



Guangdong Meide Testing Technology Co., Ltd.



TEST REPORT OF ANSI/IES LM-79-19

APPROVED METHOD FOR OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

Client..... : ROYALUX EXPORTS

Address..... : 150-B, NOIDA SPECIAL ECONOMIC ZONE, NOIDA, GAUTAM BUDHHA NAGAR,
UTTAR PRADESH, 201305, INDIA

Test Model..... : 402Y0200W30L70AY,402Y0200W57L70AY

Brand Name..... : 

Testing Laboratory..... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road,Songshan Lake
Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr., China.

Testing location..... : As above

Report No..... : C02A21070284L01003

Test Date..... : July 19, 2021 – July 23, 2021

Report Date..... : July 27, 2021

Tested by:

Tim Qian/ Test Engineer

Checked by:

Ken Mo / Project Engineer

Approved by:

Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. 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.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



1.Product Description for Equipment under Test(EUT)

Table with 2 columns: Parameter and Value. Parameters include Model Tested, Manufacturer, Address, Product Type, Rated Voltage/Frequency, Rated Power, Nominal CCT, LED Driver Manufacturer, LED Driver Model No, LED Manufacturer, and LED Model No.

Model Similarity:

Model nomenclature: 4XXDyyyyWCVRXY

- "4" denotes SHOEBOX Series;
"XX" can be 01 or 02, which denotes luminaires shell Shape and Overall dimension;
"D" can be Y or N, which denotes Dimmable or Non-dimmable;
"yyyy" denotes the wattage of luminaires;
"C" can be two arbitrary numbers, which denotes LED Color Temperature;
"V" can be L or H, which denotes range of input voltage;
"R" can be two arbitrary numbers, which denotes CRI;
"X" can be A, B, C or D, which denotes Light Distribution;
"Y" can be an arbitrary number, letter or blank, which denote the company's internal information.



2. Standards Used

- ANSI/IES LM-79-19:APPROVED METHOD:OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS
- IES TM-30-18 IES Method for Evaluating Light Source Color Rendition (This Method is not in Nvlap accreditation scope)
- ANSI C82.77-10:2014 Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment-Solid State

3. Test equipment list

Test Equipment	Serial No	Model No	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2021/09/29
Digital Power Meter	MD-E001	PF2010	2021/09/29
AC Testing Power Source	MD-E002	DPS1060	2021/09/29
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2021/09/29
Integrating Sphere System	MD-E029	2M	2021/09/29
High Accuracy Array Spectroradio Meter	MD-E011	HAAS-3000	2021/09/29
Digital Power Meter	MD-E008	PF310	2021/09/29
AC Testing Power Source	MD-E010	DPS1010	2021/09/29
Standard Lamp	MD-E012	D204	2022/05/18

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).



4. Test Method

Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ during measurement. And relative humidity between 10% and 65%.

Goniophotometer System

The sample was tested according to the ANSI/IES LM-79-19.

Photometric parameters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.

Integrating Sphere System

The sample was tested according to the ANSI/IES LM-79-19.

The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and 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.

Fidelity Index (R_f) and Gamut Index (R_g) Calculation

The R_f , R_g was calculated according to IES TM-30-18 by using calculation tools. The calculation was based on the measured SPD from 380nm to 780nm with 1nm intervals. All the colors in this report is for reference only.

THD and PF Test

The sample was tested according to the ANSI C82.77-10:2014.

The sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.



5.Integrating Sphere Test Results

5.1 Test Data

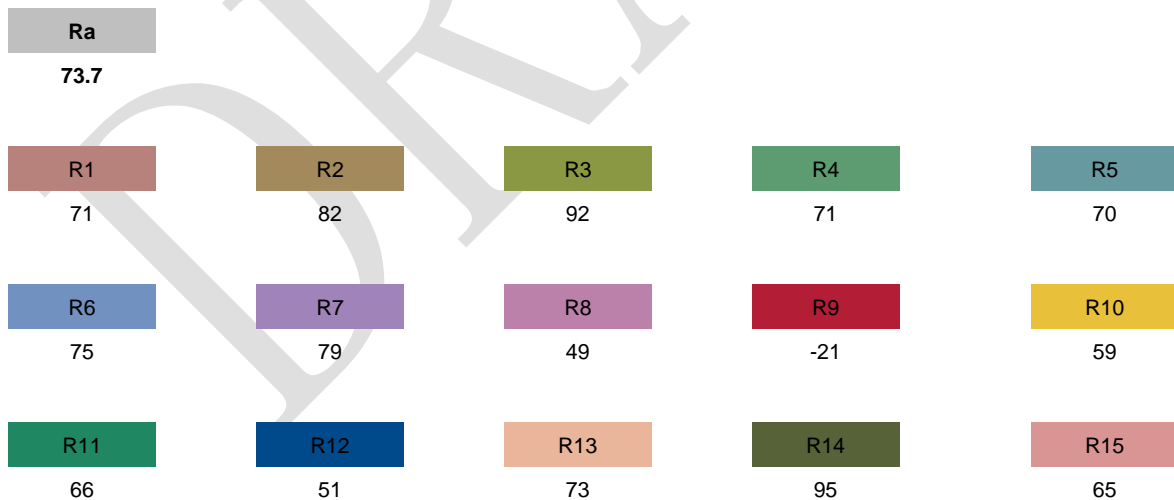
Test Ambient Temperature	25.1°C	Test orientation	Downward
Operate time(Min.)	75	stabilization time(Min.)	60

Optical and Electrical Measurement Result

Model Number	Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)	CCT (K)
402Y0200W30L70AY	119.78	60	1.662	198.1	0.9953	28560	144.14	3014
402Y0200W57L70AY	119.79	60	1.643	195.9	0.9952	29483	150.52	5612

Model Number	Ra	R9	Rf	Rg	x	y	u'	v'	Duv
402Y0200W30L70AY	73.7	-21	74	97	0.4329	0.3975	0.2508	0.5182	-2.09E-03
402Y0200W57L70AY	74.3	-15	74	95	0.3299	0.3422	0.2047	0.4778	1.75E-03

5.2 Model # 402Y0200W30L70AY Color Rendering Index





5.3.1 Model # 402Y0200W30L70AY ANSI/IES TM-30-18 Color Rendition Report

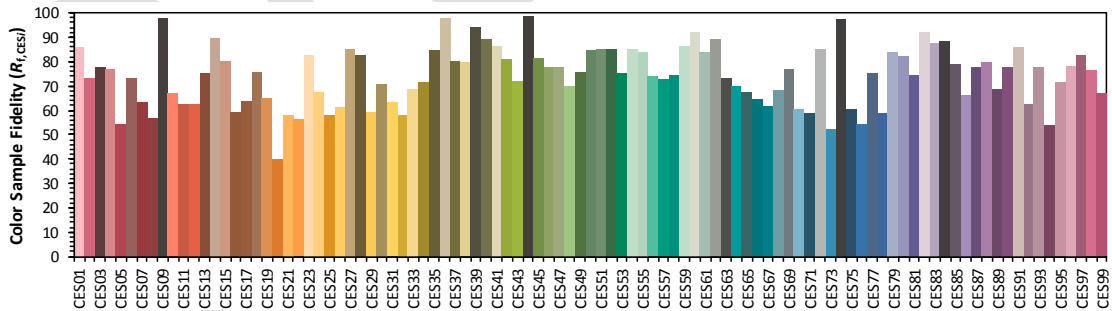
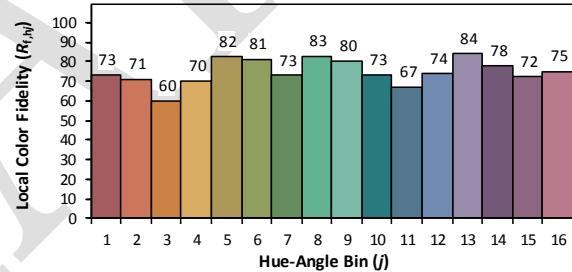
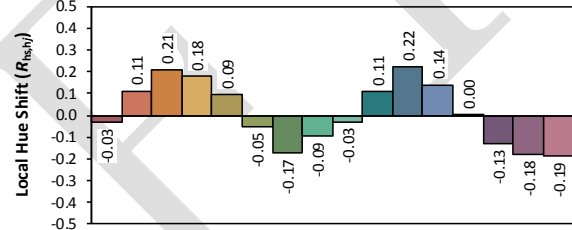
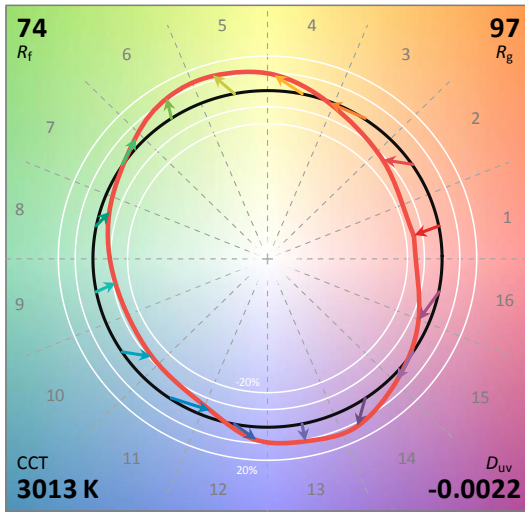
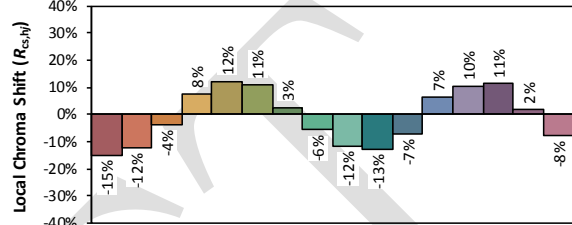
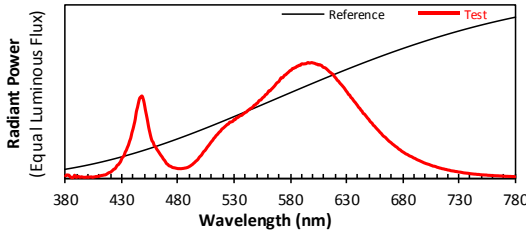
ANSI/IES TM-30-18 Color Rendition Report

Source: JK3030AWT-00-0000-000B0HH422E

Manufacturer: ROYALUX EXPORTS

Date: 2021/7/23

Model: 402Y0200W30L70AY



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4329
 y 0.3974
 u' 0.2509
 v' 0.5181

CIE 13.3-1995 (CRI)	
R_a	74
R_g	-21

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



5.3.3 Model # 402Y0200W57L70AY ANSI/IES TM-30-18 Color Rendition Report

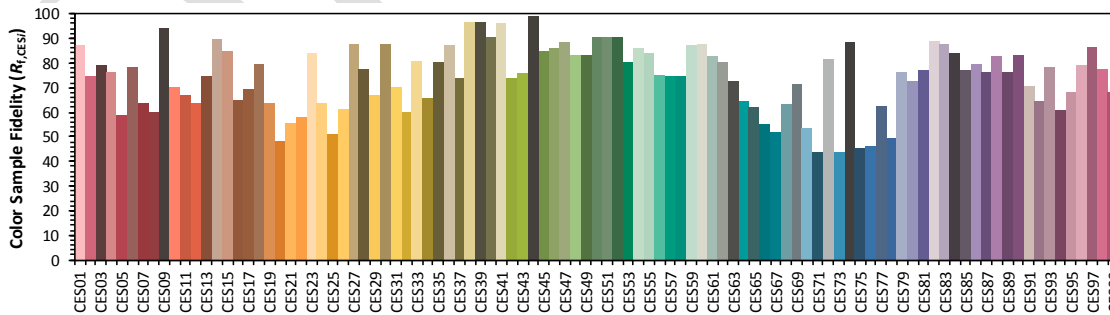
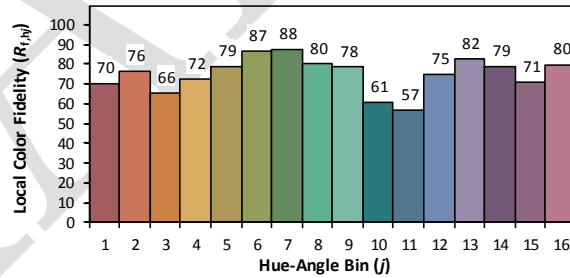
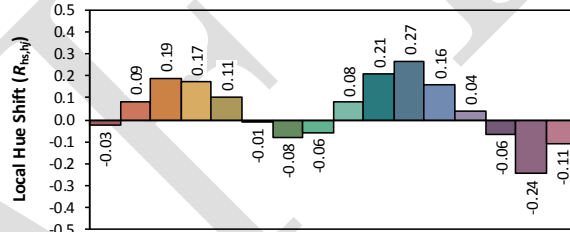
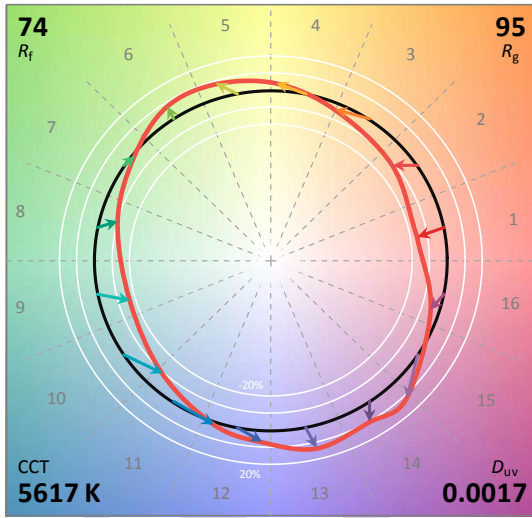
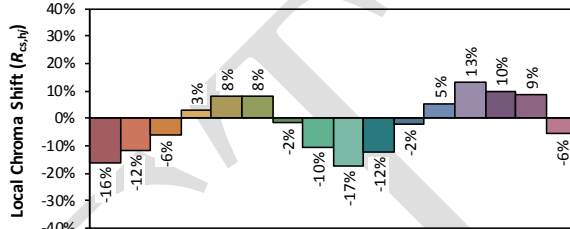
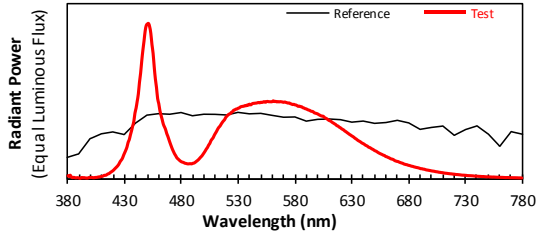
ANSI/IES TM-30-18 Color Rendition Report

Source: JK3030AWT-00-0000-000B0HH422E

Manufacturer: ROYALUX EXPORTS

Date: 2021/7/23

Model: 402Y0200W57L70AY



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.3298
y 0.3420
u' 0.2047
v' 0.4776

CIE 13.3-1995 (CRI)	
R _a	74
R ₉	-15

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



5.4 Model # 402Y0200W30L70AY Relative Spectral Power Distribution

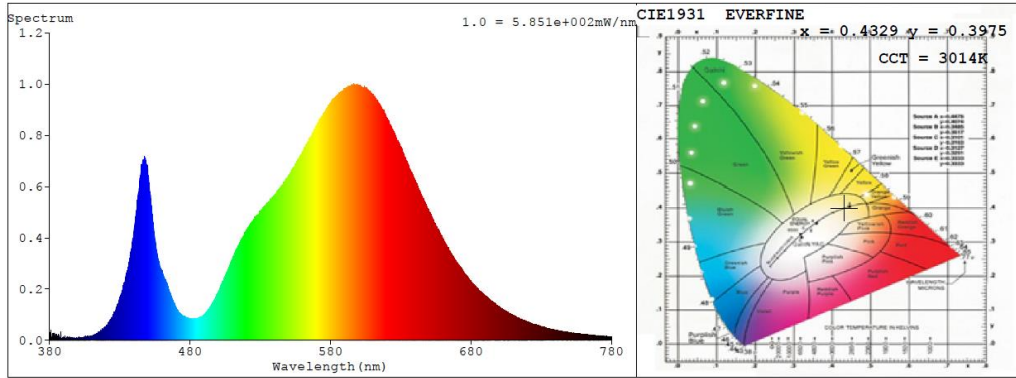


Table with 10 columns: nm, mW, nm, mW, nm, mW, nm, mW, nm, mW. It lists spectral power distribution data for wavelengths from 380nm to 516nm.



Guangdong Meide Testing Technology Co., Ltd.



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.6431	599	0.9956	648	0.5294	697	0.1427	746	0.0333
551	0.6484	600	0.9934	649	0.5165	698	0.1382	747	0.0325
552	0.664	601	0.9908	650	0.5066	699	0.1335	748	0.0326
553	0.6719	602	0.9887	651	0.4914	700	0.1297	749	0.0306
554	0.6747	603	0.9828	652	0.4812	701	0.1259	750	0.0297
555	0.6881	604	0.9825	653	0.4726	702	0.1231	751	0.0286
556	0.6966	605	0.9745	654	0.4567	703	0.1201	752	0.0286
557	0.7044	606	0.9786	655	0.4497	704	0.1174	753	0.0277
558	0.7189	607	0.9736	656	0.4381	705	0.1124	754	0.0276
559	0.7234	608	0.9704	657	0.4273	706	0.1098	755	0.0271
560	0.7362	609	0.9585	658	0.417	707	0.1048	756	0.025
561	0.7525	610	0.9535	659	0.4068	708	0.1037	757	0.025
562	0.7522	611	0.9509	660	0.395	709	0.1017	758	0.0244
563	0.7634	612	0.9442	661	0.3862	710	0.0983	759	0.0238
564	0.7729	613	0.9351	662	0.3739	711	0.0938	760	0.0227
565	0.7831	614	0.9261	663	0.3631	712	0.0918	761	0.0226
566	0.7936	615	0.916	664	0.3566	713	0.088	762	0.0217
567	0.8065	616	0.9094	665	0.3495	714	0.0865	763	0.0215
568	0.8192	617	0.9009	666	0.3384	715	0.083	764	0.021
569	0.8265	618	0.8955	667	0.3289	716	0.0812	765	0.021
570	0.8336	619	0.8809	668	0.3189	717	0.0794	766	0.0202
571	0.8507	620	0.8692	669	0.3119	718	0.0764	767	0.0196
572	0.8654	621	0.8576	670	0.3045	719	0.0751	768	0.0196
573	0.8642	622	0.8427	671	0.2951	720	0.0718	769	0.0182
574	0.8734	623	0.8361	672	0.2881	721	0.0701	770	0.0176
575	0.887	624	0.8222	673	0.2802	722	0.0686	771	0.0176
576	0.8907	625	0.8114	674	0.2726	723	0.0648	772	0.0162
577	0.9009	626	0.8012	675	0.2668	724	0.0635	773	0.0164
578	0.909	627	0.7896	676	0.2575	725	0.0622	774	0.0161
579	0.918	628	0.7783	677	0.2488	726	0.0609	775	0.0154
580	0.9274	629	0.764	678	0.2441	727	0.0582	776	0.0158
581	0.9307	630	0.7497	679	0.235	728	0.0576	777	0.0149
582	0.9444	631	0.7378	680	0.2283	729	0.0558	778	0.0143
583	0.9454	632	0.7208	681	0.2226	730	0.0532	779	0.0145
584	0.9516	633	0.7156	682	0.2161	731	0.0528	780	0.0133
585	0.9541	634	0.6965	683	0.2094	732	0.0513		
586	0.964	635	0.6888	684	0.2057	733	0.0494		
587	0.965	636	0.6751	685	0.2004	734	0.0471		
588	0.9734	637	0.6618	686	0.1936	735	0.0455		
589	0.9718	638	0.6513	687	0.1895	736	0.0447		
590	0.9833	639	0.638	688	0.1858	737	0.0434		
591	0.9849	640	0.6254	689	0.1805	738	0.0429		
592	0.9833	641	0.6098	690	0.1741	739	0.0415		
593	0.9854	642	0.6018	691	0.1711	740	0.0397		
594	0.9858	643	0.586	692	0.1653	741	0.0385		
595	0.9915	644	0.5768	693	0.1597	742	0.0372		
596	0.9962	645	0.5581	694	0.1556	743	0.0362		
597	0.9913	646	0.5534	695	0.1517	744	0.0352		
598	0.9926	647	0.5415	696	0.1472	745	0.035		



6. Goniophotometer Test results for model # 402Y0200W30L70AY

6.1 Test Data

Test Ambient Temperature	25.1°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	60

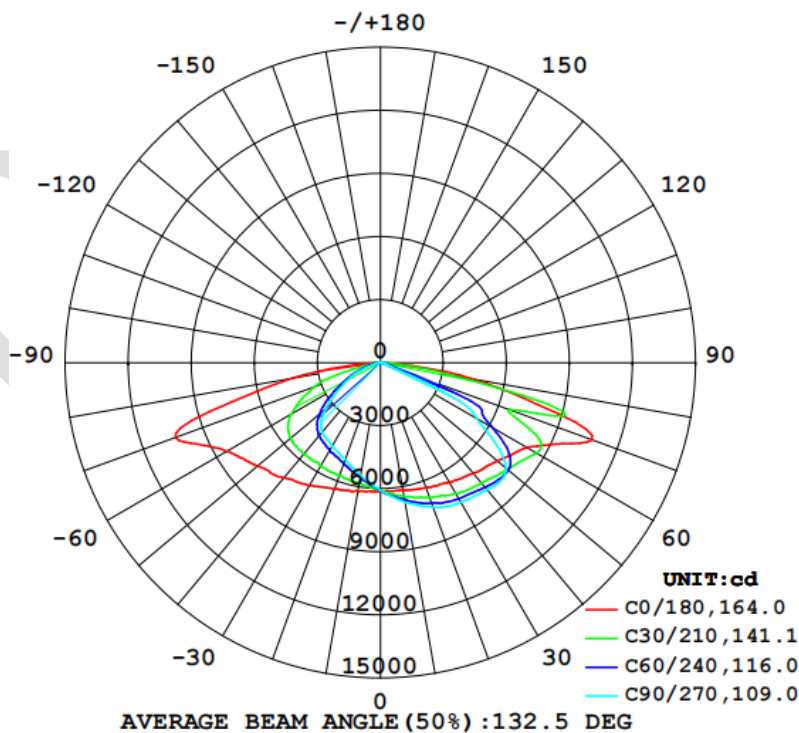
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
119.9	60	1.6603	0.9959	198.3

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	ZL (0-90°)	ZL (80-90°)
28685	144.65	99.8%	2.1%

6.2 Luminous Intensity Distribution





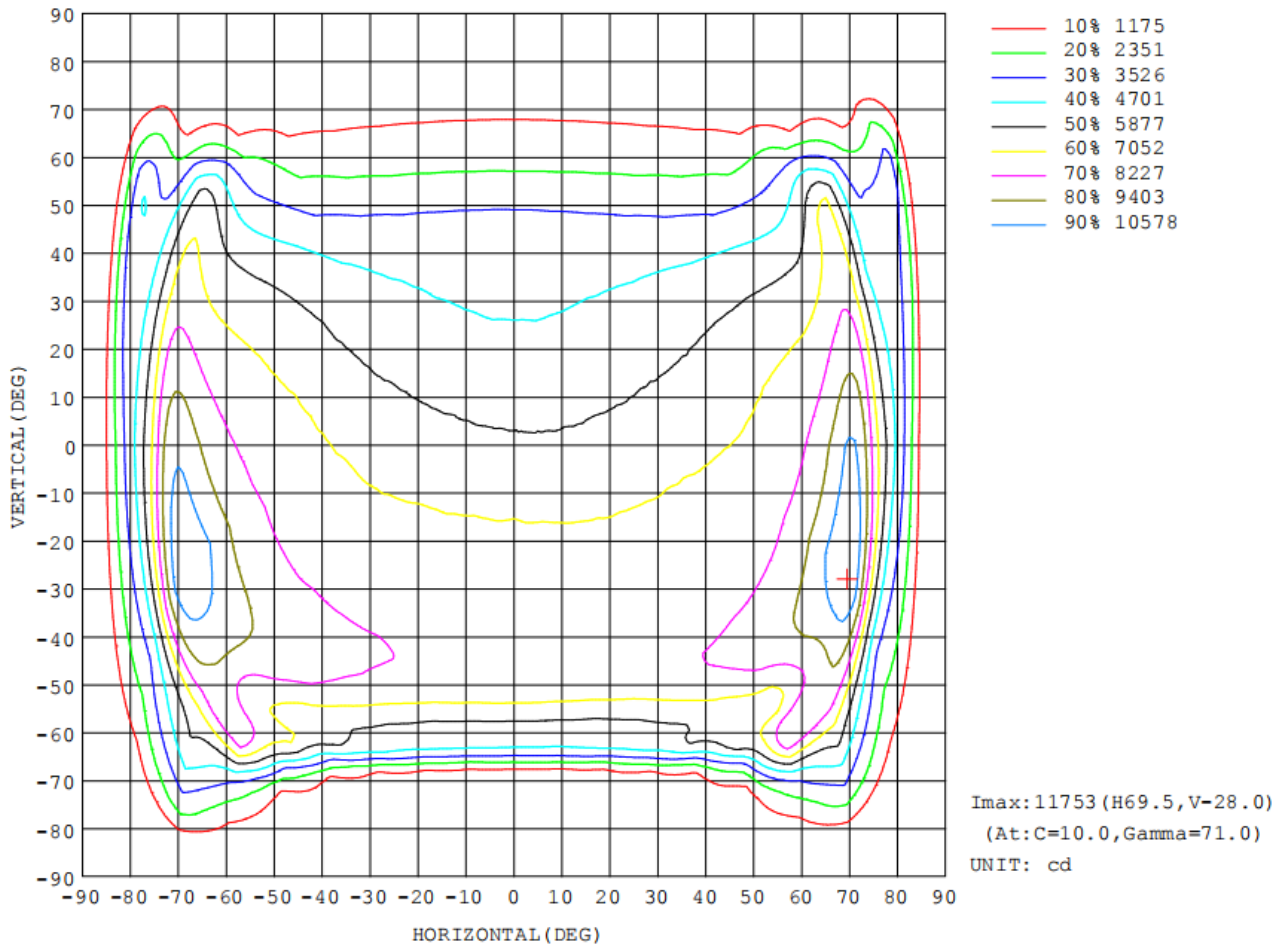
6.3 Zonal Flux Diagram

Table with 13 columns: γ, C0, C45, C90, C135, C180, C225, C270, C315, γ, Φ zone, Φ total, %lum, lamp. Rows include data for γ from 10 to 180 and a summary row for LUMINOUS INTENSITY: *10cd.





6.4 Isocandela Diagram





6.5 Luminous Distribution Intensity Data

Table--1

UNIT: ×10cd

Table with 19 columns (C (DEG) 0-180) and 19 rows (y (DEG) 0-180) containing luminous distribution intensity data.



Table--2

UNIT: x10cd

C (DEG) y (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	611	611	609	608	608	608	608	608	607	606	606	606	605	604	603	605	603		
5	609	602	596	588	585	582	578	576	574	576	576	578	580	584	587	594	596		
10	610	598	584	573	566	556	550	547	545	544	548	554	560	568	578	586	596		
15	613	596	578	562	547	534	524	519	517	518	522	531	542	555	568	583	599		
20	620	597	574	552	528	512	501	494	493	492	498	510	525	544	564	585	607		
25	627	603	571	538	512	495	482	474	473	473	480	494	512	535	562	587	614		
30	643	604	567	531	502	482	469	460	460	460	467	482	500	526	561	594	626		
35	657	614	566	521	490	469	457	449	445	448	455	469	488	519	559	600	638		
40	676	625	566	513	477	455	441	434	432	432	438	452	476	510	557	606	647		
45	698	638	567	499	455	427	413	402	399	399	408	423	453	498	558	621	674		
50	715	645	560	474	418	380	357	344	339	342	354	375	414	472	551	628	686		
55	735	647	539	426	355	309	284	270	266	269	283	307	352	422	529	632	709		
60	748	634	492	349	274	232	211	202	200	201	211	233	276	351	485	619	729		
65	761	608	416	259	197	169	157	152	149	150	156	170	199	265	423	596	758		
70	795	619	334	172	129	109	98.4	91.9	90.0	92.1	98.3	110	132	179	372	643	824		
75	654	645	185	79.2	64.6	58.5	50.0	36.1	32.1	37.8	51.2	58.4	65.6	83.6	229	700	622		
80	432	164	48.2	38.0	36.6	31.4	21.4	19.6	19.2	19.6	21.9	32.1	36.3	37.5	48.7	213	432		
85	176	24.4	16.2	12.4	13.2	10.3	8.60	8.72	7.80	8.98	8.40	10.1	12.3	11.2	15.0	19.2	248		
90	0.68	0.71	0.39	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.15	0.44	0.62	0.60		
95	1.20	1.07	0.89	0.36	0.11	0.06	0.07	0.03	0.01	0.01	0.05	0.08	0.12	0.42	0.84	0.95	0.99		
100	1.78	1.61	1.21	0.85	0.46	0.24	0.13	0.08	0.07	0.08	0.13	0.24	0.48	0.86	1.17	1.44	1.53		
105	2.05	1.89	1.42	1.07	0.81	0.59	0.43	0.34	0.31	0.35	0.42	0.58	0.79	1.02	1.38	1.73	1.84		
110	2.02	1.98	1.72	1.36	1.07	0.85	0.72	0.65	0.60	0.61	0.68	0.83	1.03	1.29	1.58	1.92	1.89		
115	1.90	1.87	1.67	1.43	1.18	1.04	0.93	0.88	0.85	0.88	0.92	1.03	1.19	1.46	1.60	1.80	1.86		
120	1.72	1.65	1.52	1.43	1.17	1.11	1.07	1.05	1.06	1.04	1.04	1.12	1.25	1.44	1.48	1.59	1.64		
125	1.50	1.50	1.44	1.20	1.15	1.10	1.11	1.16	1.24	1.20	1.16	1.14	1.17	1.23	1.37	1.47	1.43		
130	1.31	1.22	1.16	1.06	1.01	1.09	1.14	1.18	1.27	1.18	1.18	1.04	1.07	1.05	1.06	1.18	1.18		
135	1.17	1.10	1.10	1.02	0.92	1.09	1.17	1.17	1.24	1.09	1.16	1.03	0.99	1.03	1.03	1.08	1.03		
140	1.14	1.10	1.09	0.95	0.91	1.09	1.12	1.11	1.16	1.06	1.11	1.01	0.96	1.00	1.02	1.04	0.99		
145	1.15	1.09	1.09	0.96	0.98	1.10	1.12	1.10	1.15	1.07	1.10	1.06	0.98	1.00	1.03	1.04	0.98		
150	1.16	1.15	1.12	1.06	1.04	1.11	1.12	1.09	1.14	1.10	1.09	1.08	1.06	1.05	1.05	1.05	1.05		
155	1.17	1.20	1.23	1.20	1.12	1.13	1.13	1.11	1.13	1.12	1.09	1.11	1.12	1.13	1.10	1.07	1.06		
160	1.16	1.23	1.26	1.28	1.20	1.15	1.14	1.12	1.12	1.13	1.10	1.12	1.14	1.17	1.13	1.15	1.09		
165	1.30	1.26	1.26	1.30	1.24	1.19	1.18	1.17	1.14	1.18	1.16	1.17	1.19	1.23	1.18	1.18	1.16		
170	1.47	1.47	1.40	1.42	1.42	1.33	1.20	1.17	1.25	1.32	1.29	1.31	1.31	1.40	1.32	1.21	1.29		
175	1.47	1.49	1.45	1.44	1.45	1.32	1.20	1.18	1.22	1.26	1.23	1.25	1.32	1.43	1.32	1.22	1.31		
180	1.50	1.48	1.48	1.44	1.45	1.32	1.19	1.18	1.20	1.21	1.23	1.19	1.32	1.36	1.30	1.22	1.30		

6. THD and PF Test

Model Number	Voltage (V AC)	Frequency (Hz)	Power Factor	THD (%)
402Y0200W30L70AY	100.0	60	0.991	5.93
402Y0200W30L70AY	120.0	60	0.993	6.11
402Y0200W30L70AY	277.0	60	0.957	12.7



7. Photo of sample



Figure 1



Figure 2

***** END OF THE TEST REPORT*****