

Test Report Of ANSI/IES LM-79-19

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

Report Number..... : N02A23121368L00101

Client..... : ROYALUX EXPORTS PRIVATE LIMITED

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

Test Model..... : 1004Y504030W354050L

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

Date of receipt..... : Apr. 11, 2024

Date of test : Apr. 11, 2024 - Apr. 24, 2024

Date of report..... : Apr. 24, 2024

Tested by:



Allen Chen/ Test Engineer

Checked by:



Jarvis Zhang/ 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)

Representative (Tested) Model:	1004Y504030W354050L
Manufacturer:	ROYALUX EXPORTS PRIVATE LIMITED
Product Type:	Low Bay Luminaires (Commercial and Industrial)
Rated Voltage/Frequency:	100-277V AC, 50/60Hz
Rated Power:	30W/40W/50W
Rated luminous flux:	4050lm/5400lm/6750lm
Nominal CCT:	3500K/4000K/5000K
LED Manufacturer:	Bridgelux Inc.
LED Model No.:	BXEN-35E-11M-3CA, BXEN-50E-11M-3CA

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	2024/09/16
Digital Power Meter	MD-E001	PF2010	2024/09/16
AC Testing Power Source	MD-E002	DPS1060	2024/09/16
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2024/09/25
Integrating Sphere System	MD-E029	2M	2024/09/16
High Accuracy Array Spectroradiometer	MD-E011	HAAS-3000	2024/09/16
Digital Power Meter	MD-E008	PF310	2024/09/16
AC Testing Power Source	MD-E010	DPS1010	2024/09/16
Standard Lamp	MD-E036	D204	2024/09/25

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 (Integrating sphere internal temperature)	25.3℃	Test orientation	Downward
Operate time(Min.)	60	stabilization time(Min.)	30

Optical and Electrical Measurement Result

Mode	Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)	CCT (K)
50W-3500K	119.87	60	0.3981	46.68	0.9782	6097.9	130.63	3553
50W-4000K	119.89	60	0.3832	44.84	0.9762	6339.7	141.38	4252
50W-5000K	119.87	60	0.3948	46.25	0.9772	6289.7	135.99	4915

Mode	Ra	R9	Rf	Rg	x	y	u'	v'	Duv
50W-3500K	84.5	13	86	96	0.4025	0.3895	0.2344	0.5103	9.58E-05
50W-4000K	86.3	21	85	95	0.3687	0.3644	0.2223	0.4943	-2.29E-03
50W-5000K	85.2	16	85	95	0.3476	0.3538	0.2123	0.4861	9.30E-05

5.2 Mode # 50W-3500K Color Rendering Index

Ra
84.5

R1
83

R2
92

R3
97

R4
83

R5
84

R6
89

R7
85

R8
64

R9
13

R10
80

R11
83

R12
70

R13
85

R14
99

R15
76

*5.3.1 Mode # 50W-3500K ANSI/IES TM-30-18 Color Rendition Report

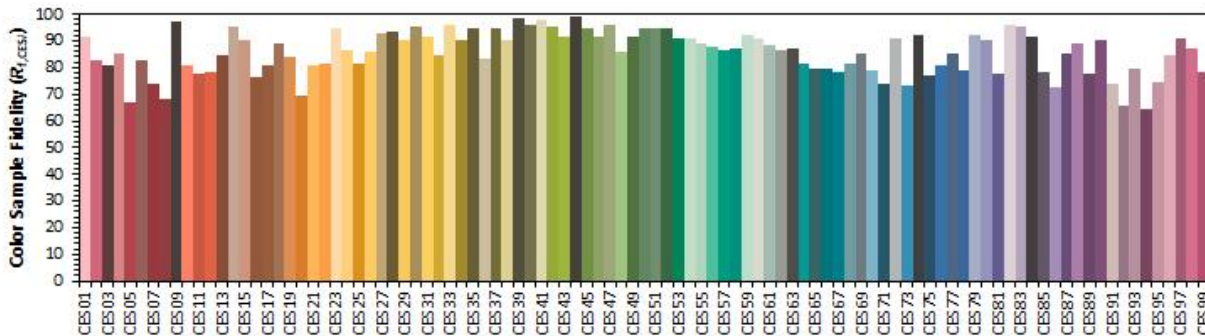
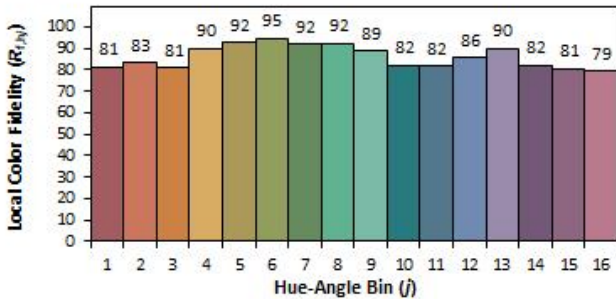
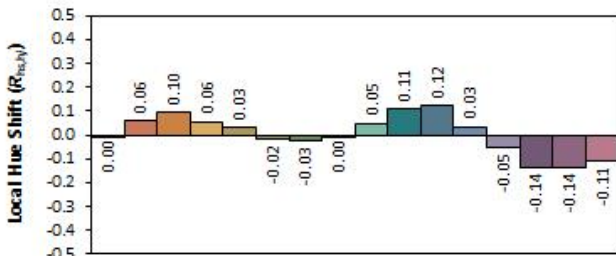
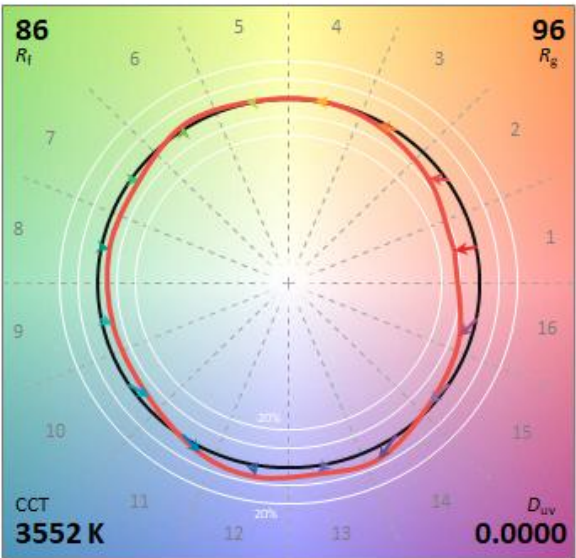
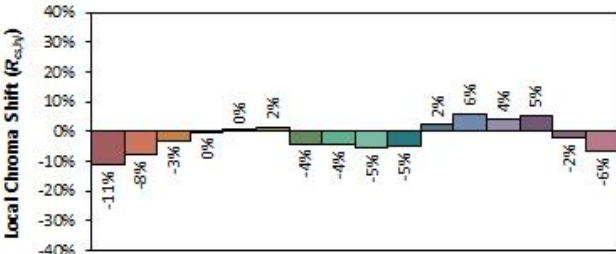
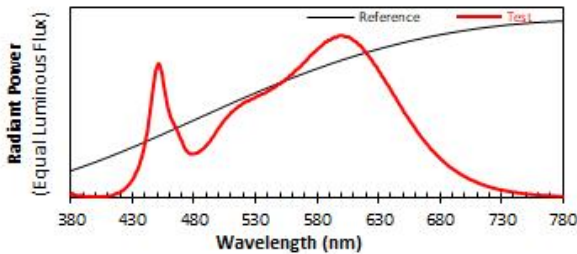
ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-35E-11M-3CA

Date: 2024/4/24

Manufacturer: ROYALUX EXPORTS PRIVATE LIMITED

Model: 1004Y504030W354050L



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

x 0.4025
 y 0.3894
 u' 0.2344
 v' 0.5103

CIE 13.3-1995
(CRI)
 R_a 85
 R_g 13

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

*5.3.2 Mode # 50W-4000K ANSI/IES TM-30-18 Color Rendition Report

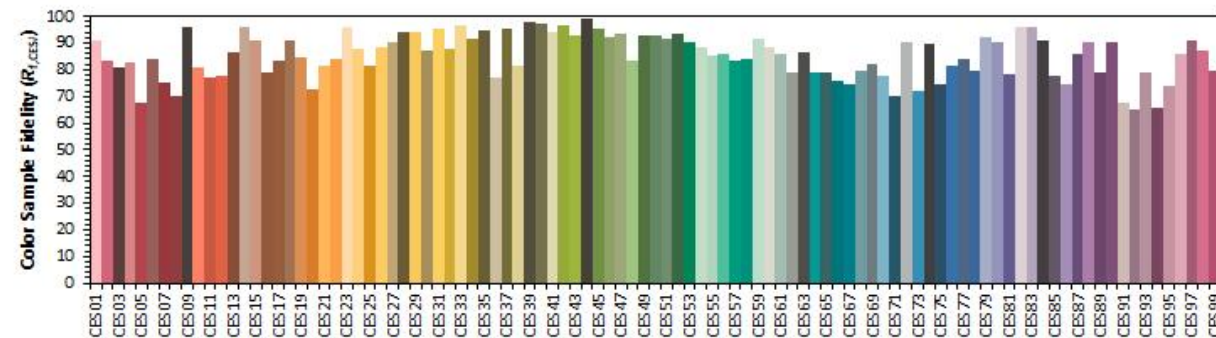
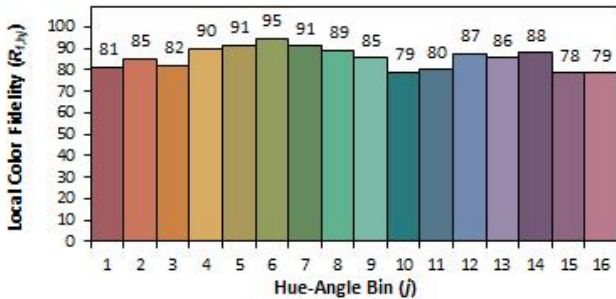
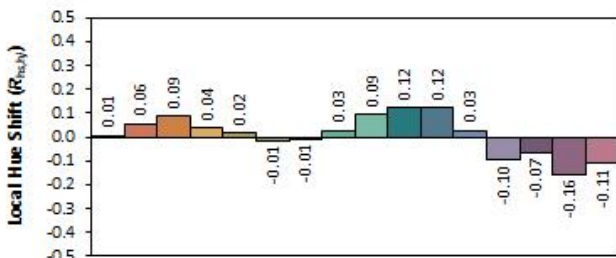
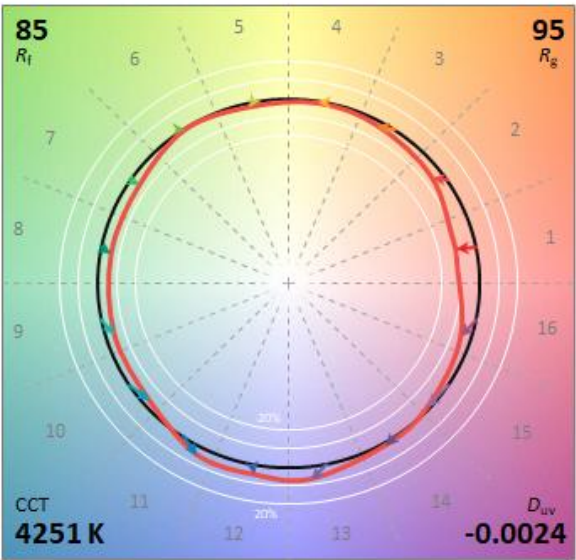
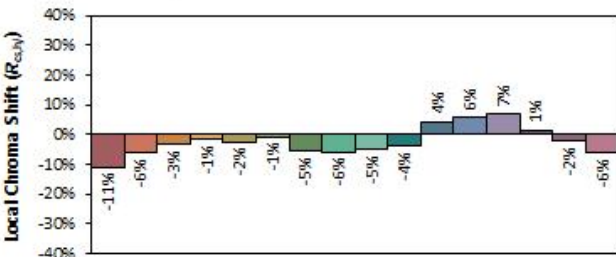
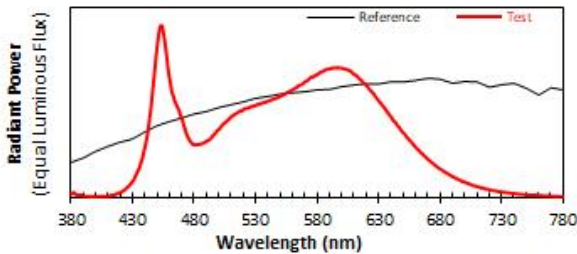
ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-35E-11M-3CA, BXEN-50E-11M-3CA

Manufacturer: ROYALUX EXPORTS PRIVATE LIMITED

Date: 2024/4/24

Model: 1004Y504030W354050L



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

x 0.3687
 y 0.3643
 u' 0.2223
 v' 0.4942

CIE 13.3-1995
(CRI)
 R_a 86
 R_g 21

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

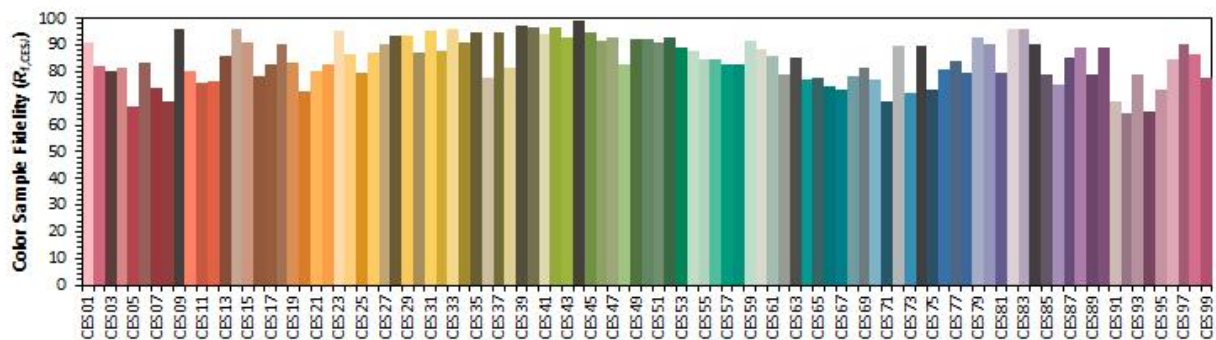
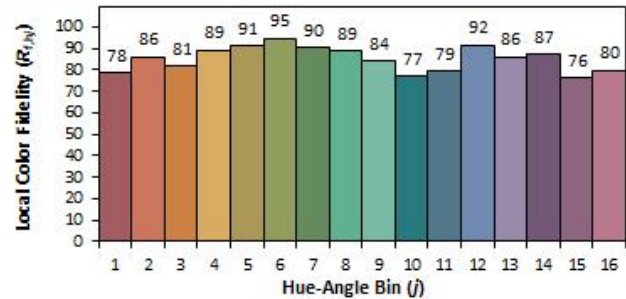
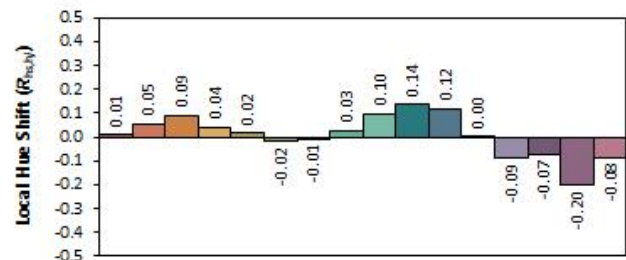
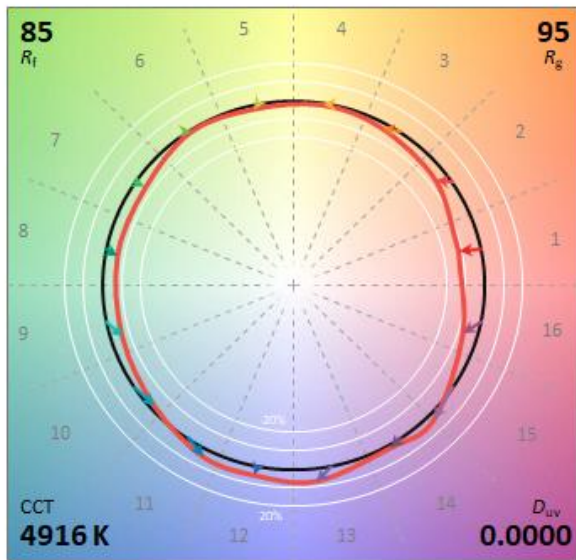
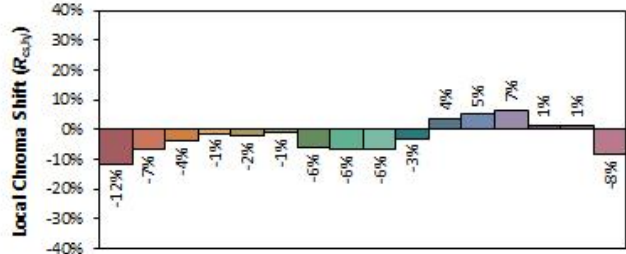
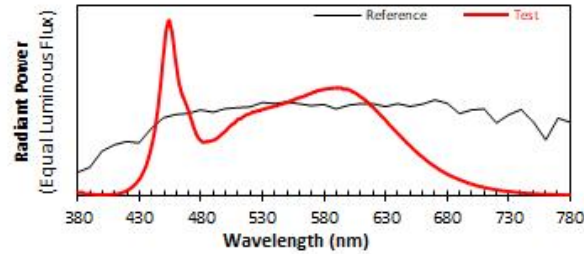
*5.3.3 Mode # 50W-5000K ANSI/IES TM-30-18 Color Rendition Report

ANSI/IES TM-30-18 Color Rendition Report

Source: BXEN-50E-11M-3CA

Date: 2024/4/24

Manufacturer: ROYALUX EXPORTS PRIVATE
LIMITED

Model: 1004Y504030W354050L

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

 $x = 0.3475$ y 0.3536

ψ 0.2123

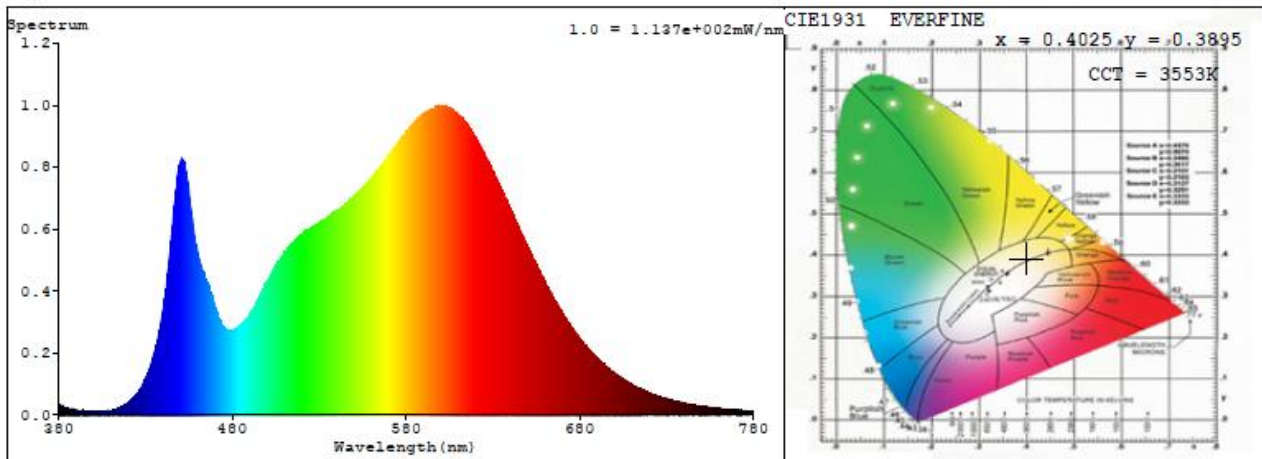
γ' 0.4860

CIE 13.3-1995
(CRI)

 R_2 85 R_9 16

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

5.4 Mode # 50W-3500K Relative Spectral Power Distribution



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.023	414	0.0201	448	0.7469	482	0.2793	516	0.5649
381	0.0328	415	0.0241	449	0.788	483	0.2776	517	0.5679
382	0.0169	416	0.028	450	0.8084	484	0.2874	518	0.571
383	0.0213	417	0.0297	451	0.8261	485	0.2913	519	0.5777
384	0.0182	418	0.0332	452	0.8175	486	0.2963	520	0.5846
385	0.019	419	0.0354	453	0.7898	487	0.3024	521	0.5868
386	0.0166	420	0.0404	454	0.7611	488	0.3092	522	0.5942
387	0.014	421	0.0459	455	0.7085	489	0.3165	523	0.596
388	0.0206	422	0.0474	456	0.6655	490	0.3243	524	0.5979
389	0.0156	423	0.0566	457	0.6242	491	0.3341	525	0.5991
390	0.015	424	0.0616	458	0.5795	492	0.3426	526	0.6062
391	0.0115	425	0.0687	459	0.5497	493	0.3505	527	0.6099
392	0.0121	426	0.0758	460	0.5224	494	0.3633	528	0.6111
393	0.0107	427	0.0855	461	0.495	495	0.3757	529	0.6156
394	0.0115	428	0.0934	462	0.4802	496	0.3824	530	0.6202
395	0.0131	429	0.1066	463	0.4659	497	0.3964	531	0.6246
396	0.0098	430	0.1163	464	0.45	498	0.4095	532	0.6295
397	0.0107	431	0.1257	465	0.4328	499	0.4192	533	0.6318
398	0.0113	432	0.1472	466	0.4232	500	0.4314	534	0.6347
399	0.01	433	0.1622	467	0.4029	501	0.4412	535	0.6404
400	0.0097	434	0.1757	468	0.3847	502	0.449	536	0.6408
401	0.0094	435	0.1939	469	0.3645	503	0.4647	537	0.6426
402	0.0118	436	0.221	470	0.3544	504	0.4727	538	0.6472
403	0.0116	437	0.2429	471	0.3328	505	0.4827	539	0.6523
404	0.0127	438	0.2681	472	0.3143	506	0.4899	540	0.6597
405	0.0105	439	0.3001	473	0.3026	507	0.4991	541	0.661
406	0.0121	440	0.3376	474	0.2897	508	0.5066	542	0.6644
407	0.0121	441	0.3778	475	0.2859	509	0.5146	543	0.6711
408	0.0104	442	0.4088	476	0.2744	510	0.5276	544	0.6751
409	0.0152	443	0.4682	477	0.2728	511	0.5294	545	0.6764
410	0.0139	444	0.5233	478	0.2737	512	0.5372	546	0.6848
411	0.0161	445	0.5797	479	0.2728	513	0.5447	547	0.6877
412	0.0174	446	0.6389	480	0.2736	514	0.5502	548	0.6982
413	0.0176	447	0.6934	481	0.2748	515	0.5558	549	0.7012

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.7013	599	0.998	648	0.5673	697	0.1484	746	0.0324
551	0.7107	600	0.9991	649	0.5558	698	0.1426	747	0.031
552	0.715	601	0.9972	650	0.5425	699	0.1408	748	0.0303
553	0.7189	602	0.9962	651	0.5269	700	0.1359	749	0.0296
554	0.7255	603	0.9902	652	0.5185	701	0.1313	750	0.028
555	0.7336	604	0.9911	653	0.5066	702	0.1284	751	0.0273
556	0.7366	605	0.9902	654	0.4969	703	0.1228	752	0.0267
557	0.7451	606	0.9897	655	0.4852	704	0.1188	753	0.0267
558	0.7547	607	0.9844	656	0.4723	705	0.1156	754	0.0261
559	0.7584	608	0.9775	657	0.4634	706	0.1118	755	0.0248
560	0.7598	609	0.976	658	0.4509	707	0.1104	756	0.0241
561	0.7716	610	0.9657	659	0.4409	708	0.1065	757	0.0232
562	0.7813	611	0.9629	660	0.4299	709	0.1034	758	0.0222
563	0.7889	612	0.9606	661	0.4153	710	0.0997	759	0.0218
564	0.7902	613	0.951	662	0.406	711	0.0953	760	0.0218
565	0.7999	614	0.9397	663	0.3959	712	0.092	761	0.0216
566	0.8043	615	0.9411	664	0.386	713	0.0896	762	0.0201
567	0.8109	616	0.9301	665	0.3757	714	0.0874	763	0.0194
568	0.8217	617	0.9237	666	0.3654	715	0.0851	764	0.0191
569	0.8291	618	0.9093	667	0.3569	716	0.0808	765	0.0185
570	0.8356	619	0.9033	668	0.3483	717	0.0787	766	0.0182
571	0.8419	620	0.8948	669	0.3384	718	0.0771	767	0.0178
572	0.8516	621	0.8846	670	0.3299	719	0.0742	768	0.0176
573	0.8605	622	0.8728	671	0.3207	720	0.0731	769	0.0172
574	0.8705	623	0.8629	672	0.3107	721	0.0699	770	0.0166
575	0.8777	624	0.8536	673	0.2999	722	0.0674	771	0.0152
576	0.8817	625	0.8451	674	0.2971	723	0.0658	772	0.0157
577	0.8911	626	0.829	675	0.2847	724	0.0635	773	0.0155
578	0.8979	627	0.819	676	0.2794	725	0.0614	774	0.0148
579	0.9033	628	0.8126	677	0.2713	726	0.0589	775	0.015
580	0.9127	629	0.8016	678	0.2622	727	0.0579	776	0.014
581	0.918	630	0.785	679	0.2565	728	0.0559	777	0.0136
582	0.9243	631	0.7753	680	0.2501	729	0.0527	778	0.0132
583	0.9324	632	0.7634	681	0.24	730	0.0538	779	0.0131
584	0.9352	633	0.7463	682	0.2329	731	0.0513	780	0.0131
585	0.9437	634	0.743	683	0.2267	732	0.0491		
586	0.9524	635	0.7253	684	0.221	733	0.0478		
587	0.9595	636	0.7131	685	0.214	734	0.0461		
588	0.9596	637	0.7012	686	0.2074	735	0.0448		
589	0.9684	638	0.6924	687	0.1998	736	0.044		
590	0.9713	639	0.6813	688	0.1935	737	0.0422		
591	0.9696	640	0.6685	689	0.1891	738	0.0408		
592	0.9799	641	0.6535	690	0.1846	739	0.0404		
593	0.979	642	0.6383	691	0.1787	740	0.0391		
594	0.9883	643	0.6288	692	0.1729	741	0.0368		
595	0.986	644	0.6205	693	0.1692	742	0.0354		
596	0.9859	645	0.6037	694	0.1645	743	0.0354		
597	0.9944	646	0.5916	695	0.1579	744	0.0338		
598	0.9965	647	0.5791	696	0.1539	745	0.0325		

6. Goniophotometer Test results for mode # 50W-3500K

6.1 Test Data

Test Ambient Temperature	25.2°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	30

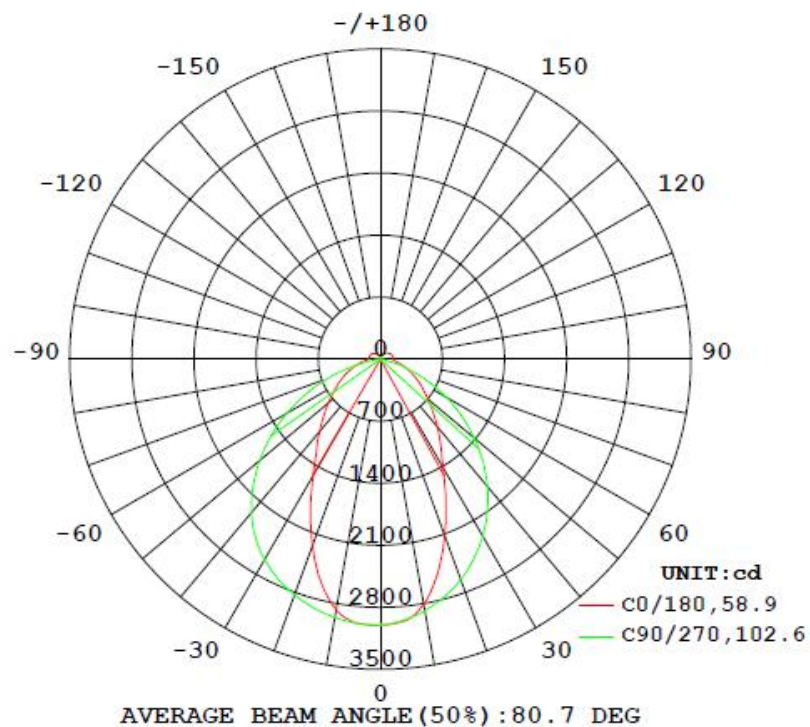
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120	60	0.3897	0.9955	46.53

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	S/MH(C0/180)	S/MH(C90/270)	ZL (20-50°)
6095.39	131	3006	0.88	1.29	48.8%

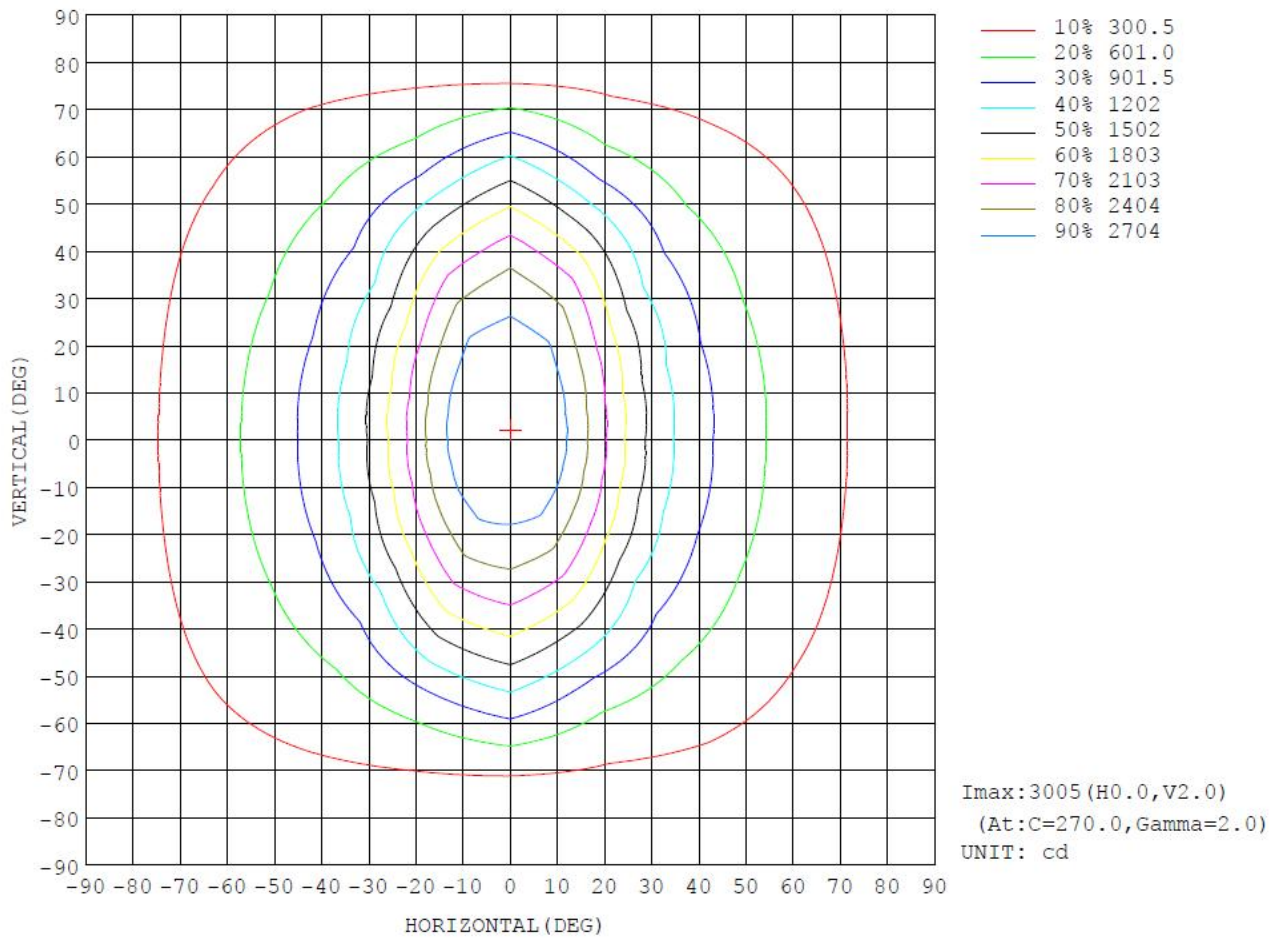
6.2 Luminous Intensity Distribution



6.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	2806	2860	2884	2890	2872	2953	2959	2908	0- 10	281.5	281.5	4.62,4.62
20	2121	2376	2645	2474	2241	2561	2829	2490	10- 20	759.9	1041	17.1,17.1
30	1413	1741	2308	1864	1519	1951	2613	1880	20- 30	1010	2052	33.7,33.7
40	1000	1160	1878	1261	1068	1342	2258	1292	30- 40	1038	3090	50.7,50.7
50	700.2	790.5	1380	845.2	765.9	924.9	1773	888.3	40- 50	926.8	4016	65.9,65.9
60	492.1	513.3	853.4	551.9	548.6	619.1	1215	575.0	50- 60	726.6	4743	77.8,77.8
70	323.4	318.4	353.0	346.3	371.7	403.3	624.5	360.6	60- 70	498.5	5242	86,86
80	193.3	164.3	34.09	187.3	228.7	230.7	109.3	194.9	70- 80	281.5	5523	90.6,90.6
90	146.4	101.3	16.96	88.49	126.8	114.2	7.880	121.8	80- 90	133.6	5657	92.8,92.8
100	146.0	96.98	15.39	85.52	128.3	108.1	8.733	116.4	90-100	100.7	5757	94.5,94.5
110	139.5	91.03	13.31	78.49	125.4	99.51	9.078	106.2	100-110	92.63	5850	96,96
120	126.8	83.26	11.72	69.02	117.0	87.16	9.757	90.90	110-120	79.43	5929	97.3,97.3
130	108.1	71.74	12.19	60.41	103.0	73.59	11.81	73.90	120-130	63.26	5993	98.3,98.3
140	86.50	58.75	13.27	52.39	85.38	61.17	13.62	57.17	130-140	46.35	6039	99.1,99.1
150	64.11	45.66	12.05	43.39	65.89	51.66	13.19	40.08	140-150	30.51	6070	99.6,99.6
160	42.97	30.56	12.20	32.74	47.10	41.15	17.77	16.67	150-160	17.04	6087	99.9,99.9
170	25.06	18.26	13.90	20.08	27.83	23.75	14.41	16.74	160-170	7.155	6094	100,100
180	11.48	14.78	15.92	15.11	11.39	14.51	15.73	15.56	170-180	1.664	6095	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

6.4 Isocandela Diagram



6.5 Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) y (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	2996	2996	2996	2996	2996	2996	2996	2996	2996	2996	2996	2996	2996	2996	2996	2996			
5	2969	2960	2961	2956	2958	2959	2964	2975	2990	2997	3000	2997	2990	2988	2981	2974			
10	2806	2813	2860	2880	2884	2891	2890	2869	2872	2905	2953	2966	2959	2946	2908	2839			
15	2499	2534	2656	2772	2777	2786	2723	2626	2598	2660	2798	2909	2909	2882	2738	2567			
20	2121	2180	2376	2598	2645	2645	2474	2294	2241	2334	2561	2805	2829	2772	2490	2225			
25	1746	1817	2064	2388	2489	2459	2181	1936	1865	1968	2268	2646	2733	2609	2196	1866			
30	1413	1477	1741	2140	2308	2233	1864	1592	1519	1625	1951	2444	2613	2413	1880	1527			
35	1186	1221	1430	1872	2102	1984	1552	1300	1259	1328	1639	2207	2453	2178	1575	1254			
40	1000	1027	1160	1592	1878	1715	1261	1094	1068	1121	1342	1935	2258	1901	1292	1057			
45	837	858	961	1314	1636	1440	1027	921	904	942	1113	1651	2030	1609	1074	886			
50	700	713	791	1040	1380	1166	845	774	766	788	925	1359	1773	1316	888	737			
55	587	589	641	784	1118	903	686	647	646	658	760	1069	1500	1029	720	611			
60	492	492	513	592	853	667	552	540	549	548	619	820	1215	776	575	515			
65	402	396	414	430	594	485	440	451	457	458	500	619	915	576	459	423			
70	323	312	318	301	353	337	346	364	372	370	403	447	625	409	361	341			
75	254	238	236	205	142	223	261	287	296	293	311	311	334	279	271	268			
80	193	173	164	125	34.1	140	187	219	229	225	231	207	109	181	195	204			
85	149	123	105	63.2	18.3	75.4	125	159	171	166	162	122	18.5	103	131	150			
90	146	126	101	53.8	17.0	49.6	88.5	118	127	122	114	74.5	7.88	80.4	122	148			
95	147	127	99.7	52.5	16.0	47.7	87.6	118	128	123	111	70.2	8.33	75.4	120	147			
100	146	128	97.0	50.7	15.4	45.6	85.5	116	128	123	108	66.0	8.73	68.8	116	145			
105	143	127	94.2	48.6	14.3	43.2	82.4	113	128	121	104	60.9	8.80	60.8	112	141			
110	139	124	91.0	46.1	13.3	40.4	78.5	109	125	118	99.5	56.3	9.08	53.7	106	135			
115	134	120	87.7	43.4	12.2	37.8	73.9	105	122	114	93.8	52.4	9.21	48.3	99.2	128			
120	127	114	83.3	40.8	11.7	35.1	69.0	100	117	109	87.2	48.7	9.76	43.8	90.9	120			
125	118	107	77.7	38.5	11.5	32.6	64.5	95.1	111	102	80.3	45.2	10.8	40.0	82.4	111			
130	108	98.4	71.7	36.4	12.2	30.4	60.4	89.4	103	94.1	73.6	42.0	11.8	36.6	73.9	101			
135	97.4	89.4	65.4	34.1	12.8	28.5	56.6	82.5	94.6	86.2	67.2	39.0	12.8	33.5	65.6	89.9			
140	86.5	80.0	58.7	31.5	13.3	26.8	52.4	74.8	85.4	78.2	61.2	36.7	13.6	30.3	57.2	79.0			
145	75.3	70.3	52.1	28.9	13.0	25.3	48.0	67.3	75.7	70.4	56.2	35.1	13.7	26.4	48.5	67.6			
150	64.1	60.1	45.7	26.0	12.0	23.8	43.4	59.2	65.9	63.0	51.7	34.1	13.2	19.1	40.1	56.3			
155	53.2	50.3	39.2	21.3	12.1	22.2	38.4	50.9	56.4	54.9	46.8	33.0	16.7	13.4	29.8	45.3			
160	43.0	40.8	30.6	17.7	12.2	19.8	32.7	42.5	47.1	46.8	41.1	30.3	17.8	12.0	16.7	32.5			
165	33.4	31.7	23.3	16.7	12.4	17.1	26.2	33.7	37.3	37.4	33.7	24.7	16.8	10.8	16.4	18.3			
170	25.1	21.9	18.3	15.8	13.9	14.0	20.1	24.3	27.8	27.9	23.8	21.2	14.4	14.2	16.7	18.2			
175	19.0	15.5	16.6	15.9	15.2	14.2	15.1	16.6	18.6	18.8	17.4	14.9	14.0	14.9	16.2	17.1			
180	11.5	14.6	14.8	15.9	15.9	15.7	15.1	14.2	11.4	11.3	14.5	15.3	15.7	15.8	15.6	15.0			

7. THD and PF Test

Mode	Voltage (V AC)	Frequency (Hz)	Power Factor	THD (%)
50W-3500K	100.0	60	0.9797	8.68
	120.0	60	0.9774	9.58
	277.0	60	0.9265	10.56
50W-4000K	277.0	60	0.9191	10.47
50W-5000K	277.0	60	0.9218	10.52

8. Photo of sample

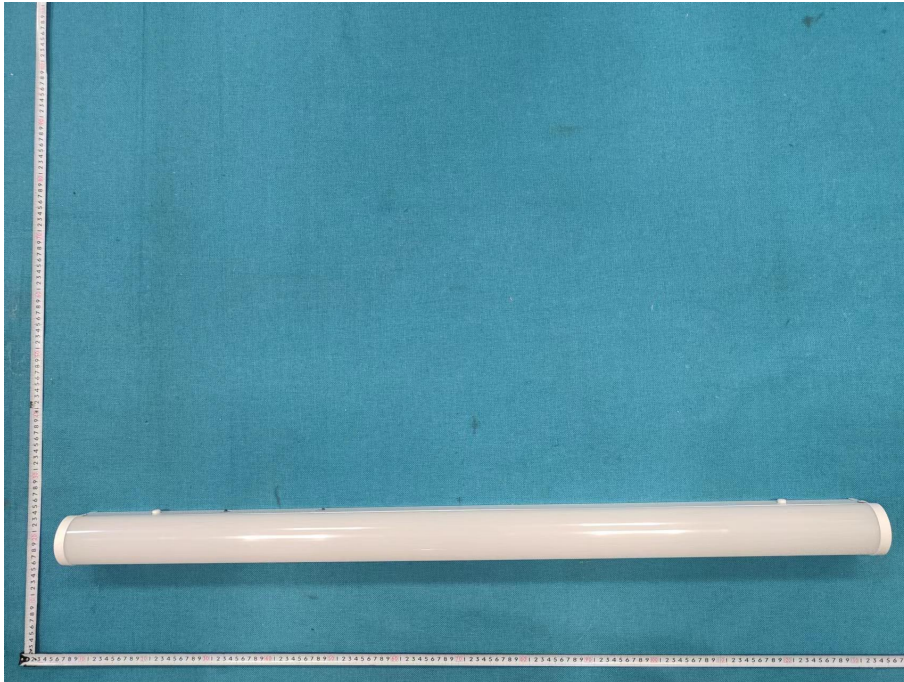


Figure 1

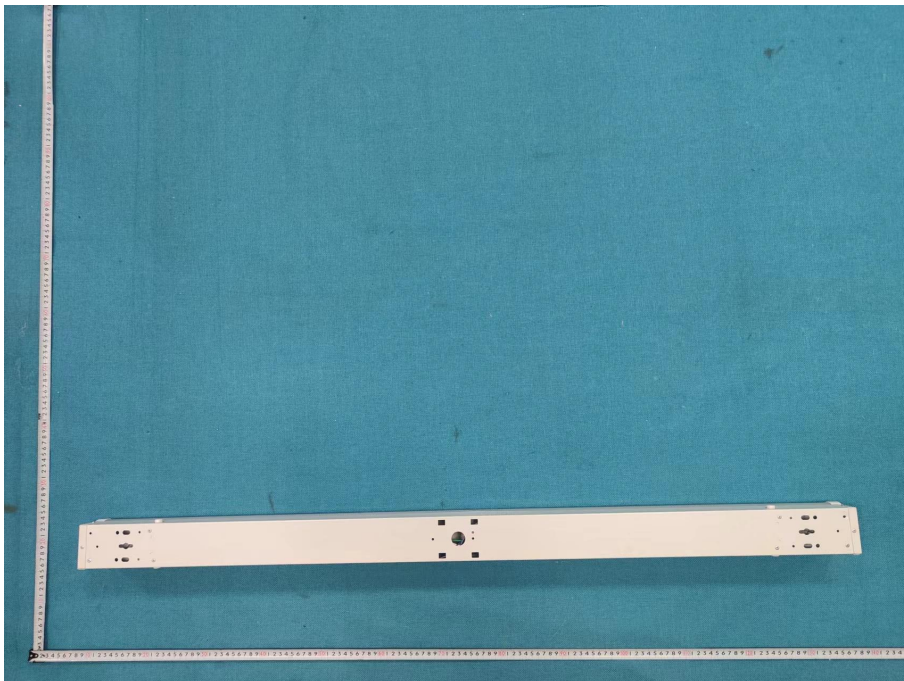


Figure 2

---End of Report---