LM-79-08 Test Report

For

LEDVANCE LLC

200 Ballardvale St. Wilmington MA 01887

LED LAMP

Model Name(s):
LED39ED28UNVFR840MED
LED39ED28UNVFR850MED

Representative (Tested) Model:
LED39ED28UNVFR840MED
LED39ED28UNVFR850MED

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

Prepared by:

Engineer: Alan Wang
Date: 2022-12-29

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:	LED39ED28UNVFR840MED LED39ED28UNVFR850MED
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:	221216003-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.:	NTCLR22120224
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:

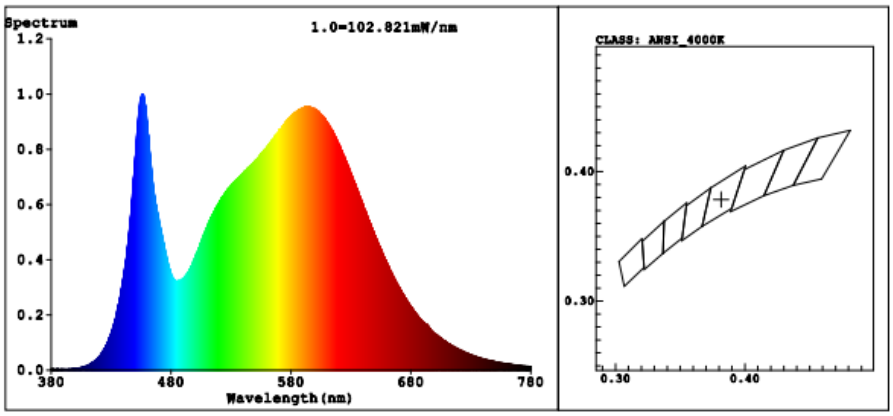
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3193	38.11	0.9945

Color Data:

Parameter	Result
CCT(K)	3983
Ra	83.1
R_f	83
R_g	94
$R_{cs,\ h1}$	-13
Chromaticity, (x, y)	(0.3815,0.3785)
Chromaticity, (u', v')	(0.2251,0.5025)
Duv	0.0005

Specify Color Rendering			
R1	82	R9	9
R2	91	R10	77
R3	96	R11	78
R4	80	R12	61
R5	81	R13	84
R6	87	R14	98
R7	85	R15	76
R8	64	-	-

Spectrum Diagram:



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

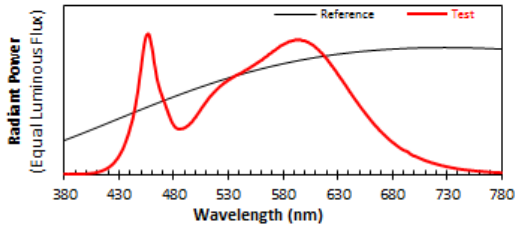
ANSI/IES TM-30-18 Color Rendition Report

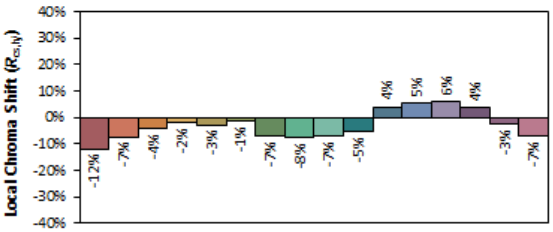
Source: --

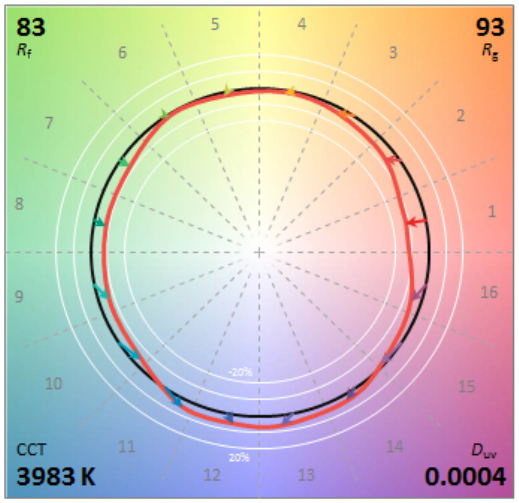
Manufacturer: LEDVANCE LLC

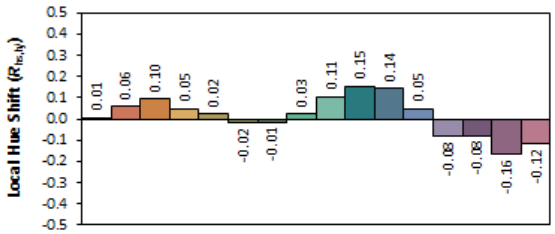
Date: 2022/4/10

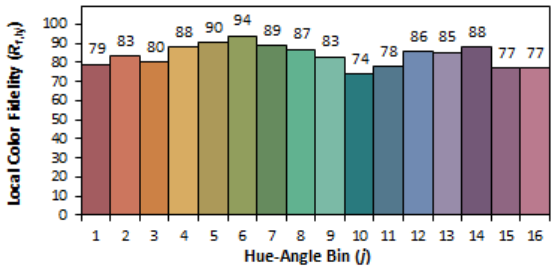
Model: LED39ED28UNVFR840MED

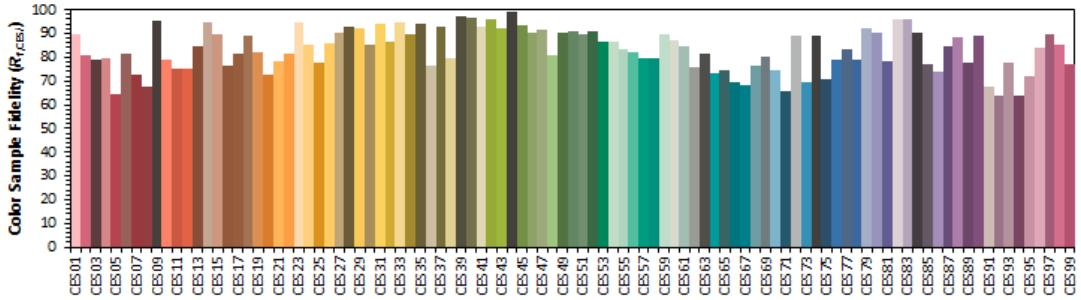












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3815
y	0.3783
u'	0.2252
v'	0.5024

CIE 13.3-1995 (CRI)

R_a	83
R_9	9

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	0.0057	447	0.5864	514	0.5568	581	0.9219	648	0.5097	715	0.0862
381	0.0033	448	0.6438	515	0.5654	582	0.9278	649	0.4992	716	0.0843
382	0.0045	449	0.7006	516	0.5734	583	0.9293	650	0.4877	717	0.0820
383	0.0024	450	0.7556	517	0.5833	584	0.9320	651	0.4772	718	0.0802
384	0.0032	451	0.8162	518	0.5887	585	0.9387	652	0.4669	719	0.0779
385	0.0041	452	0.8727	519	0.5992	586	0.9408	653	0.4574	720	0.0751
386	0.0035	453	0.9238	520	0.6050	587	0.9418	654	0.4464	721	0.0730
387	0.0031	454	0.9600	521	0.6136	588	0.9456	655	0.4379	722	0.0704
388	0.0029	455	0.9848	522	0.6217	589	0.9462	656	0.4267	723	0.0684
389	0.0035	456	0.9916	523	0.6281	590	0.9485	657	0.4165	724	0.0667
390	0.0032	457	0.9940	524	0.6330	591	0.9509	658	0.4065	725	0.0643
391	0.0038	458	0.9670	525	0.6398	592	0.9540	659	0.3979	726	0.0633
392	0.0036	459	0.9355	526	0.6465	593	0.9520	660	0.3878	727	0.0612
393	0.0034	460	0.8959	527	0.6533	594	0.9516	661	0.3778	728	0.0596
394	0.0031	461	0.8484	528	0.6556	595	0.9540	662	0.3690	729	0.0573
395	0.0042	462	0.7939	529	0.6622	596	0.9522	663	0.3601	730	0.0555
396	0.0033	463	0.7494	530	0.6678	597	0.9502	664	0.3506	731	0.0541
397	0.0049	464	0.7011	531	0.6734	598	0.9450	665	0.3422	732	0.0528
398	0.0042	465	0.6652	532	0.6763	599	0.9467	666	0.3355	733	0.0509
399	0.0052	466	0.6327	533	0.6814	600	0.9454	667	0.3260	734	0.0492
400	0.0055	467	0.6055	534	0.6886	601	0.9415	668	0.3156	735	0.0479
401	0.0060	468	0.5823	535	0.6902	602	0.9373	669	0.3090	736	0.0466
402	0.0066	469	0.5595	536	0.6969	603	0.9346	670	0.3015	737	0.0451
403	0.0069	470	0.5362	537	0.7017	604	0.9311	671	0.2937	738	0.0433
404	0.0086	471	0.5173	538	0.7040	605	0.9256	672	0.2861	739	0.0422
405	0.0089	472	0.4976	539	0.7085	606	0.9218	673	0.2783	740	0.0410
406	0.0105	473	0.4764	540	0.7124	607	0.9173	674	0.2715	741	0.0396
407	0.0114	474	0.4544	541	0.7166	608	0.9115	675	0.2634	742	0.0387
408	0.0125	475	0.4314	542	0.7176	609	0.9048	676	0.2571	743	0.0376
409	0.0147	476	0.4131	543	0.7239	610	0.8982	677	0.2497	744	0.0361
410	0.0162	477	0.3914	544	0.7294	611	0.8904	678	0.2424	745	0.0356
411	0.0179	478	0.3735	545	0.7353	612	0.8852	679	0.2363	746	0.0343
412	0.0209	479	0.3598	546	0.7405	613	0.8779	680	0.2296	747	0.0333
413	0.0228	480	0.3471	547	0.7406	614	0.8676	681	0.2248	748	0.0329
414	0.0260	481	0.3376	548	0.7475	615	0.8625	682	0.2183	749	0.0314
415	0.0289	482	0.3306	549	0.7509	616	0.8542	683	0.2116	750	0.0308
416	0.0322	483	0.3247	550	0.7580	617	0.8448	684	0.2061	751	0.0298
417	0.0358	484	0.3229	551	0.7621	618	0.8361	685	0.2006	752	0.0293
418	0.0396	485	0.3210	552	0.7669	619	0.8271	686	0.1943	753	0.0282
419	0.0440	486	0.3229	553	0.7715	620	0.8181	687	0.1888	754	0.0275
420	0.0486	487	0.3227	554	0.7774	621	0.8076	688	0.1835	755	0.0267
421	0.0540	488	0.3241	555	0.7819	622	0.7958	689	0.1795	756	0.0259
422	0.0605	489	0.3275	556	0.7860	623	0.7881	690	0.1741	757	0.0252
423	0.0662	490	0.3311	557	0.7925	624	0.7742	691	0.1704	758	0.0243
424	0.0736	491	0.3349	558	0.7981	625	0.7675	692	0.1680	759	0.0233
425	0.0811	492	0.3413	559	0.8031	626	0.7558	693	0.1653	760	0.0231
426	0.0900	493	0.3456	560	0.8067	627	0.7445	694	0.1624	761	0.0222
427	0.1003	494	0.3521	561	0.8107	628	0.7361	695	0.1562	762	0.0217
428	0.1090	495	0.3615	562	0.8198	629	0.7234	696	0.1485	763	0.0215
429	0.1210	496	0.3679	563	0.8248	630	0.7108	697	0.1434	764	0.0204
430	0.1329	497	0.3759	564	0.8302	631	0.7014	698	0.1392	765	0.0199
431	0.1474	498	0.3875	565	0.8352	632	0.6890	699	0.1344	766	0.0195
432	0.1608	499	0.3990	566	0.8407	633	0.6773	700	0.1313	767	0.0188
433	0.1771	500	0.4049	567	0.8509	634	0.6687	701	0.1302	768	0.0184
434	0.1923	501	0.4194	568	0.8527	635	0.6556	702	0.1261	769	0.0173
435	0.2120	502	0.4293	569	0.8585	636	0.6453	703	0.1229	770	0.0171
436	0.2337	503	0.4410	570	0.8647	637	0.6346	704	0.1194	771	0.0167
437	0.2546	504	0.4511	571	0.8730	638	0.6228	705	0.1163	772	0.0160
438	0.2772	505	0.4645	572	0.8750	639	0.6100	706	0.1127	773	0.0156
439	0.3020	506	0.4755	573	0.8812	640	0.6000	707	0.1094	774	0.0151
440	0.3292	507	0.4863	574	0.8881	641	0.5858	708	0.1059	775	0.0149
441	0.3559	508	0.4974	575	0.8924	642	0.5774	709	0.1031	776	0.0144
442	0.3850	509	0.5074	576	0.8984	643	0.5644	710	0.1002	777	0.0139
443	0.4140	510	0.5181	577	0.9067	644	0.5534	711	0.0964	778	0.0136
444	0.4563	511	0.5291	578	0.9104	645	0.5419	712	0.0947	779	0.0131
445	0.4943	512	0.5393	579	0.9134	646	0.5303	713	0.0918	780	0.0129
446	0.5396	513	0.5491	580	0.9177	647	0.5207	714	0.0896	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:

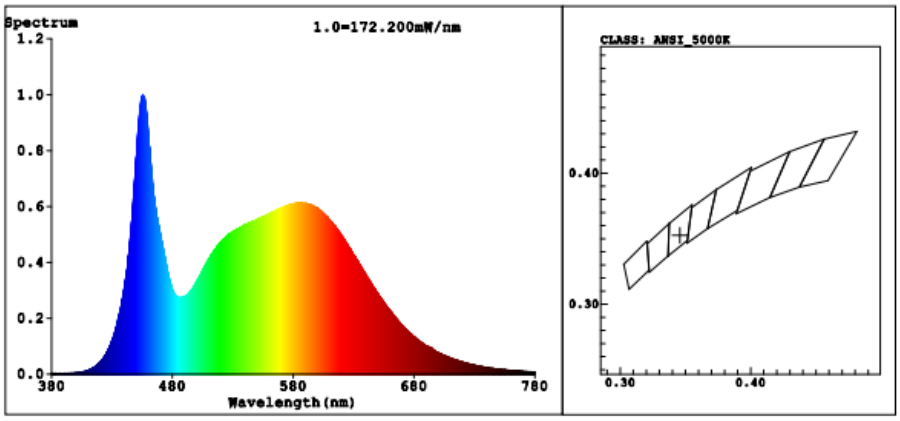
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3221	38.41	0.9936

Color Data:

Parameter	Result
CCT(K)	4981
Ra	84.0
R_f	83
R_g	95
$R_{cs,\ h1}$	-13
Chromaticity, (x, y)	(0.3457,0.3527)
Chromaticity, (u', v')	(0.2114,0.4853)
Duv	0.0003

Specify Color Rendering			
R1	83	R9	14
R2	92	R10	78
R3	95	R11	78
R4	80	R12	57
R5	82	R13	86
R6	86	R14	98
R7	87	R15	78
R8	68	-	-

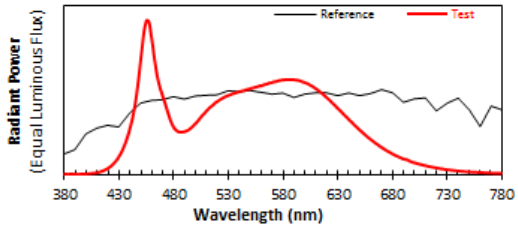
Spectrum Diagram:

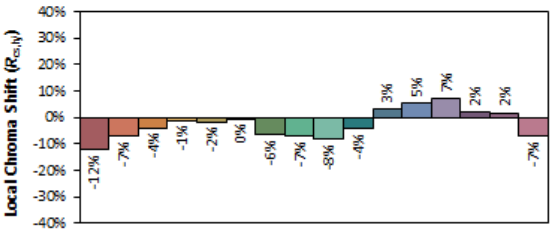


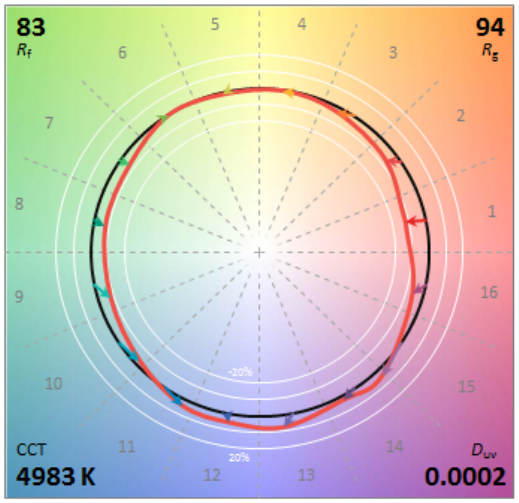
IES TM-30-18 Color Rendition Result (5000K):

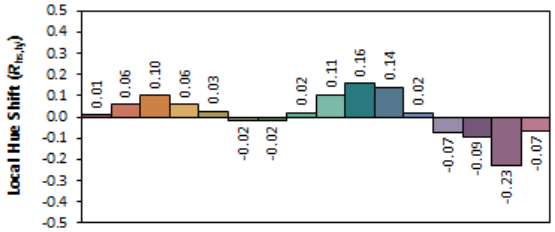
ANSI/IES TM-30-18 Color Rendition Report

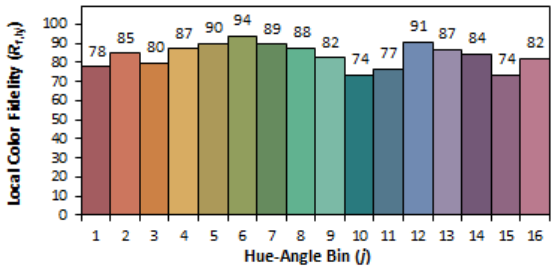
Source: --
Manufacturer: LEDVANCE LLC
Date: 2022/4/10
Model: LED39ED28UNVFR850MED

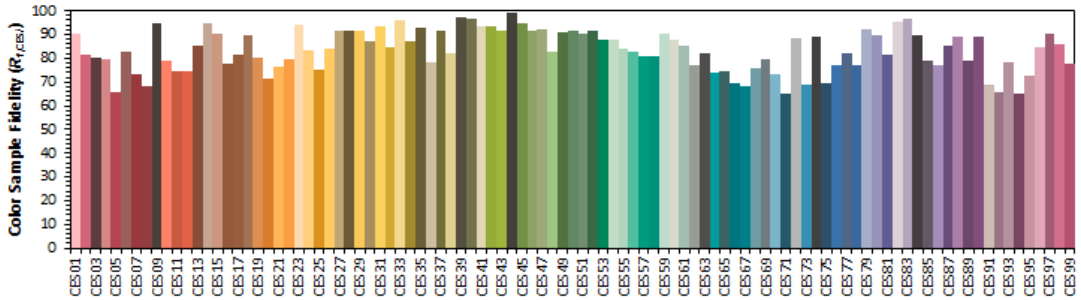












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3456
y	0.3525
u'	0.2114
v'	0.4852

CIE 13.3-1995 (CRI)

R_a	84
R_9	15

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	0.0029	447	0.5750	514	0.4374	581	0.6085	648	0.3020	715	0.0500
381	0.0033	448	0.6341	515	0.4426	582	0.6104	649	0.2944	716	0.0487
382	0.0028	449	0.6947	516	0.4470	583	0.6106	650	0.2877	717	0.0472
383	0.0020	450	0.7582	517	0.4551	584	0.6096	651	0.2813	718	0.0461
384	0.0020	451	0.8204	518	0.4606	585	0.6109	652	0.2759	719	0.0441
385	0.0026	452	0.8822	519	0.4672	586	0.6114	653	0.2689	720	0.0435
386	0.0026	453	0.9334	520	0.4690	587	0.6106	654	0.2629	721	0.0418
387	0.0028	454	0.9672	521	0.4752	588	0.6100	655	0.2569	722	0.0405
388	0.0027	455	0.9907	522	0.4798	589	0.6098	656	0.2506	723	0.0393
389	0.0024	456	0.9902	523	0.4841	590	0.6098	657	0.2440	724	0.0377
390	0.0024	457	0.9843	524	0.4879	591	0.6085	658	0.2382	725	0.0373
391	0.0026	458	0.9537	525	0.4924	592	0.6086	659	0.2327	726	0.0362
392	0.0022	459	0.9070	526	0.4961	593	0.6065	660	0.2275	727	0.0347
393	0.0026	460	0.8610	527	0.5002	594	0.6052	661	0.2220	728	0.0336
394	0.0024	461	0.8098	528	0.5030	595	0.6048	662	0.2164	729	0.0328
395	0.0031	462	0.7554	529	0.5048	596	0.6012	663	0.2111	730	0.0318
396	0.0036	463	0.7086	530	0.5092	597	0.5982	664	0.2055	731	0.0312
397	0.0032	464	0.6610	531	0.5112	598	0.5956	665	0.1997	732	0.0298
398	0.0034	465	0.6256	532	0.5140	599	0.5938	666	0.1957	733	0.0291
399	0.0038	466	0.5937	533	0.5171	600	0.5912	667	0.1903	734	0.0281
400	0.0041	467	0.5668	534	0.5207	601	0.5876	668	0.1851	735	0.0278
401	0.0047	468	0.5429	535	0.5207	602	0.5864	669	0.1803	736	0.0265
402	0.0049	469	0.5221	536	0.5230	603	0.5826	670	0.1758	737	0.0258
403	0.0058	470	0.4981	537	0.5264	604	0.5780	671	0.1705	738	0.0248
404	0.0063	471	0.4777	538	0.5278	605	0.5744	672	0.1669	739	0.0243
405	0.0076	472	0.4576	539	0.5305	606	0.5711	673	0.1622	740	0.0234
406	0.0080	473	0.4331	540	0.5338	607	0.5661	674	0.1574	741	0.0229
407	0.0090	474	0.4112	541	0.5339	608	0.5626	675	0.1535	742	0.0222
408	0.0100	475	0.3885	542	0.5357	609	0.5567	676	0.1493	743	0.0213
409	0.0112	476	0.3667	543	0.5389	610	0.5519	677	0.1451	744	0.0209
410	0.0130	477	0.3463	544	0.5398	611	0.5474	678	0.1418	745	0.0205
411	0.0143	478	0.3302	545	0.5415	612	0.5429	679	0.1376	746	0.0194
412	0.0168	479	0.3158	546	0.5452	613	0.5356	680	0.1334	747	0.0191
413	0.0186	480	0.3025	547	0.5457	614	0.5307	681	0.1301	748	0.0184
414	0.0212	481	0.2920	548	0.5481	615	0.5274	682	0.1262	749	0.0181
415	0.0240	482	0.2863	549	0.5496	616	0.5198	683	0.1228	750	0.0174
416	0.0261	483	0.2792	550	0.5518	617	0.5148	684	0.1194	751	0.0170
417	0.0296	484	0.2759	551	0.5553	618	0.5073	685	0.1163	752	0.0166
418	0.0334	485	0.2733	552	0.5557	619	0.5013	686	0.1132	753	0.0160
419	0.0371	486	0.2732	553	0.5581	620	0.4954	687	0.1097	754	0.0155
420	0.0415	487	0.2740	554	0.5592	621	0.4885	688	0.1069	755	0.0154
421	0.0465	488	0.2734	555	0.5625	622	0.4820	689	0.1037	756	0.0149
422	0.0520	489	0.2745	556	0.5632	623	0.4758	690	0.1005	757	0.0145
423	0.0571	490	0.2756	557	0.5663	624	0.4680	691	0.0985	758	0.0140
424	0.0635	491	0.2789	558	0.5678	625	0.4615	692	0.0977	759	0.0135
425	0.0711	492	0.2818	559	0.5713	626	0.4542	693	0.0964	760	0.0131
426	0.0792	493	0.2845	560	0.5697	627	0.4487	694	0.0945	761	0.0126
427	0.0874	494	0.2899	561	0.5733	628	0.4415	695	0.0904	762	0.0124
428	0.0963	495	0.2948	562	0.5750	629	0.4332	696	0.0866	763	0.0122
429	0.1063	496	0.3011	563	0.5789	630	0.4265	697	0.0832	764	0.0115
430	0.1184	497	0.3071	564	0.5802	631	0.4204	698	0.0801	765	0.0113
431	0.1305	498	0.3139	565	0.5810	632	0.4129	699	0.0778	766	0.0110
432	0.1437	499	0.3240	566	0.5834	633	0.4054	700	0.0761	767	0.0106
433	0.1587	500	0.3266	567	0.5889	634	0.3985	701	0.0748	768	0.0104
434	0.1741	501	0.3371	568	0.5892	635	0.3904	702	0.0726	769	0.0099
435	0.1920	502	0.3442	569	0.5896	636	0.3850	703	0.0702	770	0.0097
436	0.2105	503	0.3530	570	0.5913	637	0.3765	704	0.0684	771	0.0094
437	0.2311	504	0.3620	571	0.5955	638	0.3701	705	0.0670	772	0.0093
438	0.2526	505	0.3698	572	0.5973	639	0.3637	706	0.0649	773	0.0088
439	0.2750	506	0.3787	573	0.5964	640	0.3563	707	0.0633	774	0.0087
440	0.3015	507	0.3862	574	0.5989	641	0.3483	708	0.0613	775	0.0083
441	0.3286	508	0.3930	575	0.6007	642	0.3424	709	0.0592	776	0.0081
442	0.3583	509	0.4014	576	0.6031	643	0.3357	710	0.0579	777	0.0079
443	0.3906	510	0.4103	577	0.6059	644	0.3281	711	0.0561	778	0.0078
444	0.4313	511	0.4161	578	0.6060	645	0.3206	712	0.0541	779	0.0075
445	0.4718	512	0.4247	579	0.6077	646	0.3138	713	0.0526	780	0.0074
446	0.5205	513	0.4311	580	0.6092	647	0.3078	714	0.0515	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

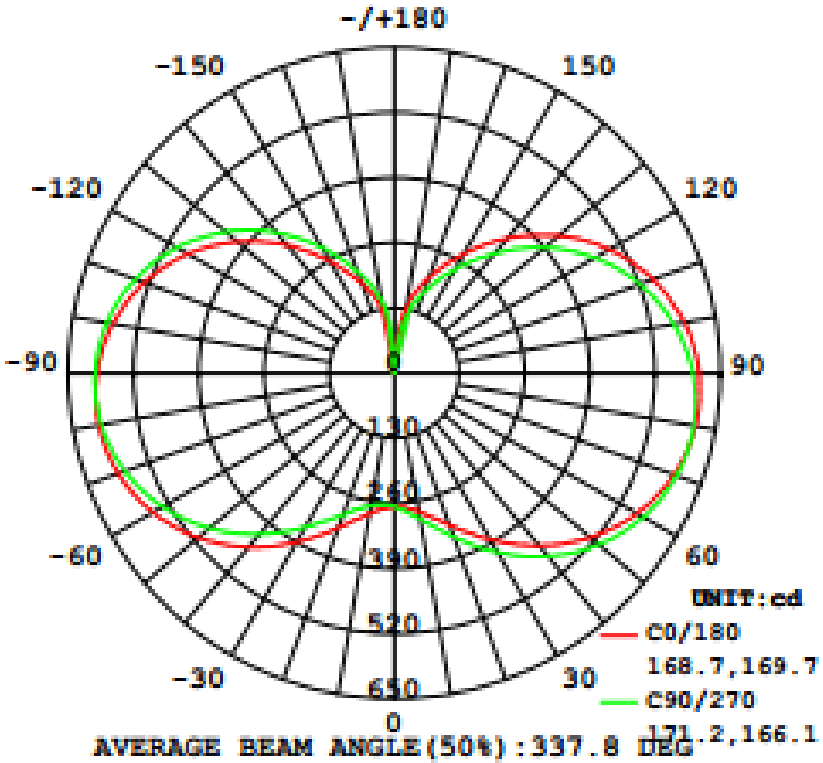
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3195	38.16	0.9952
277.0	60.01	0.1426	36.22	0.9172

Goniophotometer Data:

Parameter	Results	
	120V	277V
Total Luminous (lm)	6041.4	6021.0
Luminous Efficacy (lm/W)	158.34	166.23
Beam Angle (°)	337.8	
Center Beam Intensity (cd)	267	

Luminous Intensity Distribution Diagram:

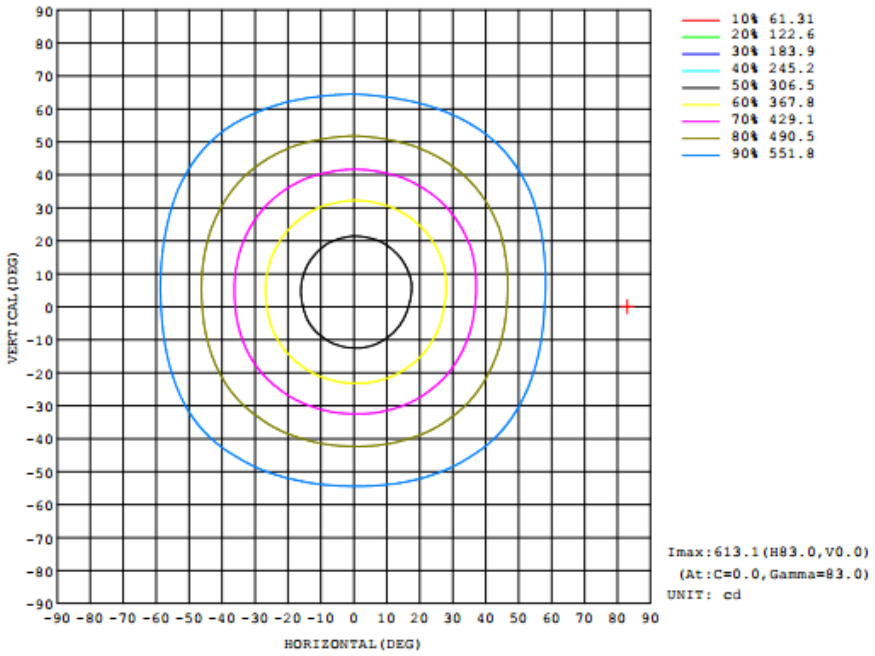


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	280.4	289.7	295.4	293.4	284.1	273.7	268.3	271.0	0- 10	26.19	26.19	0.43,0.43
20	322.5	338.3	347.7	344.3	328.2	309.5	300.4	305.6	10- 20	86.12	112.3	1.86,1.86
30	383.1	402.4	413.0	409.1	389.1	365.8	354.3	361.8	20- 30	164.6	277.0	4.58,4.58
40	449.2	467.2	476.9	472.9	453.0	429.6	418.8	427.9	30- 40	263.0	539.9	8.94,8.94
50	509.5	524.7	532.0	528.7	510.5	489.5	480.9	491.0	40- 50	372.2	912.2	15.1,15.1
60	558.8	569.1	573.6	571.1	555.7	538.8	533.3	543.7	50- 60	478.9	1391	23,23
70	592.8	597.6	598.6	596.4	585.9	573.8	571.7	581.9	60- 70	569.0	1960	32.4,32.4
80	609.4	608.2	605.8	604.7	598.6	591.6	593.7	603.0	70- 80	630.9	2591	42.9,42.9
90	607.5	600.8	594.9	594.3	593.0	592.1	596.9	605.2	80- 90	656.4	3247	53.8,53.8
100	586.8	575.1	566.1	566.2	570.1	574.0	582.5	589.6	90-100	642.5	3890	64.4,64.4
110	540.3	532.4	520.7	521.6	530.2	539.2	549.7	555.1	100-110	590.7	4481	74.2,74.2
120	494.6	474.9	461.4	462.7	475.8	488.7	501.2	505.3	110-120	508.0	4989	82.6,82.6
130	427.6	405.6	390.5	392.2	408.4	425.5	438.9	441.7	120-130	404.9	5394	89.3,89.3
140	352.0	328.8	313.4	315.0	333.5	352.3	366.5	368.2	130-140	294.6	5688	94.2,94.2
150	274.3	252.6	238.1	239.6	258.0	274.6	289.3	291.1	140-150	191.2	5879	97.3,97.3
160	203.9	184.8	172.3	173.9	190.8	202.3	215.8	219.2	150-160	107.1	5987	99.1,99.1
170	130.5	108.7	99.32	103.0	122.0	131.5	143.8	146.5	160-170	46.92	6033	99.9,99.9
180	0	0	0	0	0	0	0	0	170-180	7.991	6041	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	267	267	267	267	267	267	267	267	267	267	267	267	267	267	267	267		
5	270	272	275	277	278	278	277	275	272	269	266	264	263	263	265	267		
10	280	286	290	294	295	296	293	290	284	279	274	270	268	269	271	275		
15	299	306	312	317	319	319	316	311	304	296	288	284	281	282	285	291		
20	323	331	338	345	348	348	344	338	328	318	309	303	300	302	306	313		
25	351	361	369	376	380	380	376	369	357	346	336	328	325	326	332	340		
30	383	394	402	410	413	413	409	401	389	377	366	358	354	356	362	371		
35	416	427	435	442	446	446	442	434	421	409	398	390	386	388	394	404		
40	449	459	467	474	477	477	473	465	453	441	430	422	419	421	428	437		
45	481	490	497	503	506	506	502	495	483	471	461	454	451	454	461	469		
50	510	518	525	530	532	532	529	522	510	499	490	484	481	485	491	499		
55	536	544	549	553	555	555	552	546	535	525	516	512	509	513	519	527		
60	559	565	569	572	574	574	571	566	556	547	539	536	533	538	544	551		
65	578	583	586	588	588	589	586	581	573	565	558	556	554	560	565	572		
70	593	597	598	599	599	599	596	592	586	579	574	572	572	577	582	588		
75	603	605	605	605	604	604	603	600	594	589	585	585	585	590	595	599		
80	609	610	608	607	606	606	605	602	599	595	592	593	594	599	603	607		
85	611	610	607	605	602	603	602	600	598	595	594	596	598	603	607	610		
90	607	605	601	598	595	595	594	594	593	592	592	595	597	602	605	607		
95	599	595	590	586	582	583	582	583	584	584	585	589	592	597	600	601		
100	587	581	575	570	566	566	566	568	570	571	574	580	583	587	590	589		
105	570	563	555	550	545	545	546	548	552	555	559	565	569	573	575	574		
110	548	541	532	526	521	520	522	525	530	534	539	547	550	554	555	554		
115	523	515	505	498	493	492	494	498	505	509	516	524	527	532	532	530		
120	495	485	475	467	461	461	463	467	476	481	489	498	501	506	505	502		
125	462	452	441	433	427	426	429	434	443	450	459	468	472	476	475	471		
130	428	417	406	396	391	389	392	399	408	416	425	435	439	443	442	437		
135	391	379	367	358	352	351	354	361	372	380	390	400	404	408	406	401		
140	352	341	329	319	313	312	315	322	334	342	352	362	366	370	368	363		
145	313	302	290	281	275	274	276	284	295	303	314	323	328	331	330	324		
150	274	264	253	244	238	237	240	247	258	265	275	284	289	292	291	287		
155	238	228	218	210	204	203	206	213	223	228	237	246	251	255	254	250		
160	204	195	185	177	172	171	174	181	191	194	202	210	216	219	219	216		
165	171	161	151	146	141	139	143	150	160	161	170	177	183	186	186	184		
170	130	121	109	103	99.3	97.3	103	110	122	123	132	139	144	147	146	144		
175	72.7	63.5	50.0	39.2	36.2	36.7	46.2	55.7	69.5	69.8	78.7	85.8	90.5	92.6	92.1	89.1		
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

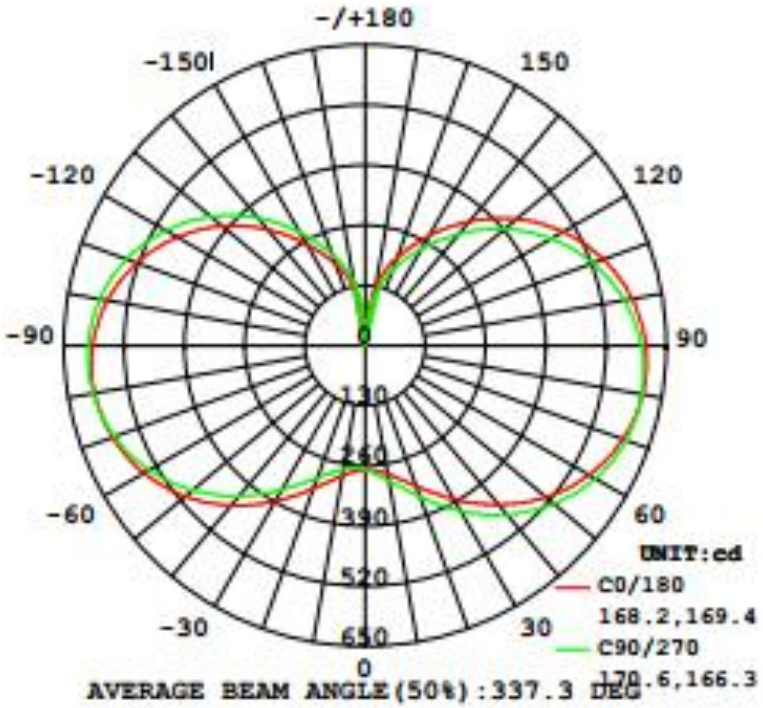
Electrical Data:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60.01	0.3221	38.47	0.9953
277.0	60.01	0.1451	36.81	0.9158

Goniophotometer Data:

Parameter	Results	
	120V	277V
Total Luminous (lm)	6019.3	6060.0
Luminous Efficacy (lm/W)	156.48	164.63
Beam Angle (°)	337.3	
Center Beam Intensity (cd)	268	

Luminous Intensity Distribution Diagram:

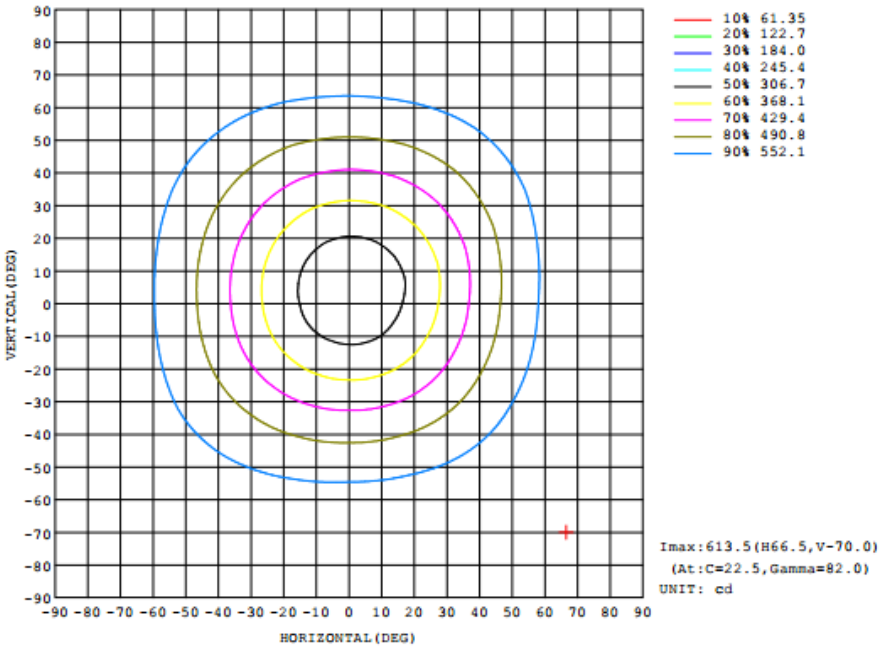


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	281.9	290.7	296.0	293.8	285.6	276.7	271.6	273.3	0- 10	26.34	26.34	0.44,0.44
20	323.0	338.5	347.5	343.0	328.4	313.4	304.5	307.9	10- 20	86.51	112.9	1.87,1.87
30	383.5	402.4	412.2	405.5	388.1	370.0	359.0	363.7	20- 30	165.0	277.9	4.62,4.62
40	448.8	467.3	476.1	468.0	450.2	433.8	423.9	429.1	30- 40	263.3	541.2	8.99,8.99
50	509.1	525.2	531.7	522.3	506.9	493.2	486.0	491.1	40- 50	372.1	913.2	15.2,15.2
60	558.4	570.2	574.0	563.8	551.4	542.6	538.0	543.4	50- 60	478.3	1392	23.1,23.1
70	592.2	599.1	598.7	588.9	579.7	576.7	575.6	580.8	60- 70	568.1	1960	32.6,32.6
80	608.3	610.0	606.6	596.6	592.9	593.4	595.6	600.5	70- 80	629.4	2589	43,43
90	605.7	602.6	596.3	586.5	588.5	592.3	597.8	602.2	80- 90	654.3	3243	53.9,53.9
100	584.7	577.0	567.1	558.8	564.7	573.0	581.8	585.5	90-100	639.9	3883	64.5,64.5
110	546.5	534.5	522.3	514.6	523.9	536.3	547.2	550.8	100-110	587.7	4471	74.3,74.3
120	492.5	477.1	463.2	456.5	468.9	484.8	497.3	499.9	110-120	504.8	4976	82.7,82.7
130	425.8	408.0	392.7	387.3	402.1	420.0	433.9	436.1	120-130	401.8	5378	89.3,89.3
140	350.5	331.2	315.4	312.1	327.9	346.2	360.4	362.5	130-140	292.0	5670	94.2,94.2
150	273.3	254.8	240.7	238.6	253.1	269.2	282.8	285.7	140-150	189.4	5859	97.3,97.3
160	202.5	186.9	175.1	174.0	187.4	197.6	210.1	214.5	150-160	106.1	5965	99.1,99.1
170	128.7	109.1	100.9	102.9	119.6	128.2	139.5	142.7	160-170	46.38	6011	99.9,99.9
180	0	0	0	0	0	0	0	0	170-180	7.831	6019	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	268	268	268	268	268	268	268	268	268	268	268	268	268	268	268	268		
5	271	274	276	278	279	279	278	276	273	271	268	267	266	265	266	268		
10	282	287	291	294	296	296	294	290	286	281	277	273	272	271	273	277		
15	300	306	312	317	320	319	316	311	305	298	292	287	285	285	287	292		
20	323	331	339	345	348	347	343	337	328	320	313	308	304	305	308	314		
25	352	361	369	376	379	378	374	367	357	348	340	333	329	329	333	341		
30	384	394	402	410	412	411	405	398	388	378	370	362	359	359	364	372		
35	416	427	435	442	445	443	438	430	420	410	402	394	391	392	396	405		
40	449	459	467	474	476	474	468	460	450	441	434	427	424	424	429	437		
45	480	490	498	504	505	503	497	489	479	471	465	458	456	457	461	469		
50	509	519	525	531	532	529	522	515	507	498	493	487	486	487	491	499		
55	535	544	549	554	555	551	545	538	530	523	520	515	514	515	519	526		
60	558	565	570	574	574	570	564	558	551	545	543	538	538	540	543	549		
65	577	583	587	590	589	584	579	573	567	563	562	559	559	561	564	569		
70	592	597	599	601	599	595	589	584	580	577	577	575	576	578	581	585		
75	602	606	607	608	605	601	595	591	588	586	587	586	588	590	593	596		
80	608	610	610	610	607	602	597	593	593	591	593	594	596	598	601	604		
85	610	610	609	607	603	598	594	591	593	591	595	596	599	602	604	606		
90	606	605	603	601	596	590	587	585	589	587	592	594	598	600	602	604		
95	598	596	592	589	584	579	575	574	579	579	585	588	592	595	596	597		
100	585	582	577	573	567	563	559	558	565	566	573	577	582	585	586	585		
105	568	564	558	553	547	541	538	539	546	549	557	562	567	569	570	569		
110	547	541	534	529	522	517	515	515	524	528	536	542	547	551	551	549		
115	521	515	508	501	494	489	487	489	498	503	512	518	524	527	527	525		
120	492	486	477	470	463	458	457	459	469	475	485	491	497	500	500	498		
125	461	453	444	436	429	424	423	426	437	443	454	461	467	470	470	467		
130	426	418	408	400	393	388	387	391	402	409	420	428	434	437	436	433		
135	389	380	370	362	355	350	350	354	366	373	384	392	398	401	400	396		
140	350	342	331	323	315	312	312	316	328	335	346	354	360	363	363	359		
145	311	303	293	284	277	274	274	279	290	297	307	315	322	325	324	320		
150	273	265	255	247	241	238	239	243	253	259	269	277	283	286	286	282		
155	237	229	220	213	207	204	205	209	219	223	232	239	245	249	249	246		
160	203	195	187	180	175	173	174	178	187	189	198	204	210	214	214	212		
165	169	162	153	148	144	140	143	148	157	158	166	172	177	181	181	179		
170	129	121	109	105	101	98.3	103	109	120	120	128	135	140	143	143	141		
175	70.4	62.1	49.5	38.7	36.1	36.5	45.9	54.8	67.9	68.0	76.2	82.3	86.8	88.8	88.8	85.7		
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************