LM-79-19 Test Report

For

LEDVANCE LLC

200 Ballardvale St. Wilmington MA 01887

LED LAMP

Model Name(s):
LED54ED37UNVCL840MOG

Representative (Tested) Model:
LED54ED37UNVCL840MOG

Model Difference: N/A

Prepared by:

Engineer: Alan Wang
Date: 2023-03-30

Reviewed by:

Technical Lead: Vincent Yuan
Issue Date: 2023-03-31
Revised Date: N/A

Note:
1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd
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:	LED54ED37UNVCL840MOG
Product Type:	LED LAMP
Rating Input:	120-277Vac, 50/60Hz, 54W
Declared CCT:	4000K
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:	230329001-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.:	NTCLR22120230
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:

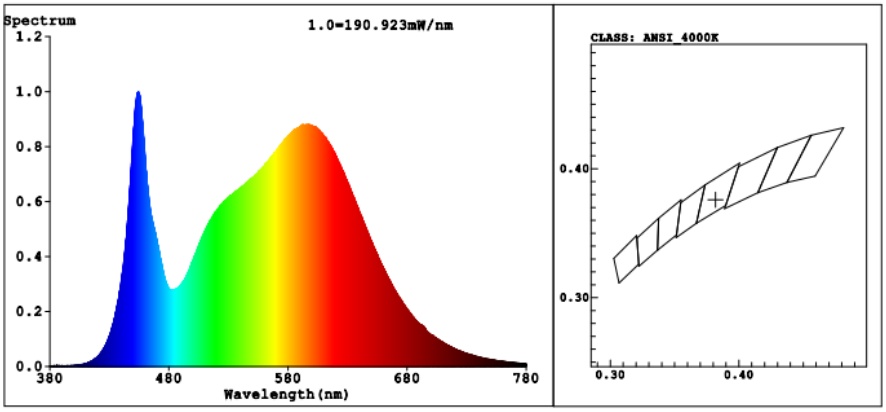
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.4320	51.42	0.9918

Color Data:

Parameter	Result
CCT(K)	3956
Ra	84.1
R_f	84
R_g	95
$R_{cs,\ h1}$	-12
Chromaticity, (x, y)	(0.3819, 0.3760)
Chromaticity, (u', v')	(0.2263, 0.5015)
Duv	-0.0008

Specify Color Rendering			
R1	83	R9	13
R2	91	R10	78
R3	96	R11	81
R4	82	R12	62
R5	83	R13	85
R6	87	R14	98
R7	86	R15	77
R8	65	-	-

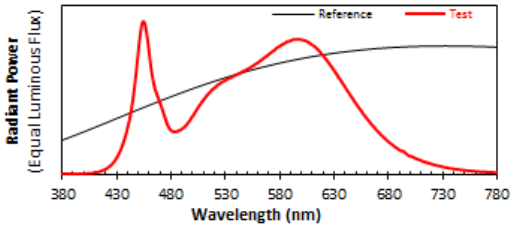
Spectrum Diagram:

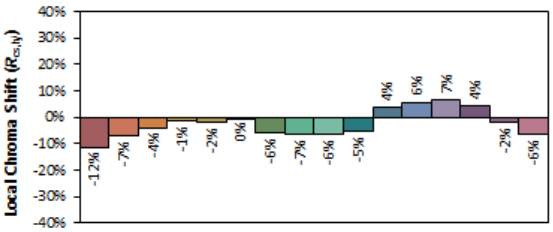


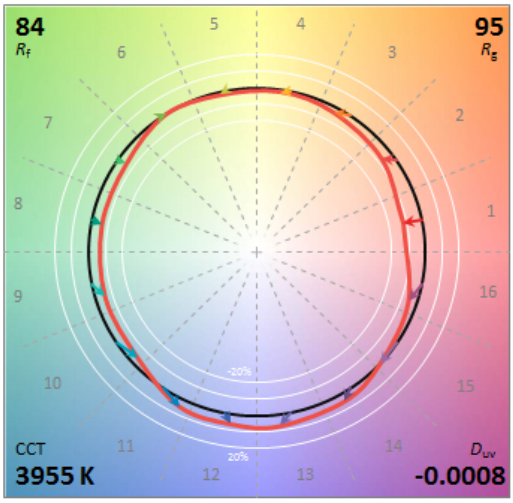
IES TM-30-18 Color Rendition Result:

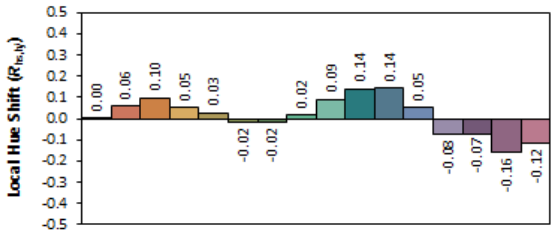
ANSI/IES TM-30-18 Color Rendition Report

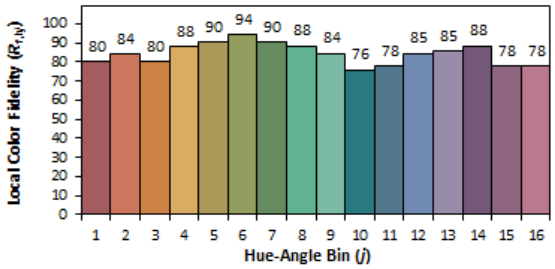
Source:	--	**Manufacturer:**	LEDVANCE LLC
Date:	2023/3/29	**Model:**	LED54ED37UNVCL840MOG

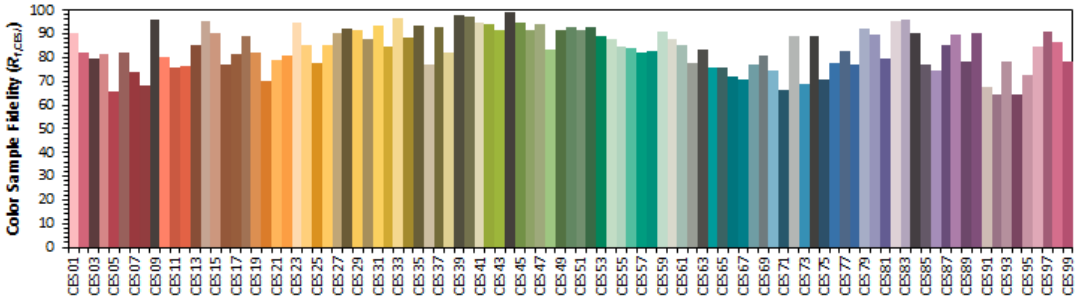












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3818
y	0.3759
u'	0.2264
v'	0.5014

CIE 13.3-1995 (CRI)

R_a	84
R_9	13

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	0.0018	447	0.6275	514	0.5249	581	0.8395	648	0.4760	715	0.0753
381	0.0020	448	0.6959	515	0.5317	582	0.8453	649	0.4659	716	0.0732
382	0.0029	449	0.7652	516	0.5388	583	0.8500	650	0.4562	717	0.0708
383	0.0015	450	0.8312	517	0.5485	584	0.8525	651	0.4453	718	0.0686
384	0.0033	451	0.8921	518	0.5523	585	0.8573	652	0.4353	719	0.0661
385	0.0026	452	0.9461	519	0.5617	586	0.8631	653	0.4256	720	0.0645
386	0.0038	453	0.9819	520	0.5648	587	0.8646	654	0.4170	721	0.0627
387	0.0023	454	0.9948	521	0.5711	588	0.8659	655	0.4070	722	0.0604
388	0.0033	455	0.9894	522	0.5781	589	0.8682	656	0.3948	723	0.0588
389	0.0020	456	0.9647	523	0.5843	590	0.8715	657	0.3858	724	0.0570
390	0.0030	457	0.9273	524	0.5880	591	0.8737	658	0.3763	725	0.0549
391	0.0028	458	0.8782	525	0.5918	592	0.8782	659	0.3677	726	0.0539
392	0.0020	459	0.8181	526	0.5983	593	0.8772	660	0.3590	727	0.0526
393	0.0023	460	0.7589	527	0.6023	594	0.8768	661	0.3502	728	0.0497
394	0.0027	461	0.7056	528	0.6056	595	0.8787	662	0.3413	729	0.0488
395	0.0024	462	0.6568	529	0.6087	596	0.8793	663	0.3327	730	0.0467
396	0.0031	463	0.6143	530	0.6126	597	0.8794	664	0.3237	731	0.0457
397	0.0023	464	0.5803	531	0.6175	598	0.8782	665	0.3156	732	0.0448
398	0.0036	465	0.5528	532	0.6220	599	0.8765	666	0.3086	733	0.0426
399	0.0030	466	0.5312	533	0.6243	600	0.8747	667	0.2998	734	0.0417
400	0.0037	467	0.5123	534	0.6295	601	0.8741	668	0.2908	735	0.0410
401	0.0040	468	0.4945	535	0.6298	602	0.8706	669	0.2832	736	0.0390
402	0.0042	469	0.4764	536	0.6345	603	0.8697	670	0.2765	737	0.0380
403	0.0049	470	0.4529	537	0.6397	604	0.8672	671	0.2676	738	0.0366
404	0.0054	471	0.4347	538	0.6411	605	0.8628	672	0.2615	739	0.0358
405	0.0056	472	0.4128	539	0.6461	606	0.8591	673	0.2540	740	0.0342
406	0.0066	473	0.3905	540	0.6481	607	0.8547	674	0.2473	741	0.0333
407	0.0074	474	0.3687	541	0.6528	608	0.8501	675	0.2406	742	0.0321
408	0.0081	475	0.3488	542	0.6547	609	0.8441	676	0.2342	743	0.0314
409	0.0094	476	0.3281	543	0.6588	610	0.8386	677	0.2265	744	0.0307
410	0.0104	477	0.3126	544	0.6611	611	0.8345	678	0.2206	745	0.0296
411	0.0118	478	0.2987	545	0.6673	612	0.8301	679	0.2149	746	0.0284
412	0.0135	479	0.2896	546	0.6727	613	0.8218	680	0.2083	747	0.0275
413	0.0152	480	0.2845	547	0.6710	614	0.8158	681	0.2029	748	0.0271
414	0.0173	481	0.2785	548	0.6780	615	0.8082	682	0.1971	749	0.0263
415	0.0199	482	0.2772	549	0.6810	616	0.8012	683	0.1926	750	0.0255
416	0.0218	483	0.2765	550	0.6852	617	0.7927	684	0.1857	751	0.0244
417	0.0252	484	0.2783	551	0.6883	618	0.7833	685	0.1802	752	0.0237
418	0.0291	485	0.2782	552	0.6927	619	0.7785	686	0.1746	753	0.0232
419	0.0311	486	0.2817	553	0.6987	620	0.7677	687	0.1707	754	0.0226
420	0.0350	487	0.2849	554	0.7002	621	0.7575	688	0.1661	755	0.0215
421	0.0393	488	0.2875	555	0.7064	622	0.7489	689	0.1604	756	0.0210
422	0.0453	489	0.2924	556	0.7101	623	0.7403	690	0.1568	757	0.0205
423	0.0504	490	0.2970	557	0.7159	624	0.7299	691	0.1517	758	0.0197
424	0.0558	491	0.3027	558	0.7208	625	0.7209	692	0.1514	759	0.0191
425	0.0629	492	0.3085	559	0.7245	626	0.7106	693	0.1495	760	0.0186
426	0.0706	493	0.3146	560	0.7288	627	0.7018	694	0.1453	761	0.0182
427	0.0790	494	0.3218	561	0.7367	628	0.6909	695	0.1385	762	0.0176
428	0.0883	495	0.3323	562	0.7403	629	0.6802	696	0.1321	763	0.0171
429	0.1000	496	0.3417	563	0.7446	630	0.6697	697	0.1261	764	0.0160
430	0.1105	497	0.3509	564	0.7514	631	0.6604	698	0.1224	765	0.0161
431	0.1227	498	0.3625	565	0.7578	632	0.6500	699	0.1190	766	0.0154
432	0.1374	499	0.3756	566	0.7603	633	0.6368	700	0.1158	767	0.0150
433	0.1537	500	0.3817	567	0.7690	634	0.6263	701	0.1151	768	0.0144
434	0.1699	501	0.3953	568	0.7714	635	0.6174	702	0.1116	769	0.0143
435	0.1900	502	0.4070	569	0.7779	636	0.6074	703	0.1079	770	0.0139
436	0.2092	503	0.4174	570	0.7829	637	0.5949	704	0.1044	771	0.0133
437	0.2324	504	0.4287	571	0.7901	638	0.5843	705	0.1012	772	0.0127
438	0.2555	505	0.4398	572	0.7947	639	0.5740	706	0.0984	773	0.0126
439	0.2818	506	0.4510	573	0.8009	640	0.5622	707	0.0959	774	0.0120
440	0.3123	507	0.4604	574	0.8043	641	0.5502	708	0.0930	775	0.0119
441	0.3413	508	0.4714	575	0.8099	642	0.5412	709	0.0901	776	0.0116
442	0.3753	509	0.4800	576	0.8169	643	0.5301	710	0.0877	777	0.0110
443	0.4138	510	0.4906	577	0.8255	644	0.5195	711	0.0841	778	0.0108
444	0.4600	511	0.4977	578	0.8287	645	0.5084	712	0.0821	779	0.0101
445	0.5082	512	0.5078	579	0.8304	646	0.4975	713	0.0797	780	0.0100
446	0.5679	513	0.5167	580	0.8383	647	0.4882	714	0.0774	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

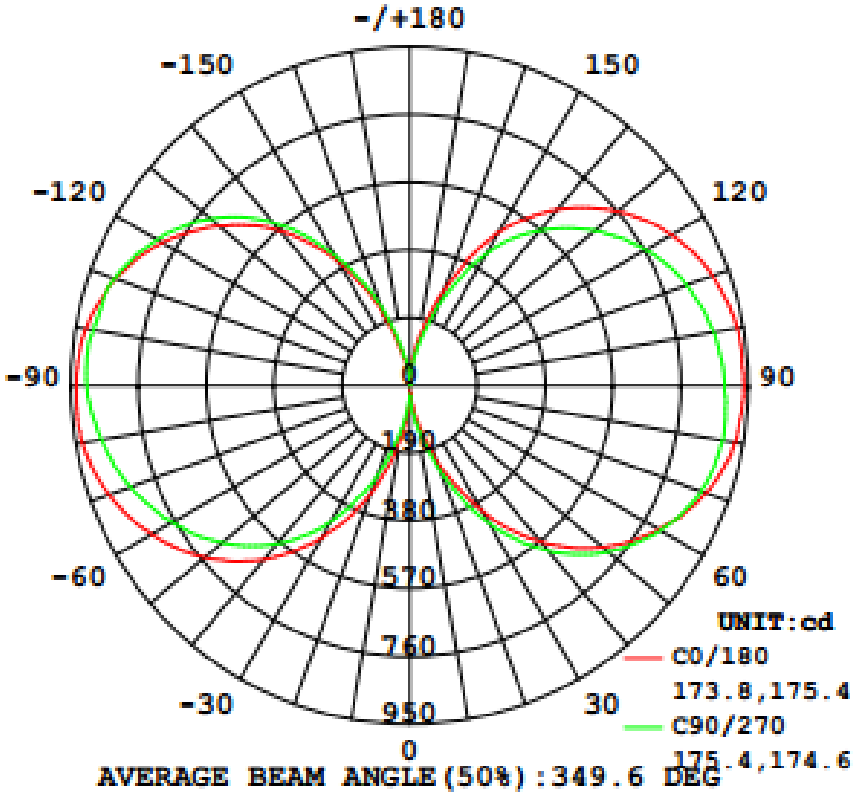
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.4315	51.35	0.9916
277.0	60	0.2063	51.59	0.9030

Goniophotometer Data:

Parameter	Results	
	120V	277V
Total Luminous (lm)	9086.3	8991.8
Luminous Efficacy (lm/W)	176.95	174.29
Beam Angle (°)	349.6	
Center Beam Intensity (cd)	28	

Luminous Intensity Distribution Diagram:

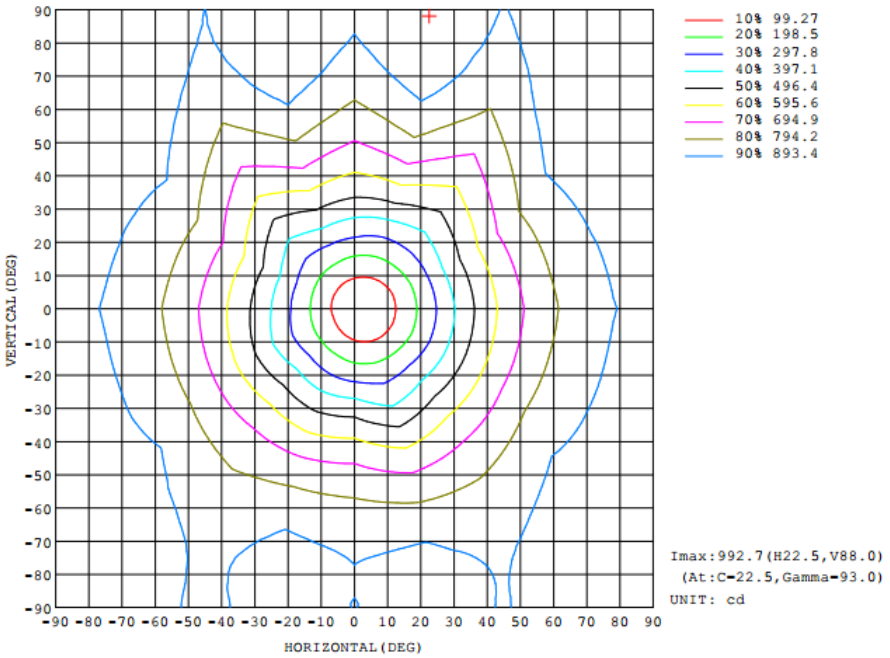


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	67.46	74.96	105.1	134.5	148.7	135.6	111.1	78.81	0- 10	6.579	6.579	0.07,0.07
20	225.7	235.7	257.8	300.9	323.4	289.8	271.6	234.1	10- 20	54.57	61.15	0.67,0.67
30	405.6	413.5	448.2	469.7	491.4	424.4	439.2	376.5	20- 30	164.5	225.6	2.48,2.48
40	572.3	576.4	605.4	614.8	637.1	561.3	578.7	506.7	30- 40	324.3	549.9	6.05,6.05
50	705.0	705.0	726.3	719.2	750.1	677.5	685.0	618.6	40- 50	507.5	1057	11.6,11.6
60	807.8	802.5	812.3	789.8	835.4	771.4	768.5	714.4	50- 60	687.2	1745	19.2,19.2
70	883.3	864.0	868.7	831.5	896.3	842.5	833.3	789.8	60- 70	842.9	2588	28.5,28.5
80	925.0	893.1	891.5	850.1	931.2	886.5	878.0	835.2	70- 80	954.9	3542	39,39
90	937.9	895.3	884.1	838.3	936.4	904.8	904.8	868.8	80- 90	1014	4556	50.1,50.1
100	931.5	873.9	864.7	810.5	921.4	899.9	900.6	872.3	90-100	1013	5570	61.3,61.3
110	902.5	828.7	826.8	765.0	877.8	869.3	880.1	854.4	100-110	952.7	6523	71.8,71.8
120	847.3	760.8	762.8	698.5	802.4	804.4	818.5	806.2	110-120	841.1	7364	81,81
130	759.5	669.2	676.3	609.0	696.7	708.3	727.3	730.1	120-130	685.2	8049	88.6,88.6
140	644.3	557.5	568.2	502.2	567.4	569.5	598.1	604.9	130-140	506.3	8555	94.2,94.2
150	496.2	422.2	425.3	370.7	403.5	364.8	422.1	416.1	140-150	323.4	8879	97.7,97.7
160	285.2	263.0	242.9	209.9	210.5	217.8	237.6	275.2	150-160	158.2	9037	99.5,99.5
170	111.7	104.2	80.81	57.94	53.35	58.68	71.91	94.42	160-170	45.84	9083	100,100
180	0	0	0	0	0	0	0	0	170-180	3.670	9086	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Isocandela Diagram:



Luminous Distribution Intensity Data:

Table--1 UNIT: cd

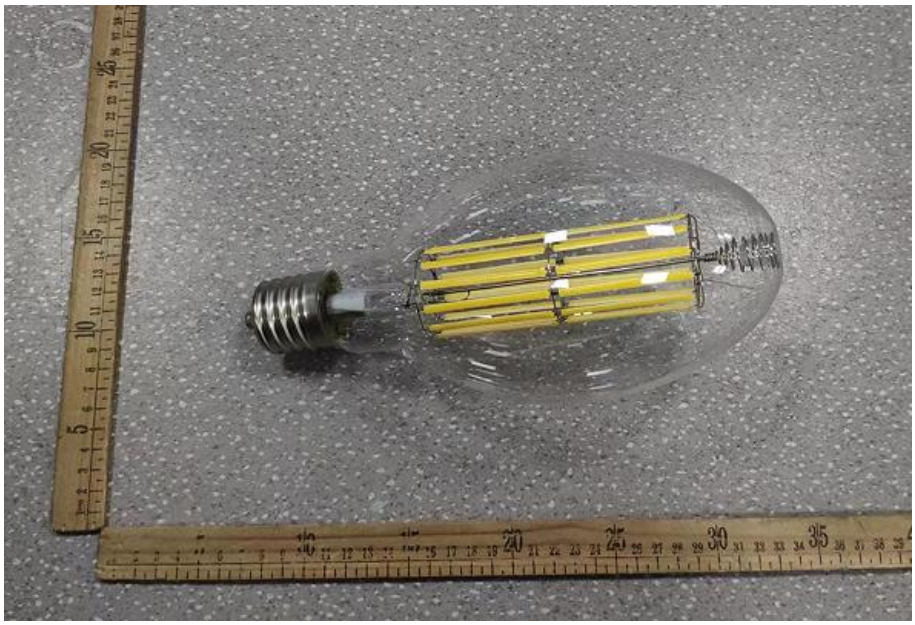
C (DEG) / γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8			
5	24.5	25.7	29.9	36.3	48.1	60.0	67.9	72.9	75.8	73.9	67.8	60.7	50.3	42.9	33.9	25.3			
10	67.5	70.1	75.0	89.2	105	120	135	140	149	144	136	125	111	95.6	78.8	67.9			
15	141	139	152	161	176	199	214	216	235	233	218	206	184	167	154	138			
20	226	225	236	236	258	280	301	287	323	326	290	289	272	244	234	220			
25	312	313	328	310	356	362	390	363	410	420	357	382	353	327	310	309			
30	406	406	414	377	448	447	470	444	491	510	424	470	439	419	377	410			
35	494	494	499	455	530	522	545	521	567	591	495	553	514	510	443	489			
40	572	575	576	532	605	593	615	596	637	666	561	633	579	597	507	569			
45	643	653	645	606	670	661	671	662	697	730	623	703	636	673	566	643			
50	705	722	705	674	726	721	719	721	750	787	677	766	685	739	619	710			
55	761	787	758	738	772	773	758	773	796	838	728	820	731	795	669	769			
60	808	840	802	791	812	820	790	818	835	883	771	866	768	844	714	819			
65	849	888	837	841	845	861	815	858	870	920	810	907	802	885	757	863			
70	883	924	864	882	869	888	831	884	896	947	842	941	833	920	790	901			
75	908	953	879	909	883	911	842	910	918	968	867	961	858	945	817	926			
80	925	981	893	938	892	933	850	931	931	981	887	978	878	964	835	943			
85	932	998	898	958	888	945	847	942	936	986	899	986	894	975	855	953			
90	938	1007	895	969	884	950	838	948	936	984	905	979	905	977	869	955			
95	936	1008	888	974	878	952	827	943	931	977	906	965	908	970	875	951			
100	932	1001	874	968	865	940	811	929	921	961	900	941	901	955	872	940			
105	920	985	851	953	847	922	789	907	902	937	886	913	893	932	863	920			
110	902	961	829	931	827	896	765	881	878	913	869	884	880	904	854	891			
115	879	929	798	903	799	864	734	847	843	876	841	840	854	876	835	863			
120	847	891	761	862	763	824	698	805	802	831	804	791	819	833	806	822			
125	807	848	719	812	723	774	655	754	752	779	761	735	778	784	771	775			
130	759	794	669	758	676	719	609	696	697	722	708	673	727	727	730	723			
135	706	735	616	697	625	656	558	632	636	661	645	610	669	668	674	667			
140	644	667	557	629	568	585	502	560	567	593	569	547	598	607	605	611			
145	574	589	492	552	505	502	440	475	487	516	470	489	515	540	511	556			
150	496	502	422	461	425	410	371	389	404	419	365	422	422	460	416	482			
155	393	404	342	359	331	313	297	298	307	294	303	328	329	362	349	380			
160	285	297	263	254	243	214	210	198	210	206	218	218	238	250	275	264			
165	194	194	183	168	151	133	125	111	116	117	122	125	141	154	171	178			
170	112	108	104	96.9	80.8	70.4	57.9	54.2	53.4	53.6	58.7	63.5	71.9	81.3	94.4	103			
175	21.9	22.1	21.0	17.4	8.89	4.55	5.89	2.26	2.67	2.84	9.80	11.5	17.1	22.6	27.5	29.3			
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	0.4315	51.35	0.9916	8.83
277.0	60	0.2063	51.59	0.9030	10.38

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************