



Photometric Test Report

Relevant Standards

- IES LM-79-2008
- ANSI C82.77:2014

Prepared For RAB Lighting Inc.

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Report Number

DLF2408109-5a

Test Date

2024/8/28

Issue Date

2024/9/1

Prepared By

Wangzun Zhu

Approved By

Kevin Jia

The results contained in this report pertain only to the tested sample.

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1.0 Test Summary

DLC Technical Requirements v5.1

Outdoor - Pole/Arm-Mounted Area and Roadway Luminaires				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2008	1000		178
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	32.9
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		5.41
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	6.55%
		20.00%	277V	13.66%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.994
		0.9	277V	0.942
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	3113
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		86
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	-		22
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		86
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥89		98
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18% ≤ IES Rcs,h1 ≤ +23%		-9%
Zonal Lumen Requirement (0°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	100%		27.65%
Zonal Lumen Requirement (80°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	≤10%		3.28%
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		277
(Goniophotometer - Section 4.2)		Non-Worst Case		120
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		0.021
(Goniophotometer - Section 4.2)		Non-Worst Case		0.039
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		5.41
(Goniophotometer - Section 4.2)		Non-Worst Case		4.63

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/8/28	SA-CLBS	ES1-02	E1
2	Goniophotometer Test	2024/8/28	SA-CLBS	ES1-02	E1
3	THD and PF Test	2024/8/28	SA-CLBS	ES1-02	E1

Remark(If any)

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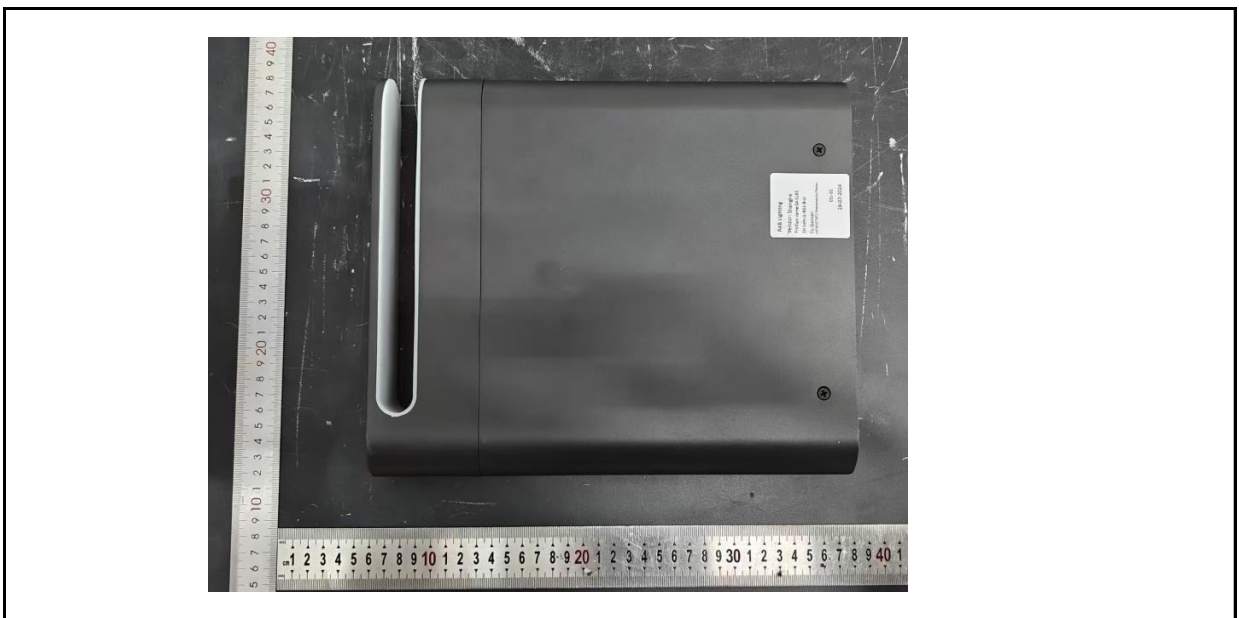
2、 The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.

3.0 Production Description

Luminaire Description: SA-CLBS

Electrical Specification: 120V-277V,50/60HZ

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	SA-CLBS	Sample ID.	E1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	56.0

Test Method

The samples were tested according to the IES LM-79-2008.

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$.

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 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.

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 780 nm.

Test Result

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.05	60	0.039	4.63	0.994
277.02	60	0.021	5.41	0.942

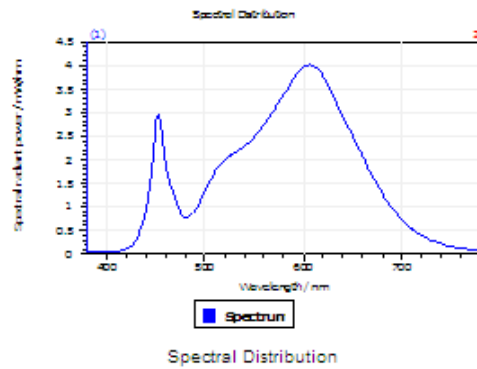
Test Result

CCT (K)	CRI	R9	Duv
3113	86	22	-0.0034

Rf	Rg	IES Rcs,h1
86	98	-9%

4.1 Integrating Sphere Test

Results



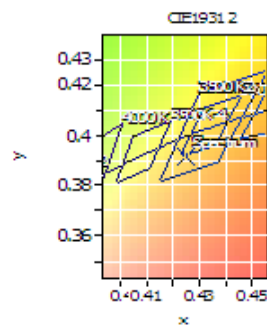
Spectral values

DominantWavelength 583.71 nm
Purity 0.449
PeakWavelength 606.23 nm
Radiant Power 0.6287 W
Width50%:

Color Coordinates

Correlated Color Temperat 3113 K
x: 0.4245 u: 0.2480 u': 0.2480
y: 0.3913 v: 0.3429 v': 0.5144

CRI01	85.4	CRI09	21.8
CRI02	93.4	CRI10	84.4
CRI03	96.0	CRI11	84.5
CRI04	84.2	CRI12	74.0
CRI05	85.7	CRI13	87.6
CRI06	91.8	CRI14	98.7
CRI07	84.0	CRI15	79.2
CRI08	64.8	CRI16	76.5
ResultsCRI	85.7		



FlickDistance 3.4E-003

4.1 Integrating Sphere Test

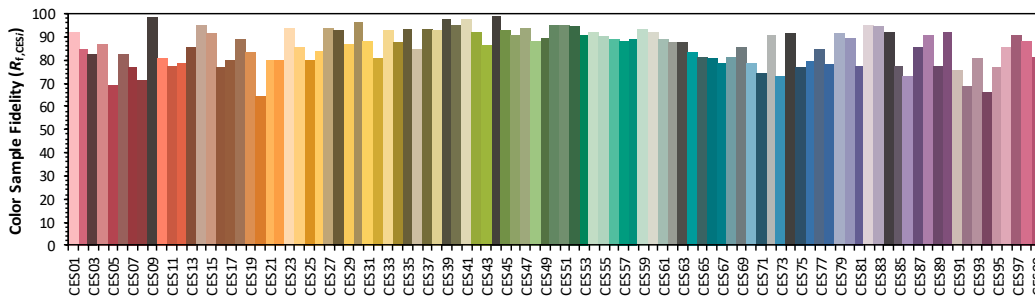
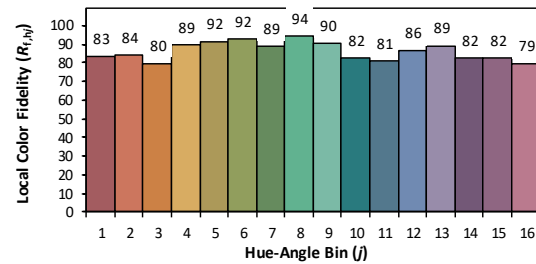
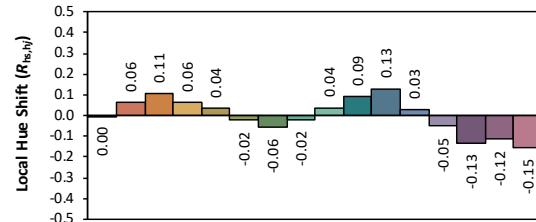
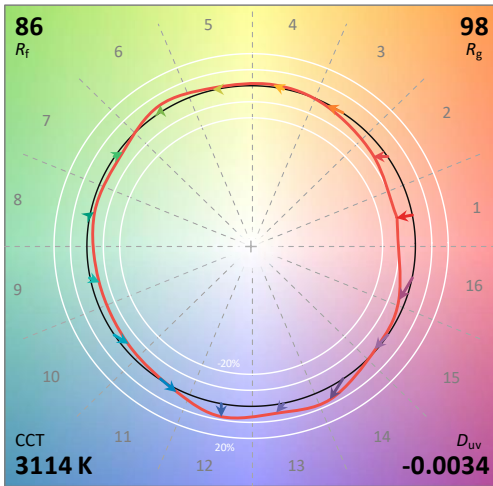
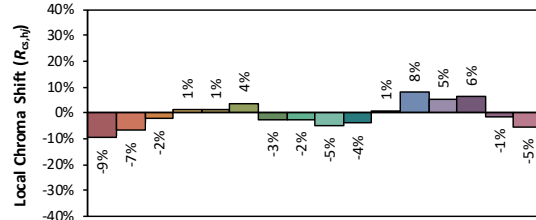
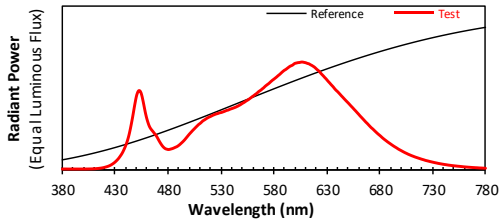
IES TM-30-18 Color Rendition Report

Source: DLF2408109-5a

Manufacturer: RAB Lighting Inc.

Date: 2024/8/28

Model: SA-CLBS



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

x 0.4245
 y 0.3913
 u' 0.2480
 v' 0.5144

CIE 13.3-1995 (CRI)	
R_a	86
R_g	26

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength							
WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)
380	3.63E-05	485	8.11E-04	590	3.71E-03	695	8.46E-04
385	3.59E-05	490	9.14E-04	595	3.86E-03	700	7.29E-04
390	3.56E-05	495	1.10E-03	600	3.97E-03	705	6.25E-04
395	3.60E-05	500	1.33E-03	605	4.01E-03	710	5.36E-04
400	3.67E-05	505	1.54E-03	610	4.00E-03	715	4.63E-04
405	3.90E-05	510	1.73E-03	615	3.91E-03	720	3.98E-04
410	4.53E-05	515	1.88E-03	620	3.77E-03	725	3.41E-04
415	6.28E-05	520	1.99E-03	625	3.57E-03	730	2.92E-04
420	9.84E-05	525	2.08E-03	630	3.36E-03	735	2.49E-04
425	1.67E-04	530	2.14E-03	635	3.14E-03	740	2.13E-04
430	2.98E-04	535	2.21E-03	640	2.93E-03	745	1.82E-04
435	5.27E-04	540	2.28E-03	645	2.71E-03	750	1.58E-04
440	9.13E-04	545	2.36E-03	650	2.51E-03	755	1.37E-04
445	1.66E-03	550	2.48E-03	655	2.30E-03	760	1.17E-04
450	2.73E-03	555	2.60E-03	660	2.08E-03	765	1.01E-04
455	2.80E-03	560	2.74E-03	665	1.87E-03	770	8.68E-05
460	1.90E-03	565	2.90E-03	670	1.66E-03	775	7.51E-05
465	1.47E-03	570	3.05E-03	675	1.47E-03	780	6.52E-05
470	1.20E-03	575	3.21E-03	680	1.29E-03		
475	8.78E-04	580	3.38E-03	685	1.12E-03		
480	7.63E-04	585	3.54E-03	690	9.78E-04		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	SA-CLBS	Sample ID.	E1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	54.0

Test Method

The samples were tested according to the IES LM-79-2008.

Photometric parameters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample.

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.

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 0.5° vertical intervals and 10° horizontal intervals.

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	277.09	60	0.021	5.41	0.942
NON-WROST CASE	120.02	60	0.039	4.63	0.994

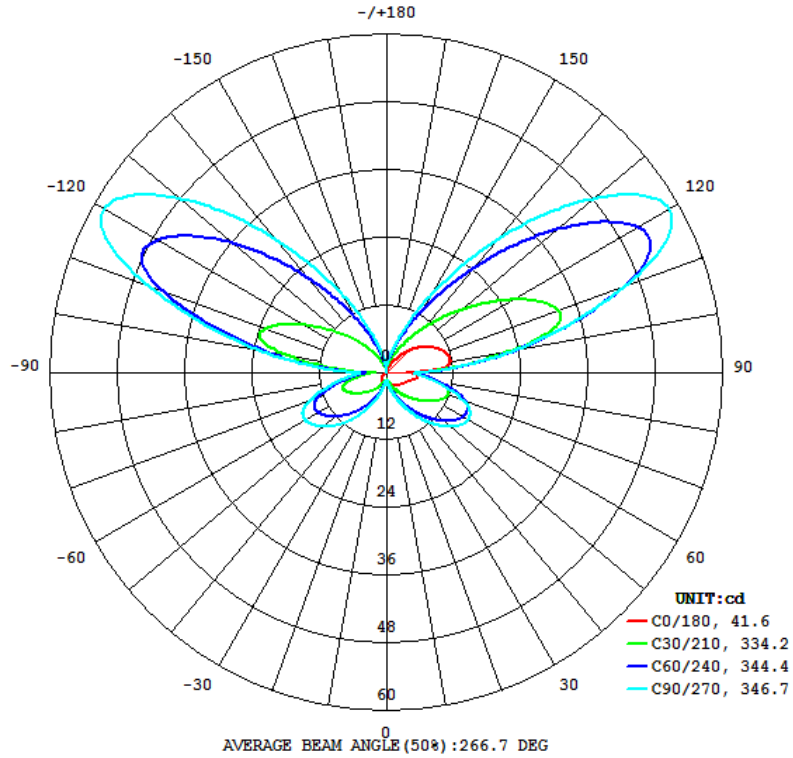
Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
178	202.2	352.9	41.6	346.7	32.9

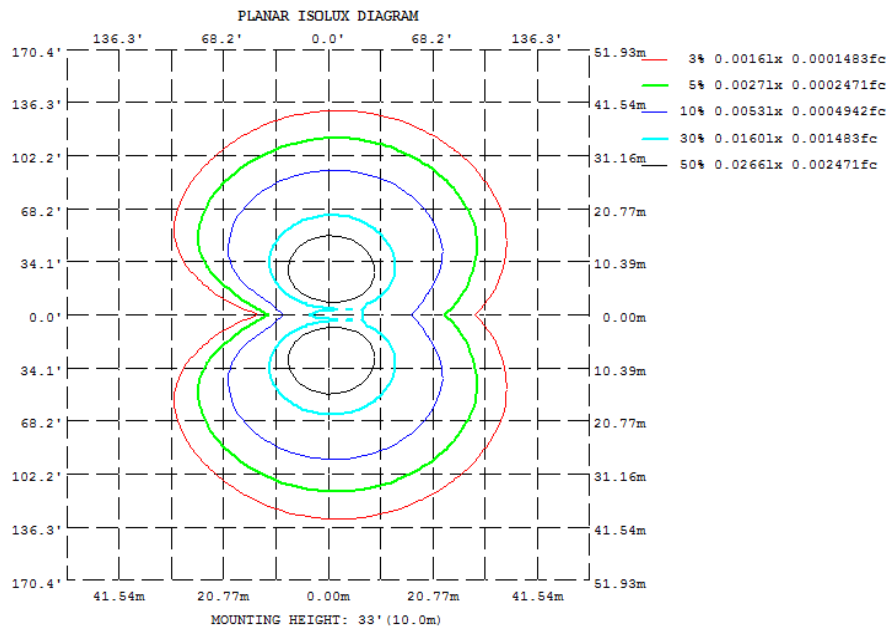
Zonal Lumen Requirement (0° - 90°)	Zonal Lumen Requirement (80° - 90°)	BUG rating
27.65%	3.28%	B0-U3-G0

4.2 Goniophotometer Test

Light Distribution Curve



Isolux Plot



4.2 Goniophotometer Test

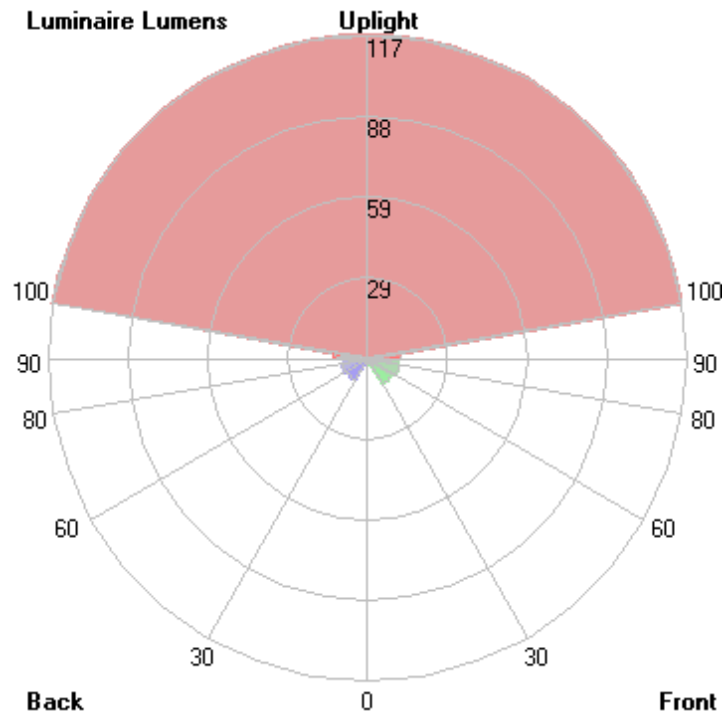
Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	2.433	1.636	1.993	1.497	2.164	1.497	1.993	1.636
20	2.565	3.225	4.482	2.844	1.964	2.844	4.482	3.225
30	2.777	5.403	7.782	4.683	1.693	4.683	7.782	5.403
40	3.041	8.092	11.58	6.926	1.363	6.926	11.58	8.092
50	3.367	11.07	15.01	9.394	0.9916	9.394	15.01	11.07
60	3.809	13.62	16.87	11.44	0.5989	11.44	16.87	13.62
70	4.558	14.13	14.61	11.46	0.2213	11.46	14.61	14.13
80	5.606	9.662	8.671	6.797	0.0434	6.797	8.671	9.662
90	3.557	5.863	5.401	3.726	0.0338	3.726	5.401	5.863
100	11.65	22.51	22.71	20.10	0.0472	20.10	22.71	22.51
110	11.14	42.49	45.10	36.89	0.0754	36.89	45.10	42.49
120	9.198	40.83	58.22	33.72	0.1091	33.72	58.22	40.83
130	6.869	29.01	48.10	23.47	0.1413	23.47	48.10	29.01
140	4.382	17.54	31.18	14.15	0.1707	14.15	31.18	17.54
150	2.184	9.285	16.36	7.334	0.1898	7.334	16.36	9.285
160	0.9015	4.220	6.652	3.045	0.1816	3.045	6.652	4.220
170	0.3608	1.481	1.958	1.035	0.1446	1.035	1.958	1.481
180	0.0021	0.0047	0.0071	0.0057	0.0111	0.0057	0.0071	0.0047
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	0.17	0 - 10	0.17	0.10%
10-20	0.69	0 - 20	0.86	0.48%
20-30	1.84	0 - 30	2.70	1.52%
30-40	3.79	0 - 40	6.49	3.64%
40-50	6.44	0 - 50	12.93	7.26%
50-60	9.31	0 - 60	22.24	12.48%
60-70	11.23	0 - 70	33.47	18.79%
70-80	9.95	0 - 80	43.42	24.37%
80-90	5.85	0 - 90	49.27	27.65%
90-100	11.87	0 - 100	61.14	34.32%
100-110	27.64	0 - 110	88.78	49.83%
110-120	34.18	0 - 120	122.96	69.02%
120-130	27.40	0 - 130	150.36	84.40%
130-140	16.45	0 - 140	166.81	93.63%
140-150	7.78	0 - 150	174.59	98.00%
150-160	2.81	0 - 160	177.40	99.57%
160-170	0.69	0 - 170	178.09	99.96%
170-180	0.07	0 - 180	178.16	100.00%

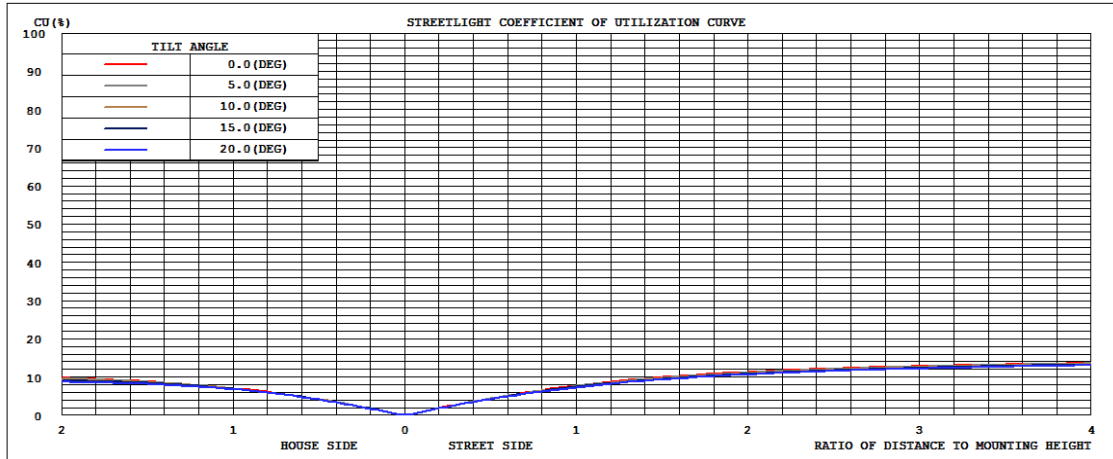
4.2 Goniophotometer Test

LCS/BUG

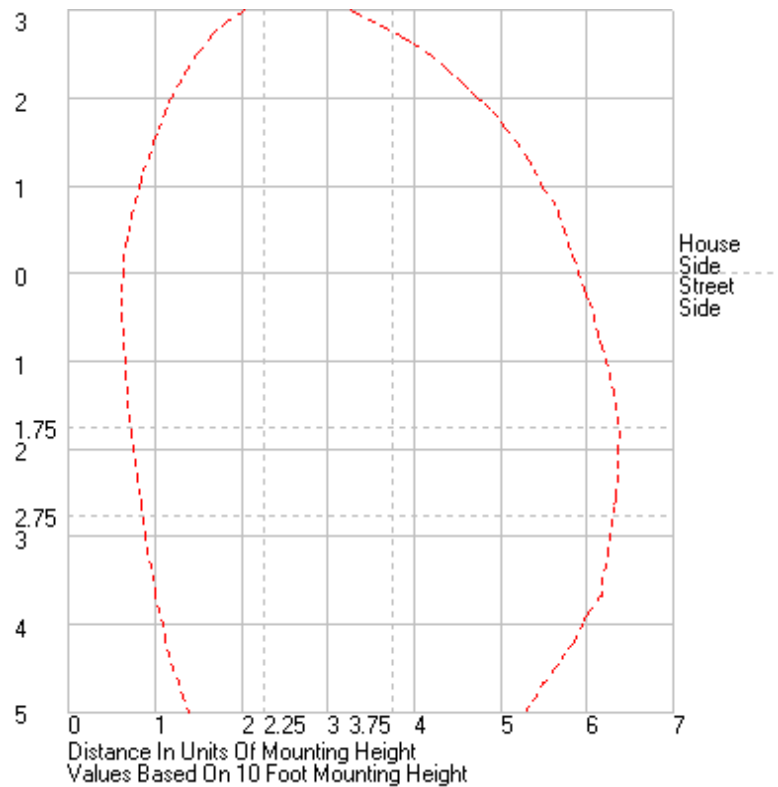


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	1.4	N.A.	0.8
FM - Front-Medium (30-60)	10.5	N.A.	5.9
FH - Front-High (60-80)	11.9	N.A.	6.7
FVH - Front-Very High (80-90)	3.6	N.A.	2.0
BL - Back-Low (0-30)	1.3	N.A.	0.7
BM - Back-Medium (30-60)	9.0	N.A.	5.1
BH - Back-High (60-80)	9.3	N.A.	5.2
BVH - Back-Very High (80-90)	2.2	N.A.	1.2
UL - Uplight-Low (90-100)	11.9	N.A.	6.7
UH - Uplight-High (100-180)	117.0	N.A.	65.7
Total	178.1	N.A.	100.0
BUG Rating	B0-U3-G0		

Coefficients of Utilization



Isolines





4.2 Goniophotometer Test

	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	360
0	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307
1	2.34	2.34	2.32	2.28	2.24	2.2	2.19	2.19	2.21	2.24	2.28	2.31	2.31	2.31	2.28	2.24	2.21	2.19	2.19	2.2	2.24	2.28	2.32	2.34	2.34
2	2.36	2.34	2.26	2.17	2.12	2.09	2.08	2.08	2.1	2.13	2.2	2.27	2.29	2.27	2.2	2.13	2.1	2.08	2.08	2.09	2.12	2.17	2.26	2.34	2.36
3	2.38	2.32	2.19	2.12	2.03	1.93	1.88	1.9	1.98	2.06	2.12	2.22	2.27	2.22	2.12	2.06	1.98	1.9	1.88	1.93	2.03	2.12	2.19	2.32	2.38
4	2.41	2.3	2.15	2.01	1.78	1.65	1.6	1.62	1.7	1.91	2.07	2.17	2.26	2.17	2.07	1.91	1.7	1.62	1.6	1.65	1.78	2.01	2.15	2.3	2.41
5	2.43	2.27	2.13	1.8	1.59	1.47	1.42	1.44	1.51	1.68	1.99	2.12	2.24	2.12	1.99	1.68	1.51	1.44	1.42	1.47	1.59	1.8	2.13	2.27	2.43
6	2.44	2.24	2.01	1.65	1.45	1.4	1.4	1.38	1.38	1.52	1.82	2.09	2.23	2.09	1.82	1.52	1.38	1.38	1.4	1.4	1.45	1.65	2.01	2.24	2.44
7	2.45	2.21	1.86	1.54	1.45	1.49	1.5	1.47	1.4	1.39	1.65	2.06	2.21	2.06	1.65	1.39	1.4	1.47	1.5	1.49	1.45	1.54	1.86	2.21	2.45
8	2.44	2.19	1.76	1.47	1.55	1.62	1.64	1.59	1.49	1.36	1.53	2.02	2.2	2.02	1.53	1.36	1.49	1.59	1.64	1.62	1.55	1.47	1.76	2.19	2.44
9	2.43	2.18	1.69	1.54	1.67	1.78	1.81	1.74	1.6	1.42	1.43	1.97	2.18	1.97	1.43	1.42	1.6	1.74	1.81	1.78	1.67	1.54	1.69	2.18	2.43
10	2.43	2.16	1.62	1.64	1.82	1.95	1.99	1.92	1.74	1.5	1.35	1.89	2.16	1.89	1.35	1.5	1.74	1.92	1.99	1.95	1.82	1.64	1.62	2.16	2.43
11	2.44	2.11	1.58	1.75	1.99	2.15	2.2	2.11	1.89	1.59	1.33	1.79	2.15	1.79	1.33	1.59	1.89	2.11	2.2	2.15	1.99	1.75	1.58	2.11	2.44
12	2.45	2.05	1.61	1.88	2.16	2.36	2.41	2.3	2.05	1.7	1.36	1.69	2.13	1.69	1.36	1.7	2.05	2.3	2.41	2.36	2.16	1.88	1.61	2.05	2.45
13	2.46	1.99	1.68	2.02	2.36	2.58	2.64	2.52	2.23	1.82	1.4	1.59	2.11	1.59	1.4	1.82	2.23	2.52	2.64	2.58	2.36	2.02	1.68	1.99	2.46
14	2.48	1.96	1.76	2.17	2.56	2.81	2.88	2.74	2.41	1.95	1.46	1.5	2.09	1.5	1.46	1.95	2.41	2.74	2.88	2.81	2.56	2.17	1.76	1.96	2.48
15	2.49	1.93	1.85	2.33	2.77	3.05	3.12	2.97	2.6	2.08	1.52	1.43	2.07	1.43	1.52	2.08	2.6	2.97	3.12	3.05	2.77	2.33	1.85	1.93	2.49
16	2.5	1.91	1.95	2.49	2.98	3.3	3.38	3.2	2.8	2.22	1.6	1.36	2.05	1.36	1.6	2.22	2.8	3.2	3.38	3.3	2.98	2.49	1.95	1.91	2.5
17	2.52	1.89	2.05	2.67	3.21	3.56	3.64	3.45	3	2.37	1.67	1.3	2.03	1.3	1.67	2.37	3	3.45	3.64	3.56	3.21	2.67	2.05	1.89	2.52
18	2.53	1.87	2.16	2.85	3.44	3.82	3.91	3.7	3.21	2.52	1.76	1.25	2.01	1.25	1.76	2.52	3.21	3.7	3.91	3.82	3.44	2.85	2.16	1.87	2.53
19	2.55	1.85	2.28	3.03	3.67	4.09	4.19	3.96	3.42	2.68	1.84	1.21	1.99	1.21	1.84	2.68	3.42	3.96	4.19	4.09	3.67	3.03	2.28	1.85	2.55
20	2.56	1.84	2.4	3.22	3.91	4.37	4.48	4.23	3.65	2.84	1.93	1.2	1.96	1.2	1.93	2.84	3.65	4.23	4.48	4.37	3.91	3.22	2.4	1.84	2.56
21	2.58	1.85	2.53	3.42	4.16	4.66	4.78	4.5	3.88	3.01	2.03	1.21	1.94	1.21	2.03	3.01	3.88	4.5	4.78	4.66	4.16	3.42	2.53	1.85	2.58
22	2.6	1.87	2.66	3.62	4.42	4.95	5.08	4.78	4.11	3.17	2.12	1.23	1.92	1.23	2.12	3.17	4.11	4.78	5.08	4.95	4.42	3.62	2.66	1.87	2.6
23	2.62	1.92	2.8	3.82	4.69	5.26	5.4	5.08	4.35	3.35	2.22	1.24	1.89	1.24	2.22	3.35	4.35	5.08	5.4	5.26	4.69	3.82	2.8	1.92	2.62
24	2.64	1.98	2.94	4.03	4.96	5.57	5.72	5.38	4.6	3.52	2.33	1.26	1.86	1.26	2.33	3.52	4.6	5.38	5.72	5.57	4.96	4.03	2.94	1.98	2.64
25	2.66	2.05	3.08	4.24	5.24	5.88	6.04	5.68	4.86	3.71	2.43	1.28	1.84	1.28	2.43	3.71	4.86	5.68	6.04	5.88	5.24	4.24	3.08	2.05	2.66
26	2.68	2.11	3.23	4.47	5.53	6.21	6.37	6	5.12	3.89	2.54	1.31	1.81	1.31	2.54	3.89	5.12	6	6.37	6.21	5.53	4.47	3.23	2.11	2.68
27	2.71	2.19	3.38	4.69	5.82	6.53	6.71	6.31	5.38	4.08	2.65	1.34	1.78	1.34	2.65	4.08	5.38	6.31	6.71	6.53	5.82	4.69	3.38	2.19	2.71
28	2.73	2.26	3.54	4.92	6.12	6.87	7.06	6.63	5.66	4.28	2.76	1.37	1.75	1.37	2.76	4.28	5.66	6.63	7.06	6.87	6.12	4.92	3.54	2.26	2.73
29	2.75	2.34	3.69	5.16	6.41	7.22	7.42	6.96	5.93	4.47	2.88	1.41	1.72	1.41	2.88	4.47	5.93	6.96	7.42	7.22	6.41	5.16	3.69	2.34	2.75
30	2.78	2.43	3.86	5.4	6.73	7.57	7.78	7.3	6.22	4.68	2.99	1.45	1.69	1.45	2.99	4.68	6.22	7.3	7.78	7.57	6.73	5.4	3.86	2.43	2.78
31	2.8	2.51	4.02	5.65	7.04	7.93	8.15	7.64	6.5	4.89	3.11	1.48	1.66	1.48	3.11	4.89	6.5	7.64	8.15	7.93	7.04	5.65	4.02	2.51	2.8
32	2.82	2.61	4.19	5.91	7.36	8.29	8.52	7.99	6.78	5.1	3.23	1.52	1.63	1.52	3.23	5.1	6.78	7.99	8.52	8.29	7.36	5.91	4.19	2.61	2.82
33	2.85	2.7	4.37	6.16	7.69	8.67	8.9	8.35	7.08	5.31	3.35	1.56	1.6	1.56	3.35	5.31	7.08	8.35	8.9	8.67	7.69	6.16	4.37	2.7	2.85
34	2.88	2.79	4.54	6.42	8.02	9.03	9.28	8.7	7.38	5.53	3.47	1.6	1.57	1.6	3.47	5.53	7.38	8.7	9.28	9.03	8.02	6.42	4.54	2.79	2.88
35	2.9	2.89	4.73	6.68	8.36	9.41	9.66	9.06	7.69	5.76	3.6	1.64	1.53	1.64	3.6	5.76	7.69	9.06	9.66	9.41	8.36	6.68	4.73	2.89	2.9
36	2.93	2.99	4.91	6.96	8.7	9.79	10.05	9.42	8	5.98	3.73	1.68	1.5	1.68	3.73	5.98	8	9.42	10.05	9.79	8.7	6.96	4.91	2.99	2.93
37	2.96	3.09	5.1	7.23	9.05	10.16	10.43	9.78	8.3	6.21	3.86	1.73	1.47	1.73	3.86	6.21	8.3	9.78	10.43	10.16	9.05	7.23	5.1	3.09	2.96
38	2.98	3.2	5.29	7.52	9.39	10.54	10.81	10.15	8.62	6.45	3.99	1.77	1.43	1.77	3.99	6.45	8.62	10.15	10.81	10.54	9.39	7.52	5.29	3.2	2.98
39	3.01	3.31	5.49	7.8	9.75	10.93	11.19	10.51	8.93	6.68	4.13	1.81	1.4	1.81	4.13	6.68	8.93	10.51	11.19	10.93	9.75	7.8	5.49	3.31	3.01
40	3.04	3.42	5.69	8.09	10.1	11.31	11.58	10.87	9.25	6.93	4.26	1.86	1.36	1.86	4.26	6.93	9.25	10.87	11.58	11.31	10.1	8.09	5.69	3.42	3.04
41	3.07	3.53	5.89	8.38	10.45	11.68	11.95	11.22	9.57	7.17	4.4	1.91	1.33	1.91	4.4	7.17	9.57	11.22	11.95	11.68	10.45	8.38	5.89	3.53	3.07
42	3.1	3.65	6.09	8.68	10.8	12.05	12.32	11.58	9.88	7.41	4.55	1.95	1.29	1.95	4.55	7.41	9.88	11.58	12.32	12.05	10.8	8.68	6.09	3.65	3.1
43	3.13	3.76	6.31	8.97	11.15	12.42	12.69	11.93	10.2	7.66	4.7	2	1.25	2	4.7	7.66	10.2	11.93	12.69	12.42	11.15	8.97	6.31	3.76	3.13
44	3.16	3.88	6.52	9.28	11.49	12.79	13.05	12.28	10.51	7.91	4.84	2.05	1.22	2.05	4.84	7.91	10.51	12.28	13.05	12.79	11.49	9.28	6.52	3.88	3.16
45	3.2	4	6.73	9.57	11.84	13.14	13.4	12.61	10.82	8.16	5	2.1	1.18	2.1	5	8.16	10.82	12.61	13.4	13.14	11.84	9.57	6.73	4	3.2
46	3.23	4.12	6.96	9.88	12.18	13.48	13.75	12.94	11.12	8.41	5.15	2.15	1.14	2.15	5.15	8.41	11.12	12.94	13.75	13.48	12.18	9.88	6.96	4.12	3.23
47	3.26	4.25	7.18	10.18	12.51	13.82	14.08	13.27	11.42	8.66	5.31	2.2	1.11	2.2	5.31	8.66	11.42	13.27	14.08	13.82	12.51	10.18	7.18	4.25	3.26
48	3.3	4.37	7.4	10.48	12.84	14.16	14.41	13.58	11.71	8.9	5.47	2.25	1.07	2.25	5.47	8.9	11.71	13.58	14.41	14.16	12.84	10.48	7.4	4.37	3.3
49	3.33	4.5	7.63	10.78	13.16	14.47	14.72	13.89	12	9.15	5.63	2.3	1.03	2.3	5.63	9.15	12	13.89	14.72	14.47	13.16	10.78	7.63	4.5	3.33
50	3.37	4.63	7.86	11.07	13.47	14.78	15.01	14.17	12.28	9.39	5.79	2.35	0.99	2.35	5.79	9.39	12.28								



51	3.4	4.76	8.1	11.36	13.77	15.07	15.3	14.45	12.55	9.63	5.96	2.41	0.95	2.41	5.96	9.63	12.55	14.45	15.3	15.07	13.77	11.36	8.1	4.76	3.4
52	3.44	4.9	8.33	11.65	14.07	15.35	15.56	14.71	12.81	9.87	6.12	2.46	0.91	2.46	6.12	9.87	12.81	14.71	15.56	15.35	14.07	11.65	8.33	4.9	3.44
53	3.48	5.03	8.57	11.93	14.33	15.61	15.81	14.96	13.05	10.1	6.29	2.52	0.87	2.52	6.29	10.1	13.05	14.96	15.81	15.61	14.33	11.93	8.57	5.03	3.48
54	3.52	5.17	8.81	12.21	14.61	15.85	16.04	15.18	13.28	10.32	6.46	2.57	0.83	2.57	6.46	10.32	13.28	15.18	16.04	15.85	14.61	12.21	8.81	5.17	3.52
55	3.57	5.32	9.05	12.47	14.84	16.07	16.24	15.38	13.49	10.54	6.63	2.63	0.79	2.63	6.63	10.54	13.49	15.38	16.24	16.07	14.84	12.47	9.05	5.32	3.57
56	3.61	5.46	9.29	12.73	15.08	16.27	16.42	15.57	13.69	10.74	6.8	2.69	0.76	2.69	6.8	10.74	13.69	15.57	16.42	16.27	15.08	12.73	9.29	5.46	3.61
57	3.66	5.6	9.52	12.98	15.28	16.44	16.58	15.73	13.86	10.94	6.97	2.75	0.72	2.75	6.97	10.94	13.86	15.73	16.58	16.44	15.28	12.98	9.52	5.6	3.66
58	3.71	5.76	9.76	13.21	15.48	16.59	16.71	15.87	14.02	11.12	7.14	2.81	0.68	2.81	7.14	11.12	14.02	15.87	16.71	16.59	15.48	13.21	9.76	5.76	3.71
59	3.76	5.91	9.99	13.42	15.65	16.71	16.81	15.97	14.16	11.29	7.3	2.88	0.64	2.88	7.3	11.29	14.16	15.97	16.81	16.71	15.65	13.42	9.99	5.91	3.76
60	3.81	6.06	10.21	13.62	15.78	16.8	16.87	16.04	14.26	11.44	7.45	2.95	0.6	2.95	7.45	11.44	14.26	16.04	16.87	16.8	15.78	13.62	10.21	6.06	3.81
61	3.86	6.22	10.44	13.8	15.9	16.86	16.89	16.09	14.35	11.57	7.61	3.01	0.56	3.01	7.61	11.57	14.35	16.09	16.89	16.86	15.9	13.8	10.44	6.22	3.86
62	3.93	6.38	10.65	13.96	15.98	16.88	16.88	16.09	14.4	11.67	7.76	3.08	0.52	3.08	7.76	11.67	14.4	16.09	16.88	16.88	15.98	13.96	10.65	6.38	3.93
63	3.99	6.54	10.85	14.09	16.04	16.86	16.83	16.05	14.41	11.76	7.89	3.15	0.48	3.15	7.89	11.76	14.41	16.05	16.83	16.86	16.04	14.09	10.85	6.54	3.99
64	4.06	6.71	11.04	14.2	16.05	16.79	16.72	15.97	14.39	11.82	8.02	3.23	0.44	3.23	8.02	11.82	14.39	15.97	16.72	16.79	16.05	14.2	11.04	6.71	4.06
65	4.13	6.88	11.22	14.28	16.02	16.68	16.57	15.84	14.33	11.85	8.13	3.3	0.4	3.3	8.13	11.85	14.33	15.84	16.57	16.68	16.02	14.28	11.22	6.88	4.13
66	4.21	7.05	11.38	14.33	15.95	16.52	16.36	15.66	14.23	11.85	8.23	3.38	0.36	3.38	8.23	11.85	14.23	15.66	16.36	16.52	15.95	14.33	11.38	7.05	4.21
67	4.29	7.22	11.52	14.35	15.83	16.3	16.07	15.41	14.07	11.82	8.3	3.45	0.33	3.45	8.3	11.82	14.07	15.61	16.07	16.3	15.83	14.35	11.52	7.22	4.29
68	4.37	7.39	11.64	14.32	15.67	15.98	15.66	15.05	13.84	11.74	8.35	3.52	0.29	3.52	8.35	11.74	13.84	15.05	15.66	15.98	15.67	14.32	11.64	7.39	4.37
69	4.46	7.56	11.73	14.25	15.44	15.56	15.19	14.62	13.55	11.63	8.38	3.59	0.26	3.59	8.38	11.63	13.55	14.62	15.19	15.56	15.44	14.25	11.73	7.56	4.46
70	4.56	7.72	11.79	14.13	15.13	15.08	14.61	14.08	13.23	11.46	8.38	3.66	0.22	3.66	8.38	11.46	13.23	14.08	15.13	15.08	15.13	14.13	11.79	7.72	4.56
71	4.66	7.88	11.81	13.96	14.71	14.5	14.01	13.49	12.77	11.24	8.35	3.73	0.19	3.73	8.35	11.24	12.77	13.49	14.01	14.5	14.71	13.96	11.81	7.88	4.66
72	4.76	8.02	11.8	13.71	14.24	13.91	13.41	12.9	12.2	10.97	8.28	3.78	0.16	3.78	8.28	10.97	12.2	12.9	13.41	13.91	14.24	13.71	11.8	8.02	4.76
73	4.86	8.16	11.74	13.39	13.67	13.32	12.83	12.31	11.62	10.62	8.17	3.83	0.13	3.83	8.17	10.62	11.62	12.31	12.83	13.32	13.67	13.39	11.74	8.16	4.86
74	4.97	8.27	11.63	13.04	13.08	12.73	12.23	11.71	11.04	10.15	8.02	3.86	0.11	3.86	8.02	10.15	11.04	11.71	12.23	13.08	13.04	11.63	8.27	4.97	4.97
75	5.08	8.36	11.47	12.57	12.48	12.13	11.63	11.12	10.46	9.6	7.82	3.88	0.09	3.88	7.82	9.6	10.46	11.12	11.63	12.13	12.48	12.57	11.47	8.36	5.08
76	5.19	8.43	11.25	12.03	11.89	11.55	11.03	10.53	9.88	9.04	7.56	3.88	0.07	3.88	7.56	9.04	9.88	10.53	11.03	11.55	11.89	12.03	11.25	8.43	5.19
77	5.3	8.46	10.97	11.44	11.31	10.96	10.44	9.95	9.3	8.47	7.24	3.85	0.06	3.85	7.24	8.47	9.3	9.95	10.44	10.96	11.31	11.44	10.97	8.46	5.3
78	5.4	8.45	10.6	10.84	10.72	10.37	9.84	9.36	8.71	7.9	6.82	3.79	0.05	3.79	6.82	7.9	8.71	9.36	9.84	10.37	10.72	10.84	10.6	8.45	5.4
79	5.5	8.39	10.14	10.25	10.15	9.79	9.26	8.78	8.15	7.35	6.32	3.69	0.04	3.69	6.32	7.35	8.15	8.78	9.26	9.79	10.15	10.25	10.14	8.39	5.5
80	5.61	8.26	9.62	9.66	9.57	9.22	8.67	8.21	7.58	6.8	5.8	3.54	0.04	3.54	5.8	6.8	7.58	8.21	8.67	9.22	9.57	9.66	9.62	8.26	5.61
81	5.69	8.06	9.04	9.09	9	8.66	8.1	7.64	7.03	6.25	5.29	3.33	0.04	3.33	5.29	6.25	7.03	7.64	8.1	8.66	9	9.09	9.04	8.06	5.69
82	5.73	7.79	8.45	8.53	8.45	8.1	7.53	7.09	6.48	5.72	4.78	3.07	0.04	3.07	4.78	5.72	6.48	7.09	7.53	8.1	8.45	8.53	8.45	7.79	5.73
83	5.72	7.42	7.87	7.98	7.92	7.56	6.98	6.54	5.96	5.19	4.28	2.75	0.04	2.75	4.28	5.19	5.96	6.54	6.98	7.56	7.92	7.98	7.87	7.42	5.72
84	5.63	6.95	7.31	7.45	7.4	7.03	6.43	6.01	5.44	4.68	3.79	2.4	0.04	2.4	3.79	4.68	5.44	6.01	6.43	7.03	7.4	7.45	7.31	6.95	5.63
85	5.4	6.41	6.76	6.93	6.9	6.52	5.92	5.52	4.94	4.18	3.31	2.05	0.04	2.05	3.31	4.18	4.94	5.52	5.92	6.52	6.9	6.93	6.76	6.41	5.4
86	5.01	5.86	6.26	6.47	6.44	6.07	5.46	5.07	4.48	3.72	2.85	1.69	0.04	1.69	2.85	3.72	4.48	5.07	5.46	6.07	6.44	6.47	6.26	5.86	5.01
87	4.56	5.32	5.78	6.06	6.07	5.7	5.09	4.71	4.12	3.32	2.43	1.35	0.04	1.35	2.43	3.32	4.12	4.71	5.09	5.7	6.06	6.07	5.78	5.32	4.56
88	4.05	4.82	5.39	5.73	5.8	5.53	4.88	4.52	3.93	3.11	2.15	1.05	0.03	1.05	2.15	3.11	3.93	4.52	4.88	5.53	5.8	5.73	5.39	4.82	4.05
89	3.64	4.45	5.15	5.59	5.83	5.63	5.01	4.71	4.04	3.21	2.22	1.09	0.03	0.99	2.22	3.21	4.04	4.71	5.01	5.63	5.83	5.59	5.15	4.45	3.64
90	3.56	4.38	5.29	5.86	6.08	5.93	5.4	5.18	4.59	3.73	2.76	1.31	0.03	1.31	2.76	3.73	4.59	5.18	5.4	5.93	6.08	5.86	5.29	4.38	3.56
91	4.17	5.04	5.77	6.32	6.67	6.57	6.11	5.88	5.38	4.69	3.69	1.96	0.03	1.96	3.69	4.69	5.38	5.88	6.11	6.57	6.67	6.32	5.77	5.04	4.17
92	5.34	6.06	6.7	7.37	7.75	7.73	7.35	7.15	6.65	5.87	4.91	2.79	0.03	2.79	4.91	5.87	6.65	7.15	7.35	7.73	7.75	7.37	6.7	6.06	5.34
93	6.68	7.41	8.12	8.77	9.19	9.2	8.86	8.66	8.16	7.34	6.24	3.71	0.04	3.71	6.24	7.34	8.16	8.66	8.86	9.2	9.19	8.77	8.12	7.41	6.68
94	8.18	9.08	9.82	10.46	10.88	10.9	10.58	10.38	9.86	8.99	7.75	4.68	0.04	4.68	7.75	8.99	9.86	10.38	10.58	10.9	10.88	10.46	9.82	9.08	8.18
95	9.65	10.87	11.64	12.28	12.69	12.72	12.43	12.22	11.66	10.7	9.28	5.65	0.04	5.65	9.28	10.7	11.66	12.22	12.43	12.72	12.69	12.28	11.64	10.87	9.65
96	10.79	12.71	13.59	14.24	14.66	14.69	14.4	14.18	13.53	12.49	10.9	6.6	0.04	6.6	10.9	12.49	13.53	14.18	14.4	14.69	14.66	14.24	13.59	12.71	10.79
97	11.17	14.56	15.61	16.26	16.66	16.7	16.43	16.18	15.49	14.36	12.57	7.4	0.04	7.4	12.57	14.36	15.49	16.18	16.43	16.7	16.66	16.26	15.61	14.56	11.17
98	11.32	16.32	17.63	18.29	18.68	18.73	18.45	18.19	17.47	16.23	14.25	7.95	0.04	7.95	14.25	16.23	17.47	18.19	18.45	18.73	18.68	18.29	17.63	16.32	11.32
99	11.51	17.66	19.71	20.36	20.78	20.84	20.58	20.28	19.49	18.15	15.97	8.26	0.04	8.26	15.97	18.15	19.49	20.28	20.58	20.84	20.78	20.36	19.71	17.66	11.51
100	11.65	18.55	21.81	22.51	22.91	22.96	22.71	22.4	21.54	20.1	17.66	8.39	0.05	8.39	17.66	20.1	21.54	22.4	22.91	22.96	22.51	22.51	2		



106	11.57	18.91	31.9	35.71	36.18	36.24	36.02	35.55	34.29	31.87	23.67	7.44	0.06	7.44	23.67	31.87	34.29	35.55	36.02	36.24	36.18	35.71	31.9	18.91	11.57
107	11.49	18.63	32.5	37.82	38.45	38.52	38.27	37.78	36.48	33.54	23.77	7.18	0.07	7.18	23.77	33.54	36.48	37.78	38.27	38.52	38.45	37.82	32.5	18.63	11.49
108	11.39	18.31	32.78	39.69	40.7	40.78	40.57	40.02	38.59	34.93	23.68	6.92	0.07	6.92	23.68	34.93	38.59	40.02	40.57	40.78	40.7	39.69	32.78	18.31	11.39
109	11.27	17.97	32.8	41.25	42.93	43.06	42.83	42.24	40.61	36.06	23.44	6.67	0.07	6.67	23.44	36.06	40.61	42.24	42.83	43.06	42.93	41.25	32.8	17.97	11.27
110	11.14	17.62	32.64	42.49	45.04	45.31	45.1	44.46	42.54	36.89	23.1	6.42	0.08	6.42	23.1	36.89	42.54	44.46	45.1	45.31	45.04	42.49	32.64	17.62	11.14
111	11	17.26	32.33	43.42	47.04	47.52	47.35	46.58	44.23	37.46	22.68	6.18	0.08	6.18	22.68	37.46	44.23	46.58	47.35	47.52	47.04	43.42	32.33	17.26	11
112	10.84	16.88	31.9	44.05	48.69	49.61	49.47	48.59	45.64	37.75	22.18	5.95	0.08	5.95	22.18	37.75	45.64	48.59	49.47	49.61	48.69	44.05	31.9	16.88	10.84
113	10.66	16.5	31.37	44.41	50.1	51.56	51.53	50.4	46.8	37.78	21.64	5.73	0.08	5.73	21.64	37.78	46.8	50.4	51.53	51.56	50.1	44.41	31.37	16.5	10.66
114	10.49	16.12	30.78	44.47	51.15	53.24	53.31	51.95	47.64	37.59	21.06	5.51	0.09	5.51	21.06	37.59	47.64	51.95	53.31	53.24	51.15	44.47	30.78	16.12	10.49
115	10.29	15.72	30.11	44.27	51.95	54.62	54.85	53.23	48.21	37.23	20.45	5.31	0.09	5.31	20.45	37.23	48.21	53.23	54.85	54.62	51.95	44.27	30.11	15.72	10.29
116	10.09	15.31	29.37	43.87	52.49	55.7	56.11	54.2	48.53	36.73	19.8	5.11	0.1	5.11	19.8	36.73	48.53	54.2	56.11	55.7	52.49	43.87	29.37	15.31	10.09
117	9.87	14.91	28.6	43.3	52.71	56.47	57.03	54.87	48.56	36.08	19.14	4.91	0.1	4.91	19.14	36.08	48.56	54.87	57.03	56.47	52.71	43.3	28.6	14.91	9.87
118	9.65	14.5	27.8	42.58	52.65	57.01	57.72	55.29	48.36	35.36	18.47	4.73	0.1	4.73	18.47	35.36	48.36	55.29	57.72	57.01	52.65	42.58	27.8	14.5	9.65
119	9.42	14.09	26.95	41.75	52.31	57.23	58.12	55.43	47.91	34.56	17.78	4.54	0.11	4.54	17.78	34.56	47.91	55.43	58.12	57.23	52.31	41.75	26.95	14.09	9.42
120	9.2	13.67	26.1	40.83	51.73	57.17	58.22	55.31	47.28	33.72	17.11	4.37	0.11	4.37	17.11	33.72	47.28	55.31	58.22	57.17	51.73	40.83	26.1	13.67	9.2
121	8.98	13.26	25.22	39.85	50.98	56.85	58.04	54.91	46.48	32.82	16.43	4.2	0.11	4.2	16.43	32.82	46.48	54.91	58.04	56.85	50.98	39.85	25.22	13.26	8.98
122	8.76	12.85	24.36	38.8	50.05	56.27	57.6	54.27	45.59	31.87	15.78	4.04	0.12	4.04	15.78	31.87	45.59	54.27	57.6	56.27	50.05	38.8	24.36	12.85	8.76
123	8.54	12.43	23.47	37.69	49.01	55.45	56.9	53.46	44.57	30.87	15.13	3.88	0.12	3.88	15.13	30.87	44.57	53.46	56.9	55.45	49.01	37.69	23.47	12.43	8.54
124	8.31	12.02	22.6	36.53	47.87	54.46	56.02	52.45	43.49	29.87	14.52	3.73	0.12	3.73	14.52	29.87	43.49	52.45	56.02	54.46	47.87	36.53	22.6	12.02	8.31
125	8.08	11.61	21.74	35.34	46.66	53.34	54.96	51.33	42.34	28.82	13.9	3.58	0.13	3.58	13.9	28.82	42.34	51.33	54.96	53.34	46.66	35.34	21.74	11.61	8.08
126	7.84	11.21	20.9	34.1	45.35	52.09	53.75	50.1	41.13	27.75	13.31	3.44	0.13	3.44	13.31	27.75	41.13	50.1	53.75	52.09	45.35	34.1	20.9	11.21	7.84
127	7.6	10.81	20.07	32.84	44.03	50.77	52.44	48.81	39.87	26.7	12.74	3.31	0.13	3.31	12.74	26.7	39.87	48.81	52.44	50.77	44.03	32.84	20.07	10.81	7.6
128	7.36	10.42	19.26	31.57	42.62	49.36	51.05	47.46	38.6	25.62	12.19	3.18	0.13	3.18	12.19	25.62	38.6	47.46	51.05	49.36	42.62	31.57	19.26	10.42	7.36
129	7.11	10.03	18.44	30.3	41.18	47.88	49.6	46.01	37.26	24.55	11.65	3.06	0.14	3.06	11.65	24.55	37.26	46.01	49.6	47.88	41.18	30.3	18.44	10.03	7.11
130	6.87	9.65	17.67	29.01	39.69	46.34	48.1	44.57	35.9	23.47	11.15	2.94	0.14	2.94	11.15	23.47	35.9	44.57	48.1	46.34	39.69	29.01	17.67	9.65	6.87
131	6.63	9.28	16.91	27.75	38.2	44.8	46.54	43.04	34.53	22.45	10.65	2.83	0.14	2.83	10.65	22.45	34.53	43.04	46.54	44.8	38.2	27.75	16.91	9.28	6.63
132	6.38	8.91	16.16	26.5	36.65	43.17	44.91	41.48	33.1	21.41	10.16	2.72	0.15	2.72	10.16	21.41	33.1	41.48	44.91	43.17	36.65	26.5	16.16	8.91	6.38
133	6.13	8.55	15.42	25.28	35.09	41.54	43.28	39.88	31.7	20.4	9.69	2.62	0.15	2.62	9.69	20.4	31.7	39.88	43.28	41.54	35.09	25.28	15.42	8.55	6.13
134	5.88	8.2	14.71	24.07	33.54	39.87	41.59	38.27	30.3	19.42	9.24	2.53	0.15	2.53	9.24	19.42	30.3	38.27	41.59	39.87	33.54	24.07	14.71	8.2	5.88
135	5.63	7.84	14.01	22.89	32.01	38.17	39.87	36.63	28.87	18.47	8.79	2.43	0.16	2.43	8.79	18.47	28.87	36.63	39.87	38.17	32.01	22.89	14.01	7.84	5.63
136	5.38	7.49	13.33	21.75	30.44	36.44	38.14	35	27.49	17.55	8.36	2.35	0.16	2.35	8.36	17.55	27.49	35	38.14	36.44	30.44	21.75	13.33	7.49	5.38
137	5.13	7.15	12.65	20.64	28.93	34.74	36.39	33.34	26.11	16.65	7.94	2.26	0.16	2.26	7.94	16.65	26.11	33.34	36.39	34.74	28.93	20.64	12.65	7.15	5.13
138	4.88	6.82	11.98	19.57	27.44	33.04	34.63	31.7	24.75	15.79	7.53	2.18	0.17	2.18	7.53	15.79	24.75	31.7	34.63	33.04	27.44	19.57	11.98	6.82	4.88
139	4.63	6.5	11.34	18.53	25.96	31.33	32.89	30.05	23.43	14.96	7.13	2.1	0.17	2.1	7.13	14.96	23.43	30.05	32.89	31.33	25.96	18.53	11.34	6.5	4.63
140	4.38	6.19	10.72	17.54	24.57	29.7	31.18	28.46	22.15	14.15	6.74	2.03	0.17	2.03	6.74	14.15	22.15	28.46	31.18	29.7	24.57	17.54	10.72	6.19	4.38
141	4.14	5.87	10.12	16.57	23.19	28.05	29.47	26.89	20.91	13.38	6.38	1.95	0.17	1.95	6.38	13.38	20.91	26.89	29.47	28.05	23.19	16.57	10.12	5.87	4.14
142	3.9	5.56	9.54	15.63	21.87	26.45	27.81	25.35	19.69	12.61	6.03	1.88	0.18	1.88	6.03	12.61	19.69	25.35	27.81	26.45	21.87	15.63	9.54	5.56	3.9
143	3.66	5.27	9	14.75	20.61	24.93	26.21	23.85	18.55	11.88	5.68	1.81	0.18	1.81	5.68	11.88	18.55	23.85	26.21	24.93	20.61	14.75	9	5.27	3.66
144	3.43	4.98	8.46	13.88	19.41	23.42	24.61	22.41	17.42	11.16	5.36	1.74	0.18	1.74	5.36	11.16	17.42	22.41	24.61	23.42	19.41	13.88	8.46	4.98	3.43
145	3.21	4.7	7.95	13.05	18.22	21.99	23.1	21	16.34	10.46	5.03	1.67	0.18	1.67	5.03	10.46	16.34	21	23.1	21.99	18.22	13.05	7.95	4.7	3.21
146	2.98	4.42	7.45	12.22	17.1	20.62	21.62	19.68	15.32	9.79	4.72	1.6	0.18	1.6	4.72	9.79	15.32	19.68	21.62	20.62	17.1	12.22	7.45	4.42	2.98
147	2.77	4.16	6.98	11.44	16.02	19.3	20.22	18.4	14.33	9.15	4.43	1.54	0.19	1.54	4.43	9.15	14.33	18.4	20.22	19.3	16.02	11.44	6.98	4.16	2.77
148	2.57	3.9	6.54	10.68	14.98	18.02	18.87	17.16	13.36	8.51	4.15	1.47	0.19	1.47	4.15	8.51	13.36	17.16	18.87	18.02	14.98	10.68	6.54	3.9	2.57
149	2.37	3.66	6.12	9.96	14	16.81	17.58	15.97	12.43	7.91	3.88	1.41	0.19	1.41	3.88	7.91	12.43	15.97	17.58	16.81	14	9.96	6.12	3.66	2.37
150	2.18	3.44	5.73	9.28	13.04	15.66	16.36	14.86	11.53	7.33	3.62	1.35	0.19	1.35	3.62	7.33	11.53	14.86	16.36	15.66	13.04	9.28	5.73	3.44	2.18
151	2.01	3.23	5.35	8.64	12.11	14.55	15.16	13.77	10.65	6.77	3.37	1.28	0.19	1.28	3.37	6.77	10.65	13.77	15.16	14.55	12.11	8.64	5.35	3.23	2.01
152	1.84	3.02	5	8.04	11.23	13.48	14.04	12.71	9.82	6.25	3.15	1.22	0.19	1.22	3.15	6.25	9.82	12.71	14.04	13.48	11.23	8.04	5	3.02	1.84
153	1.69	2.83	4.67	7.46	10.37	12.44	12.95	11.68	9.02	5.76	2.93	1.15	0.19	1.15	2.93	5.76	9.02	11.68	12.95	12.44	10.37	7.46	4.67	2.83	1.69
154	1.55	2.66	4.37	6.92	9.57	11.45	11.89	10.72	8.25	5.28	2.72	1.06	0.19	1.06	2.72	5.2									



161	0.83	1.65	2.68	3.87	5.07	5.88	5.98	5.33	4.12	2.77	1.57	0.68	0.18	0.68	1.57	2.77	4.12	5.33	5.98	5.88	5.07	3.87	2.68	1.65	0.83
162	0.76	1.54	2.49	3.54	4.57	5.26	5.34	4.75	3.7	2.51	1.45	0.63	0.17	0.63	1.45	2.51	3.7	4.75	5.34	5.26	4.57	3.54	2.49	1.54	0.76
163	0.7	1.44	2.3	3.23	4.11	4.69	4.74	4.23	3.32	2.26	1.33	0.58	0.17	0.58	1.33	2.26	3.32	4.23	4.74	4.69	4.11	3.23	2.3	1.44	0.7
164	0.64	1.34	2.13	2.94	3.7	4.18	4.21	3.76	2.98	2.04	1.19	0.54	0.17	0.54	1.19	2.04	2.98	3.76	4.21	4.18	3.7	2.94	2.13	1.34	0.64
165	0.59	1.25	1.95	2.67	3.31	3.71	3.73	3.34	2.67	1.85	1.1	0.51	0.17	0.51	1.1	1.85	2.67	3.34	3.73	3.71	3.31	2.67	1.95	1.25	0.59
166	0.54	1.15	1.75	2.42	2.97	3.29	3.3	2.97	2.39	1.67	1.03	0.49	0.17	0.49	1.03	1.67	2.39	2.97	3.3	3.29	2.97	2.42	1.75	1.15	0.54
167	0.49	1.05	1.57	2.18	2.64	2.92	2.92	2.63	2.14	1.51	0.94	0.45	0.17	0.45	0.94	1.51	2.14	2.63	2.92	2.92	2.64	2.18	1.57	1.05	0.49
168	0.45	0.95	1.42	1.95	2.35	2.58	2.57	2.33	1.89	1.36	0.86	0.41	0.16	0.41	0.86	1.36	1.89	2.33	2.57	2.58	2.35	1.95	1.42	0.95	0.45
169	0.41	0.85	1.29	1.69	2.08	2.27	2.26	2.04	1.66	1.21	0.78	0.37	0.15	0.37	0.78	1.21	1.66	2.04	2.26	2.27	2.08	1.69	1.29	0.85	0.41
170	0.36	0.75	1.15	1.48	1.79	1.98	1.96	1.75	1.45	1.04	0.69	0.34	0.14	0.34	0.69	1.04	1.45	1.75	1.96	1.98	1.79	1.48	1.15	0.75	0.36
171	0.31	0.64	1	1.3	1.53	1.66	1.65	1.52	1.26	0.94	0.58	0.3	0.14	0.3	0.58	0.94	1.26	1.52	1.65	1.66	1.53	1.3	1	0.64	0.31
172	0.27	0.55	0.81	1.1	1.32	1.42	1.42	1.31	1.06	0.77	0.48	0.27	0.12	0.27	0.48	0.77	1.06	1.31	1.42	1.42	1.32	1.1	0.81	0.55	0.27
173	0.23	0.44	0.63	0.9	1.1	1.21	1.21	1.11	0.86	0.61	0.37	0.24	0.11	0.24	0.37	0.61	0.86	1.11	1.21	1.21	1.1	0.9	0.63	0.44	0.23
174	0.19	0.34	0.47	0.67	0.86	0.98	0.98	0.86	0.68	0.46	0.29	0.21	0.11	0.21	0.29	0.46	0.68	0.86	0.98	0.98	0.86	0.67	0.47	0.34	0.19
175	0.16	0.26	0.35	0.47	0.64	0.78	0.81	0.67	0.48	0.33	0.23	0.17	0.1	0.17	0.23	0.33	0.48	0.67	0.81	0.78	0.64	0.47	0.35	0.26	0.16
176	0.11	0.18	0.24	0.29	0.39	0.51	0.6	0.38	0.3	0.23	0.17	0.14	0.09	0.14	0.17	0.23	0.3	0.38	0.6	0.51	0.39	0.29	0.24	0.18	0.11
177	0.07	0.11	0.15	0.17	0.18	0.1	0.07	0.15	0.16	0.14	0.13	0.11	0.08	0.11	0.13	0.14	0.16	0.15	0.07	0.1	0.18	0.17	0.15	0.11	0.07
178	0.04	0.05	0.07	0.08	0.06	0.01	0.01	0.03	0.07	0.08	0.08	0.08	0.06	0.08	0.08	0.08	0.07	0.03	0.01	0.01	0.06	0.08	0.07	0.05	0.04
179	0.02	0.02	0.02	0.02	0.01	0	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.03	0.02	0.01	0.01	0.01	0.01	0	0.01	0.02	0.02	0.02	0.02
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	SA-CLBS	Sample ID.	E1
Temperature (°C)	25.3	Humidity (%RH)	56.0

Test Method

The samples were tested according to the ANSI C82.77:2014.
The total harmonic distortion shall be measured to the 40th order.
The ambient temperature condition was maintained at 25° C ± 1° 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 were calculated.

Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
120.05	60	0.039	4.63	0.994	6.55%
277.02	60	0.021	5.41	0.942	13.66%

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2023/12/24	2024/12/23
DLF108	Auxiliary Lamp	2023/12/24	2024/12/23
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2023/12/24	2024/12/23
DLF116	AC Power Source	2023/12/16	2024/12/15
DLF516	Power Meter	2023/12/16	2024/12/15
DLF112	Temperature Recorder	2023/12/28	2024/12/27
DLF114	Temperature & Humidity Datalogger	2023/12/28	2024/12/27
DLF101	Goniophotometer	2023/12/24	2024/12/23
DLF511	AC Power Source	2023/12/16	2024/12/15
DLF512	AC Power Source	2023/12/16	2024/12/15
DLF513	AC Power Source	2023/12/16	2024/12/15
DLF507	DC Power Source	2023/12/16	2024/12/15
DLF111	Temperature & Humidity Datalogger	2023/12/28	2024/12/27
DLF119	Power Meter	2023/12/16	2024/12/15
DLF031	Temperature data logger	2024/6/20	2025/6/19
DLF073	Power Analyzer	2024/6/20	2025/6/19
DLF003	Temperature & Humidity Datalogger	2024/6/20	2025/6/19

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