



# TEST REPORT

**Reference No.** ..... : WTN17N0887476N  
**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-360A GT-500RZ-S 3701970  
**Ratings** ..... : Internal 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:**

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Compiled by:

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Approved by:



Simon Beng / 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.
<p><b>Possible test case verdicts:</b></p> <ul style="list-style-type: none"> <li>- test case does not apply to the test object: .....: N(A.) / not included in the order</li> <li>- test object does meet the requirement.....: P(ass)</li> <li>- test object does not meet the requirement: .....: F(ail)</li> </ul> <p><b>Possible suffixes to the verdicts:</b></p> <ul style="list-style-type: none"> <li>- suffix for detailed information for the client.....: - C(omment)</li> <li>- suffix for important information for factory inspection.....: - M(anufacturing)</li> </ul>
<p><b>General remarks:</b></p> <p>"(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.</p> <p>Remark:</p> <ol style="list-style-type: none"> <li>1. Measurement was conducted at full battery and at a stable ambient temperature 25°C±1°C.</li> </ol>

**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 parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ .

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  $\pm 0.2$  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 parameters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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  $5^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

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IES LM-79-08			
Clause	Requirement – Test	Measuring result – Remark	Verdict
2.0	Ambient Conditions		P
2.1	General		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 relevant 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		
<b>Model:</b>	DY-360A GT-500RZ-S 3701970 @High output big beam angle		
Rated Voltage:	Internal Battery (With full battery)	Rated Power (W):	N
Rated luminous flux (lm):	1000	Ambient temperature 25 ±1 (°C):	25.0
Test item	Measured Value		
	Integrating Sphere	Goniophotometer	
<b>Key Photometric Results</b>			
Luminous Efficacy (Lumens/Watt)	---	---	
Total Luminous Flux (Lumens)	---	1073.1	
Peak Intensity (cd)	---	1705	
Total Radiant Flux (Watts)	---	---	
Correlated Color Temperature (CCT)	5501	---	
Color Rendering Index (CRI)	71.9	---	
Chromaticity (Chroma x / Chroma y)	0.3325 / 0.3520	---	
Chromaticity (Chroma u' / Chroma v')	0.2028 / 0.4830	---	
Duv Value	5.48e-03	---	
Stabilization Time (Light and Power) (Minutes)	30	30	
Total Run Time (Minutes)	35	40	
<b>Electrical Input Results</b>			
Input Power (Watts)	---	---	
Input Voltage (Volts AC)	---	---	
Input Current (Amps)	---	---	
Input Frequency (Hertz)	---	---	
Power Factor	---	---	
<b>Additional Information</b>			
Test Geometry Configuration	4π	Type C	
Ambient Temperature (°C):	25.0	25.0	
ISTMT (In-Situ Temperature Measurement) (°C):	N		
Supplementary Information:			
<ul style="list-style-type: none"> <li>- Absorbtion Correction used: Yes</li> <li>- 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%.</li> </ul>			



Table 1b	Test data for other output status	Test Geometry Configuration		4π	
Light output status	$\Phi_{\text{total}}$ (lm)	Chromaticity		CCT	Ra
		x	y		
High output small beam angle	911.2	0.3338	0.3545	5450	71.8
Low output big beam angle	363.2	0.3360	0.3589	5366	71.3
Low output small beam angle	379.6	0.3375	0.3617	5313	71.1



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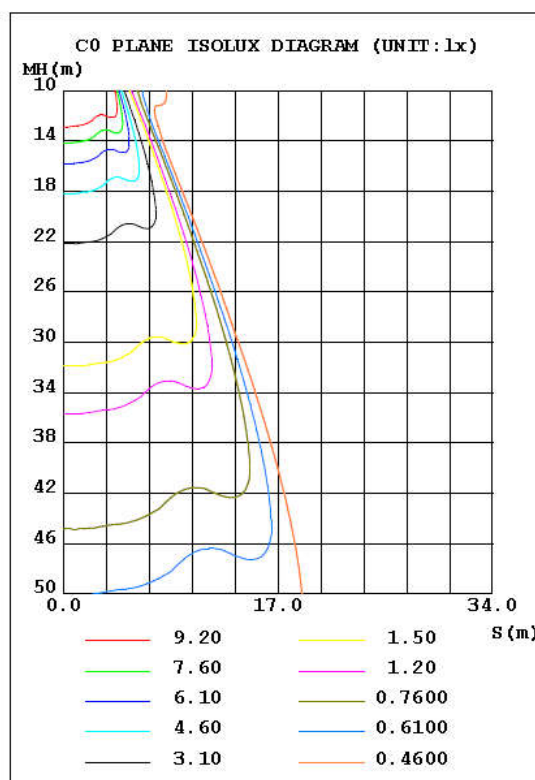
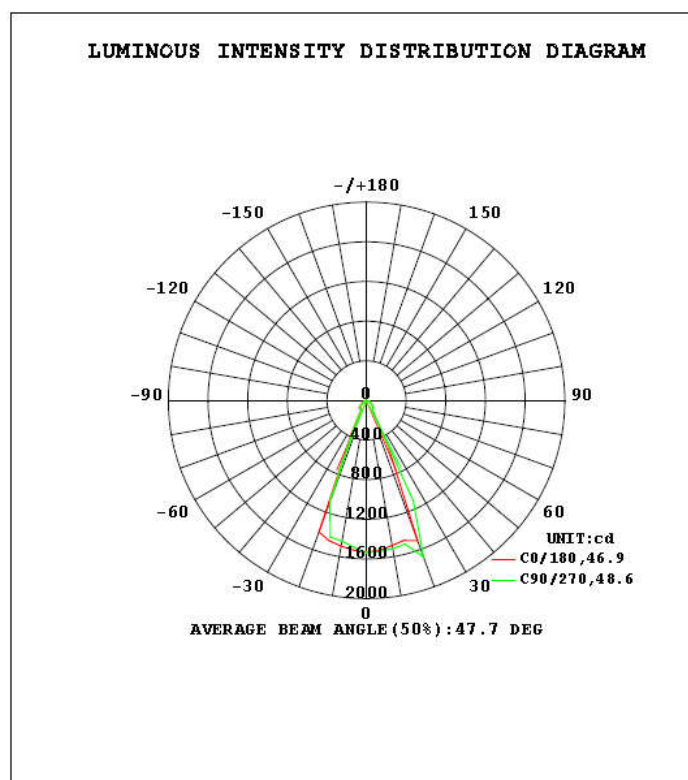
Table 2	Spectrum Test															
Model:	DY-360A GT-500RZ-S 3701970															
<p data-bbox="268 353 416 392"><b>Spectrum</b></p> <div data-bbox="268 398 1444 817"> </div> <p data-bbox="268 817 496 846">Spectral Distribution</p> <p data-bbox="1098 817 1444 846">CIE1931 Chromaticity Diagram</p> <p data-bbox="268 869 632 902"><b>Colorimetric Parameters</b></p> <p data-bbox="268 902 1501 936">Chromaticity Coordinate: <math>x = 0.3325</math> <math>y = 0.3520</math> / <math>u' = 0.2028</math> <math>v' = 0.4830</math> (<math>duv=5.48e-03</math>) <math>Dx, Dy: 0.0000, 0.0109</math></p> <p data-bbox="268 936 935 967">CCT= 5501K Prcp WL: <math>L_d=552.2nm</math> Purity=5.4%</p> <p data-bbox="268 967 1123 1001">Peak WL: <math>L_p=448nm</math> FWHM: <math>=25.8nm</math> Ratio: R=13.3% G=83.4% B=3.3%</p> <p data-bbox="268 1041 544 1072">Render Index: <math>R_a = 71.9</math></p> <table data-bbox="268 1075 1259 1140"> <tr> <td>R1 =70</td> <td>R2 =75</td> <td>R3 =78</td> <td>R4 =73</td> <td>R5 =71</td> <td>R6 =67</td> <td>R7 =81</td> </tr> <tr> <td>R8 =61</td> <td>R9 =-22</td> <td>R10=40</td> <td>R11=70</td> <td>R12=44</td> <td>R13=70</td> <td>R14=88</td> <td>R15=65</td> </tr> </table> <p data-bbox="268 1144 507 1176">WHITE:ANSI_5700K</p>		R1 =70	R2 =75	R3 =78	R4 =73	R5 =71	R6 =67	R7 =81	R8 =61	R9 =-22	R10=40	R11=70	R12=44	R13=70	R14=88	R15=65
R1 =70	R2 =75	R3 =78	R4 =73	R5 =71	R6 =67	R7 =81										
R8 =61	R9 =-22	R10=40	R11=70	R12=44	R13=70	R14=88	R15=65									

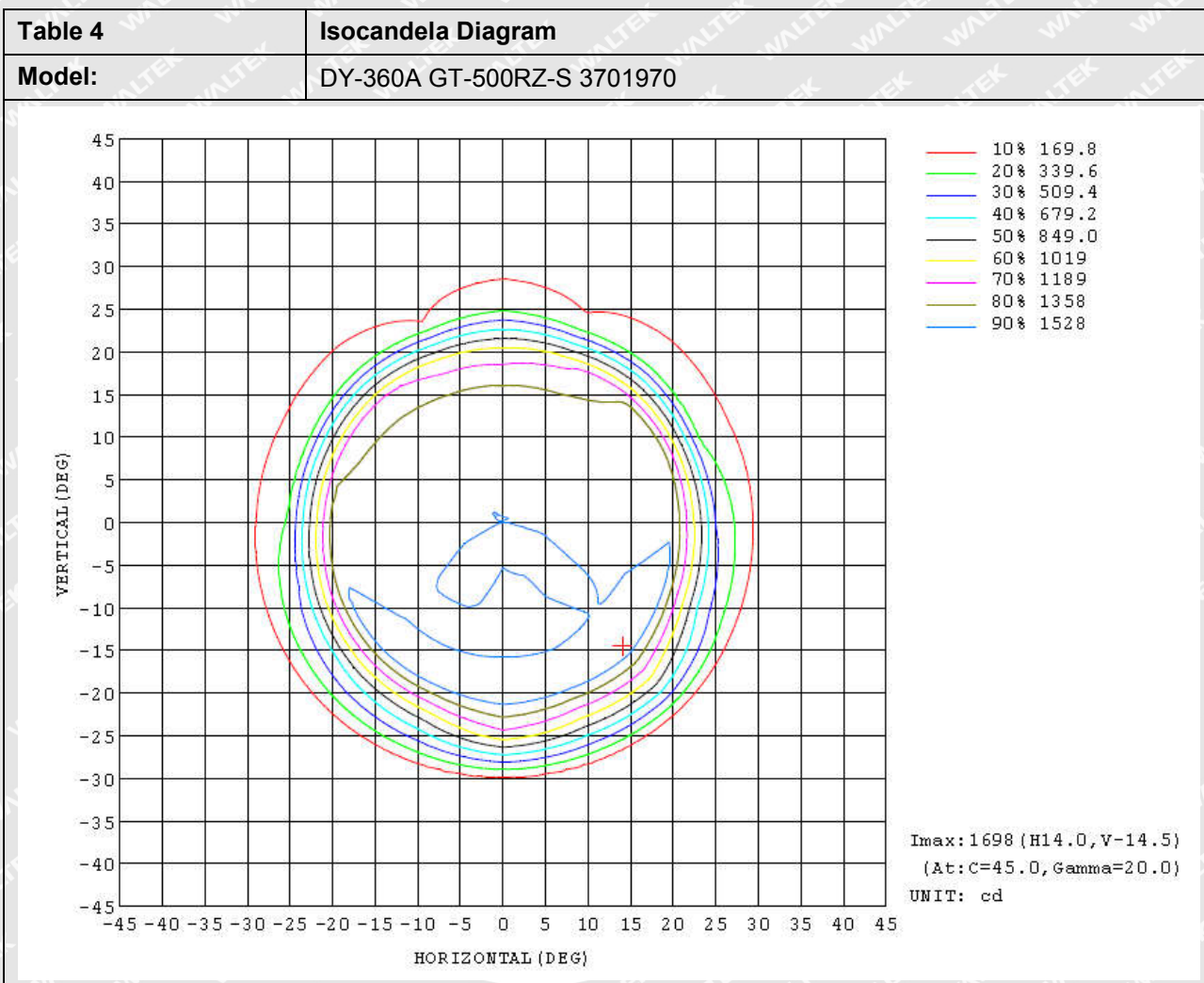
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**Table 3** Luminous intensity distribution diagram and C0 Plane Isolux Diagram  
**Model:** DY-360A GT-500RZ-S 3701970

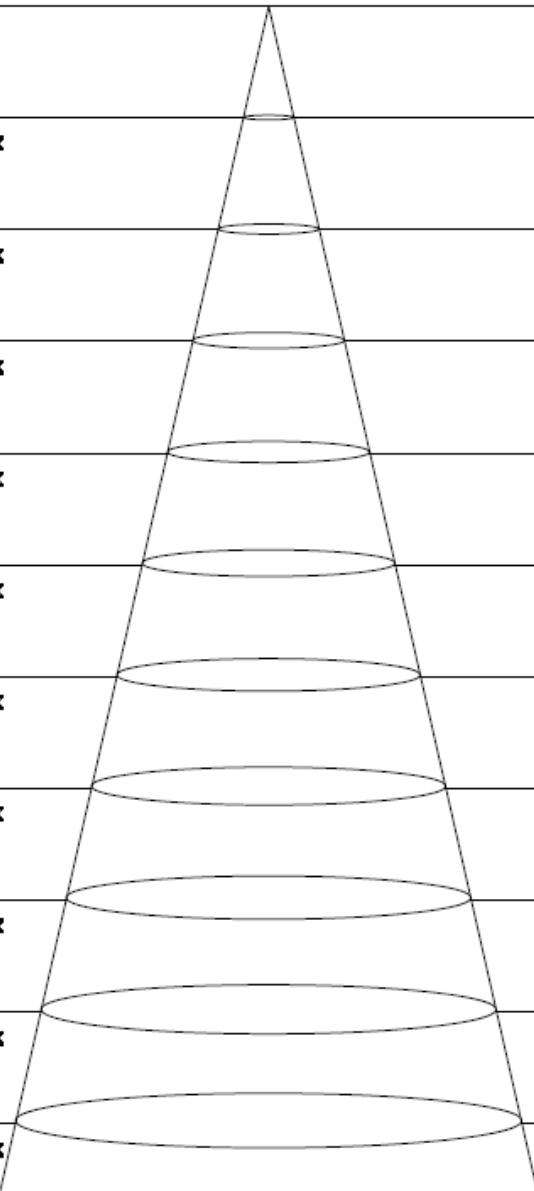
DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		I <sub>max</sub> (cd)	1705	S/MH (C0/180)	0.64
NOMINAL POWER (W)		LOR (%)	100.0	S/MH (C90/270)	0.62
RATED VOLTAGE (V)	5	TOTAL FLUX (lm)	1073.1	η UP, DN (C0-180)	0.0, 54.9
NOMINAL FLUX (lm)	1073.05	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 45.1
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.00
TEST VOLTAGE (V)		η down (%)	100.0	CIBSE SHR MAX	1.00





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<b>Table 5</b>		<b>AAI Figure</b>	
<b>Model:</b>		DY-360A GT-500RZ-S 3701970	
<b>1m</b>	<b>1123,15411x</b>		<b>86.54cm</b>
<b>2m</b>	<b>280.7,385.21x</b>		<b>173.09cm</b>
<b>3m</b>	<b>124.8,171.21x</b>		<b>259.63cm</b>
<b>4m</b>	<b>70.18,96.291x</b>		<b>346.18cm</b>
<b>5m</b>	<b>44.92,61.631x</b>		<b>432.72cm</b>
<b>6m</b>	<b>31.19,42.801x</b>		<b>519.27cm</b>
<b>7m</b>	<b>22.92,31.441x</b>		<b>605.81cm</b>
<b>8m</b>	<b>17.54,24.071x</b>		<b>692.35cm</b>
<b>9m</b>	<b>13.86,19.021x</b>		<b>778.90cm</b>
<b>10m</b>	<b>11.23,15.411x</b>		<b>865.44cm</b>
<b>Height</b>	<b>Eavg, Emax</b>	<b>Angle: 46.80deg</b>	<b>Diameter</b>

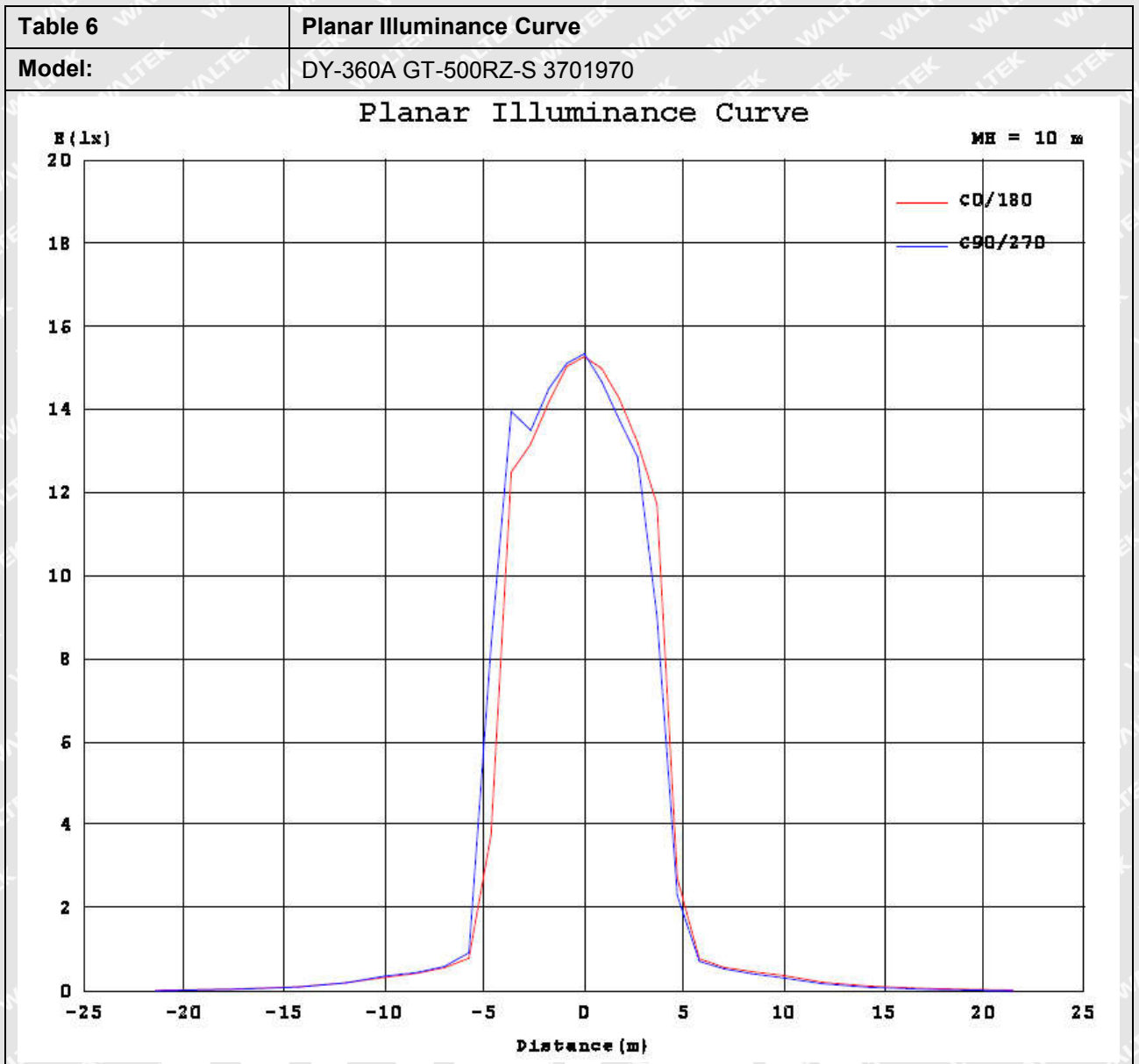




Table 7		Zonal Flux Diagram										
Model:		DY-360A GT-500RZ-S 3701970										
γ	c0	c45	c90	c135	c180	c225	c270	c315	γ	Φ zone	Φ total	%lum, lamp
10	1486	1542	1510	1533	1493	1462	1439	1473	0- 10	144.0	144.0	13.4, 13.4
20	1507	1705	1682	1600	1413	1222	1088	1351	10- 20	415.9	559.9	52.2, 52.2
30	123.0	141.7	143.1	136.4	121.2	120.7	111.5	120.9	20- 30	291.0	850.9	79.3, 79.3
40	95.86	91.28	101.9	92.18	105.6	91.13	94.92	86.45	30- 40	65.46	916.3	85.4, 85.4
50	77.84	71.26	77.07	71.40	84.09	72.01	69.64	67.63	40- 50	63.83	980.1	91.3, 91.3
60	47.82	41.16	41.48	42.99	55.08	40.83	36.74	39.22	50- 60	51.87	1032	96.2, 96.2
70	18.43	17.50	12.71	17.65	20.05	16.29	12.65	16.40	60- 70	31.56	1064	99.1, 99.1
80	2.596	2.393	1.878	2.364	2.794	2.567	1.687	2.697	70- 80	8.704	1072	99.9, 99.9
90	0	0	0	0	0	0	0	0	80- 90	0.7669	1073	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	1073	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	1073	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	1073	100, 100
130	0	0	0	0	0	0.0018	0	0.0104	120-130	0.0003	1073	100, 100
140	0	0.0040	0	0.0196	0	0.0219	0	0.0410	130-140	0.0054	1073	100, 100
150	0	0	0	0	0	0	0	0	140-150	0.0041	1073	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	1073	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	1073	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	1073	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		





<b>Table 8</b>		<b>Luminous Distribution Intensity Data</b>																		
<b>Model:</b>		DY-360A GT-500RZ-S 3701970																		
<b>Table--1</b>		<b>UNIT: cd</b>																		
<b>C (DEG)</b>	<b>γ (DEG)</b>	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	0	1527	1531	1541	1533	1535	1525	1533	1528	1527	1531	1541	1533	1535	1525	1533	1528			
0	5	1522	1531	1541	1532	1529	1537	1539	1525	1517	1495	1508	1494	1486	1487	1502	1511			
0	10	1486	1522	1542	1521	1519	1532	1533	1509	1493	1461	1462	1451	1439	1453	1473	1472			
0	15	1462	1521	1529	1497	1498	1508	1511	1482	1465	1450	1454	1438	1427	1435	1448	1435			
0	20	1507	1593	1705	1661	1682	1618	1600	1534	1413	1305	1222	1103	1088	1155	1351	1498			
0	25	506	645	1015	967	1116	830	723	570	366	270	245	172	310	190	320	324			
0	30	123	129	142	146	143	146	136	123	121	117	121	110	111	111	121	122			
0	35	104	99.0	104	104	109	106	105	99.4	106	98.2	101	92.6	98.5	91.5	97.4	97.4			
0	40	95.9	87.7	91.3	90.8	102	90.6	92.2	88.1	106	88.3	91.1	81.9	94.9	80.6	86.5	86.7			
0	45	96.0	78.5	81.0	77.9	105	77.7	80.8	81.6	107	82.2	80.5	72.8	92.2	71.2	77.2	79.1			
0	50	77.8	72.3	71.3	69.2	77.1	68.5	71.4	75.0	84.1	75.9	72.0	65.0	69.6	62.4	67.6	72.4			
0	55	61.2	61.1	56.0	56.4	57.8	55.6	56.7	62.9	66.5	65.0	58.2	50.4	53.5	49.6	54.8	62.0			
0	60	47.8	48.0	41.2	40.2	41.5	39.9	43.0	50.1	55.1	59.1	40.8	37.1	36.7	36.4	39.2	50.6			
0	65	32.2	39.2	29.4	25.2	23.6	25.3	30.1	50.2	43.6	61.0	27.6	23.5	21.3	22.6	28.1	55.1			
0	70	18.4	18.3	17.5	14.1	12.7	14.0	17.7	19.2	20.0	18.7	16.3	13.3	12.6	13.3	16.4	18.7			
0	75	7.58	7.84	8.07	6.32	5.63	6.32	7.97	8.09	7.39	7.81	7.57	6.43	5.99	6.56	7.71	7.76			
0	80	2.60	2.66	2.39	2.09	1.88	2.11	2.36	2.68	2.79	2.80	2.57	1.80	1.69	1.87	2.70	2.72			
0	85	0.37	0.37	0.23	0.15	0.11	0.15	0.23	0.39	0.47	0.38	0.16	0.04	0.03	0.05	0.20	0.40			
0	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			
0	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			
0	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			
0	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			
0	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			
0	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			
0	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			
0	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			
0	130	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	0.01	0.01			
0	135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.02	0.03	0.02			
0	140	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.02	0.00	0.02	0.02	0.02	0.00	0.03	0.04	0.03			
0	145	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.02			
0	150	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			
0	155	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			
0	160	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			
0	165	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			
0	170	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			
0	175	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			
0	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 spectroradiometer system	EVERFINE HAAS-2000	2017-03-09	2018-03-08
Standard lamp	EVERFINE D204	2017-03-09	2018-03-08

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**Attachment 2: Photo document**

**Model: DY-360A GT-500RZ-S 3701970**



Photo 1

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

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