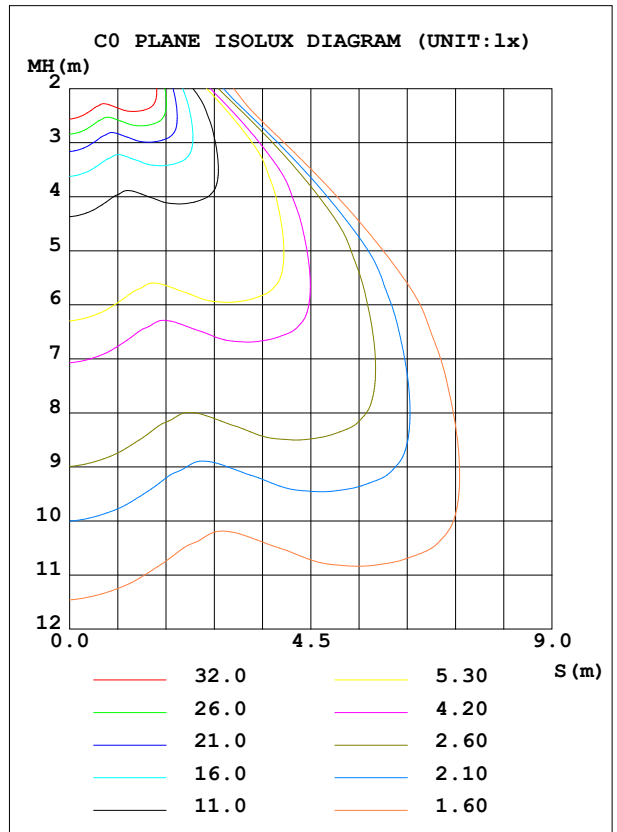
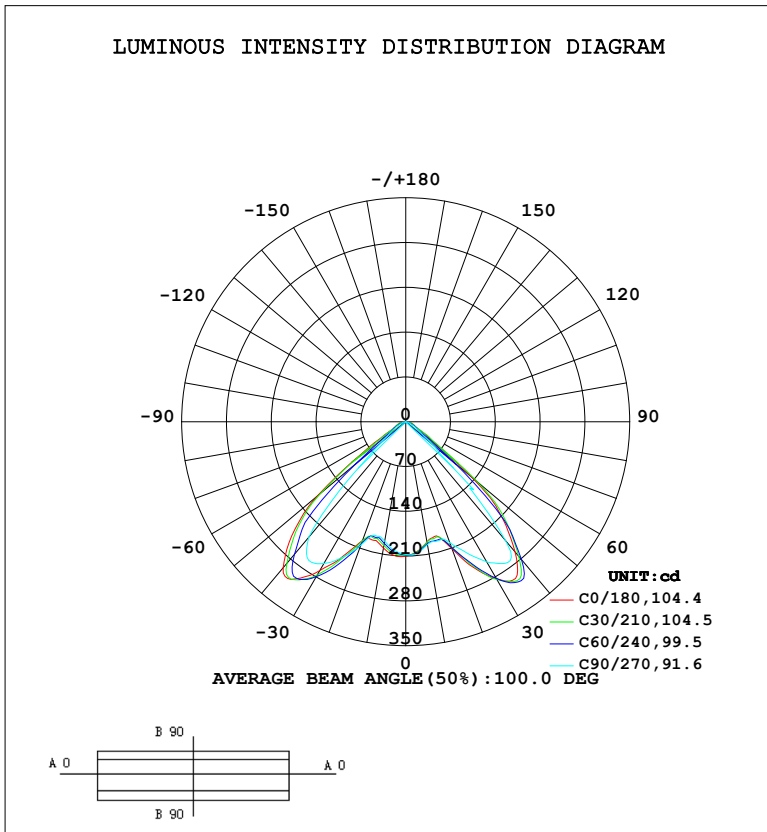


LUMINAIRE PHOTOMETRIC TEST REPORT

|   |       |             |
|---|-------|-------------|
| Test:U:220.08V I:0.0608A P:7.3995W PF:0.5526 Freq:50.00Hz |       |             |
| Lamp Flux:590.563x1 lm                                    |       |             |
| NAME: HYO-240R-7W 3000K                                   | TYPE: | WEIGHT:     |
| SPEC.:  | DIM.: | SERIAL No.: |
| MFR.:   | SUR.: |             |

| DATA OF LAMP      |         | PHOTOMETRIC DATA |        |                          |           |
|-------------------|---------|------------------|--------|--------------------------|-----------|
| MODEL             |         | Imax (cd)        | 310.8  | S/MH (C0/180)            | 1.66      |
| NOMINAL POWER (W) |         | LOR (%)          | 100.0  | S/MH (C90/270)           | 1.38      |
| RATED VOLTAGE (V) | --      | TOTAL FLUX (lm)  | 590.56 | $\eta$ UP, DN (C0-180)   | 0.0, 50.2 |
| NOMINAL FLUX (lm) | 590.563 | CIE CLASS        | DIRECT | $\eta$ UP, DN (C180-360) | 0.0, 49.8 |
| LAMPS INSIDE      | 1       | $\eta$ up (%)    | 0.0    | CIBSE SHR NOM            | 1.00      |
| TEST VOLTAGE (V)  | --      | $\eta$ down (%)  | 100.0  | CIBSE SHR MAX            | 1.00      |



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [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  | 191.1                 | 193.1  | 195.0  | 196.9  | 200.4  | 194.2  | 189.7  | 187.5  | 0- 10   | 19.13   | 19.13   | 3.24,3.24  |
| 20  | 211.2                 | 207.1  | 200.6  | 195.5  | 197.6  | 201.3  | 205.0  | 210.1  | 10- 20  | 54.22   | 73.34   | 12.4,12.4  |
| 30  | 283.4                 | 284.5  | 252.6  | 268.5  | 268.5  | 280.5  | 255.7  | 278.8  | 20- 30  | 111.4   | 184.8   | 31.3,31.3  |
| 40  | 265.8                 | 287.1  | 243.2  | 297.8  | 298.1  | 282.2  | 235.9  | 261.0  | 30- 40  | 178.8   | 363.5   | 61.6,61.6  |
| 50  | 134.2                 | 158.5  | 48.72  | 175.7  | 179.9  | 161.7  | 50.58  | 135.8  | 40- 50  | 154.3   | 517.8   | 87.7,87.7  |
| 60  | 21.46                 | 21.35  | 18.07  | 21.87  | 25.70  | 25.45  | 19.59  | 21.33  | 50- 60  | 49.24   | 567.1   | 96,96      |
| 70  | 12.71                 | 10.51  | 6.879  | 10.39  | 14.21  | 12.29  | 7.926  | 10.72  | 60- 70  | 15.21   | 582.3   | 98.6,98.6  |
| 80  | 6.845                 | 2.071  | 0.5559 | 1.882  | 7.842  | 2.372  | 0.6041 | 1.478  | 70- 80  | 7.313   | 589.6   | 99.8,99.8  |
| 90  | 0.1079                | 0.0800 | 0.0588 | 0.0732 | 0.1195 | 0.0829 | 0.0540 | 0.0800 | 80- 90  | 0.9521  | 590.6   | 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): 452.06 lm

%lum = 76.5%  
 %lamp = 76.5%

Conical surface Flux(120deg): 567.08 lm

%lum = 96.0%  
 %lamp = 96.0%

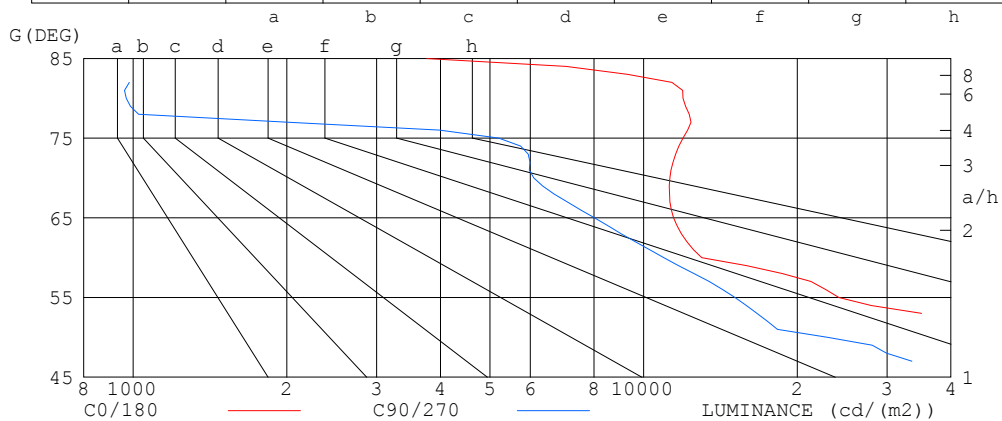
C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

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 |



| LUMINANCE cd/(m2) |        |         |
|-------------------|--------|---------|
| G (DEG)           | C0/180 | C90/270 |
| 85                | 3762   | 604     |
| 80                | 11945  | 970     |
| 75                | 11948  | 5205    |
| 70                | 11259  | 6095    |
| 65                | 11453  | 8012    |
| 60                | 13003  | 10952   |
| 55                | 24144  | 15112   |
| 50                | 63276  | 22969   |
| 45                | 91898  | 64365   |

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:



WEC AND CCEC

| $\rho_{cc}$ | 80%                   |      |      | 70%  |      |      | 50%                             |      |      | 30%  |      |      | 10%  |      |      | 0 |
|-------------|-----------------------|------|------|------|------|------|---------------------------------|------|------|------|------|------|------|------|------|---|
| $\rho_w$    | 50%                   | 30%  | 10%  | 50%  | 30%  | 10%  | 50%                             | 30%  | 10%  | 50%  | 30%  | 10%  | 50%  | 30%  | 10%  | 0 |
| $\rho_{fc}$ | 20%                   |      |      | 20%  |      |      | 20%                             |      |      | 20%  |      |      | 20%  |      |      | 0 |
| RCR         | RCR:Room Cavity Ratio |      |      |      |      |      | Wall Exitance Coefficients(WEC) |      |      |      |      |      |      |      |      |   |
| 0.0         |                       |      |      |      |      |      |                                 |      |      |      |      |      |      |      |      |   |
| 1.0         | .234                  | .133 | .042 | .227 | .130 | .041 | .214                            | .123 | .039 | .203 | .117 | .038 | .192 | .111 | .036 |   |
| 2.0         | .230                  | .126 | .039 | .224 | .123 | .038 | .213                            | .118 | .037 | .202 | .114 | .036 | .193 | .109 | .034 |   |
| 3.0         | .220                  | .117 | .035 | .215 | .115 | .035 | .206                            | .111 | .034 | .197 | .108 | .033 | .188 | .104 | .032 |   |
| 4.0         | .210                  | .109 | .032 | .205 | .107 | .032 | .197                            | .104 | .031 | .189 | .101 | .031 | .181 | .099 | .030 |   |
| 5.0         | .199                  | .102 | .029 | .195 | .100 | .029 | .188                            | .098 | .029 | .181 | .095 | .028 | .174 | .093 | .028 |   |
| 6.0         | .189                  | .095 | .027 | .186 | .094 | .027 | .179                            | .092 | .027 | .172 | .090 | .026 | .166 | .088 | .026 |   |
| 7.0         | .179                  | .089 | .025 | .176 | .088 | .025 | .170                            | .086 | .025 | .164 | .084 | .025 | .159 | .083 | .024 |   |
| 8.0         | .170                  | .083 | .023 | .167 | .082 | .023 | .162                            | .081 | .023 | .157 | .079 | .023 | .152 | .078 | .023 |   |
| 9.0         | .162                  | .078 | .022 | .159 | .078 | .022 | .154                            | .076 | .022 | .149 | .075 | .021 | .145 | .074 | .021 |   |
| 10.0        | .154                  | .074 | .020 | .151 | .073 | .020 | .147                            | .072 | .020 | .143 | .071 | .020 | .139 | .070 | .020 |   |

| $\rho_{cc}$ | 80%                   |      |      | 70%  |      |      | 50%  |      |      | 30%  |      |      | 10%  |      |      | 0 |
|-------------|-----------------------|------|------|------|------|------|--|------|------|------|------|------|------|------|------|---|
| $\rho_w$    | 50%                   | 30%  | 10%  | 50%  | 30%  | 10%  | 50%  | 30%  | 10%  | 50%  | 30%  | 10%  | 50%  | 30%  | 10%  | 0 |
| $\rho_{fc}$ | 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         | .175                  | .157 | .140 | .150 | .135 | .121 | .102                                       | .093 | .084 | .059 | .054 | .049 | .019 | .017 | .016 |   |
| 2.0         | .164                  | .132 | .106 | .140 | .114 | .091 | .096                                       | .079 | .064 | .055 | .046 | .037 | .018 | .015 | .012 |   |
| 3.0         | .155                  | .114 | .081 | .133 | .098 | .070 | .091                                       | .068 | .049 | .053 | .040 | .029 | .017 | .013 | .010 |   |
| 4.0         | .147                  | .100 | .064 | .126 | .087 | .056 | .087                                       | .060 | .039 | .050 | .035 | .023 | .016 | .011 | .008 |   |
| 5.0         | .140                  | .089 | .052 | .120 | .077 | .045 | .083                                       | .054 | .032 | .048 | .032 | .019 | .015 | .010 | .006 |   |
| 6.0         | .134                  | .081 | .043 | .115 | .070 | .037 | .079                                       | .049 | .026 | .046 | .029 | .016 | .015 | .009 | .005 |   |
| 7.0         | .128                  | .074 | .036 | .110 | .064 | .031 | .076                                       | .045 | .022 | .044 | .026 | .013 | .014 | .009 | .004 |   |
| 8.0         | .123                  | .068 | .031 | .106 | .059 | .027 | .073                                       | .041 | .019 | .042 | .024 | .011 | .014 | .008 | .004 |   |
| 9.0         | .117                  | .063 | .027 | .101 | .055 | .023 | .070                                       | .039 | .017 | .041 | .023 | .010 | .013 | .007 | .003 |   |
| 10.0        | .113                  | .059 | .023 | .097 | .051 | .021 | .067                                       | .036 | .015 | .039 | .021 | .009 | .013 | .007 | .003 |   |

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

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   | 26.0             | 27.3 | 26.3 | 27.5 | 27.7 | 24.7           | 26.0 | 25.0 | 26.2 | 26.4 |
| 3H  | 25.9             | 27.2 | 26.2 | 27.4 | 27.6 | 24.6           | 25.8 | 24.9 | 26.0 | 26.2 |
| 4H  | 25.9             | 27.1 | 26.2 | 27.3 | 27.6 | 24.5           | 25.7 | 24.8 | 25.9 | 26.1 |
| 6H  | 25.9             | 27.0 | 26.3 | 27.3 | 27.5 | 24.4           | 25.5 | 24.7 | 25.7 | 26.0 |
| 8H  | 25.9             | 27.0 | 26.3 | 27.2 | 27.5 | 24.4           | 25.4 | 24.7 | 25.7 | 25.9 |
| 12H   | 25.9             | 26.9 | 26.2 | 27.2 | 27.5 | 24.3           | 25.3 | 24.7 | 25.6 | 25.9 |
| 4H 2H   | 25.8             | 26.9 | 26.1 | 27.2 | 27.4 | 24.6           | 25.7 | 24.9 | 25.9 | 26.2 |
| 3H  | 25.8             | 26.8 | 26.1 | 27.1 | 27.3 | 24.5           | 25.5 | 24.8 | 25.7 | 26.0 |
| 4H  | 25.8             | 26.7 | 26.2 | 27.0 | 27.4 | 24.4           | 25.3 | 24.8 | 25.6 | 25.9 |
| 6H  | 25.9             | 26.7 | 26.3 | 27.0 | 27.4 | 24.4           | 25.1 | 24.7 | 25.5 | 25.8 |
| 8H  | 25.9             | 26.6 | 26.3 | 27.0 | 27.4 | 24.3           | 25.0 | 24.7 | 25.4 | 25.8 |
| 12H   | 25.9             | 26.6 | 26.3 | 26.9 | 27.3 | 24.3           | 24.9 | 24.7 | 25.3 | 25.7 |
| 8H 4H   | 25.7             | 26.5 | 26.2 | 26.8 | 27.2 | 24.4           | 25.1 | 24.8 | 25.4 | 25.8 |
| 6H  | 25.8             | 26.4 | 26.3 | 26.8 | 27.2 | 24.3           | 24.9 | 24.7 | 25.3 | 25.7 |
| 8H  | 25.9             | 26.4 | 26.3 | 26.8 | 27.2 | 24.2           | 24.7 | 24.7 | 25.2 | 25.6 |
| 12H   | 25.8             | 26.3 | 26.3 | 26.7 | 27.2 | 24.2           | 24.6 | 24.7 | 25.1 | 25.5 |
| 12H 4H  | 25.7             | 26.3 | 26.1 | 26.7 | 27.1 | 24.3           | 25.0 | 24.7 | 25.3 | 25.7 |
| 6H  | 25.8             | 26.3 | 26.3 | 26.7 | 27.2 | 24.2           | 24.7 | 24.7 | 25.2 | 25.6 |
| 8H  | 25.8             | 26.3 | 26.3 | 26.7 | 27.2 | 24.2           | 24.6 | 24.7 | 25.1 | 25.5 |
| Variations with the observer position at spacings(CIE Pub.117): |                  |      |      |      |      |                |      |      |      |      |
| S = 1.0H  | + 2.0 / - 3.9    |      |      |      |      | + 2.6 / - 6.6  |      |      |      |      |
| 1.5H  | + 1.3 / - 3.9    |      |      |      |      | + 2.4 / - 6.4  |      |      |      |      |
| 2.0H  | + 4.5 / - 5.1    |      |      |      |      | + 4.9 / - 4.5  |      |      |      |      |

CIE Pub.117, 590.6 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = -1.8)  
 Area: 0.0033 m2

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

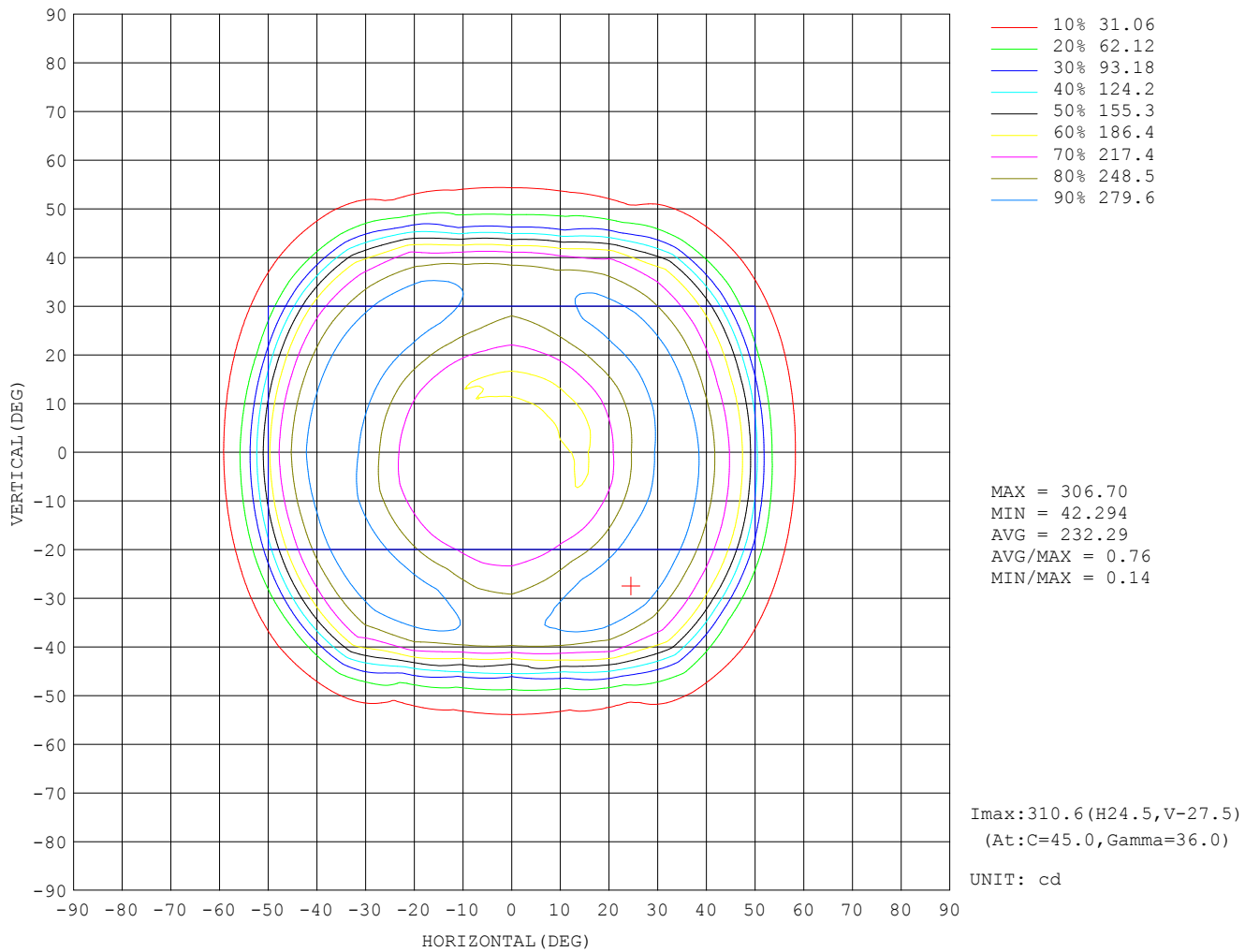
**UTILIZATION FACTORS TABLE**

| 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) $k(RI) \times RCR = 5$ |     |           |     |     |     |               |     |     |        |
| k = 0.60                         | 67   | 57  | 51        | 66  | 57  | 51  | 65            | 56  | 51  | 45     |
| 0.80                             | 78   | 68  | 62        | 77  | 68  | 62  | 75            | 67  | 61  | 56     |
| 1.00                             | 86   | 77  | 72        | 85  | 77  | 71  | 83            | 77  | 71  | 65     |
| 1.25                             | 93   | 85  | 79        | 91  | 84  | 79  | 89            | 83  | 78  | 72     |
| 1.50                             | 97   | 89  | 84        | 95  | 89  | 84  | 93            | 87  | 83  | 77     |
| 2.00                             | 102  | 96  | 91        | 101 | 95  | 91  | 98            | 93  | 89  | 83     |
| 2.50                             | 105  | 99  | 95        | 103 | 98  | 94  | 100           | 95  | 92  | 85     |
| 3.00                             | 107  | 102 | 98        | 105 | 101 | 97  | 102           | 98  | 95  | 88     |
| 4.00                             | 110  | 106 | 102       | 108 | 104 | 101 | 104           | 101 | 98  | 90     |
| 5.00                             | 112  | 108 | 105       | 109 | 106 | 103 | 105           | 103 | 100 | 92     |
| 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: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

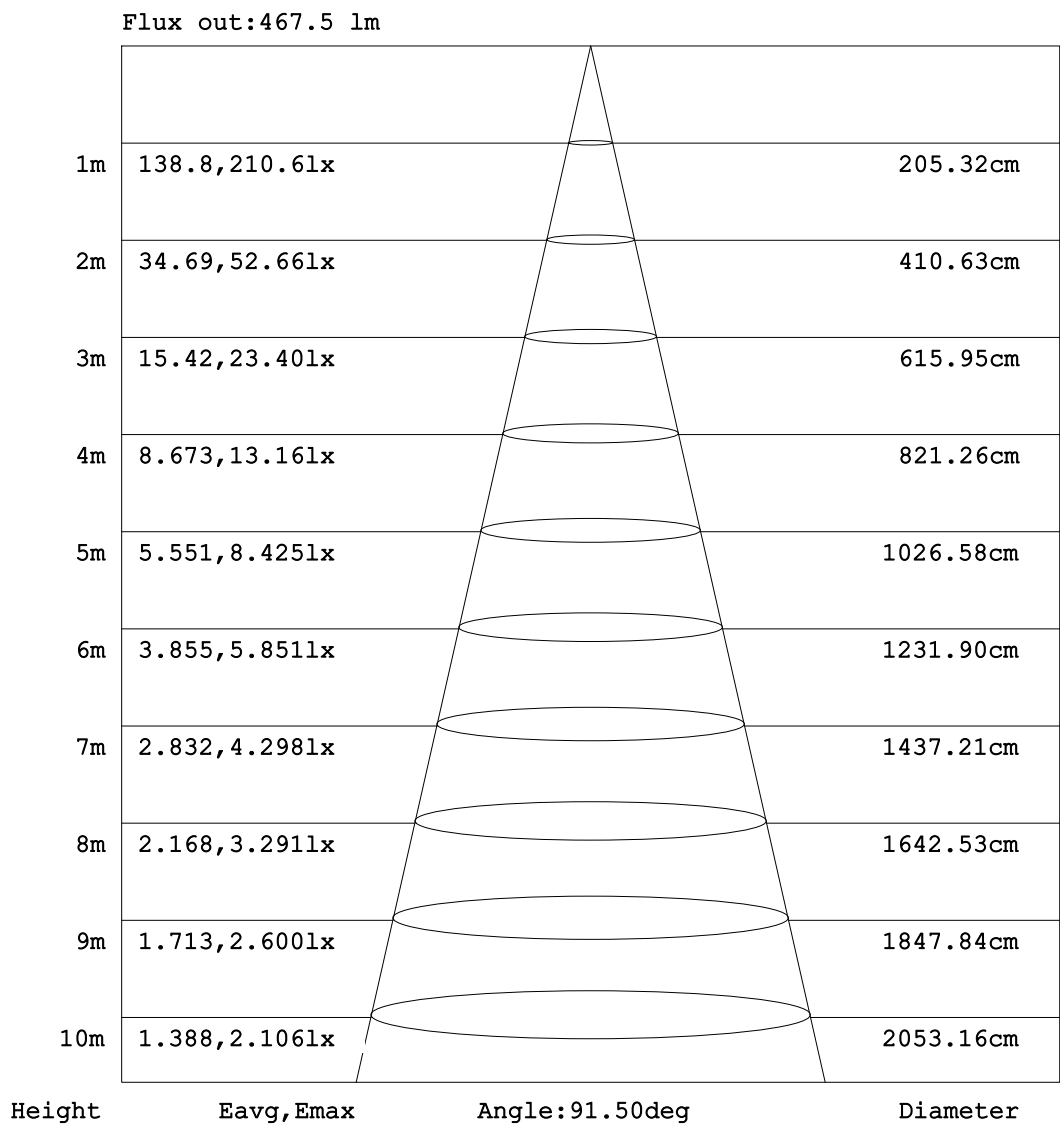


C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:



**AAI Figure**

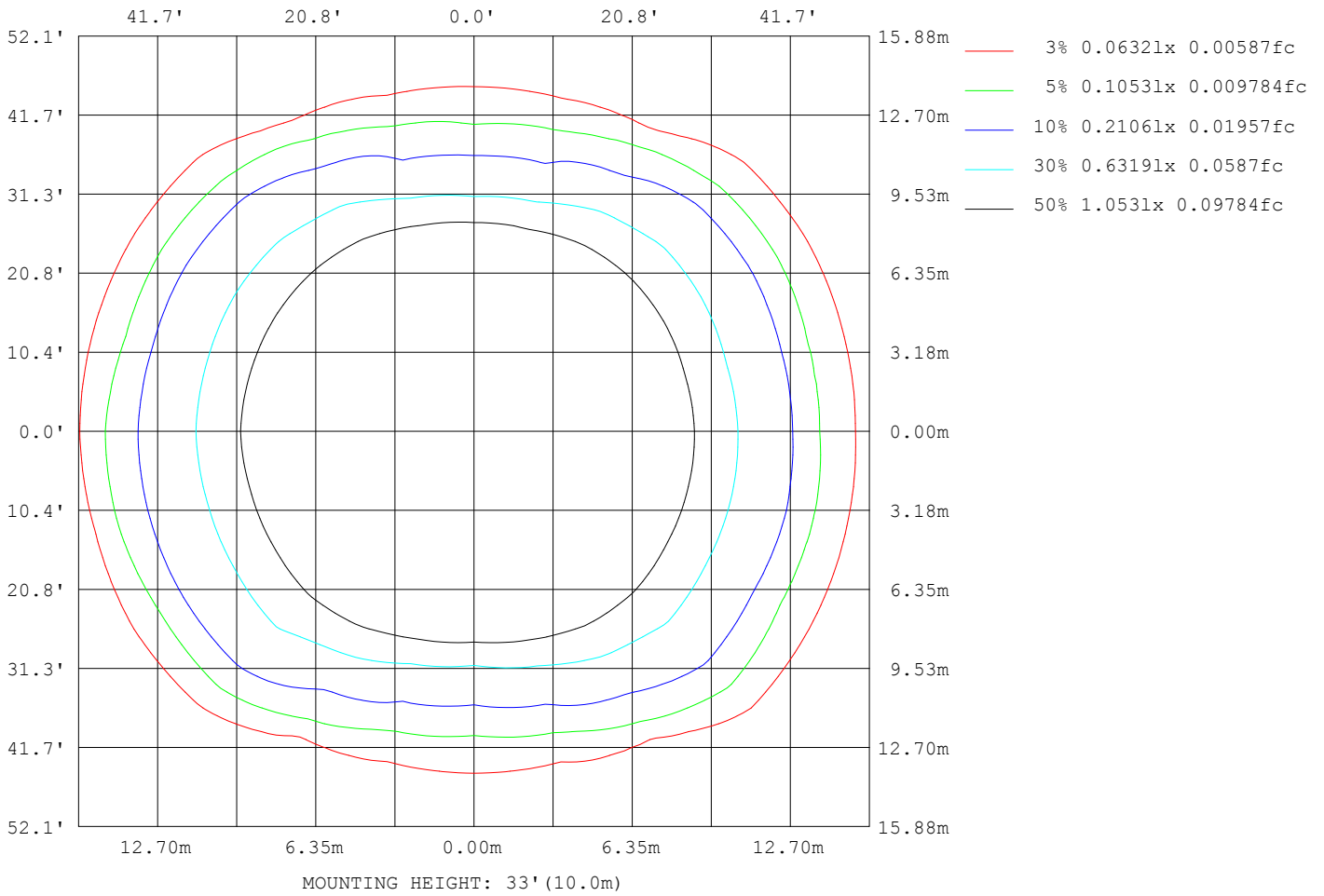


**Note:**The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3°C  
 Operators:DAMIN  
 Test Date:2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

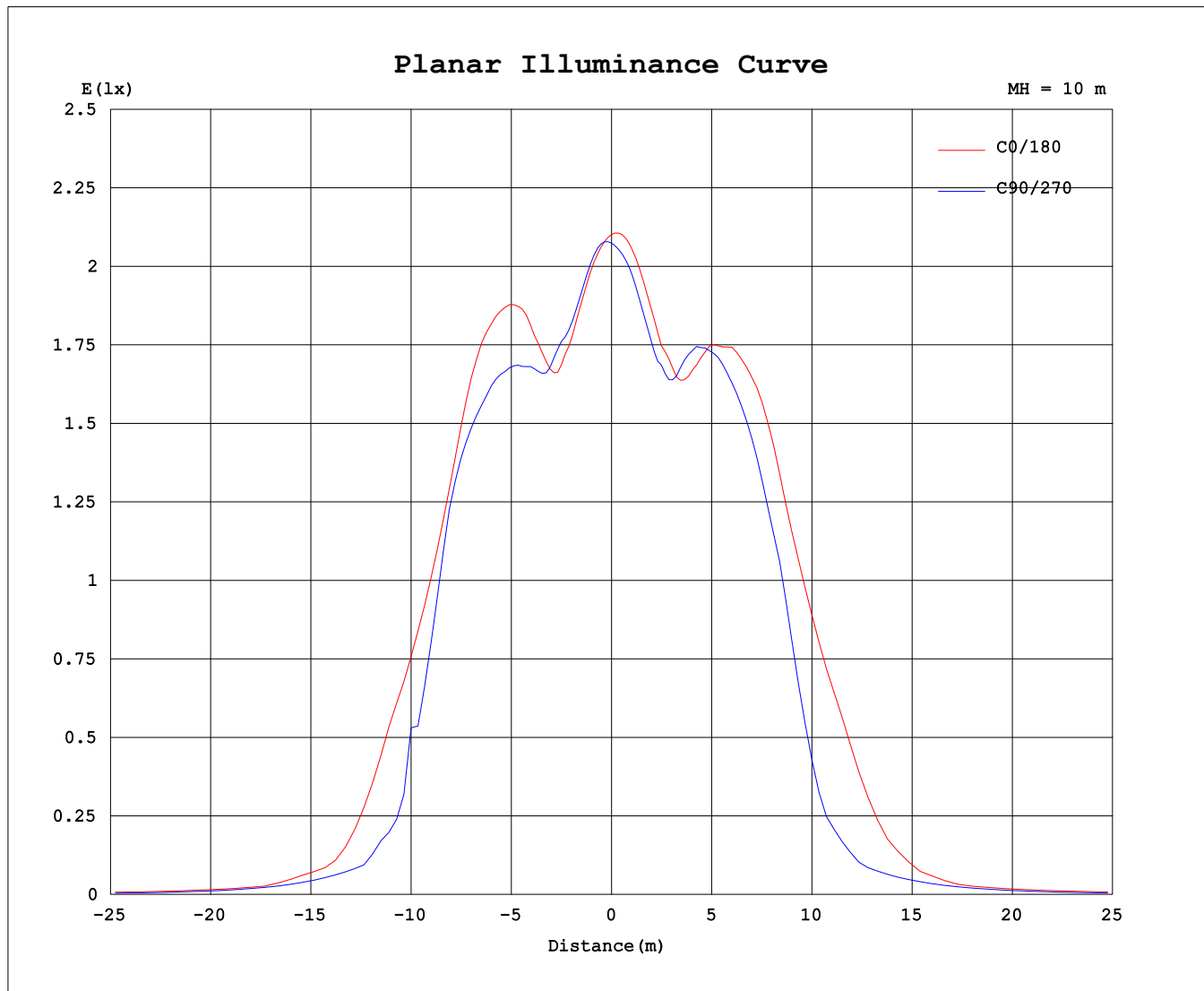
ISOLUX DIAGRAM



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-08-15

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:



