

# IESNA LM-79: 2008

## Measurement and Test Report

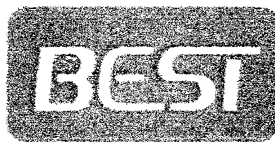
for

### Green Creative Ltd.

Room 1206-7, New Victory House, 93-103 Wing Lok Street, Central, HONG KONG

Sep 14, 2012

|                       |   |
|-----------------------|---|
| Product Name:         | A19   |
| Model No:             | 01-709-D/827  |
| Test Engineer:        | David Zhang <i>David Zhang</i>  |
| Report No.:           | BTR66.181.12.137.07   |
| Sample Received Date: | Sep 12, 2012  |
| Test Performed Date:  | Sep 13, 2012  |
| Reviewed By:          | Steven Hsu <i>Steven Hsu</i>  |
| Prepared By:          | <b>BEST Test Service Shenzhen Co., Ltd.</b><br>1st Floor, 1st Building, Weitai Industrial Park, Yingrenshi, Shiyantao,<br>Baoan, Shenzhen, China<br>TEL: +86-755-28236006<br>FAX: +86-755-23467087-811<br>Email: <a href="mailto:certification@bestcert.cn">certification@bestcert.cn</a> |



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## 1 - GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

|   |   |  |
|---|---|--|
| Applicant   | : | Green Creative Ltd.  |
| Product Name  | : | A19  |
| Model No  | : | 01-709-D/827   |
| Brand   | : | GREEN CREATIVE   |
| SKU   | : | T.B.D  |
| 12 NC Code  | : | T.B.D  |
| Nominal Operation Voltage                                       | : | AC 120V/60Hz   |
| Nominal Power   | : | 12W  |
| Nominal CCT   | : | 2700K  |
| Nominal CRI   | : | 82   |
| Nominal Lumen Output  | : | 800 Lumens   |
| Nominal Life Time   | : | 30000 Hours  |
| Number of hours operated prior to measurement for new sample    | : | 0 Hours  |
| Stabilization Time  | : | 1.0 hours  |
| Total operating time for measurement include stabilization time | : | 1.0 hours  |
|   |   | <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Non Standard   |
| Nominal Shape of Bulb(Designation)                              | : | <input checked="" type="checkbox"/> Omnidirectional A19<br><input type="checkbox"/> Decorative B, BA, C, CA, DC, F, G<br><input type="checkbox"/> Directional R, BR, ER, PAR, MR, K  |
| Date of Receiving Sample  | : | Sep 12, 2012   |
| Measurement quantities measured                                 | : | 1 pcs  |
| Orientation During Testing                                      | : | Base Up  |
| Test Requested  | : | 1. Electrical and Photometric Test<br>2. Luminous Intensity Distribution Test;<br>(Note: For the summary of test result, we use the parameters from testing result of the integral sphere upon the request of the client.) |

### 1.2 Objective

The following test report is prepared on behalf of Green Creative Ltd. in accordance with IESNA LM-79-08, used the following American National Standards or illumination Engineering Society of North America test guides:

- ANSI C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products;
- ANSI C79.1– 2002: American National Standard for Electric Lamps – Nomenclature for Glass Bulbs Intended for Use with Electric Lamps;
- ANSI C78.20 – 2003: American National Standard for Electric Lamps – A, G, PS, and Similar Shapes with E26 Medium Screw Bases;
- ANSI C78.21 – 2003: American National Standard for Electric Lamps – PAR and R Shapes;
- ANSI C78.24 – 2001: American National Standard for Electric Lamps – Two-inch (51 mm); Integral-reflector Lamps with Front Covers and GU5.3 or GX 5.3 Bases;
- ANSI/IEC C81.61-2003: American National Standard for Electric Lamp Bases;
- ANSI/IEEE C62.41 – 1991 (01-May-1991): Surge Voltages in Low-Voltage AC Power Circuits, Recommended Practice for;
- CIE Publication No. 13.3 – 1995: Method of Measuring and Specifying Color Rendering of Light Sources;
- CIE Publication No. 18.2 – 1983: The Basis of Physical Photometry;
- IESNA LM-16-1993: Practical Guide to Colorimetry of Light Sources;
- IESNA LM-28-89 – 1989: Guide for the Selection, Care, and Use of Electrical Instruments in the Photometric Laboratory;
- IESNA LM-79-08 Electrical and Photometric Measurement of Solid State Lighting Products
- UL 1993 – 1999: Standard for Self-Ballasted Lamps and Lamp Adapters;
- UL 8750 – 2009: Light Emitting Diode (LED) Equipment for Use in Lighting Products.

### 1.3 Test Facility Description

The Energy Efficiency Lab used by BEST to collect energy efficiency measurement data is located in 1st Floor, 1st Building, Weitai Industrial Park, Yingrenshi, Shiyao, Baoan, Shenzhen, China. BEST Test Service Shenzhen Co., Ltd is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200770-0). BEST Test Service Shenzhen Co., Ltd is also an ELI accredited lab for lighting products (ELI Certificate No. ELI-L04-2010) and UL accredited lab for lighting products

### 1.4 Test Equipment List

| Device  | Manufacture           | Model No                   | Serial No  | Cal. Date    | Cal Due Date |
|---|-----------------------|----------------------------|------------|--------------|--------------|
| Integral Sphere                                   | Everfine              | 1.5M<br>SPEKTRON           | 608040T    | Oct 20, 2011 | Oct 20, 2012 |
| Integral Sphere                                   | Everfine              | 1.5M<br>SPEKTRON           | 906025     | Oct 20, 2011 | Oct 20, 2012 |
| Integral Sphere                                   | Labsphere             | LMS-650                    | 6101002416 | Mar 10, 2012 | Mar 09, 2013 |
| Spectro Meter Assy                                | Labsphere             | CDS 2100                   | 217101416  | Mar 10, 2012 | Mar 09, 2013 |
| Plus UV-VIS-Near IR Spectrophotometer Colorimeter | Everfine              | PMS-80-V1<br>(380nm-800nm) | 608033     | Oct 20, 2011 | Oct 20, 2012 |
| Plus UV-VIS-Near IR Spectrophotometer Colorimeter | Everfine              | PMS-700<br>(200nm-800nm)   | 908001     | Oct 20, 2011 | Oct 20, 2012 |
| Goniophotometer                                   | Everfine              | GOR-5000                   | 1009001    | Nov 20, 2011 | Nov 19, 2012 |
| 6 <sup>1/2</sup> Digital Multimeter               | Agilent               | 34401A                     | MY4702386  | Oct 18, 2011 | Oct 17, 2012 |
| AC Power Source                                   | California Instrument | 1501I                      | S13093     | N/A          | N/A          |
| AC Power Source                                   | California Instrument | 1501L                      | L03572     | N/A          | N/A          |
| Standard Light Source                             | OSRAM                 | 24V/50W                    | NO.1       | Sep 17, 2011 | Sep 16, 2012 |
| Standard Light Source                             | OSRAM                 | 24V/50W                    | NO.2       | Sep 17, 2011 | Sep 16, 2012 |
| Multi-Function AC standard Meter                  | Everfine              | PF2010S                    | 605010     | Oct 18, 2011 | Oct 17, 2012 |
| Digital Power Meter                               | Everfine              | PF9811                     | 902029     | Oct 18, 2011 | Oct 17, 2012 |
| Digital Power Meter                               | YOKOGAWA              | WT210                      | 91K310009  | Oct 18, 2011 | Oct 17, 2012 |
| Digital Power Meter                               | YOKOGAWA              | WT210                      | 91K310017  | Oct 18, 2011 | Oct 17, 2012 |
| Digital Power Meter                               | YOKOGAWA              | WT210                      | 91K310016  | Oct 18, 2011 | Oct 17, 2012 |
| Ballast Parameter Analyzer                        | Everfine              | PF9821                     | 905050     | Oct 18, 2011 | Oct 17, 2012 |
| Second Meter                                      | TIANFU                | PC 396                     | N/A        | Oct 18, 2011 | Oct 17, 2012 |
| Digital Storage Oscilloscope                      | Tektronix             | TDS2012B                   | C051911    | Oct 18, 2011 | Oct 17, 2012 |

**Statement of Traceability:** BEST Test Service Shenzhen Co., Ltd. certifies that all calibration has been performed using suitable standards traceable to the NIM China.

## 2 - Test Method

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### 2.1 Photometric and Electrical Measurement (Integrated Sphere Method)

Total light output (luminous flux) for the  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ambient temperature conditions is measured using an Everfine integrating sphere. Temperature is measured at a position inside the sphere. Spectral radiant flux measurements are made using PMS-700 to the detector port of the integrating sphere. Each lamp is operated at rated voltage in its designated orientation. Each lamp should be stable before measurements are made. The determining method of stable is as follows:

Step 1 Take 3 measurements of the lamp light output at 15 minute interval (total time=30mintues.)This time period is in addition to the recommended pre-burning time.

Step 2 Calculate the percent difference between the maximum measured value and the minimum measured value for the three consecutive measurements.

Step 3 if the value calculated in Step 2 does not exceed 0.5 percent, the lamp is considered stable.

Luminous flux, chromaticity coordinates, correlated color temperature and color rendering index for each lamp are calculated from the spectral radiant flux measurements taken at 2 nm intervals over the range 350 to 1050 nm. The calibration of the sphere photometer-spectrometer system is traceable to the NIST USA. Lamp efficacy (lumens per watts) for each lamp model is computed based on the revised luminous flux result. Electrical measurements including voltage, current, power and power factor are measured using the YOKOGAWA WT210 digital power Meter.

The total uncertainty of the light output measurements is estimated, at the 95% confidence level, not to exceed  $\pm 1.12\%$  over the wavelength range 350-1050 nm.

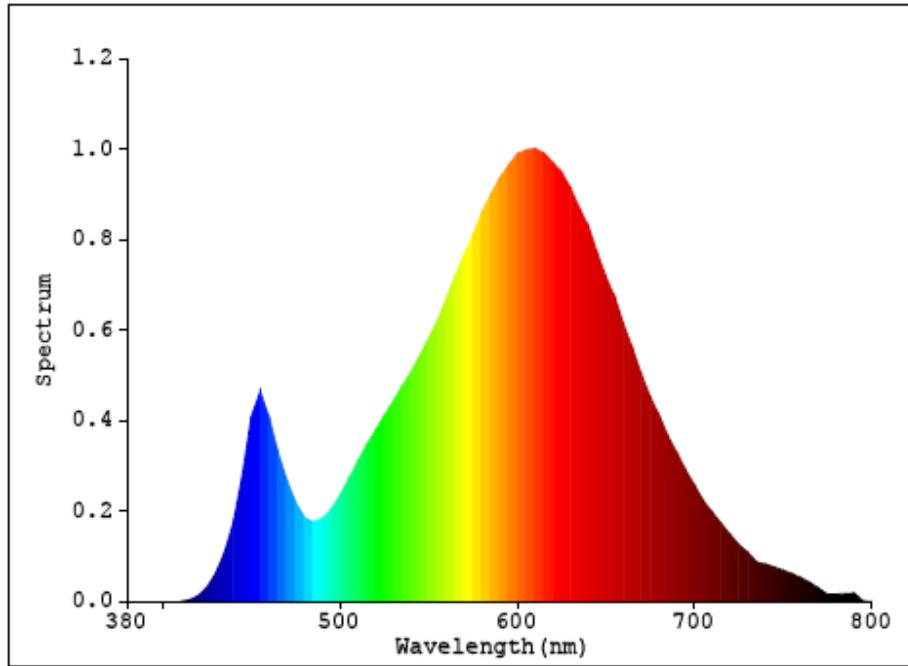
### 2.2 Deviation from standard operating procedure

None

### 3 – Summary of Test Result

|                 | Item                               | Test Result                            |                             | Accreditation |
|-----------------|------------------------------------|--|-----------------------------|---------------|
| Required Fields | Lumen Output (Lumens)              | 746.53                                 |                             | NVLAP/EPA     |
|                 | Luminous Efficacy (lm/w)           | 62.98                                  |                             | NVLAP/EPA     |
|                 | Correlated Color Temperature (CCT) | 2724                                   |                             | NVLAP/EPA     |
|                 | Color Rendering Index– CRI         | 82.8                                   |                             | NVLAP/EPA     |
|                 | Input Power (W)                    | 11.85                                  |                             | NVLAP/EPA     |
| Optional Fields | Power Type                         | <input checked="" type="checkbox"/> AC | <input type="checkbox"/> DC | /             |
|                 | Input Voltage (V)                  | 120.0                                  |                             | NVLAP/EPA     |
|                 | Input Current (A)                  | 0.1019                                 |                             | NVLAP/EPA     |
|                 | Power Factor                       | 0.9689                                 |                             | NVLAP/EPA     |
|                 | x(CIE 1931)                        | 0.4522                                 |                             | NVLAP/EPA     |
|                 | y(CIE 1931)                        | 0.3998                                 |                             | NVLAP/EPA     |
|                 | u' (CIE 1976)                      | 0.2624                                 |                             | NVLAP/EPA     |
|                 | v' (CIE 1976)                      | 0.5220                                 |                             | NVLAP/EPA     |
|                 | Duv(CIE 1976)                      | 0.0034                                 |                             | NVLAP/EPA     |
|                 | R9                                 | 19                                     |                             | NVLAP/EPA     |

## 4 – Spectral Flux Plots



## 5 – EUT Photos

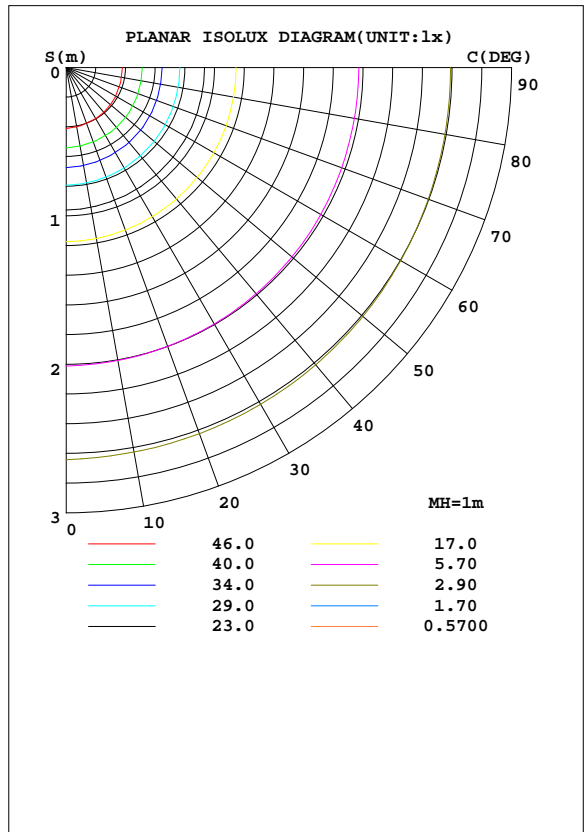
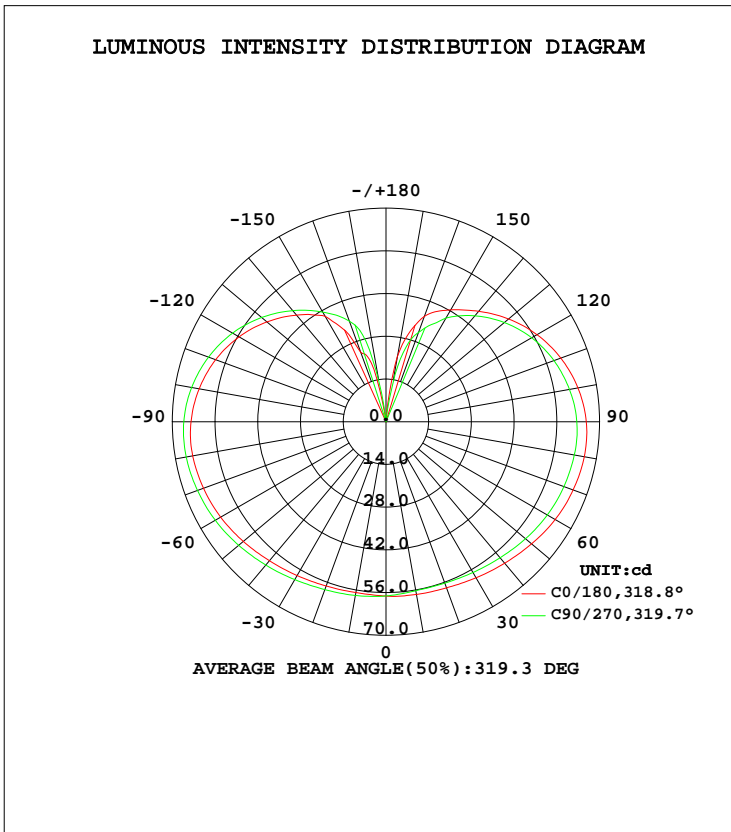




LUMINAIRE PHOTOMETRIC TEST REPORT

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |

| DATA OF LAMP     |              | PHOTOMETRIC DATA Eff: 60.68 lm/W |         |                    |            |
|------------------|--------------|----------------------------------|---------|--------------------|------------|
| MODEL            | 01-709-D/827 | Imax(cd)                         | 66.72   | S/MH(C0/180)       | 1.61       |
| NOMINAL POWER(W) | 12           | LOR(%)                           | 100.0   | S/MH(C90/270)      | 1.56       |
| RATED VOLTAGE(V) | 120          | TOTAL FLUX(lm)                   | 722.05  | η UP, DN(C0-180)   | 22.6, 26.6 |
| NOMINAL FLUX(lm) | 722.045      | CIE CLASS                        | DIFFUSE | η UP, DN(C180-360) | 23.3, 27.5 |
| LAMPS INSIDE     | 1            | η up(%)                          | 45.9    | CIBSE SHR NOM      | 1.75       |
| TEST VOLTAGE(V)  | 120.0        | η down(%)                        | 54.1    | CIBSE SHR MAX      | 1.75       |



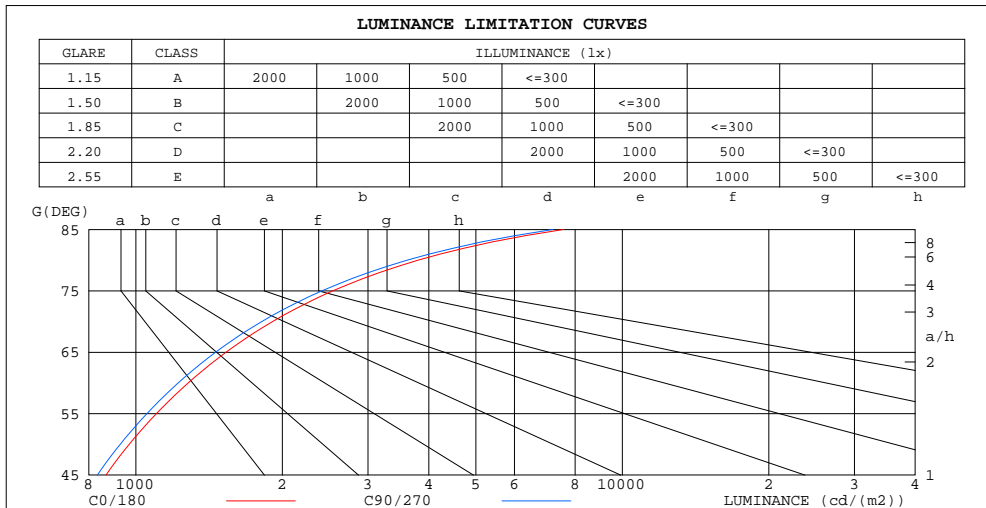
C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES

ZONAL FLUX DIAGRAM:

| $\gamma$ | C0                    | C45   | C90   | C135  | C180  | C225  | C270  | C315  | $\gamma$ | $\Phi$ zone | $\Phi$ total | #lum,lamp |
|----------|-----------------------|-------|-------|-------|-------|-------|-------|-------|----------|-------------|--------------|-----------|
| 10       | 57.46                 | 56.80 | 56.23 | 56.26 | 56.86 | 57.50 | 57.82 | 57.69 | 0- 10    | 5.447       | 5.447        | 0.75,0.75 |
| 20       | 57.94                 | 56.99 | 56.28 | 56.43 | 57.30 | 58.20 | 58.54 | 58.32 | 10- 20   | 16.23       | 21.68        | 3,3       |
| 30       | 59.03                 | 57.87 | 57.04 | 57.15 | 58.23 | 59.32 | 59.75 | 59.54 | 20- 30   | 26.84       | 48.52        | 6.72,6.72 |
| 40       | 60.52                 | 59.07 | 58.19 | 58.35 | 59.45 | 60.65 | 61.30 | 61.16 | 30- 40   | 37.17       | 85.68        | 11.9,11.9 |
| 50       | 62.26                 | 60.64 | 59.67 | 59.79 | 61.03 | 62.30 | 62.99 | 62.94 | 40- 50   | 46.96       | 132.6        | 18.4,18.4 |
| 60       | 64.04                 | 62.31 | 61.07 | 61.15 | 62.55 | 63.97 | 64.60 | 64.63 | 50- 60   | 55.87       | 188.5        | 26.1,26.1 |
| 70       | 65.28                 | 63.46 | 62.05 | 62.19 | 63.66 | 65.07 | 65.75 | 65.85 | 60- 70   | 63.18       | 251.7        | 34.9,34.9 |
| 80       | 66.00                 | 63.90 | 62.67 | 62.85 | 64.32 | 65.53 | 66.46 | 66.65 | 70- 80   | 68.26       | 320.0        | 44.3,44.3 |
| 90       | 65.64                 | 63.37 | 62.53 | 62.66 | 63.89 | 64.80 | 66.26 | 66.42 | 80- 90   | 70.62       | 390.6        | 54.1,54.1 |
| 100      | 63.89                 | 61.55 | 61.07 | 61.39 | 62.18 | 62.71 | 64.68 | 65.00 | 90-100   | 69.52       | 460.1        | 63.7,63.7 |
| 110      | 60.99                 | 58.75 | 58.60 | 58.97 | 59.44 | 59.69 | 61.92 | 62.54 | 100-110  | 65.10       | 525.2        | 72.7,72.7 |
| 120      | 57.13                 | 55.20 | 55.12 | 55.35 | 55.62 | 55.86 | 58.09 | 58.88 | 110-120  | 57.92       | 583.1        | 80.8,80.8 |
| 130      | 52.44                 | 50.98 | 50.63 | 50.70 | 50.95 | 51.57 | 53.19 | 54.10 | 120-130  | 48.63       | 631.7        | 87.5,87.5 |
| 140      | 47.27                 | 46.37 | 45.34 | 45.15 | 45.65 | 47.03 | 47.56 | 48.47 | 130-140  | 38.18       | 669.9        | 92.8,92.8 |
| 150      | 42.34                 | 41.59 | 39.24 | 32.42 | 39.94 | 42.02 | 41.50 | 42.06 | 140-150  | 27.35       | 697.3        | 96.6,96.6 |
| 160      | 36.75                 | 35.58 | 31.17 | 27.40 | 24.27 | 31.33 | 35.07 | 36.25 | 150-160  | 16.95       | 714.2        | 98.9,98.9 |
| 170      | 21.73                 | 18.95 | 12.08 | 5.782 | 6.429 | 7.661 | 13.07 | 15.90 | 160-170  | 7.374       | 721.6        | 99.9,99.9 |
| 180      | 0                     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 170-180  | 0.4461      | 722.0        | 100,100   |
| DEG      | LUMINOUS INTENSITY:cd |       |       |       |       |       |       |       |          | UNIT:lm     |              |           |



| LUMINANCE cd/(m2) |        |         |
|-------------------|--------|---------|
| G(DEG)            | C0/180 | C90/270 |
| 85                | 7572   | 7203    |
| 80                | 3801   | 3609    |
| 75                | 2538   | 2410    |
| 70                | 1909   | 1814    |
| 65                | 1532   | 1458    |
| 60                | 1281   | 1221    |
| 55                | 1102   | 1053    |
| 50                | 969    | 928     |
| 45                | 868    | 833     |

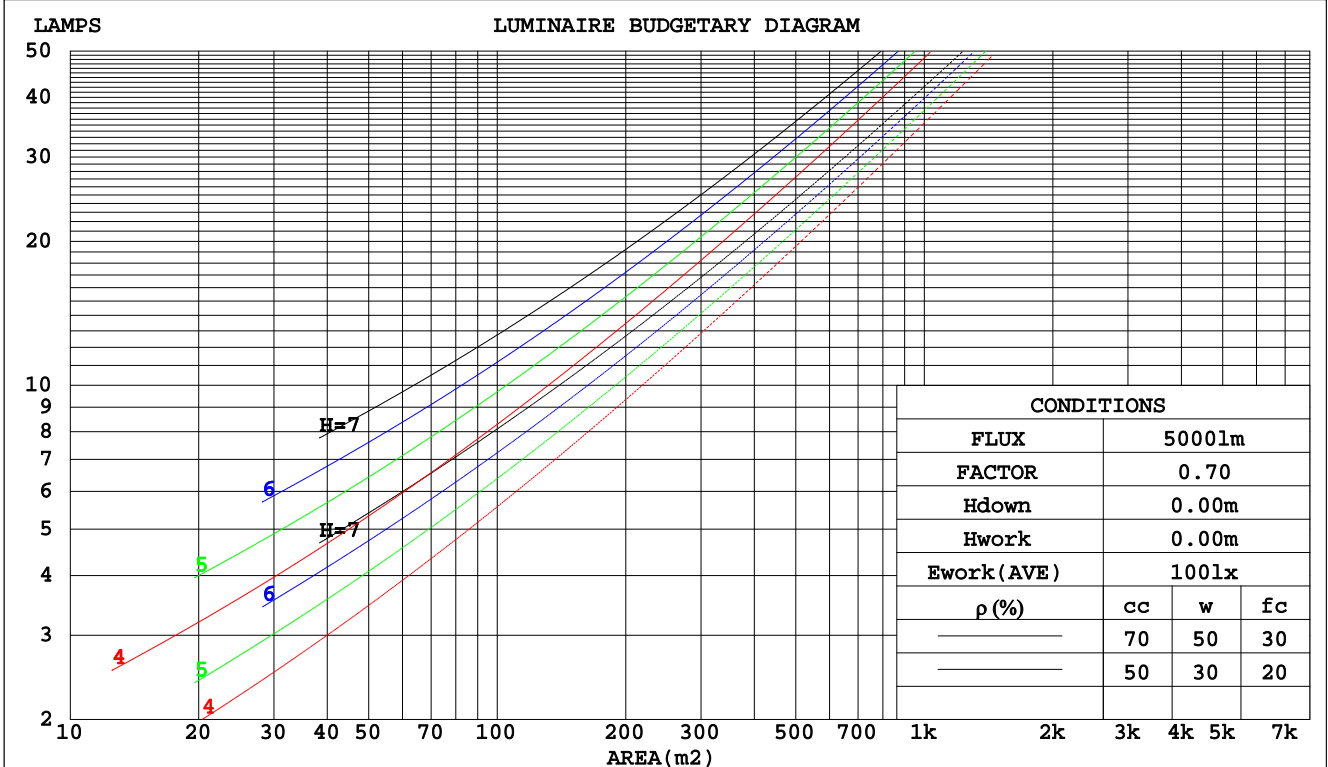
C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.2DEG  
Operators:David  
Test Date:2012-09-13

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
Humidity:43.1%  
Test Distance:2.435m [K=1.0000]  
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |

| pcc  | 80%                             |      |      | 70%  |      |      | 50% |     |     | 30% |     |     | 10% |     |     | 0   |
|------|---------------------------------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| pw   | 50%                             | 30%  | 10%  | 50%  | 30%  | 10%  | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 0   |
| pfc  | 20%                             |      |      | 20%  |      |      | 20% |     |     | 20% |     |     | 20% |     |     | 0   |
| RCR  | RCR:Room Cavity Ratio           |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |
|      | Coefficients of Utilization(CU) |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |
| 0.0  | 1.08                            | 1.08 | 1.08 | 1.00 | 1.00 | 1.00 | .86 | .86 | .86 | .72 | .72 | .72 | .60 | .60 | .60 | .54 |
| 1.0  | .87                             | .82  | .77  | .81  | .76  | .71  | .68 | .64 | .60 | .56 | .53 | .50 | .45 | .43 | .41 | .36 |
| 2.0  | .74                             | .66  | .59  | .68  | .61  | .55  | .57 | .51 | .46 | .47 | .42 | .39 | .37 | .34 | .31 | .26 |
| 3.0  | .64                             | .54  | .47  | .58  | .50  | .44  | .49 | .42 | .37 | .40 | .35 | .31 | .32 | .28 | .25 | .20 |
| 4.0  | .55                             | .46  | .39  | .51  | .42  | .36  | .43 | .36 | .30 | .35 | .30 | .25 | .28 | .24 | .20 | .16 |
| 5.0  | .49                             | .39  | .32  | .45  | .36  | .30  | .38 | .31 | .26 | .31 | .25 | .21 | .24 | .20 | .17 | .13 |
| 6.0  | .43                             | .34  | .28  | .40  | .32  | .26  | .34 | .27 | .22 | .28 | .22 | .18 | .22 | .18 | .14 | .11 |
| 7.0  | .39                             | .30  | .24  | .36  | .28  | .22  | .30 | .24 | .19 | .25 | .20 | .16 | .20 | .16 | .12 | .10 |
| 8.0  | .35                             | .27  | .21  | .32  | .25  | .19  | .27 | .21 | .16 | .23 | .17 | .14 | .18 | .14 | .11 | .08 |
| 9.0  | .32                             | .24  | .18  | .30  | .22  | .17  | .25 | .19 | .14 | .21 | .16 | .12 | .17 | .13 | .10 | .07 |
| 10.0 | .29                             | .21  | .16  | .27  | .20  | .15  | .23 | .17 | .13 | .19 | .14 | .11 | .15 | .11 | .09 | .07 |



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.2DEG  
 Operators: David  
 Test Date: 2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity: 43.1%  
 Test Distance: 2.435m [K=1.0000]  
 Remarks:

WEC AND CCEC

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION 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 Coefficients(WEC) |      |      |      |      |      |      |      |      |   |
| 0.0  |                       |      |      |      |      |      |                                 |      |      |      |      |      |      |      |      |   |
| 1.0  | .413                  | .235 | .074 | .391 | .223 | .071 | .352                            | .202 | .064 | .315 | .182 | .058 | .282 | .163 | .053 |   |
| 2.0  | .344                  | .189 | .058 | .325 | .179 | .055 | .289                            | .160 | .050 | .255 | .143 | .045 | .224 | .127 | .040 |   |
| 3.0  | .300                  | .160 | .048 | .282 | .151 | .046 | .249                            | .135 | .041 | .219 | .120 | .037 | .190 | .105 | .033 |   |
| 4.0  | .267                  | .139 | .041 | .251 | .131 | .039 | .220                            | .117 | .035 | .192 | .103 | .031 | .166 | .090 | .027 |   |
| 5.0  | .241                  | .123 | .036 | .226 | .116 | .034 | .198                            | .103 | .030 | .172 | .091 | .027 | .148 | .079 | .024 |   |
| 6.0  | .219                  | .110 | .031 | .206 | .104 | .030 | .180                            | .092 | .027 | .156 | .081 | .024 | .133 | .070 | .021 |   |
| 7.0  | .202                  | .100 | .028 | .189 | .094 | .027 | .165                            | .083 | .024 | .143 | .073 | .021 | .122 | .063 | .019 |   |
| 8.0  | .186                  | .091 | .026 | .175 | .086 | .024 | .153                            | .076 | .022 | .132 | .067 | .019 | .112 | .058 | .017 |   |
| 9.0  | .173                  | .084 | .023 | .162 | .079 | .022 | .142                            | .070 | .020 | .122 | .061 | .018 | .104 | .053 | .015 |   |
| 10.0 | .162                  | .078 | .022 | .152 | .073 | .020 | .132                            | .065 | .018 | .114 | .057 | .016 | .097 | .049 | .014 |   |

| 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  | .540                  | .540 | .540 | .462 | .462 | .462 | .315                                       | .315 | .315 | .181 | .181 | .181 | .058 | .058 | .058 |   |
| 1.0  | .540                  | .508 | .479 | .462 | .436 | .412 | .316                                       | .300 | .285 | .182 | .174 | .166 | .058 | .056 | .054 |   |
| 2.0  | .534                  | .487 | .447 | .458 | .419 | .386 | .314                                       | .290 | .269 | .181 | .169 | .158 | .058 | .055 | .051 |   |
| 3.0  | .527                  | .471 | .427 | .452 | .407 | .370 | .310                                       | .283 | .260 | .179 | .165 | .153 | .058 | .054 | .050 |   |
| 4.0  | .520                  | .460 | .414 | .446 | .397 | .360 | .307                                       | .277 | .253 | .177 | .162 | .150 | .057 | .053 | .049 |   |
| 5.0  | .512                  | .451 | .405 | .440 | .390 | .353 | .303                                       | .272 | .249 | .176 | .160 | .148 | .057 | .052 | .049 |   |
| 6.0  | .505                  | .443 | .399 | .434 | .384 | .348 | .299                                       | .269 | .246 | .174 | .158 | .146 | .056 | .052 | .048 |   |
| 7.0  | .498                  | .437 | .395 | .429 | .379 | .344 | .296                                       | .266 | .244 | .172 | .157 | .145 | .056 | .051 | .048 |   |
| 8.0  | .492                  | .432 | .391 | .423 | .375 | .341 | .293                                       | .263 | .242 | .170 | .155 | .144 | .055 | .051 | .048 |   |
| 9.0  | .486                  | .428 | .388 | .418 | .371 | .339 | .290                                       | .261 | .241 | .169 | .154 | .143 | .055 | .051 | .048 |   |
| 10.0 | .480                  | .424 | .386 | .414 | .368 | .337 | .287                                       | .259 | .239 | .167 | .153 | .143 | .054 | .050 | .047 |   |

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

Uncorrected UGR Table

|   |                  |      |      |      |                   |                |      |                   |      |      |
|---|------------------|------|------|------|-------------------|----------------|------|-------------------|------|------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                  |      |      |      |                   |                |      |                   |      |      |
| NAME:   |                  |      |      |      | TYPE:01-709-D/827 |                |      | WEIGHT:           |      |      |
| DIM.:   |                  |      |      |      | SPEC.:            |                |      | SERIAL No.:       |      |      |
| MFR.: Green Creative  |                  |      |      |      | SUR.:             |                |      | PROTECTION 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   | 10.3             | 11.4 | 11.1 | 12.2 | 13.3              | 10.1           | 11.2 | 10.9              | 12.0 | 13.1 |
| 3H  | 13.6             | 14.6 | 14.4 | 15.5 | 16.6              | 13.3           | 14.3 | 14.2              | 15.2 | 16.3 |
| 4H  | 15.4             | 16.4 | 16.3 | 17.3 | 18.4              | 15.2           | 16.1 | 16.0              | 17.0 | 18.1 |
| 6H  | 17.5             | 18.4 | 18.4 | 19.3 | 20.5              | 17.2           | 18.1 | 18.1              | 19.0 | 20.2 |
| 8H  | 18.6             | 19.5 | 19.5 | 20.4 | 21.6              | 18.3           | 19.2 | 19.2              | 20.1 | 21.3 |
| 12H   | 20.0             | 20.8 | 20.9 | 21.7 | 22.9              | 19.7           | 20.5 | 20.6              | 21.4 | 22.6 |
| 4H 2H   | 11.2             | 12.2 | 12.1 | 13.1 | 14.2              | 11.1           | 12.1 | 12.0              | 13.0 | 14.1 |
| 3H  | 14.7             | 15.5 | 15.5 | 16.4 | 17.6              | 14.5           | 15.3 | 15.4              | 16.2 | 17.4 |
| 4H  | 16.6             | 17.4 | 17.6 | 18.3 | 19.5              | 16.4           | 17.2 | 17.3              | 18.1 | 19.3 |
| 6H  | 18.9             | 19.6 | 19.8 | 20.5 | 21.7              | 18.6           | 19.3 | 19.6              | 20.3 | 21.5 |
| 8H  | 20.1             | 20.8 | 21.1 | 21.7 | 23.0              | 19.8           | 20.5 | 20.8              | 21.5 | 22.7 |
| 12H   | 21.5             | 22.1 | 22.5 | 23.1 | 24.4              | 21.3           | 21.9 | 22.2              | 22.8 | 24.1 |
| 8H 4H   | 17.3             | 18.0 | 18.3 | 18.9 | 20.2              | 17.2           | 17.8 | 18.1              | 18.8 | 20.0 |
| 6H  | 19.8             | 20.4 | 20.8 | 21.4 | 22.6              | 19.6           | 20.2 | 20.6              | 21.2 | 22.4 |
| 8H  | 21.3             | 21.7 | 22.2 | 22.7 | 24.0              | 21.0           | 21.5 | 22.0              | 22.5 | 23.8 |
| 12H   | 22.9             | 23.3 | 23.9 | 24.3 | 25.6              | 22.7           | 23.1 | 23.6              | 24.1 | 25.4 |
| 12H 4H  | 17.5             | 18.1 | 18.5 | 19.1 | 20.3              | 17.4           | 18.0 | 18.3              | 19.0 | 20.2 |
| 6H  | 20.1             | 20.6 | 21.1 | 21.6 | 22.9              | 20.0           | 20.5 | 20.9              | 21.4 | 22.7 |
| 8H  | 21.7             | 22.1 | 22.7 | 23.1 | 24.4              | 21.5           | 21.9 | 22.5              | 22.9 | 24.2 |
| Variations with the observer position at spacings:                |                  |      |      |      |                   |                |      |                   |      |      |
| S = 1.0H  | + 0.1 / - 0.1    |      |      |      |                   | + 0.1 / - 0.1  |      |                   |      |      |
| 1.5H  | + 0.2 / - 0.3    |      |      |      |                   | + 0.2 / - 0.3  |      |                   |      |      |
| 2.0H  | + 0.3 / - 0.4    |      |      |      |                   | + 0.3 / - 0.4  |      |                   |      |      |

CIE Pub.117 Corrected 722.0 lm Total Lamp Luminous Flux. (8log(F/F0) = -1.1)

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

## UTILIZATION FACTORS TABLE

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |

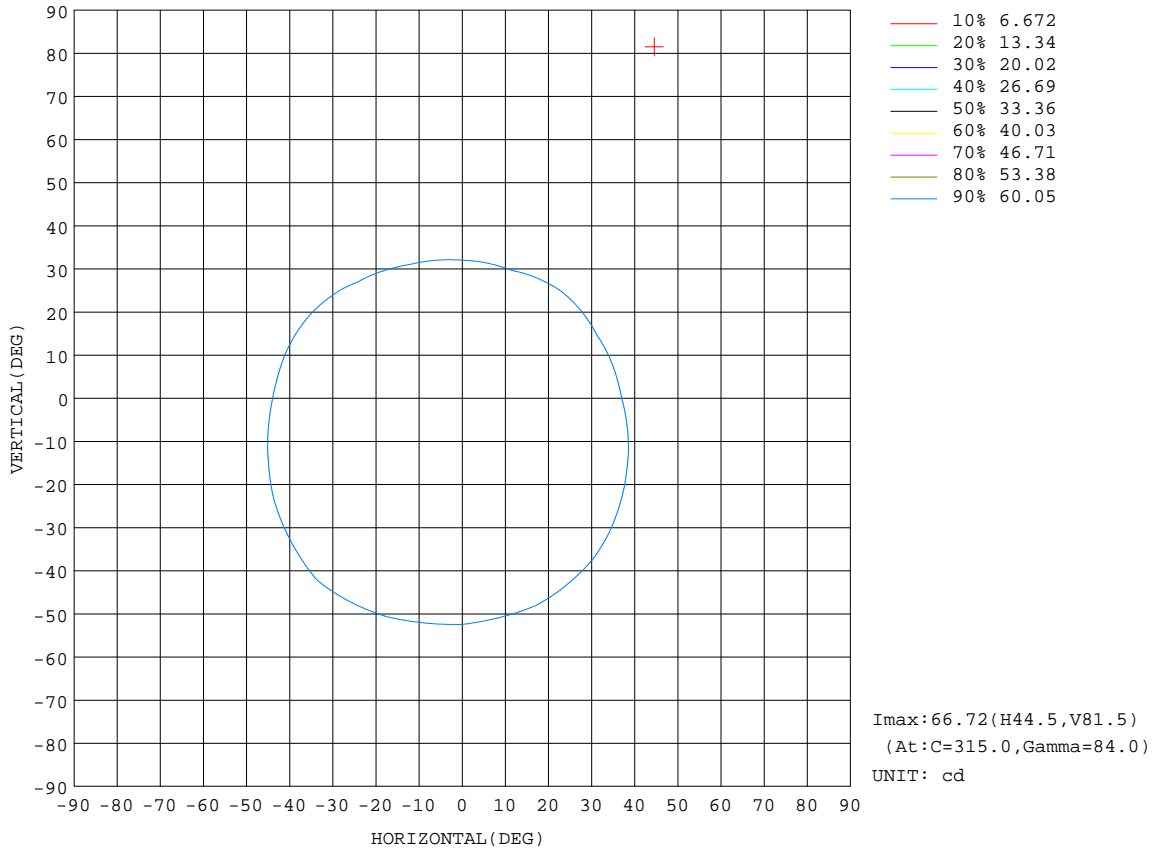
| REFLECTANCE                      |   |     |           |     |     |     |               |     |     |        |
|----------------------------------|---|-----|-----------|-----|-----|-----|---------------|-----|-----|--------|
| Ceiling                          | 0.8   | 0.8 | 0.8       | 0.7 | 0.7 | 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) $k(RI) \times RCR = 5$ |     |           |     |     |     |               |     |     |        |
| k = 0.60                         | 37  | 25  | 17        | 35  | 24  | 17  | 32            | 22  | 16  | 8      |
| 0.80                             | 46  | 32  | 24        | 43  | 31  | 23  | 38            | 28  | 21  | 12     |
| 1.00                             | 53  | 39  | 30        | 50  | 37  | 28  | 44            | 35  | 26  | 15     |
| 1.25                             | 60  | 46  | 36        | 56  | 43  | 34  | 49            | 38  | 31  | 18     |
| 1.50                             | 65  | 51  | 42        | 61  | 48  | 39  | 53            | 43  | 35  | 20     |
| 2.00                             | 73  | 60  | 50        | 68  | 56  | 48  | 58            | 49  | 42  | 25     |
| 2.50                             | 78  | 66  | 57        | 72  | 62  | 53  | 62            | 54  | 47  | 28     |
| 3.00                             | 82  | 71  | 62        | 76  | 66  | 58  | 65            | 57  | 51  | 30     |
| 4.00                             | 87  | 77  | 70        | 81  | 72  | 65  | 69            | 62  | 57  | 34     |
| 5.00                             | 90  | 82  | 75        | 84  | 76  | 70  | 71            | 66  | 61  | 37     |
| ROOM INDEX                       | UF(total)   |     |           |     |     |     |               |     |     | Direct |
| According to DIN EN 13032-2 2004 |   |     | Suspended |     |     |     | SHRNOM = 1.25 |     |     |        |

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |

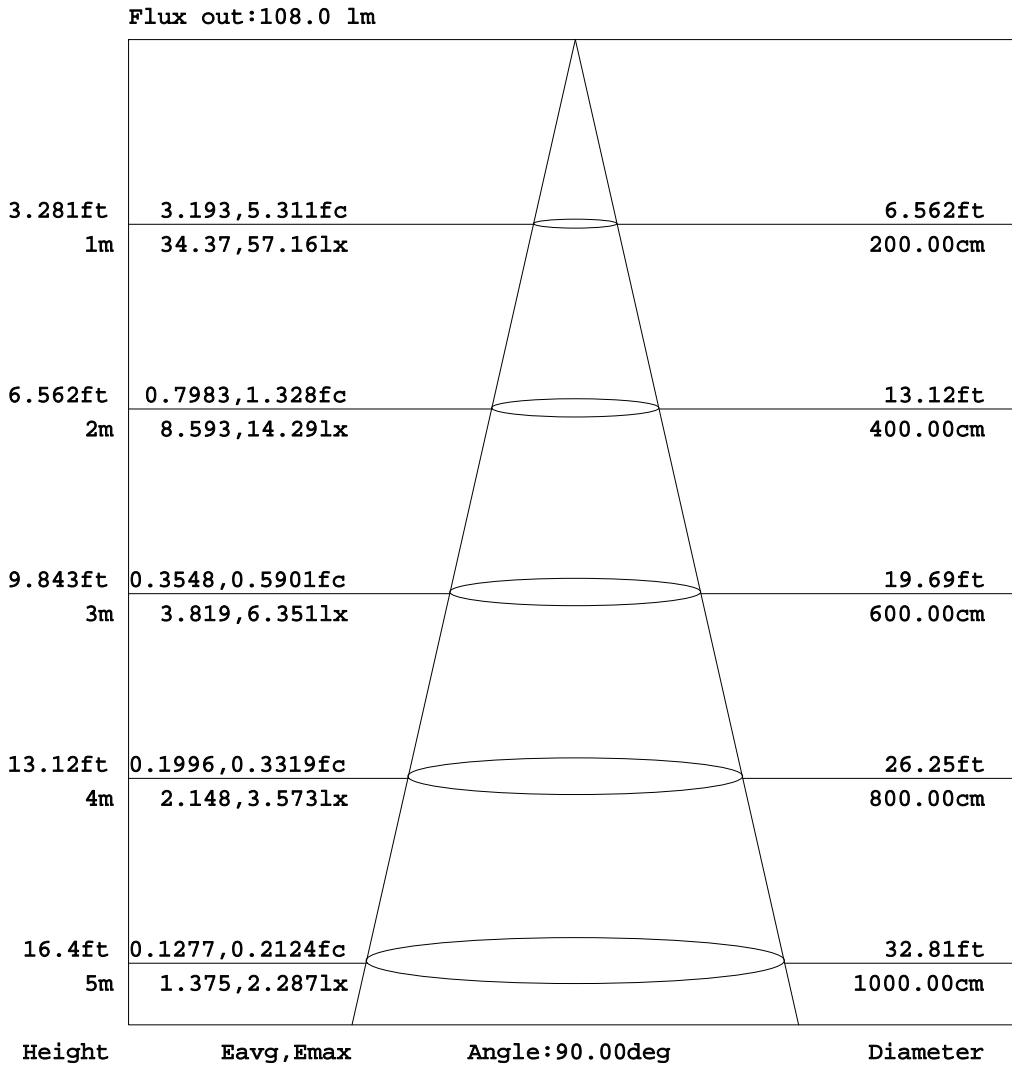


C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

AAI Figure

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |



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

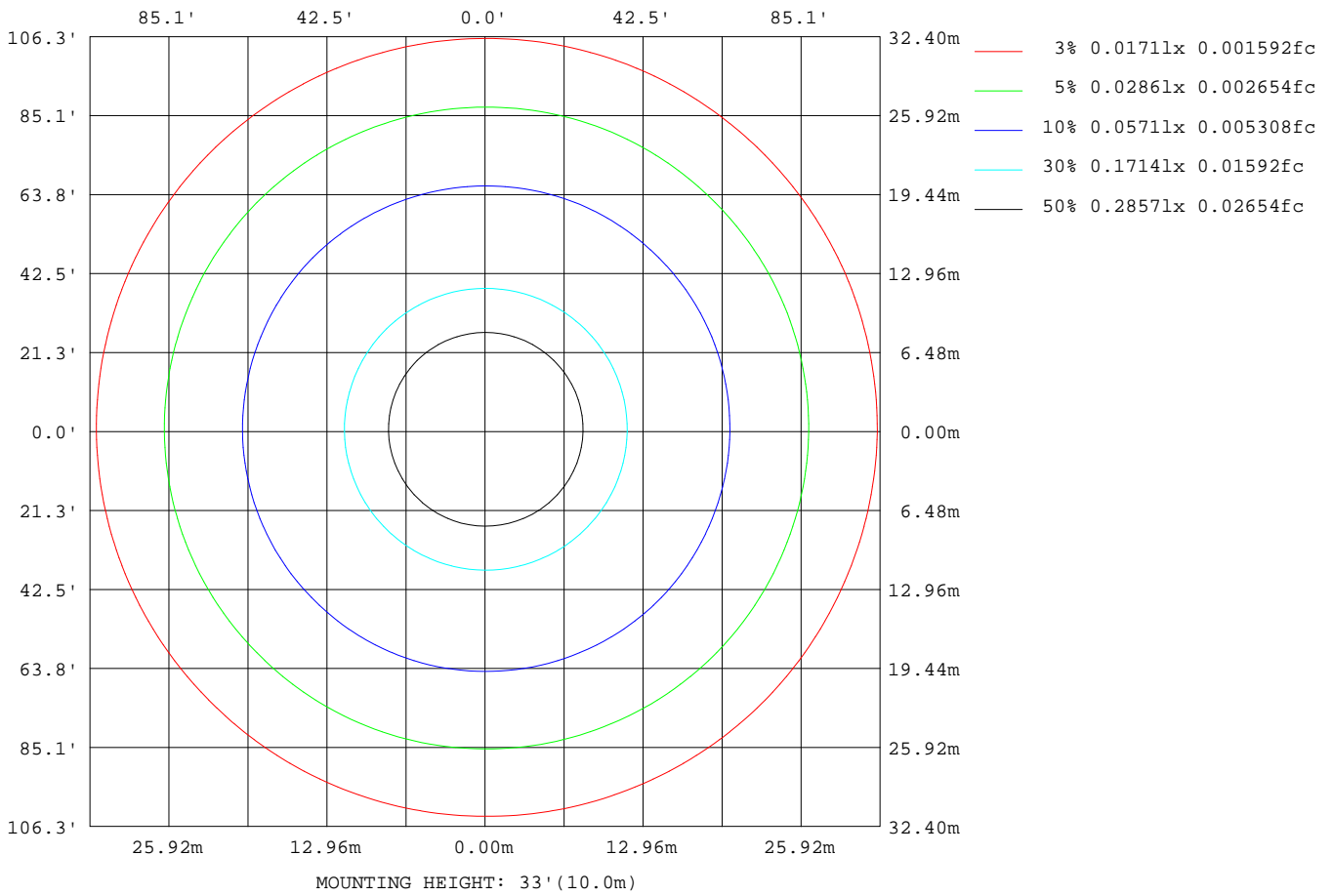
C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:



ISOLUX DIAGRAM

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.2DEG  
 Operators: David  
 Test Date: 2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity: 43.1%  
 Test Distance: 2.435m [K=1.0000]  
 Remarks:

Average Luminance Table(CIBSE)

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |

| Parameter description for average Luminance            | Symbol | Value         | Unit     |
|--|--------|---------------|----------|
| Luminance in Azimuth Plane                             | Bc     | refer Table 2 | cd/sq.m. |
| Intensity at angle Gamma in given azimuth plane        | I      | from data     | cd/klm   |
| Number of lamps  | N      | 1             |          |
| Output of each lamp(initial lumens as specified)       | F      | 722.045       | lm       |
| Multiplying factor                                     | K      | 1             |          |
| Luminous area in horizontal plane used in calculations | A      | 0.1           | sq.m.    |
| Angle to the downward vertical from light centre       | Gamma  | from data     | deg      |

Table 1. Calculation parameters for determination of CIBSE LG3:1996 Average Luminance

| G<br>deg | C plane(deg) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|          | 0            | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 150  | 160  | 170  | 180  |
| 55       | 1102         | 1100 | 1098 | 1096 | 1094 | 1091 | 1089 | 1087 | 1085 | 1083 | 1082 | 1081 | 1080 | 1078 | 1077 | 1077 | 1077 | 1077 | 1078 |
| 60       | 1281         | 1279 | 1276 | 1274 | 1271 | 1268 | 1265 | 1262 | 1259 | 1257 | 1255 | 1254 | 1253 | 1252 | 1251 | 1250 | 1249 | 1250 | 1251 |
| 65       | 1532         | 1529 | 1526 | 1523 | 1519 | 1516 | 1512 | 1508 | 1504 | 1501 | 1499 | 1498 | 1496 | 1495 | 1494 | 1493 | 1493 | 1494 | 1494 |
| 70       | 1909         | 1905 | 1901 | 1897 | 1893 | 1888 | 1883 | 1878 | 1873 | 1868 | 1866 | 1864 | 1862 | 1861 | 1860 | 1859 | 1859 | 1860 | 1861 |
| 75       | 2538         | 2534 | 2529 | 2522 | 2516 | 2509 | 2503 | 2496 | 2490 | 2484 | 2480 | 2477 | 2474 | 2473 | 2472 | 2472 | 2473 | 2474 | 2475 |
| 80       | 3801         | 3795 | 3787 | 3776 | 3765 | 3753 | 3743 | 3733 | 3725 | 3718 | 3710 | 3703 | 3699 | 3697 | 3697 | 3699 | 3702 | 3703 | 3704 |
| 85       | 7572         | 7565 | 7551 | 7528 | 7501 | 7476 | 7455 | 7439 | 7429 | 7418 | 7396 | 7375 | 7363 | 7358 | 7360 | 7366 | 7373 | 7376 | 7377 |

Table 2. Average Luminance(cd/sq.m.) for defined C plane,Gamma angle

| CIBSE<br>Category | Gamma<br>(deg) | Average Luminance |           | Patch Luminance |           |
|-------------------|----------------|-------------------|-----------|-----------------|-----------|
|                   |                | maximum           | specified | maximum         | specified |
|                   |                | calculated        | maximum   | measured        | maximum   |
| Category 1        | 55 to 90       | 7572              | 200       | ---             | 500       |
| Category 2        | 65 to 90       | 7572              | 200       | ---             | 500       |
| Category 3        | 75 to 90       | 7572              | 200       | ---             | 500       |

Table 3. Tabulation of Average and Patch Luminance(cd/sq.m.) for defined CIBSE categories

No match

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

Average Luminance Table(CIBSE)

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |

| Parameter description for average Luminance            | Symbol | Value         | Unit     |
|--|--------|---------------|----------|
| Luminance in Azimuth Plane                             | Bc     | refer Table 2 | cd/sq.m. |
| Intensity at angle Gamma in given azimuth plane        | I      | from data     | cd/klm   |
| Number of lamps  | N      | 1             |          |
| Output of each lamp(initial lumens as specified)       | F      | 722.045       | lm       |
| Multiplying factor                                     | K      | 1             |          |
| Luminous area in horizontal plane used in calculations | A      | 0.1           | sq.m.    |
| Angle to the downward vertical from light centre       | Gamma  | from data     | deg      |

Table 1. Calculation parameters for determination of CIBSE LG3:2001 Average Luminance

| G<br>deg | C plane(deg) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|          | 0            | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 150  | 160  | 170  | 180  |
| 55       | 1102         | 1100 | 1098 | 1096 | 1094 | 1091 | 1089 | 1087 | 1085 | 1083 | 1082 | 1081 | 1080 | 1078 | 1077 | 1077 | 1077 | 1077 | 1078 |
| 60       | 1281         | 1279 | 1276 | 1274 | 1271 | 1268 | 1265 | 1262 | 1259 | 1257 | 1255 | 1254 | 1253 | 1252 | 1251 | 1250 | 1249 | 1250 | 1251 |
| 65       | 1532         | 1529 | 1526 | 1523 | 1519 | 1516 | 1512 | 1508 | 1504 | 1501 | 1499 | 1498 | 1496 | 1495 | 1494 | 1493 | 1493 | 1494 | 1494 |
| 70       | 1909         | 1905 | 1901 | 1897 | 1893 | 1888 | 1883 | 1878 | 1873 | 1868 | 1866 | 1864 | 1862 | 1861 | 1860 | 1859 | 1859 | 1860 | 1861 |
| 75       | 2538         | 2534 | 2529 | 2522 | 2516 | 2509 | 2503 | 2496 | 2490 | 2484 | 2480 | 2477 | 2474 | 2473 | 2472 | 2472 | 2473 | 2474 | 2475 |
| 80       | 3801         | 3795 | 3787 | 3776 | 3765 | 3753 | 3743 | 3733 | 3725 | 3718 | 3710 | 3703 | 3699 | 3697 | 3697 | 3699 | 3702 | 3703 | 3704 |
| 85       | 7572         | 7565 | 7551 | 7528 | 7501 | 7476 | 7455 | 7439 | 7429 | 7418 | 7396 | 7375 | 7363 | 7358 | 7360 | 7366 | 7373 | 7376 | 7377 |

Table 2. Average Luminance(cd/sq.m.) for defined C plane,Gamma angle

| range<br>(deg) | Maximum<br>measured | Average Luminance(cd/sq.m)                             |                                     |                                    |                                    |
|----------------|---------------------|--|-------------------------------------|------------------------------------|------------------------------------|
|                |                     | Maximum limit for screen type & software category used |                                     |                                    |                                    |
|                |                     | Type I,II screen<br>Some neg.s'ware                    | Type I,II screen<br>Only pos.s'ware | Type III screen<br>Some neg.s'ware | Type III screen<br>Only pos.s'ware |
| 55 to 90       | 7572                | 1000   | 1500                                | 200                                | 500                                |
| 65 to 90       | 7572                | 1000   | 1500                                | 200                                | 500                                |

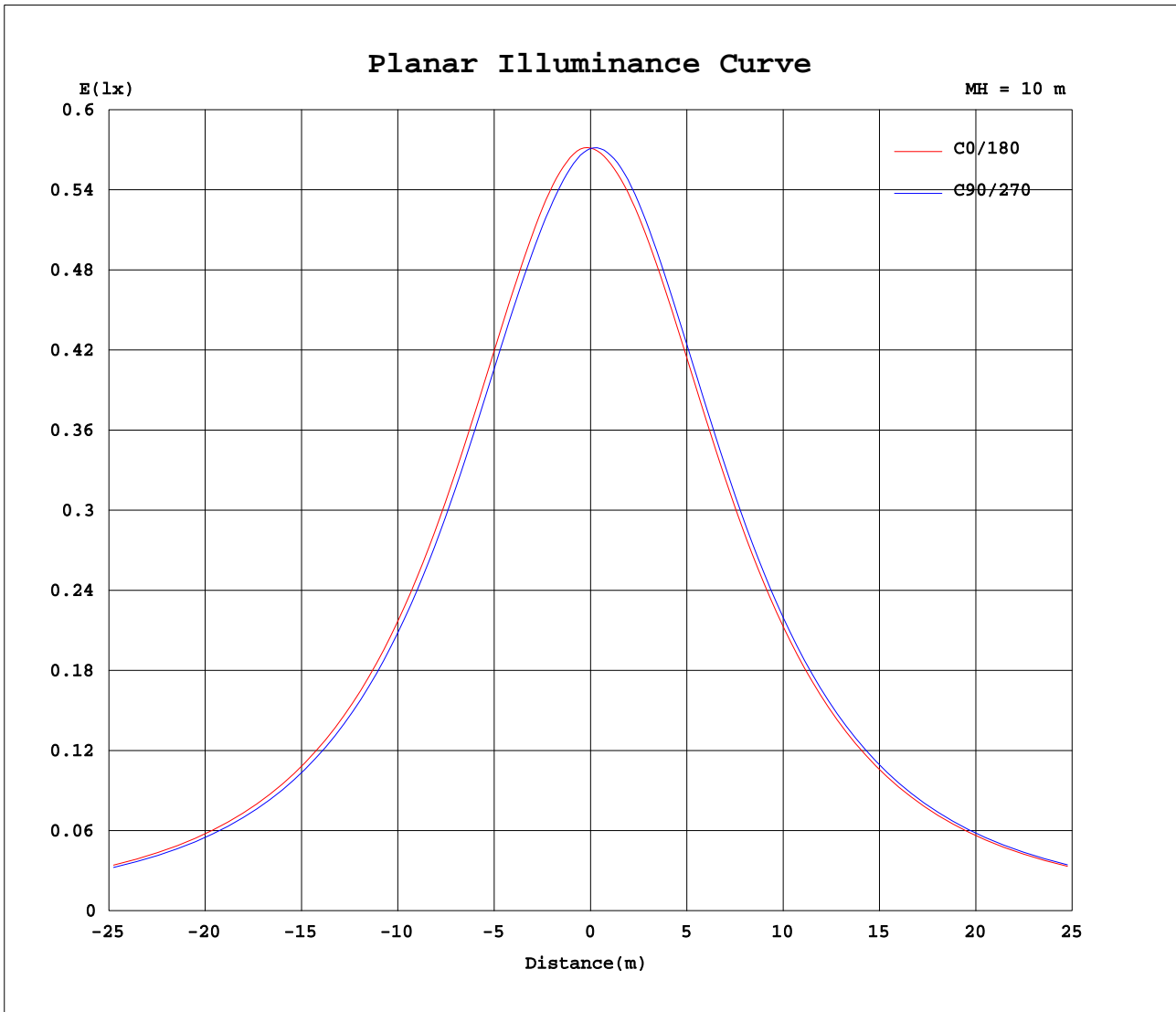
Table 3. Tabulation of average luminance(cd/sq.m.) and luminance limits

No match

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 25.2DEG  
Operators: David  
Test Date: 2012-09-13

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
Humidity: 43.1%  
Test Distance: 2.435m [K=1.0000]  
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

|   |                   |                   |
|---|-------------------|-------------------|
| Test:U:120.0V I:0.1023A P:11.90W PF:0.9691 Lamp Flux:722.045x1 lm |                   |                   |
| NAME:   | TYPE:01-709-D/827 | WEIGHT:           |
| DIM.:   | SPEC.:            | SERIAL No.:       |
| MFR.: Green Creative  | SUR.:             | PROTECTION ANGLE: |

Table--1

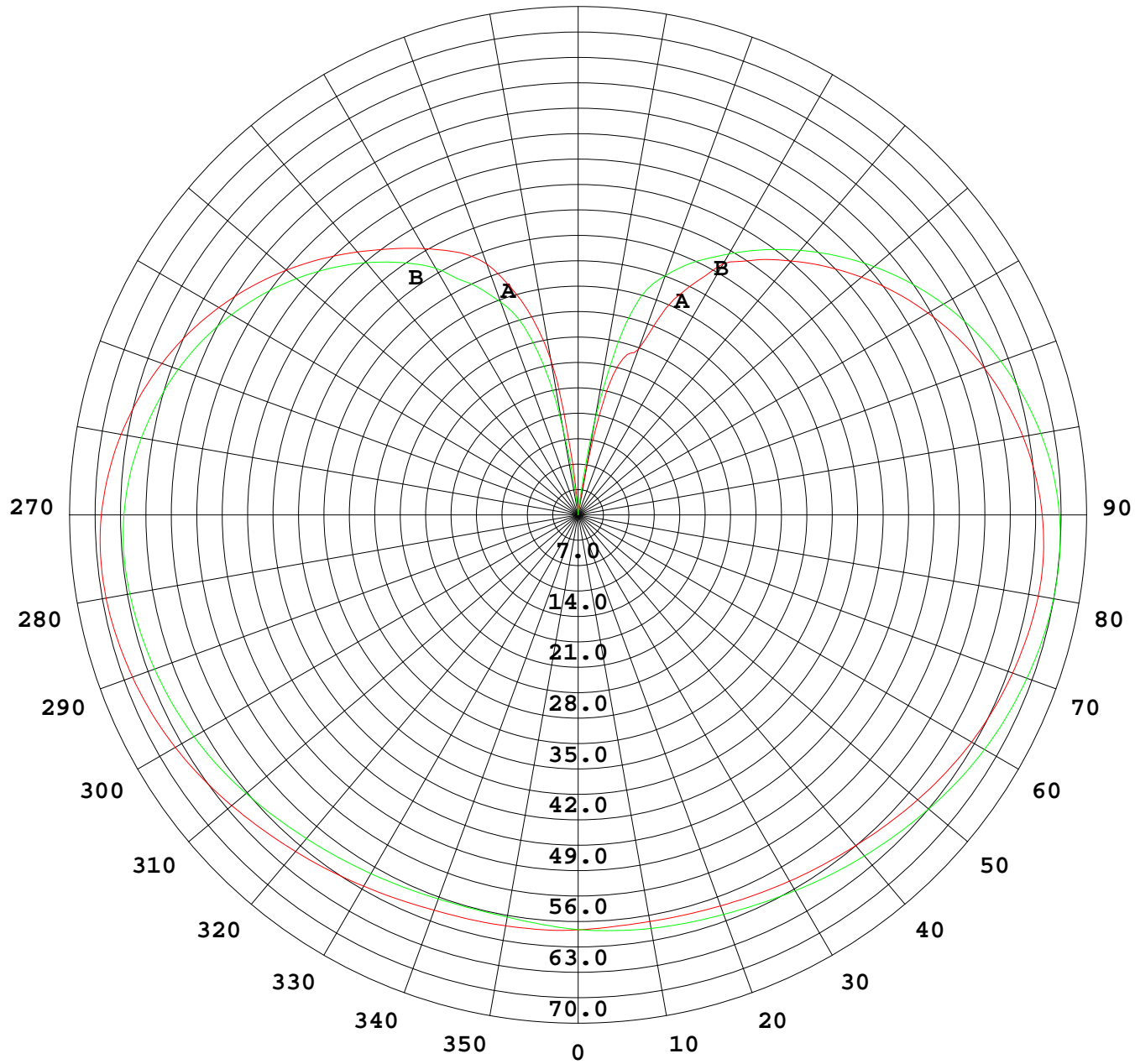
UNIT: cd

| C( DEG)<br>γ (DEG) | 0    | 23   | 45   | 68   | 90   | 113  | 135  | 158  | 180  | 203  | 225  | 248  | 270  | 293  | 315  | 338  |      |  |  |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|--|
| 0                  | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.0 | 57.0 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.0 | 57.0 |      |  |  |
| 5                  | 57.3 | 57.2 | 56.9 | 56.8 | 56.6 | 56.6 | 56.6 | 56.6 | 56.7 | 56.9 | 57.1 | 57.2 | 57.3 | 57.5 | 57.5 | 57.5 | 57.4 |  |  |
| 10                 | 57.5 | 57.2 | 56.8 | 56.5 | 56.2 | 56.2 | 56.3 | 56.5 | 56.9 | 57.2 | 57.5 | 57.7 | 57.8 | 57.8 | 57.7 | 57.6 |      |  |  |
| 15                 | 57.7 | 57.3 | 56.8 | 56.4 | 56.1 | 56.1 | 56.3 | 56.5 | 57.0 | 57.5 | 57.8 | 58.1 | 58.1 | 58.1 | 58.0 | 57.8 |      |  |  |
| 20                 | 57.9 | 57.5 | 57.0 | 56.5 | 56.3 | 56.3 | 56.4 | 56.7 | 57.3 | 57.8 | 58.2 | 58.5 | 58.5 | 58.5 | 58.3 | 58.2 |      |  |  |
| 25                 | 58.4 | 57.9 | 57.4 | 56.8 | 56.6 | 56.6 | 56.7 | 57.1 | 57.7 | 58.1 | 58.7 | 59.0 | 59.1 | 59.1 | 58.9 | 58.7 |      |  |  |
| 30                 | 59.0 | 58.4 | 57.9 | 57.2 | 57.0 | 57.1 | 57.1 | 57.6 | 58.2 | 58.7 | 59.3 | 59.6 | 59.8 | 59.8 | 59.5 | 59.4 |      |  |  |
| 35                 | 59.8 | 59.1 | 58.4 | 57.8 | 57.6 | 57.6 | 57.7 | 58.1 | 58.8 | 59.3 | 60.0 | 60.3 | 60.5 | 60.6 | 60.3 | 60.2 |      |  |  |
| 40                 | 60.5 | 59.8 | 59.1 | 58.5 | 58.2 | 58.1 | 58.3 | 58.8 | 59.4 | 60.0 | 60.7 | 61.1 | 61.3 | 61.4 | 61.2 | 61.0 |      |  |  |
| 45                 | 61.3 | 60.6 | 59.8 | 59.2 | 58.9 | 58.8 | 59.1 | 59.5 | 60.2 | 60.8 | 61.4 | 61.9 | 62.1 | 62.2 | 62.0 | 61.8 |      |  |  |
| 50                 | 62.3 | 61.5 | 60.6 | 60.0 | 59.7 | 59.6 | 59.8 | 60.3 | 61.0 | 61.6 | 62.3 | 62.7 | 63.0 | 63.1 | 62.9 | 62.7 |      |  |  |
| 55                 | 63.2 | 62.3 | 61.5 | 60.8 | 60.4 | 60.4 | 60.5 | 61.1 | 61.8 | 62.4 | 63.2 | 63.6 | 63.8 | 64.0 | 63.8 | 63.7 |      |  |  |
| 60                 | 64.0 | 63.0 | 62.3 | 61.5 | 61.1 | 61.1 | 61.1 | 61.8 | 62.5 | 63.1 | 64.0 | 64.3 | 64.6 | 64.8 | 64.6 | 64.5 |      |  |  |
| 65                 | 64.7 | 63.7 | 63.0 | 62.0 | 61.6 | 61.6 | 61.7 | 62.4 | 63.2 | 63.8 | 64.6 | 64.9 | 65.2 | 65.5 | 65.3 | 65.2 |      |  |  |
| 70                 | 65.3 | 64.2 | 63.5 | 62.5 | 62.1 | 62.1 | 62.2 | 62.9 | 63.7 | 64.3 | 65.1 | 65.4 | 65.7 | 66.1 | 65.9 | 65.8 |      |  |  |
| 75                 | 65.7 | 64.6 | 63.7 | 62.9 | 62.4 | 62.3 | 62.6 | 63.3 | 64.1 | 64.7 | 65.4 | 65.9 | 66.2 | 66.4 | 66.3 | 66.2 |      |  |  |
| 80                 | 66.0 | 64.9 | 63.9 | 63.2 | 62.7 | 62.4 | 62.9 | 63.5 | 64.3 | 65.1 | 65.5 | 66.2 | 66.5 | 66.6 | 66.6 | 66.5 |      |  |  |
| 85                 | 66.0 | 65.0 | 63.8 | 63.3 | 62.8 | 62.3 | 62.9 | 63.4 | 64.3 | 65.1 | 65.3 | 66.2 | 66.5 | 66.4 | 66.7 | 66.5 |      |  |  |
| 90                 | 65.6 | 64.8 | 63.4 | 63.1 | 62.5 | 61.7 | 62.7 | 63.0 | 63.9 | 64.8 | 64.8 | 65.9 | 66.3 | 66.0 | 66.4 | 66.2 |      |  |  |
| 95                 | 64.9 | 64.4 | 62.6 | 62.5 | 62.0 | 60.9 | 62.2 | 62.3 | 63.2 | 64.2 | 63.9 | 65.3 | 65.7 | 65.1 | 65.8 | 65.4 |      |  |  |
| 100                | 63.9 | 63.6 | 61.5 | 61.6 | 61.1 | 59.8 | 61.4 | 61.2 | 62.2 | 63.3 | 62.7 | 64.4 | 64.7 | 64.0 | 65.0 | 64.4 |      |  |  |
| 105                | 62.6 | 62.5 | 60.2 | 60.5 | 59.9 | 58.5 | 60.3 | 60.0 | 60.9 | 62.2 | 61.3 | 63.1 | 63.4 | 62.6 | 63.9 | 63.1 |      |  |  |
| 110                | 61.0 | 61.2 | 58.7 | 59.1 | 58.6 | 57.0 | 59.0 | 58.5 | 59.4 | 60.7 | 59.7 | 61.7 | 61.9 | 61.0 | 62.5 | 61.5 |      |  |  |
| 115                | 59.2 | 59.5 | 57.1 | 57.4 | 57.0 | 55.3 | 57.3 | 56.7 | 57.7 | 59.0 | 57.9 | 60.0 | 60.1 | 59.2 | 60.9 | 59.7 |      |  |  |
| 120                | 57.1 | 57.6 | 55.2 | 55.5 | 55.1 | 53.5 | 55.3 | 54.7 | 55.6 | 57.0 | 55.9 | 57.9 | 58.1 | 57.2 | 58.9 | 57.7 |      |  |  |
| 125                | 54.9 | 55.4 | 53.2 | 53.3 | 53.0 | 51.5 | 53.1 | 52.5 | 53.4 | 54.7 | 53.7 | 55.6 | 55.8 | 55.0 | 56.6 | 55.4 |      |  |  |
| 130                | 52.4 | 52.9 | 51.0 | 50.9 | 50.6 | 49.5 | 50.7 | 50.1 | 50.9 | 52.1 | 51.6 | 53.1 | 53.2 | 52.6 | 54.1 | 52.9 |      |  |  |
| 135                | 49.9 | 50.3 | 48.7 | 48.3 | 48.1 | 47.4 | 48.0 | 47.6 | 48.4 | 49.4 | 49.4 | 50.4 | 50.5 | 50.2 | 51.4 | 50.3 |      |  |  |
| 140                | 47.3 | 47.5 | 46.4 | 45.6 | 45.3 | 44.5 | 45.1 | 44.4 | 45.7 | 46.5 | 47.0 | 47.5 | 47.6 | 47.7 | 48.5 | 47.7 |      |  |  |
| 145                | 44.7 | 44.5 | 44.0 | 42.9 | 42.4 | 41.4 | 40.0 | 40.4 | 42.9 | 43.5 | 44.6 | 44.3 | 44.6 | 45.3 | 45.4 | 44.9 |      |  |  |
| 150                | 42.3 | 41.3 | 41.6 | 40.5 | 39.2 | 37.8 | 32.4 | 28.4 | 39.9 | 40.3 | 42.0 | 41.3 | 41.5 | 42.9 | 42.1 | 42.1 |      |  |  |
| 155                | 40.0 | 38.1 | 39.2 | 38.1 | 35.2 | 33.1 | 27.4 | 31.2 | 33.7 | 34.7 | 39.2 | 39.1 | 38.5 | 40.3 | 39.2 | 39.3 |      |  |  |
| 160                | 36.7 | 35.0 | 35.6 | 33.6 | 31.2 | 28.4 | 27.4 | 31.0 | 24.3 | 29.3 | 31.3 | 34.9 | 35.1 | 36.3 | 36.3 | 35.9 |      |  |  |
| 165                | 30.7 | 30.8 | 28.9 | 26.8 | 25.2 | 21.2 | 20.4 | 23.7 | 21.3 | 21.1 | 24.3 | 27.6 | 29.4 | 29.1 | 30.1 | 31.3 |      |  |  |
| 170                | 21.7 | 20.2 | 18.9 | 16.5 | 12.1 | 3.96 | 5.78 | 6.75 | 6.43 | 6.37 | 7.66 | 11.9 | 13.1 | 14.5 | 15.9 | 17.2 |      |  |  |
| 175                | 3.69 | 2.84 | 2.56 | 0.73 | 0.72 | 0.70 | 0.05 | 0.05 | 0.44 | 0.47 | 0.31 | 0.04 | 0.58 | 0.67 | 1.28 | 2.15 |      |  |  |
| 180                | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |      |  |  |

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:David  
 Test Date:2012-09-13

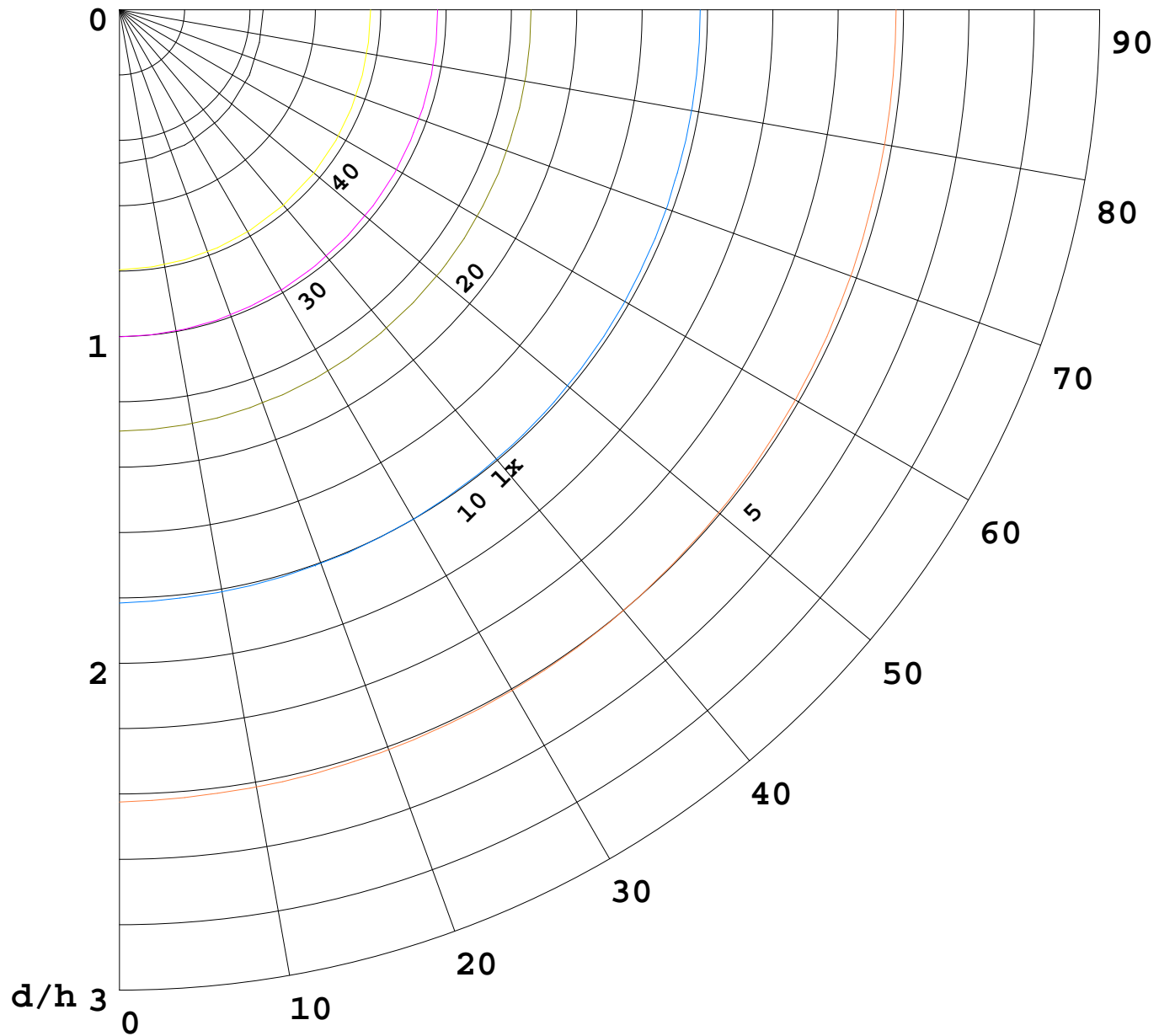
γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.265  
 Humidity:43.1%  
 Test Distance:2.435m [K=1.0000]  
 Remarks:

I(cd)



1000 lm

$K = 1$



**F** = 5000 lm  
**K** = 0.7  
**Hcc** = 0.0 m  
**Hfc** = 0.0 m  
**Eave** = 100 lx

|       | <b>Pcc</b> | <b>Pw</b> | <b>Pfc</b> |
|-------|------------|-----------|------------|
| ————— | 70         | 50        | 30         |
| ————— | 50         | 30        | 20         |

