

Photometric Test Report

Relevant Standards

- ☒ IES LM-79-2008
- ☒ ANSI C82.77-2017

Prepared For

RAB Lighting Inc.

Prepared By

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Revised Date: N/A

1.0 Test Summary

DLC Technical Requirements V5.1

Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		8879
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		135.6
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	300		8581
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard	Premium	131.0
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		65.5
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	2.45
			277V	7.12
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
			277V	0.920
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3045±175	3130
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥70		76.1
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	N/A		-19
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		79
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		95
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-14%
Zonal Lumen Requirement (80°-90°) (Goniophotometer – Section 4.2)	IES LM-79-2008	≤10%		6.8%
Input Voltage (V)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Cast		120.0
(Goniophotometer – Section 4.2)		Non-Worst Case		277.0
Input Current (A)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		0.549
(Goniophotometer – Section 4.2)		Non-Worst Case		0.254
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		65.5
(Goniophotometer – Section 4.2)		Non-Worst Case		64.8

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2023-06-13	W34M @ 60W / 3000K	230612002-S1
2	Goniophotometer Test	2023-06-13	W34M @ 60W / 3000K	230612002-S1
3	THD and PF Test	2023-06-13	W34M @ 60W / 3000K	230612002-S1

Remark (If any)

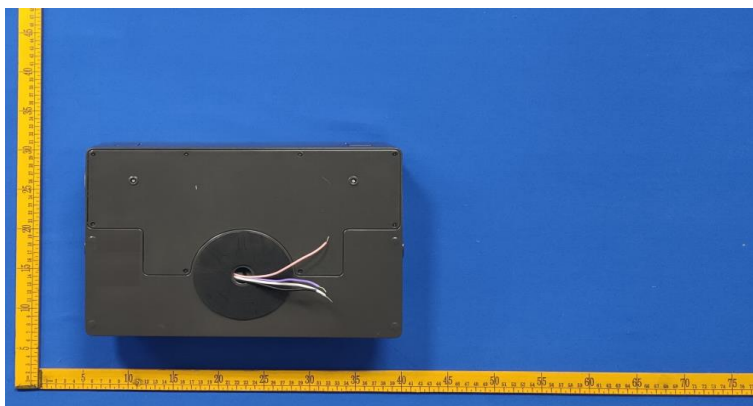
1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

3.0 Product Description

Luminaire Description: Model No. W34M @ 60W / 3000K, color tunable from 3000K, 4000K and 5000K.

Electrical Specification: 120-277Vac, 50/60Hz

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	W34M @ 60W / 3000K	Sample ID	230612002-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

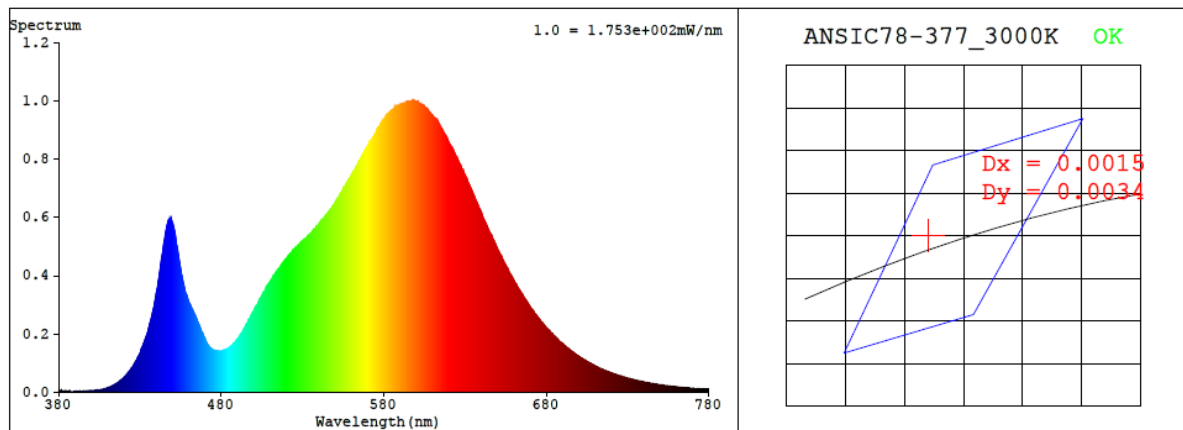
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.</p> <p>The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load.</p> <p>The sample was measured using 4π geometry and operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780nm.</p>

Test Result

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.549	65.5	0.995
277.0	60	0.254	64.8	0.920

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3130	76.1	-19	0.0011	79	95	-14%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4295$ $y = 0.4042$ / $u' = 0.2457$ $v' = 0.5203$ ($duv=1.13e-03$)

CCT= 3130K Prcp WL: Ld=581.9nm Purity=50.2%

Peak WL: Lp=598nm FWHM: =123.1nm Ratio:R=21.0% G=76.8% B=2.2%

Render Index: Ra = 76.1 AvgR = 68.1 TM30:Rf=79 Rg=94

EEL: 0.10158 A++ Highest

R1 =73 R2 =85 R3 =95 R4 =73 R5 =73 R6 =80 R7 =80
R8 =50 R9 =-19 R10=65 R11=70 R12=58 R13=75 R14=97 R15=65

4.1 Integrating Sphere Test

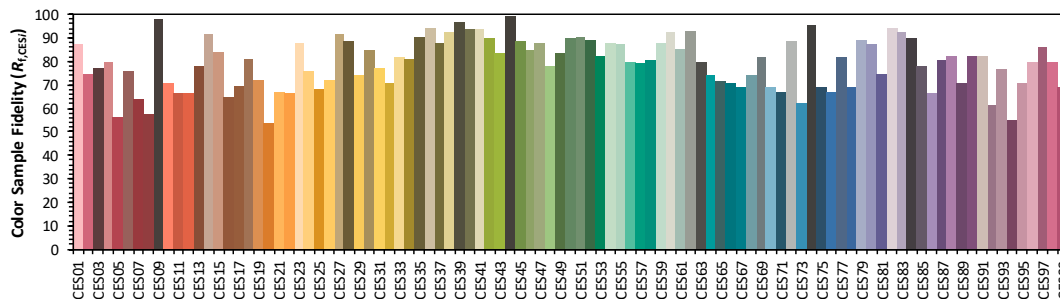
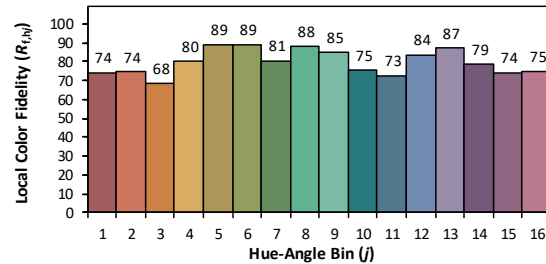
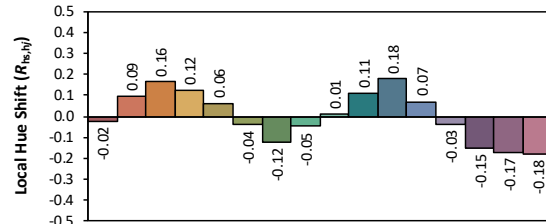
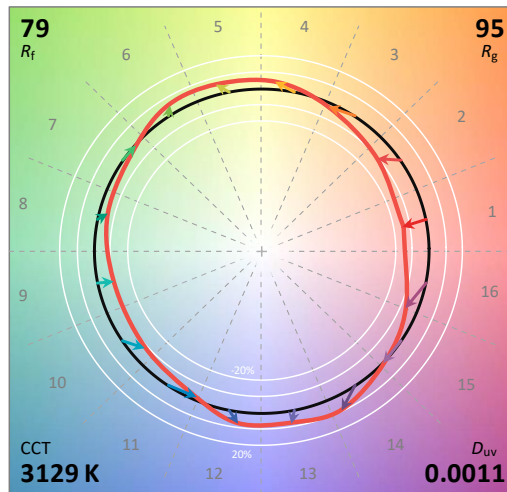
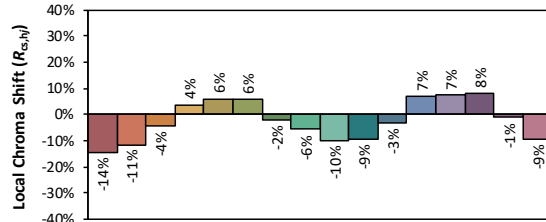
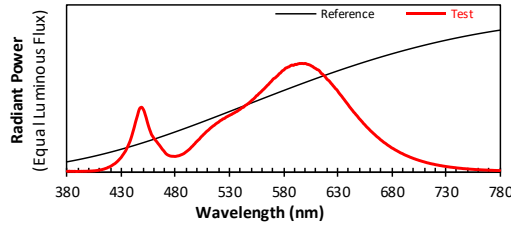
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2023/6/14

Model: W34M @ 60W / 3000K



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

x 0.4295
 y 0.4040
 u' 0.2458
 v' 0.5203

CIE 13.3-1995
(CRI)

R_a 76
 R_g -19

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	3.90E-06	447	5.83E-04	514	4.14E-04	581	9.44E-04	648	5.16E-04	715	7.71E-05
381	3.10E-06	448	5.91E-04	515	4.22E-04	582	9.54E-04	649	5.03E-04	716	7.44E-05
382	4.70E-06	449	5.93E-04	516	4.28E-04	583	9.57E-04	650	4.90E-04	717	7.25E-05
383	2.60E-06	450	5.78E-04	517	4.37E-04	584	9.63E-04	651	4.80E-04	718	7.03E-05
384	3.40E-06	451	5.60E-04	518	4.44E-04	585	9.65E-04	652	4.68E-04	719	6.88E-05
385	2.90E-06	452	5.28E-04	519	4.51E-04	586	9.73E-04	653	4.57E-04	720	6.60E-05
386	2.80E-06	453	4.96E-04	520	4.57E-04	587	9.79E-04	654	4.44E-04	721	6.40E-05
387	3.60E-06	454	4.58E-04	521	4.66E-04	588	9.82E-04	655	4.35E-04	722	6.22E-05
388	1.80E-06	455	4.25E-04	522	4.73E-04	589	9.79E-04	656	4.24E-04	723	6.04E-05
389	1.80E-06	456	3.93E-04	523	4.78E-04	590	9.84E-04	657	4.12E-04	724	5.83E-05
390	2.50E-06	457	3.67E-04	524	4.86E-04	591	9.89E-04	658	4.03E-04	725	5.63E-05
391	3.40E-06	458	3.40E-04	525	4.89E-04	592	9.86E-04	659	3.93E-04	726	5.51E-05
392	2.60E-06	459	3.26E-04	526	4.95E-04	593	9.92E-04	660	3.83E-04	727	5.29E-05
393	3.80E-06	460	3.09E-04	527	5.03E-04	594	9.94E-04	661	3.73E-04	728	5.14E-05
394	3.00E-06	461	2.96E-04	528	5.07E-04	595	9.97E-04	662	3.64E-04	729	4.99E-05
395	4.10E-06	462	2.85E-04	529	5.14E-04	596	9.96E-04	663	3.54E-04	730	4.81E-05
396	3.60E-06	463	2.73E-04	530	5.18E-04	597	9.97E-04	664	3.46E-04	731	4.68E-05
397	3.90E-06	464	2.59E-04	531	5.24E-04	598	9.96E-04	665	3.36E-04	732	4.53E-05
398	4.10E-06	465	2.47E-04	532	5.28E-04	599	9.95E-04	666	3.27E-04	733	4.40E-05
399	5.30E-06	466	2.33E-04	533	5.35E-04	600	9.97E-04	667	3.19E-04	734	4.24E-05
400	4.80E-06	467	2.19E-04	534	5.40E-04	601	9.94E-04	668	3.11E-04	735	4.12E-05
401	5.10E-06	468	2.05E-04	535	5.45E-04	602	9.89E-04	669	3.02E-04	736	4.02E-05
402	6.30E-06	469	1.95E-04	536	5.52E-04	603	9.88E-04	670	2.93E-04	737	3.87E-05
403	6.50E-06	470	1.82E-04	537	5.55E-04	604	9.84E-04	671	2.86E-04	738	3.77E-05
404	7.60E-06	471	1.69E-04	538	5.63E-04	605	9.80E-04	672	2.77E-04	739	3.67E-05
405	7.90E-06	472	1.60E-04	539	5.69E-04	606	9.73E-04	673	2.69E-04	740	3.50E-05
406	9.20E-06	473	1.54E-04	540	5.75E-04	607	9.69E-04	674	2.63E-04	741	3.39E-05
407	1.02E-05	474	1.49E-04	541	5.85E-04	608	9.60E-04	675	2.56E-04	742	3.30E-05
408	1.18E-05	475	1.45E-04	542	5.91E-04	609	9.54E-04	676	2.48E-04	743	3.19E-05
409	1.31E-05	476	1.43E-04	543	5.94E-04	610	9.49E-04	677	2.41E-04	744	3.11E-05
410	1.49E-05	477	1.42E-04	544	6.04E-04	611	9.41E-04	678	2.35E-04	745	3.00E-05
411	1.74E-05	478	1.42E-04	545	6.12E-04	612	9.38E-04	679	2.28E-04	746	2.84E-05
412	1.89E-05	479	1.41E-04	546	6.17E-04	613	9.31E-04	680	2.20E-04	747	2.78E-05
413	2.21E-05	480	1.41E-04	547	6.25E-04	614	9.19E-04	681	2.15E-04	748	2.73E-05
414	2.45E-05	481	1.43E-04	548	6.32E-04	615	9.05E-04	682	2.10E-04	749	2.63E-05
415	2.82E-05	482	1.45E-04	549	6.41E-04	616	9.00E-04	683	2.03E-04	750	2.59E-05
416	3.14E-05	483	1.47E-04	550	6.50E-04	617	8.89E-04	684	1.98E-04	751	2.50E-05
417	3.53E-05	484	1.50E-04	551	6.60E-04	618	8.81E-04	685	1.93E-04	752	2.39E-05
418	4.09E-05	485	1.54E-04	552	6.67E-04	619	8.69E-04	686	1.86E-04	753	2.32E-05
419	4.36E-05	486	1.58E-04	553	6.77E-04	620	8.55E-04	687	1.81E-04	754	2.24E-05
420	4.95E-05	487	1.63E-04	554	6.86E-04	621	8.46E-04	688	1.75E-04	755	2.18E-05
421	5.48E-05	488	1.68E-04	555	6.99E-04	622	8.39E-04	689	1.71E-04	756	2.12E-05
422	6.20E-05	489	1.76E-04	556	7.04E-04	623	8.27E-04	690	1.67E-04	757	2.03E-05
423	6.86E-05	490	1.83E-04	557	7.16E-04	624	8.14E-04	691	1.61E-04	758	1.97E-05
424	7.40E-05	491	1.91E-04	558	7.25E-04	625	8.03E-04	692	1.56E-04	759	1.91E-05
425	8.27E-05	492	1.99E-04	559	7.33E-04	626	7.90E-04	693	1.51E-04	760	1.87E-05
426	9.14E-05	493	2.07E-04	560	7.44E-04	627	7.80E-04	694	1.47E-04	761	1.81E-05
427	1.01E-04	494	2.17E-04	561	7.54E-04	628	7.66E-04	695	1.43E-04	762	1.77E-05
428	1.12E-04	495	2.28E-04	562	7.62E-04	629	7.58E-04	696	1.39E-04	763	1.70E-05
429	1.23E-04	496	2.37E-04	563	7.73E-04	630	7.46E-04	697	1.34E-04	764	1.66E-05
430	1.34E-04	497	2.48E-04	564	7.83E-04	631	7.30E-04	698	1.31E-04	765	1.61E-05
431	1.49E-04	498	2.58E-04	565	7.94E-04	632	7.17E-04	699	1.27E-04	766	1.55E-05
432	1.63E-04	499	2.71E-04	566	8.03E-04	633	7.05E-04	700	1.23E-04	767	1.52E-05
433	1.78E-04	500	2.80E-04	567	8.14E-04	634	6.93E-04	701	1.19E-04	768	1.47E-05
434	1.93E-04	501	2.90E-04	568	8.25E-04	635	6.79E-04	702	1.16E-04	769	1.38E-05
435	2.14E-04	502	2.98E-04	569	8.35E-04	636	6.67E-04	703	1.12E-04	770	1.40E-05
436	2.34E-04	503	3.11E-04	570	8.48E-04	637	6.53E-04	704	1.09E-04	771	1.32E-05
437	2.57E-04	504	3.22E-04	571	8.58E-04	638	6.40E-04	705	1.05E-04	772	1.30E-05
438	2.80E-04	505	3.31E-04	572	8.62E-04	639	6.27E-04	706	1.02E-04	773	1.28E-05
439	3.09E-04	506	3.42E-04	573	8.70E-04	640	6.14E-04	707	9.94E-05	774	1.22E-05
440	3.42E-04	507	3.51E-04	574	8.80E-04	641	5.99E-04	708	9.62E-05	775	1.15E-05
441	3.77E-04	508	3.62E-04	575	8.89E-04	642	5.87E-04	709	9.33E-05	776	1.15E-05
442	4.12E-04	509	3.71E-04	576	9.02E-04	643	5.74E-04	710	9.06E-05	777	1.09E-05
443	4.52E-04	510	3.79E-04	577	9.08E-04	644	5.62E-04	711	8.76E-05	778	1.07E-05
444	4.86E-04	511	3.87E-04	578	9.18E-04	645	5.49E-04	712	8.48E-05	779	1.07E-05
445	5.20E-04	512	3.97E-04	579	9.29E-04	646	5.39E-04	713	8.17E-05	780	1.07E-05
446	5.57E-04	513	4.06E-04	580	9.35E-04	647	5.26E-04	714	7.98E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	W34M @ 60W / 3000K	Sample ID	230612002-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	25.0	Humidity (%RH)	42.1

Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using a type C goniophotometer and software.</p> <p>The ambient temperature shall be maintained at $25 \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample.</p> <p>The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ± 0.2 percent under load.</p> <p>The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1.0° vertical intervals and 15° horizontal intervals.</p>

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.0	60	0.549	65.5	0.995
NON-WORST CASE	277.0	60	0.254	64.8	0.920

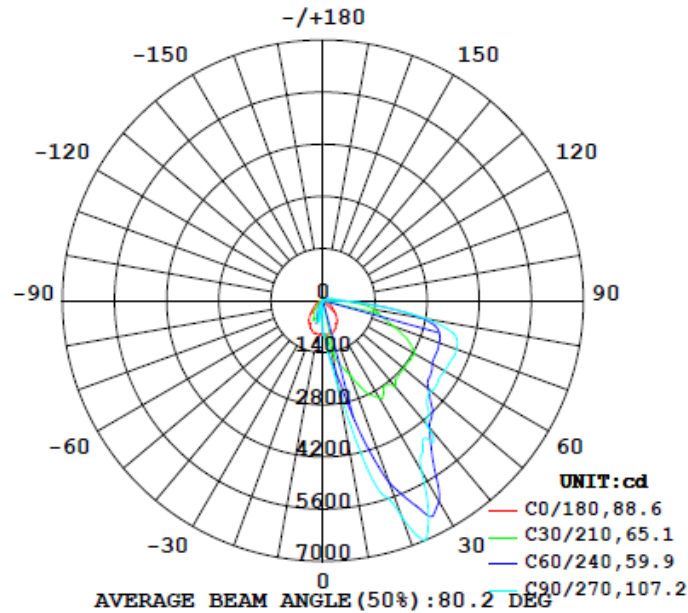
Test Result

Result Type	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement (80°-90°)	BUG
		C0-180	C90-270	C0-180	C90-270			
0°-180° zones	8879	90.3	124.5	63.4	61.3	135.6	6.5%	B1-U3-G4
0°-90° zones	8581	90.3	124.5	63.4	61.3	131.0	6.8%	B1-U3-G4

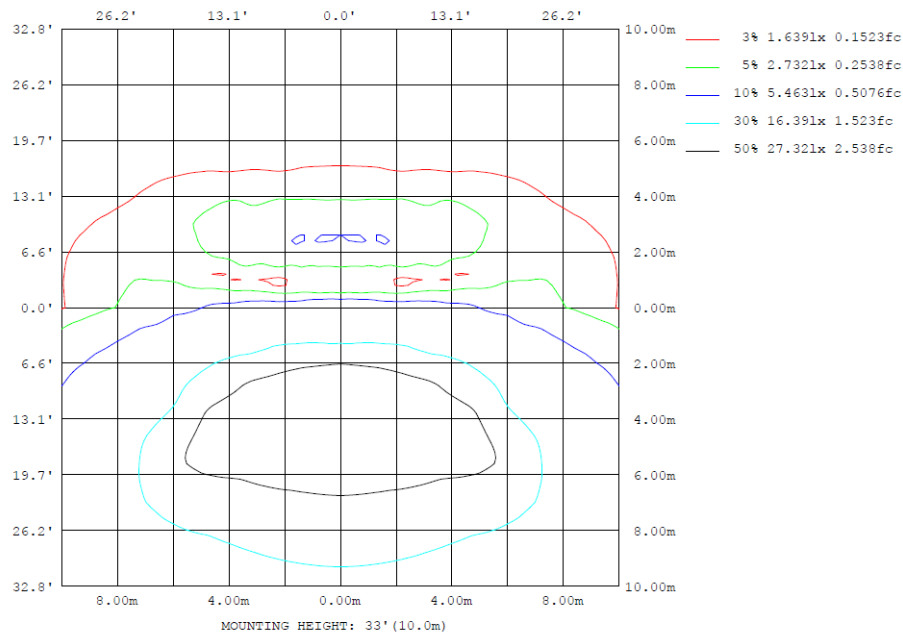
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

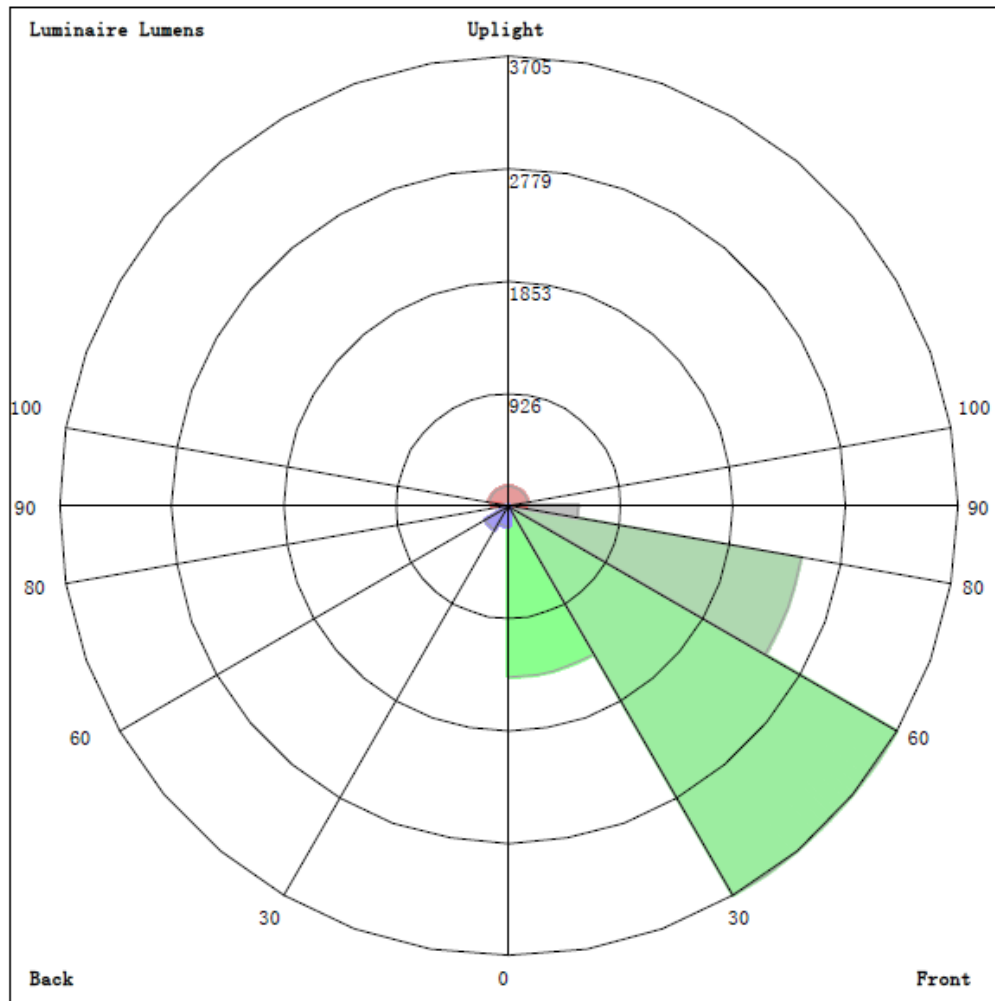
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	± zone	± total	±lum, lamp
10	920.7	1709	2390	1709	920.7	200.8	414.6	200.8	0- 10	77.55	77.55	0.87,0.87
20	860.5	3474	6157	3474	860.5	625.9	334.6	625.9	10- 20	449.6	527.1	5.94,5.94
30	717.8	5342	5316	5342	717.8	369.4	171.8	369.4	20- 30	1046	1573	17.7,17.7
40	572.5	5398	4323	5398	572.5	220.4	64.56	220.4	30- 40	1292	2865	32.3,32.3
50	362.5	3804	3775	3804	362.5	93.31	11.49	93.31	40- 50	1333	4198	47.3,47.3
60	238.3	3070	3778	3070	238.3	36.38	2.702	36.38	50- 60	1304	5502	62,62
70	148.9	2868	3818	2868	148.9	20.35	0.7524	20.35	60- 70	1303	6805	76.6,76.6
80	56.67	2548	2807	2548	56.67	15.35	1.849	15.35	70- 80	1195	8000	90.1,90.1
90	16.75	485.9	542.7	485.9	16.75	10.06	2.938	10.06	80- 90	580.4	8581	96.6,96.6
100	11.90	189.5	290.7	189.5	11.90	5.511	3.538	5.511	90-100	137.4	8718	98.2,98.2
110	8.894	92.49	128.9	92.49	8.894	5.021	3.670	5.021	100-110	66.33	8784	98.9,98.9
120	6.700	74.22	92.42	74.22	6.700	4.720	3.609	4.720	110-120	37.34	8822	99.4,99.4
130	5.212	53.21	74.83	53.21	5.212	4.525	4.057	4.525	120-130	26.00	8848	99.6,99.6
140	4.044	29.61	64.45	29.61	4.044	4.037	4.177	4.037	130-140	18.01	8866	99.9,99.9
150	3.132	16.36	29.90	16.36	3.132	3.498	3.775	3.498	140-150	8.379	8874	99.9,99.9
160	2.406	7.840	13.29	7.840	2.406	3.228	2.770	3.228	150-160	3.619	8878	100,100
170	1.947	1.441	1.485	1.441	1.947	2.373	1.647	2.373	160-170	1.029	8879	100,100
180	2.218	2.005	1.815	2.005	2.218	2.103	1.786	2.103	170-180	0.1769	8879	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	77.55	0-10	77.55	0.87%
10-20	449.56	0-20	527.11	5.94%
20-30	1045.57	0-30	1572.68	17.71%
30-40	1292.10	0-40	2864.78	32.27%
40-50	1333.31	0-50	4198.09	47.28%
50-60	1304.02	0-60	5502.11	61.97%
60-70	1303.01	0-70	6805.12	76.64%
70-80	1195.19	0-80	8000.31	90.11%
80-90	580.43	0-90	8580.74	96.64%
90-100	137.42	0-100	8718.16	98.19%
100-110	66.33	0-110	8784.49	98.94%
110-120	37.34	0-120	8821.83	99.36%
120-130	26.00	0-130	8847.83	99.65%
130-140	18.01	0-140	8865.84	99.85%
140-150	8.38	0-150	8874.22	99.95%
150-160	3.62	0-160	8877.84	99.99%
160-170	1.03	0-170	8878.87	100.00%
170-180	0.18	0-180	8879.05	100.00%

4.2 Goniophotometer Test

LCS/BUG

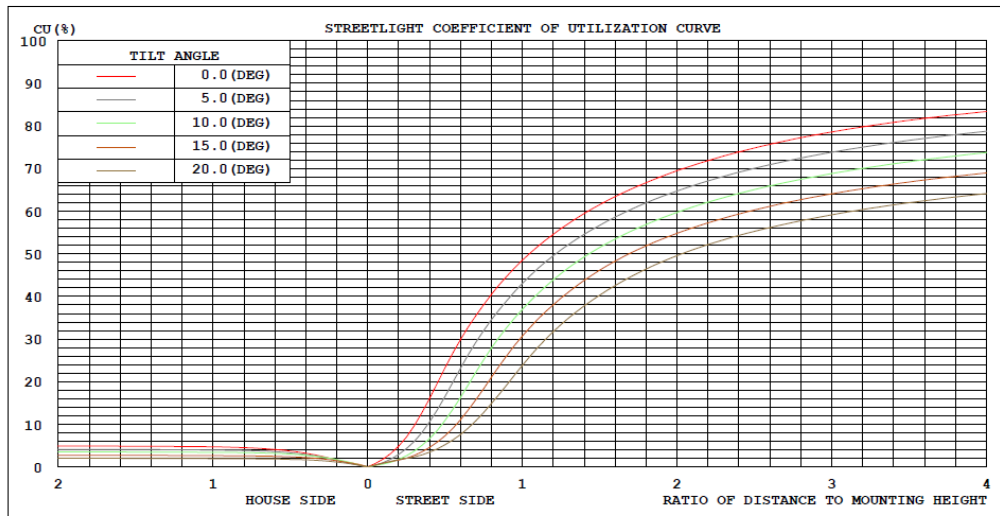


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

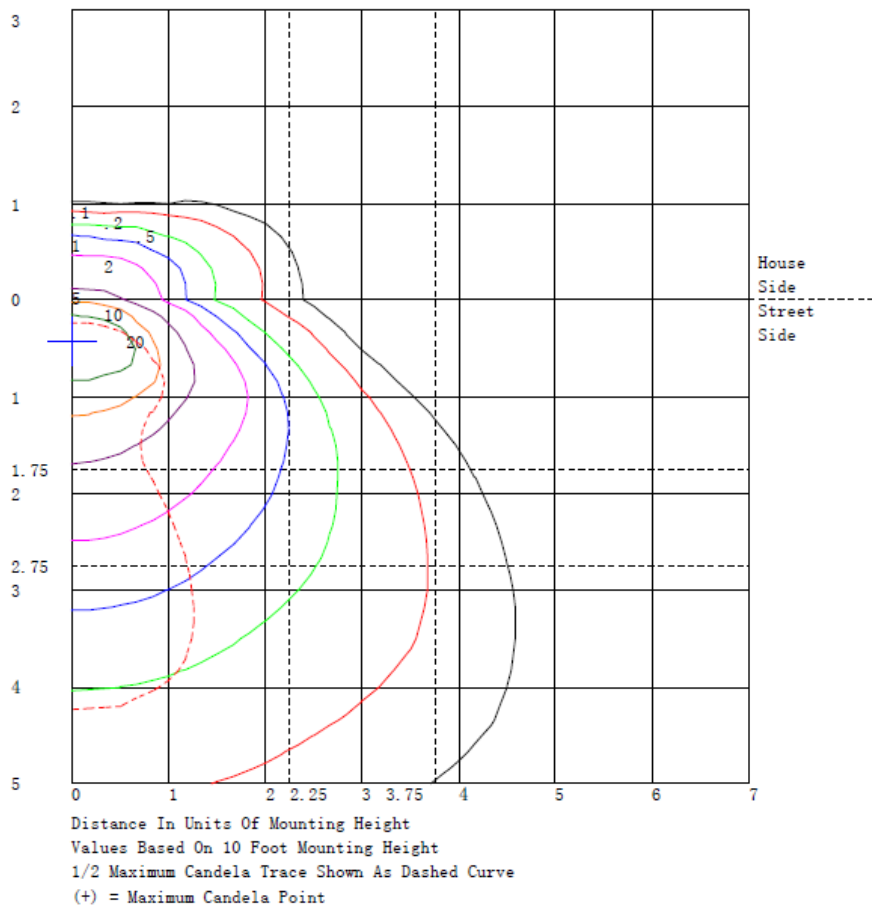
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	1408.2	N.A.	15.9
FM - Front-Medium (30-60)	3705.5	N.A.	41.7
FH - Front-High (60-80)	2449.9	N.A.	27.6
FVH - Front-Very High (80-90)	571.6	N.A.	6.4
BL - Back-Low (0-30)	164.5	N.A.	1.9
BM - Back-Medium (30-60)	223.9	N.A.	2.5
BH - Back-High (60-80)	48.3	N.A.	0.5
BVH - Back-Very High (80-90)	8.8	N.A.	0.1
UL - Uplight-Low (90-100)	137.4	N.A.	1.5
UH - Uplight-High (100-180)	160.9	N.A.	1.8
Total	8879.0	N.A.	100.0
BUG Rating	B1-U3-G4		

4.2 Goniophotometer Test

Coefficients of Utilization



Isolines



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

Table--1 UNIT: cd

C (DEG) γ (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	897	898	898	899	899	900	901	901	902	903	904	904	905	905	905	906	906	907	908
5	906	895	889	890	897	911	932	964	1001	1041	1079	1117	1155	1192	1227	1257	1279	1294	1302
10	921	901	920	976	1090	1227	1372	1495	1608	1709	1779	1842	1908	2007	2110	2208	2292	2355	2390
15	920	977	1070	1200	1386	1594	1807	1960	2128	2333	2663	3029	3407	3758	4081	4359	4566	4705	4770
20	860	1064	1271	1481	1659	1865	2125	2512	2966	3474	4075	4666	5196	5514	5740	5897	6037	6125	6157
25	820	1036	1292	1587	1908	2278	2707	3252	3842	4454	5084	5671	6175	6483	6683	6789	6788	6742	6685
30	718	971	1276	1633	2020	2476	3020	3806	4610	5342	5805	6105	6237	6098	5857	5588	5451	5359	5316
35	660	953	1275	1624	1940	2330	2842	3817	4787	5577	5621	5431	5127	4975	4839	4730	4683	4664	4666
40	573	898	1254	1642	2023	2464	2994	3895	4751	5398	5241	4877	4468	4470	4535	4608	4512	4405	4323
45	441	831	1227	1629	2018	2426	2866	3485	4061	4507	4509	4373	4179	4126	4088	4059	4011	3973	3952
50	363	727	1111	1515	1965	2416	2845	3240	3568	3804	3830	3782	3704	3705	3715	3732	3747	3762	3775
55	291	539	857	1247	1790	2341	2840	3110	3287	3394	3462	3499	3522	3575	3628	3677	3719	3752	3772
60	238	414	693	1076	1682	2301	2840	3007	3063	3070	3177	3288	3396	3483	3561	3629	3696	3747	3778
65	191	324	559	896	1438	2004	2518	2742	2877	2965	3101	3232	3356	3483	3597	3692	3751	3786	3798
70	149	228	401	668	1095	1566	2029	2360	2638	2868	3048	3198	3328	3475	3606	3713	3775	3808	3818
75	100	149	279	492	821	1206	1621	2044	2442	2788	2983	3120	3225	3363	3485	3585	3643	3675	3687
80	56.7	90.1	200	386	676	1022	1403	1827	2222	2548	2656	2687	2678	2714	2745	2770	2786	2797	2807
85	32.5	64.8	147	280	499	741	980	1166	1313	1411	1409	1372	1322	1316	1317	1322	1323	1326	1331
90	16.8	40.8	78.9	131	209	292	371	423	461	486	489	486	481	494	510	525	534	539	543
95	12.4	25.9	45.8	72.1	108	148	190	230	267	295	303	304	304	317	331	343	348	349	349
100	11.9	22.9	36.5	52.6	72.1	93.6	117	142	167	190	206	221	235	252	267	280	287	290	291
105	10.5	20.3	30.8	42.1	54.7	67.7	80.8	93.7	106	118	128	138	148	164	181	195	202	206	208
110	8.89	15.1	22.5	31.0	41.2	52.1	63.1	73.8	83.7	92.5	98.5	104	108	115	121	127	128	129	129
115	7.79	13.5	19.8	26.8	34.3	42.4	51.1	61.2	71.1	79.9	84.9	88.8	92.2	97.8	103	107	108	107	106
120	6.70	12.0	17.4	23.0	28.0	33.7	40.7	52.3	64.1	74.2	77.1	78.1	78.7	83.1	87.7	91.7	92.8	92.9	92.4
125	5.81	9.80	14.1	18.6	22.9	27.9	33.9	43.4	53.3	62.3	67.4	71.1	73.8	76.5	78.6	80.0	80.1	79.8	79.3
130	5.21	7.15	9.97	13.7	18.3	23.8	30.1	37.6	45.4	53.2	60.9	67.7	73.2	75.4	76.3	76.2	75.9	75.4	74.8
135	4.64	5.11	6.89	9.98	15.1	20.9	27.1	32.0	36.9	41.9	47.7	53.7	59.8	66.7	72.8	77.6	78.3	77.7	76.5
140	4.04	3.64	4.68	7.16	12.2	17.9	23.3	25.7	27.6	29.6	33.2	37.2	41.6	46.2	50.7	55.0	59.2	62.5	64.4
145	3.57	2.23	2.37	3.99	8.23	13.1	17.7	19.2	20.2	21.4	24.5	27.9	31.1	33.0	34.5	35.6	37.0	38.1	38.8
150	3.13	2.23	2.21	3.08	5.36	8.15	11.0	12.8	14.5	16.4	19.4	22.4	25.0	26.1	26.8	27.2	28.3	29.2	29.9
155	2.74	2.27	2.22	2.58	3.42	4.63	6.17	8.01	10.1	12.4	15.2	17.8	19.8	20.1	19.8	19.3	19.6	19.9	20.1
160	2.41	2.33	2.27	2.23	1.95	1.89	2.24	3.81	5.76	7.84	9.64	11.2	12.5	13.1	13.3	13.4	13.4	13.3	13.3
165	2.07	2.05	2.01	1.96	1.81	1.70	1.67	1.78	2.05	2.53	3.48	4.54	5.57	6.26	6.80	7.22	7.48	7.65	7.75
170	1.95	1.91	1.87	1.82	1.77	1.70	1.63	1.57	1.50	1.44	1.38	1.33	1.29	1.25	1.22	1.23	1.30	1.40	1.48
175	2.05	2.04	2.01	1.99	1.95	1.92	1.88	1.84	1.79	1.75	1.70	1.65	1.60	1.56	1.53	1.51	1.48	1.47	1.48
180	2.22	2.21	2.21	2.19	2.17	2.14	2.11	2.08	2.04	2.00	1.96	1.92	1.88	1.84	1.81	1.79	1.79	1.80	1.82

C (DEG)																	UNIT: cd		
γ (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	907	906	906	905	905	905	904	904	903	902	901	901	900	899	899	898	898	897	904
5	1294	1279	1257	1227	1192	1155	1117	1079	1041	1001	964	932	911	897	890	889	895	906	832
10	2355	2292	2208	2110	2007	1908	1842	1779	1709	1608	1495	1372	1227	1090	976	920	901	921	662
15	4705	4566	4359	4081	3758	3407	3029	2663	2333	2128	1960	1807	1594	1386	1200	1070	977	920	601
20	6125	6037	5897	5740	5514	5196	4666	4075	3474	2966	2512	2125	1865	1659	1481	1271	1064	860	532
25	6742	6788	6789	6683	6483	6175	5671	5084	4454	3842	3252	2707	2278	1908	1587	1292	1036	820	509
30	5359	5451	5588	5857	6098	6237	6105	5805	5342	4610	3806	3020	2476	2020	1633	1276	971	718	513
35	4664	4683	4730	4839	4975	5127	5431	5621	5577	4787	3817	2842	2330	1940	1624	1275	953	660	551
40	4405	4512	4608	4535	4470	4468	4877	5241	5398	4751	3895	2994	2464	2023	1642	1254	898	573	527
45	3973	4011	4059	4088	4126	4179	4373	4509	4507	4061	3485	2866	2426	2018	1629	1227	831	441	461
50	3762	3747	3732	3715	3705	3704	3782	3830	3804	3568	3240	2845	2416	1965	1515	1111	727	363	370
55	3752	3719	3677	3628	3575	3522	3499	3462	3394	3287	3110	2840	2341	1790	1247	857	539	291	304
60	3747	3696	3629	3561	3483	3396	3288	3177	3070	3063	3007	2840	2301	1682	1076	693	414	238	250
65	3786	3751	3692	3597	3483	3356	3232	3101	2965	2877	2742	2518	2004	1438	896	559	324	191	198
70	3808	3775	3713	3606	3475	3328	3198	3048	2868	2638	2360	2029	1566	1095	668	401	228	149	141
75	3675	3643	3585	3485	3363	3225	3120	2983	2788	2442	2044	1621	1206	821	492	279	149	100	90.4
80	2797	2786	2770	2745	2714	2678	2687	2656	2548	2222	1827	1403	1022	676	386	200	90.1	56.7	52.6
85	1326	1323	1322	1317	1316	1322	1372	1409	1411	1313	1166	980	741	499	280	147	64.8	32.5	35.5
90	539	534	525	510	494	481	486	489	486	461	423	371	292	209	131	78.9	40.8	16.8	18.8
95	349	348	343	331	317	304	304	303	295	267	230	190	148	108	72.1	45.8	25.9	12.4	13.1
100	290	287	280	267	252	235	221	206	190	167	142	117	93.6	72.1	52.6	36.5	22.9	11.9	11.4
105	206	202	195	181	164	148	138	128	118	106	93.7	80.8	67.7	54.7	42.1	30.8	20.3	10.5	10.0
110	129	128	127	121	115	108	104	98.5	92.5	83.7	73.8	63.1	52.1	41.2	31.0	22.5	15.1	8.89	8.79
115	107	108	107	103	97.8	92.2	88.8	84.9	79.9	71.1	61.2	51.1	42.4	34.3	26.8	19.8	13.5	7.79	8.04
120	92.9	92.8	91.7	87.7	83.1	78.7	78.1	77.1	74.2	64.1	52.3	40.7	33.7	28.0	23.0	17.4	12.0	6.70	7.44
125	79.8	80.1	80.0	78.6	76.5	73.8	71.1	67.4	62.3	53.3	43.4	33.9	27.9	22.9	18.6	14.1	9.80	5.81	6.99
130	75.4	75.9	76.2	76.3	75.4	73.2	67.7	60.9	53.2	45.4	37.6	30.1	23.8	18.3	13.7	9.97	7.15	5.21	5.49
135	77.7	78.3	77.6	72.8	66.7	59.8	53.7	47.7	41.9	36.9	32.0	27.1	20.9	15.1	9.98	6.89	5.11	4.64	4.87
140	62.5	59.2	55.0	50.7	46.2	41.6	37.2	33.2	29.6	27.6	25.7	23.3	17.9	12.2	7.16	4.68	3.64	4.4	4.38
145	38.1	37.0	35.6	34.5	33.0	31.1	27.9	24.5	21.4	20.2	19.2	17.7	13.1	8.23	3.99	2.37	2.23	3.57	3.98
150	29.2	28.3	27.2	26.8	26.1	25.0	22.4	19.4	16.4	14.5	12.8	11.0	8.15	5.36	3.08	2.21	2.23	3.13	3.57
155	19.9	19.6	19.3	19.8	20.1	19.8	17.8	15.2	12.4	10.1	8.01	6.17	4.63	3.48	2.58	2.22	2.27	2.74	3.20
160	13.3	13.4	13.4	13.3	13.1	12.5	11.2	9.64	7.84	5.76	3.81	2.24	1.89	1.95	2.23	2.27	2.27	2.41	2.80
165	7.65	7.48	7.22	6.80	6.26	5.57	4.54	3.48	2.53	2.05	1.78	1.67	1.70	1.81	1.96	2.01	2.03	2.07	2.50
170	1.40	1.30	1.23	1.22	1.25	1.29	1.33	1.38	1.44	1.50	1.57	1.63	1.70	1.77	1.82	1.87	1.91	1.95	2.27
175	1.47	1.48	1.51	1.53	1.56	1.60	1.65	1.70	1.75	1.79	1.84	1.88	1.92	1.95	1.99	2.01	2.04	2.05	2.24
180	1.80	1.79	1.79	1.81	1.84	1.88	1.92	1.96	2.00	2.04	2.08	2.11	2.14	2.17	2.19	2.21	2.21	2.22	2.24

Table--3

UNIT: °C

C (DBG) y (DBG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	909	912	913	913	912	911	911	911	912	912	911	910	909	907	907	908	908	908	907
5	749	656	538	422	320	267	234	215	202	196	194	190	188	186	185	184	184	184	185
10	459	310	234	199	192	183	186	201	232	268	303	324	341	357	382	402	415	402	382
15	364	211	165	183	249	344	448	543	573	583	584	600	613	619	603	584	569	584	603
20	309	193	236	346	480	555	606	626	571	496	418	385	365	354	343	337	335	337	343
25	305	209	295	434	570	545	485	412	383	360	339	306	275	250	244	244	248	244	244
30	374	299	332	399	467	452	417	369	327	285	247	219	197	181	174	171	172	171	174
35	469	416	410	417	423	387	340	289	244	204	173	166	167	171	165	159	156	159	165
40	485	447	415	385	353	309	264	220	184	152	125	101	81.8	68.2	63.5	62.9	64.6	62.9	63.5
45	463	446	400	343	283	240	200	164	126	92.5	64.8	50.4	42.1	37.9	33.6	31.3	30.8	31.3	33.6
50	365	348	313	269	222	176	132	93.3	66.1	45.4	30.7	21.7	16.7	14.4	12.3	11.4	11.5	11.4	12.3
55	303	288	253	209	161	120	82.3	51.0	34.1	23.7	17.9	12.2	8.60	6.55	5.47	5.24	5.56	5.24	5.47
60	249	234	199	157	114	82.7	56.8	36.4	24.4	16.9	12.5	8.14	5.16	3.36	2.55	2.42	2.70	2.42	2.55
65	194	180	145	106	68.9	49.4	35.9	26.8	19.2	13.8	9.89	6.10	3.22	1.26	0.61	0.60	0.94	0.60	0.61
70	129	114	92.6	69.9	48.7	36.1	27.0	20.3	15.0	11.0	7.93	4.87	2.45	0.76	0.31	0.40	0.75	0.40	0.31
75	80.1	69.4	57.6	46.2	35.7	28.0	21.8	16.8	12.9	9.82	7.32	4.78	2.73	1.25	0.88	0.95	1.25	0.95	0.88
80	48.3	43.6	38.4	33.1	27.9	23.3	19.1	15.4	12.0	9.11	6.63	4.55	2.94	1.83	1.54	1.61	1.85	1.61	1.54
85	36.6	35.9	32.2	27.5	22.5	19.1	16.1	13.4	10.7	8.21	6.06	4.43	3.20	2.38	2.17	2.22	2.41	2.22	2.17
90	19.9	19.9	18.5	16.4	14.1	12.7	11.4	10.1	8.22	6.42	4.81	3.87	3.24	2.89	2.79	2.83	2.94	2.83	2.79
95	13.2	12.9	11.9	10.5	9.07	8.07	7.16	6.31	5.35	4.47	3.76	3.42	3.26	3.22	3.22	3.25	3.29	3.25	3.22
100	10.8	10.1	9.22	8.34	7.47	6.77	6.12	5.51	4.83	4.23	3.74	3.54	3.46	3.47	3.48	3.51	3.54	3.51	3.48
105	9.46	8.84	8.11	7.37	6.67	6.15	5.68	5.24	4.71	4.23	3.84	3.69	3.64	3.65	3.66	3.68	3.70	3.68	3.66
110	8.55	8.16	7.53	6.83	6.15	5.73	5.36	5.02	4.58	4.17	3.83	3.69	3.64	3.63	3.64	3.65	3.67	3.65	3.64
115	8.05	7.84	7.23	6.51	5.79	5.43	5.15	4.90	4.50	4.13	3.81	3.68	3.63	3.62	3.61	3.62	3.63	3.62	3.61
120	7.80	7.79	7.16	6.34	5.50	5.16	4.91	4.72	4.38	4.07	3.80	3.68	3.63	3.62	3.61	3.61	3.61	3.61	3.61
125	7.66	7.84	7.20	6.29	5.34	4.99	4.77	4.62	4.35	4.11	3.91	3.84	3.81	3.82	3.80	3.79	3.78	3.79	3.80
130	5.66	5.71	5.61	5.42	5.19	4.97	4.74	4.52	4.32	4.14	4.01	4.00	4.02	4.06	4.07	4.07	4.06	4.07	4.07
135	5.02	5.10	5.07	4.97	4.83	4.67	4.49	4.32	4.17	4.06	3.99	4.02	4.08	4.15	4.18	4.20	4.20	4.20	4.18
140	4.60	4.71	4.67	4.55	4.39	4.26	4.14	4.04	3.95	3.89	3.87	3.93	4.01	4.09	4.14	4.17	4.18	4.17	4.14
145	4.22	4.37	4.35	4.25	4.11	3.97	3.84	3.73	3.69	3.69	3.71	3.78	3.86	3.95	4.01	4.04	4.05	4.04	4.01
150	3.87	4.03	4.00	3.88	3.72	3.62	3.55	3.50	3.50	3.52	3.57	3.62	3.67	3.72	3.76	3.78	3.78	3.78	3.76
155	3.53	3.71	3.69	3.58	3.43	3.37	3.33	3.31	3.29	3.28	3.29	3.32	3.36	3.38	3.35	3.31	3.25	3.31	3.35
160	3.19	3.39	3.40	3.32	3.22	3.22	3.23	3.23	3.18	3.12	3.06	3.04	3.03	3.00	2.93	2.85	2.77	2.85	2.93
165	2.82	3.03	3.08	3.05	2.99	2.98	2.96	2.93	2.86	2.78	2.69	2.59	2.50	2.41	2.34	2.29	2.24	2.29	2.34
170	2.50	2.65	2.68	2.66	2.59	2.54	2.46	2.37	2.24	2.10	1.96	1.84	1.73	1.66	1.63	1.63	1.65	1.63	1.63
175	2.37	2.46	2.50	2.49	2.44	2.34	2.22	2.09	2.00	1.91	1.84	1.77	1.71	1.67	1.66	1.67	1.69	1.67	1.66
180	2.16	2.14	2.15	2.16	2.16	2.15	2.13	2.10	2.05	1.98	1.92	1.87	1.82	1.79	1.78	1.77	1.79	1.77	1.78

C (DBG) y (DBG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355				
0	907	909	910	911	912	912	911	911	911	912	913	913	912	909	904				
5	186	188	190	194	196	202	215	234	267	320	422	538	656	749	832				
10	357	341	324	303	268	232	201	186	183	192	199	234	310	459	662				
15	619	613	600	584	583	573	543	448	344	249	183	165	211	364	601				
20	354	365	385	418	496	571	626	606	555	480	346	236	193	309	532				
25	250	275	306	339	360	383	412	485	545	570	434	295	209	305	509				
30	181	197	219	247	285	327	369	417	452	467	399	332	299	374	513				
35	171	167	166	173	204	244	289	340	387	423	417	410	416	469	551				
40	68.2	81.8	101	125	152	184	220	264	309	353	385	415	447	485	527				
45	37.9	42.1	50.4	64.8	92.5	126	164	200	240	283	343	400	446	463	461				
50	14.4	16.7	21.7	30.7	45.4	66.1	93.3	132	176	222	269	313	348	365	370				
55	6.55	8.60	12.2	17.9	23.7	34.1	51.0	82.3	120	161	209	253	288	303	304				
60	3.36	5.16	8.14	12.5	16.9	24.4	36.4	56.8	82.7	114	157	199	234	249	250				
65	1.26	3.22	6.10	9.89	13.8	19.2	26.8	35.9	49.4	68.9	106	145	180	194	198				
70	0.76	2.45	4.87	7.93	11.0	15.0	20.3	27.0	36.1	48.7	69.9	92.6	114	129	141				
75	1.25	2.73	4.78	7.32	9.82	12.9	16.8	21.8	28.0	35.7	46.2	57.6	69.4	80.1	90.4				
80	1.83	2.94	4.55	6.63	9.11	12.0	15.4	19.1	23.3	27.9	33.1	38.4	43.6	48.3	52.6				
85	2.38	3.20	4.43	6.06	8.21	10.7	13.4	16.1	19.1	22.5	27.5	32.2	35.9	36.6	35.5				
90	2.89	3.24	3.87	4.81	6.42	8.22	10.1	11.4	12.7	14.1	16.4	18.5	19.9	19.9	18.8				
95	3.22	3.26	3.42	3.76	4.47	5.35	6.31	7.16	8.07	9.07	10.5	11.9	12.9	13.2	13.1				
100	3.47	3.46	3.54	3.74	4.23	4.83	5.51	6.12	6.77	7.47	8.34	9.22	10.1	10.8	11.4				
105	3.65	3.64	3.69	3.84	4.23	4.71	5.24	5.68	6.15	6.67	7.37	8.11	8.84	9.46	10.0				
110	3.63	3.64	3.69	3.83	4.17	4.58	5.02	5.36	5.73	6.15	6.83	7.53	8.16	8.55	8.79				
115	3.62	3.63	3.68	3.81	4.13	4.50	4.90	5.15	5.43	5.79	6.51	7.23	7.84	8.05	8.04				
120	3.62	3.63	3.68	3.80	4.07	4.38	4.72	4.91	5.16	5.50	6.34	7.16	7.79	7.80	7.44				
125	3.82	3.81	3.84	3.91	4.11	4.35	4.62	4.77	4.99	5.34	6.29	7.20	7.84	7.66	6.99				
130	4.06	4.02	4.00	4.01	4.14	4.32	4.52	4.74	4.97	5.19	5.42	5.61	5.71	5.66	5.49				
135	4.15	4.08	4.02	3.99	4.06	4.17	4.32	4.49	4.67	4.83	4.97	5.07	5.10	5.02	4.87				
140	4.09	4.01	3.93	3.87	3.89	3.95	4.04	4.14	4.26	4.39	4.55	4.67	4.71	4.60	4.38				
145	3.95	3.86	3.78	3.71	3.69	3.69	3.73	3.84	3.97	4.11	4.25	4.35	4.37	4.22	3.95				
150	3.72	3.67	3.62	3.57	3.52	3.50	3.50	3.55	3.62	3.72	3.88	4.00	4.03	3.87	3.57				
155	3.38	3.36	3.32	3.29	3.28	3.29	3.31	3.33	3.37	3.43	3.58	3.69	3.71	3.53	3.20				
160	3.00	3.03	3.04	3.06	3.12	3.18	3.23	3.23	3.22	3.22	3.32	3.40	3.39	3.19	2.86				
165	2.41	2.50	2.59	2.69	2.78	2.86	2.93	2.96	2.98	2.99	3.05	3.08	3.03	2.82	2.50				
170	1.66	1.73	1.84	1.96	2.10	2.24	2.37	2.46	2.54	2.59	2.66	2.68	2.65	2.50	2.27				
175	1.67	1.71	1.77	1.84	1.91	2.00	2.09	2.22	2.34	2.44	2.49	2.50	2.46	2.37	2.24				
180	1.79	1.82	1.87	1.92	1.98	2.05	2.10	2.13	2.15	2.16	2.16	2.15	2.14	2.16	2.18				

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	W34M @ 60W / 3000K	Sample ID	230612002-S1
Temperature (°C)	25.4	Humidity (%RH)	41.0

Test Method
<p>The samples were tested according to the ANSI C82.77:2014</p> <p>The total harmonic distortion shall be measured to the 40th order.</p> <p>The ambient temperature shall be maintained at $25 \pm 1^{\circ}\text{C}$. The sample measurements were made using a digital power meter and power supply. The sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion was calculated.</p>

Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD(%)
120.0	60	0.549	65.5	0.995	2.45
277.0	60	0.254	64.8	0.920	7.12

5.0 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-F01-019	Temperature & Humidity Meter	2022-11-12	2023-11-11

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