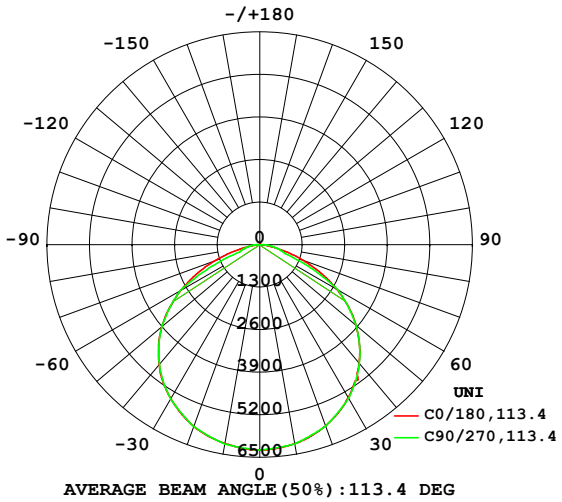
# LUMINAIRE PHOTOMETRIC TEST REPORT

| | | |
|---|---|---|
| Test:U:230.0V I:0.5263A P:118.4W PF:0.9786 Freq:49.99Hz Lamp Flux:17437.9x1 lm | | |
| NAME: LHB19-120-5080-L00B01 | TYPE: | WEIGHT: |
| SPEC.: | DIM.: | SERIAL No.: |
| MFR.: | SUR.: | Shielding Angle: |

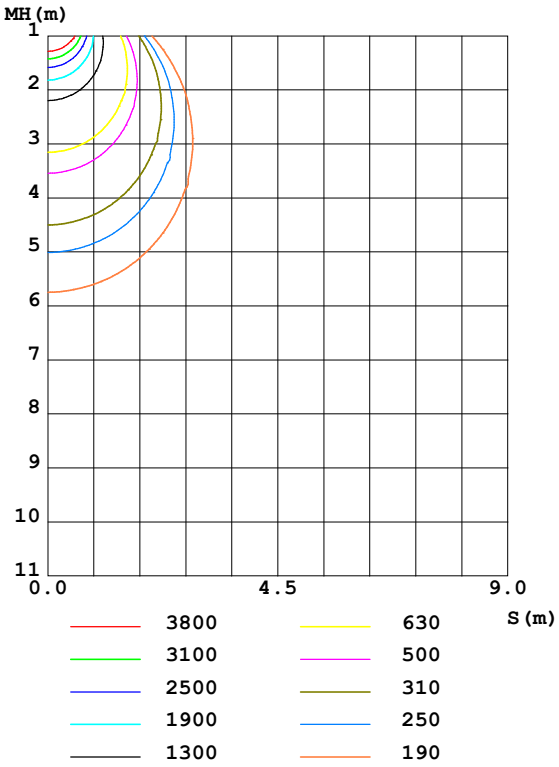
| DATA OF LAMP | | PHOTOMETRIC DATA | | Eff: 147.22 lm/W | |
|---|---|---|---|---|---|
| MODEL | SMD283 | Imax(cd) | 6279 | S/MH(C0/180) | 1.29 |
| NOMINAL POWER(W) | 120 | LOR(%) | 100.0 | S/MH(C90/270) | 1.29 |
| RATED VOLTAGE(V) | 230 | TOTAL FLUX(lm) | 17438 | η UP,DN(C0-180) | 0.0,50.0 |
| NOMINAL FLUX(lm) | 17437.9 | CIE CLASS | DIRECT | η UP,DN(C180-360) | 0.0,50.0 |
| LAMPS INSIDE | 1 | η up(%) | 0.0 | CIBSE SHR NOM | 1.25 |
| TEST VOLTAGE(V) | 230 | η down(%) | 100.0 | CIBSE SHR MAX | 1.35 |

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM




AVERAGE BEAM ANGLE(50%):113.4 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)




H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

# ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

| γ | C0 | C45 | C90 | C135 | C180 | C225 | C270 | C315 | γ | Φ zone | Φ total | %lum,lamp |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 6174 | 6155 | 6179 | 6151 | 6166 | 6156 | 6185 | 6159 | 0- 10 | 592.6 | 592.6 | 3.4,3.4 |
| 20 | 5889 | 5865 | 5898 | 5878 | 5908 | 5886 | 5913 | 5876 | 10- 20 | 1707 | 2300 | 13.2,13.2 |
| 30 | 5405 | 5389 | 5425 | 5416 | 5438 | 5429 | 5446 | 5411 | 20- 30 | 2615 | 4915 | 28.2,28.2 |
| 40 | 4724 | 4710 | 4734 | 4760 | 4785 | 4780 | 4772 | 4734 | 30- 40 | 3194 | 8109 | 46.5,46.5 |
| 50 | 3837 | 3810 | 3845 | 3877 | 3911 | 3912 | 3910 | 3847 | 40- 50 | 3338 | 11447 | 65.6,65.6 |
| 60 | 2706 | 2679 | 2747 | 2772 | 2777 | 2819 | 2804 | 2731 | 50- 60 | 2972 | 14419 | 82.7,82.7 |
| 70 | 1417 | 1408 | 846.2 | 1485 | 1482 | 1510 | 661.1 | 1421 | 60- 70 | 2006 | 16425 | 94.2,94.2 |
| 80 | 307.8 | 431.5 | 437.4 | 485.4 | 332.5 | 471.2 | 335.4 | 411.5 | 70- 80 | 809.9 | 17235 | 98.8,98.8 |
| 90 | 10.79 | 17.67 | 28.49 | 30.38 | 9.426 | 11.48 | 9.619 | 13.07 | 80- 90 | 203.0 | 17438 | 100,100 |
| 100 | | | | | | | | | 90-100 | | | |
| 110 | | | | | | | | | 100-110 | | | |
| 120 | | | | | | | | | 110-120 | | | |
| 130 | | | | | | | | | 120-130 | | | |
| 140 | | | | | | | | | 130-140 | | | |
| 150 | | | | | | | | | 140-150 | | | |
| 160 | | | | | | | | | 150-160 | | | |
| 170 | | | | | | | | | 160-170 | | | |
| 180 | | | | | | | | | 170-180 | | | |
| DEG | LUMINOUS INTENSITY:cd | | | | | | | | | UNIT:lm | | |

Conical surface Flux(90deg): 9790 lm

%lum = 56.1%
%lamp = 56.1%

Conical surface Flux(120deg): 14419 lm

%lum = 82.7%
%lamp = 82.7%

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

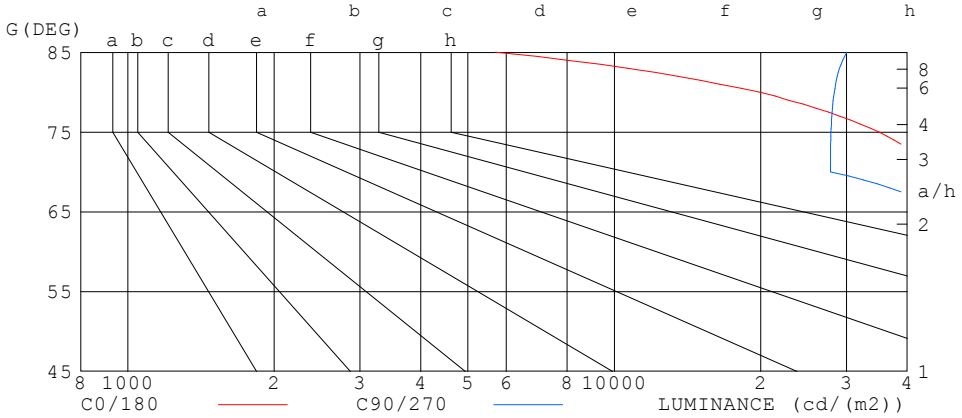
Checker: LI

Assessor:

# LUMINANCE LIMITATION CURVES

**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 | 5707 | 30056 |
| 80 | 19937 | 28325 |
| 75 | 34975 | 27887 |
| 70 | 46596 | 27826 |
| 65 | 55065 | 47815 |
| 60 | 60859 | 61795 |
| 55 | 64986 | 64624 |
| 50 | 67132 | 67263 |
| 45 | 68560 | 68590 |

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

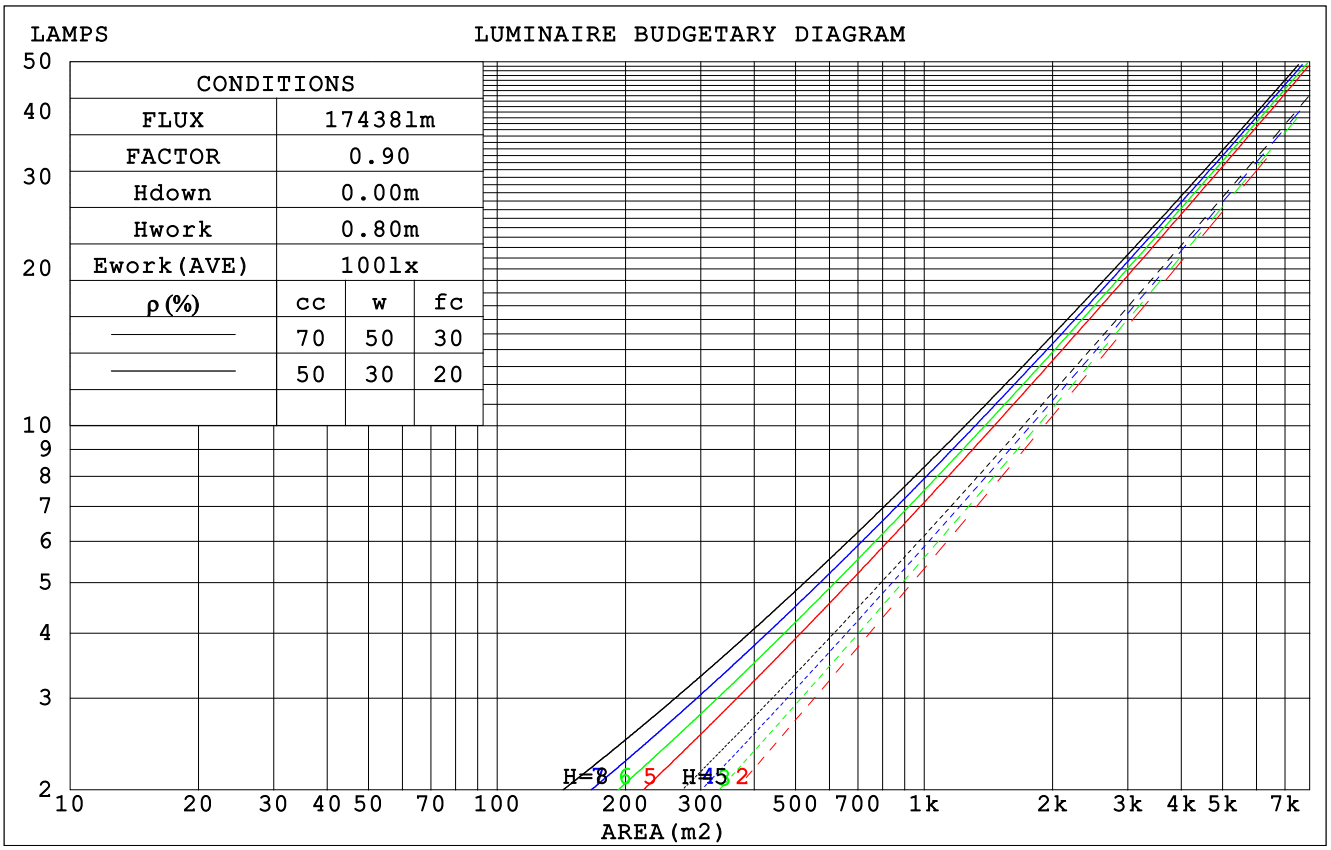
V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

## CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

| 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 | 1.11 | 1.11 | 1.11 | 1.06 | 1.06 | 1.06 | 1.02 | 1.02 | 1.02 | 1.00 |
| 1.0 | 1.05 | 1.01 | .97 | 1.03 | .99 | .96 | .98 | .95 | .93 | .95 | .92 | .90 | .91 | .89 | .87 | .85 |
| 2.0 | .92 | .85 | .80 | .90 | .84 | .79 | .87 | .81 | .77 | .83 | .79 | .75 | .80 | .77 | .74 | .72 |
| 3.0 | .81 | .73 | .67 | .79 | .72 | .66 | .76 | .70 | .65 | .74 | .68 | .64 | .71 | .67 | .63 | .61 |
| 4.0 | .72 | .63 | .57 | .70 | .62 | .56 | .68 | .61 | .55 | .66 | .60 | .55 | .64 | .58 | .54 | .52 |
| 5.0 | .64 | .55 | .49 | .63 | .55 | .49 | .61 | .54 | .48 | .59 | .53 | .47 | .57 | .51 | .47 | .45 |
| 6.0 | .58 | .49 | .43 | .57 | .48 | .42 | .55 | .48 | .42 | .53 | .47 | .42 | .52 | .46 | .41 | .39 |
| 7.0 | .52 | .44 | .38 | .52 | .43 | .37 | .50 | .43 | .37 | .49 | .42 | .37 | .47 | .41 | .37 | .35 |
| 8.0 | .48 | .39 | .33 | .47 | .39 | .33 | .46 | .38 | .33 | .44 | .38 | .33 | .43 | .37 | .33 | .31 |
| 9.0 | .44 | .36 | .30 | .43 | .35 | .30 | .42 | .35 | .30 | .41 | .34 | .30 | .40 | .34 | .30 | .28 |
| 10.0 | .40 | .32 | .27 | .40 | .32 | .27 | .39 | .32 | .27 | .38 | .31 | .27 | .37 | .31 | .27 | .25 |




H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

## WEC AND CCEC

| 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 | .289 | .165 | .052 | .282 | .161 | .051 | .269 | .154 | .049 | .257 | .148 | .048 | .246 | .143 | .046 | |
| 2.0 | .277 | .152 | .047 | .271 | .149 | .046 | .260 | .144 | .045 | .249 | .140 | .044 | .239 | .135 | .043 | |
| 3.0 | .260 | .138 | .041 | .254 | .136 | .041 | .244 | .132 | .040 | .235 | .129 | .039 | .226 | .125 | .039 | |
| 4.0 | .242 | .126 | .037 | .237 | .124 | .037 | .228 | .121 | .036 | .219 | .118 | .036 | .212 | .115 | .035 | |
| 5.0 | .225 | .115 | .033 | .221 | .113 | .033 | .213 | .111 | .033 | .205 | .108 | .032 | .198 | .106 | .032 | |
| 6.0 | .210 | .105 | .030 | .206 | .104 | .030 | .199 | .102 | .030 | .192 | .100 | .029 | .186 | .098 | .029 | |
| 7.0 | .196 | .097 | .027 | .192 | .096 | .027 | .186 | .094 | .027 | .180 | .092 | .027 | .174 | .091 | .027 | |
| 8.0 | .183 | .090 | .025 | .180 | .089 | .025 | .174 | .087 | .025 | .169 | .086 | .025 | .164 | .084 | .025 | |
| 9.0 | .172 | .083 | .023 | .169 | .083 | .023 | .164 | .081 | .023 | .159 | .080 | .023 | .155 | .079 | .023 | |
| 10.0 | .162 | .078 | .022 | .160 | .077 | .022 | .155 | .076 | .021 | .151 | .075 | .021 | .146 | .074 | .021 | |

| 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 | .190 | .190 | .190 | .163 | .163 | .163 | .111 | .111 | .111 | .064 | .064 | .064 | .020 | .020 | .020 | |
| 1.0 | .179 | .156 | .136 | .153 | .134 | .117 | .105 | .092 | .081 | .060 | .053 | .047 | .019 | .017 | .015 | |
| 2.0 | .170 | .132 | .100 | .146 | .114 | .086 | .100 | .079 | .060 | .058 | .046 | .035 | .018 | .015 | .011 | |
| 3.0 | .163 | .114 | .076 | .139 | .099 | .066 | .096 | .068 | .046 | .055 | .040 | .027 | .018 | .013 | .009 | |
| 4.0 | .155 | .101 | .059 | .133 | .087 | .052 | .091 | .061 | .036 | .053 | .036 | .022 | .017 | .012 | .007 | |
| 5.0 | .148 | .090 | .048 | .127 | .078 | .042 | .087 | .055 | .029 | .051 | .032 | .017 | .016 | .010 | .006 | |
| 6.0 | .141 | .082 | .040 | .121 | .071 | .035 | .084 | .050 | .024 | .048 | .029 | .015 | .016 | .010 | .005 | |
| 7.0 | .134 | .075 | .034 | .115 | .065 | .029 | .080 | .046 | .021 | .046 | .027 | .012 | .015 | .009 | .004 | |
| 8.0 | .128 | .069 | .029 | .110 | .060 | .025 | .076 | .042 | .018 | .044 | .025 | .011 | .014 | .008 | .004 | |
| 9.0 | .122 | .064 | .025 | .105 | .056 | .022 | .073 | .039 | .016 | .042 | .023 | .009 | .014 | .008 | .003 | |
| 10.0 | .116 | .060 | .023 | .100 | .052 | .020 | .070 | .037 | .014 | .041 | .022 | .008 | .013 | .007 | .003 | |

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

## UGR(Unified Glare Rating) Table

| 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 | 26.7 | 28.3 | 27.1 | 28.6 | 28.9 | 26.8 | 28.4 | 27.1 | 28.7 | 29.0 |
| 3H | 28.1 | 29.5 | 28.5 | 29.9 | 30.2 | 27.6 | 29.0 | 28.0 | 29.4 | 29.7 |
| 4H | 28.5 | 29.8 | 28.9 | 30.2 | 30.5 | 27.8 | 29.2 | 28.2 | 29.5 | 29.9 |
| 6H | 28.6 | 29.9 | 29.0 | 30.2 | 30.6 | 28.1 | 29.3 | 28.5 | 29.7 | 30.1 |
| 8H | 28.6 | 29.8 | 29.0 | 30.2 | 30.6 | 28.2 | 29.4 | 28.6 | 29.8 | 30.2 |
| 12H | 28.6 | 29.7 | 29.0 | 30.1 | 30.5 | 28.3 | 29.4 | 28.7 | 29.8 | 30.2 |
| 4H 2H | 27.2 | 28.6 | 27.6 | 29.0 | 29.3 | 27.4 | 28.7 | 27.8 | 29.1 | 29.5 |
| 3H | 28.8 | 30.0 | 29.2 | 30.4 | 30.8 | 28.4 | 29.5 | 28.8 | 29.9 | 30.3 |
| 4H | 29.3 | 30.3 | 29.7 | 30.7 | 31.1 | 28.7 | 29.7 | 29.2 | 30.2 | 30.6 |
| 6H | 29.5 | 30.4 | 29.9 | 30.8 | 31.3 | 29.1 | 30.0 | 29.5 | 30.4 | 30.9 |
| 8H | 29.5 | 30.3 | 29.9 | 30.8 | 31.2 | 29.2 | 30.0 | 29.7 | 30.5 | 31.0 |
| 12H | 29.5 | 30.2 | 30.0 | 30.7 | 31.2 | 29.3 | 30.1 | 29.8 | 30.6 | 31.0 |
| 8H 4H | 29.4 | 30.2 | 29.8 | 30.7 | 31.1 | 28.9 | 29.8 | 29.4 | 30.2 | 30.7 |
| 6H | 29.6 | 30.3 | 30.1 | 30.8 | 31.3 | 29.4 | 30.1 | 29.9 | 30.6 | 31.1 |
| 8H | 29.6 | 30.2 | 30.1 | 30.8 | 31.2 | 29.7 | 30.3 | 30.2 | 30.8 | 31.3 |
| 12H | 29.6 | 30.2 | 30.1 | 30.7 | 31.2 | 29.9 | 30.4 | 30.4 | 30.9 | 31.5 |
| 12H 4H | 29.4 | 30.1 | 29.9 | 30.6 | 31.1 | 29.0 | 29.7 | 29.4 | 30.2 | 30.6 |
| 6H | 29.6 | 30.3 | 30.2 | 30.7 | 31.3 | 29.5 | 30.1 | 30.0 | 30.5 | 31.1 |
| 8H | 29.7 | 30.2 | 30.2 | 30.7 | 31.3 | 29.7 | 30.3 | 30.3 | 30.8 | 31.3 |
| CIE190: 2010 | | | | | | | | | | |

CIE190: 2010
Area: 0.08892 m2

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

Checker: LI

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Assessor:

# UTILIZATION FACTORS TABLE

| 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 | 58 | 47 | 40 | 58 | 47 | 40 | 56 | 46 | 40 | 33 |
| 0.80 | 69 | 57 | 50 | 68 | 57 | 50 | 66 | 56 | 49 | 43 |
| 1.00 | 77 | 67 | 59 | 76 | 66 | 59 | 74 | 67 | 59 | 52 |
| 1.25 | 85 | 74 | 68 | 83 | 74 | 67 | 80 | 72 | 66 | 59 |
| 1.50 | 90 | 80 | 73 | 88 | 79 | 73 | 85 | 77 | 72 | 65 |
| 2.00 | 96 | 88 | 82 | 95 | 87 | 81 | 91 | 85 | 80 | 72 |
| 2.50 | 100 | 93 | 87 | 98 | 91 | 86 | 94 | 89 | 84 | 76 |
| 3.00 | 103 | 97 | 92 | 101 | 95 | 91 | 97 | 92 | 88 | 80 |
| 4.00 | 107 | 102 | 97 | 105 | 100 | 96 | 101 | 97 | 93 | 85 |
| 5.00 | 109 | 105 | 101 | 107 | 103 | 99 | 103 | 99 | 96 | 87 |
| ROOM INDEX | UF(total) | | | | | | | | | Direct |
| According to DIN EN 13032-2 2004 | | | | Suspended | | | | | SHRNOM = 1.25 | |

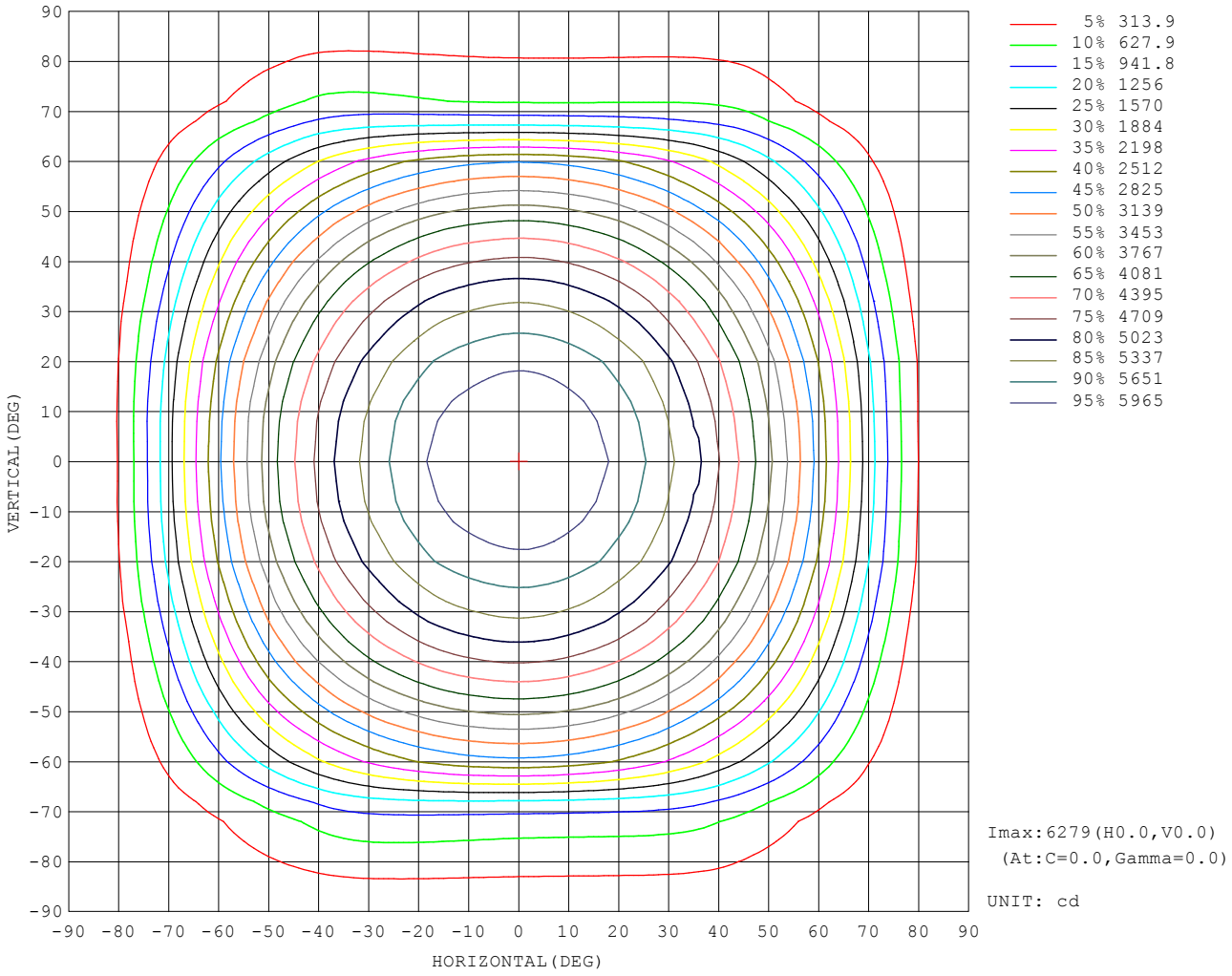
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

## ISOCANDELA DIAGRAM



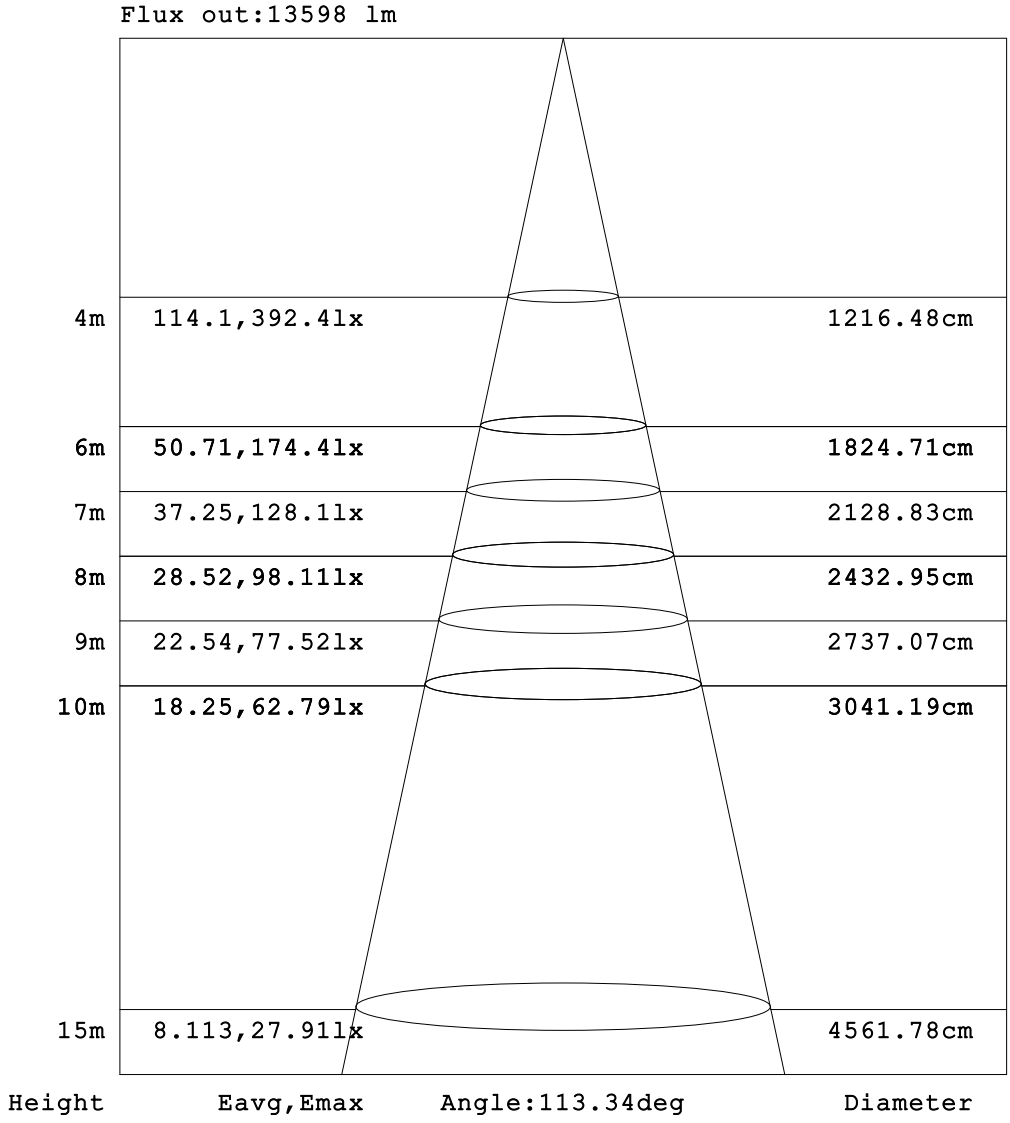

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

## AAI Figure




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

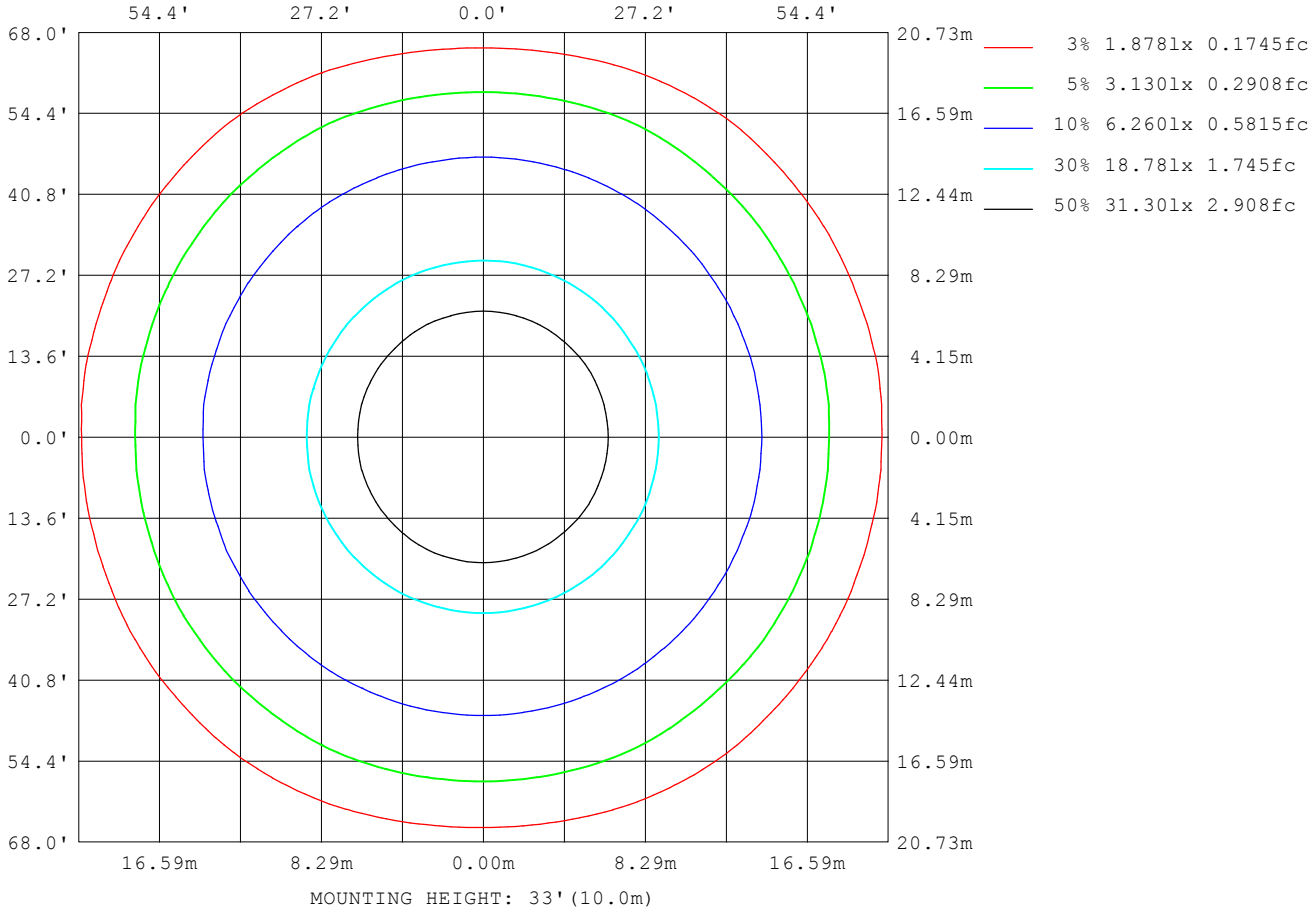
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

## ISOLUX DIAGRAM



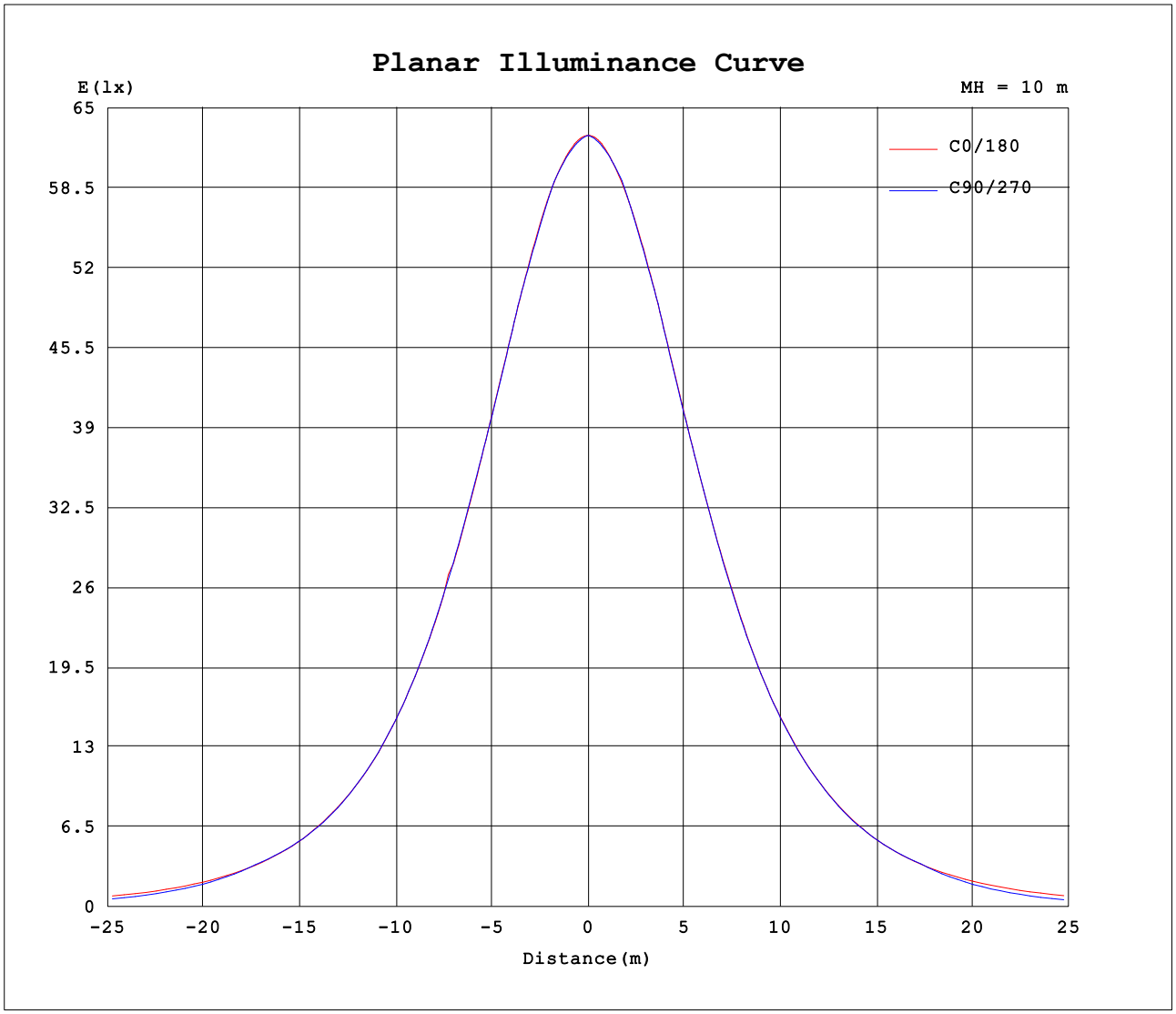

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor:

## Planar Illuminance Curve




H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:WJH
Test Date:2020-08-13

V(B) Range:-90 - 90DEG
V(B) Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.426
Humidity:65.0%
Test Distance:9.350m [K=1.0000]
Remarks:

Checker: LI

Assessor: