LM-79-19 Test Report

For

LEDVANCE LLC

200 Ballardvale St. Wilmington MA 01887

LED LAMP

Model Name(s):
LED54ED37UNVCL850MOG

Representative (Tested) Model:
LED54ED37UNVCL850MOG

Model Difference: N/A

Prepared by:

Alan Wang

Engineer: Alan Wang
Date: 2023-03-30

Reviewed by:

Vincent Yuan

Technical Lead: Vincent Yuan
Issue Date: 2021-11-
Revised Date: N/A

Note:
1. The results contained in this report pertain only to the tested samples.
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3. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.

Client Information:

Applicant Name:	LEDVANCE LLC
Brand Name:	SYLVANIA, LEDVANCE, SIMPLY DONE

Product Information:

Model Number:	LED54ED37UNVCL850MOG
Product Type:	LED LAMP
Rating Input:	120-277Vac, 50/60Hz, 54W
Declared CCT:	5000K
Declared Light Output:	8000lm

Test Information:

Standard Lamp:	Total Spectral Radiant Flux Standard Lamp, trace to NIST. 1. D908S for Gonio 2. D215S for Integrating Sphere
Date of Receipt Samples:	2023-03-27
Quantity of Receipt Samples:	1 pc
Sample Number:	230329002-S1
Test Representation:	1. All CCTs conducted IS and Electrical test; 2. The lowest CCT conducted Gonio test.

Laboratory Information:

Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Laboratory Contact Name:	Neil Zhong
Laboratory Contact E-mail:	Neil_zhong@ntc-cert.com

Report Information:

Test Report Form:	LM-79_TRF_V1.5
Issued Date of Test Report:	2023-03-31
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR22120231
Remark *(If applicable)*:	N/A

Test Specification:	
Date of Test	2023-03-29
Test Item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Fidelity Index 8. Gamut Index 9. Local Chroma Shift 10. THD and PF
Reference Standard	ANSI/IES LM-79-19 APPROVED METHOD: OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS ANSI C78.377-2017 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Color Rendering Properties of Light Sources CIE 15-2018 Technical Report Colorimetry ANSI IES TM-30-18 IES Method for Evaluating Light Source Color Rendition IES TM-15-11 Luminaire Classification System for Outdoor Luminaires Addendum A for IES TM-15-11 Backlight, Uplight, and Glare (BUG) Ratings ANSI C82.77-10:2020 Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment – Solid State

Test Methods:

1. Photometric and Electrical Measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C ± 1°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 required Voltage and Frequency. It was stabilized before measurement was made. Luminous Flux, Luminaire Efficacy and Zonal Lumen were calculated from the software taken at 1° vertical intervals and 15° horizonal intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at 25 °C± 1°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 sample was operated at require Voltage and Frequency. It was stabilized before measurement was made. Chromaticity Coordinates, Correlated Color Temperature and Color Rendering Index were calculated from the spectral radiant flux measurements taken at least 1 nm intervals over the rage of 380 to 780 nm.

3. THD and PF Measurements:

The sample was tested according to the ANSI C82.77, the sample was operated at requirement Voltage and Frequency, and was stabilized before measurement. The Total Harmonic Distortion was calculated from the Digital Power Meter.

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.2	41.0	Face Down	90	10

Electrical Data:

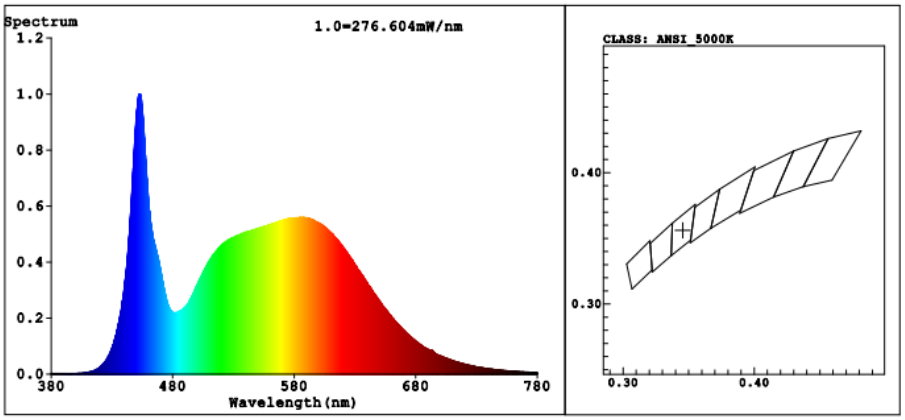
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.4397	52.25	0.9903

Color Data:

Parameter	Result
CCT(K)	4996
Ra	83.2
R_f	83
R_g	95
$R_{cs,\ h1}$	-13
Chromaticity, (x, y)	(0.3456, 0.3562)
Chromaticity, (u', v')	(0.2100, 0.4870)
Duv	0.0021

Specify Color Rendering			
R1	82	R9	10
R2	89	R10	73
R3	93	R11	80
R4	81	R12	54
R5	81	R13	84
R6	83	R14	96
R7	88	R15	76
R8	68	-	-

Spectrum Diagram:



IES TM-30-18 Color Rendition Result:

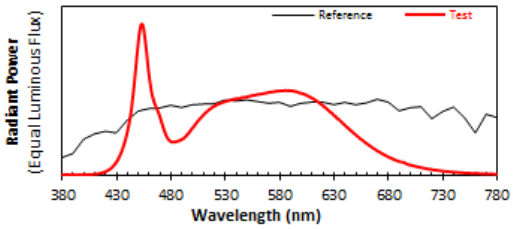
ANSI/IES TM-30-18 Color Rendition Report

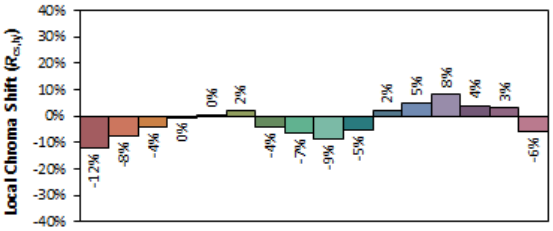
Source: --

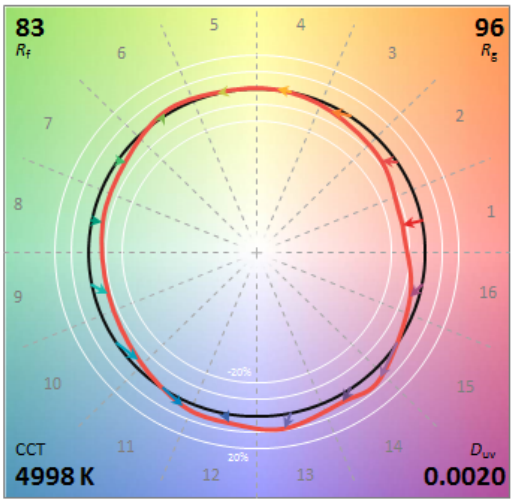
Manufacturer: LEDVANCE LLC

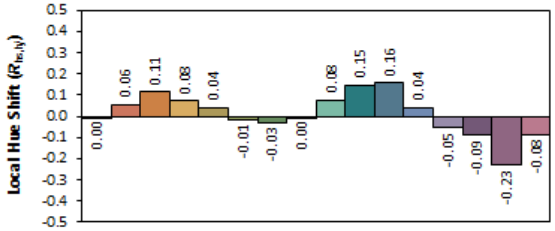
Date: 2023/3/29

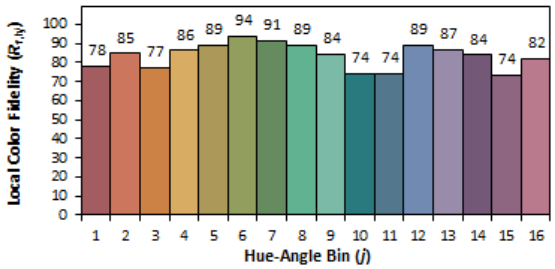
Model: LED54ED37UNVCL850MOG

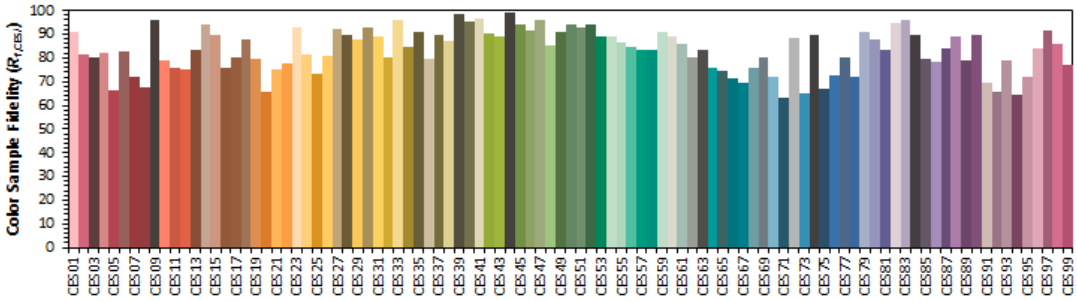












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3456
y	0.3560
u'	0.2100
v'	0.4869

CIE 13.3-1995 (CRI)

R_a	83
R_9	10

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

Spectrum Data:

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0023	447	0.6934	514	0.4289	581	0.5575	648	0.2743	715	0.0419
381	0.0026	448	0.7745	515	0.4347	582	0.5583	649	0.2684	716	0.0410
382	0.0026	449	0.8477	516	0.4398	583	0.5576	650	0.2624	717	0.0393
383	0.0026	450	0.9125	517	0.4455	584	0.5590	651	0.2559	718	0.0383
384	0.0028	451	0.9612	518	0.4496	585	0.5590	652	0.2504	719	0.0371
385	0.0026	452	0.9943	519	0.4547	586	0.5591	653	0.2435	720	0.0361
386	0.0026	453	0.9998	520	0.4571	587	0.5578	654	0.2385	721	0.0346
387	0.0024	454	0.9825	521	0.4633	588	0.5596	655	0.2339	722	0.0336
388	0.0024	455	0.9392	522	0.4662	589	0.5570	656	0.2272	723	0.0328
389	0.0019	456	0.8819	523	0.4697	590	0.5576	657	0.2217	724	0.0318
390	0.0024	457	0.8201	524	0.4723	591	0.5573	658	0.2154	725	0.0309
391	0.0025	458	0.7478	525	0.4748	592	0.5565	659	0.2109	726	0.0298
392	0.0019	459	0.6829	526	0.4787	593	0.5537	660	0.2053	727	0.0288
393	0.0027	460	0.6247	527	0.4808	594	0.5524	661	0.2005	728	0.0283
394	0.0024	461	0.5799	528	0.4831	595	0.5520	662	0.1945	729	0.0269
395	0.0021	462	0.5378	529	0.4855	596	0.5490	663	0.1894	730	0.0261
396	0.0027	463	0.5091	530	0.4872	597	0.5448	664	0.1850	731	0.0254
397	0.0021	464	0.4840	531	0.4897	598	0.5430	665	0.1794	732	0.0247
398	0.0024	465	0.4655	532	0.4924	599	0.5427	666	0.1754	733	0.0241
399	0.0022	466	0.4495	533	0.4921	600	0.5391	667	0.1706	734	0.0231
400	0.0023	467	0.4318	534	0.4967	601	0.5382	668	0.1659	735	0.0224
401	0.0025	468	0.4142	535	0.4971	602	0.5354	669	0.1613	736	0.0219
402	0.0026	469	0.3936	536	0.4989	603	0.5322	670	0.1576	737	0.0211
403	0.0029	470	0.3695	537	0.5029	604	0.5288	671	0.1529	738	0.0205
404	0.0032	471	0.3471	538	0.5026	605	0.5242	672	0.1486	739	0.0199
405	0.0034	472	0.3255	539	0.5037	606	0.5217	673	0.1445	740	0.0191
406	0.0040	473	0.3028	540	0.5065	607	0.5189	674	0.1409	741	0.0186
407	0.0044	474	0.2819	541	0.5059	608	0.5133	675	0.1364	742	0.0179
408	0.0052	475	0.2646	542	0.5054	609	0.5089	676	0.1325	743	0.0178
409	0.0056	476	0.2487	543	0.5072	610	0.5064	677	0.1291	744	0.0170
410	0.0064	477	0.2377	544	0.5105	611	0.5021	678	0.1258	745	0.0164
411	0.0073	478	0.2288	545	0.5135	612	0.4982	679	0.1214	746	0.0159
412	0.0084	479	0.2240	546	0.5146	613	0.4913	680	0.1179	747	0.0155
413	0.0094	480	0.2197	547	0.5132	614	0.4869	681	0.1153	748	0.0150
414	0.0108	481	0.2194	548	0.5164	615	0.4830	682	0.1117	749	0.0145
415	0.0127	482	0.2195	549	0.5172	616	0.4774	683	0.1082	750	0.0142
416	0.0140	483	0.2195	550	0.5190	617	0.4711	684	0.1055	751	0.0137
417	0.0166	484	0.2204	551	0.5211	618	0.4665	685	0.1016	752	0.0132
418	0.0189	485	0.2224	552	0.5217	619	0.4613	686	0.0989	753	0.0128
419	0.0215	486	0.2248	553	0.5249	620	0.4532	687	0.0960	754	0.0126
420	0.0245	487	0.2271	554	0.5257	621	0.4485	688	0.0936	755	0.0120
421	0.0285	488	0.2294	555	0.5260	622	0.4433	689	0.0901	756	0.0117
422	0.0326	489	0.2333	556	0.5281	623	0.4365	690	0.0884	757	0.0116
423	0.0371	490	0.2385	557	0.5289	624	0.4296	691	0.0868	758	0.0110
424	0.0420	491	0.2423	558	0.5302	625	0.4234	692	0.0865	759	0.0107
425	0.0484	492	0.2491	559	0.5331	626	0.4170	693	0.0858	760	0.0103
426	0.0555	493	0.2539	560	0.5341	627	0.4116	694	0.0829	761	0.0100
427	0.0638	494	0.2636	561	0.5349	628	0.4063	695	0.0785	762	0.0099
428	0.0719	495	0.2714	562	0.5360	629	0.3978	696	0.0743	763	0.0096
429	0.0823	496	0.2794	563	0.5375	630	0.3905	697	0.0714	764	0.0093
430	0.0927	497	0.2888	564	0.5391	631	0.3867	698	0.0687	765	0.0088
431	0.1057	498	0.2981	565	0.5393	632	0.3765	699	0.0666	766	0.0086
432	0.1200	499	0.3092	566	0.5405	633	0.3714	700	0.0652	767	0.0084
433	0.1357	500	0.3159	567	0.5447	634	0.3669	701	0.0647	768	0.0082
434	0.1526	501	0.3275	568	0.5435	635	0.3590	702	0.0622	769	0.0083
435	0.1716	502	0.3362	569	0.5461	636	0.3525	703	0.0602	770	0.0077
436	0.1931	503	0.3454	570	0.5482	637	0.3461	704	0.0585	771	0.0074
437	0.2171	504	0.3546	571	0.5488	638	0.3388	705	0.0567	772	0.0072
438	0.2424	505	0.3631	572	0.5502	639	0.3325	706	0.0555	773	0.0069
439	0.2699	506	0.3714	573	0.5508	640	0.3258	707	0.0534	774	0.0068
440	0.3039	507	0.3796	574	0.5513	641	0.3181	708	0.0519	775	0.0068
441	0.3399	508	0.3869	575	0.5534	642	0.3128	709	0.0503	776	0.0065
442	0.3793	509	0.3948	576	0.5550	643	0.3073	710	0.0492	777	0.0061
443	0.4256	510	0.4035	577	0.5569	644	0.2989	711	0.0471	778	0.0060
444	0.4873	511	0.4097	578	0.5558	645	0.2926	712	0.0460	779	0.0058
445	0.5480	512	0.4167	579	0.5571	646	0.2871	713	0.0449	780	0.0057
446	0.6192	513	0.4229	580	0.5576	647	0.2808	714	0.0436	N/A	N/A

Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.2	54.4	Face Down	90	25

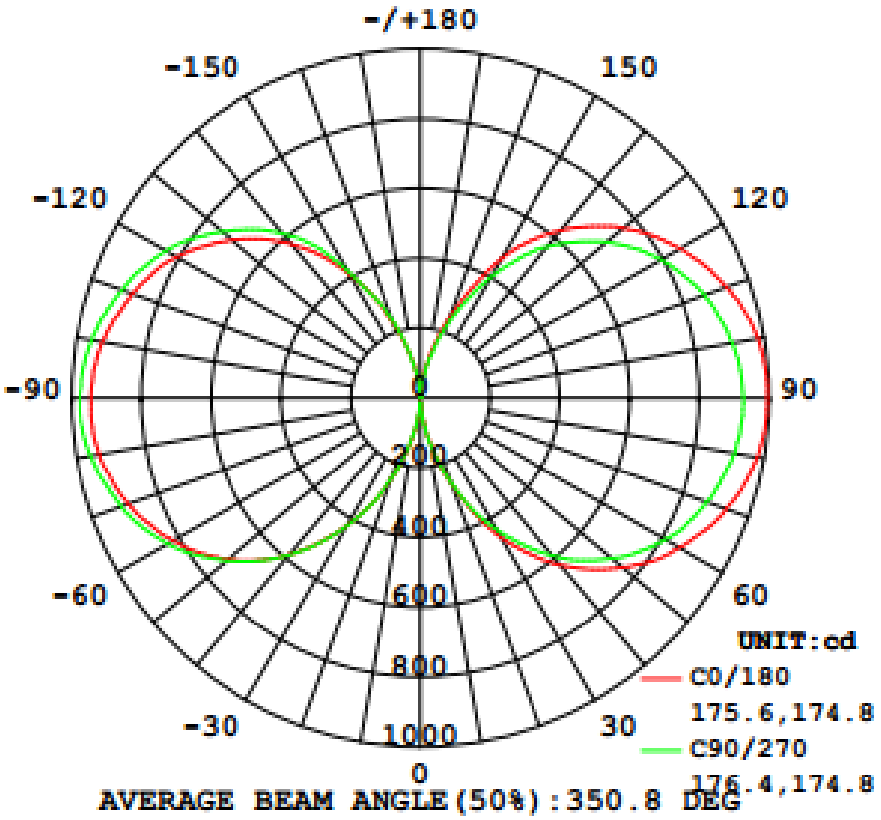
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.4391	52.17	0.9901
277.0	60	0.2091	52.16	0.9005

Goniophotometer Data:

Parameter	Results	
	120V	277V
Total Luminous (lm)	8619.0	9273.7
Luminous Efficacy (lm/W)	165.21	177.79
Beam Angle (°)	350.8	
Center Beam Intensity (cd)	16	

Luminous Intensity Distribution Diagram:

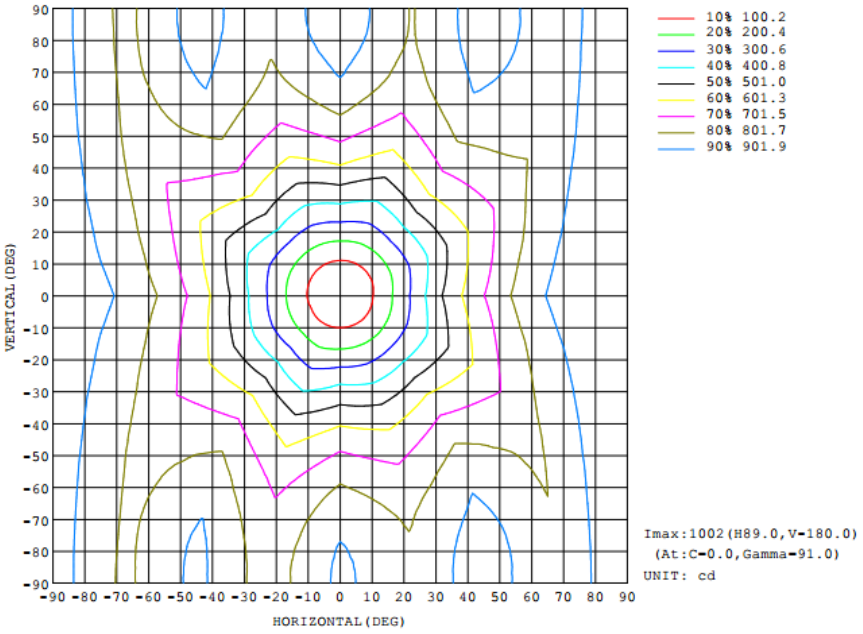


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	95.18	97.00	100.6	100.0	94.17	90.03	86.53	85.51	0- 10	5.434	5.434	0.06,0.06
20	264.2	255.4	258.9	262.2	248.9	248.3	248.7	246.3	10- 20	50.54	55.97	0.65,0.65
30	462.4	430.0	437.6	432.9	420.6	433.9	422.3	420.1	20- 30	156.7	212.7	2.47,2.47
40	624.6	596.9	590.3	595.8	586.3	587.3	587.1	584.4	30- 40	310.1	522.7	6.06,6.06
50	755.3	733.5	715.7	724.2	719.9	713.8	725.7	719.8	40- 50	485.4	1008	11.7,11.7
60	856.6	838.4	810.6	821.3	818.3	815.3	836.6	828.3	50- 60	655.8	1664	19.3,19.3
70	932.9	903.6	873.3	883.0	891.2	890.4	912.9	903.3	60- 70	800.4	2464	28.6,28.6
80	978.9	948.6	913.2	924.5	934.2	934.4	959.8	952.6	70- 80	902.0	3366	39.1,39.1
90	993.1	962.8	925.5	934.1	944.3	947.8	976.2	967.1	80- 90	955.0	4321	50.1,50.1
100	983.4	944.7	907.8	914.6	926.0	940.2	955.2	951.0	90-100	952.9	5274	61.2,61.2
110	934.3	894.8	866.4	876.5	878.8	894.0	909.4	906.9	100-110	899.5	6174	71.6,71.6
120	857.7	821.0	794.7	804.8	809.0	826.4	844.1	842.0	110-120	796.4	6970	80.9,80.9
130	757.4	719.7	695.4	699.8	705.3	728.9	742.4	738.9	120-130	651.9	7622	88.4,88.4
140	627.3	589.3	567.2	571.1	576.0	602.6	615.0	617.1	130-140	484.1	8106	94.1,94.1
150	461.1	417.7	399.5	402.4	410.6	433.0	423.5	451.2	140-150	311.8	8418	97.7,97.7
160	247.8	233.4	222.0	224.2	230.4	231.6	242.5	256.7	150-160	152.3	8570	99.4,99.4
170	86.03	83.03	72.17	67.31	80.65	77.38	82.34	88.96	160-170	44.94	8615	100,100
180	0	0	0	0	0	0	0	0	170-180	3.766	8619	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Isocandela Diagram:



Luminous Distribution Intensity Data:

Table--1 UNIT: cd

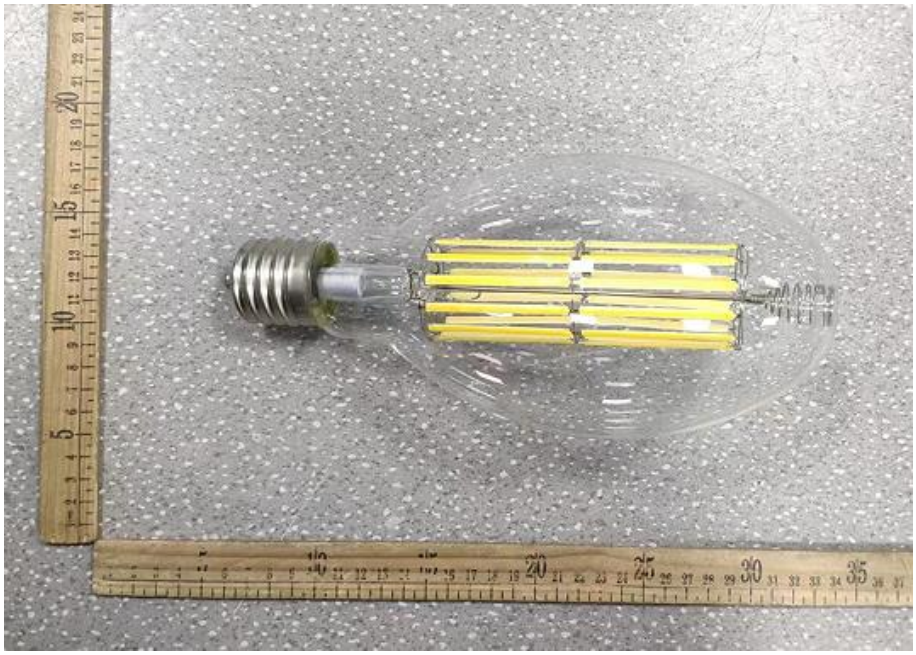
γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2			
5	36.2	37.7	39.3	41.1	41.2	43.6	42.8	43.8	39.6	40.1	37.7	36.2	35.3	34.6	33.1	34.3			
10	95.2	95.9	97.0	99.4	101	99.5	100	102	94.2	93.6	90.0	88.1	86.5	85.0	85.5	86.9			
15	176	173	171	173	174	168	177	177	167	165	165	165	163	160	160	164			
20	264	257	255	255	259	238	262	251	249	240	248	245	249	239	246	247			
25	363	334	345	337	353	309	349	335	336	314	340	321	336	312	336	327			
30	462	404	430	414	438	377	433	411	421	380	434	399	422	381	420	408			
35	547	472	515	485	516	445	517	483	506	446	513	470	508	449	506	482			
40	625	533	597	553	590	509	596	549	586	507	587	535	587	511	584	553			
45	694	590	669	610	659	562	664	603	658	562	653	592	661	570	657	615			
50	755	643	734	660	716	606	724	650	720	612	714	645	726	622	720	669			
55	813	687	790	702	767	644	776	688	774	654	767	691	785	668	778	720			
60	857	723	838	736	811	677	821	720	818	688	815	730	837	707	828	759			
65	900	753	872	767	847	702	855	744	857	717	857	762	879	740	871	794			
70	933	773	904	788	873	721	883	762	891	738	890	786	913	764	903	817			
75	960	787	929	801	895	733	906	773	914	752	916	800	937	778	930	833			
80	979	800	949	812	913	742	924	784	934	766	934	814	960	791	953	842			
85	990	804	960	817	922	749	932	787	943	769	946	820	972	796	964	849			
90	993	801	963	816	926	748	934	784	944	768	948	822	976	797	967	849			
95	991	800	958	815	921	745	928	783	939	767	946	820	969	794	961	852			
100	983	794	945	810	908	737	915	777	926	765	940	816	955	790	951	844			
105	963	786	923	797	888	728	899	769	902	757	922	802	935	781	933	828			
110	934	770	895	783	866	714	877	755	879	744	894	786	909	765	907	808			
115	900	746	861	756	833	694	845	729	847	720	861	767	880	746	877	787			
120	858	712	821	721	795	664	805	696	809	691	826	740	844	719	842	756			
125	811	675	775	682	749	630	756	657	760	654	780	705	798	684	792	718			
130	757	633	720	641	695	592	700	615	705	613	729	663	742	641	739	674			
135	697	588	658	592	633	546	637	569	645	565	667	608	684	593	683	628			
140	627	536	589	537	567	493	571	515	576	510	603	546	615	539	617	573			
145	551	472	508	469	487	428	495	450	501	456	530	485	535	491	541	522			
150	461	396	418	387	399	348	402	371	411	416	433	427	423	447	451	464			
155	348	312	321	295	308	274	310	284	321	332	313	347	323	364	341	359			
160	248	232	233	221	222	206	224	210	230	230	232	230	243	245	257	242			
165	156	152	150	145	140	134	140	136	148	147	145	141	152	155	159	155			
170	86.0	83.6	83.0	79.7	72.2	71.1	67.3	76.6	80.6	80.2	77.4	79.3	82.3	84.6	89.0	88.8			
175	5.93	5.07	4.65	3.13	6.52	9.02	9.82	7.71	14.1	18.6	20.2	23.4	24.9	27.2	25.9	25.4			
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			

THD and PF Measurement Test Results:

Electrical Measurement:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	iTHD(%)
120.0	60	0.4391	52.17	0.9901	8.92
277.0	60	0.2091	52.16	0.9005	10.61

Photo of Sample:



Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2022-11-09	2023-11-08
NTC-F01-006	2.0 meter Integrating Sphere	2022-11-09	2023-11-08
NTC-F01-012	Standard Lamp	2022-11-09	2023-11-08
NTC-F01-013	Standard Lamp	2022-11-09	2023-11-08
NTC-F01-031	Digital Power Meter	2022-08-31	2023-08-30
NTC-F01-020	Temperature & Humidity Meter	2022-11-12	2023-11-11

************End of Report************