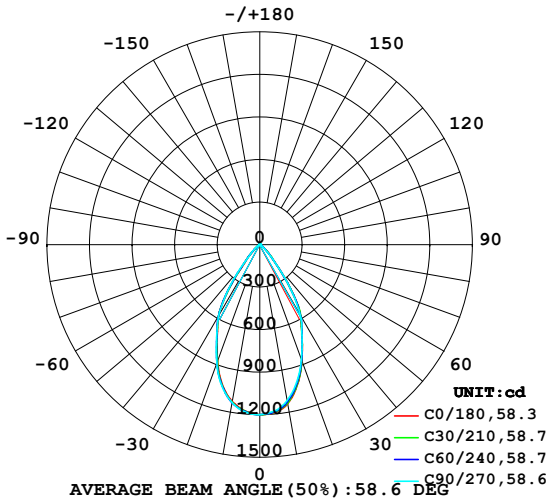
# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

## LUMINAIRE PHOTOMETRIC TEST REPORT

| | | |
|---|---|---|
| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

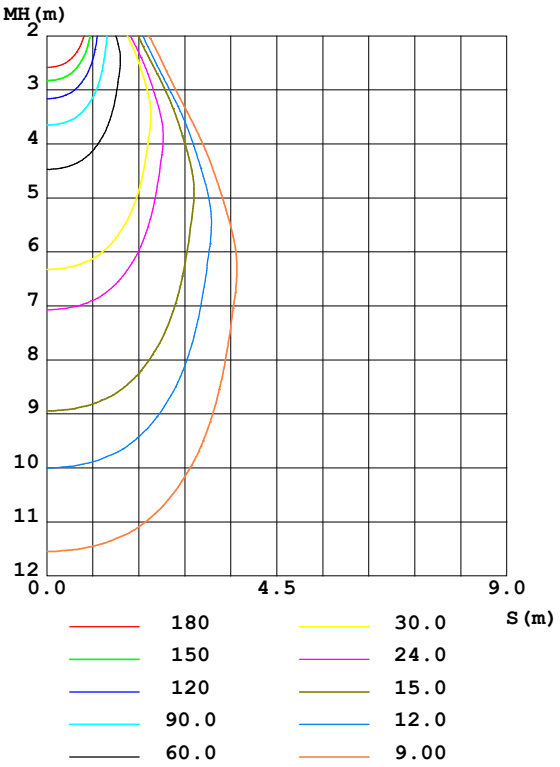
| DATA OF LAMP | | PHOTOMETRIC DATA | | Eff: 82.38 lm/W | |
|---|---|---|---|---|---|
| MODEL | HCP-81322112 | Imax(cd) | 1200 | S/MH(C0/180) | 0.85 |
| NOMINAL POWER(W) | 12 | LOR(%) | 100.0 | S/MH(C90/270) | 0.87 |
| RATED VOLTAGE(V) | 220 | TOTAL FLUX(lm) | 1071.4 | η UP,DN(C0-180) | 0.6,49.3 |
| NOMINAL FLUX(lm) | 1071.38 | CIE CLASS | DIRECT | η UP,DN(C180-360) | 0.5,49.6 |
| LAMPS INSIDE | 1 | η up(%) | 1.1 | CIBSE SHR NOM | 0.75 |
| TEST VOLTAGE(V) | 220 | η down(%) | 98.9 | CIBSE SHR MAX | 0.95 |

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM




AVERAGE BEAM ANGLE(50%):58.6 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)




C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

## ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

| γ | C0 | C45 | C90 | C135 | C180 | C225 | C270 | C315 | γ | Φ zone | Φ total | %lum,lamp |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1139 | 1133 | 1116 | 1121 | 1123 | 1127 | 1130 | 1131 | 0- 10 | 111.2 | 111.2 | 10.4,10.4 |
| 20 | 869.9 | 873.7 | 861.1 | 874.0 | 874.6 | 874.1 | 890.0 | 873.3 | 10- 20 | 283.9 | 395.0 | 36.9,36.9 |
| 30 | 574.0 | 584.6 | 572.1 | 582.8 | 582.5 | 581.3 | 582.8 | 575.4 | 20- 30 | 328.1 | 723.1 | 67.5,67.5 |
| 40 | 182.2 | 186.1 | 179.9 | 183.4 | 170.8 | 173.0 | 188.1 | 188.7 | 30- 40 | 234.3 | 957.4 | 89.4,89.4 |
| 50 | 50.10 | 46.64 | 37.89 | 38.49 | 40.57 | 41.46 | 44.31 | 49.17 | 40- 50 | 75.36 | 1033 | 96.4,96.4 |
| 60 | 11.02 | 10.52 | 8.411 | 9.494 | 9.582 | 9.520 | 9.205 | 10.18 | 50- 60 | 18.99 | 1052 | 98.2,98.2 |
| 70 | 3.964 | 3.709 | 2.794 | 3.556 | 4.046 | 3.534 | 2.874 | 3.352 | 60- 70 | 5.896 | 1058 | 98.7,98.7 |
| 80 | 0.7096 | 0.3773 | 0.3308 | 0.3427 | 0.5937 | 0.4049 | 0.3296 | 0.3916 | 70- 80 | 1.645 | 1059 | 98.9,98.9 |
| 90 | 0.0566 | 0.0522 | 0.0478 | 0.0522 | 0.0609 | 0.0608 | 0.0565 | 0.0565 | 80- 90 | 0.1776 | 1059 | 98.9,98.9 |
| 100 | 0.0564 | 0.1043 | 0.0650 | 0.1130 | 0.1131 | 0.0651 | 0.0999 | 0.0521 | 90-100 | 0.0703 | 1060 | 98.9,98.9 |
| 110 | 0.3120 | 0.3391 | 0.3168 | 0.3608 | 0.3132 | 0.2691 | 0.2827 | 0.2476 | 100-110 | 0.1835 | 1060 | 98.9,98.9 |
| 120 | 0.9933 | 1.017 | 1.024 | 1.043 | 0.9260 | 0.8722 | 0.8782 | 0.8593 | 110-120 | 0.5802 | 1060 | 99,99 |
| 130 | 2.165 | 2.160 | 2.183 | 2.203 | 1.986 | 1.958 | 1.930 | 1.910 | 120-130 | 1.307 | 1062 | 99.1,99.1 |
| 140 | 3.616 | 3.619 | 3.664 | 3.676 | 3.407 | 3.352 | 3.337 | 3.291 | 130-140 | 2.125 | 1064 | 99.3,99.3 |
| 150 | 4.993 | 4.996 | 5.085 | 5.087 | 4.814 | 4.716 | 4.727 | 4.616 | 140-150 | 2.621 | 1066 | 99.5,99.5 |
| 160 | 6.079 | 6.094 | 6.201 | 6.194 | 5.942 | 5.863 | 5.886 | 5.732 | 150-160 | 2.512 | 1069 | 99.8,99.8 |
| 170 | 7.000 | 7.054 | 7.122 | 7.128 | 6.963 | 6.974 | 6.967 | 6.853 | 160-170 | 1.830 | 1071 | 99.9,99.9 |
| 180 | 7.752 | 7.839 | 7.757 | 7.831 | 7.752 | 7.822 | 7.757 | 7.826 | 170-180 | 0.7001 | 1071 | 100,100 |
| DEG | LUMINOUS INTENSITY:cd | | | | | | | | | UNIT:lm | | |

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

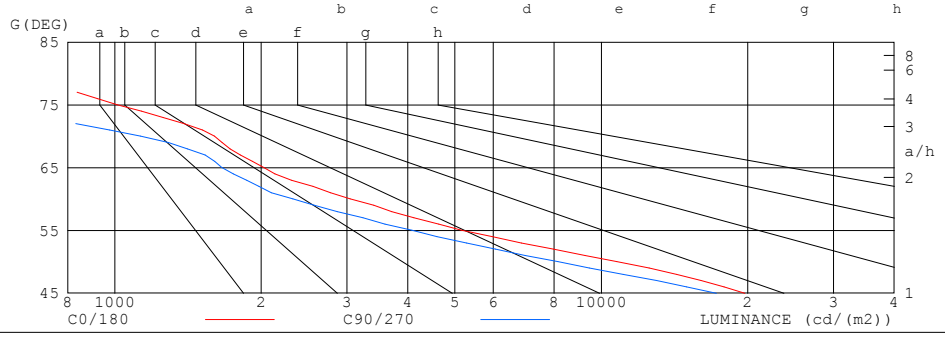
# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

## LUMINANCE LIMITATION CURVES

| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
|---|---|---|
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

**LUMINANCE LIMITATION CURVES**

| GLARE | CLASS | ILLUMINANCE (lx) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1.15 | A | 2000 | 1000 | 500 | <=300 | | | | |
| 1.50 | B | | 2000 | 1000 | 500 | <=300 | | | |
| 1.85 | C | | | 2000 | 1000 | 500 | <=300 | | |
| 2.20 | D | | | | 2000 | 1000 | 500 | <=300 | |
| 2.55 | E | | | | | 2000 | 1000 | 500 | <=300 |
| | | a | b | c | d | e | f | g | h |




| LUMINANCE cd/(m2) | | |
|---|---|---|
| G(DEG) | C0/180 | C90/270 |
| 85 | 359 | 118 |
| 80 | 565 | 263 |
| 75 | 1011 | 509 |
| 70 | 1601 | 1129 |
| 65 | 2024 | 1660 |
| 60 | 3045 | 2324 |
| 55 | 5160 | 4084 |
| 50 | 10768 | 8143 |
| 45 | 19725 | 17252 |

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

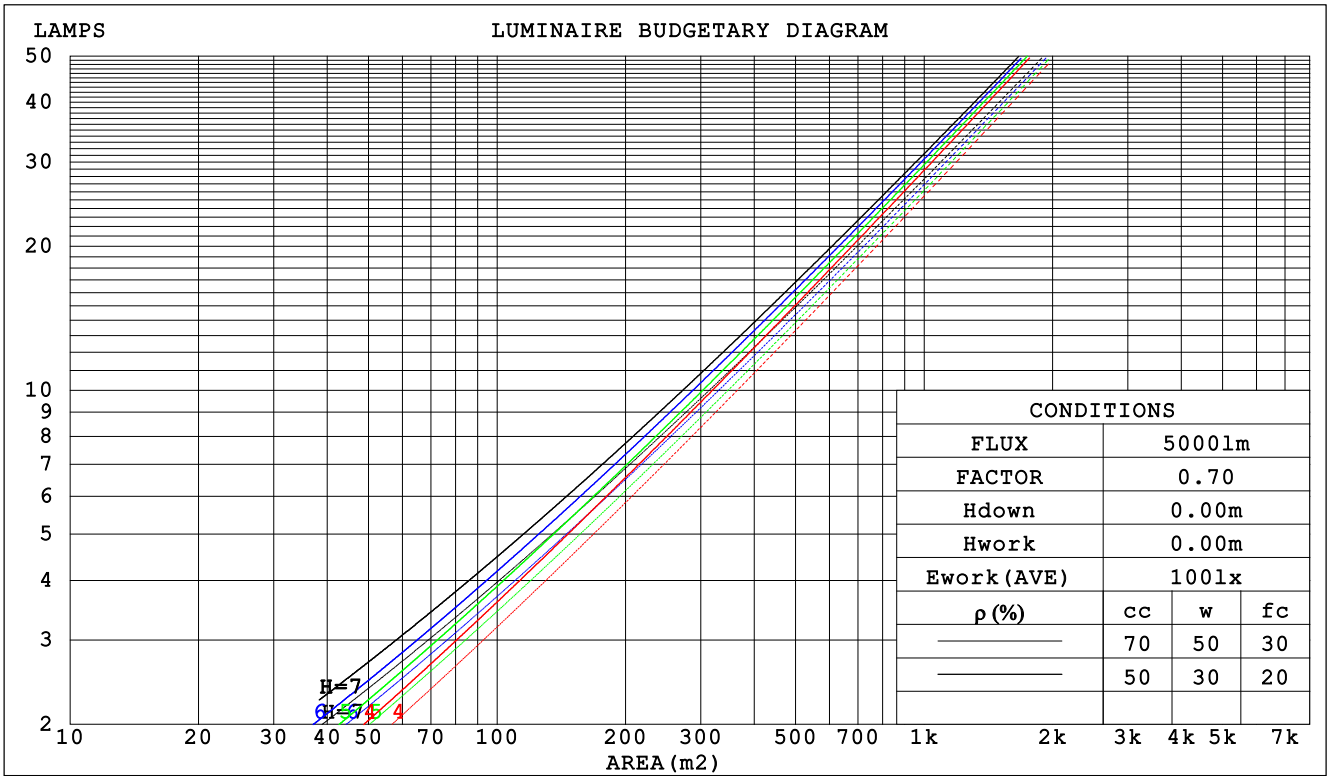
γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

### CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

| | | |
|---|---|---|
| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

| ρcc | 80% | | | 70% | | | 50% | | | 30% | | | 10% | | | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ρw | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 0 |
| ρfc | 20% | | | 20% | | | 20% | | | 20% | | | 20% | | | 0 |
| RCR | RCR:Room Cavity Ratio | | | Coefficients of Utilization(CU) | | | | | | | | | | | | |
| 0.0 | 1.19 | 1.19 | 1.19 | 1.16 | 1.16 | 1.16 | 1.10 | 1.10 | 1.10 | 1.06 | 1.06 | 1.06 | 1.01 | 1.01 | 1.01 | .99 |
| 1.0 | 1.10 | 1.08 | 1.05 | 1.08 | 1.06 | 1.04 | 1.04 | 1.02 | 1.00 | .00 | .98 | .97 | .96 | .95 | .94 | .92 |
| 2.0 | 1.02 | .98 | .95 | 1.01 | .97 | .94 | .97 | .94 | .91 | .94 | .91 | .89 | .91 | .89 | .87 | .86 |
| 3.0 | .95 | .90 | .86 | .94 | .89 | .85 | .91 | .87 | .84 | .88 | .85 | .82 | .86 | .83 | .81 | .79 |
| 4.0 | .89 | .83 | .79 | .87 | .82 | .78 | .85 | .81 | .77 | .83 | .79 | .76 | .81 | .78 | .75 | .74 |
| 5.0 | .83 | .77 | .72 | .82 | .76 | .72 | .80 | .75 | .71 | .78 | .74 | .71 | .76 | .73 | .70 | .68 |
| 6.0 | .78 | .71 | .67 | .77 | .71 | .67 | .75 | .70 | .66 | .74 | .69 | .66 | .72 | .68 | .65 | .64 |
| 7.0 | .73 | .67 | .62 | .72 | .66 | .62 | .71 | .66 | .62 | .69 | .65 | .61 | .68 | .64 | .61 | .59 |
| 8.0 | .68 | .62 | .58 | .68 | .62 | .58 | .67 | .61 | .58 | .66 | .61 | .57 | .64 | .60 | .57 | .56 |
| 9.0 | .65 | .59 | .54 | .64 | .58 | .54 | .63 | .58 | .54 | .62 | .57 | .54 | .61 | .57 | .54 | .52 |
| 10.0 | .61 | .55 | .51 | .61 | .55 | .51 | .60 | .54 | .51 | .59 | .54 | .51 | .58 | .54 | .50 | .49 |




C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

## WEC AND CCEC

| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
|---|---|---|
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

| ρcc | 80% | | | 70% | | | 50% | | | 30% | | | 10% | | | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ρw | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 0 |
| ρfc | 20% | | | 20% | | | 20% | | | 20% | | | 20% | | | 0 |
| RCR | RCR:Room Cavity Ratio | | | | | | Wall Exitance Coeffcients(WEC) | | | | | | | | | |
| 0.0 | | | | | | | | | | | | | | | | |
| 1.0 | .182 | .104 | .033 | .175 | .100 | .032 | .162 | .093 | .030 | .150 | .086 | .028 | .138 | .080 | .026 | |
| 2.0 | .175 | .096 | .029 | .169 | .093 | .029 | .158 | .088 | .027 | .147 | .083 | .026 | .138 | .078 | .025 | |
| 3.0 | .167 | .089 | .027 | .162 | .087 | .026 | .152 | .082 | .025 | .143 | .079 | .024 | .135 | .075 | .023 | |
| 4.0 | .159 | .083 | .024 | .155 | .081 | .024 | .146 | .078 | .023 | .139 | .074 | .022 | .131 | .071 | .022 | |
| 5.0 | .152 | .077 | .022 | .148 | .076 | .022 | .140 | .073 | .022 | .134 | .071 | .021 | .127 | .068 | .020 | |
| 6.0 | .145 | .073 | .021 | .141 | .071 | .021 | .135 | .069 | .020 | .129 | .067 | .020 | .123 | .065 | .019 | |
| 7.0 | .138 | .068 | .019 | .135 | .067 | .019 | .129 | .065 | .019 | .124 | .064 | .018 | .119 | .062 | .018 | |
| 8.0 | .132 | .065 | .018 | .130 | .064 | .018 | .124 | .062 | .018 | .119 | .061 | .017 | .115 | .059 | .017 | |
| 9.0 | .127 | .061 | .017 | .124 | .061 | .017 | .119 | .059 | .017 | .115 | .058 | .017 | .111 | .056 | .016 | |
| 10.0 | .121 | .058 | .016 | .119 | .058 | .016 | .115 | .056 | .016 | .111 | .055 | .016 | .107 | .054 | .015 | |

| ρcc | 80% | | | 70% | | | 50% | | | 30% | | | 10% | | | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ρw | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 0 |
| ρfc | 20% | | | 20% | | | 20% | | | 20% | | | 20% | | | 0 |
| RCR | RCR:Room Cavity Ratio | | | | | | Ceiling Cavity Exitance Coefficients(CCEC) | | | | | | | | | |
| 0.0 | .199 | .199 | .199 | .170 | .170 | .170 | .116 | .116 | .116 | .067 | .067 | .067 | .021 | .021 | .021 | |
| 1.0 | .180 | .166 | .153 | .154 | .142 | .132 | .105 | .098 | .091 | .061 | .057 | .053 | .019 | .018 | .017 | |
| 2.0 | .165 | .141 | .121 | .142 | .121 | .104 | .097 | .084 | .073 | .056 | .049 | .043 | .018 | .016 | .014 | |
| 3.0 | .153 | .122 | .098 | .131 | .105 | .085 | .090 | .073 | .059 | .052 | .043 | .035 | .017 | .014 | .011 | |
| 4.0 | .143 | .108 | .080 | .123 | .093 | .070 | .085 | .065 | .049 | .049 | .038 | .029 | .016 | .012 | .010 | |
| 5.0 | .135 | .096 | .068 | .116 | .083 | .059 | .080 | .058 | .042 | .046 | .034 | .025 | .015 | .011 | .008 | |
| 6.0 | .128 | .087 | .058 | .110 | .075 | .050 | .076 | .053 | .036 | .044 | .031 | .021 | .014 | .010 | .007 | |
| 7.0 | .121 | .080 | .050 | .104 | .069 | .044 | .072 | .048 | .031 | .042 | .028 | .018 | .014 | .009 | .006 | |
| 8.0 | .116 | .073 | .044 | .100 | .064 | .039 | .069 | .045 | .027 | .040 | .026 | .016 | .013 | .009 | .005 | |
| 9.0 | .111 | .068 | .040 | .095 | .059 | .035 | .066 | .042 | .025 | .038 | .025 | .015 | .012 | .008 | .005 | |
| 10.0 | .106 | .064 | .036 | .091 | .055 | .031 | .063 | .039 | .022 | .037 | .023 | .013 | .012 | .008 | .004 | |

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

## UGR(Unified Glare Rating) Table

| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
|---|---|---|
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

| ceiling/cavity | | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| walls | | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| working plane | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Room dimensions | | Viewed crosswise | | | | | Viewed endwise | | | | |
| x = 2H | y = 2H | 18.6 | 19.5 | 18.8 | 19.7 | 19.9 | 18.2 | 19.2 | 18.5 | 19.4 | 19.6 |
| | 3H | 18.4 | 19.3 | 18.7 | 19.5 | 19.8 | 18.1 | 19.0 | 18.4 | 19.2 | 19.4 |
| | 4H | 18.3 | 19.2 | 18.6 | 19.4 | 19.7 | 18.0 | 18.8 | 18.3 | 19.1 | 19.3 |
| | 6H | 18.2 | 19.0 | 18.6 | 19.3 | 19.6 | 17.9 | 18.7 | 18.2 | 19.0 | 19.2 |
| | 8H | 18.2 | 19.0 | 18.5 | 19.2 | 19.5 | 17.9 | 18.6 | 18.2 | 18.9 | 19.2 |
| | 12H | 18.2 | 18.9 | 18.5 | 19.2 | 19.5 | 17.8 | 18.5 | 18.2 | 18.8 | 19.1 |
| 4H | 2H | 18.3 | 19.2 | 18.6 | 19.4 | 19.6 | 18.0 | 18.8 | 18.3 | 19.1 | 19.3 |
| | 3H | 18.2 | 18.9 | 18.5 | 19.2 | 19.5 | 17.9 | 18.6 | 18.2 | 18.9 | 19.2 |
| | 4H | 18.1 | 18.8 | 18.5 | 19.1 | 19.4 | 17.8 | 18.4 | 18.1 | 18.7 | 19.1 |
| | 6H | 18.0 | 18.6 | 18.4 | 18.9 | 19.3 | 17.7 | 18.2 | 18.1 | 18.6 | 19.0 |
| | 8H | 18.0 | 18.5 | 18.4 | 18.9 | 19.2 | 17.6 | 18.1 | 18.0 | 18.5 | 18.9 |
| | 12H | 17.9 | 18.4 | 18.3 | 18.8 | 19.2 | 17.6 | 18.0 | 18.0 | 18.4 | 18.8 |
| 8H | 4H | 18.0 | 18.5 | 18.4 | 18.9 | 19.2 | 17.6 | 18.1 | 18.0 | 18.5 | 18.9 |
| | 6H | 17.9 | 18.3 | 18.3 | 18.7 | 19.1 | 17.5 | 17.9 | 18.0 | 18.4 | 18.8 |
| | 8H | 17.8 | 18.2 | 18.3 | 18.6 | 19.1 | 17.5 | 17.8 | 17.9 | 18.3 | 18.7 |
| | 12H | 17.7 | 18.1 | 18.2 | 18.5 | 19.0 | 17.4 | 17.7 | 17.9 | 18.2 | 18.7 |
| 12H | 4H | 17.9 | 18.4 | 18.3 | 18.8 | 19.2 | 17.6 | 18.0 | 18.0 | 18.4 | 18.9 |
| | 6H | 17.8 | 18.2 | 18.3 | 18.6 | 19.1 | 17.5 | 17.8 | 17.9 | 18.3 | 18.7 |
| | 8H | 17.7 | 18.1 | 18.2 | 18.5 | 19.0 | 17.4 | 17.7 | 17.9 | 18.2 | 18.7 |

| Variations with the observer position at spacings: | | |
|---|---|---|
| S = 1.0H | + 3.2 / - 8.5 | + 3.1 / - 9.8 |
| 1.5H | + 4.9 / - 7.1 | + 5.0 / - 7.7 |
| 2.0H | + 5.6 / - 6.7 | + 5.7 / - 6.6 |

CIE Pub.117, 1071 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.2)

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

### UTILIZATION FACTORS TABLE

| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
|---|---|---|
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

| REFLECTANCE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ceiling | 0.8 | 0.8 | 0.8 | 0.7 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 | 0 |
| Walls | 0.7 | 0.5 | 0.3 | 0.7 | 0.5 | 0.3 | 0.7 | 0.5 | 0.3 | 0 |
| Working plane | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0 |
| ROOM INDEX | UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5 | | | | | | | | | |
| k = 0.60 | 85 | 78 | 74 | 84 | 78 | 74 | 83 | 77 | 74 | 70 |
| 0.80 | 93 | 86 | 82 | 92 | 86 | 82 | 91 | 85 | 82 | 78 |
| 1.00 | 98 | 92 | 88 | 97 | 91 | 87 | 95 | 91 | 87 | 83 |
| 1.25 | 102 | 96 | 93 | 101 | 96 | 92 | 99 | 94 | 91 | 87 |
| 1.50 | 105 | 100 | 96 | 103 | 99 | 96 | 101 | 97 | 94 | 90 |
| 2.00 | 108 | 103 | 100 | 106 | 102 | 99 | 103 | 100 | 98 | 92 |
| 2.50 | 109 | 105 | 102 | 108 | 104 | 101 | 104 | 102 | 99 | 93 |
| 3.00 | 111 | 108 | 105 | 109 | 106 | 103 | 106 | 103 | 101 | 94 |
| 4.00 | 113 | 110 | 108 | 111 | 109 | 106 | 107 | 105 | 104 | 96 |
| 5.00 | 114 | 112 | 110 | 112 | 110 | 108 | 108 | 106 | 105 | 97 |
| ROOM INDEX | UF(total) | | | | | | | | | Direct |
| According to DIN EN 13032-2 2004 | | | | Suspended | | | | | SHRNOM = 1.25 | |

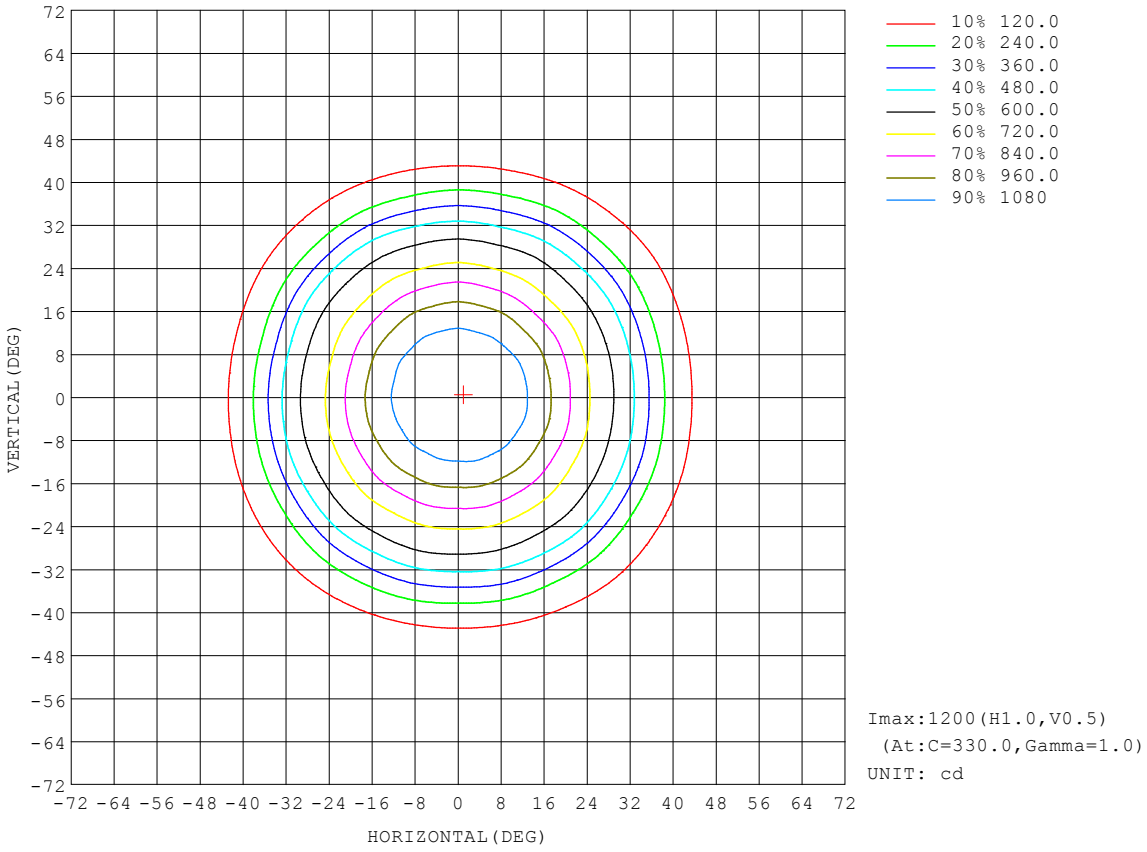
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

### ISOCANDELA DIAGRAM

| | | |
|---|---|---|
| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |



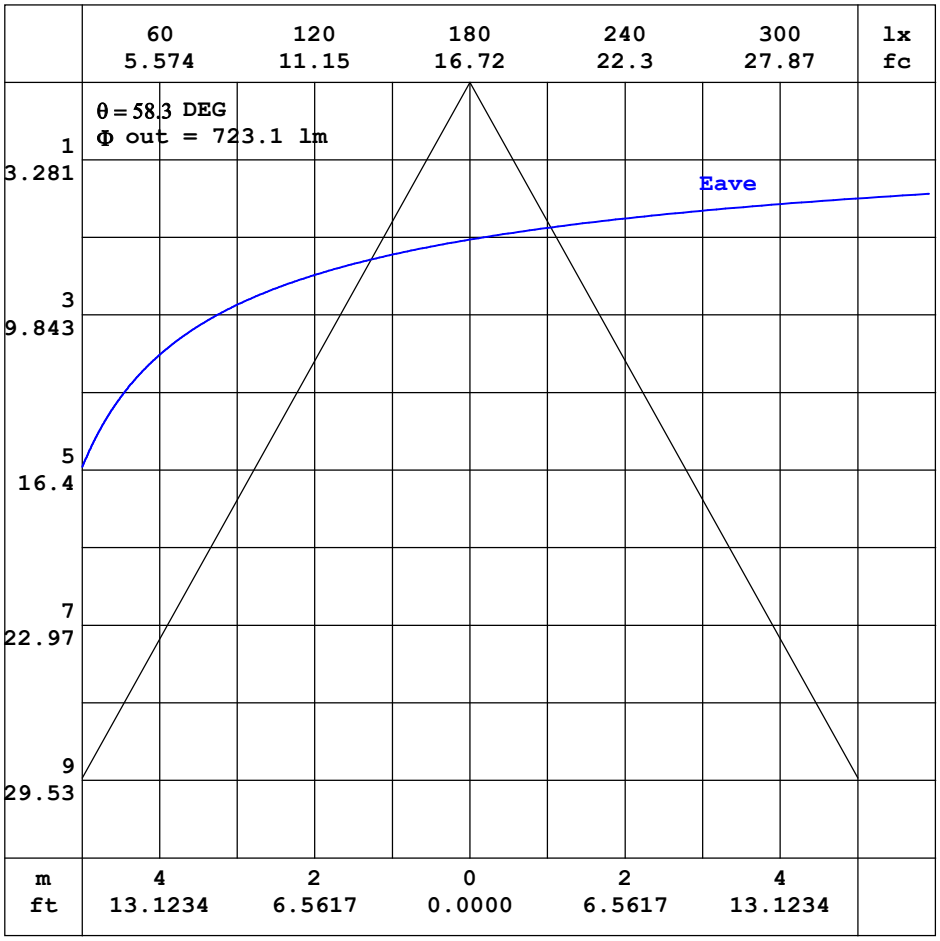

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

### AAI CURVES

| | | |
|---|---|---|
| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |




**Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.**

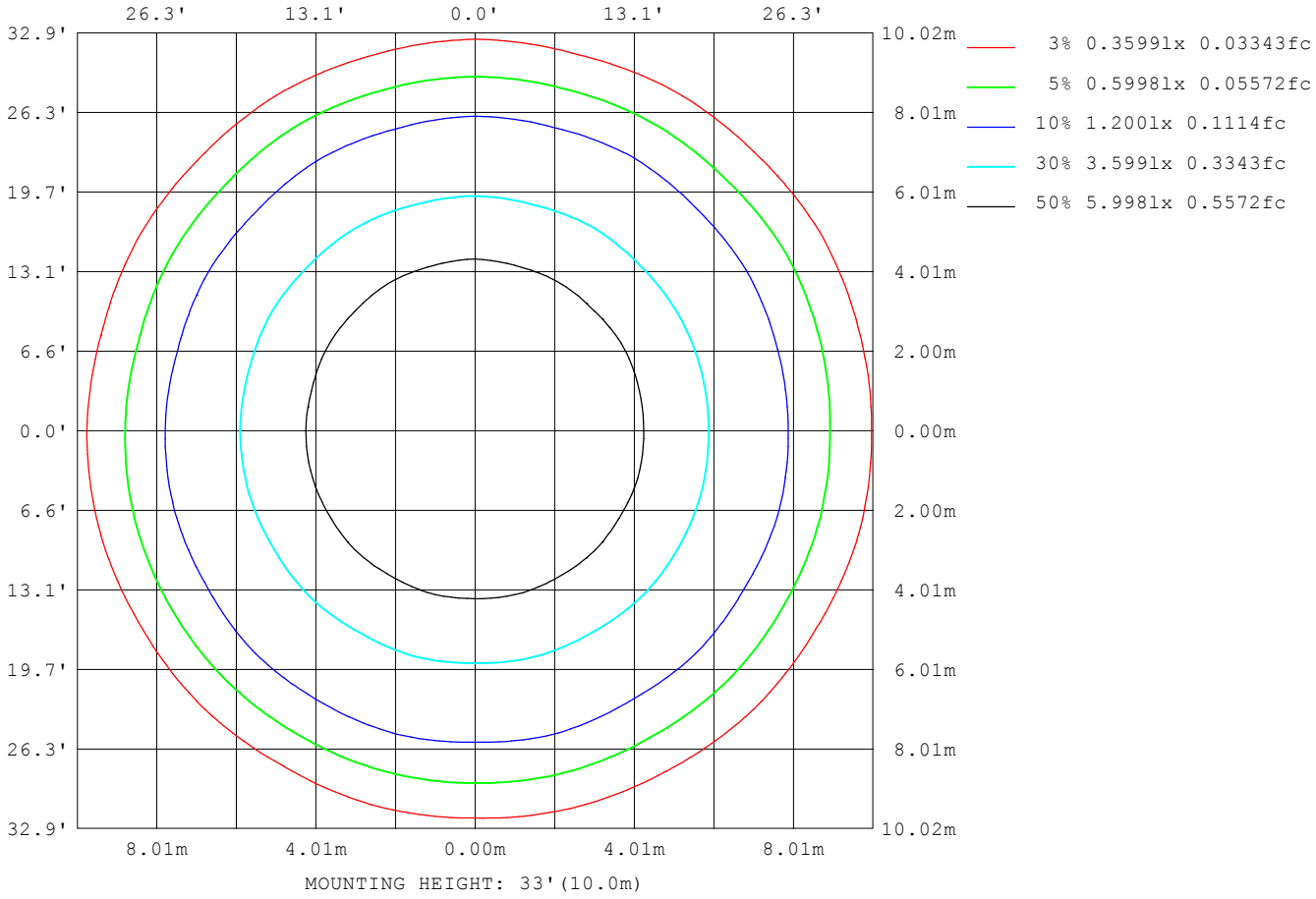
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

### ISOLUX DIAGRAM

| | | |
|---|---|---|
| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |




C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

## LED Avg.L Report

| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
|---|---|---|
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

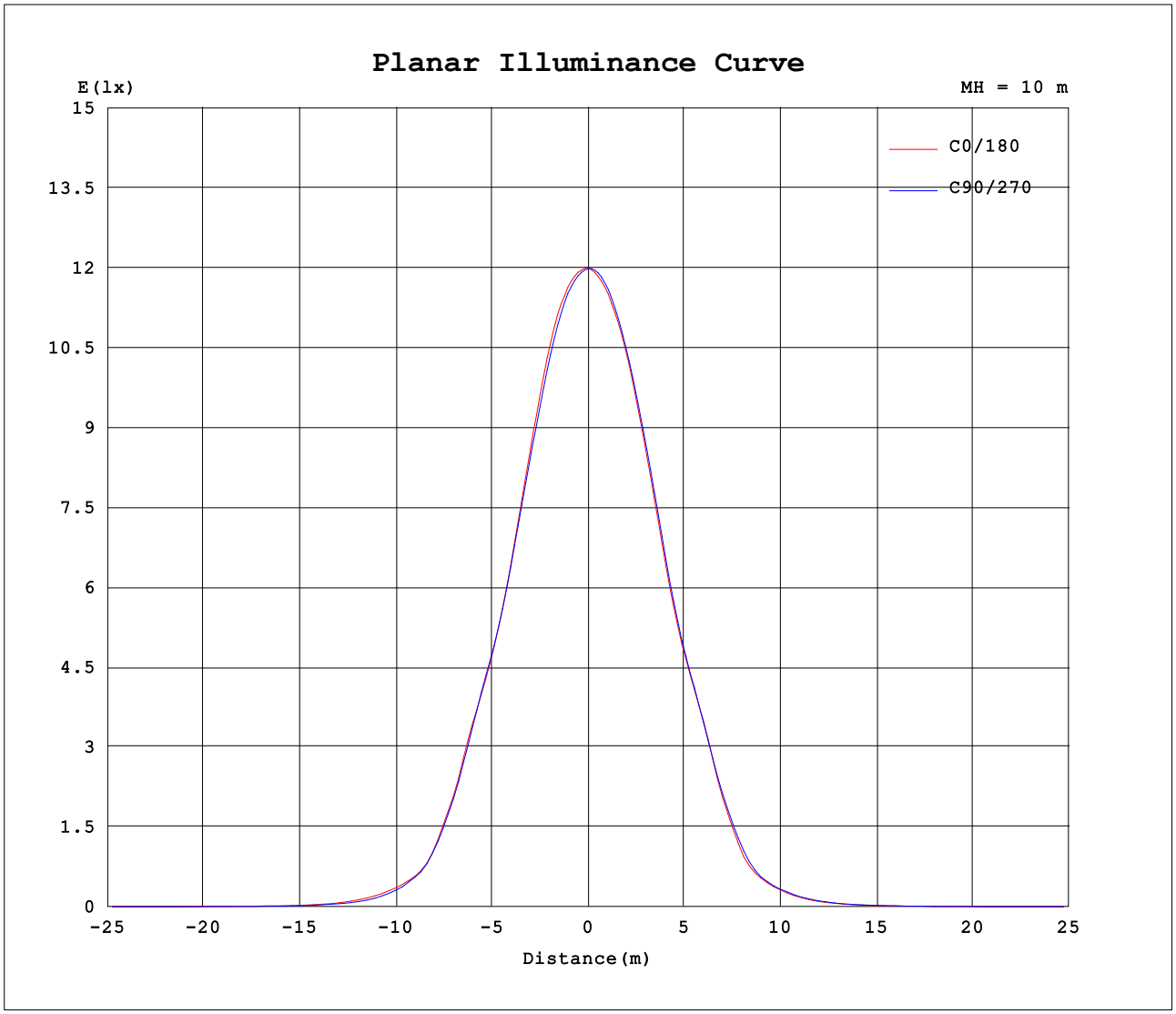
| AvgL | cd/m2 |
|---|---|
| L_0~180(65)av | 1992 |
| L_0~180(75)av | 983 |
| L_0~180(85)av | 317 |
| L_90~270(65)av | 1691 |
| L_90~270(75)av | 533 |
| L_90~270(85)av | 107 |
| L_45(65)av | 1891 |
| L_45(75)av | 692 |
| L_45(85)av | 141 |

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

## Planar Illuminance Curve




C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

### LUMINOUS DISTRIBUTION INTENSITY DATA

| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
|---|---|---|
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

Table--1 UNIT: cd

| γ (DEG) \ C(DEG) | 0 | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 | 195 | 210 | 225 | 240 | 255 | 270 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1200 | 1199 | 1199 | 1199 | 1199 | 1199 | 1199 | 1198 | 1199 | 1199 | 1199 | 1198 | 1200 | 1199 | 1199 | 1199 | 1199 | 1199 | 1199 |
| 5 | 1189 | 1189 | 1187 | 1186 | 1183 | 1182 | 1178 | 1179 | 1176 | 1177 | 1175 | 1177 | 1178 | 1176 | 1178 | 1178 | 1182 | 1183 | 1185 |
| 10 | 1139 | 1141 | 1134 | 1133 | 1125 | 1125 | 1116 | 1117 | 1116 | 1121 | 1118 | 1121 | 1123 | 1124 | 1129 | 1127 | 1132 | 1128 | 1130 |
| 15 | 1026 | 1031 | 1022 | 1022 | 1015 | 1014 | 1005 | 1010 | 1008 | 1015 | 1013 | 1020 | 1022 | 1018 | 1028 | 1023 | 1030 | 1028 | 1033 |
| 20 | 870 | 876 | 868 | 874 | 866 | 869 | 861 | 868 | 864 | 874 | 868 | 875 | 875 | 868 | 877 | 874 | 886 | 881 | 890 |
| 25 | 705 | 711 | 704 | 712 | 707 | 711 | 705 | 710 | 705 | 715 | 709 | 713 | 711 | 707 | 716 | 711 | 720 | 714 | 722 |
| 30 | 574 | 577 | 579 | 585 | 575 | 579 | 572 | 580 | 573 | 583 | 576 | 582 | 582 | 579 | 586 | 581 | 585 | 578 | 583 |
| 35 | 381 | 385 | 380 | 390 | 381 | 384 | 371 | 379 | 374 | 382 | 371 | 377 | 374 | 364 | 376 | 373 | 390 | 380 | 387 |
| 40 | 182 | 184 | 180 | 186 | 182 | 186 | 180 | 183 | 181 | 183 | 177 | 175 | 171 | 166 | 171 | 173 | 184 | 182 | 188 |
| 45 | 101 | 102 | 97.9 | 97.5 | 93.1 | 91.5 | 88.3 | 89.2 | 87.1 | 90.1 | 89.1 | 90.7 | 90.2 | 87.1 | 89.9 | 89.9 | 92.3 | 91.8 | 94.2 |
| 50 | 50.1 | 50.6 | 47.7 | 46.6 | 42.1 | 40.7 | 37.9 | 38.1 | 37.0 | 38.5 | 38.0 | 39.7 | 40.6 | 39.7 | 41.8 | 41.5 | 43.0 | 42.7 | 44.3 |
| 55 | 21.4 | 21.7 | 20.5 | 20.1 | 18.3 | 17.7 | 17.0 | 17.0 | 16.7 | 17.4 | 16.8 | 17.2 | 17.5 | 17.4 | 18.4 | 18.4 | 18.7 | 18.2 | 19.2 |
| 60 | 11.0 | 11.3 | 10.8 | 10.5 | 9.47 | 9.04 | 8.41 | 8.69 | 8.97 | 9.49 | 9.34 | 9.47 | 9.58 | 9.41 | 9.71 | 9.52 | 9.59 | 9.02 | 9.21 |
| 65 | 6.19 | 6.29 | 6.11 | 5.95 | 5.44 | 5.23 | 5.08 | 5.23 | 5.39 | 5.80 | 5.86 | 5.94 | 5.99 | 5.88 | 5.92 | 5.68 | 5.58 | 5.36 | 5.27 |
| 70 | 3.96 | 4.06 | 3.90 | 3.71 | 3.10 | 2.92 | 2.79 | 2.84 | 2.95 | 3.56 | 3.80 | 3.97 | 4.05 | 3.95 | 3.98 | 3.53 | 3.20 | 2.86 | 2.87 |
| 75 | 1.89 | 2.00 | 1.77 | 1.40 | 1.10 | 0.99 | 0.95 | 0.99 | 1.02 | 1.24 | 1.40 | 1.62 | 1.79 | 1.68 | 1.64 | 1.28 | 1.12 | 0.99 | 1.04 |
| 80 | 0.71 | 0.72 | 0.56 | 0.38 | 0.37 | 0.32 | 0.33 | 0.31 | 0.35 | 0.34 | 0.41 | 0.51 | 0.59 | 0.60 | 0.52 | 0.40 | 0.34 | 0.37 | 0.33 |
| 85 | 0.23 | 0.16 | 0.15 | 0.08 | 0.08 | 0.05 | 0.07 | 0.05 | 0.07 | 0.05 | 0.13 | 0.15 | 0.17 | 0.19 | 0.11 | 0.11 | 0.06 | 0.10 | 0.06 |
| 90 | 0.06 | 0.05 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| 95 | 0.05 | 0.07 | 0.05 | 0.07 | 0.05 | 0.08 | 0.05 | 0.07 | 0.05 | 0.07 | 0.05 | 0.07 | 0.07 | 0.06 | 0.07 | 0.06 | 0.07 | 0.06 | 0.07 |
| 100 | 0.06 | 0.11 | 0.06 | 0.10 | 0.07 | 0.11 | 0.06 | 0.11 | 0.07 | 0.11 | 0.09 | 0.12 | 0.11 | 0.09 | 0.10 | 0.07 | 0.10 | 0.06 | 0.10 |
| 105 | 0.17 | 0.18 | 0.16 | 0.18 | 0.16 | 0.19 | 0.18 | 0.19 | 0.17 | 0.20 | 0.17 | 0.20 | 0.19 | 0.15 | 0.17 | 0.14 | 0.16 | 0.11 | 0.16 |
| 110 | 0.31 | 0.33 | 0.31 | 0.34 | 0.31 | 0.35 | 0.32 | 0.35 | 0.33 | 0.36 | 0.33 | 0.37 | 0.31 | 0.28 | 0.30 | 0.27 | 0.29 | 0.26 | 0.28 |
| 115 | 0.59 | 0.60 | 0.59 | 0.61 | 0.60 | 0.63 | 0.60 | 0.63 | 0.61 | 0.64 | 0.62 | 0.65 | 0.56 | 0.53 | 0.54 | 0.53 | 0.54 | 0.52 | 0.53 |
| 120 | 0.99 | 1.00 | 1.00 | 1.02 | 1.01 | 1.03 | 1.02 | 1.04 | 1.07 | 1.04 | 1.07 | 1.05 | 0.93 | 0.90 | 0.91 | 0.87 | 0.90 | 0.87 | 0.88 |
| 125 | 1.50 | 1.52 | 1.51 | 1.54 | 1.53 | 1.56 | 1.55 | 1.56 | 1.55 | 1.56 | 1.56 | 1.56 | 1.40 | 1.38 | 1.38 | 1.35 | 1.37 | 1.35 | 1.35 |
| 130 | 2.17 | 2.15 | 2.18 | 2.16 | 2.18 | 2.19 | 2.18 | 2.20 | 2.19 | 2.20 | 2.19 | 2.21 | 1.99 | 1.97 | 1.96 | 1.96 | 1.94 | 1.93 | 1.93 |
| 135 | 2.86 | 2.86 | 2.86 | 2.88 | 2.88 | 2.90 | 2.93 | 2.92 | 2.93 | 2.92 | 2.93 | 2.92 | 2.68 | 2.67 | 2.65 | 2.62 | 2.62 | 2.60 | 2.61 |
| 140 | 3.62 | 3.61 | 3.62 | 3.62 | 3.64 | 3.65 | 3.66 | 3.68 | 3.66 | 3.68 | 3.67 | 3.68 | 3.41 | 3.38 | 3.38 | 3.35 | 3.35 | 3.33 | 3.34 |
| 145 | 4.33 | 4.33 | 4.33 | 4.34 | 4.33 | 4.37 | 4.41 | 4.40 | 4.41 | 4.41 | 4.42 | 4.44 | 4.14 | 4.12 | 4.09 | 4.05 | 4.05 | 4.05 | 4.05 |
| 150 | 4.99 | 4.99 | 4.98 | 5.00 | 5.01 | 5.05 | 5.08 | 5.10 | 5.09 | 5.09 | 5.09 | 5.10 | 4.81 | 4.77 | 4.77 | 4.72 | 4.72 | 4.70 | 4.73 |
| 155 | 5.58 | 5.56 | 5.54 | 5.58 | 5.59 | 5.66 | 5.70 | 5.71 | 5.66 | 5.69 | 5.68 | 5.71 | 5.42 | 5.38 | 5.37 | 5.31 | 5.32 | 5.31 | 5.36 |
| 160 | 6.08 | 6.04 | 6.02 | 6.09 | 6.10 | 6.19 | 6.20 | 6.22 | 6.17 | 6.19 | 6.16 | 6.22 | 5.94 | 5.92 | 5.92 | 5.86 | 5.86 | 5.86 | 5.89 |
| 165 | 6.56 | 6.55 | 6.48 | 6.56 | 6.63 | 6.72 | 6.73 | 6.75 | 6.68 | 6.66 | 6.64 | 6.70 | 6.47 | 6.46 | 6.45 | 6.42 | 6.43 | 6.43 | 6.47 |
| 170 | 7.00 | 7.03 | 6.99 | 7.05 | 7.10 | 7.15 | 7.12 | 7.14 | 7.10 | 7.13 | 7.14 | 7.18 | 6.96 | 6.98 | 7.02 | 6.97 | 6.97 | 6.94 | 6.97 |
| 175 | 7.47 | 7.49 | 7.47 | 7.58 | 7.56 | 7.55 | 7.53 | 7.56 | 7.54 | 7.62 | 7.60 | 7.59 | 7.47 | 7.47 | 7.56 | 7.53 | 7.50 | 7.46 | 7.44 |
| 180 | 7.75 | 7.75 | 7.79 | 7.84 | 7.82 | 7.75 | 7.76 | 7.76 | 7.75 | 7.83 | 7.78 | 7.75 | 7.75 | 7.76 | 7.79 | 7.82 | 7.82 | 7.76 | 7.76 |

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γInterval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks:

# IES TEST REPORT
## Photometric Filename: HCP-81X22112 6000K.IES

### LUMINOUS DISTRIBUTION INTENSITY DATA

| | | |
|---|---|---|
| Test:U:219.60V I:0.0596A P:13.005W PF:0.9938 Freq:49.99Hz Lamp Flux:1071.38x1 lm | | |
| Name: HCP-81X22112 6000K | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: HAVIT COMMERCIAL | SUR.: | Shielding Angle: |

Table--2 UNIT: cd

| γ (DEG) \ C(DEG) | 285 | 300 | 315 | 330 | 345 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1198 | 1199 | 1199 | 1199 | 1198 | | | | | | | | | | | | | | |
| 5 | 1185 | 1187 | 1186 | 1188 | 1188 | | | | | | | | | | | | | | |
| 10 | 1127 | 1130 | 1131 | 1137 | 1136 | | | | | | | | | | | | | | |
| 15 | 1027 | 1032 | 1026 | 1033 | 1028 | | | | | | | | | | | | | | |
| 20 | 880 | 883 | 873 | 884 | 874 | | | | | | | | | | | | | | |
| 25 | 713 | 716 | 709 | 715 | 711 | | | | | | | | | | | | | | |
| 30 | 576 | 585 | 575 | 579 | 576 | | | | | | | | | | | | | | |
| 35 | 380 | 393 | 386 | 395 | 386 | | | | | | | | | | | | | | |
| 40 | 184 | 193 | 189 | 195 | 187 | | | | | | | | | | | | | | |
| 45 | 91.9 | 97.2 | 98.1 | 102 | 101 | | | | | | | | | | | | | | |
| 50 | 44.5 | 47.7 | 49.2 | 51.4 | 50.4 | | | | | | | | | | | | | | |
| 55 | 18.9 | 20.3 | 20.4 | 21.2 | 21.1 | | | | | | | | | | | | | | |
| 60 | 9.02 | 9.77 | 10.2 | 11.0 | 11.0 | | | | | | | | | | | | | | |
| 65 | 5.02 | 5.33 | 5.71 | 6.09 | 6.11 | | | | | | | | | | | | | | |
| 70 | 2.71 | 2.96 | 3.35 | 3.78 | 3.77 | | | | | | | | | | | | | | |
| 75 | 1.01 | 1.14 | 1.27 | 1.53 | 1.69 | | | | | | | | | | | | | | |
| 80 | 0.37 | 0.34 | 0.39 | 0.44 | 0.58 | | | | | | | | | | | | | | |
| 85 | 0.10 | 0.07 | 0.11 | 0.12 | 0.20 | | | | | | | | | | | | | | |
| 90 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | | | | | | | | | | | | | | |
| 95 | 0.05 | 0.07 | 0.05 | 0.07 | 0.06 | | | | | | | | | | | | | | |
| 100 | 0.05 | 0.10 | 0.05 | 0.10 | 0.06 | | | | | | | | | | | | | | |
| 105 | 0.11 | 0.15 | 0.10 | 0.15 | 0.11 | | | | | | | | | | | | | | |
| 110 | 0.26 | 0.27 | 0.25 | 0.28 | 0.25 | | | | | | | | | | | | | | |
| 115 | 0.52 | 0.53 | 0.53 | 0.53 | 0.52 | | | | | | | | | | | | | | |
| 120 | 0.86 | 0.87 | 0.86 | 0.87 | 0.85 | | | | | | | | | | | | | | |
| 125 | 1.34 | 1.34 | 1.35 | 1.35 | 1.35 | | | | | | | | | | | | | | |
| 130 | 1.91 | 1.93 | 1.91 | 1.93 | 1.91 | | | | | | | | | | | | | | |
| 135 | 2.59 | 2.59 | 2.58 | 2.59 | 2.59 | | | | | | | | | | | | | | |
| 140 | 3.31 | 3.31 | 3.29 | 3.30 | 3.30 | | | | | | | | | | | | | | |
| 145 | 4.00 | 3.99 | 3.98 | 3.99 | 3.99 | | | | | | | | | | | | | | |
| 150 | 4.69 | 4.66 | 4.62 | 4.65 | 4.69 | | | | | | | | | | | | | | |
| 155 | 5.30 | 5.26 | 5.22 | 5.23 | 5.24 | | | | | | | | | | | | | | |
| 160 | 5.82 | 5.80 | 5.73 | 5.75 | 5.79 | | | | | | | | | | | | | | |
| 165 | 6.42 | 6.39 | 6.28 | 6.27 | 6.28 | | | | | | | | | | | | | | |
| 170 | 6.92 | 6.93 | 6.85 | 6.85 | 6.83 | | | | | | | | | | | | | | |
| 175 | 7.41 | 7.48 | 7.47 | 7.41 | 7.37 | | | | | | | | | | | | | | |
| 180 | 7.76 | 7.76 | 7.83 | 7.79 | 7.76 | | | | | | | | | | | | | | |

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2023-03-06

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:8.003m [K=1.0000]
Remarks: