LM-79-08 Test Report

For

LEDVANCE LLC

200 Ballardvale St. Wilmington MA 01887

LED LAMP

Model Name(s):
LED39ED28UNVCL840MED
LED39ED28UNVCL850MED

Representative (Tested) Model:
LED39ED28UNVCL840MED
LED39ED28UNVCL850MED

Model Difference: All construction and rating are the same, except CCT

Prepared by:

Engineer: Alan Wang
Date: 2022-12-27

Reviewed by:

Technical Lead: Vincent Yuan
Issue Date: 2023-02-13
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 d not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

Client Information:

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

Product Information:

Model Number:	LED39ED28UNVCL840MED LED39ED28UNVCL850MED
Product Type:	LED LAMP
Rating Input:	120-277Vac, 50/60Hz, 39W
Declared CCT:	4000K,5000K
Declared Light Output:	6000lm
LED Manufacturer:	N/A
LED Model:	N/A

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:	2022-04-08
Quantity of Receipt Samples:	2 pc
Sample Number:	221216004-S1(4000K), S2(5000K)

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-79-08_TRF_V1.5
Issued Date of Test Report:	2023-02-13
Revised Date of Test Report:	N/A
Test Report No.:	NTCLR22120225
Remark *(If applicable)*:	N/A

Test Specification:	
Date of Test	2022-04-10
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	IES LM-79-2008 Electrical and Photometric 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 15-2004 Technical Report Colorimetry ANSI IES TM-30-18 IES Method for Evaluating Light Source Color Rendition ANSI C78.77-10-2014 Harmonic Emission Limits – Related Power Quality Requirements IES TM-15-11 Luminaire Classification System for Outdoor Luminaires Addendum A for IES TM-15-11 Backlight, Uplight, and Glare (BUG) Ratings

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:4000K

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.0	41.0	Face Down	90	10

Electrical Data:

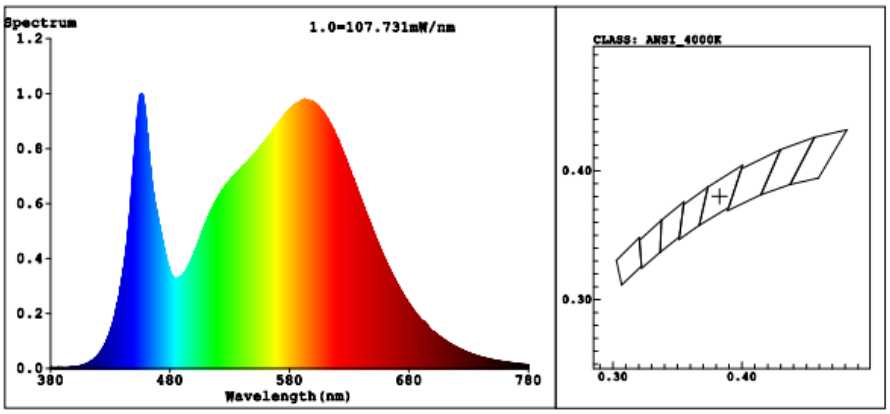
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3241	38.68	0.9944

Color Data:

Parameter	Result
CCT(K)	3953
Ra	82.9
R_f	83
R_g	94
$R_{cs,\ h1}$	-13
Chromaticity, (x, y)	(0.3831,0.3798)
Chromaticity, (u', v')	(0.2256,0.5033)
Duv	0.0007

Specify Color Rendering			
R1	81	R9	8
R2	91	R10	77
R3	96	R11	78
R4	80	R12	61
R5	81	R13	84
R6	86	R14	98
R7	85	R15	75
R8	63	-	-

Spectrum Diagram:



IES TM-30-18 Color Rendition Result (4000K):

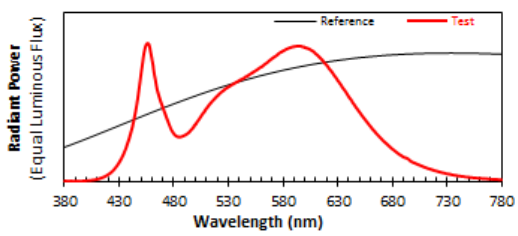
ANSI/IES TM-30-18 Color Rendition Report

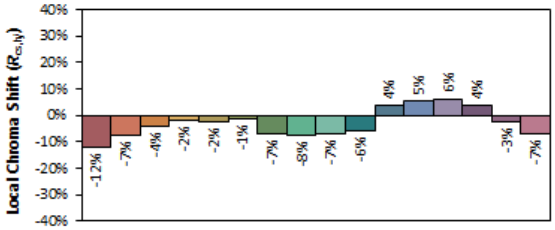
Source: --

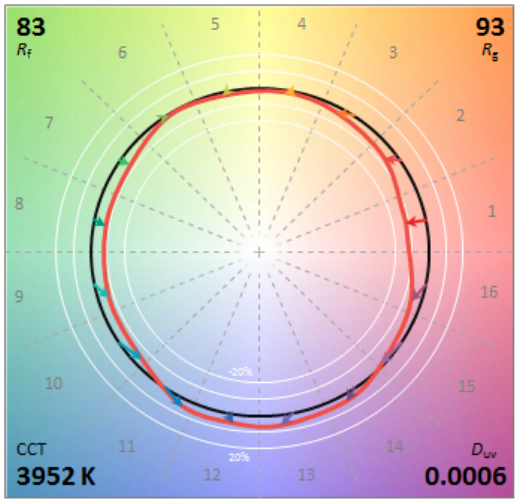
Manufacturer: LEDVANCE LLC

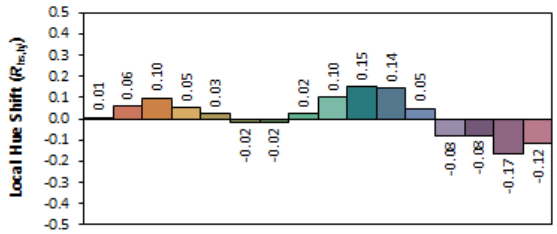
Date: 2022/4/10

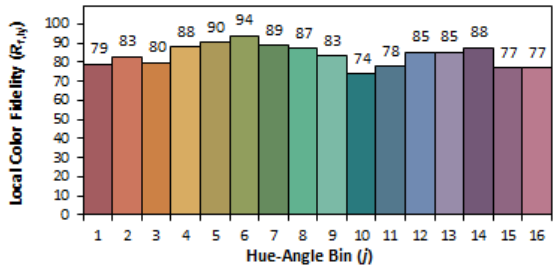
Model: LED39ED28UNVCL840MED

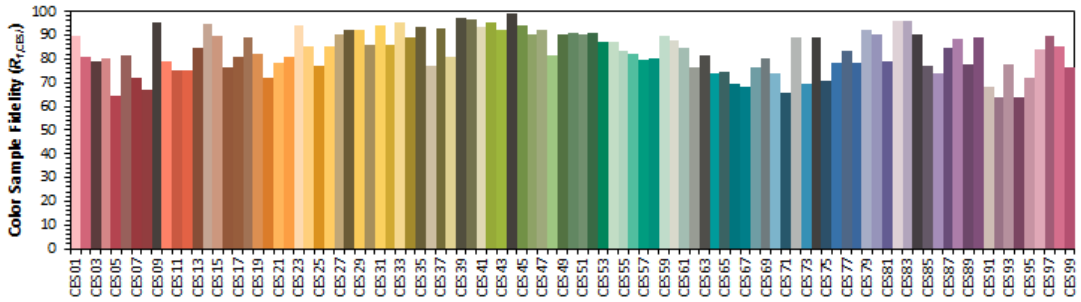












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3830
y	0.3797
u'	0.2256
v'	0.5033

CIE 13.3-1995 (CRI)

R_a	83
R_9	8

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

Spectrum Data (4000K):

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0040	447	0.6015	514	0.5666	581	0.9428	648	0.5217	715	0.0890
381	0.0046	448	0.6592	515	0.5759	582	0.9473	649	0.5104	716	0.0869
382	0.0037	449	0.7153	516	0.5835	583	0.9515	650	0.5003	717	0.0843
383	0.0043	450	0.7770	517	0.5936	584	0.9545	651	0.4894	718	0.0811
384	0.0035	451	0.8336	518	0.5996	585	0.9581	652	0.4780	719	0.0787
385	0.0038	452	0.8897	519	0.6111	586	0.9624	653	0.4674	720	0.0768
386	0.0042	453	0.9372	520	0.6160	587	0.9638	654	0.4564	721	0.0747
387	0.0037	454	0.9711	521	0.6243	588	0.9668	655	0.4484	722	0.0722
388	0.0039	455	0.9895	522	0.6324	589	0.9670	656	0.4369	723	0.0700
389	0.0034	456	0.9934	523	0.6401	590	0.9703	657	0.4266	724	0.0680
390	0.0033	457	0.9888	524	0.6469	591	0.9716	658	0.4166	725	0.0663
391	0.0041	458	0.9608	525	0.6513	592	0.9728	659	0.4064	726	0.0639
392	0.0035	459	0.9206	526	0.6572	593	0.9741	660	0.3975	727	0.0626
393	0.0044	460	0.8774	527	0.6650	594	0.9739	661	0.3863	728	0.0606
394	0.0032	461	0.8318	528	0.6711	595	0.9743	662	0.3771	729	0.0581
395	0.0045	462	0.7766	529	0.6743	596	0.9742	663	0.3678	730	0.0567
396	0.0038	463	0.7363	530	0.6815	597	0.9707	664	0.3607	731	0.0551
397	0.0050	464	0.6877	531	0.6839	598	0.9687	665	0.3501	732	0.0536
398	0.0043	465	0.6538	532	0.6894	599	0.9693	666	0.3414	733	0.0525
399	0.0058	466	0.6235	533	0.6950	600	0.9623	667	0.3338	734	0.0503
400	0.0060	467	0.5982	534	0.7008	601	0.9625	668	0.3236	735	0.0488
401	0.0060	468	0.5748	535	0.7031	602	0.9582	669	0.3166	736	0.0474
402	0.0069	469	0.5533	536	0.7091	603	0.9568	670	0.3082	737	0.0461
403	0.0078	470	0.5306	537	0.7136	604	0.9529	671	0.2997	738	0.0448
404	0.0084	471	0.5099	538	0.7177	605	0.9479	672	0.2924	739	0.0434
405	0.0100	472	0.4881	539	0.7212	606	0.9440	673	0.2839	740	0.0419
406	0.0105	473	0.4666	540	0.7273	607	0.9394	674	0.2778	741	0.0406
407	0.0121	474	0.4458	541	0.7313	608	0.9340	675	0.2710	742	0.0395
408	0.0132	475	0.4246	542	0.7339	609	0.9257	676	0.2632	743	0.0385
409	0.0149	476	0.4046	543	0.7390	610	0.9179	677	0.2558	744	0.0375
410	0.0170	477	0.3850	544	0.7432	611	0.9121	678	0.2499	745	0.0367
411	0.0188	478	0.3683	545	0.7487	612	0.9053	679	0.2418	746	0.0358
412	0.0216	479	0.3555	546	0.7548	613	0.8972	680	0.2351	747	0.0341
413	0.0241	480	0.3430	547	0.7560	614	0.8889	681	0.2296	748	0.0334
414	0.0269	481	0.3348	548	0.7626	615	0.8817	682	0.2224	749	0.0325
415	0.0301	482	0.3279	549	0.7687	616	0.8731	683	0.2168	750	0.0315
416	0.0326	483	0.3232	550	0.7729	617	0.8635	684	0.2110	751	0.0306
417	0.0376	484	0.3224	551	0.7783	618	0.8520	685	0.2045	752	0.0298
418	0.0413	485	0.3207	552	0.7812	619	0.8458	686	0.1976	753	0.0288
419	0.0466	486	0.3212	553	0.7891	620	0.8359	687	0.1934	754	0.0278
420	0.0511	487	0.3232	554	0.7927	621	0.8270	688	0.1890	755	0.0273
421	0.0568	488	0.3262	555	0.7978	622	0.8143	689	0.1825	756	0.0270
422	0.0622	489	0.3284	556	0.8014	623	0.8050	690	0.1787	757	0.0260
423	0.0695	490	0.3335	557	0.8088	624	0.7948	691	0.1738	758	0.0249
424	0.0761	491	0.3364	558	0.8152	625	0.7867	692	0.1716	759	0.0242
425	0.0848	492	0.3429	559	0.8193	626	0.7733	693	0.1689	760	0.0236
426	0.0939	493	0.3477	560	0.8237	627	0.7614	694	0.1656	761	0.0226
427	0.1040	494	0.3550	561	0.8275	628	0.7519	695	0.1605	762	0.0222
428	0.1136	495	0.3635	562	0.8352	629	0.7415	696	0.1524	763	0.0215
429	0.1263	496	0.3735	563	0.8415	630	0.7279	697	0.1466	764	0.0210
430	0.1377	497	0.3803	564	0.8481	631	0.7184	698	0.1416	765	0.0207
431	0.1525	498	0.3901	565	0.8528	632	0.7052	699	0.1380	766	0.0197
432	0.1666	499	0.4061	566	0.8586	633	0.6962	700	0.1346	767	0.0194
433	0.1827	500	0.4109	567	0.8671	634	0.6824	701	0.1320	768	0.0186
434	0.1989	501	0.4261	568	0.8721	635	0.6705	702	0.1288	769	0.0181
435	0.2185	502	0.4356	569	0.8793	636	0.6599	703	0.1249	770	0.0174
436	0.2377	503	0.4460	570	0.8834	637	0.6502	704	0.1211	771	0.0170
437	0.2605	504	0.4592	571	0.8912	638	0.6382	705	0.1186	772	0.0165
438	0.2844	505	0.4703	572	0.8948	639	0.6247	706	0.1150	773	0.0163
439	0.3078	506	0.4822	573	0.9007	640	0.6124	707	0.1124	774	0.0157
440	0.3347	507	0.4937	574	0.9060	641	0.6011	708	0.1085	775	0.0150
441	0.3625	508	0.5028	575	0.9122	642	0.5915	709	0.1053	776	0.0150
442	0.3930	509	0.5166	576	0.9202	643	0.5790	710	0.1026	777	0.0141
443	0.4259	510	0.5276	577	0.9253	644	0.5655	711	0.0993	778	0.0139
444	0.4662	511	0.5370	578	0.9305	645	0.5549	712	0.0967	779	0.0139
445	0.5070	512	0.5480	579	0.9335	646	0.5439	713	0.0939	780	0.0129
446	0.5507	513	0.5576	580	0.9392	647	0.5319	714	0.0918	N/A	N/A

Integrating Sphere Test Results:5000K

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.0	41.0	Face Down	90	10

Electrical Data:

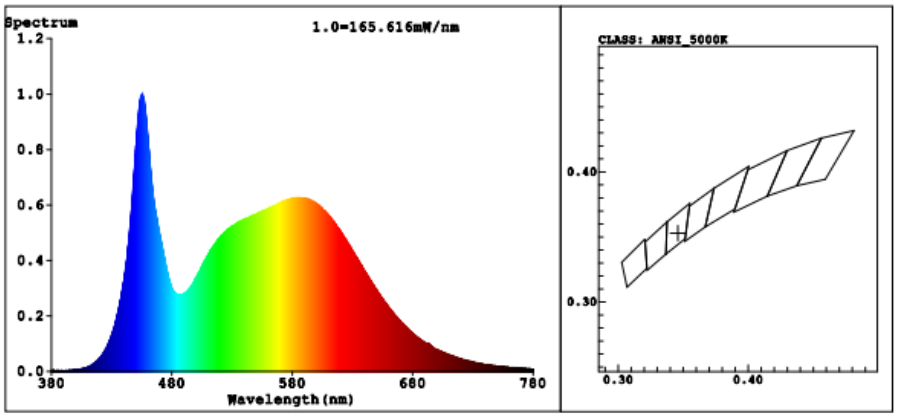
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3136	37.45	0.9953

Color Data:

Parameter	Result
CCT(K)	4974
Ra	83.9
R_f	83
R_g	95
$R_{cs,\ h1}$	-13
Chromaticity, (x, y)	(0.3459,0.3530)
Chromaticity, (u', v')	(0.2114,0.4855)
Duv	0.0004

Specify Color Rendering			
R1	83	R9	14
R2	91	R10	77
R3	95	R11	79
R4	80	R12	57
R5	82	R13	86
R6	86	R14	97
R7	87	R15	78
R8	68	-	-

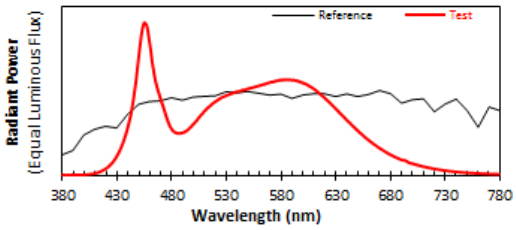
Spectrum Diagram:

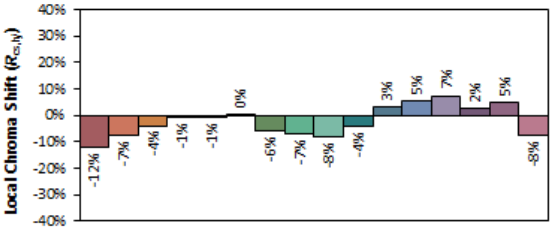


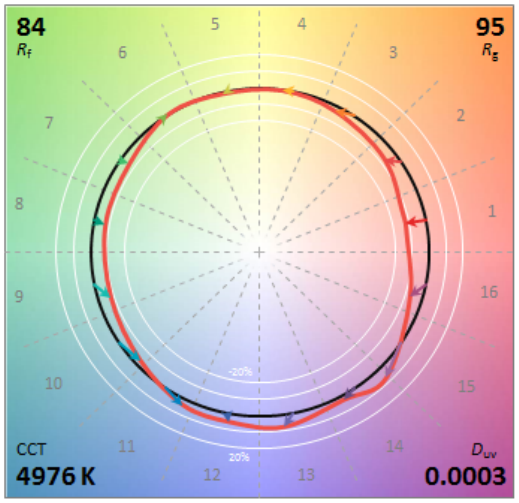
IES TM-30-18 Color Rendition Result (5000K):

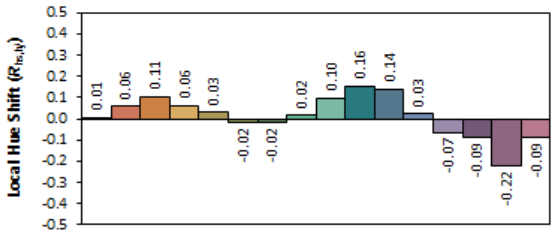
ANSI/IES TM-30-18 Color Rendition Report

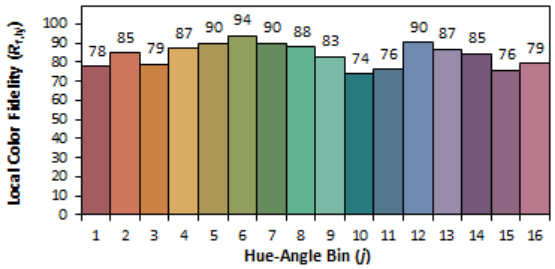
Source: --
Manufacturer: LEDVANCE LLC
Date: 2022/4/10
Model: LED39ED28UNVCL850MED

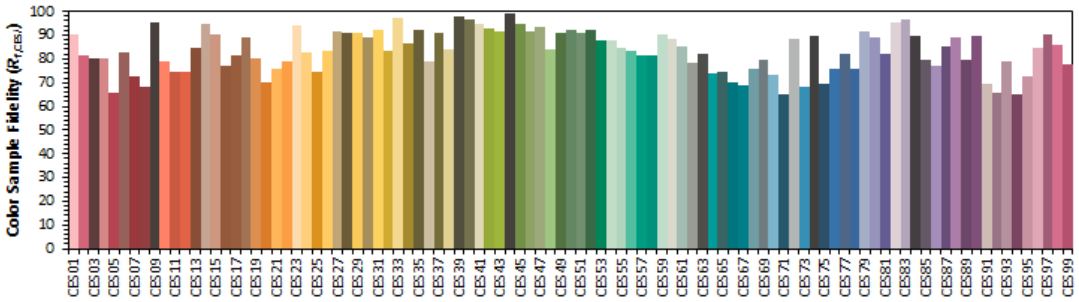












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3459
y	0.3528
u'	0.2115
v'	0.4854

CIE 13.3-1995 (CRI)

R_a	84
R_9	14

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

Spectrum Data (5000K):

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0021	447	0.6054	514	0.4461	581	0.6202	648	0.3062	715	0.0504
381	0.0024	448	0.6693	515	0.4527	582	0.6225	649	0.2993	716	0.0491
382	0.0031	449	0.7293	516	0.4588	583	0.6236	650	0.2936	717	0.0480
383	0.0022	450	0.7931	517	0.4658	584	0.6223	651	0.2859	718	0.0463
384	0.0028	451	0.8530	518	0.4710	585	0.6228	652	0.2795	719	0.0448
385	0.0028	452	0.9081	519	0.4768	586	0.6234	653	0.2735	720	0.0437
386	0.0023	453	0.9523	520	0.4805	587	0.6233	654	0.2679	721	0.0424
387	0.0026	454	0.9820	521	0.4860	588	0.6229	655	0.2609	722	0.0410
388	0.0022	455	0.9952	522	0.4905	589	0.6216	656	0.2548	723	0.0400
389	0.0024	456	0.9871	523	0.4954	590	0.6208	657	0.2481	724	0.0387
390	0.0025	457	0.9753	524	0.5003	591	0.6218	658	0.2422	725	0.0375
391	0.0026	458	0.9394	525	0.5038	592	0.6202	659	0.2365	726	0.0366
392	0.0024	459	0.8942	526	0.5088	593	0.6187	660	0.2312	727	0.0354
393	0.0028	460	0.8466	527	0.5118	594	0.6166	661	0.2250	728	0.0343
394	0.0029	461	0.7959	528	0.5142	595	0.6156	662	0.2189	729	0.0337
395	0.0033	462	0.7394	529	0.5171	596	0.6131	663	0.2146	730	0.0322
396	0.0031	463	0.6940	530	0.5214	597	0.6094	664	0.2096	731	0.0316
397	0.0034	464	0.6500	531	0.5231	598	0.6066	665	0.2033	732	0.0303
398	0.0037	465	0.6152	532	0.5260	599	0.6057	666	0.1991	733	0.0291
399	0.0039	466	0.5850	533	0.5281	600	0.6022	667	0.1942	734	0.0287
400	0.0045	467	0.5601	534	0.5333	601	0.5980	668	0.1882	735	0.0278
401	0.0049	468	0.5375	535	0.5331	602	0.5977	669	0.1831	736	0.0270
402	0.0052	469	0.5139	536	0.5362	603	0.5946	670	0.1791	737	0.0262
403	0.0062	470	0.4897	537	0.5399	604	0.5903	671	0.1735	738	0.0253
404	0.0067	471	0.4695	538	0.5404	605	0.5859	672	0.1698	739	0.0244
405	0.0077	472	0.4491	539	0.5451	606	0.5806	673	0.1657	740	0.0240
406	0.0089	473	0.4267	540	0.5441	607	0.5772	674	0.1615	741	0.0231
407	0.0095	474	0.4034	541	0.5471	608	0.5740	675	0.1564	742	0.0224
408	0.0109	475	0.3815	542	0.5465	609	0.5671	676	0.1519	743	0.0220
409	0.0128	476	0.3614	543	0.5490	610	0.5638	677	0.1479	744	0.0213
410	0.0141	477	0.3412	544	0.5533	611	0.5582	678	0.1438	745	0.0205
411	0.0161	478	0.3241	545	0.5561	612	0.5530	679	0.1395	746	0.0199
412	0.0185	479	0.3114	546	0.5580	613	0.5472	680	0.1358	747	0.0193
413	0.0205	480	0.2997	547	0.5552	614	0.5406	681	0.1323	748	0.0190
414	0.0233	481	0.2903	548	0.5599	615	0.5357	682	0.1288	749	0.0183
415	0.0265	482	0.2852	549	0.5634	616	0.5299	683	0.1249	750	0.0177
416	0.0300	483	0.2797	550	0.5641	617	0.5218	684	0.1211	751	0.0171
417	0.0334	484	0.2762	551	0.5662	618	0.5175	685	0.1182	752	0.0169
418	0.0377	485	0.2749	552	0.5690	619	0.5116	686	0.1149	753	0.0162
419	0.0413	486	0.2748	553	0.5699	620	0.5037	687	0.1113	754	0.0159
420	0.0469	487	0.2739	554	0.5711	621	0.4982	688	0.1087	755	0.0157
421	0.0512	488	0.2747	555	0.5744	622	0.4907	689	0.1055	756	0.0148
422	0.0577	489	0.2772	556	0.5752	623	0.4844	690	0.1027	757	0.0144
423	0.0638	490	0.2784	557	0.5787	624	0.4772	691	0.1002	758	0.0140
424	0.0708	491	0.2797	558	0.5802	625	0.4709	692	0.0994	759	0.0137
425	0.0787	492	0.2854	559	0.5824	626	0.4631	693	0.0987	760	0.0131
426	0.0867	493	0.2869	560	0.5835	627	0.4568	694	0.0963	761	0.0127
427	0.0969	494	0.2934	561	0.5861	628	0.4491	695	0.0929	762	0.0126
428	0.1063	495	0.2992	562	0.5886	629	0.4420	696	0.0879	763	0.0120
429	0.1177	496	0.3060	563	0.5901	630	0.4340	697	0.0843	764	0.0117
430	0.1304	497	0.3122	564	0.5928	631	0.4286	698	0.0813	765	0.0112
431	0.1430	498	0.3188	565	0.5931	632	0.4199	699	0.0788	766	0.0113
432	0.1562	499	0.3299	566	0.5956	633	0.4127	700	0.0770	767	0.0108
433	0.1742	500	0.3346	567	0.6004	634	0.4052	701	0.0759	768	0.0104
434	0.1893	501	0.3437	568	0.6010	635	0.3980	702	0.0737	769	0.0101
435	0.2077	502	0.3520	569	0.6030	636	0.3913	703	0.0716	770	0.0096
436	0.2270	503	0.3589	570	0.6055	637	0.3839	704	0.0695	771	0.0097
437	0.2492	504	0.3702	571	0.6084	638	0.3773	705	0.0678	772	0.0093
438	0.2712	505	0.3784	572	0.6074	639	0.3691	706	0.0659	773	0.0090
439	0.2966	506	0.3859	573	0.6092	640	0.3619	707	0.0639	774	0.0089
440	0.3216	507	0.3957	574	0.6129	641	0.3549	708	0.0621	775	0.0085
441	0.3514	508	0.4016	575	0.6136	642	0.3479	709	0.0603	776	0.0082
442	0.3814	509	0.4116	576	0.6165	643	0.3421	710	0.0580	777	0.0079
443	0.4149	510	0.4193	577	0.6170	644	0.3343	711	0.0571	778	0.0077
444	0.4604	511	0.4256	578	0.6192	645	0.3270	712	0.0553	779	0.0075
445	0.5037	512	0.4345	579	0.6206	646	0.3194	713	0.0535	780	0.0074
446	0.5541	513	0.4411	580	0.6223	647	0.3134	714	0.0523	N/A	N/A

Goniophotometer Test Results:4000K

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.2	46.6	Face Down	90	25

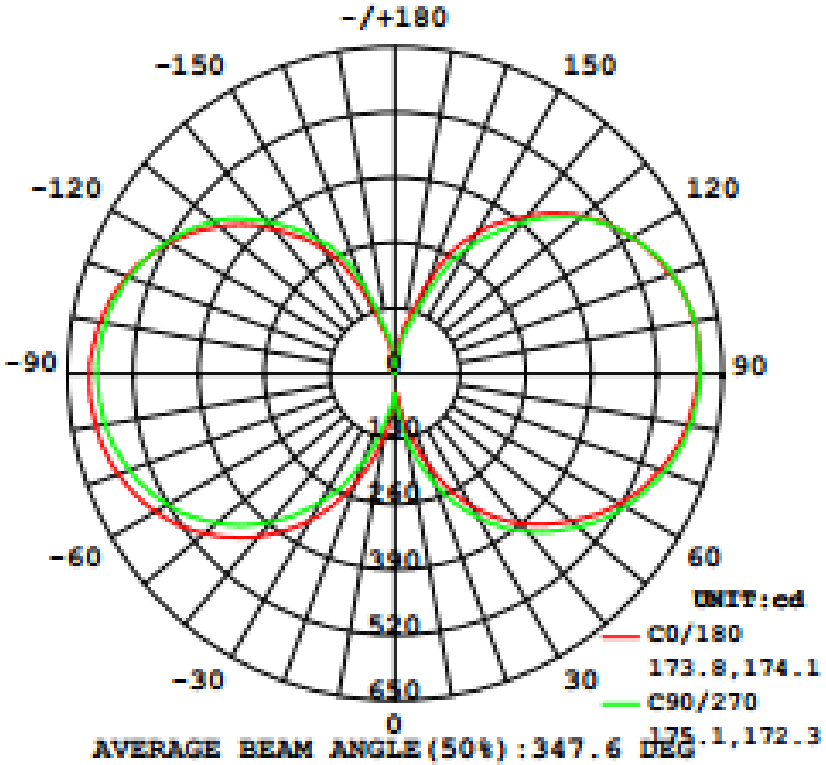
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3252	38.83	0.9949
277.0	60.01	0.1433	36.25	0.9132

Goniophotometer Data:

Parameter	Results	
	120V	277V
Total Luminous (lm)	6032.0	6008.0
Luminous Efficacy (lm/W)	155.35	165.74
Beam Angle (°)	347.6	
Center Beam Intensity (cd)	42	

Luminous Intensity Distribution Diagram:

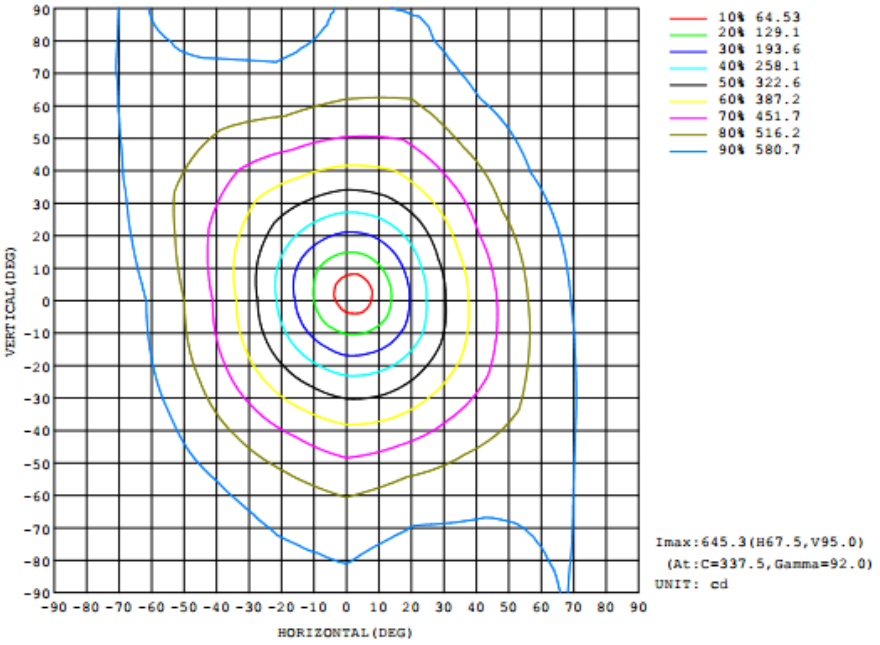


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	ηlum,lamp
10	86.56	101.9	129.2	139.4	123.8	101.6	85.31	78.68	0- 10	7.333	7.333	0.12,0.12
20	192.0	196.0	231.8	251.9	230.9	195.2	187.2	190.6	10- 20	46.40	53.73	0.89,0.89
30	303.7	294.1	329.4	354.1	335.0	290.5	293.1	304.3	20- 30	124.3	178.0	2.95,2.95
40	389.2	380.0	410.1	442.9	423.1	363.3	385.1	402.7	30- 40	227.8	405.8	6.73,6.73
50	455.7	450.1	473.9	517.9	494.7	427.4	461.9	483.9	40- 50	341.9	747.6	12.4,12.4
60	515.6	504.4	528.0	576.9	549.0	482.2	521.8	552.2	50- 60	454.1	1202	19.9,19.9
70	559.4	542.3	569.2	618.8	585.1	525.1	561.1	600.3	60- 70	550.6	1752	29.1,29.1
80	589.1	563.4	594.8	642.9	603.0	553.5	584.8	631.1	70- 80	621.4	2374	39.4,39.4
90	603.4	569.1	606.5	650.8	607.9	568.3	592.6	645.0	80- 90	658.8	3033	50.3,50.3
100	602.7	557.0	603.5	638.9	594.5	566.6	583.8	638.1	90-100	660.5	3693	61.2,61.2
110	581.2	526.7	583.6	607.9	566.7	543.5	561.9	612.5	100-110	624.7	4318	71.6,71.6
120	542.8	486.1	542.5	559.7	519.2	504.7	523.8	567.0	110-120	552.9	4871	80.7,80.7
130	486.9	428.7	481.6	492.3	455.8	447.5	470.9	506.2	120-130	454.4	5325	88.3,88.3
140	409.1	355.1	391.0	399.0	374.6	367.3	394.8	418.9	130-140	338.4	5664	93.9,93.9
150	321.9	273.6	289.9	296.0	287.8	279.8	307.8	322.5	140-150	218.9	5883	97.5,97.5
160	192.0	147.0	142.0	145.2	153.1	157.1	190.4	207.2	150-160	113.6	5996	99.4,99.4
170	79.69	59.86	50.42	53.46	52.23	54.08	70.18	82.12	160-170	32.78	6029	100,100
180	0	0	0	0	0	0	0	0	170-180	3.016	6032	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	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4	42.4		
5	45.7	51.4	58.4	71.4	76.3	80.3	82.1	83.5	74.2	67.5	60.8	58.8	51.6	47.1	44.2	45.1		
10	86.6	93.2	102	121	129	137	139	140	124	114	102	96.9	85.3	76.4	78.7	83.5		
15	136	138	148	173	179	192	196	196	177	160	142	145	135	131	135	142		
20	192	189	196	224	232	246	252	254	231	211	195	200	187	184	191	203		
25	251	242	247	277	284	299	306	309	285	264	247	256	243	241	249	266		
30	304	292	294	323	329	346	354	361	335	310	291	306	293	293	304	325		
35	349	338	338	368	373	390	400	409	380	352	327	352	340	339	354	377		
40	389	379	380	411	410	432	443	454	423	389	363	397	385	381	403	426		
45	424	412	416	450	443	468	483	495	460	421	396	437	426	419	446	469		
50	456	442	450	488	474	501	518	533	495	449	427	475	462	453	484	508		
55	488	470	479	523	504	529	551	567	525	474	456	509	494	484	520	543		
60	516	494	504	551	528	552	577	593	549	494	482	539	522	511	552	575		
65	540	512	525	574	549	572	600	617	569	510	505	561	543	534	578	601		
70	559	527	542	595	569	588	619	637	585	524	525	582	561	554	600	622		
75	577	538	556	611	584	600	633	651	596	534	541	599	575	570	618	641		
80	589	546	563	622	595	608	643	660	603	541	553	611	585	583	631	653		
85	597	550	568	627	603	612	649	665	607	544	562	618	590	591	639	661		
90	603	554	569	630	606	612	651	666	608	548	568	621	593	599	645	667		
95	605	553	565	626	604	607	646	662	603	548	568	619	590	600	645	666		
100	603	550	557	620	603	601	639	655	594	545	567	615	584	599	638	660		
105	596	544	544	609	596	589	626	642	583	538	558	605	575	592	629	650		
110	581	535	527	593	584	573	608	622	567	526	543	589	562	582	613	634		
115	563	521	508	571	567	551	586	599	544	512	527	569	545	565	592	613		
120	543	503	486	547	542	526	560	570	519	493	505	543	524	543	567	587		
125	518	483	460	517	517	498	529	536	490	469	479	514	499	518	538	558		
130	487	456	429	481	482	466	492	498	456	442	447	481	471	490	506	524		
135	451	425	395	440	441	428	449	454	418	406	412	443	437	452	467	485		
140	409	387	355	395	391	385	399	402	375	363	367	400	395	406	419	439		
145	368	347	317	349	341	339	348	353	332	318	321	356	352	357	364	387		
150	322	305	274	302	290	292	296	302	288	279	280	308	308	314	323	335		
155	268	250	221	241	223	229	228	235	230	227	231	254	262	266	277	286		
160	192	174	147	162	142	148	145	154	153	154	157	181	190	194	207	215		
165	125	114	97.5	105	93.2	98.9	94.5	96.1	92.5	92.1	92.0	108	115	121	128	135		
170	79.7	74.3	59.9	57.4	50.4	51.8	53.5	52.5	52.2	52.6	54.1	62.3	70.2	74.9	82.1	84.2		
175	5.64	19.4	5.04	3.22	2.95	4.48	6.45	8.76	11.1	11.2	12.3	19.0	22.6	25.4	27.0	25.6		
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		

Goniophotometer Test Results:5000K

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.2	46.6	Face Down	90	25

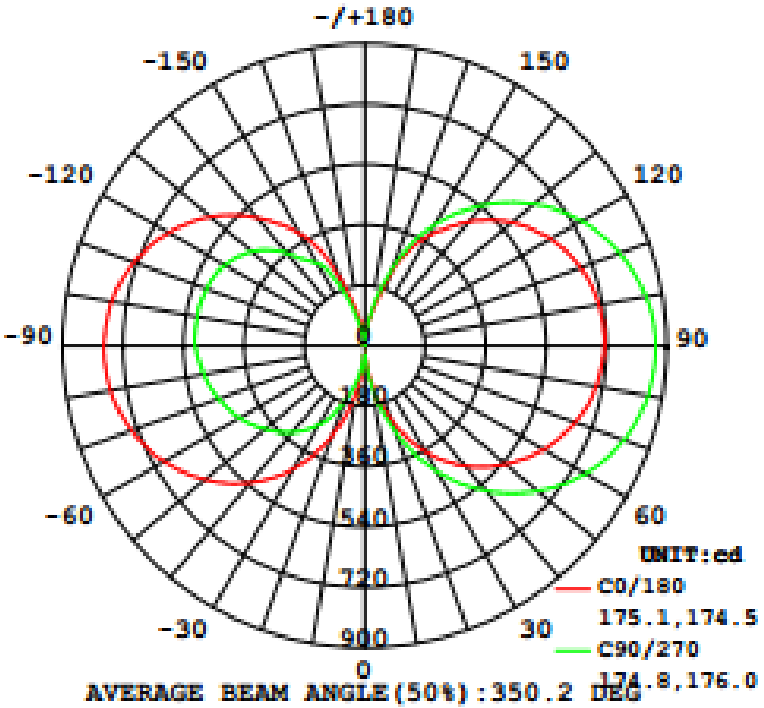
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3114	37.17	0.9947
277.0	60.01	0.1451	36.88	0.9173

Goniophotometer Data:

Parameter	Results	
	120V	277V
Total Luminous (lm)	6026.0	6496.9
Luminous Efficacy (lm/W)	162.13	176.15
Beam Angle (°)	350.2	
Center Beam Intensity (cd)	26	

Luminous Intensity Distribution Diagram:

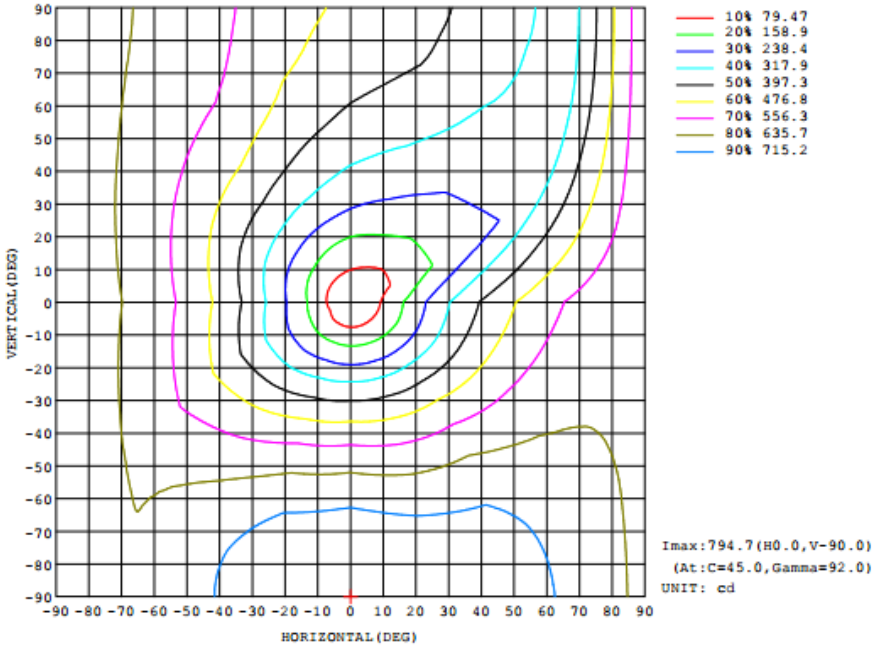


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	101.7	116.4	120.2	104.2	132.2	114.5	88.00	54.07	0- 10	6.170	6.170	0.10,0.10
20	233.9	267.6	275.0	218.0	284.1	239.7	174.6	106.8	10- 20	44.02	50.19	0.83,0.83
30	364.6	424.8	431.5	327.3	421.8	360.5	271.3	164.6	20- 30	122.0	172.2	2.86,2.86
40	467.2	557.1	564.1	424.9	531.8	458.2	335.9	209.3	30- 40	225.5	397.7	6.6,6.6
50	548.6	666.5	672.8	506.1	619.8	536.4	386.3	244.2	40- 50	338.7	736.4	12.2,12.2
60	617.1	758.3	760.2	572.0	688.9	598.6	429.9	276.3	50- 60	449.9	1186	19.7,19.7
70	667.2	823.8	821.1	618.0	738.5	642.3	462.5	300.3	60- 70	547.0	1733	28.8,28.8
80	699.7	865.2	856.2	645.4	768.2	670.6	486.3	316.3	70- 80	619.2	2353	39,39
90	714.5	882.2	866.2	652.3	777.2	682.4	503.9	328.0	80- 90	658.0	3011	50,50
100	709.0	872.4	850.0	640.7	764.7	674.0	505.6	329.9	90-100	660.6	3671	60.9,60.9
110	683.8	835.3	808.4	606.2	730.5	648.4	500.5	324.9	100-110	625.1	4296	71.3,71.3
120	639.1	773.6	745.7	551.9	674.6	605.5	481.7	310.0	110-120	555.2	4851	80.5,80.5
130	572.9	683.7	657.9	480.9	599.7	540.0	438.1	283.0	120-130	457.6	5309	88.1,88.1
140	483.6	566.9	546.6	393.8	499.5	448.1	362.0	238.7	130-140	341.7	5651	93.8,93.8
150	378.5	432.1	416.7	293.6	386.8	338.5	285.6	182.8	140-150	221.9	5873	97.5,97.5
160	227.9	260.6	250.0	176.3	214.9	184.9	153.3	109.1	150-160	116.4	5989	99.4,99.4
170	77.01	90.45	88.04	69.21	74.38	69.66	50.95	36.39	160-170	33.87	6023	99.9,99.9
180	0	0	0	0	0	0	0	0	170-180	3.083	6026	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	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6		
5	49.5	49.8	51.9	53.4	52.8	50.8	47.6	40.9	63.0	61.7	59.5	55.3	49.9	42.3	35.5	30.8		
10	102	108	116	121	120	116	104	76.8	132	124	115	102	88.0	72.5	54.1	43.0		
15	171	175	190	200	197	186	163	115	210	192	177	155	129	106	79.6	58.0		
20	234	246	268	279	275	256	218	151	284	258	240	208	175	144	107	77.3		
25	304	322	350	363	357	328	274	186	358	326	305	271	230	188	139	95.6		
30	365	389	425	439	431	394	327	218	422	384	361	321	271	222	165	111		
35	419	453	493	505	501	455	378	249	480	439	413	365	306	253	188	124		
40	467	511	557	567	564	513	425	277	532	488	458	402	336	280	209	137		
45	511	563	614	622	622	566	468	303	579	533	500	435	364	305	228	146		
50	549	610	666	672	673	613	506	326	620	572	536	462	386	326	244	154		
55	584	655	716	718	720	657	541	348	657	609	570	489	409	348	262	162		
60	617	693	758	760	760	695	572	367	689	641	599	512	430	367	276	168		
65	644	726	794	794	794	727	597	383	717	668	623	529	447	383	288	173		
70	667	753	824	823	821	753	618	396	738	692	642	541	462	397	300	177		
75	687	776	848	847	842	773	634	406	756	711	659	554	476	410	309	180		
80	700	791	865	864	856	787	645	414	768	724	671	561	486	419	316	182		
85	709	801	876	874	863	794	651	418	774	731	678	567	495	427	322	184		
90	714	806	882	881	866	796	652	420	777	735	682	571	504	434	328	184		
95	714	806	881	880	862	791	649	419	772	732	680	569	506	435	329	183		
100	709	799	872	872	850	782	641	415	765	726	674	566	506	434	330	182		
105	699	784	857	858	832	765	626	407	751	714	665	561	505	433	330	180		
110	684	764	835	837	808	742	606	395	730	696	648	553	500	428	325	177		
115	664	738	808	811	780	713	582	381	705	672	630	543	494	420	319	173		
120	639	707	774	779	746	679	552	363	675	645	606	528	482	408	310	169		
125	608	668	731	738	705	639	518	342	639	611	574	507	463	391	297	162		
130	573	625	684	691	658	593	481	319	600	573	540	481	438	371	283	154		
135	531	574	628	636	605	542	439	291	553	527	499	451	405	344	263	146		
140	484	518	567	575	547	488	394	262	499	473	448	408	362	307	239	136		
145	430	456	499	510	485	429	344	231	444	414	397	362	314	265	211	124		
150	379	396	432	439	417	366	294	198	387	355	338	317	286	236	183	111		
155	315	326	353	360	341	301	241	162	314	297	273	257	235	203	157	94.2		
160	228	240	261	265	250	222	176	121	215	206	185	174	153	135	109	65.8		
165	132	146	166	170	160	143	113	80.5	126	123	111	100	83.3	70.1	60.4	37.2		
170	77.0	82.1	90.5	90.9	88.0	83.3	69.2	51.7	74.4	73.1	69.7	60.4	50.9	44.0	36.4	21.9		
175	4.11	3.42	3.39	3.82	25.3	5.60	7.13	9.08	14.8	14.7	14.0	12.8	11.2	9.91	8.00	3.15		
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		

Photo of Sample:4000K

5000K

Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2021-11-10	2022-11-09
NTC-F01-006	2.0 meter Integrating Sphere	2021-11-10	2022-11-09
NTC-F01-012	Standard Lamp	2021-11-10	2022-11-09
NTC-F01-013	Standard Lamp	2021-11-10	2022-11-09
NTC-F01-031	Digital Power Meter	2021-08-22	2022-08-21
NTC-F01-020	Temperature & Humidity Meter	2021-11-15	2022-11-14

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