Lab Code: 200707-0

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: 520163/520165/52016301

Report Type: Original Report	**Product Type:** LED A Lamp
Test Engineer:	Jack Zhou
Report Number:	R2DG120220070-10-M1
Test Date:	2012-02-21 to 2012-02-23
Report Date:	2012-04-26
Reviewed By:	Jeanne Han
Note:	This vision report “No.R2DG120220070-10-M1”replace the previous report “No.R2DG120220070-10” effective date of 2012-04-26
Prepared By:	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

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1 - GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT	Description	Electrical Rate	Brand	Manufacturer	Model
LED A L a mp	520163 is tested model .Difference: Only color of finish and the packaging, The electronic circuit and basic construction are the same	AC120V 60Hz 8.5W 3000K	ETI	ELEC-TECH INTERNATIONAL CO., LTD	520163/520165 /52016301

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
- INSNA 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

SPECTRORADIOMETRIC TESTING IN INTEGRATING SPHERE	
PHOTOMETRIC	-
Total Integrated Flux (Lumens)	596.939
SPECTRORADIOMETRIC	-
Observer	-
Chromaticity Ordinate x	0.4376
Chromaticity Ordinate y	0.4013
Observer	-
Chromaticity Ordinate u	0.2522
Chromaticity Ordinate v	0.3469
Correlated Color Temp CCT (K)	2965
Color Rendering Index (CRI)	80.0
Total Radiant Flux (W)	1.84
ELECTRICAL	-
Input Voltage (Volts AC)	120.05
Input Current (A AC)	0.085
Input Power (Watts)	8.52
Power Factor	0.835
Off State Power(Watts)	0.0
EFFICACY	-
Lumens/Watt	70.063

LUMINOUS INTENSITY DISTRIBUTION	
Center beam candlepower(if applicable)(cd)	138.5
Beam angle(if applicable)(°)	124.7
Zonal lumens in the 0°-60° zone(%)	54.6%
Zonal lumens in the 60°-90° zone(%)	26.1%
Zonal lumens in the 90°-120° zone(%)	11.9%
Zonal lumens in the 120°-180° zone(%)	7.4%

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 fir 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 TLTAL 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℃;

Attachment A – Spectral Flux

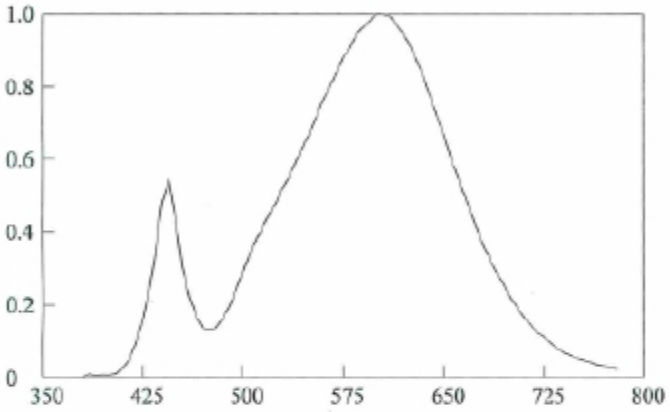
Report of Spectroradiometric & Electric Analysis for Light Source

Product: 520163
Manufacturer: ETI
Sample No.: 1# Date: 2-23-2012
Tested By: Blake Reviewed By: Jack

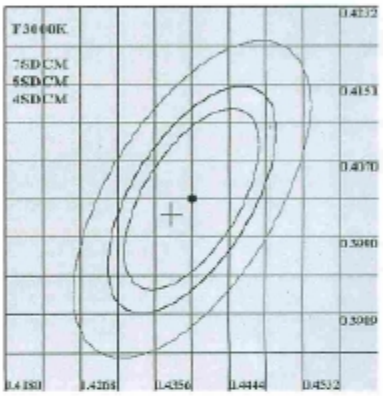
Test Condition

Temperature: 25.0°C RH: 65.0%
Spectrum Range: 380-780 nm Scan Step: 5 nm

Spectroradiometric Parameters



Spectral Distribution



SDCM:F3000K

x0=0.4400 y0=0.4030

Chromaticity Coordinates: x=0.4376 y=0.4013 u=0.2522 v=0.3469

Correlated Color Temperature: 2965 K Dominant Wavelength: 582.0 nm(E)
Luminous Flux: 596.939 lm Purity: 0.5197
Chromaticity Difference: -1.22E-03duv Peak Wavelength: 602.4 nm
Red Color Ratio: 44.4% Green Color Ratio: 49.3%
Blue Color Ratio: 6.3% Color Tolerance: 1.2 SDCM
Rendering Index: Ra=80.0 Radiant Flux: 1.84 W

R1=78 R2=86 R3=94 R4=78 R5=77 R6=81 R7=84 R8=61
R9=10 R10=69 R11=76 R12=65 R13=80 R14=96 R15=73

Electric Parameters

Voltage: 120.05 V Current: 0.085 A
Power Factor: 0.835 Power: 8.52 W

Luminous Efficacy: 70.063 lm/W

Attachment B – Light Intensity Test Data

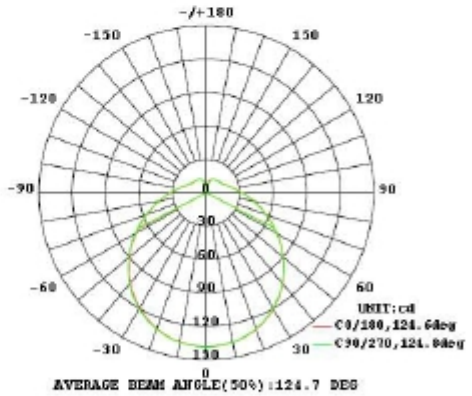
EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT Page 1 Of 11

LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	SUR.:	PROTECTION ANGLE:

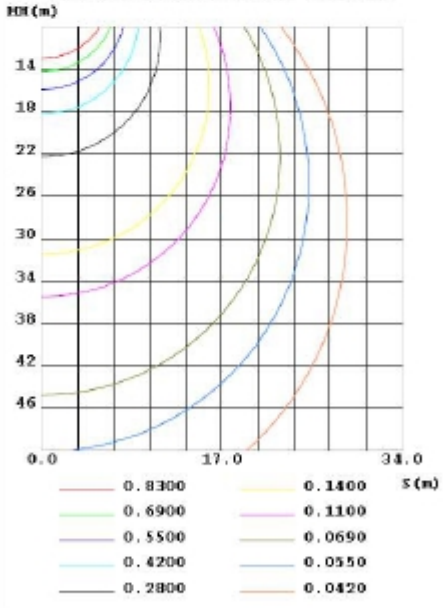
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 70.91 lm/W	
MODEL	520163	Imax(cd)	138.5	S/MH(C0/180)	1.29
NOMINAL POWER(W)	8.5	LOR(%)	100.0	S/MH(C90/270)	1.29
RATED VOLTAGE(V)	120	TOTAL FLUX(lm)	602.73	η UP,DN(C0-180)	9.6,40.3
NOMINAL FLUX(lm)	602.728	CIE CLASS	SEMI-D.	η UP,DN(C180-360)	9.7,40.4
LAMPS INSIDE	1	η up(%)	19.3	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	120.1	η down(%)	80.7	CIBSE SHR MAX	1.50

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):124.7 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT Page 2 Of 11

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	φ zone	φ total	%lum,lamp
10	136.5	136.3	136.2	136.3	136.0	136.3	136.5	136.5	0- 10	13.12	13.12	2.18,2.18
20	130.5	130.0	130.0	130.0	129.6	130.0	130.3	130.7	10- 20	37.78	50.90	8.43,8.43
30	120.3	119.8	119.7	119.6	119.5	119.8	120.5	120.8	20- 30	57.92	108.8	18.1,18.1
40	106.6	106.0	106.0	105.9	105.6	106.1	106.8	107.0	30- 40	71.08	179.9	29.8,29.8
50	90.40	89.93	89.92	89.69	89.54	89.96	90.59	91.01	40- 50	76.00	255.9	42.5,42.5
60	73.48	73.21	73.05	72.74	72.60	72.98	73.60	73.95	50- 60	73.15	329.0	54.6,54.6
70	57.21	56.90	56.59	56.28	56.41	56.70	57.19	57.48	60- 70	64.34	393.4	65.3,65.3
80	43.30	42.96	42.57	42.34	42.51	42.82	43.21	43.44	70- 80	52.45	445.8	74,74
90	32.55	32.21	31.85	31.69	31.85	32.10	32.44	32.63	80- 90	40.65	486.5	80.7,80.7
100	24.87	24.57	24.29	24.14	24.25	24.50	24.82	24.93	90-100	30.69	517.2	85.8,85.8
110	19.87	19.61	19.40	19.24	19.32	19.53	19.82	19.91	100-110	23.16	540.3	89.6,89.6
120	16.90	16.71	16.52	16.38	16.40	16.59	16.82	16.95	110-120	17.87	558.2	92.6,92.6
130	15.39	15.25	15.10	14.96	14.94	15.09	15.27	15.41	120-130	14.21	572.4	95,95
140	14.70	14.59	14.45	14.33	14.33	14.45	14.59	14.72	130-140	11.48	583.9	96.9,96.9
150	14.25	14.14	14.02	13.96	13.96	14.07	14.18	14.28	140-150	8.996	592.9	98.4,98.4
160	12.83	12.73	11.80	12.02	12.74	12.84	12.89	12.95	150-160	6.280	599.2	99.4,99.4
170	8.651	8.418	6.322	7.068	8.715	8.941	9.033	8.984	160-170	3.145	602.3	99.9,99.9
180	0	0	0.0071	0	0	0	0	0	170-180	0.4141	602.7	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:2012-02-21

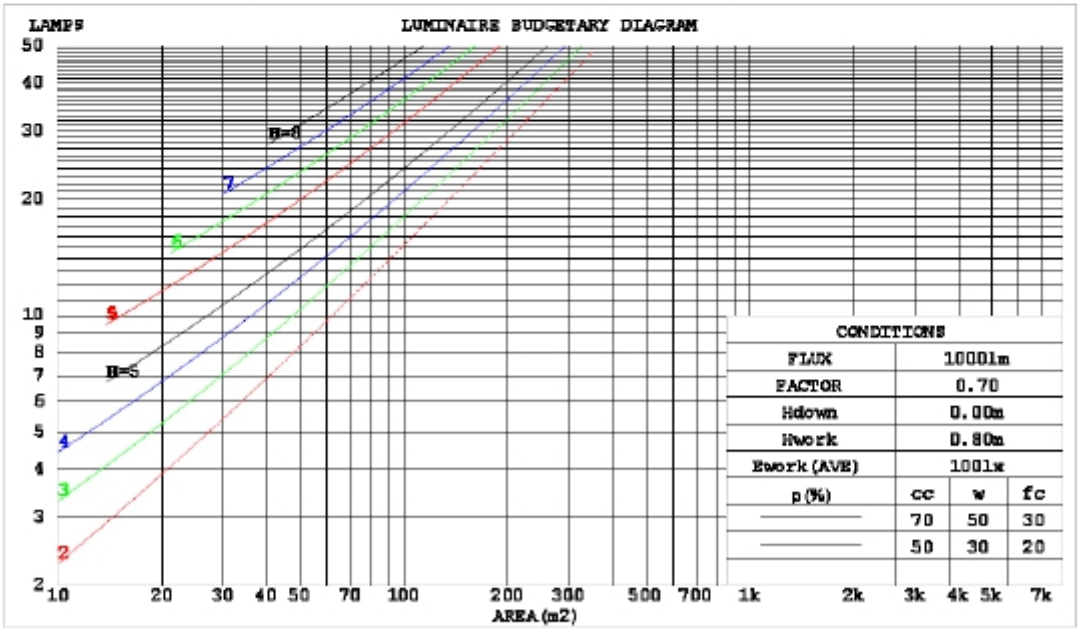
γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT Page 3 Of 11

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	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			Coefficients of Utilization(CU)												
0.0	1.14	1.14	1.14	1.10	1.10	1.10	1.00	1.00	1.00	.92	.92	.92	.84	.84	.84	.81
1.0	.96	.91	.86	.92	.87	.83	.84	.80	.77	.77	.74	.71	.70	.68	.66	.62
2.0	.82	.75	.68	.79	.72	.66	.72	.66	.62	.66	.61	.57	.60	.56	.53	.50
3.0	.72	.63	.56	.69	.61	.54	.63	.56	.51	.57	.52	.47	.53	.48	.44	.41
4.0	.63	.54	.47	.60	.52	.45	.55	.48	.43	.51	.45	.40	.46	.42	.37	.35
5.0	.56	.47	.40	.54	.45	.39	.49	.42	.37	.45	.39	.34	.42	.36	.32	.30
6.0	.50	.41	.34	.48	.40	.34	.44	.37	.32	.41	.35	.30	.38	.32	.28	.26
7.0	.45	.36	.30	.44	.35	.28	.40	.33	.28	.37	.31	.26	.34	.28	.25	.23
8.0	.41	.33	.27	.40	.32	.26	.37	.30	.25	.34	.28	.23	.31	.26	.22	.20
9.0	.38	.29	.24	.36	.29	.23	.34	.27	.22	.31	.25	.21	.29	.24	.20	.18
10.0	.35	.27	.21	.33	.26	.21	.31	.25	.20	.29	.23	.19	.27	.22	.18	.16



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

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WEC AND CCEC

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	SUR.:	PROJECTION 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						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.372	.211	.067	.359	.203	.065	.334	.192	.061	.312	.180	.058	.291	.169	.054	
2.0	.324	.178	.054	.312	.172	.053	.290	.161	.050	.270	.151	.047	.251	.142	.045	
3.0	.289	.154	.046	.278	.149	.045	.258	.140	.043	.240	.131	.040	.223	.123	.038	
4.0	.261	.136	.040	.251	.132	.039	.233	.124	.037	.216	.116	.035	.201	.109	.033	
5.0	.238	.121	.035	.229	.118	.034	.213	.111	.033	.197	.104	.031	.183	.098	.029	
6.0	.218	.109	.031	.210	.106	.031	.195	.100	.029	.181	.094	.028	.168	.089	.026	
7.0	.202	.100	.028	.194	.097	.028	.181	.091	.026	.168	.086	.025	.156	.081	.024	
8.0	.187	.092	.026	.181	.089	.025	.168	.084	.024	.156	.079	.023	.145	.074	.022	
9.0	.175	.085	.024	.169	.082	.023	.157	.078	.022	.146	.073	.021	.136	.069	.020	
10.0	.164	.079	.022	.158	.076	.021	.147	.072	.020	.137	.068	.019	.127	.064	.018	

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						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.337	.337	.337	.288	.288	.288	.197	.197	.197	.113	.113	.113	.036	.036	.036	
1.0	.333	.304	.278	.285	.261	.239	.195	.179	.165	.112	.104	.096	.036	.033	.031	
2.0	.326	.281	.243	.279	.242	.210	.191	.167	.147	.110	.097	.086	.035	.031	.028	
3.0	.318	.264	.222	.273	.228	.192	.187	.158	.135	.108	.093	.079	.035	.030	.026	
4.0	.310	.252	.207	.266	.218	.180	.183	.152	.127	.106	.089	.075	.034	.029	.025	
5.0	.303	.242	.197	.260	.209	.172	.179	.146	.121	.104	.086	.072	.033	.028	.024	
6.0	.295	.234	.190	.254	.203	.165	.175	.142	.117	.102	.083	.070	.033	.027	.023	
7.0	.288	.228	.185	.248	.197	.161	.171	.138	.114	.100	.081	.068	.032	.027	.022	
8.0	.282	.222	.181	.243	.193	.158	.168	.135	.112	.098	.080	.067	.032	.026	.022	
9.0	.276	.217	.178	.238	.188	.155	.165	.132	.110	.096	.078	.066	.031	.026	.022	
10.0	.270	.213	.175	.233	.185	.153	.161	.130	.109	.094	.077	.065	.031	.025	.021	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

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Uncorrected UGR Table

NAME: EYI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: EYI	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	12.9	14.2	13.4	14.7	15.3	12.9	14.2	13.4	14.7	15.3
	3H	15.0	16.2	15.6	16.8	17.4	15.0	16.2	15.5	16.8	17.4
	4H	16.1	17.3	16.7	17.9	18.5	16.1	17.3	16.7	17.8	18.5
	6H	17.4	18.5	18.0	19.1	19.7	17.3	18.4	17.9	19.0	19.7
	8H	18.1	19.1	18.7	19.7	20.4	18.0	19.1	18.6	19.7	20.3
	12H	18.9	19.9	19.5	20.5	21.2	18.8	15.8	19.4	20.4	21.1
4H	2H	13.6	14.8	14.2	15.3	16.0	13.6	14.7	14.1	15.3	16.0
	3H	15.9	16.9	16.5	17.6	18.3	15.9	16.9	16.5	17.5	18.2
	4H	17.2	18.2	17.9	18.8	19.5	17.2	18.1	17.8	18.8	19.5
	6H	18.7	19.5	19.3	20.2	20.9	18.6	15.4	19.3	20.1	20.9
	8H	19.5	20.2	20.1	20.9	21.7	19.4	20.2	20.1	20.8	21.6
	12H	20.4	21.1	21.1	21.8	22.6	20.3	21.0	21.0	21.7	22.5
8H	4H	17.7	18.5	18.4	19.2	20.0	17.7	18.5	18.4	19.1	19.9
	6H	19.4	20.1	20.1	20.8	21.6	19.4	20.0	20.1	20.7	21.6
	8H	20.4	21.0	21.1	21.7	22.6	20.4	21.0	21.1	21.7	22.5
	12H	21.6	22.1	22.3	22.8	23.7	21.5	22.0	22.2	22.8	23.6
12H	4H	17.8	18.5	18.5	19.2	20.0	17.8	18.5	18.5	19.2	20.0
	6H	19.6	20.2	20.4	21.0	21.8	19.6	20.2	20.3	20.9	21.8
	8H	20.7	21.3	21.5	22.0	22.9	20.7	21.2	21.4	21.9	22.8
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 / - 0.4					+ 0.2 / - 0.4				

CIE Pub.117 Corrected 602.7 lm Total Lamp Luminous Flux.(Slog(F/F0) = -1.8)

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

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UTILIZATION FACTORS TABLE

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	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) x RCR = 5									
k = 0.60	48	36	29	47	36	29	45	35	28	22
0.80	58	45	37	56	44	37	53	43	36	28
1.00	65	53	45	63	52	44	60	52	43	34
1.25	72	60	52	70	59	51	65	56	49	39
1.50	77	65	57	75	64	56	70	60	54	43
2.00	85	74	66	81	72	64	75	67	61	49
2.50	89	79	71	85	77	69	79	72	66	53
3.00	93	84	76	89	81	74	82	75	70	56
4.00	97	90	83	93	86	81	86	80	76	61
5.00	100	93	88	96	90	85	88	83	79	64
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHR%OH = 1.25	

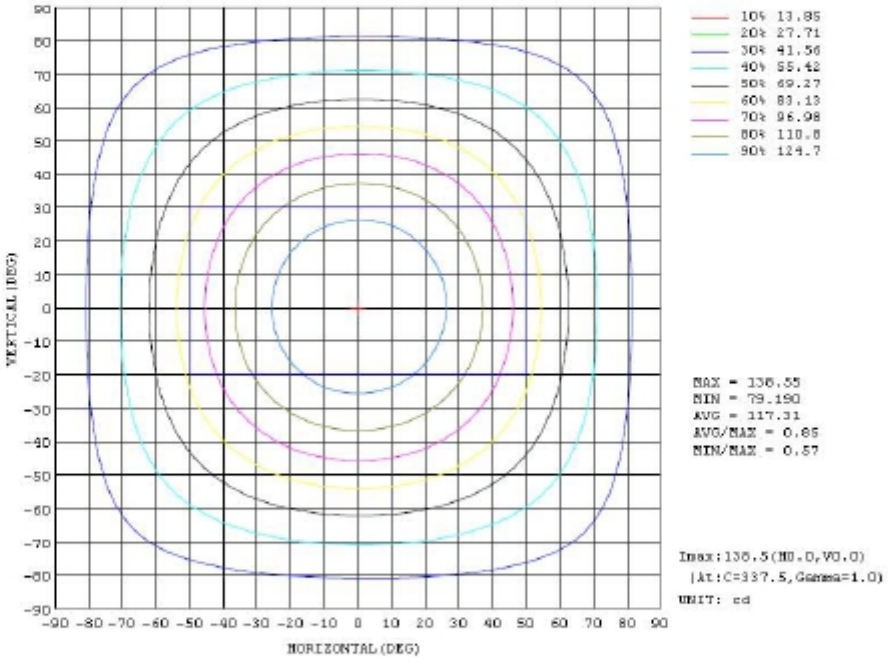
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT Page 7 of 11

ISOCANDELA DIAGRAM

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

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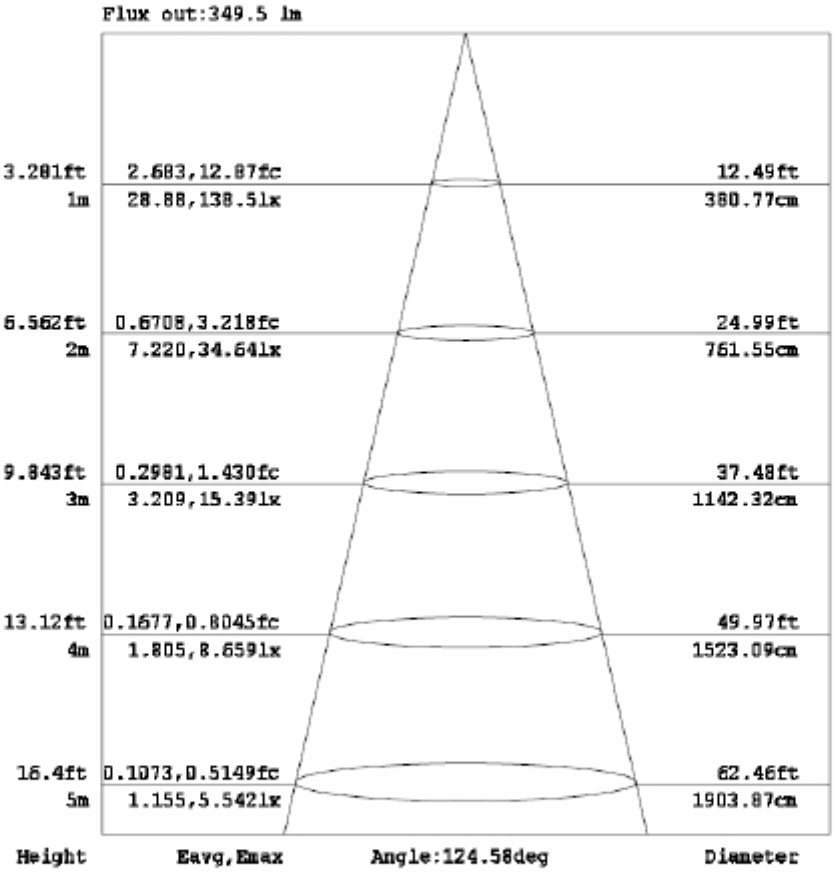
AAI Figure

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	SUR.:	PROTECTION ANGLE:



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

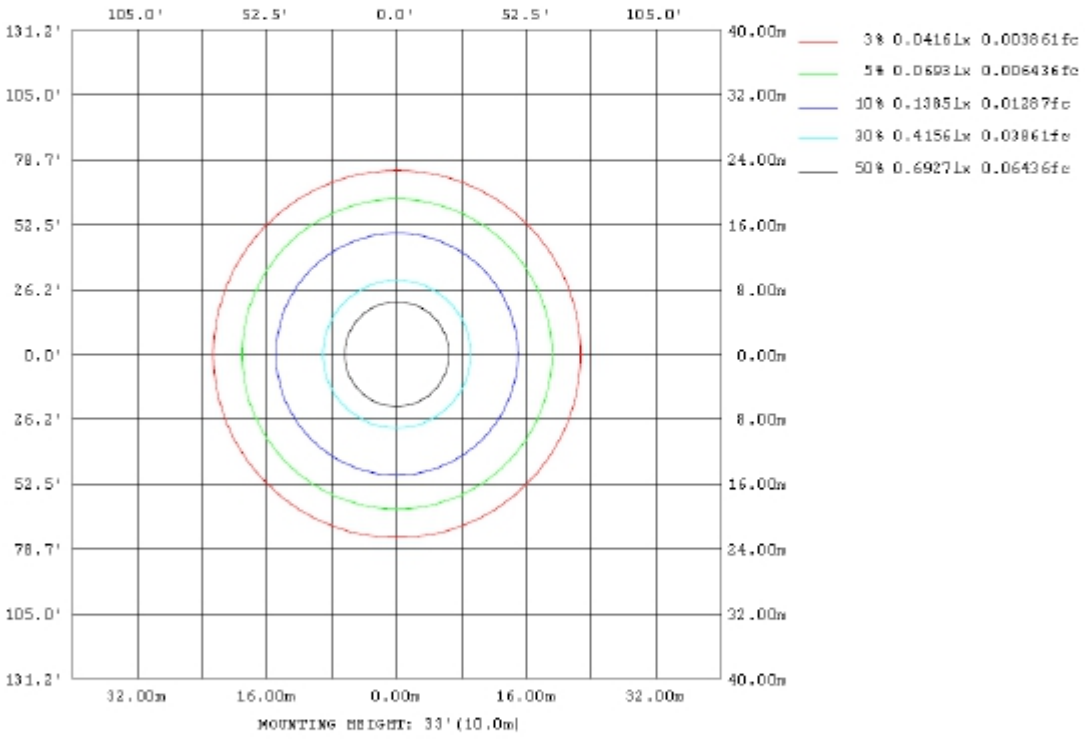
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT Page 9 Of 11

ISOLUX DIAGRAM

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

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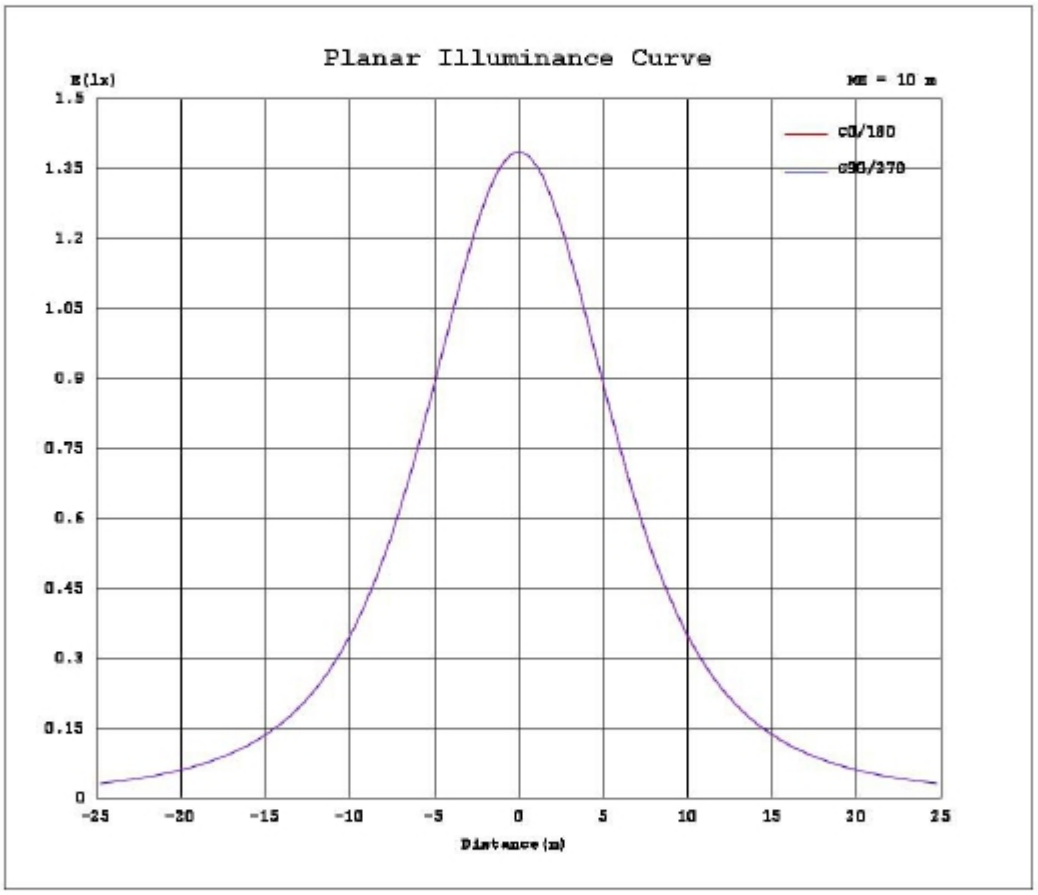
Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

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LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: ETI	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: ETI	SUR.:	PROTECTION ANGLE:

Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338			
0	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138			
5	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138			
10	137	136	136	136	136	136	136	136	136	136	136	136	136	137	137	137			
15	134	134	134	134	134	134	134	134	133	134	134	134	134	134	134	134			
20	130	130	130	130	130	130	130	130	130	130	130	130	131	131	131	131			
25	126	126	125	125	125	125	125	125	125	125	125	126	126	126	126	126			
30	120	120	120	120	120	120	120	120	119	120	120	120	121	121	121	121			
35	114	114	113	113	113	113	113	113	113	113	113	114	114	114	114	114			
40	107	106	106	106	106	106	106	106	106	106	106	107	107	107	107	107			
45	98.7	98.5	98.2	98.3	98.2	98.1	97.9	98.1	97.7	97.9	98.3	98.6	99.0	99.2	99.3	99.0			
50	90.4	90.2	89.9	90.1	89.9	89.9	89.7	89.8	89.5	89.6	90.0	90.3	90.6	90.8	91.0	90.7			
55	82.0	81.8	81.7	81.7	81.5	81.5	81.2	81.3	81.1	81.3	81.5	81.8	82.2	82.4	82.4	82.2			
60	73.5	73.4	73.2	73.3	73.0	72.9	72.7	72.8	72.6	72.7	73.0	73.2	73.6	73.8	74.0	73.7			
65	65.2	65.1	64.9	65.0	64.7	64.6	64.3	64.5	64.3	64.4	64.7	64.9	65.2	65.4	65.5	65.3			
70	57.2	57.2	56.9	57.0	56.6	56.6	56.3	56.5	56.4	56.4	56.7	56.8	57.2	57.2	57.5	57.3			
75	49.8	49.9	49.6	49.6	49.2	49.2	49.0	49.2	49.1	49.1	49.4	49.4	49.8	49.8	50.1	50.0			
80	43.3	43.2	43.0	43.0	42.6	42.6	42.3	42.6	42.5	42.5	42.8	42.9	43.2	43.2	43.4	43.3			
85	37.5	37.5	37.2	37.2	36.8	36.8	36.6	36.8	36.8	36.8	37.0	37.1	37.4	37.4	37.6	37.5			
90	32.5	32.5	32.2	32.2	31.9	31.8	31.7	31.9	31.8	31.9	32.1	32.2	32.4	32.4	32.6	32.5			
95	28.3	28.3	28.0	28.0	27.7	27.7	27.5	27.7	27.7	27.7	27.9	28.0	28.3	28.2	28.4	28.3			
100	24.9	24.8	24.6	24.5	24.3	24.2	24.1	24.3	24.2	24.3	24.5	24.6	24.8	24.8	24.9	24.9			
105	22.1	22.0	21.8	21.7	21.6	21.5	21.4	21.5	21.5	21.5	21.7	21.8	22.0	22.0	22.1	22.1			
110	19.9	19.8	19.6	19.5	19.4	19.3	19.2	19.3	19.3	19.4	19.5	19.6	19.8	19.8	19.9	19.9			
115	18.2	18.1	17.9	17.9	17.7	17.7	17.6	17.7	17.6	17.7	17.9	18.0	18.1	18.1	18.2	18.2			
120	16.9	16.8	16.7	16.6	16.5	16.5	16.4	16.4	16.4	16.5	16.6	16.7	16.8	16.9	16.9	16.9			
125	16.0	16.0	15.8	15.8	15.7	15.6	15.5	15.5	15.5	15.6	15.7	15.8	15.9	16.0	16.0	16.0			
130	15.4	15.3	15.3	15.2	15.1	15.0	15.0	15.0	14.9	15.0	15.1	15.2	15.3	15.3	15.4	15.4			
135	15.0	15.0	14.9	14.8	14.7	14.7	14.6	14.6	14.6	14.6	14.7	14.8	14.9	14.9	15.0	15.0			
140	14.7	14.7	14.6	14.5	14.5	14.4	14.3	14.3	14.3	14.4	14.4	14.5	14.6	14.7	14.7	14.7			
145	14.5	14.4	14.4	14.3	14.2	14.2	14.1	14.1	14.1	14.2	14.3	14.3	14.4	14.4	14.5	14.5			
150	14.2	14.2	14.1	14.1	14.0	14.0	14.0	14.0	14.0	14.0	14.1	14.1	14.2	14.2	14.3	14.3			
155	13.7	13.7	13.6	13.5	13.4	13.5	13.3	13.5	13.5	13.6	13.6	13.7	13.7	13.7	13.8	13.8			
160	12.8	12.8	12.7	12.7	11.8	12.5	12.0	12.3	12.7	12.8	12.8	12.8	12.9	12.9	13.0	12.9			
165	11.7	11.5	11.6	10.9	9.14	7.71	10.3	10.7	11.7	11.7	11.8	11.8	11.9	11.8	11.9	11.6			
170	8.65	8.32	8.41	7.71	6.32	5.86	7.07	7.68	8.72	8.83	8.94	8.99	9.03	9.02	8.98	8.56			
175	1.40	1.26	0.84	0.46	0.79	1.01	0.98	1.42	1.75	1.89	2.22	2.18	2.11	1.83	1.73	1.47			
180	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	0.00	0.00	0.00			

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Jack
Test Date:2012-02-21

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.270
Humidity:65.0%
Test Distance:2.475m [K=1.0000]
Remarks:

Attachment C – EUT PHOTO

C1.EUT Photo