



TEST REPORT

Reference No. : WTN17N0887473N
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-360C-BPGT-500PT-S 3701972
Ratings : External Battery
IES LM-79-08
Standards : 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:

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.
<p>Possible test case verdicts:</p> <ul style="list-style-type: none"> - 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) <p>Possible suffixes to the verdicts:</p> <ul style="list-style-type: none"> - suffix for detailed information for the client.....: - C(omment) - suffix for important information for factory inspection.....: - M(anufacturing)
<p>General remarks:</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"> 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 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 ± 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° vertical intervals and 22.5° 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		
Model:	DY-360C-BPGT-500PT-S 3701972 @High output big beam angle		
Rated Voltage:	External Battery (With full battery)	Rated Power (W):	N
Rated luminous flux (lm):	N	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)	---	2192.1	
Peak Intensity (cd)	---	885.4	
Total Radiant Flux (Watts)	---	---	
Correlated Color Temperature (CCT)	5016	---	
Color Rendering Index (CRI)	81.1	---	
Chromaticity (Chroma x / Chroma y)	0.3430 / 0.3324	---	
Chromaticity (Chroma u' / Chroma v')	0.2177 / 0.4746	---	
Duv Value	-9.17e-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:			
<ul style="list-style-type: none"> - 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		
Mid output	900.1	0.3433	0.3331	5006	81.4
Low output	361.1	0.3437	0.3339	4992	82.0



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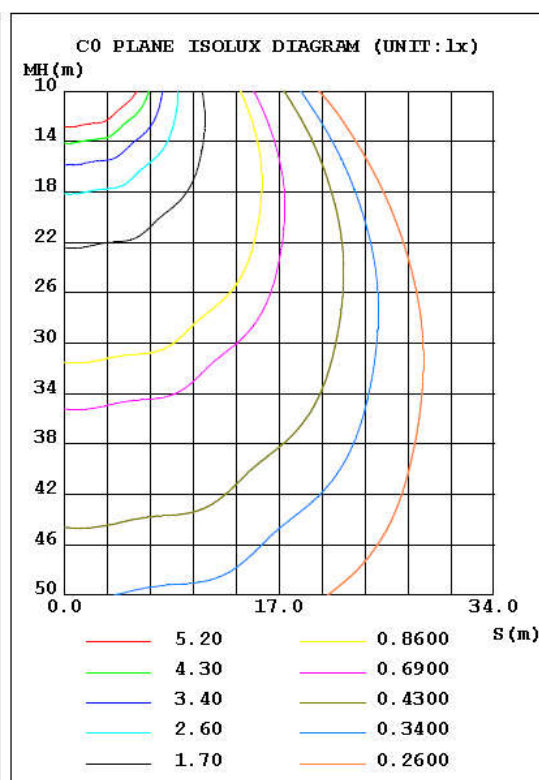
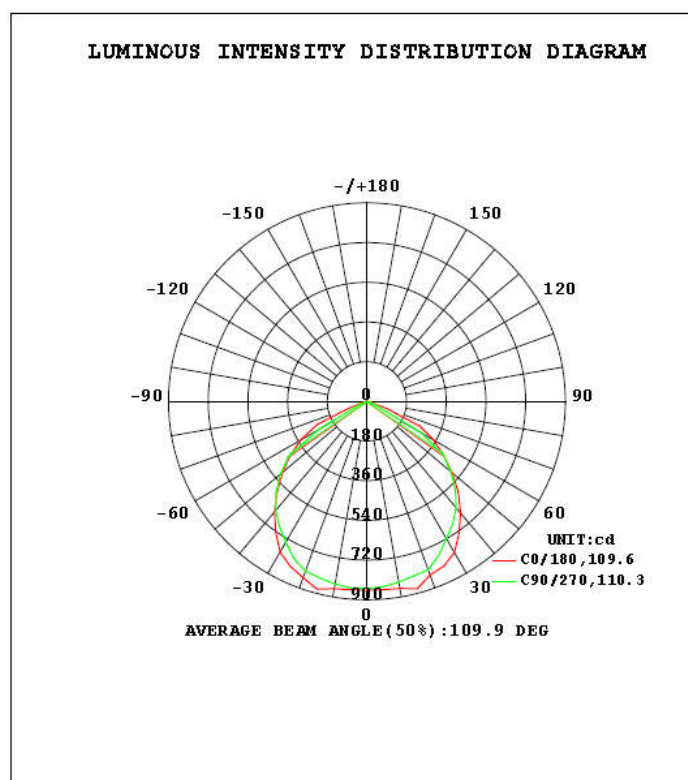
Table 2	Spectrum Test
Model:	DY-360C-BPGT-500PT-S 3701972
<p>Spectrum</p> <p>Spectral Distribution CIE1931 Chromaticity Diagram</p>	
<p>Colorimetric Parameters</p> <p>Chromaticity Coordinate: $x = 0.3430$ $y = 0.3324$ / $u' = 0.2177$ $v' = 0.4746$ ($duv = -9.17e-03$) $Dx, Dy: -0.0017, -0.0189$</p> <p>CCT= 5016K Prop WL: $L_d = 626.6nm$ Purity=2.6%</p> <p>Peak WL: $L_p = 442nm$ FWHM: =16.7nm Ratio: R=16.7% G=79.7% B=3.6%</p> <p>Render Index: Ra = 81.1</p> <p>R1 =84 R2 =84 R3 =82 R4 =82 R5 =85 R6 =79 R7 =81 R8 =72 R9 =22 R10=61 R11=86 R12=68 R13=83 R14=90 R15=80</p> <p>WHITE:OUT</p>	

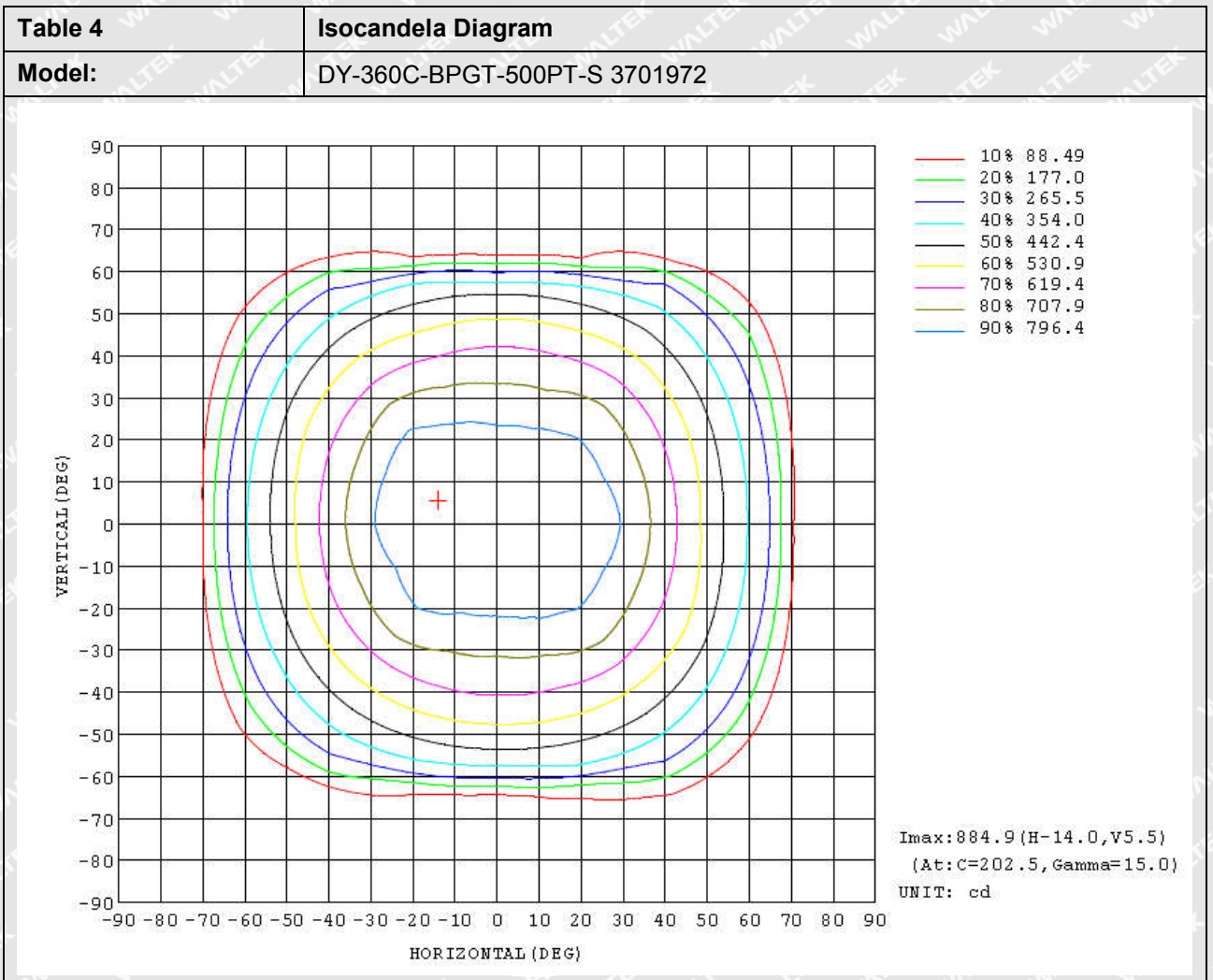
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Table 3 Luminous intensity distribution diagram and C0 Plane Isolux Diagram
Model: DY-360C-BPGT-500PT-S 3701972

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		I _{max} (cd)	885.4	S/MH (C0/180)	1.33
NOMINAL POWER (W)		LOR (%)	100.0	S/MH (C90/270)	1.29
RATED VOLTAGE (V)		TOTAL FLUX (lm)	2192.1	η UP, DN (C0-180)	0.0, 49.7
NOMINAL FLUX (lm)	2192.13	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 50.3
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)		η down (%)	100.0	CIBSE SHR MAX	1.35





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Table 5		AAI Figure	
Model:		DY-360C-BPGT-500PT-S 3701972	
Height	Eavg, Emax	Angle: 109.57deg	Diameter
1m	279.6, 856.41x		283.36cm
2m	69.90, 214.11x		566.72cm
3m	31.07, 95.161x		850.08cm
4m	17.47, 53.531x		1133.44cm
5m	11.18, 34.261x		1416.80cm
6m	7.766, 23.791x		1700.16cm
7m	5.706, 17.481x		1983.52cm
8m	4.369, 13.381x		2266.88cm
9m	3.452, 10.571x		2550.24cm
10m	2.796, 8.5641x		2833.60cm



Table 6	Planar Illuminance Curve
Model:	DY-360C-BPGT-500PT-S 3701972

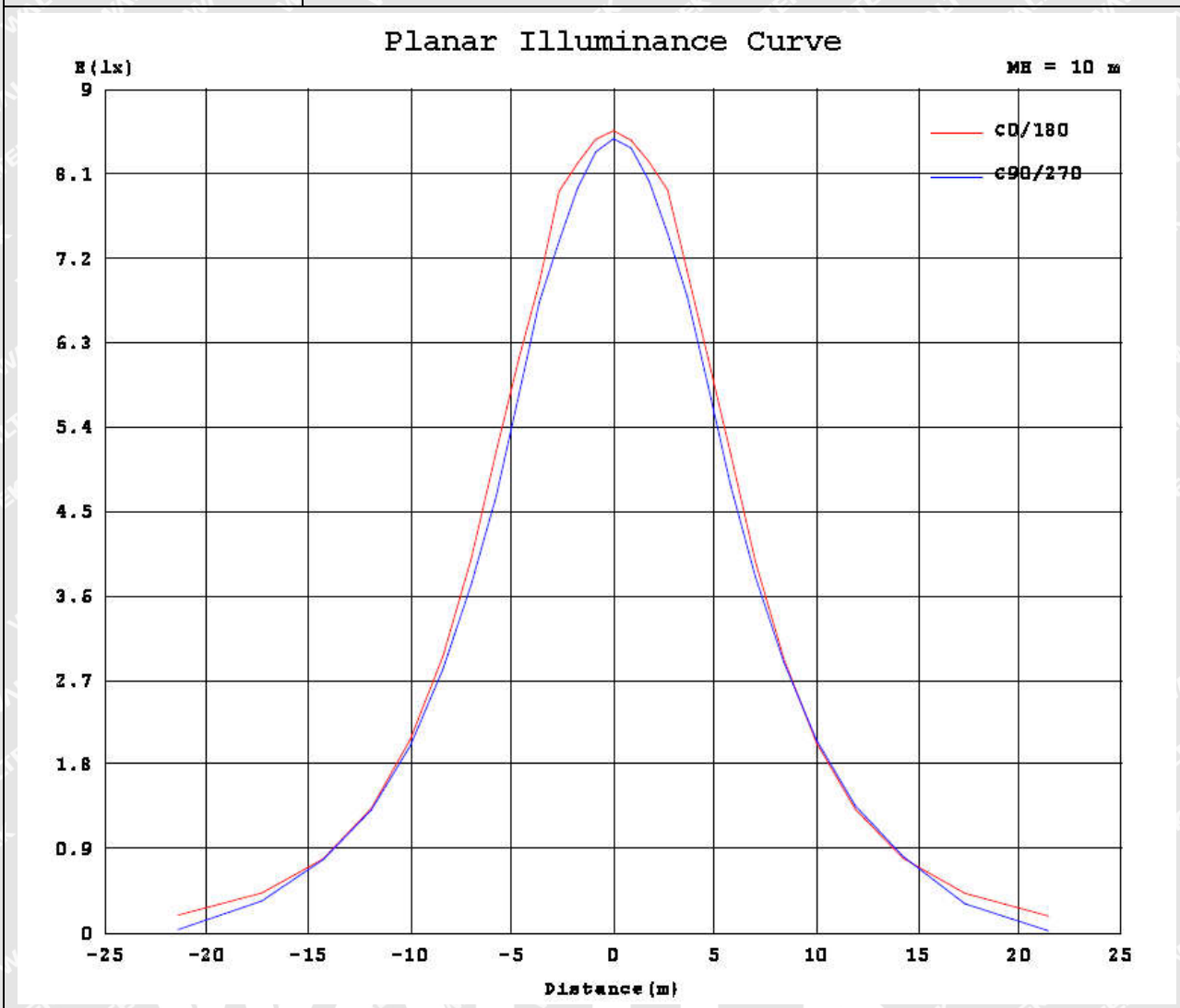




Table 7		Zonal Flux Diagram										
Model:		DY-360C-BPGT-500PT-S 3701972										
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	ϕ zone	ϕ total	\$lum, lamp
10	860.3	842.4	832.5	836.2	861.7	849.0	840.2	842.7	0- 10	80.84	80.84	3.69,3.69
20	837.1	846.6	812.2	840.4	850.6	862.1	818.4	853.6	10- 20	239.1	320.0	14.6,14.6
30	792.6	785.4	719.4	777.1	790.1	798.5	737.3	782.2	20- 30	370.8	690.8	31.5,31.5
40	659.4	659.3	628.8	639.9	653.6	669.2	645.6	668.0	30- 40	445.3	1136	51.8,51.8
50	504.3	516.7	497.5	500.7	500.7	525.4	513.7	529.8	40- 50	449.8	1586	72.3,72.3
60	347.3	357.1	280.4	336.6	346.1	348.7	255.9	368.5	50- 60	383.1	1969	89.8,89.8
70	97.57	110.9	13.04	68.57	87.52	92.51	12.44	82.77	60- 70	196.0	2165	98.8,98.8
80	5.438	4.209	3.812	4.339	4.855	3.985	3.054	3.986	70- 80	25.40	2190	99.9,99.9
90	0.0011	0.0035	0.0027	0.0021	0	0	0	0	80- 90	1.748	2192	100,100
100	0	0	0	0	0	0	0	0	90-100	0.0012	2192	100,100
110	0	0	0	0	0	0	0	0	100-110	0	2192	100,100
120	0	0	0	0	0	0	0	0	110-120	0	2192	100,100
130	0	0	0	0	0.0027	0	0	0	120-130	0.0001	2192	100,100
140	0.0005	0	0	0	0.0035	0	0	0	130-140	0.0002	2192	100,100
150	0.0019	0	0	0	0.0013	0	0	0	140-150	0.0002	2192	100,100
160	0	0	0	0	0	0	0	0	150-160	0.0000	2192	100,100
170	0	0	0	0	0	0	0	0	160-170	0.0000	2192	100,100
180	0	0	0	0	0	0	0	0	170-180	0.0000	2192	100,100
DRG	LUMINOUS INTENSITY:cd								UNIT:lm			

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Table 8		Luminous Distribution Intensity Data																		
Model:		DY-360C-BPGT-500PT-S 3701972																		
Table--1		UNIT: cd																		
τ (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	0	856	853	852	850	848	847	845	845	856	853	852	850	848	847	845	845			
5	5	857	853	849	846	843	843	842	842	856	854	851	849	848	847	846	845			
10	10	860	850	842	836	832	833	836	842	862	856	849	843	840	840	843	845			
15	15	879	882	837	824	820	821	833	873	880	885	850	833	829	829	840	875			
20	20	837	830	847	815	812	812	840	837	851	851	862	824	818	818	854	826			
25	25	823	810	808	791	771	783	814	804	825	821	827	802	786	792	814	808			
30	30	793	782	785	738	719	729	777	772	790	789	799	755	737	744	782	784			
35	35	729	723	735	690	678	681	714	710	722	724	748	704	693	695	737	726			
40	40	659	654	659	634	629	627	640	647	654	656	669	643	646	645	668	658			
45	45	587	597	591	575	567	568	569	579	577	594	596	579	586	585	598	596			
50	50	504	531	517	506	498	496	501	500	501	526	525	509	514	514	530	522			
55	55	424	442	440	430	420	420	421	423	426	441	448	439	437	439	452	438			
60	60	347	350	357	343	280	318	337	334	346	342	349	339	256	322	369	355			
65	65	263	265	263	131	57.7	108	237	248	250	256	255	91.6	40.8	87.9	277	271			
70	70	97.6	129	111	22.5	13.0	16.0	68.6	117	87.5	139	92.5	13.4	12.4	13.8	82.8	163			
75	75	11.0	11.8	9.49	8.03	7.60	8.12	9.48	13.0	10.2	10.1	10.4	7.08	6.39	7.19	8.92	11.9			
80	80	5.44	5.45	4.21	4.16	3.81	4.05	4.34	5.46	4.86	4.95	3.99	3.08	3.05	3.21	3.99	5.42			
85	85	1.27	1.33	1.24	1.24	1.08	1.13	1.07	1.07	1.11	1.01	0.79	0.63	0.65	0.70	0.96	1.35			
90	90	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
95	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	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	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	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	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	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	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	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	0.00	0.00			
135	135	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			
140	140	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			
145	145	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			
150	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			
155	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			
160	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			
165	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			
170	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			
175	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			
180	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-360C-BPGT-500PT-S 3701972



Photo 1

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

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