

TEST REPORT OF ANSI/IES LM-79-19

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

Client..... : ARTIKA FOR LIVING INC.
Address..... : 1756, 50th Avenue Montreal (Lachine), Quebec Canada, H8T 2V5
Test Model..... : SCO-BLC; followed by up to eight characters
Brand Name..... : Artika
Testing Laboratory... : Guangdong Meide Testing Technology Co., Ltd.
Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan La
Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.
Testing location..... : As above
Report No...... : N02A22030585L00401
Date of receipt..... : Mar 28, 2022
Date of test : Mar 29, 2022
Date of report..... : Apr 02, 2022

Tested by:

Jarvis Zhang

Jarvis Zhang / Test Engineer

Checked by:

Ken Mo

Ken Mo / Project Engineer

Approved by:

Jessie Li

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 used 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)

Model No.:	SCO-BLC
Manufacturer:	DongGuan City Rising Stars Lighting Co., LTD
Product Type:	LED vanity
Rated Voltage/Frequency:	120V AC, 60HZ
Rated Power:	25W
Rated luminous flux:	1500LM
Nominal CCT:	4000K

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)

3. Test equipment list

Test Equipment	Serial No.	Model No.	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2022/09/17
Digital Power Meter	MD-E001	PF2010	2022/09/17
AC Testing Power Source	MD-E002	DPS1060	2022/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2022/10/13
Integrating Sphere System	MD-E029	2M	2022/09/17
High Accuracy Array Spectroradio Meter	MD-E011	HAAS-3000	2022/09/17
Digital Power Meter	MD-E008	PF310	2022/09/17
AC Testing Power Source	MD-E010	DPS1010	2022/09/17
Standard Lamp	MD-E036	D204	2022/10/13

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° 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.

5. Integrating Sphere Test Results

5.1 Test Data

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

Optical and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
119.99	60	0.213	24.87	0.9733	2039.7	82

CCT (K)	Ra	R9	x	y	u'	v'
3901	82.6	6	0.387	0.3868	0.2254	0.5069

Color Rendering Index

Ra 82.6				
R1 80	R2 89	R3 95	R4 81	R5 80
R6 85	R7 86	R8 64	R9 6	R10 74
R11 80	R12 61	R13 82	R14 98	R15 74



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

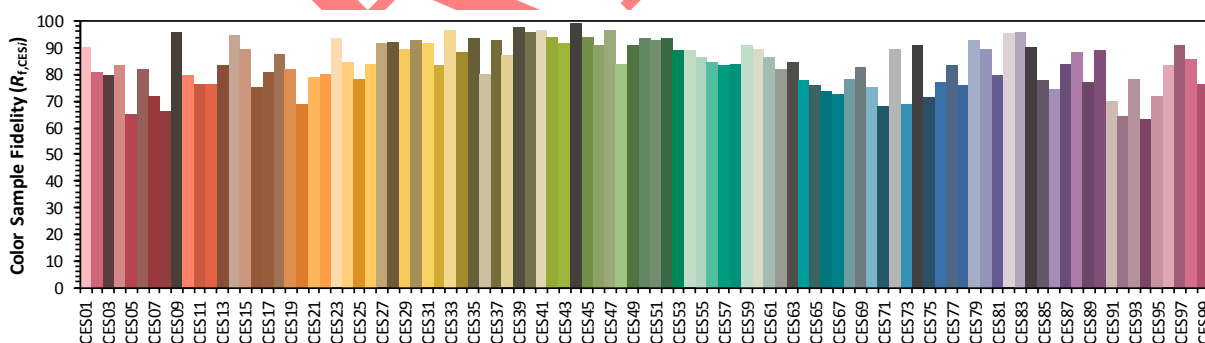
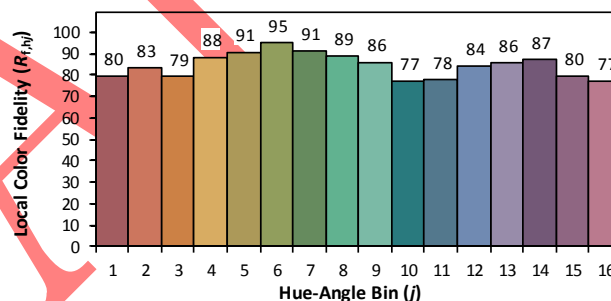
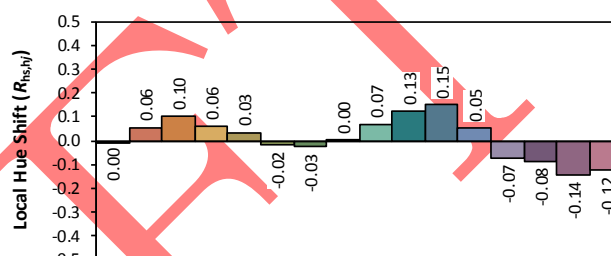
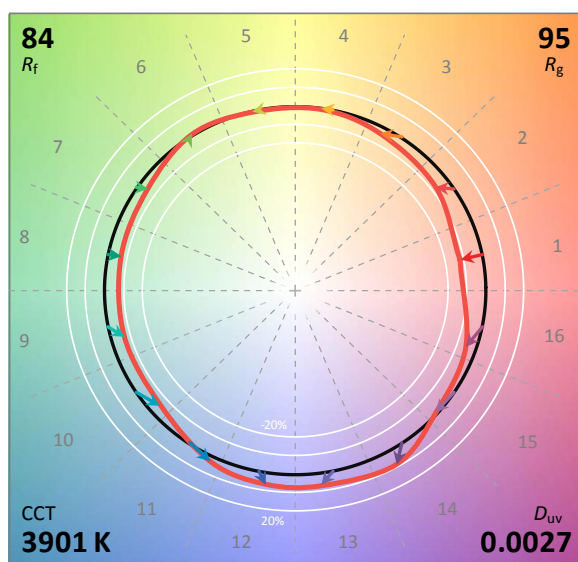
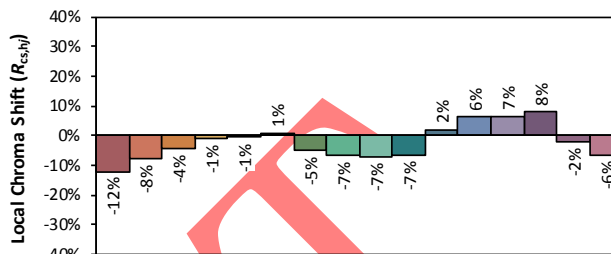
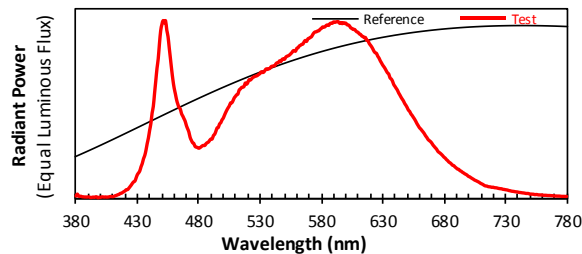
ANSI/IES TM-30-18 Color Rendition Report

Source:

Manufacturer:

Date: 2022/3/29

Model: SCO-BLC



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

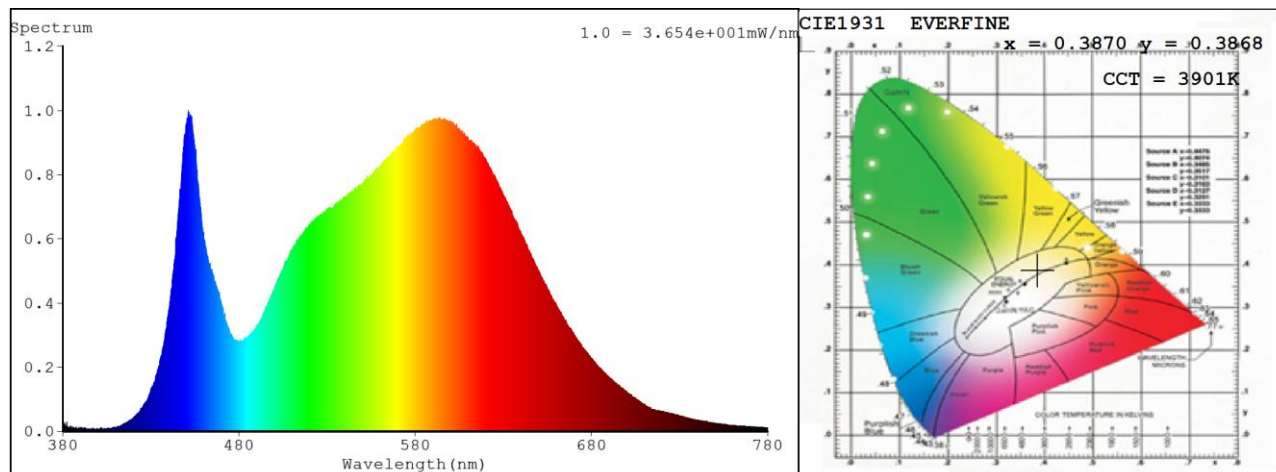
x 0.3870
 y 0.3866
 u' 0.2255
 v' 0.5068

CIE 13.3-1995
(CRI)

R_a 83
 R_g 6

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

Relative Spectral Power Distribution



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0142	414	0.0216	448	0.8535	482	0.2858	516	0.6142
381	0.0253	415	0.0234	449	0.9248	483	0.2912	517	0.6182
382	0.0143	416	0.0288	450	0.9595	484	0.2936	518	0.6371
383	0.013	417	0.0301	451	0.9813	485	0.2929	519	0.6306
384	0.0133	418	0.0344	452	0.9685	486	0.3028	520	0.6388
385	0.0106	419	0.0389	453	0.9797	487	0.3085	521	0.6547
386	0.0101	420	0.0432	454	0.9278	488	0.3122	522	0.6531
387	0.0091	421	0.0499	455	0.8926	489	0.3218	523	0.6591
388	0.0093	422	0.0497	456	0.8297	490	0.3286	524	0.6668
389	0.0088	423	0.0574	457	0.7691	491	0.3289	525	0.6704
390	0.01	424	0.0662	458	0.7079	492	0.3475	526	0.674
391	0.0085	425	0.075	459	0.653	493	0.3547	527	0.6758
392	0.0065	426	0.0851	460	0.6091	494	0.3709	528	0.6792
393	0.0074	427	0.093	461	0.5772	495	0.3896	529	0.6849
394	0.0088	428	0.097	462	0.5437	496	0.3924	530	0.6892
395	0.0073	429	0.1148	463	0.5202	497	0.4116	531	0.6989
396	0.0103	430	0.1325	464	0.5017	498	0.4182	532	0.6952
397	0.0094	431	0.1422	465	0.4939	499	0.4338	533	0.6968
398	0.0047	432	0.1535	466	0.4682	500	0.4431	534	0.7059
399	0.0085	433	0.1762	467	0.4554	501	0.4593	535	0.715
400	0.0074	434	0.1937	468	0.4407	502	0.4747	536	0.7116
401	0.0099	435	0.22	469	0.426	503	0.4886	537	0.7163
402	0.0096	436	0.2376	470	0.4021	504	0.5006	538	0.717
403	0.0087	437	0.2663	471	0.3847	505	0.5115	539	0.7269
404	0.0094	438	0.3032	472	0.367	506	0.5273	540	0.7295
405	0.0086	439	0.3344	473	0.3377	507	0.528	541	0.7312
406	0.009	440	0.3764	474	0.3221	508	0.5399	542	0.7327
407	0.0101	441	0.4137	475	0.3086	509	0.5553	543	0.7432
408	0.012	442	0.4712	476	0.3041	510	0.5638	544	0.7487
409	0.0116	443	0.5083	477	0.2884	511	0.5727	545	0.7498
410	0.0114	444	0.5796	478	0.284	512	0.5764	546	0.7596
411	0.0132	445	0.6486	479	0.282	513	0.5987	547	0.7552
412	0.0163	446	0.7178	480	0.2779	514	0.6042	548	0.7672
413	0.0183	447	0.7707	481	0.2808	515	0.6127	549	0.7699

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.7678	599	0.9647	648	0.5238	697	0.1368	746	0.0301
551	0.7795	600	0.967	649	0.5138	698	0.1334	747	0.0288
552	0.7844	601	0.9575	650	0.5017	699	0.1287	748	0.0288
553	0.7872	602	0.9568	651	0.4878	700	0.1227	749	0.0282
554	0.7913	603	0.9512	652	0.4809	701	0.1201	750	0.0254
555	0.798	604	0.9409	653	0.4675	702	0.1153	751	0.0253
556	0.8048	605	0.9377	654	0.4588	703	0.111	752	0.0247
557	0.8144	606	0.9316	655	0.4484	704	0.107	753	0.0243
558	0.8155	607	0.9329	656	0.4382	705	0.1024	754	0.0224
559	0.8125	608	0.9252	657	0.4261	706	0.0995	755	0.0229
560	0.8282	609	0.9187	658	0.413	707	0.0961	756	0.0226
561	0.8313	610	0.9161	659	0.402	708	0.0927	757	0.0209
562	0.841	611	0.9073	660	0.3909	709	0.0885	758	0.0208
563	0.8449	612	0.9049	661	0.384	710	0.0839	759	0.0204
564	0.85	613	0.8957	662	0.3755	711	0.0809	760	0.0204
565	0.8516	614	0.8934	663	0.3671	712	0.0771	761	0.0188
566	0.8646	615	0.8866	664	0.3577	713	0.0724	762	0.0187
567	0.8716	616	0.8876	665	0.3462	714	0.0701	763	0.0187
568	0.8663	617	0.8722	666	0.3373	715	0.0693	764	0.0179
569	0.8802	618	0.8706	667	0.3263	716	0.0664	765	0.0174
570	0.8834	619	0.8555	668	0.3201	717	0.0655	766	0.0175
571	0.8883	620	0.8462	669	0.3145	718	0.0646	767	0.0169
572	0.8922	621	0.8366	670	0.3066	719	0.0625	768	0.0164
573	0.9041	622	0.8246	671	0.296	720	0.0632	769	0.0162
574	0.9137	623	0.8113	672	0.2879	721	0.0609	770	0.015
575	0.9185	624	0.8036	673	0.2799	722	0.0601	771	0.0149
576	0.9192	625	0.8	674	0.2723	723	0.0594	772	0.0145
577	0.9241	626	0.7848	675	0.2608	724	0.0573	773	0.0143
578	0.9248	627	0.7749	676	0.255	725	0.056	774	0.0142
579	0.9335	628	0.7601	677	0.2499	726	0.0549	775	0.0136
580	0.9375	629	0.7485	678	0.2437	727	0.0544	776	0.0126
581	0.9459	630	0.7362	679	0.2366	728	0.0518	777	0.0127
582	0.9449	631	0.7269	680	0.2288	729	0.051	778	0.0127
583	0.947	632	0.7164	681	0.2236	730	0.0495	779	0.0123
584	0.9542	633	0.7038	682	0.2153	731	0.0485	780	0.0123
585	0.9568	634	0.6925	683	0.2096	732	0.0471		
586	0.9545	635	0.6862	684	0.2017	733	0.0447		
587	0.964	636	0.6655	685	0.1974	734	0.0436		
588	0.9667	637	0.6593	686	0.1914	735	0.0415		
589	0.966	638	0.6478	687	0.1841	736	0.0406		
590	0.9739	639	0.6292	688	0.182	737	0.0398		
591	0.9713	640	0.619	689	0.1747	738	0.0383		
592	0.9735	641	0.6082	690	0.1693	739	0.0375		
593	0.9751	642	0.598	691	0.1632	740	0.0367		
594	0.9743	643	0.583	692	0.1617	741	0.035		
595	0.9654	644	0.5715	693	0.1544	742	0.034		
596	0.9705	645	0.5588	694	0.1515	743	0.0331		
597	0.964	646	0.5482	695	0.1457	744	0.032		
598	0.9694	647	0.5377	696	0.1417	745	0.0314		

6. Goniophotometer Test results

6.1 Test Data

Test Ambient Temperature	25.2°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	60

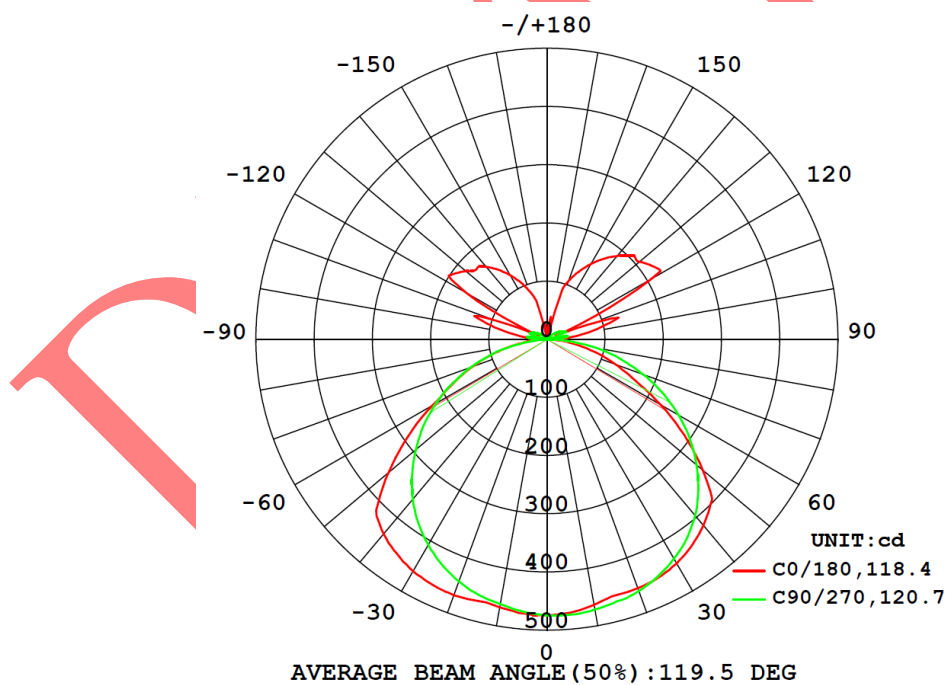
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
120.2	60	0.21	0.9707	24.82

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	Spacing Criteria (C0/180°)	Spacing Criteria (C90/270°)
2030.24	81.81	475.6	1.46	1.28

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	463.6	469.1	471.8	472.1	468.0	464.1	462.0	460.4	0- 10	44.89	44.89	2.21, 2.21
20	455.4	449.4	460.6	457.6	467.8	448.8	443.1	438.2	10- 20	130.0	174.9	8.61, 8.61
30	444.7	437.7	435.9	450.1	460.3	432.0	408.5	420.3	20- 30	205.6	380.5	18.7, 18.7
40	417.7	410.7	395.9	423.4	436.8	396.6	359.1	385.0	30- 40	262.6	643.1	31.7, 31.7
50	349.1	363.1	335.5	376.6	355.8	343.8	294.9	331.6	40- 50	290.4	933.5	46, 46
60	226.2	281.1	261.1	283.4	227.8	238.3	220.5	236.6	50- 60	265.5	1199	59.1, 59.1
70	123.6	154.6	175.3	152.1	135.2	120.6	138.3	116.2	60- 70	191.0	1390	68.5, 68.5
80	48.40	61.71	85.80	66.87	55.95	44.48	50.05	40.04	70- 80	103.4	1493	73.6, 73.6
90	5.389	2.283	2.002	3.004	2.522	8.849	8.828	11.81	80- 90	25.72	1519	74.8, 74.8
100	73.52	62.87	37.00	59.90	67.74	76.83	24.95	80.08	90-100	34.41	1554	76.5, 76.5
110	75.01	61.48	25.30	57.60	99.74	86.57	31.59	101.8	100-110	71.25	1625	80, 80
120	206.0	159.9	27.55	145.4	161.8	137.5	22.60	154.5	110-120	92.06	1717	84.6, 84.6
130	207.9	156.4	15.99	138.8	182.6	132.7	12.45	149.0	120-130	120.5	1837	90.5, 90.5
140	187.8	138.7	1.250	120.0	163.0	115.8	2.537	128.8	130-140	94.04	1931	95.1, 95.1
150	149.2	113.3	1.160	94.35	127.6	98.07	1.275	95.40	140-150	59.63	1991	98.1, 98.1
160	105.9	21.15	1.253	38.40	87.39	72.15	5.103	37.26	150-160	30.70	2022	99.6, 99.6
170	39.68	28.61	1.294	20.20	29.77	17.07	1.258	9.581	160-170	7.480	2029	100, 100
180	0	0	1.064	0.9954	0.9418	1.016	1.049	1.031	170-180	0.9738	2030	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

DRAFT

6.4 Luminous Distribution Intensity (cd) 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	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474	474			
5	471	473	474	474	475	475	475	474	473	472	471	470	470	470	469	469			
10	464	467	469	471	472	473	472	471	468	465	464	463	462	462	460	461			
15	455	458	461	464	466	466	465	464	465	461	454	455	455	453	449	451			
20	455	455	449	456	461	460	458	467	468	460	449	443	443	440	438	448			
25	452	452	445	444	450	448	456	465	466	456	442	426	428	423	431	443			
30	445	445	438	428	436	432	450	460	460	448	432	406	408	403	420	434			
35	433	434	427	408	418	416	440	450	436	417	387	386	386	380	405	421			
40	418	419	411	389	396	397	423	437	437	420	397	365	359	358	385	403			
45	399	400	390	367	367	374	403	419	416	399	373	339	328	332	360	381			
50	349	375	363	339	336	346	377	381	356	345	344	309	295	302	332	340			
55	288	315	332	307	300	313	344	318	292	282	300	275	259	270	297	281			
60	226	252	281	271	261	276	283	253	228	219	238	237	221	232	237	219			
65	166	190	217	230	219	234	217	189	177	165	175	194	180	190	175	158			
70	124	137	155	183	175	186	152	145	135	123	121	143	138	142	116	115			
75	85.0	96.4	101	127	130	126	107	104	94.3	83.4	80.7	86.7	97.3	86.8	75.4	76.2			
80	48.4	58.2	61.7	71.7	85.8	70.7	66.9	64.9	55.9	46.6	44.5	42.7	50.0	40.5	40.0	40.8			
85	16.6	24.4	26.8	29.1	35.1	31.1	30.8	29.3	22.6	14.8	13.4	11.6	10.7	10.1	10.3	10.8			
90	5.39	2.52	2.28	2.16	2.00	2.71	3.00	2.80	2.52	7.76	8.85	10.7	8.83	12.1	11.8	12.1			
95	36.7	28.7	27.1	25.1	18.7	23.1	23.6	24.4	30.8	38.9	40.0	40.6	32.1	42.6	43.6	43.4			
100	73.5	64.7	62.9	35.0	37.0	38.2	59.9	60.6	67.7	76.5	76.8	31.4	25.0	33.0	80.1	80.6			
105	113	104	54.6	59.3	14.3	50.9	67.1	100	107	117	26.7	68.0	14.1	68.0	46.3	119			
110	75.0	58.6	61.5	86.8	25.3	75.7	57.6	75.8	99.7	38.6	86.6	77.0	31.6	87.2	102	22.4			
115	63.8	73.9	158	95.0	32.8	83.0	145	51.2	30.6	101	139	80.5	27.3	91.6	154	119			
120	206	205	160	97.5	83.8	145	171	162	188	138	80.1	22.6	93.3	155	202				
125	221	200	163	97.4	21.9	82.2	141	186	197	179	139	77.5	17.5	92.3	156	195			
130	208	191	156	94.8	16.0	78.3	139	174	183	168	133	73.4	12.4	88.1	149	192			
135	204	189	148	88.0	10.2	71.1	131	170	172	165	125	67.0	1.98	80.7	140	183			
140	188	176	139	80.1	1.25	62.8	120	158	163	153	116	60.6	2.54	66.1	129	169			
145	169	161	127	29.5	1.86	34.7	108	143	146	138	107	56.2	1.30	8.03	114	151			
150	149	143	113	0.67	1.16	0.71	94.3	125	128	120	98.1	22.2	1.27	29.9	95.4	130			
155	128	124	98.7	44.6	1.20	25.1	79.8	106	108	102	87.2	1.67	2.07	17.8	4.19	107			
160	106	104	21.2	30.6	1.25	19.1	38.4	85.2	87.4	82.5	72.1	7.61	5.10	7.44	37.3	34.8			
165	11.3	10.2	32.3	22.7	1.26	10.3	11.3	30.5	46.9	23.8	0.81	26.2	2.32	1.35	21.3	35.2			
170	39.7	45.1	28.6	14.4	1.29	1.58	20.2	32.8	29.8	25.4	17.1	11.3	1.26	1.24	9.58	22.2			
175	14.5	17.7	11.7	4.77	1.11	1.17	1.68	7.95	6.58	2.13	1.34	1.11	1.11	1.08	2.33	4.98			
180	0.00	0.00	0.00	0.69	1.06	1.04	1.00	0.97	0.94	0.98	1.02	1.02	1.05	1.04	1.03	1.01			

7. Photo of sample

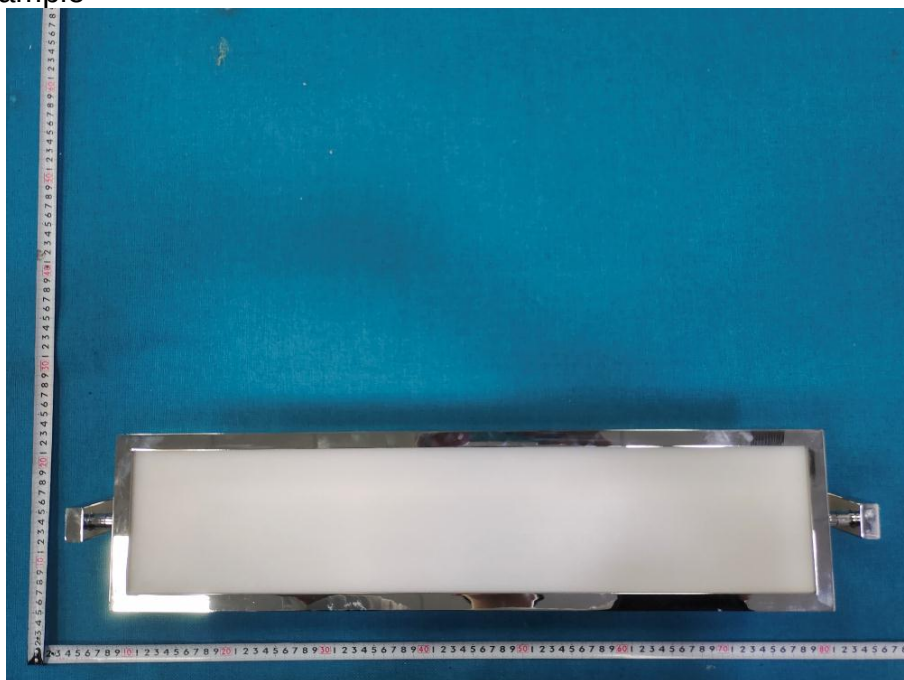


Figure 1 Overview



Figure 2 Overview

***** END OF REPORT*****