TEST REPORT

Reference No.	:	WTN17N0887474N
Applicant	:	Ningbo Hi-Tech Zone Dayatech Technology Development Co.,Ltd
Address	:	No.1599 Juxian Rd, Ningbo Hi-Tech Zone,Ningbo City,China
Manufacturer	:	Ningbo Hi-Tech Zone Dayatech Technology Development Co.,Ltd
Address	:	No.1599 Juxian Rd, Ningbo Hi-Tech Zone,Ningbo City,China
Product Name	:	Rechargeable LED worklight
Model No.	:	DY-360B GT-501RF-S 3701974
Ratings	:	External Battery
Standards	:	IES LM-79-08 Electrical and Photometric Measurements of Solid-State Lighting Products
Date of Receipt sample	:	2017-08-14
Date of Test	:	2017-08-14
Date of Issue	:	2017-08-14
Test Report Form No.	:	WPL-LM7908A-01A
Test Result	:	See the attached sheets

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
Waltek Services (Foshan) Co., Ltd.
Address: No. 13-19, 2/F, 2nd Building, Sunlink International Machinery City, Chencun Town, Shunde District, Foshan, Guangdong, China

Tel :+86-757-23811398
Fax:+86-757-23811381

Compiled by:

Jimmy Yang / Project Engineer

Approved by:

Simon Deng / Manager

Trade Mark: N
Measurement Point: N
Characteristic data (not shown on the marking plate) N
Purpose of the product (Description of intended use) LED workinglight for generally lighting purpose. Other information refers to photos in end page.
Possible test case verdicts: - test case does not apply to the test object: ……: N(.A.) / not included in the order - test object does meet the requirement……: P(ass) - test object does not meet the requirement: ……: F(ail) **Possible suffixes to the verdicts:** - suffix for detailed information for the client……: - C(omment) - suffix for important information for factory inspection....: - M(anufacturing)
General remarks: "(See Attachment #)" refers to additional information appended to the report. “(See remark #)” refers to a remark appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a comma (point) is used as the decimal separator. Remark: 1. Measurement was conducted at full battery and at a stable ambient temperature 25°C±1°C.

Test summary:

Testing is performed in accordance with the procedures outlined in IES LM-79-08. The sample is evaluated for photometric and electrical characteristics using an integrating sphere and a goniophotometer, located in an accredited, temperature and humidity-controlled, draft free photometric laboratory.

☒ Test No. 1 : Integrating Sphere Test

The sample was tested according to the IES LM-79-08.

Photometric paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C.

The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load. The AC power supply, while operating the product, shall have a sinusoidal voltage waveshape at the prescribed frequency 50Hz or 60Hz such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item. It was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

☒ Test No. 2: Goniophotometer Test

The sample was tested according to the IES LM-79-08.

Photometric paramters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample.

The sample was operated at Rated Volts(see Table 1). It was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 5° vertical intervals and 22.5° horizontal intervals.

IES LM-79-08			
Clause	Requirement – Test	Measuring result – Remark	Verdict
2.0	Ambient Conditions		P
2.1	Genaral		P
2.2	Air Temperature		P
2.3	Thermal Condition for Mounting SSL Products		P
2.4	Air Movement		P
3.0	Power Supply Characteristics		P
3.1	Waveshape of AC power supply		P
3.2	Voltage regulation		P
4.0	Seasoning of SSL Product		N
	No seasoning of SSL product		N
5.0	Stabilisation of SSL Product		P
	SSL product has sufficiently stabilized before measurement	Stabilized 30 minute	P
6.0	Operation Orientation		P
	SSL product shall be stabilized and measured in intended operating orientation	As normal working	P
7.0	Electrical Settings		P
	SSL product shall be operated at rated voltage		P
	SSL product with dimming capability are tested at maximum input power condition		N
	SSL product with different modes are measured in all relvant modes		N
8.0	Electrical Instrumentations		P
8.1	Circuits		P
8.2	Uncertainties		P
9.0	Test Methodes for Luminous Flux measurement		P
9.1	Integrating sphere with a spectroradiometer (Sphere-spectroradiometer system)		P
9.2	Integrating sphere with a photometer head (Sphere-photometer system)		N
9.3	Goniophotometer		P
10.0	Luminous Intensity Distribution		P
	Reporting acc. to IES LM-63		P
11.0	Luminous Efficay		P
	Calculation	See table 1	P
12.0	Test Methodes for Color Characteristics of SSL Products		P
	Measurements	See table 1	P
13.0	Uncertainty statement		N

Table 1a	Test data		
Model:	DY-360B GT-501RF-S 3701974 @High output		
Rated Voltage:	External Battery (With full battery)	Rated Power (W):	N
Rated luminous flux (lm):	2000	Ambient temperature 25 ±1 (°C):	25.0

Test item	**Measured Value**	
	Integrating Sphere	**Goniophotometer**
Key Photometric Results		
Luminous Efficacy (Lumens/Watt)	---	---
Total Luminous Flux (Lumens)	---	2224.6
Peak Intensity (cd)	---	910.4
Total Radiant Flux (Watts)	---	---
Correlated Color Temperature (CCT)	5137	---
Color Rendering Index (CRI)	82.3	---
Chromaticity (Chroma x / Chroma y)	0.3420 / 0.3581	---
Chromaticity (Chroma u' / Chroma v')	0.2069 / 0.4873	---
Duv Value	4.46e-03	---
Stabilization Time (Light and Power) (Minutes)	30	30
Total Run Time (Minutes)	35	40
Electrical Input Results		
Input Power (Watts)	---	---
Input Voltage (Volts AC)	---	---
Input Current (Amps)	---	---
Input Frequency (Hertz)	---	---
Power Factor	---	---
Additional Information		
Test Geometry Configuration	4π	Type C
Ambient Temperature (°C):	25.0	25.0
ISTMT (In-Situ Temperature Measurement) (°C):	N	

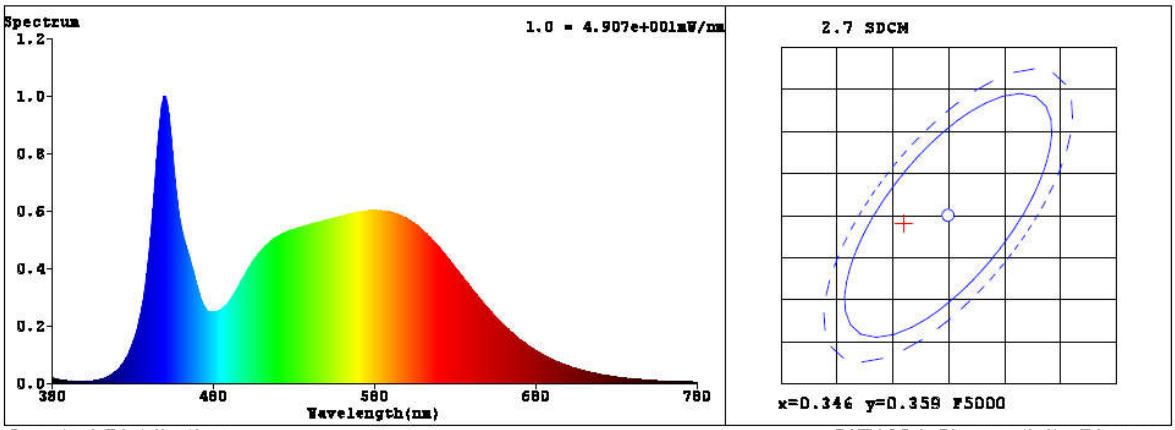
Supplementary Information:

- Absorbtion Correction used: Yes
- Stabilisation was considered reached by: the variation (maximum-minimum) of at least 3 readings of the light output and electrical power over a period of 30 minutes is less than 0.5%.

Table 1b	**Test data for other output status**	**Test Geometry Configuration**		4π	
Light output status	Φ_{total} (lm)	Chromaticity		CCT	Ra
		x	y		
Low output	597.4	0.3418	0.3582	5144	82.8
Flashlight high output	268.7	0.3252	0.3466	5816	74.0
Flashlight low output	125.5	0.3261	0.3520	5764	73.5

Table 2	Spectrum Test
Model:	DY-360B GT-501RF-S 3701974

Spectrum



Spectral Distribution CIE1931 Chromaticity Diagram

Colorimetric Parameters

Chromaticity Coordinate: x = 0.3420 y = 0.3581 / u' = 0.2069 v' = 0.4873 (duv=4.46e-03) Dx,Dy:0.0006,0.0095

CCT= 5137K Prcp WL: Ld=566.5nm Purity=10.1%

Peak WL: Lp=450nm FWHM: =21.2nm Ratio:R=15.2% G=80.3% B=4.6%

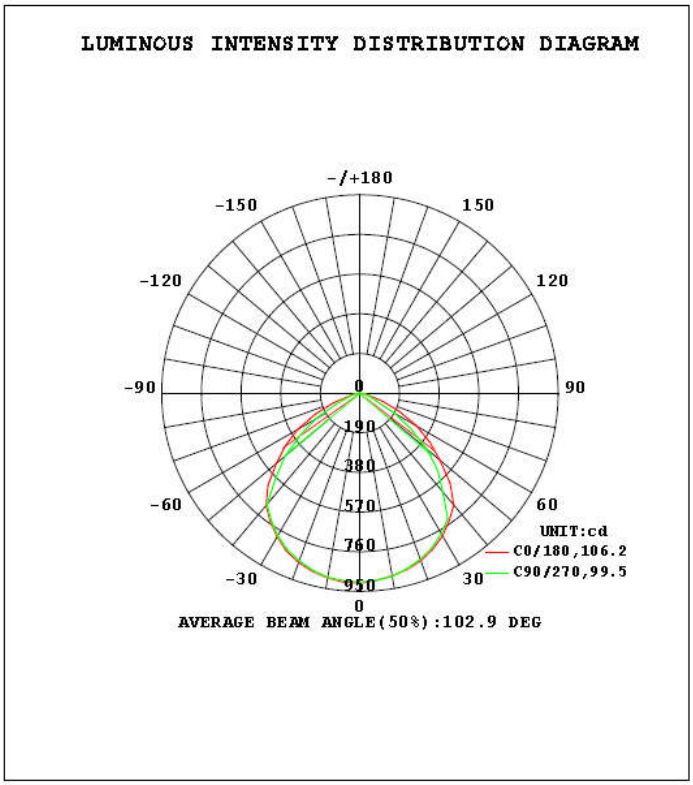
Render Index: Ra = 82.3

R1 =80	R2 =87	R3 =92	R4 =82	R5 =81	R6 =83	R7 =87	
R8 =66	R9 =1	R10=70	R11=82	R12=62	R13=82	R14=96	R15=74

WHITE:ANSI_5000K

Table 3	Luminous intensity distribution diagram and C0 Plane Isolux Diagram
Model:	DY-360B GT-501RF-S 3701974

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		Imax(cd)	910.4	S/MH(C0/180)	1.29
NOMINAL POWER(W)		LOR(%)	100.0	S/MH(C90/270)	1.29
RATED VOLTAGE(V)		TOTAL FLUX(lm)	2224.6	η UP,DN(C0-180)	0.0,48.7
NOMINAL FLUX(lm)	2224.57	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,51.3
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)		η down(%)	100.0	CIBSE SHR MAX	1.35



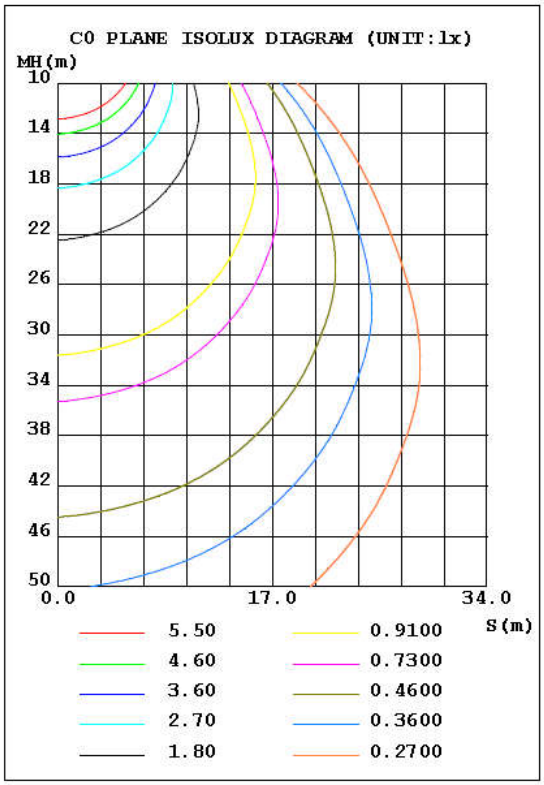


Table 4	Isocandela Diagram
Model:	DY-360B GT-501RF-S 3701974

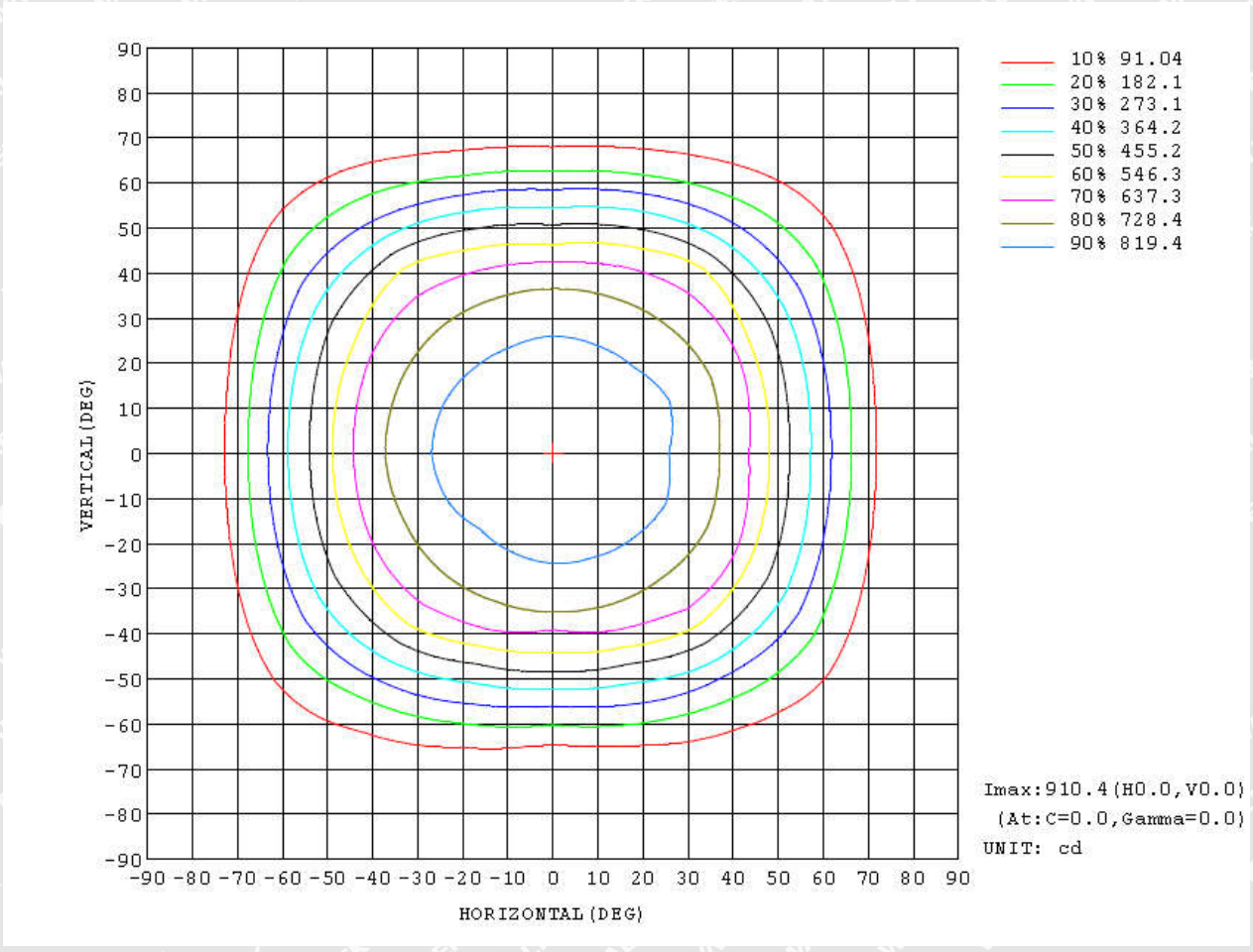


Table 5	AAI Figure
Model:	DY-360B GT-501RF-S 3701974

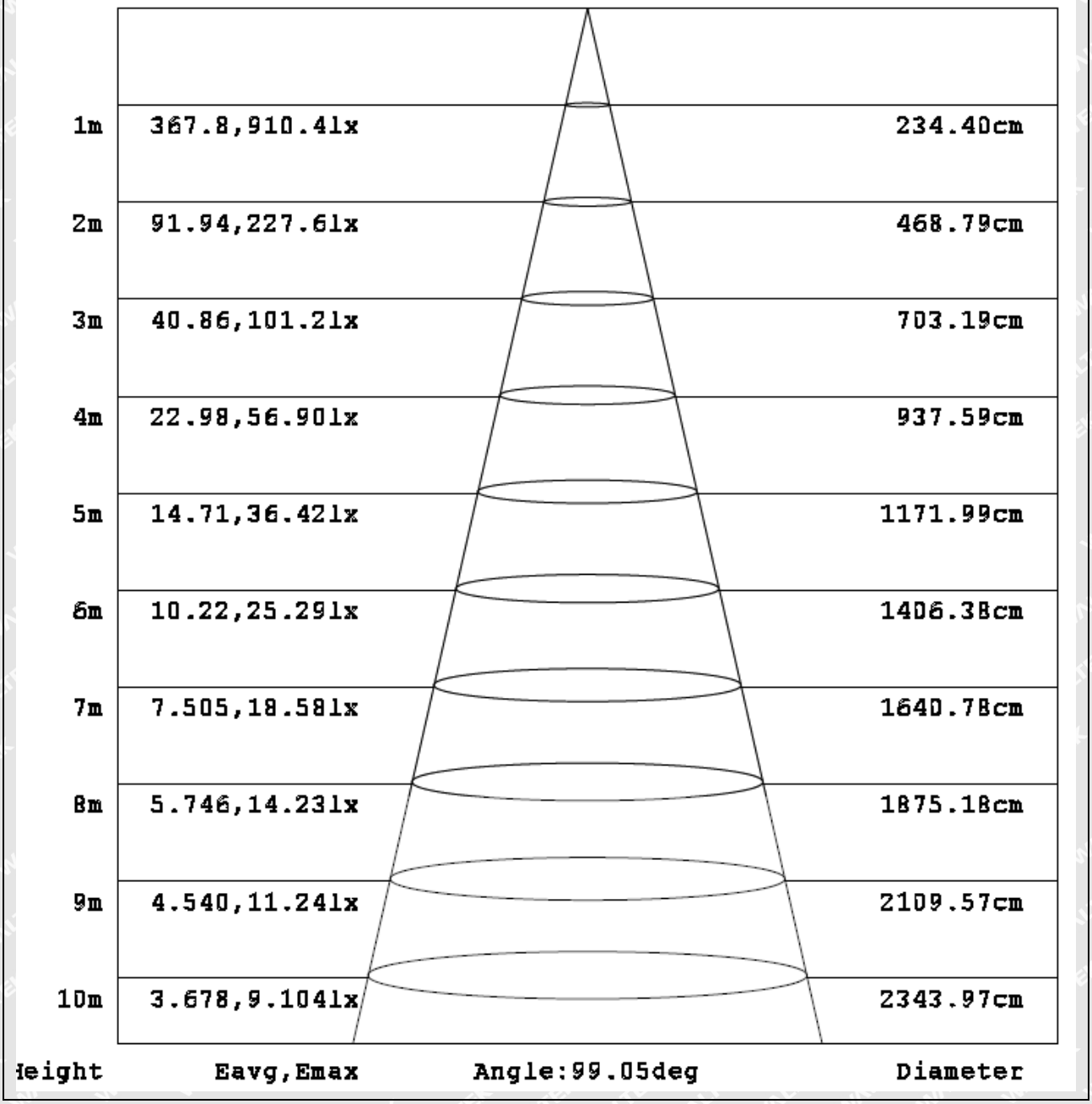


Table 6	Planar Illuminance Curve
Model:	DY-360B GT-501RF-S 3701974

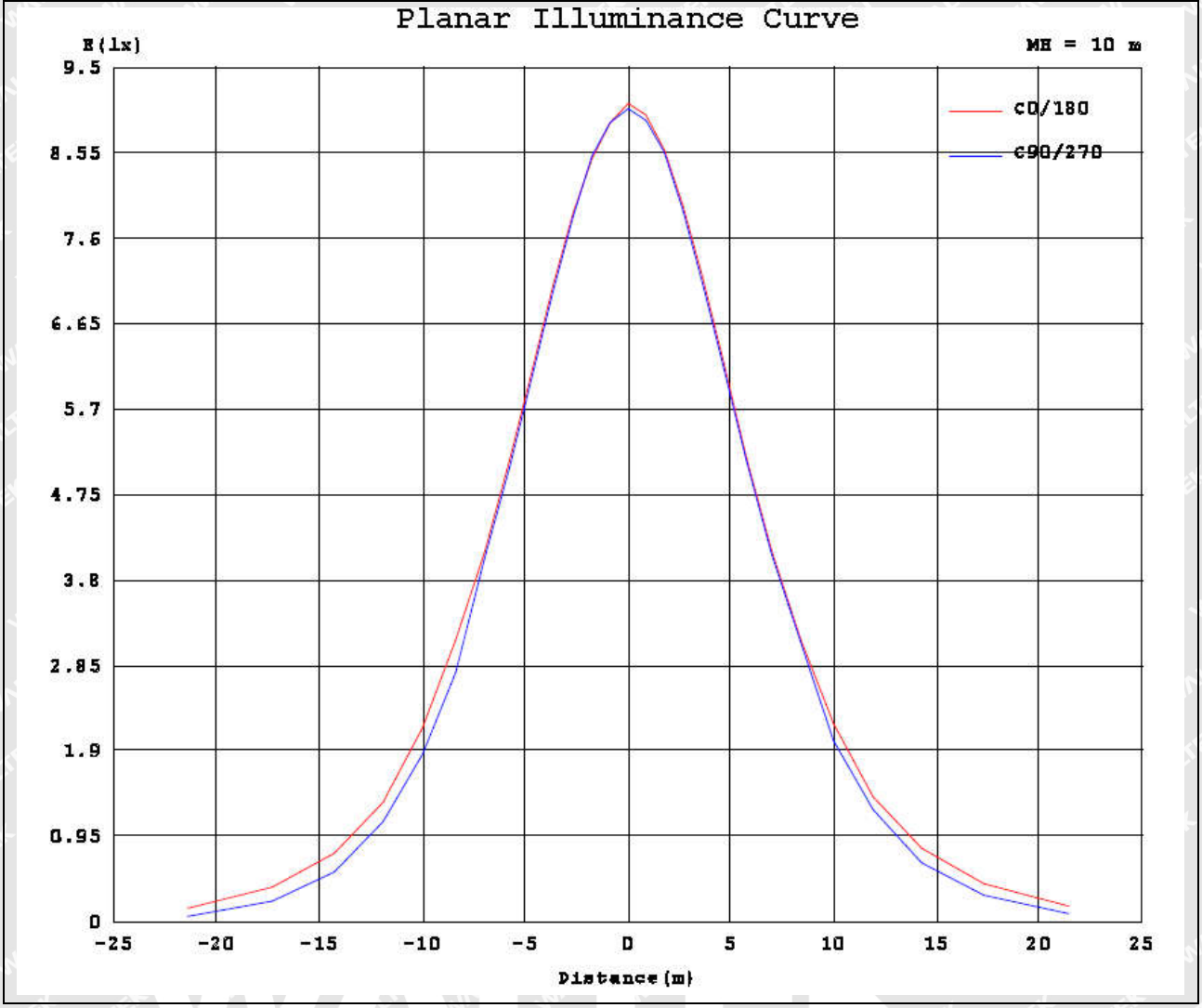


Table 7	Zonal Flux Diagram
Model:	DY-360B GT-501RF-S 3701974

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	888.1	892.2	891.3	886.0	899.0	888.3	896.0	888.6	0- 10	85.71	85.71	3.85,3.85
20	853.4	852.3	845.8	838.7	862.3	854.2	853.8	856.1	10- 20	247.5	333.2	15,15
30	790.6	782.4	778.5	777.1	794.4	789.1	789.1	792.6	20- 30	380.0	713.1	32.1,32.1
40	698.0	690.1	617.2	677.6	701.4	695.9	694.3	700.0	30- 40	464.2	1177	52.9,52.9
50	501.1	500.4	420.7	503.7	525.9	567.3	471.3	571.8	40- 50	463.5	1641	73.8,73.8
60	311.0	249.7	188.0	273.3	342.5	301.0	239.4	299.1	50- 60	350.2	1991	89.5,89.5
70	116.0	69.19	53.86	82.69	135.8	103.7	65.50	99.13	60- 70	177.0	2168	97.5,97.5
80	15.48	12.87	10.87	14.22	19.78	19.70	14.71	18.88	70- 80	51.16	2219	99.8,99.8
90	0	0	0.0000	0	0	0	0	0	80- 90	5.287	2225	100,100
100	0	0	0	0	0	0	0	0	90-100	0.0000	2225	100,100
110	0	0	0	0	0	0	0	0	100-110	0	2225	100,100
120	0	0	0	0	0	0	0	0	110-120	0	2225	100,100
130	0.0058	0	0	0	0.0030	0.0027	0.0001	0.0049	120-130	0.0005	2225	100,100
140	0.0093	0	0	0	0.0066	0	0.0112	0.0104	130-140	0.0021	2225	100,100
150	0.0118	0	0	0.0072	0	0	0.0155	0	140-150	0.0031	2225	100,100
160	0	0.0116	0.0084	0.0080	0.0111	0	0	0	150-160	0.0023	2225	100,100
170	0.0099	0.0154	0.0126	0	0	0	0	0	160-170	0.0014	2225	100,100
180	0	0	0	0	0	0	0	0	170-180	0.0004	2225	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Table 8	Luminous Distribution Intensity Data
Model:	DY-360B GT-501RF-S 3701974

Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	910	910	898	901	904	898	897	906	910	910	898	901	904	898	897	906			
5	899	907	899	897	899	897	893	904	908	908	900	899	902	896	896	907			
10	888	901	892	887	891	887	886	894	899	899	888	892	896	889	889	901			
15	875	888	875	871	870	870	865	877	884	879	875	878	878	875	874	889			
20	853	864	852	850	846	842	839	852	862	857	854	848	854	852	856	868			
25	825	836	825	817	816	811	808	824	835	831	823	821	827	825	826	841			
30	791	800	782	783	778	771	777	785	794	792	789	785	789	786	793	808			
35	746	756	739	737	733	728	733	737	751	749	745	742	743	746	752	764			
40	698	702	690	668	617	667	678	687	701	697	696	693	694	694	700	712			
45	612	641	629	551	529	547	613	624	625	636	634	604	571	618	640	651			
50	501	508	500	430	421	431	504	513	526	528	567	501	471	507	572	514			
55	407	430	384	325	297	324	384	437	436	457	438	384	350	388	424	438			
60	311	313	250	225	188	227	273	331	343	343	301	258	239	266	299	320			
65	206	202	148	105	85.0	111	160	226	237	243	197	148	128	150	184	218			
70	116	112	69.2	54.9	53.9	58.0	82.7	129	136	138	104	70.8	65.5	75.6	99.1	128			
75	44.7	42.9	32.8	31.5	30.7	32.8	36.4	51.4	56.8	62.1	44.4	39.8	38.5	39.3	41.9	55.3			
80	15.5	15.3	12.9	12.3	10.9	12.7	14.2	18.7	19.8	20.5	19.7	15.0	14.7	15.3	19.0	17.9			
85	2.55	2.08	1.12	0.78	0.57	0.83	1.31	2.46	3.36	3.50	1.94	0.83	0.74	0.95	2.11	3.27			
90	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			
95	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			
100	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			
105	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			
110	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			
115	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			
120	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			
125	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			
130	0.01	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			
135	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00			
140	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00			
145	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00			
150	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00			
155	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00			
160	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
165	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
170	0.01	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
175	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01			
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			

Attachment 1: Equipment List

Equipment	Model	calibration date	Calibration due date
Goniophotometer	EVERFINE GO R5000-2M2D	2017-03-09	2018-03-08
Temperature & Humidity Datalogger	Testo 608-H1	2017-03-09	2018-03-08
Digital power meter	EVERFINE PF2010A-V1-CAN	2017-03-09	2018-03-08
AC power source	EVERFINE DPS1060	2017-03-09	2018-03-08
DC power source	EVERFINE WY12010	2017-03-09	2018-03-08
Luminance meter	EVERFINE CX-2B	2017-03-09	2018-03-08
Standard lamp	EVERFINE 28V/10A/500cd	2017-03-09	2018-03-08
Standard lamp	EVERFINE D908	2017-03-09	2018-03-08
Integrating Sphere and High accuracy array spectroradio meter system	EVERFINE HAAS-2000	2017-03-09	2018-03-08
Standard lamp	EVERFINE D204	2017-03-09	2018-03-08

Attachment 2: Photo document

Model: DY-360B GT-501RF-S 3701974

Photo 1

====== End of Report ======