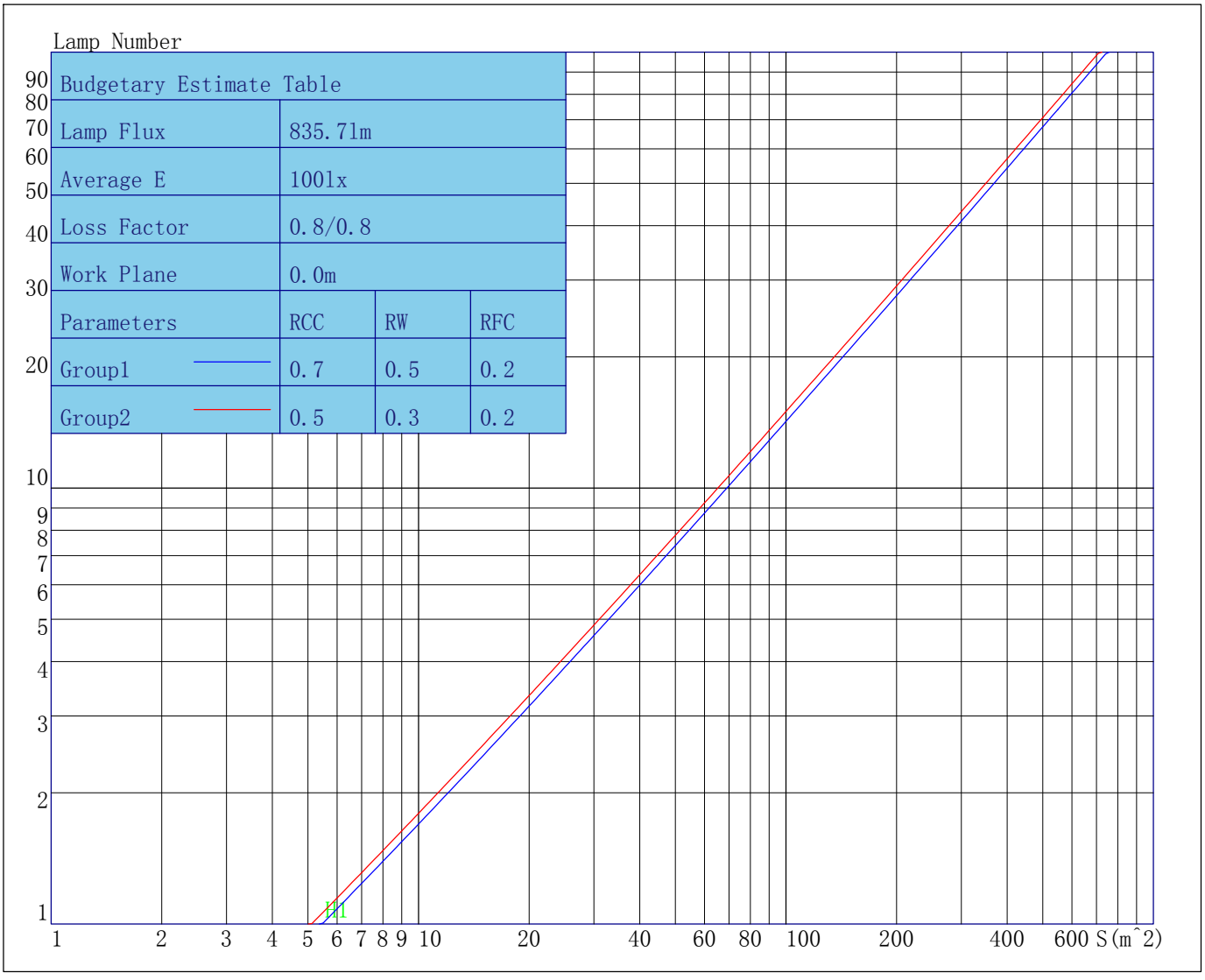
Luminance Limiting Curve




Luminous Size: Length(m)=0.000 Width(m)=0.000 Height(m)=0.000 Area(m^2)=0.000000
Luminous Type: Without Luminous Side
Luminous Curves: C0-C180 Color: C90-C270 Color:

# Indoor Budgetary Estimate Table

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |




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

# Indoor Coefficient of Utilization Table

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

| 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 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 115 | 113 | 111 | 109 | 112 | 111 | 109 | 107 | 107 | 105 | 104 | 103 | 102 | 101 | 99 | 99 | 98 | 96 |
| 2 | 111 | 107 | 104 | 101 | 109 | 105 | 103 | 100 | 102 | 100 | 98 | 99 | 98 | 96 | 97 | 95 | 94 | 93 |
| 3 | 107 | 102 | 98 | 95 | 105 | 101 | 97 | 95 | 98 | 96 | 93 | 96 | 94 | 92 | 94 | 92 | 90 | 89 |
| 4 | 104 | 98 | 94 | 91 | 102 | 97 | 93 | 90 | 95 | 92 | 89 | 93 | 90 | 88 | 91 | 89 | 87 | 86 |
| 5 | 100 | 94 | 90 | 86 | 99 | 93 | 89 | 86 | 92 | 88 | 85 | 90 | 87 | 85 | 89 | 86 | 84 | 83 |
| 6 | 97 | 90 | 86 | 83 | 96 | 90 | 86 | 83 | 88 | 85 | 82 | 87 | 84 | 82 | 86 | 83 | 81 | 80 |
| 7 | 94 | 87 | 83 | 80 | 93 | 87 | 83 | 80 | 86 | 82 | 79 | 85 | 81 | 79 | 84 | 81 | 78 | 77 |
| 8 | 91 | 84 | 80 | 77 | 90 | 84 | 80 | 77 | 83 | 79 | 77 | 82 | 79 | 76 | 81 | 78 | 76 | 75 |
| 9 | 89 | 82 | 77 | 74 | 88 | 81 | 77 | 74 | 80 | 77 | 74 | 80 | 76 | 74 | 79 | 76 | 74 | 73 |
| 10 | 86 | 79 | 75 | 72 | 85 | 79 | 75 | 72 | 78 | 74 | 72 | 77 | 74 | 72 | 77 | 74 | 72 | 71 |

# Unified Glare Rating Table

| | | |
|---|---|---|
| Lum.Name: HCP-1022222+HCP-1032222 3000K 24D | Lum.Catelog: | Test ID: 01 |
| Lamp Name: | Lamp Catelog: LED | Test Lab: Quality Department |
| Manufacture: Havit Commercial | Test Machine:GON-2000 | Test Date: 2020/11/24 |

## 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 | -1.5 | -0.5 | -1.1 | -0.2 | 0.1 | -1.5 | -0.5 | -1.1 | -0.2 | 0.1 |
| | Y=3H | -1.7 | -0.8 | -1.3 | -0.5 | -0.1 | -1.7 | -0.8 | -1.3 | -0.5 | -0.1 |
| | Y=4H | -1.8 | -1.0 | -1.4 | -0.6 | -0.3 | -1.8 | -1.0 | -1.4 | -0.6 | -0.3 |
| | Y=6H | -1.9 | -1.2 | -1.5 | -0.8 | -0.4 | -1.9 | -1.2 | -1.5 | -0.8 | -0.4 |
| | Y=8H | -2.0 | -1.3 | -1.5 | -0.9 | -0.5 | -2.0 | -1.3 | -1.5 | -0.9 | -0.5 |
| | Y=12H | -2.0 | -1.4 | -1.6 | -1.0 | -0.6 | -2.0 | -1.4 | -1.6 | -1.0 | -0.6 |
| X=4H | Y=2H | -1.8 | -1.0 | -1.4 | -0.6 | -0.3 | -1.8 | -1.0 | -1.4 | -0.6 | -0.3 |
| | Y=3H | -2.0 | -1.4 | -1.6 | -1.0 | -0.5 | -2.0 | -1.4 | -1.6 | -1.0 | -0.5 |
| | Y=4H | -2.1 | -1.6 | -1.7 | -1.1 | -0.7 | -2.1 | -1.6 | -1.7 | -1.1 | -0.7 |
| | Y=6H | -2.3 | -1.8 | -1.8 | -1.3 | -0.8 | -2.3 | -1.8 | -1.8 | -1.3 | -0.8 |
| | Y=8H | -2.3 | -1.9 | -1.9 | -1.4 | -0.9 | -2.3 | -1.9 | -1.9 | -1.4 | -0.9 |
| | Y=12H | -2.4 | -2.0 | -1.9 | -1.5 | -1.0 | -2.4 | -2.0 | -1.9 | -1.5 | -1.0 |
| X=8H | Y=4H | -2.3 | -1.9 | -1.9 | -1.4 | -0.9 | -2.3 | -1.9 | -1.9 | -1.4 | -0.9 |
| | Y=6H | -2.5 | -2.1 | -2.0 | -1.6 | -1.1 | -2.5 | -2.1 | -2.0 | -1.6 | -1.1 |
| | Y=8H | -2.5 | -2.2 | -2.0 | -1.7 | -1.2 | -2.5 | -2.2 | -2.0 | -1.7 | -1.2 |
| | Y=12H | -2.6 | -2.3 | -2.1 | -1.8 | -1.2 | -2.6 | -2.3 | -2.1 | -1.8 | -1.2 |
| X=12H | Y=4H | -2.4 | -2.0 | -1.9 | -1.5 | -1.0 | -2.4 | -2.0 | -1.9 | -1.5 | -1.0 |
| | Y=6H | -2.5 | -2.2 | -2.0 | -1.7 | -1.2 | -2.5 | -2.2 | -2.0 | -1.7 | -1.2 |
| | Y=8H | -2.6 | -2.3 | -2.1 | -1.8 | -1.2 | -2.6 | -2.3 | -2.1 | -1.8 | -1.2 |
| Variations with the objerver position at spacings | | | | | | | | | | | |
| S=1.0H | | 0.0/0.0 | | | | | 0.0/0.0 | | | | |
| S=1.5H | | 0.0/0.0 | | | | | 0.0/0.0 | | | | |
| S=2.0H | | 0.0/0.0 | | | | | 0.0/0.0 | | | | |
| Reduced UGR Table: | | | | | | | | | | | |
| Nordic Standard Table: | | BK0 | | | | | BK0 | | | | |
| Correction Value | | 0.0 | | | | | 0.0 | | | | |

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 | 3305.46 | 3305.46 | 3305.46 | 3305.46 |
| γ 1.0 | 3305.48 | 3314.02 | 3262.29 | 3306.11 |
| γ 2.0 | 3293.44 | 3280.01 | 3206.81 | 3275.07 |
| γ 3.0 | 3266.72 | 3227.50 | 3138.52 | 3227.90 |
| γ 4.0 | 3219.11 | 3160.23 | 3053.15 | 3172.29 |
| γ 5.0 | 3157.54 | 3075.30 | 2940.63 | 3084.56 |
| γ 6.0 | 3081.19 | 2969.55 | 2795.34 | 2965.86 |
| γ 7.0 | 2977.98 | 2850.96 | 2626.97 | 2819.59 |
| γ 8.0 | 2851.90 | 2713.04 | 2446.46 | 2657.83 |
| γ 9.0 | 2714.35 | 2552.28 | 2236.67 | 2467.26 |
| γ 10.0 | 2561.53 | 2369.93 | 2014.91 | 2256.46 |
| γ 11.0 | 2383.80 | 2176.12 | 1793.82 | 2028.92 |
| γ 12.0 | 2186.27 | 1968.03 | 1576.11 | 1802.69 |
| γ 13.0 | 1971.24 | 1740.82 | 1373.56 | 1590.41 |
| γ 14.0 | 1743.45 | 1505.78 | 1195.75 | 1405.53 |
| γ 15.0 | 1512.78 | 1278.19 | 1039.05 | 1242.49 |
| γ 16.0 | 1290.33 | 1076.10 | 904.46 | 1102.22 |
| γ 17.0 | 1096.23 | 916.84 | 790.46 | 977.63 |
| γ 18.0 | 937.76 | 789.39 | 693.57 | 865.93 |
| γ 19.0 | 807.23 | 683.67 | 607.02 | 766.75 |
| γ 20.0 | 697.72 | 594.72 | 533.07 | 679.24 |
| γ 21.0 | 606.20 | 519.94 | 466.52 | 600.32 |
| γ 22.0 | 528.69 | 453.75 | 408.65 | 530.77 |
| γ 23.0 | 462.80 | 395.20 | 357.23 | 468.92 |
| γ 24.0 | 404.41 | 342.97 | 310.42 | 412.80 |
| γ 25.0 | 352.65 | 295.83 | 268.37 | 361.90 |
| γ 26.0 | 306.85 | 253.40 | 230.72 | 316.10 |
| γ 27.0 | 265.33 | 213.70 | 197.26 | 274.29 |
| γ 28.0 | 226.75 | 176.02 | 167.29 | 238.01 |
| γ 29.0 | 191.75 | 146.73 | 141.87 | 205.68 |
| γ 30.0 | 162.01 | 125.16 | 119.07 | 176.85 |
| γ 31.0 | 137.68 | 108.07 | 100.55 | 149.38 |
| γ 32.0 | 118.47 | 93.06 | 84.09 | 126.66 |
| γ 33.0 | 101.23 | 80.54 | 70.91 | 105.95 |
| γ 34.0 | 87.46 | 69.99 | 59.62 | 89.39 |
| γ 35.0 | 75.87 | 60.59 | 49.58 | 74.91 |
| γ 36.0 | 65.78 | 52.38 | 41.27 | 62.51 |
| γ 37.0 | 57.09 | 45.22 | 34.78 | 51.80 |
| γ 38.0 | 49.52 | 39.21 | 30.34 | 43.45 |
| γ 39.0 | 43.14 | 33.97 | 24.91 | 36.76 |
| γ 40.0 | 37.66 | 29.58 | 21.52 | 31.56 |
| γ 41.0 | 33.05 | 25.99 | 18.72 | 27.37 |
| γ 42.0 | 29.21 | 22.90 | 16.47 | 23.83 |
| γ 43.0 | 25.93 | 20.17 | 14.57 | 21.05 |
| γ 44.0 | 23.14 | 17.78 | 13.08 | 18.61 |
| γ 45.0 | 20.69 | 15.60 | 11.65 | 16.30 |
| γ 46.0 | 18.41 | 13.66 | 10.34 | 14.20 |

## Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 47.0 | 16.43 | 11.98 | 8.99 | 12.25 |
| γ 48.0 | 14.60 | 10.42 | 8.10 | 10.39 |
| γ 49.0 | 12.90 | 8.94 | 7.53 | 9.13 |
| γ 50.0 | 11.29 | 7.90 | 6.93 | 8.35 |
| γ 51.0 | 10.09 | 6.97 | 6.57 | 7.78 |
| γ 52.0 | 9.07 | 6.05 | 6.09 | 7.21 |
| γ 53.0 | 8.17 | 5.35 | 5.54 | 6.58 |
| γ 54.0 | 7.33 | 4.68 | 5.16 | 6.12 |
| γ 55.0 | 6.60 | 4.07 | 4.69 | 5.62 |
| γ 56.0 | 5.90 | 3.48 | 4.17 | 5.11 |
| γ 57.0 | 5.22 | 2.93 | 3.72 | 4.63 |
| γ 58.0 | 4.60 | 2.45 | 3.25 | 4.31 |
| γ 59.0 | 4.07 | 2.00 | 2.77 | 3.83 |
| γ 60.0 | 3.48 | 1.42 | 2.33 | 3.33 |
| γ 61.0 | 2.99 | 0.88 | 1.70 | 2.80 |
| γ 62.0 | 2.39 | 0.34 | 0.19 | 2.28 |
| γ 63.0 | 1.83 | 0.00 | 0.00 | 1.72 |
| γ 64.0 | 1.21 | 0.00 | 0.00 | 1.26 |
| γ 65.0 | 0.68 | 0.00 | 0.00 | 0.61 |
| γ 66.0 | 0.13 | 0.00 | 0.00 | 0.03 |
| γ 67.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 68.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 69.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 70.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 71.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 72.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 73.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 74.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 75.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 76.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 77.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 78.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 79.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 80.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 81.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 82.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 83.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 84.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 85.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 86.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 87.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 88.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 89.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 90.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 91.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 92.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 93.0 | 0.00 | 0.00 | 0.00 | 0.00 |

## Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 94.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 95.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 96.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 97.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 98.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 99.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 100.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 101.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 102.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 103.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 104.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 105.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 106.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 107.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 108.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 109.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 110.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 111.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 112.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 113.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 114.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 115.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 116.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 117.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 118.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 119.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 120.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 121.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 122.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 123.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 124.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 125.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 126.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 127.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 128.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 129.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 130.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 131.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 132.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 133.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 134.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 135.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 136.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 137.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 138.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 139.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 140.0 | 0.00 | 0.00 | 0.00 | 0.00 |

## Candela Tabulation - (Cont.)

| V/H | C0.0 | C90.0 | C180.0 | C270.0 |
|---|---|---|---|---|
| γ 141.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 142.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 143.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 144.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 145.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 146.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 147.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 148.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 149.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 150.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 151.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 152.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 153.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 154.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 155.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 156.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 157.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 158.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 159.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 160.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 161.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 162.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 163.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 164.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 165.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 166.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 167.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 168.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 169.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 170.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 171.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 172.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 173.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 174.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 175.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 176.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 177.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 178.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 179.0 | 0.00 | 0.00 | 0.00 | 0.00 |
| γ 180.0 | 0.00 | 0.00 | 0.00 | 0.00 |