

**IESNA LM-79-08  
(NOT INCLUDE SPATIAL NON-UNIFORMITY  
OF CHROMATICITY)  
ELECTRICAL AND PHOTOMETRIC MEASUREMENTS OF  
SOLID-STATE LIGHTING PRODUCTS  
MEASUREMENT AND TEST REPORT**

For  
**ELEC-TECH INTERNATIONAL CO., LTD**

NO.1 Jinfeng Road, Tangjiawan Town, Zhuhai City, Guangdong Province, P.R of China.

**Model: 529933**

<b>Report Type:</b> Original Report	<b>Product Type:</b> LED Bulb
<b>Test Engineer:</b> Jack Zhou	<i>Jack Zhou</i>
<b>Report Number:</b>	R2DG120412057-10-M1
<b>Test Date:</b>	2011-12-14
<b>Report Date:</b>	2013-08-26
<b>Reviewed By:</b> Jeanne Han/Safety Manager	<i>Jeanne Han</i>
<b>Revised Note:</b>	This version report "No. R2DG120412057-10-M1" at 2013-08-26 replaced the previous report "No. R2DG120412057-10" at 2012-04-24
<b>Prepared By:</b>	Bay Area Compliance Laboratories Corp. (Shenzhen). 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China. Tel: +86-755-33320018 Fax: +86-755-33320008

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Shenzhen). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

**TABLE OF CONTENTS**

**1 - GENERAL INFORMATION.....3**  
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....3  
1.2 OBJECTIVE .....3  
1.3 TEST FACILITY .....3

**2 - SUMMARY OF TEST RESULT .....4**

**3 - TEST METHOD .....5**

**ATTACHMENT A – SPECTRAL FLUX .....6**

**ATTACHMENT B – LIGHT INTENSITY TEST DATA .....8**

**ATTACHMENT C – EUT PHOTO.....20**  
C1.EUT PHOTO .....20  
C2.EUT PHOTO .....20

FINAL

## 1 - GENERAL INFORMATION

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

EUT	Rating	Brand	Manufacturer	Model
LED Bulb	AC120V 60Hz 5W 3000K	ETI	ELEC-TECH INTERNATIONAL CO., LTD	529933

### 1.2 Objective

The following test report is prepared on behalf of *ELEC-TECH INTERNATIONAL CO., LTD* in accordance with the following American National Standards or Illumination Engineering Society of North America Test Guides:

- ANSI C78.377-2008 Specification for the Chromaticity of Solid State Lighting Products
- IESNA LM-79-2008: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products
- ANSI C82.77-2002: Harmonic Emission Limits – Related Power Quality Requirements for Lighting
- ANSI/UL 153-2005: Portable Electric Luminaires
- UL 1598-2004: Luminaires
- ASTM E 283-2004: Restricted air movement
- IESNA LM-16: Correlated Color Temperature
- IESNA LM-58-94: Color Rendering Index and Correlated Color Temperature
- CIE Publication No.13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources

### 1.3 Test Facility

The test facility used by Bay Area Compliance Laboratories Corp. (Shenzhen). is located at 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade ZoneShenzhen, Guangdong, China.

Bay Area Compliance Laboratories Corp. (Shenzhen). is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The NVLAP Lab Code is 200707-0.

## 2 - SUMMARY OF TEST RESULT

<b>SPECTRORADIOMETRIC TESTING IN INTEGRATING SPHERE</b>	
<b>PHOTOMETRIC</b>	-
Total Integrated Flux (Lumens)	296.591
<b>SPECTRORADIOMETRIC</b>	-
<b>Observer</b>	-
Chromaticity Ordinate x	0.4257
Chromaticity Ordinate y	0.3927
<b>Observer</b>	-
Chromaticity Ordinate u	0.2482
Chromaticity Ordinate v	0.3434
<b>Correlated Color Temp CCT (K)</b>	3105
<b>Color Rendering Index (CRI)</b>	85.1
<b>Total Radiant Flux (W)</b>	0.903
<b>ELECTRICAL</b>	-
Input Voltage (Volts AC)	120.02
Input Current (A AC)	0.04
Input Power (Watts)	4.63
Power Factor	0.957
<b>EFFICACY</b>	-
Lumens/Watt	64.059

<b>LUMINOUS INTENSITY DISTRIBUTION</b>	
Center beam candlepower(if applicable)(cd)	81.35
Beam angle(if applicable)( ° )	121.2
Zonal lumens in the 0° -60° zone(%)	63.8%
Zonal lumens in the 60° -90° zone(%)	27.0%
Zonal lumens in the 90° -120° zone(%)	7.8%
Zonal lumens in the 120° -180° zone(%)	1.4%

*Note: The test data was only good for the test sample. It may have deviation for other test sample.*

### 3 - Test Method

---

Test methods according to IESNA LM-79-08 following chapter:

#### 4.0 SEASONING OF SSL PRODUCT

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning.

#### 5.0 STABILIZATION OF SSL PRODUCT

Before measurements are taken. The SSL product under test shall be operated long enough to reach stabilization and temperature equilibrium. The time required for stabilization depends on the type of SSL products under test. The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaries. The SSL product during stabilization shall be operated in the ambient temperature as specified in section 2.2 and in the operating orientation as specified in 6. It can be judged that stability is reached when the variation (maximum –minimum) of at least 3 reading of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5%. The stabilization time used for each SSL product shall be reported.

#### 9.0 TEST METHODS FOR TLTL LUMINOUS FLUX MEASUREMENT

#### 10.0 LUMINOUS INTENSITY DISTRIBUTION

#### 11.0 LUMINOUS EFFICACY

#### 12.0 TEST METHODS FOR COLOR CHARACTERISTICS OF SSL PRODUCTS

#### 13.0 UNCERTAINTY STATEMENT

The uncertainty of the light output measurements is  $U=1.50\%$  ( $K=2$ ), the uncertainty of the correlated color temperature measurements is  $U=14K$  ( $K=2$ ), at the 95% confidence level. This calibration results traceable to the NATIONAL INSTITUTE OF METROLOGY (NIM).

Remark:

1. 0 hour season, Pre-heating the lamp for 45 minutes at least;
2. Ambient:65%RH, 25°C;

---

**Attachment A – Spectral Flux**

---

### Report of Spectroradiometric & Electric Analysis for Light Source

Product: 529933

Manufacturer: Elec-Tech International Co.,Ltd

Sample No.: 1#

Date: 12-14-2011

Tested By: Blake

Reviewed By: Jack

#### Test Condition

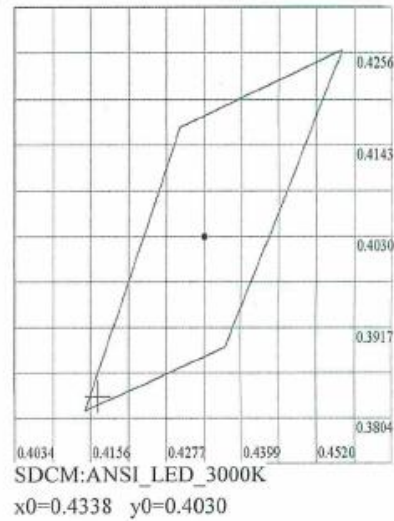
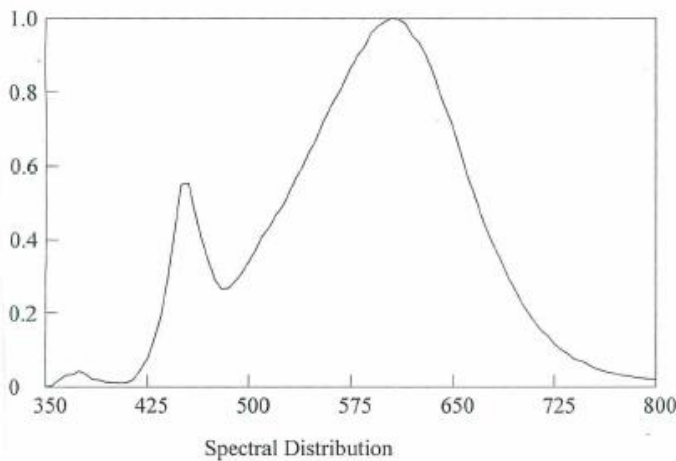
Temperature: 25.0°C

RH: 65.0%

Spectrum Range: 350-800 nm

Scan Step: 5 nm

#### Spectroradiometric Parameters



Chromaticity Coordinates:  $x=0.4257$   $y=0.3927$   $u'=0.2482$   $v'=0.5151$

Correlated Color Temperature: 3105 K

Dominant Wavelength: 582.0 nm(E)

Luminous Flux: 296.591 lm

Purity: 0.4585

Chromaticity Difference: -0.0030Duv

Peak Wavelength: 606.3 nm

Color Ratio:  $K_r=43.7\%$   $K_g=48.7\%$   $K_b=7.5\%$

Color Tolerance: 0.0 SDCM

Bandwidth: 141.8nm

Radiant Flux: 0.903 W

Rendering Index:  $R_a=85.1$

R1=84 R2=93 R3=96 R4=82 R5=84 R6=90 R7=85 R8=67

R9=27 R10=82 R11=79 R12=75 R13=86 R14=98 R15=80

#### Electric Parameters

Voltage: 120.02 V

Current: 0.04 A

Power Factor: 0.957

Power: 4.63 W

Luminous Efficacy: 64.059 lm/W

---

**Attachment B – Light Intensity Test Data**

---

FINAL

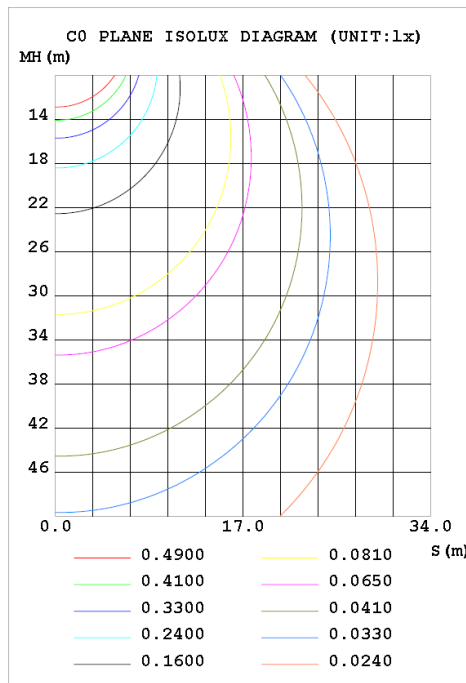
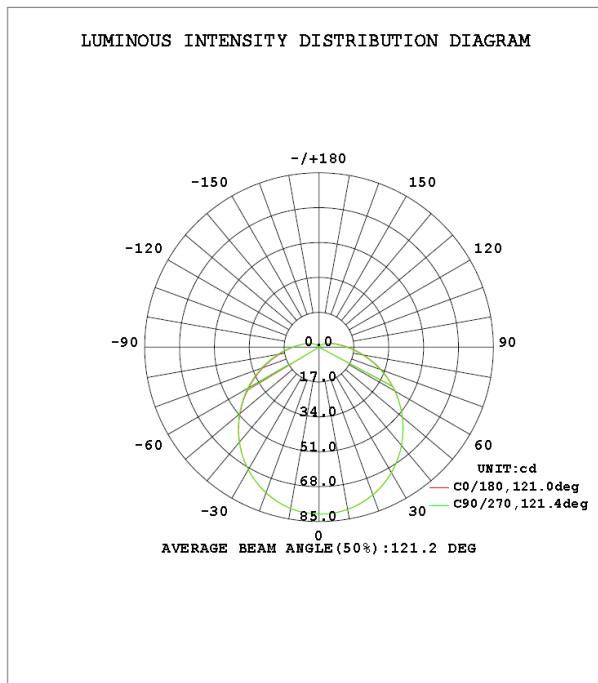


EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: Elec-Tech International Co.,Ltd	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Elec-Tech International Co.,Ltd	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 64.06 lm/W			
MODEL	529933	Imax(cd)	81.35	S/MH(C0/180)	1.29
NOMINAL POWER(W)	5	LOR(%)	100.0	S/MH(C90/270)	1.29
RATED VOLTAGE(V)	120	TOTAL FLUX(lm)	297.41	$\eta$ UP, DN(C0-180)	4.6, 46.1
NOMINAL FLUX(lm)	297.413	CIE CLASS	DIRECT	$\eta$ UP, DN(C180-360)	4.6, 44.7
LAMPS INSIDE	1	$\eta$ up(%)	9.2	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	120.0	$\eta$ down(%)	90.8	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.1DEG  
 Operators: Jack  
 Test Date: 2011-12-14

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity: 65.0%  
 Test Distance: 2.464m [K=1.0000]  
 Remarks:

## EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

Page 2 Of 11

## ZONAL FLUX DIAGRAM

## ZONAL FLUX DIAGRAM:

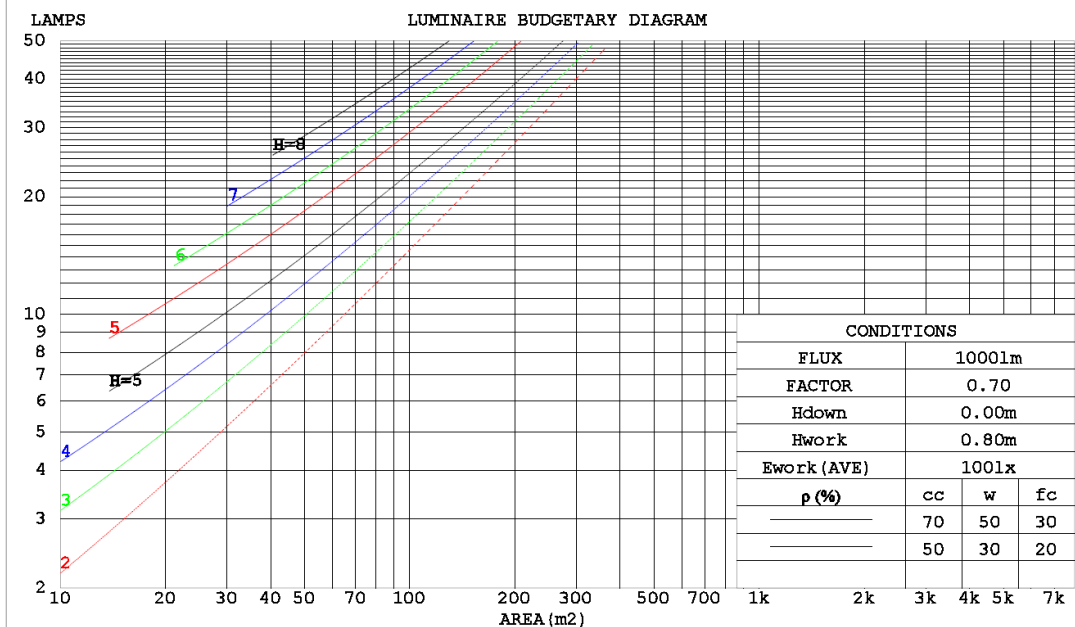
$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\phi$ zone	$\phi$ total	%lum, lamp
10	80.26	80.35	80.31	79.99	79.84	79.82	79.79	80.08	0- 10	7.704	7.704	2.59,2.59
20	76.55	76.67	76.69	75.89	75.61	75.54	75.43	76.21	10- 20	22.13	29.83	10,10
30	70.57	70.65	70.67	69.61	68.98	68.80	68.99	69.93	20- 30	33.75	63.58	21.4,21.4
40	62.52	62.42	62.53	61.00	60.33	59.93	60.58	61.31	30- 40	41.17	104.7	35.2,35.2
50	53.04	52.58	52.96	50.72	50.28	49.61	50.72	51.17	40- 50	43.59	148.3	49.9,49.9
60	42.84	42.20	42.54	39.94	39.57	38.96	40.34	40.69	50- 60	41.29	189.6	63.8,63.8
70	32.26	31.75	31.68	29.42	28.95	28.84	30.06	30.43	60- 70	35.27	224.9	75.6,75.6
80	22.04	21.78	21.26	19.98	19.53	19.87	20.61	20.98	70- 80	26.87	251.8	84.7,84.7
90	14.10	13.89	13.33	12.82	12.67	13.00	13.27	13.53	80- 90	18.32	270.1	90.8,90.8
100	8.958	8.713	8.285	8.124	8.186	8.342	8.421	8.571	90-100	11.68	281.8	94.7,94.7
110	5.644	5.441	5.216	5.151	5.251	5.315	5.371	5.432	100-110	7.189	289.0	97.2,97.2
120	3.440	3.370	3.279	3.207	3.254	3.333	3.402	3.379	110-120	4.252	293.2	98.6,98.6
130	2.015	2.008	1.975	1.904	1.940	2.028	2.076	2.009	120-130	2.361	295.6	99.4,99.4
140	1.086	1.084	1.071	1.053	1.073	1.135	1.160	1.116	130-140	1.184	296.7	99.8,99.8
150	0.4851	0.4577	0.4613	0.4874	0.4958	0.5091	0.5310	0.5205	140-150	0.4949	297.2	99.9,99.9
160	0.1181	0.1245	0.1373	0.1555	0.1566	0.1554	0.1499	0.1337	150-160	0.1396	297.4	100,100
170	0.0353	0.0538	0.0693	0.0830	0.0851	0.0742	0.0609	0.0221	160-170	0.0279	297.4	100,100
180	0	0	0	0	0	0	0	0	170-180	0.0031	297.4	100,100
DEG	LUMINOUS INTENSITY: cd									UNIT: lm		

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.1DEG  
Operators:Jack  
Test Date:2011-12-14

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
Humidity:65.0%  
Test Distance:2.464m [K=1.0000]  
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: Elec-Tech International Co.,Ltd				TYPE:				WEIGHT:								
DIM.:				SPEC.:				SERIAL No.:								
MFR.: Elec-Tech International Co.,Ltd				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
pf	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	1.17	1.17	1.17	1.13	1.13	1.13	1.06	1.06	1.06	.00	.00	.00	.94	.94	.94	.91
1.0	.99	.94	.89	.95	.91	.87	.89	.86	.82	.84	.81	.78	.79	.76	.74	.71
2.0	.85	.77	.71	.82	.75	.69	.77	.71	.66	.72	.68	.63	.68	.64	.61	.58
3.0	.74	.65	.58	.72	.64	.57	.67	.60	.55	.63	.57	.53	.59	.55	.51	.48
4.0	.65	.56	.49	.63	.55	.48	.59	.52	.46	.56	.50	.45	.53	.47	.43	.40
5.0	.58	.49	.42	.56	.48	.41	.53	.45	.40	.50	.44	.38	.47	.42	.37	.35
6.0	.52	.43	.36	.51	.42	.36	.48	.40	.34	.45	.39	.33	.43	.37	.32	.30
7.0	.47	.38	.32	.46	.37	.31	.43	.36	.30	.41	.34	.30	.39	.33	.29	.26
8.0	.43	.34	.28	.42	.33	.28	.40	.32	.27	.38	.31	.26	.36	.30	.26	.24
9.0	.39	.31	.25	.38	.30	.25	.36	.29	.24	.35	.28	.24	.33	.27	.23	.21
10.0	.36	.28	.23	.35	.28	.22	.34	.27	.22	.32	.26	.21	.31	.25	.21	.19



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.1DEG  
 Operators:Jack  
 Test Date:2011-12-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity:65.0%  
 Test Distance:2.464m [K=1.0000]  
 Remarks:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

WEC AND CCEC

NAME: Elec-Tech International Co.,Ltd	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Elec-Tech International Co.,Ltd	SUR.:	PROTECTION ANGLE:

ρ <sub>cc</sub>	80%			70%			50%			30%			10%			0
ρ <sub>w</sub>	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.367	.209	.066	.357	.203	.065	.338	.194	.062	.321	.185	.059	.305	.177	.057	
2.0	.324	.177	.054	.315	.173	.053	.298	.166	.051	.282	.158	.050	.268	.152	.048	
3.0	.290	.154	.046	.282	.151	.045	.267	.145	.044	.253	.139	.043	.240	.133	.041	
4.0	.263	.137	.040	.256	.134	.040	.242	.128	.038	.230	.123	.037	.218	.118	.036	
5.0	.240	.122	.035	.234	.120	.035	.221	.115	.034	.210	.111	.033	.199	.106	.032	
6.0	.221	.111	.032	.215	.108	.031	.204	.104	.030	.193	.100	.030	.184	.097	.029	
7.0	.204	.101	.029	.199	.099	.028	.189	.095	.027	.179	.092	.027	.170	.089	.026	
8.0	.190	.093	.026	.185	.091	.026	.176	.088	.025	.167	.085	.024	.159	.082	.024	
9.0	.177	.086	.024	.173	.084	.024	.164	.081	.023	.156	.078	.022	.149	.076	.022	
10.0	.166	.079	.022	.162	.078	.022	.154	.075	.021	.147	.073	.021	.140	.070	.020	

ρ <sub>cc</sub>	80%			70%			50%			30%			10%			0
ρ <sub>w</sub>	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.260	.260	.260	.223	.223	.223	.152	.152	.152	.087	.087	.087	.028	.028	.028	
1.0	.255	.226	.200	.218	.194	.173	.149	.134	.119	.086	.077	.069	.027	.025	.022	
2.0	.248	.203	.165	.212	.175	.143	.145	.121	.100	.084	.070	.058	.027	.023	.019	
3.0	.240	.186	.143	.206	.160	.124	.141	.111	.087	.082	.065	.051	.026	.021	.017	
4.0	.232	.173	.128	.199	.150	.111	.137	.104	.078	.079	.061	.046	.025	.020	.015	
5.0	.224	.163	.118	.193	.141	.102	.133	.099	.072	.077	.058	.043	.025	.019	.014	
6.0	.217	.155	.110	.186	.134	.096	.129	.094	.068	.075	.055	.040	.024	.018	.013	
7.0	.210	.148	.105	.180	.128	.091	.125	.090	.065	.072	.053	.039	.023	.017	.013	
8.0	.203	.142	.101	.175	.124	.088	.121	.087	.062	.070	.051	.037	.023	.017	.012	
9.0	.197	.138	.098	.170	.119	.085	.117	.084	.060	.068	.050	.036	.022	.016	.012	
10.0	.191	.133	.095	.165	.116	.083	.114	.081	.059	.067	.048	.035	.022	.016	.012	

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.1DEG  
 Operators:Jack  
 Test Date:2011-12-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity:65.0%  
 Test Distance:2.464m [K=1.0000]  
 Remarks:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

Uncorrected UGR Table

NAME: Elec-Tech International Co.,Ltd					TYPE:					WEIGHT:				
DIM.:					SPEC.:					SERIAL No.:				
MFR.: Elec-Tech International Co.,Ltd					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	11.7	13.2	12.1	13.6	14.0	11.8	13.2	12.2	13.6	14.0				
3H	13.8	15.2	14.2	15.6	16.0	13.8	15.1	14.2	15.5	16.0				
4H	14.8	16.1	15.3	16.5	17.0	14.8	16.1	15.2	16.5	17.0				
6H	15.9	17.1	16.4	17.6	18.0	15.8	17.0	16.3	17.5	18.0				
8H	16.5	17.7	17.0	18.1	18.6	16.4	17.5	16.8	18.0	18.5				
12H	17.1	18.3	17.6	18.7	19.2	17.0	18.1	17.5	18.6	19.1				
4H 2H	12.5	13.7	12.9	14.2	14.6	12.5	13.8	12.9	14.2	14.6				
3H	14.7	15.8	15.2	16.3	16.8	14.7	15.8	15.2	16.3	16.8				
4H	15.9	17.0	16.4	17.4	18.0	15.9	16.9	16.4	17.4	18.0				
6H	17.2	18.1	17.7	18.6	19.2	17.1	18.0	17.6	18.6	19.1				
8H	17.8	18.7	18.4	19.2	19.8	17.8	18.6	18.3	19.2	19.7				
12H	18.6	19.4	19.2	20.0	20.6	18.5	19.3	19.0	19.8	20.4				
8H 4H	16.4	17.3	16.9	17.8	18.4	16.4	17.2	16.9	17.8	18.3				
6H	17.9	18.6	18.5	19.2	19.8	17.8	18.6	18.4	19.1	19.8				
8H	18.7	19.4	19.3	20.0	20.6	18.7	19.3	19.3	19.9	20.6				
12H	19.7	20.3	20.3	20.9	21.6	19.6	20.2	20.2	20.8	21.5				
12H 4H	16.5	17.3	17.0	17.8	18.4	16.4	17.3	17.0	17.8	18.4				
6H	18.1	18.7	18.7	19.3	20.0	18.0	18.7	18.6	19.3	19.9				
8H	19.0	19.6	19.6	20.2	20.9	19.0	19.5	19.6	20.1	20.8				
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	+ 0.2 / - 0.3					+ 0.2 / - 0.4								

CIE Pub.117 Corrected 297.4 lm Total Lamp Luminous Flux. (8log(F/F0) = -4.2)

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.1DEG  
 Operators:Jack  
 Test Date:2011-12-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity:65.0%  
 Test Distance:2.464m [K=1.0000]  
 Remarks:

## EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

Page 6 Of 11

## UTILIZATION FACTORS TABLE

NAME: Elec-Tech International Co.,Ltd	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Elec-Tech International Co.,Ltd	SUR.:	PROTECTION ANGLE:

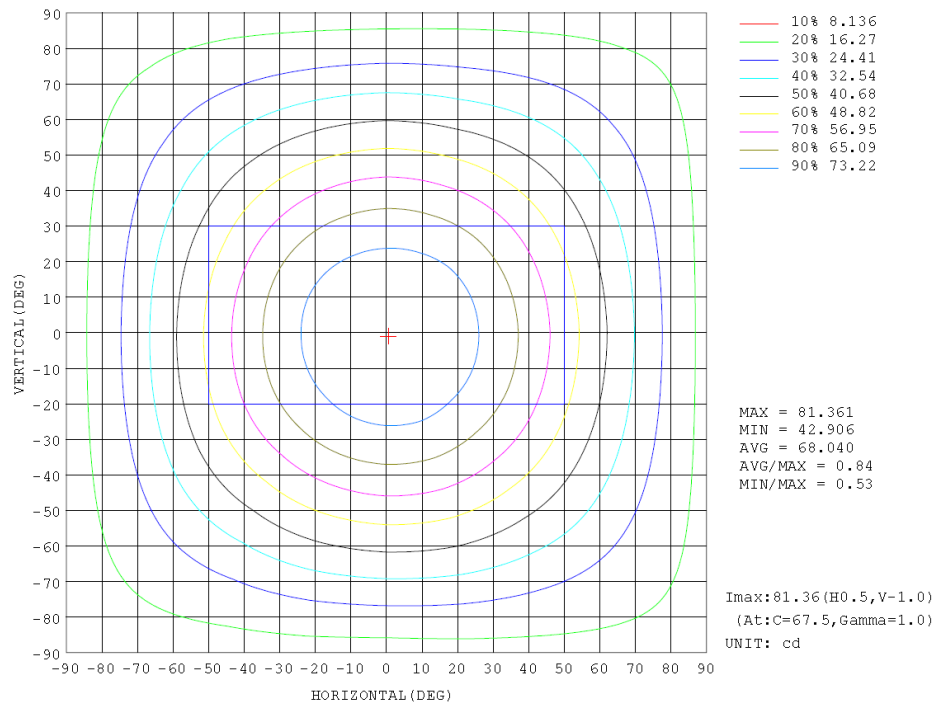
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	52	40	32	51	39	32	49	39	32	25
0.80	61	49	41	60	48	41	58	47	40	33
1.00	69	57	49	68	56	48	65	57	48	40
1.25	76	64	56	74	63	56	71	61	54	46
1.50	81	70	62	79	68	61	75	66	59	50
2.00	88	78	70	86	76	69	81	73	67	57
2.50	92	83	76	90	81	74	85	78	72	61
3.00	96	88	81	93	85	79	88	82	76	65
4.00	101	93	87	97	91	85	92	86	82	70
5.00	103	97	92	100	94	90	94	90	85	73
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004										
Suspended										
SERNOM = 1.25										

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.1DEG  
 Operators: Jack  
 Test Date: 2011-12-14

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity: 65.0%  
 Test Distance: 2.464m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

NAME: Elec-Tech International Co.,Ltd	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Elec-Tech International Co.,Ltd	SUR.:	PROTECTION ANGLE:

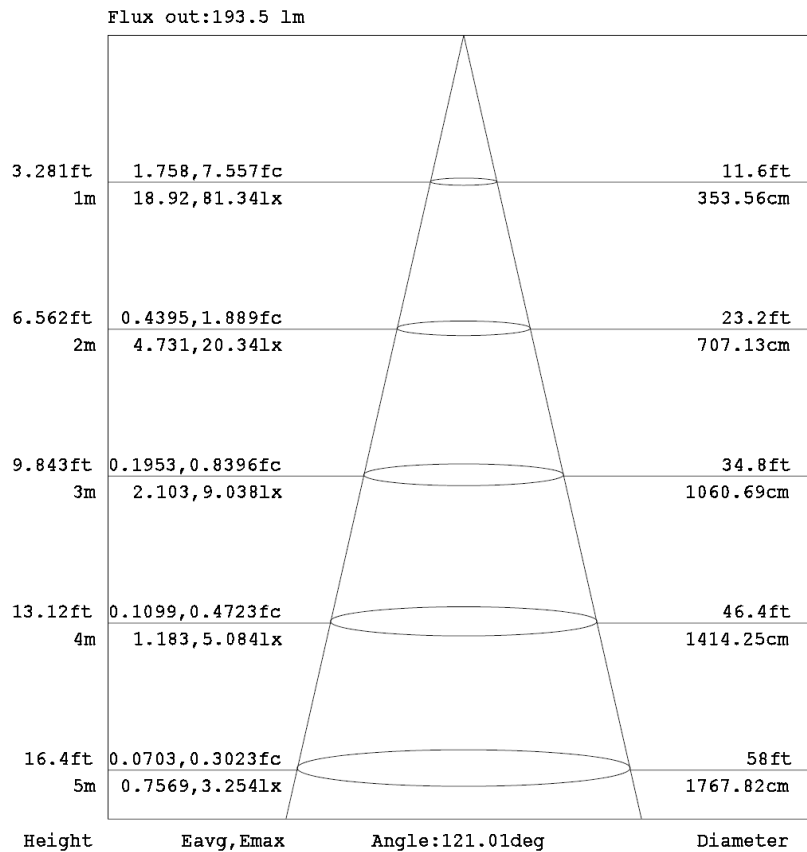


C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.1DEG  
 Operators:Jack  
 Test Date:2011-12-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity:65.0%  
 Test Distance:2.464m [K=1.0000]  
 Remarks:

AAI Figure

NAME: Elec-Tech International Co.,Ltd	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Elec-Tech International Co.,Ltd	SUR.:	PROTECTION ANGLE:



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

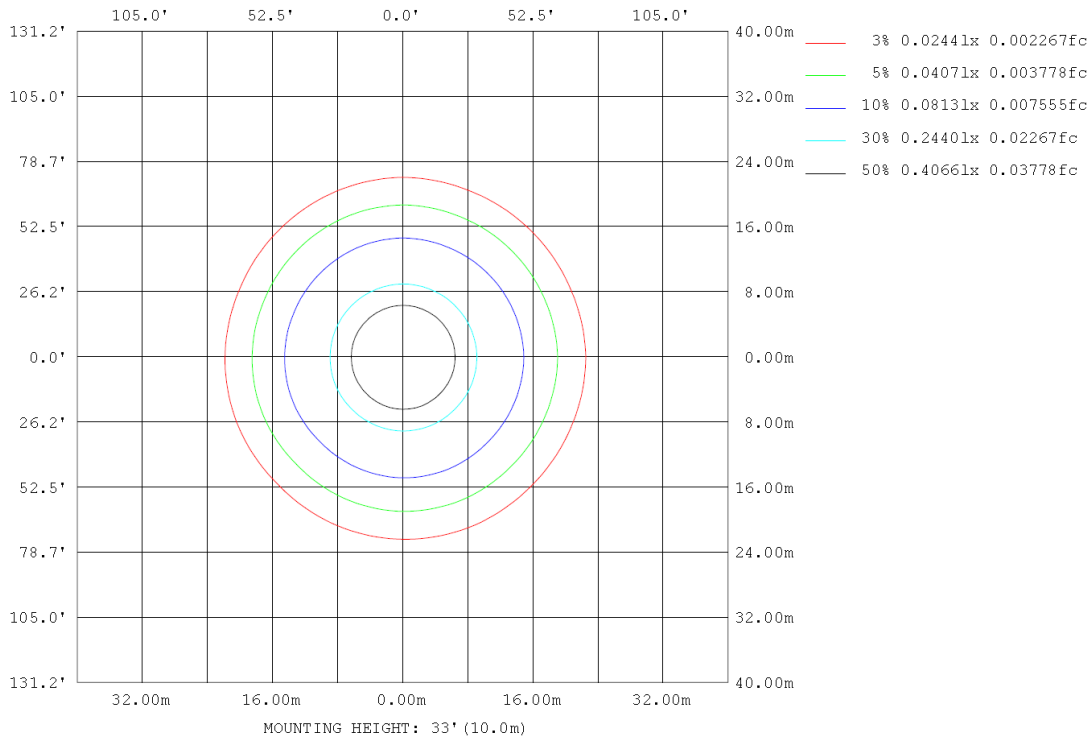
C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.1DEG  
 Operators:Jack  
 Test Date:2011-12-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity:65.0%  
 Test Distance:2.464m [K=1.0000]  
 Remarks:



ISOLUX DIAGRAM

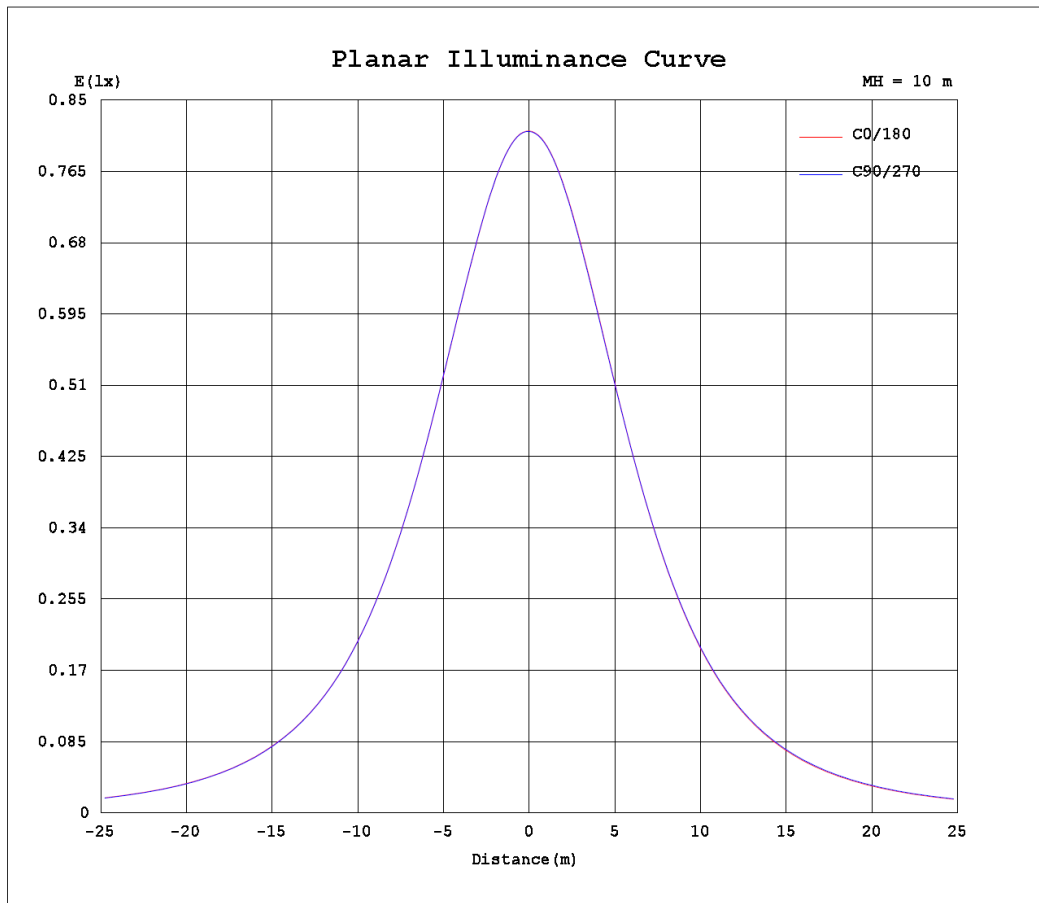
NAME: Elec-Tech International Co.,Ltd	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Elec-Tech International Co.,Ltd	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.1DEG  
 Operators: Jack  
 Test Date: 2011-12-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity: 65.0%  
 Test Distance: 2.464m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.1DEG  
 Operators: Jack  
 Test Date: 2011-12-14

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity: 65.0%  
 Test Distance: 2.464m [K=1.0000]  
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: Elec-Tech International Co.,Ltd	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Elec-Tech International Co.,Ltd	SUR.:	PROTECTION ANGLE:

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338			
0	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3	81.3			
5	81.1	81.2	81.2	81.2	81.2	81.1	81.0	81.0	80.9	80.9	80.9	80.9	80.9	80.9	81.0	81.1			
10	80.3	80.3	80.4	80.4	80.3	80.2	80.0	79.9	79.8	79.8	79.8	79.7	79.8	79.9	80.1	80.2			
15	78.7	78.8	78.8	79.0	78.8	78.6	78.3	78.1	78.0	78.0	78.0	77.8	77.9	78.1	78.4	78.6			
20	76.5	76.6	76.7	76.9	76.7	76.3	75.9	75.7	75.6	75.6	75.5	75.3	75.4	75.7	76.2	76.4			
25	73.8	73.9	73.9	74.2	74.0	73.5	73.0	72.8	72.5	72.6	72.4	72.2	72.5	72.7	73.4	73.6			
30	70.6	70.7	70.7	70.9	70.7	70.1	69.6	69.3	69.0	68.9	68.8	68.7	69.0	69.2	69.9	70.2			
35	66.8	66.9	66.8	67.1	66.8	66.2	65.6	65.3	64.9	64.7	64.6	64.6	65.0	65.2	65.9	66.3			
40	62.5	62.6	62.4	62.8	62.5	61.7	61.0	60.8	60.3	60.0	59.9	60.1	60.6	60.7	61.3	61.9			
45	57.9	57.8	57.6	58.1	57.9	56.9	56.0	55.9	55.4	54.9	54.9	55.2	55.8	55.7	56.3	57.1			
50	53.0	52.8	52.6	53.1	53.0	51.9	50.7	50.8	50.3	49.6	49.6	50.1	50.7	50.6	51.2	52.1			
55	48.0	47.6	47.4	48.0	47.8	46.7	45.3	45.4	45.0	44.2	44.3	44.9	45.5	45.3	45.9	46.8			
60	42.8	42.4	42.2	42.8	42.5	41.4	39.9	40.1	39.6	38.8	39.0	39.6	40.3	40.0	40.7	41.5			
65	37.6	37.1	37.0	37.5	37.1	36.1	34.6	34.7	34.2	33.5	33.8	34.5	35.2	34.9	35.5	36.3			
70	32.3	31.9	31.7	32.1	31.7	30.8	29.4	29.4	28.9	28.4	28.8	29.4	30.1	29.8	30.4	31.0			
75	27.0	26.7	26.6	26.7	26.3	25.7	24.5	24.4	24.0	23.6	24.2	24.6	25.2	25.0	25.5	25.9			
80	22.0	21.9	21.8	21.7	21.3	20.9	20.0	19.8	19.5	19.3	19.9	20.2	20.6	20.6	21.0	21.2			
85	17.7	17.6	17.5	17.4	16.9	16.8	16.1	15.9	15.7	15.5	16.1	16.4	16.6	16.8	16.9	17.1			
90	14.1	13.9	13.9	13.7	13.3	13.4	12.8	12.7	12.7	12.4	13.0	13.1	13.3	13.5	13.5	13.6			
95	11.2	11.0	11.0	10.9	10.5	10.6	10.2	10.2	10.2	9.93	10.4	10.5	10.6	10.8	10.8	10.8			
100	8.96	8.70	8.71	8.62	8.29	8.45	8.12	8.13	8.19	7.94	8.34	8.39	8.42	8.66	8.57	8.61			
105	7.14	6.89	6.89	6.84	6.57	6.70	6.49	6.51	6.58	6.36	6.67	6.71	6.72	6.90	6.82	6.85			
110	5.64	5.45	5.44	5.42	5.22	5.31	5.15	5.20	5.25	5.07	5.32	5.36	5.37	5.49	5.43	5.44			
115	4.42	4.30	4.29	4.28	4.15	4.20	4.08	4.12	4.15	4.04	4.22	4.26	4.29	4.34	4.31	4.30			
120	3.44	3.37	3.37	3.35	3.28	3.31	3.21	3.26	3.25	3.19	3.33	3.36	3.40	3.42	3.38	3.38			
125	2.65	2.62	2.62	2.59	2.57	2.58	2.49	2.54	2.53	2.50	2.62	2.62	2.68	2.67	2.62	2.63			
130	2.02	2.01	2.01	1.97	1.98	1.98	1.90	1.96	1.94	1.93	2.03	2.01	2.08	2.06	2.01	2.02			
135	1.50	1.50	1.50	1.48	1.48	1.49	1.43	1.48	1.46	1.46	1.54	1.52	1.58	1.56	1.52	1.52			
140	1.09	1.09	1.08	1.08	1.07	1.08	1.05	1.08	1.07	1.07	1.13	1.12	1.16	1.14	1.12	1.11			
145	0.76	0.75	0.73	0.76	0.73	0.74	0.75	0.75	0.76	0.77	0.79	0.81	0.81	0.79	0.79	0.76			
150	0.49	0.48	0.46	0.48	0.46	0.47	0.49	0.48	0.50	0.51	0.51	0.54	0.53	0.51	0.52	0.47			
155	0.25	0.26	0.25	0.25	0.26	0.27	0.27	0.29	0.29	0.29	0.31	0.30	0.31	0.30	0.28	0.27			
160	0.12	0.12	0.12	0.13	0.14	0.15	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.14	0.13	0.12			
165	0.07	0.07	0.08	0.09	0.10	0.10	0.11	0.11	0.11	0.11	0.10	0.10	0.09	0.08	0.07	0.06			
170	0.04	0.04	0.05	0.06	0.07	0.07	0.08	0.09	0.09	0.08	0.07	0.07	0.06	0.05	0.02	0.03			
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.03	0.02	0.02	0.01	0.00	0.00			
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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: 25.1DEG  
 Operators: Jack  
 Test Date: 2011-12-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.270  
 Humidity: 65.0%  
 Test Distance: 2.464m [K=1.0000]  
 Remarks:

## Attachment C – EUT PHOTO

### C1.EUT Photo



### C2.EUT Photo



\*\*\*\*\*END OF REPORT\*\*\*\*\*