

# Test Report Of ANSI/IES LM-79-19

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

**Report Number**..... : N02A23080352L00201

**Client**..... : ROYALUX EXPORTS PRIVATE LIMITED

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

**Test Model**..... : 2302Y0150W35L[Blank, BS], 2302Y0150W40L[Blank, BS],  
2302Y0150W50L[Blank, BS]

**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**..... : Aug. 21, 2023

**Date of test** ..... : Sep. 06, 2023 – Sep. 13, 2023

**Date of report**..... : Sep. 13, 2023

**Tested by:**



Jarvis Zhang/ Test Engineer

**Checked by:**



Sandy Chen/ 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.

Note 3: This report contains data that are not covered by the NVLAP accreditation. It is marked \* in the title.

## 1. Product Description for Equipment under Test(EUT)

Representative (Tested) Model:	2302Y0150W35L[Blank, BS], 2302Y0150W40L[Blank, BS], 2302Y0150W50L[Blank, BS]
Manufacturer:	ROYALUX EXPORTS PRIVATE LIMITED
Product Type:	High Bay Luminaires (Commercial and Industrial)
Rated Voltage/Frequency:	100-277V AC, 50/60Hz
Rated Power:	150W
Rated luminous flux:	21000lm
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	2023/09/17
Digital Power Meter	MD-E001	PF2010	2023/09/17
AC Testing Power Source	MD-E002	DPS1060	2023/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2023/10/13
Integrating Sphere System	MD-E029	2M	2023/09/17
High Accuracy Array Spectroradio Meter	MD-E011	HAAS-3000	2023/09/17
Digital Power Meter	MD-E008	PF310	2023/09/17
AC Testing Power Source	MD-E010	DPS1010	2023/09/17
Standard Lamp	MD-E036	D204	2023/10/13

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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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  $4\pi$  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

<b>Test Ambient Temperature (Integrating sphere internal temperature)</b>	25.3℃	<b>Test orientation</b>	Downward
<b>Operate time(Min.)</b>	60	<b>stabilization time(Min.)</b>	30

### Optical and Electrical Measurement Result

Model	Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)	CCT (K)
2302Y0150W35L [Blank, BS]	120.28	60	1.271	152.7	0.9981	20966	137.28	3340
2302Y0150W40L [Blank, BS]	120.12	60	1.24	148.7	0.9982	22358	150.32	3865
2302Y0150W50L [Blank, BS]	120.1	60	1.288	154.4	0.9981	21613	140	4867

Model	Ra	R9	Rf	Rg	x	y	u'	v'	Duv
2302Y0150W35L [Blank, BS]	85.4	20	86	96	0.4131	0.3913	0.2405	0.5127	-1.34E-03
2302Y0150W40L [Blank, BS]	86.9	27	86	96	0.3854	0.3765	0.2285	0.5022	-1.55E-03
2302Y0150W50L [Blank, BS]	86.9	28	86	96	0.349	0.3556	0.2125	0.4872	4.59E-04

### 5.2 Color Rendering Index for Model # 2302Y0150W35L[Blank, BS]

<b>Ra</b> <b>85.4</b>				
<b>R1</b> 85	<b>R2</b> 93	<b>R3</b> 96	<b>R4</b> 83	<b>R5</b> 85
<b>R6</b> 91	<b>R7</b> 85	<b>R8</b> 65	<b>R9</b> 20	<b>R10</b> 83
<b>R11</b> 83	<b>R12</b> 72	<b>R13</b> 87	<b>R14</b> 99	<b>R15</b> 78

**\*5.3.1 ANSI/IES TM-30-18 Color Rendition Report for Model # 2302Y0150W35L[Blank, BS]**

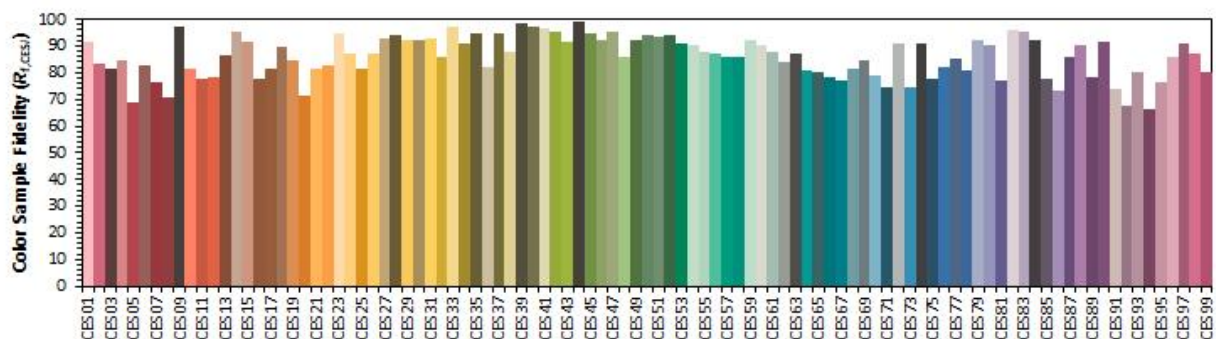
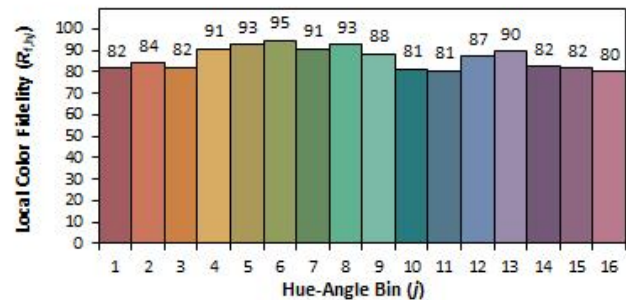
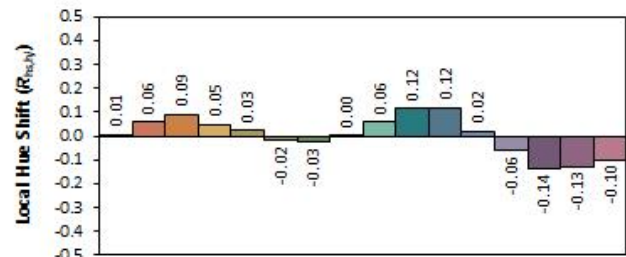
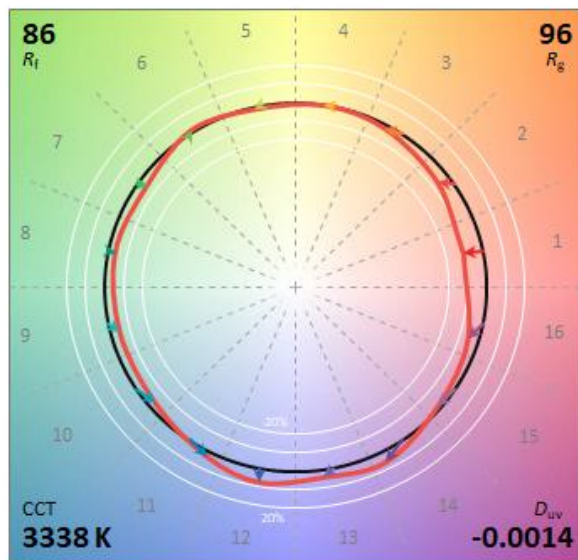
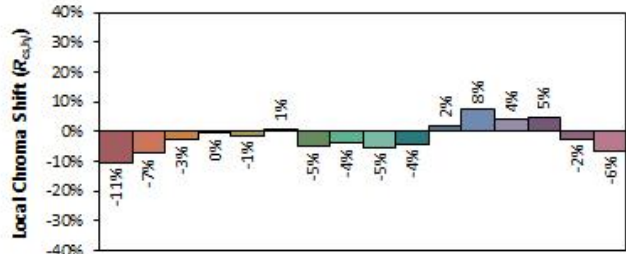
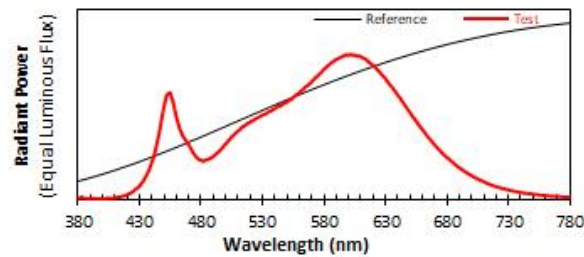
## ANSI/IES TM-30-18 Color Rendition Report

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

**Date:** 2023/9/12

**Manufacturer:** ROYALUX EXPORTS PRIVATE  
LIMITED

**Model:** 2302Y0150W35L [Blank, BS]



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

 $x = 0.4131$  $y$  0.3912

$\psi'$       0.2406

 $\gamma$  0.5126

CIE 13.3-1995  
(CRI)

85  $R_2$  $R_9$  20

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

\*5.3.2 ANSI/IES TM-30-18 Color Rendition Report for Model # 2302Y0150W40L[Blank, BS]

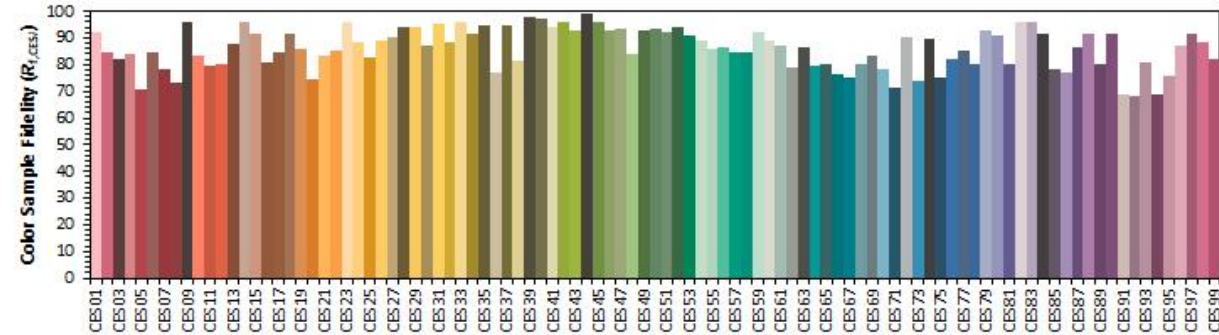
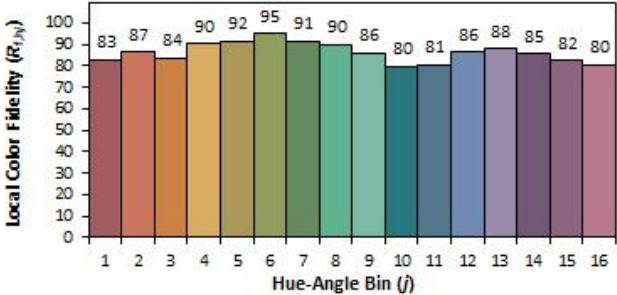
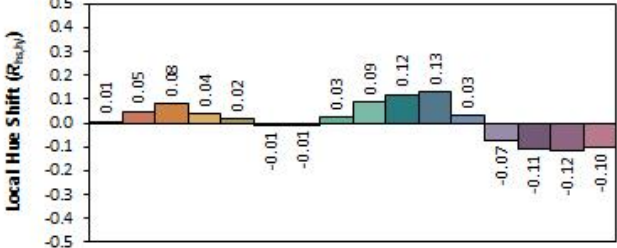
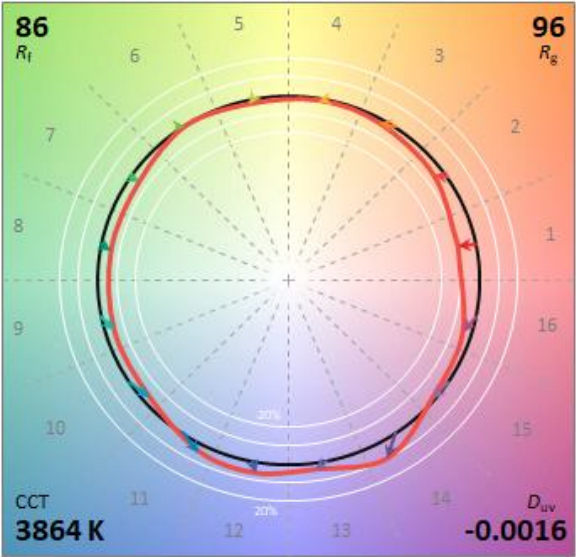
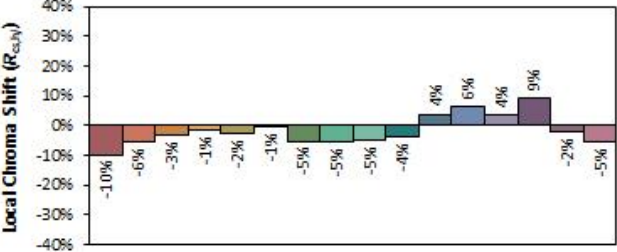
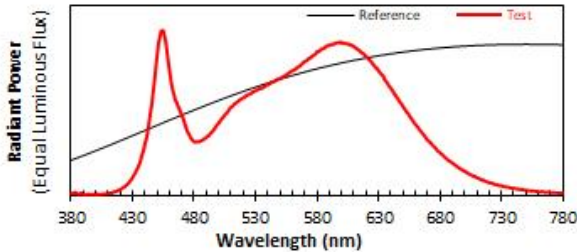
ANSI/IES TM-30-18 Color Rendition Report

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

Date: 2023/9/12

Manufacturer: ROYALUX EXPORTS PRIVATE LIMITED

Model: 2302Y0150W40L[Blank, BS]



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

x 0.3854  
y 0.3763  
u' 0.2285  
v' 0.5021

CIE 13.3-1995 (CRI)	
R <sub>a</sub>	87
R <sub>9</sub>	27

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



**\*5.3.3 ANSI/IES TM-30-18 Color Rendition Report for for Model # 2302Y0150W50L[Blank, BS]**

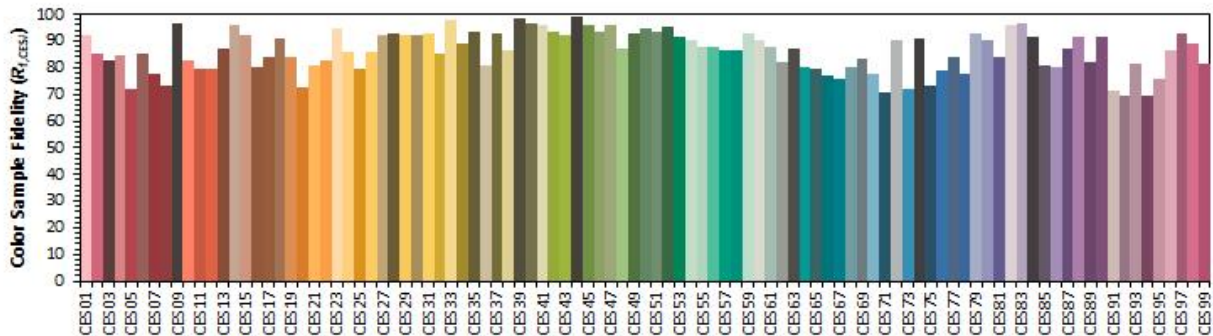
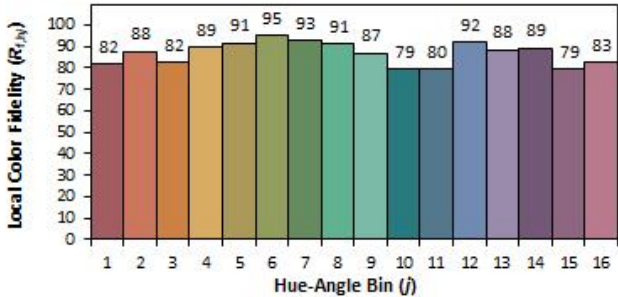
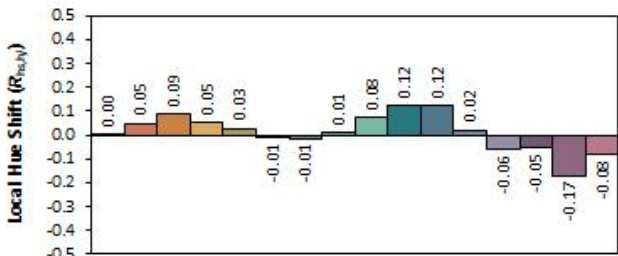
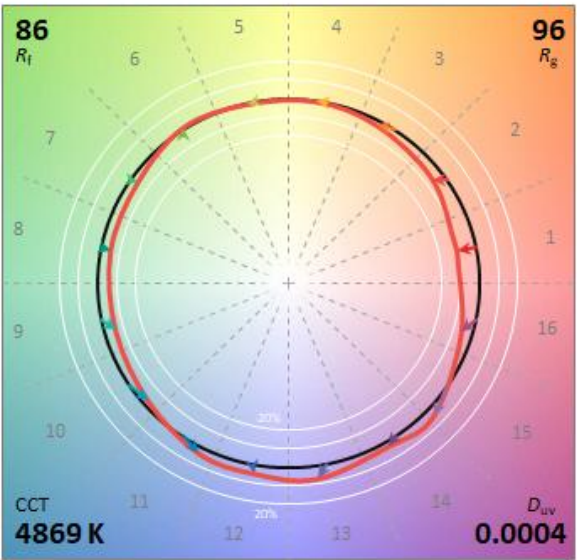
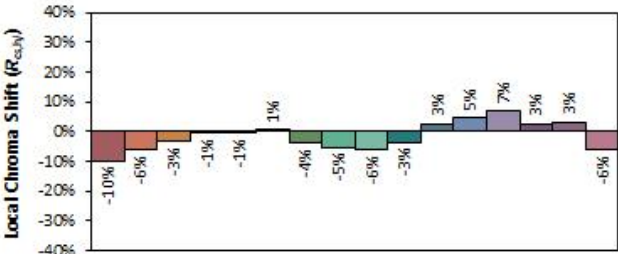
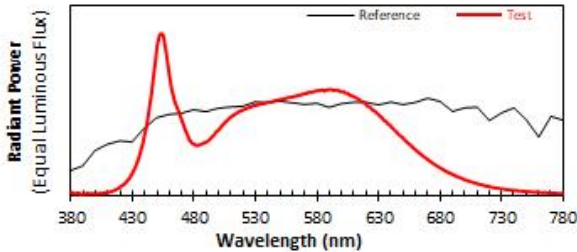
**ANSI/IES TM-30-18 Color Rendition Report**

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

**Manufacturer:** ROYALUX EXPORTS PRIVATE LIMITED

**Date:** 2023/9/12

**Model:** 2302Y0150W50L[Blank, BS]



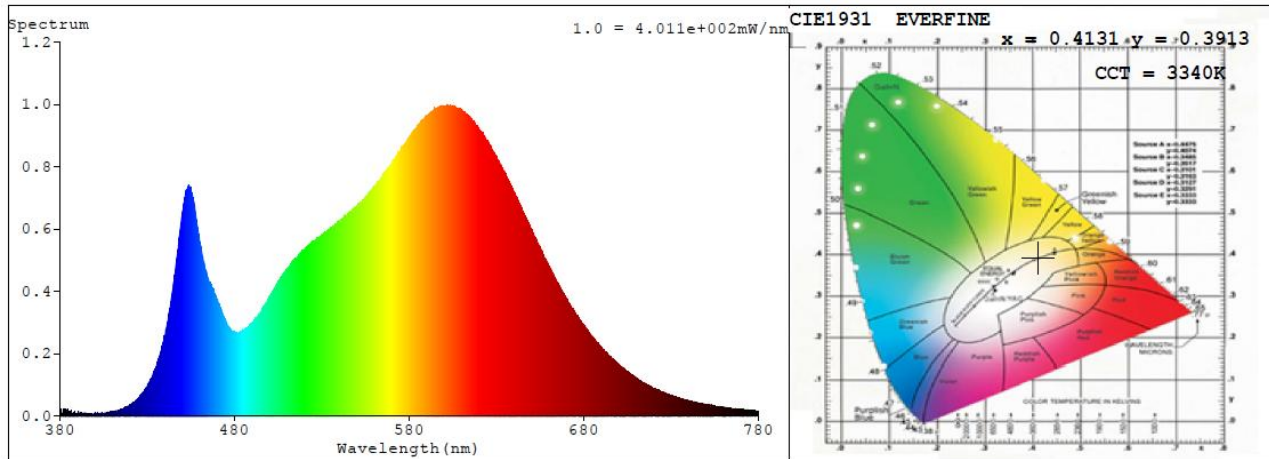
**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$     **0.3490**  
 $y$     **0.3555**  
 $u'$    **0.2125**  
 $v'$    **0.4871**

CIE 13.3-1995  
(CRI)  
 $R_a$     87  
 $R_g$     28

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

#### 5.4 Relative Spectral Power Distribution for Model # 2302Y0150W35L[Blank, BS]



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0135	414	0.0172	448	0.5601	482	0.2642	516	0.5111
381	0.0077	415	0.0218	449	0.6026	483	0.2705	517	0.52
382	0.0121	416	0.0234	450	0.6452	484	0.2739	518	0.5246
383	0.0205	417	0.0255	451	0.6839	485	0.2738	519	0.5273
384	0.0072	418	0.0269	452	0.7199	486	0.2787	520	0.5323
385	0.0098	419	0.0312	453	0.7242	487	0.2815	521	0.5411
386	0.0072	420	0.0364	454	0.7326	488	0.2873	522	0.5424
387	0.01	421	0.0384	455	0.7356	489	0.2889	523	0.548
388	0.007	422	0.0431	456	0.7018	490	0.3001	524	0.5529
389	0.0046	423	0.047	457	0.6763	491	0.3031	525	0.5595
390	0.0089	424	0.0517	458	0.6392	492	0.3138	526	0.5622
391	0.0083	425	0.0576	459	0.6028	493	0.3197	527	0.5675
392	0.009	426	0.067	460	0.5625	494	0.3274	528	0.5712
393	0.01	427	0.0739	461	0.5323	495	0.3323	529	0.5761
394	0.0065	428	0.0776	462	0.5038	496	0.3455	530	0.5814
395	0.0049	429	0.0886	463	0.4774	497	0.3515	531	0.5864
396	0.0062	430	0.093	464	0.4629	498	0.3645	532	0.587
397	0.0085	431	0.1087	465	0.4383	499	0.3737	533	0.5898
398	0.0075	432	0.1168	466	0.43	500	0.3839	534	0.6002
399	0.0051	433	0.1292	467	0.413	501	0.3906	535	0.6059
400	0.0079	434	0.1439	468	0.4036	502	0.4015	536	0.6075
401	0.0078	435	0.158	469	0.3883	503	0.4116	537	0.6103
402	0.0051	436	0.1751	470	0.3753	504	0.424	538	0.6173
403	0.0079	437	0.1937	471	0.3616	505	0.4326	539	0.6214
404	0.0116	438	0.21	472	0.3454	506	0.4383	540	0.6245
405	0.0089	439	0.2366	473	0.3319	507	0.4488	541	0.6321
406	0.0093	440	0.2592	474	0.3165	508	0.4569	542	0.6368
407	0.0101	441	0.2816	475	0.3066	509	0.4648	543	0.645
408	0.0076	442	0.3113	476	0.2927	510	0.4714	544	0.6427
409	0.015	443	0.3455	477	0.2863	511	0.4782	545	0.6462
410	0.013	444	0.3845	478	0.2787	512	0.4842	546	0.6566
411	0.0142	445	0.422	479	0.272	513	0.496	547	0.658
412	0.0175	446	0.4622	480	0.2724	514	0.5028	548	0.6636
413	0.0173	447	0.5083	481	0.2677	515	0.5057	549	0.6685



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.6697	599	0.995	648	0.6229	697	0.1814	746	0.042
551	0.6794	600	0.9926	649	0.6097	698	0.176	747	0.0413
552	0.6871	601	0.9958	650	0.6011	699	0.1703	748	0.0395
553	0.6876	602	0.9993	651	0.5877	700	0.168	749	0.0391
554	0.6943	603	0.9933	652	0.572	701	0.1604	750	0.0383
555	0.7045	604	0.9934	653	0.5664	702	0.1555	751	0.0366
556	0.7095	605	0.9937	654	0.5507	703	0.1532	752	0.0351
557	0.7186	606	0.9908	655	0.5424	704	0.1475	753	0.0356
558	0.7233	607	0.9875	656	0.5307	705	0.1413	754	0.0344
559	0.7283	608	0.9864	657	0.5145	706	0.14	755	0.0326
560	0.7373	609	0.988	658	0.5054	707	0.134	756	0.0316
561	0.745	610	0.9833	659	0.4938	708	0.1309	757	0.0308
562	0.7517	611	0.9756	660	0.4834	709	0.129	758	0.0293
563	0.757	612	0.9756	661	0.4739	710	0.1239	759	0.029
564	0.7646	613	0.97	662	0.4615	711	0.12	760	0.0284
565	0.7776	614	0.9639	663	0.4501	712	0.1149	761	0.0277
566	0.7806	615	0.9608	664	0.439	713	0.1122	762	0.0265
567	0.7856	616	0.9474	665	0.4282	714	0.1084	763	0.0262
568	0.7941	617	0.9436	666	0.419	715	0.1054	764	0.025
569	0.8017	618	0.9356	667	0.4074	716	0.1016	765	0.0242
570	0.8091	619	0.9294	668	0.3993	717	0.0979	766	0.0239
571	0.8214	620	0.925	669	0.3864	718	0.0958	767	0.0239
572	0.8278	621	0.9148	670	0.3789	719	0.0914	768	0.0226
573	0.8382	622	0.9064	671	0.3679	720	0.0906	769	0.0218
574	0.8441	623	0.8981	672	0.3582	721	0.087	770	0.0217
575	0.8504	624	0.8889	673	0.3486	722	0.0849	771	0.0217
576	0.8614	625	0.8814	674	0.3441	723	0.0829	772	0.0204
577	0.8686	626	0.8694	675	0.3322	724	0.0796	773	0.019
578	0.8753	627	0.8599	676	0.3237	725	0.077	774	0.0198
579	0.8869	628	0.8519	677	0.3156	726	0.0759	775	0.0183
580	0.8972	629	0.8411	678	0.3062	727	0.0727	776	0.0185
581	0.9026	630	0.8353	679	0.298	728	0.0718	777	0.0183
582	0.9096	631	0.8189	680	0.2891	729	0.0694	778	0.0175
583	0.921	632	0.8091	681	0.2862	730	0.0682	779	0.0171
584	0.9239	633	0.7983	682	0.2764	731	0.0641	780	0.0171
585	0.9338	634	0.7868	683	0.2701	732	0.0629		
586	0.9409	635	0.7772	684	0.2607	733	0.0615		
587	0.9456	636	0.768	685	0.2547	734	0.0595		
588	0.9514	637	0.7553	686	0.2497	735	0.0572		
589	0.9587	638	0.7453	687	0.2391	736	0.0558		
590	0.9661	639	0.7306	688	0.2345	737	0.0548		
591	0.9653	640	0.7203	689	0.2276	738	0.0535		
592	0.9732	641	0.7071	690	0.2205	739	0.051		
593	0.9745	642	0.7011	691	0.2151	740	0.0492		
594	0.9814	643	0.683	692	0.2079	741	0.049		
595	0.9833	644	0.6737	693	0.2047	742	0.0465		
596	0.9887	645	0.6588	694	0.1974	743	0.0452		
597	0.9887	646	0.648	695	0.1912	744	0.0434		
598	0.9973	647	0.636	696	0.1858	745	0.0427		

## 6. Goniophotometer Test results for Model # 2302Y0150W35L[Blank, BS]

### 6.1 Test Data

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

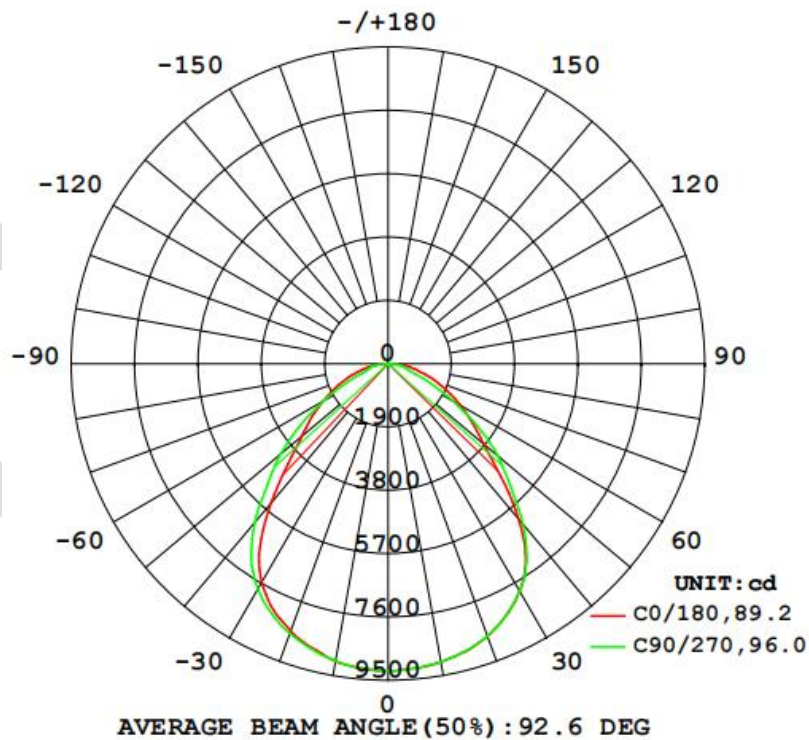
### Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120	60	1.2777	0.9983	153

### Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	Imax (cd)	ZL (20-50°)
20794.6	135.88	9214	57.4%

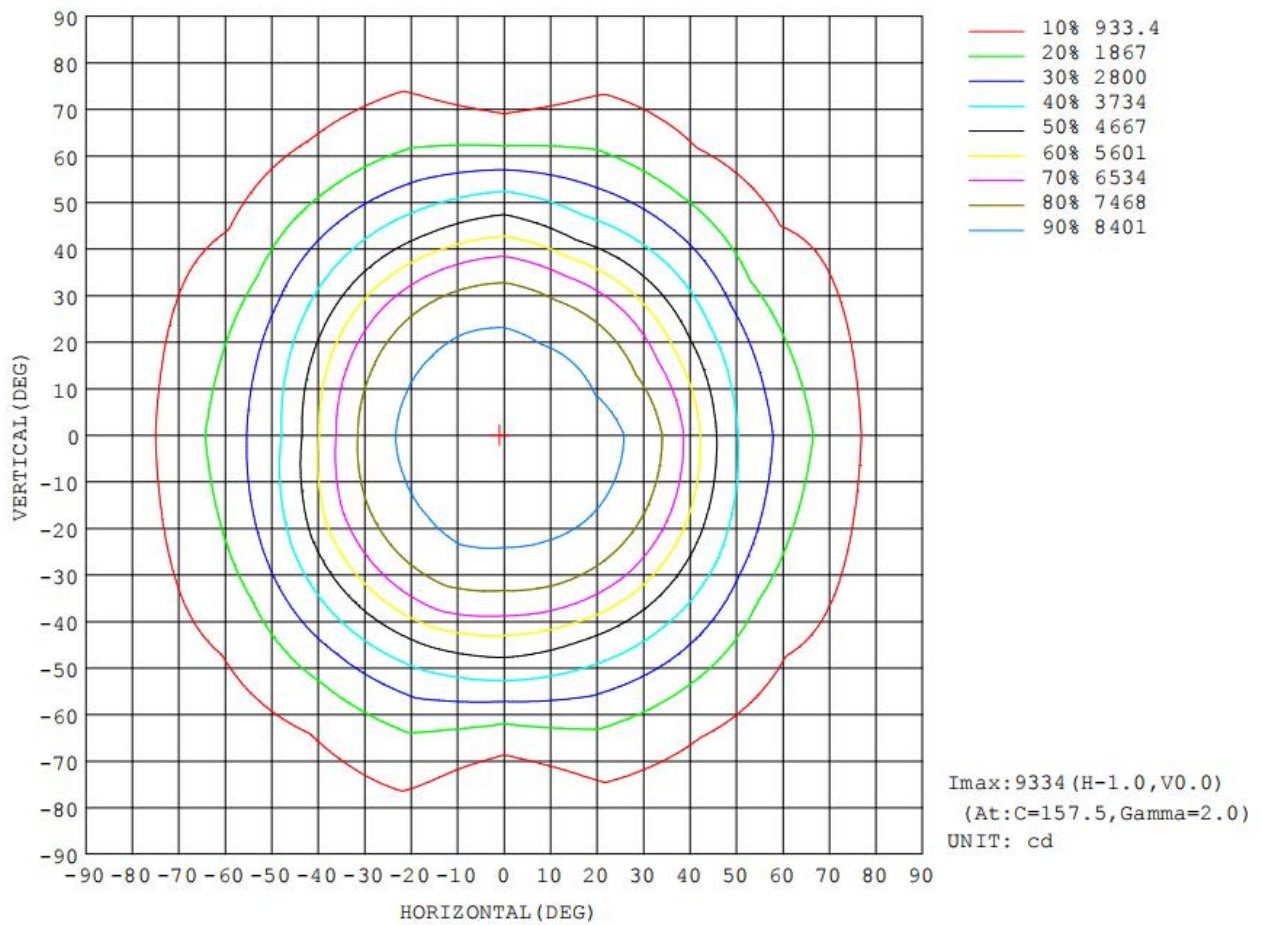
### 6.2 Luminous Intensity Distribution



### 6.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	9087	9086	9082	9129	9066	9066	9055	9008	0- 10	872.2	872.2	4.19,4.19
20	8699	8701	8693	8732	8542	8565	8612	8574	10- 20	2512	3384	16.3,16.3
30	7888	7925	7880	7949	7580	7672	7809	7650	20- 30	3813	7197	34.6,34.6
40	6102	6284	6305	6329	5475	5832	6223	5704	30- 40	4393	11590	55.7,55.7
50	3731	3977	4285	4017	3378	3672	4198	3605	40- 50	3744	15334	73.7,73.7
60	2518	2332	2242	2246	2257	2054	2233	1966	50- 60	2701	18036	86.7,86.7
70	1499	1040	805.4	1014	1332	957.5	839.4	904.2	60- 70	1568	19604	94.3,94.3
80	731.0	634.1	421.6	623.6	605.5	560.9	445.4	548.7	70- 80	853.9	20458	98.4,98.4
90	80.91	63.84	0.5901	16.82	1.307	1.213	2.303	1.177	80- 90	309.3	20767	99.9,99.9
100	1.196	1.294	1.991	1.128	2.093	2.104	2.158	1.927	90-100	3.721	20771	99.9,99.9
110	1.737	1.802	2.298	1.749	2.582	2.640	2.615	2.360	100-110	2.065	20773	99.9,99.9
120	2.563	2.873	3.528	2.821	2.999	3.219	3.132	3.141	110-120	2.504	20775	99.9,99.9
130	4.129	4.076	4.795	4.023	4.685	4.470	4.335	4.671	120-130	3.222	20779	99.9,99.9
140	5.402	5.333	5.747	5.431	7.074	6.853	6.303	7.170	130-140	4.028	20783	99.9,99.9
150	6.168	6.114	6.544	6.760	9.362	9.509	8.626	9.093	140-150	4.418	20787	100,100
160	6.886	7.839	7.512	7.744	10.72	10.92	10.55	10.58	150-160	3.931	20791	100,100
170	8.718	8.163	8.501	8.983	11.25	11.00	10.53	10.58	160-170	2.656	20794	100,100
180	10.13	10.35	11.06	11.04	9.931	10.30	10.37	10.76	170-180	0.9395	20795	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

## 6.4 Isocandela Diagram





## 6.5 Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) γ (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	9206	9206	9206	9206	9206	9206	9206	9206	9206	9206	9206	9206	9206	9206	9206	9206			
5	9166	9167	9169	9166	9169	9204	9208	9207	9174	9171	9177	9180	9171	9129	9133	9136			
10	9087	9092	9086	9073	9082	9141	9129	9118	9066	9065	9066	9062	9055	8996	9008	9031			
15	8937	8938	8939	8923	8929	9000	9013	8969	8822	8819	8879	8880	8871	8792	8841	8850			
20	8699	8717	8701	8690	8693	8793	8732	8692	8542	8539	8565	8637	8612	8520	8574	8569			
25	8350	8372	8378	8354	8349	8473	8388	8328	8146	8150	8183	8256	8276	8132	8177	8195			
30	7888	7912	7925	7922	7880	8037	7949	7890	7580	7597	7672	7755	7809	7628	7650	7672			
35	7205	7261	7289	7290	7251	7444	7325	7190	6716	6797	6924	7057	7155	6851	6881	6880			
40	6102	6252	6284	6260	6305	6535	6329	6143	5475	5657	5832	5990	6223	5686	5704	5749			
45	4787	4979	5026	5003	5188	5284	5107	4932	4244	4423	4630	4795	5121	4525	4527	4536			
50	3731	3953	3977	4076	4285	4223	4017	3838	3378	3501	3672	3890	4198	3669	3605	3585			
55	3100	3092	3167	3270	3281	3364	3084	2984	2805	2694	2863	3060	3198	2922	2776	2720			
60	2518	2181	2332	2523	2242	2607	2246	2144	2257	1875	2054	2322	2233	2266	1966	1839			
65	1985	1414	1568	1864	1405	1969	1547	1410	1783	1208	1391	1695	1427	1678	1281	1219			
70	1499	965	1040	1323	805	1442	1014	978	1332	835	957	1223	839	1206	904	884			
75	1058	711	794	973	555	1077	763	737	922	628	744	935	597	908	738	658			
80	731	522	634	679	422	794	624	527	606	446	561	658	445	570	549	459			
85	386	299	368	304	207	439	382	306	225	203	266	291	228	190	226	193			
90	80.9	8.11	63.8	69.2	0.59	66.3	16.8	62.6	1.31	1.15	1.21	1.19	2.30	1.25	1.18	1.16			
95	0.98	1.00	0.89	1.19	1.35	0.84	0.86	0.84	1.72	1.56	1.59	1.68	1.58	1.69	1.60	1.59			
100	1.20	1.36	1.29	1.37	1.99	1.06	1.13	1.05	2.09	2.06	2.10	1.94	2.16	1.97	1.93	2.02			
105	1.45	1.63	1.53	1.66	2.12	1.27	1.42	1.38	2.40	2.42	2.43	2.32	2.49	2.33	2.19	2.33			
110	1.74	1.93	1.80	2.04	2.30	1.79	1.75	1.74	2.58	2.66	2.64	2.50	2.61	2.47	2.36	2.53			
115	2.07	2.26	2.17	2.48	2.07	2.23	2.11	2.12	2.75	2.84	2.81	2.63	2.50	2.68	2.57	2.73			
120	2.56	2.73	2.87	3.02	3.53	2.77	2.82	2.59	3.00	3.10	3.22	2.87	3.13	3.03	3.14	3.08			
125	3.21	3.47	3.50	3.61	4.10	3.37	3.45	3.33	3.63	3.86	3.69	3.41	3.49	3.70	3.75	3.96			
130	4.13	4.17	4.08	4.39	4.79	4.01	4.02	4.17	4.69	4.70	4.47	4.34	4.33	4.68	4.67	4.95			
135	4.76	4.72	4.67	4.75	4.55	4.59	4.61	4.85	5.84	5.74	5.61	5.25	5.43	5.48	5.87	6.12			
140	5.40	5.41	5.33	5.22	5.75	5.36	5.43	5.33	7.07	6.97	6.85	6.31	6.30	6.71	7.17	7.47			
145	6.03	6.10	5.82	6.09	6.26	6.08	5.83	6.05	8.54	8.35	8.26	7.69	7.71	8.16	8.42	8.66			
150	6.17	6.22	6.11	6.28	6.54	6.92	6.76	6.33	9.36	9.57	9.51	9.23	8.63	8.97	9.09	9.65			
155	6.79	7.19	6.59	7.22	6.83	7.17	6.59	7.18	10.5	10.6	10.2	10.6	9.71	9.78	10.3	10.1			
160	6.89	7.36	7.84	7.22	7.51	7.59	7.74	7.46	10.7	10.7	10.9	11.1	10.5	10.4	10.6	10.8			
165	7.82	8.20	8.45	7.80	7.79	8.12	8.52	7.89	11.2	11.2	11.1	11.1	10.5	10.4	10.3	10.9			
170	8.72	8.42	8.16	8.17	8.50	8.81	8.98	8.54	11.3	11.2	11.0	10.6	10.5	10.6	10.6	10.5			
175	9.06	9.03	9.07	9.29	9.64	9.09	9.26	8.90	10.4	10.4	10.8	10.9	10.8	10.8	10.9	10.9			
180	10.1	10.0	10.4	10.4	11.1	11.1	11.0	10.9	9.93	10.0	10.3	10.4	10.4	10.6	10.8	10.7			

## 7. THD and PF Test

Model	Voltage (V AC)	Frequency (Hz)	Power Factor	THD (%)
2302Y0150W35L[Blank, BS]	100.0	60	0.997	2.53
	120.0	60	0.998	2.72
	277.0	60	0.963	5.36
2302Y0150W40L[Blank, BS]	277.0	60	0.961	5.44
2302Y0150W50L[Blank, BS]	277.0	60	0.964	5.66



## 8. Photo of sample



Figure 1



Figure 2

---End of Report---