LM-79-19 Test Report

For

LEDVANCE LLC

200 Ballardvale St. Wilmington MA 01887

LED LAMP

Model Name(s):
LED54ED37UNVFR840MOG

Representative (Tested) Model:
LED54ED37UNVFR840MOG

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:	LED54ED37UNVFR840MOG
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:	230329003-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.:	NTCLR22120232
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:

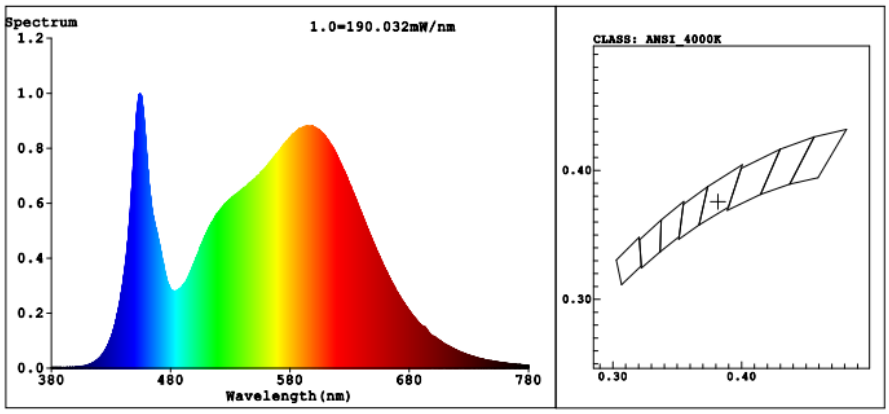
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.4299	51.13	0.9912

Color Data:

Parameter	Result
CCT(K)	3961
Ra	84.1
R_f	84
R_g	95
$R_{cs,\ h1}$	-12
Chromaticity, (x, y)	(0.3816, 0.3758)
Chromaticity, (u', v')	(0.2263, 0.5013)
Duv	-0.0008

Specify Color Rendering			
R1	83	R9	13
R2	91	R10	79
R3	96	R11	80
R4	82	R12	62
R5	83	R13	86
R6	87	R14	98
R7	86	R15	77
R8	65	-	-

Spectrum Diagram:



IES TM-30-18 Color Rendition Result:

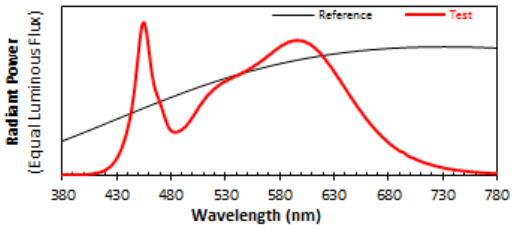
ANSI/IES TM-30-18 Color Rendition Report

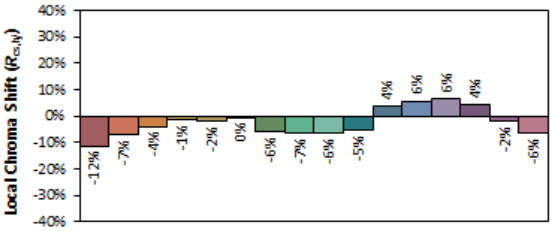
Source: --

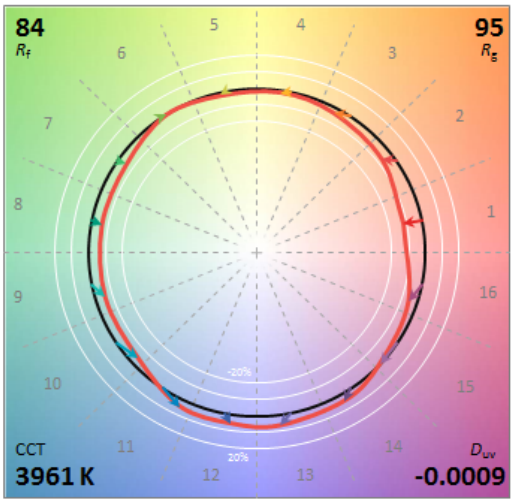
Manufacturer: LEDVANCE LLC

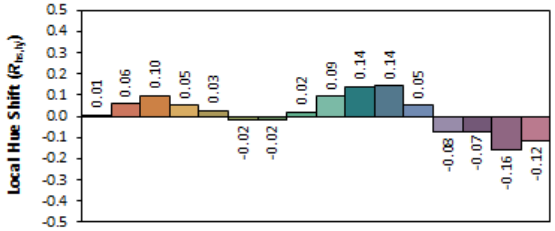
Date: 2023/3/29

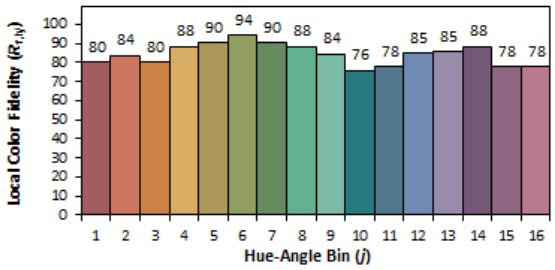
Model: LED54ED37UNVFR840MOG

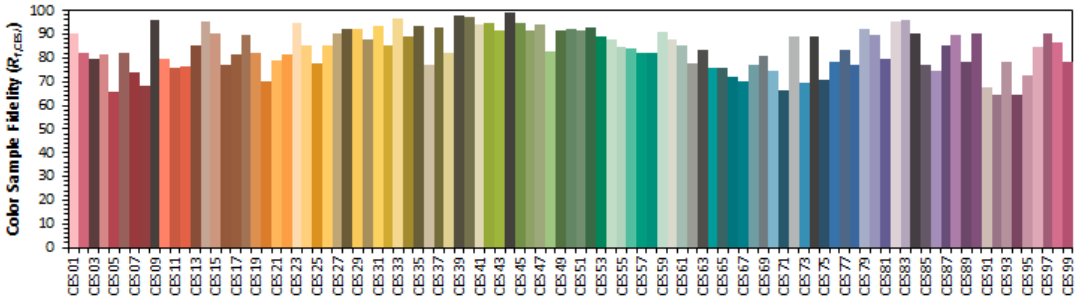












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3816
y	0.3756
u'	0.2263
v'	0.5013

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	0.0020	447	0.6213	514	0.5249	581	0.8436	648	0.4771	715	0.0751
381	0.0026	448	0.6923	515	0.5322	582	0.8484	649	0.4665	716	0.0732
382	0.0026	449	0.7579	516	0.5384	583	0.8506	650	0.4557	717	0.0713
383	0.0030	450	0.8231	517	0.5466	584	0.8534	651	0.4449	718	0.0690
384	0.0036	451	0.8844	518	0.5528	585	0.8589	652	0.4347	719	0.0668
385	0.0029	452	0.9394	519	0.5617	586	0.8623	653	0.4249	720	0.0646
386	0.0031	453	0.9760	520	0.5655	587	0.8662	654	0.4164	721	0.0635
387	0.0026	454	0.9932	521	0.5715	588	0.8710	655	0.4080	722	0.0604
388	0.0027	455	0.9946	522	0.5776	589	0.8693	656	0.3966	723	0.0588
389	0.0021	456	0.9672	523	0.5826	590	0.8728	657	0.3862	724	0.0565
390	0.0031	457	0.9352	524	0.5879	591	0.8747	658	0.3772	725	0.0557
391	0.0026	458	0.8831	525	0.5925	592	0.8779	659	0.3680	726	0.0537
392	0.0030	459	0.8269	526	0.5981	593	0.8772	660	0.3591	727	0.0522
393	0.0023	460	0.7718	527	0.6030	594	0.8770	661	0.3506	728	0.0499
394	0.0022	461	0.7177	528	0.6067	595	0.8800	662	0.3401	729	0.0485
395	0.0024	462	0.6655	529	0.6102	596	0.8798	663	0.3330	730	0.0474
396	0.0034	463	0.6249	530	0.6135	597	0.8777	664	0.3249	731	0.0458
397	0.0025	464	0.5878	531	0.6159	598	0.8776	665	0.3153	732	0.0442
398	0.0033	465	0.5606	532	0.6229	599	0.8763	666	0.3068	733	0.0432
399	0.0032	466	0.5386	533	0.6250	600	0.8765	667	0.3007	734	0.0417
400	0.0036	467	0.5182	534	0.6294	601	0.8744	668	0.2920	735	0.0403
401	0.0042	468	0.5006	535	0.6307	602	0.8713	669	0.2829	736	0.0394
402	0.0041	469	0.4815	536	0.6343	603	0.8700	670	0.2755	737	0.0380
403	0.0046	470	0.4602	537	0.6398	604	0.8652	671	0.2687	738	0.0366
404	0.0049	471	0.4404	538	0.6421	605	0.8637	672	0.2618	739	0.0357
405	0.0060	472	0.4188	539	0.6457	606	0.8591	673	0.2540	740	0.0346
406	0.0072	473	0.3948	540	0.6512	607	0.8560	674	0.2472	741	0.0335
407	0.0074	474	0.3747	541	0.6506	608	0.8527	675	0.2418	742	0.0322
408	0.0084	475	0.3522	542	0.6539	609	0.8451	676	0.2357	743	0.0311
409	0.0093	476	0.3338	543	0.6565	610	0.8414	677	0.2272	744	0.0304
410	0.0110	477	0.3164	544	0.6612	611	0.8337	678	0.2217	745	0.0296
411	0.0123	478	0.3038	545	0.6693	612	0.8287	679	0.2153	746	0.0285
412	0.0137	479	0.2964	546	0.6734	613	0.8223	680	0.2082	747	0.0279
413	0.0156	480	0.2870	547	0.6714	614	0.8130	681	0.2023	748	0.0271
414	0.0177	481	0.2822	548	0.6768	615	0.8092	682	0.1971	749	0.0263
415	0.0200	482	0.2819	549	0.6823	616	0.8020	683	0.1909	750	0.0255
416	0.0226	483	0.2787	550	0.6859	617	0.7941	684	0.1865	751	0.0246
417	0.0248	484	0.2799	551	0.6911	618	0.7864	685	0.1809	752	0.0238
418	0.0285	485	0.2810	552	0.6955	619	0.7772	686	0.1755	753	0.0235
419	0.0322	486	0.2837	553	0.6992	620	0.7665	687	0.1709	754	0.0225
420	0.0361	487	0.2869	554	0.6994	621	0.7604	688	0.1664	755	0.0220
421	0.0406	488	0.2896	555	0.7076	622	0.7473	689	0.1602	756	0.0211
422	0.0458	489	0.2942	556	0.7136	623	0.7387	690	0.1555	757	0.0204
423	0.0507	490	0.2985	557	0.7176	624	0.7292	691	0.1535	758	0.0197
424	0.0572	491	0.3042	558	0.7218	625	0.7196	692	0.1505	759	0.0193
425	0.0638	492	0.3108	559	0.7256	626	0.7119	693	0.1500	760	0.0187
426	0.0721	493	0.3158	560	0.7298	627	0.7015	694	0.1452	761	0.0182
427	0.0807	494	0.3250	561	0.7370	628	0.6924	695	0.1389	762	0.0177
428	0.0895	495	0.3344	562	0.7407	629	0.6806	696	0.1322	763	0.0170
429	0.1013	496	0.3442	563	0.7458	630	0.6683	697	0.1275	764	0.0166
430	0.1108	497	0.3537	564	0.7516	631	0.6611	698	0.1226	765	0.0161
431	0.1237	498	0.3624	565	0.7577	632	0.6477	699	0.1187	766	0.0155
432	0.1385	499	0.3772	566	0.7603	633	0.6368	700	0.1164	767	0.0150
433	0.1548	500	0.3821	567	0.7700	634	0.6278	701	0.1150	768	0.0147
434	0.1708	501	0.3966	568	0.7726	635	0.6173	702	0.1117	769	0.0135
435	0.1906	502	0.4055	569	0.7808	636	0.6062	703	0.1086	770	0.0138
436	0.2115	503	0.4181	570	0.7840	637	0.5937	704	0.1046	771	0.0135
437	0.2335	504	0.4287	571	0.7903	638	0.5844	705	0.1023	772	0.0131
438	0.2559	505	0.4419	572	0.7948	639	0.5727	706	0.0990	773	0.0129
439	0.2817	506	0.4513	573	0.8011	640	0.5633	707	0.0956	774	0.0122
440	0.3104	507	0.4609	574	0.8085	641	0.5509	708	0.0931	775	0.0116
441	0.3418	508	0.4706	575	0.8140	642	0.5405	709	0.0901	776	0.0114
442	0.3751	509	0.4808	576	0.8175	643	0.5304	710	0.0875	777	0.0109
443	0.4098	510	0.4909	577	0.8241	644	0.5186	711	0.0846	778	0.0105
444	0.4572	511	0.4988	578	0.8280	645	0.5068	712	0.0819	779	0.0103
445	0.5058	512	0.5093	579	0.8336	646	0.4976	713	0.0793	780	0.0103
446	0.5583	513	0.5184	580	0.8388	647	0.4866	714	0.0783	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

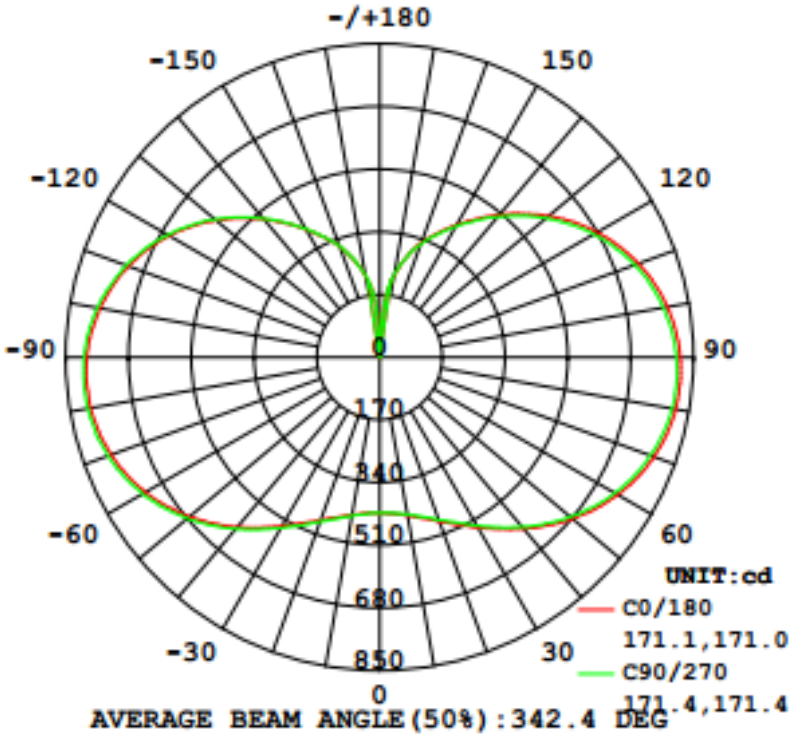
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.4295	51.07	0.9908
277.0	60	0.2045	51.32	0.9058

Goniophotometer Data:

Parameter	Results	
	120V	277V
Total Luminous (lm)	8267.1	8360.5
Luminous Efficacy (lm/W)	161.88	162.91
Beam Angle (°)	342.4	
Center Beam Intensity (cd)	422	

Luminous Intensity Distribution Diagram:

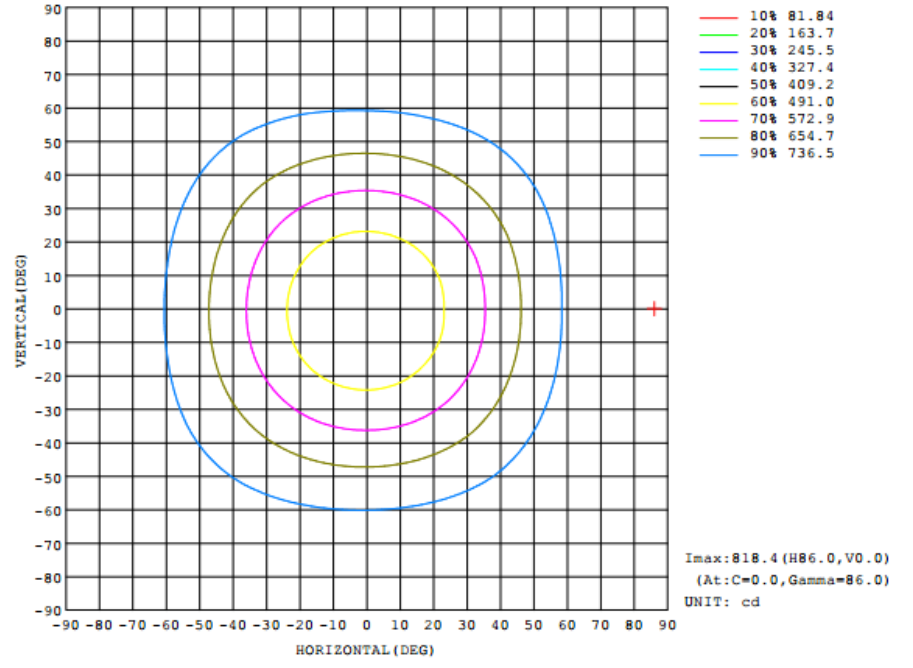


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	436.0	434.0	433.4	434.1	434.4	436.2	436.6	436.8	0- 10	40.93	40.93	0.50,0.50
20	473.4	470.7	469.3	469.5	470.3	472.9	474.7	475.3	10- 20	128.6	169.5	2.05,2.05
30	533.5	529.0	527.3	528.3	527.9	532.1	534.3	535.7	20- 30	232.1	401.6	4.86,4.86
40	607.5	602.7	600.3	601.5	601.3	604.3	607.9	609.8	30- 40	357.2	758.7	9.18,9.18
50	681.7	676.5	673.2	673.7	672.7	675.6	680.3	683.1	40- 50	497.3	1256	15.2,15.2
60	744.7	738.6	735.3	733.8	732.3	733.4	741.4	744.2	50- 60	636.3	1892	22.9,22.9
70	790.8	784.3	779.3	778.2	773.6	775.3	782.3	788.7	60- 70	756.1	2648	32,32
80	813.1	808.6	803.3	799.3	794.6	793.8	802.8	809.7	70- 80	840.2	3489	42.2,42.2
90	813.0	808.7	802.9	798.5	792.8	793.1	801.0	809.9	80- 90	877.9	4367	52.8,52.8
100	790.5	786.1	780.0	774.6	769.5	768.5	776.3	785.4	90-100	864.7	5231	63.3,63.3
110	745.1	741.8	735.5	728.6	723.7	722.9	730.5	740.9	100-110	802.0	6033	73,73
120	679.2	677.0	668.9	662.8	659.3	657.2	664.1	676.3	110-120	697.5	6731	81.4,81.4
130	596.4	595.2	587.5	581.5	578.7	576.2	582.4	593.9	120-130	564.4	7295	88.2,88.2
140	505.0	503.9	498.5	492.5	489.2	487.2	492.0	501.9	130-140	420.5	7716	93.3,93.3
150	414.1	414.1	409.0	404.3	401.2	399.7	403.0	411.1	140-150	284.6	8000	96.8,96.8
160	330.8	331.4	327.7	321.9	320.3	319.3	321.0	328.2	150-160	170.4	8171	98.8,98.8
170	224.0	226.6	226.8	224.3	223.6	221.3	226.1	232.0	160-170	80.22	8251	99.8,99.8
180	0	0	0	0	0	0	0	0	170-180	16.18	8267	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	422	422	422	422	422	422	422	422	422	422	422	422	422	422	422	422			
5	426	425	425	425	424	425	425	425	425	425	426	427	426	427	427	426			
10	436	435	434	434	433	433	434	434	434	435	436	436	437	437	437	436			
15	452	450	450	449	448	448	449	450	449	450	451	452	453	453	453	452			
20	473	472	471	469	469	469	470	471	470	471	473	474	475	475	475	474			
25	501	498	497	496	495	495	496	497	496	498	500	501	502	502	502	502			
30	533	530	529	528	527	527	528	529	528	530	532	533	534	536	536	534			
35	569	566	565	563	562	563	565	565	564	565	568	569	570	571	571	570			
40	608	604	603	601	600	601	602	602	601	603	604	606	608	610	610	608			
45	645	642	641	638	638	638	638	638	638	639	641	643	644	646	647	646			
50	682	678	676	674	673	673	674	674	673	673	676	677	680	682	683	682			
55	715	711	710	706	707	706	706	705	704	705	707	709	712	715	716	714			
60	745	741	739	737	735	735	734	733	732	733	733	736	741	743	744	745			
65	770	768	764	761	760	760	759	758	756	756	758	760	765	767	769	768			
70	791	787	784	781	779	779	778	776	774	774	775	778	782	787	789	788			
75	805	802	800	795	795	793	791	788	787	788	788	790	795	799	801	802			
80	813	811	809	804	803	802	799	797	795	795	794	797	803	808	810	810			
85	816	814	811	807	807	805	802	798	796	797	796	799	804	809	812	813			
90	813	813	809	804	803	801	798	795	793	793	793	796	801	805	810	811			
95	805	804	800	796	795	792	789	787	784	784	784	786	791	796	800	802			
100	791	790	786	782	780	778	775	772	769	768	768	771	776	782	785	789			
105	770	770	767	762	760	759	754	753	749	749	748	750	755	761	765	769			
110	745	745	742	737	736	733	729	725	724	723	723	725	731	736	741	744			
115	714	714	711	707	704	702	698	695	694	692	693	694	700	707	710	714			
120	679	678	677	673	669	666	663	660	659	658	657	660	664	670	676	680			
125	640	639	637	634	631	627	624	621	620	618	619	621	625	631	636	640			
130	596	597	595	592	588	584	581	578	579	577	576	578	582	588	594	598			
135	551	552	550	547	543	541	538	534	534	532	532	534	538	543	548	552			
140	505	505	504	501	498	496	492	489	489	487	487	488	492	497	502	506			
145	459	459	459	456	453	450	447	444	444	443	443	444	447	451	456	460			
150	414	415	414	412	409	407	404	401	401	400	400	400	403	407	411	415			
155	372	372	372	370	367	365	363	360	360	359	359	359	361	365	368	372			
160	331	331	331	329	328	323	322	321	320	319	319	320	321	325	328	331			
165	283	284	285	284	282	276	276	275	275	274	271	274	276	279	282	285			
170	224	225	227	230	227	225	224	223	224	223	221	221	226	229	232	235			
175	142	142	146	148	147	148	147	147	153	154	153	152	158	161	163	166			
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	0.4295	51.07	0.9908	10.28
277.0	60	0.2045	51.32	0.9058	10.53

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