Photometric Test Report

Relevant Standards

☑IES LM-79-2008
☑ANSI C82.77:2014

Prepared For

RAB Lighting Inc.

Room 6A33, No.1388, Wuzhong road,Shanghai ,China

Xiao Xiang,15921313292,Gary.Xiao@rabweb.com

Prepared By

Deliver Co.， Ltd.
Block 11, 78 Keling Road, SSTP, Suzhou, China
0512-66801950,kevin.jia@szdeliver.com

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2024/9/13

Prepared By	**Approved By**
Wangzun Zhu	Kevin Jia

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		262
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	26.3
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		9.96
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	8.45%
		20.00%	277V	16.36%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.991
		0.9	277V	0.927
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	3026
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	⩾70		85
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	-		18
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	⩾70		85
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	⩾89		97
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18%⩽IES Rcs,h1⩽+23%		-10%
Zonal Lumen Requirement (0°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	100%		33.44%
Zonal Lumen Requirement (80°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	⩽10%		7.84%
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		0.039
(Goniophotometer - Section 4.2)		Non-Worst Case		0.073
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		9.96
(Goniophotometer - Section 4.2)		Non-Worst Case		8.66

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/9/12	SA-SLB	ES1-02	A1
2	Goniophotometer Test	2024/9/12	SA-SLB	ES1-02	A1
3	THD and PF Test	2024/9/12	SA-SLB	ES1-02	A1

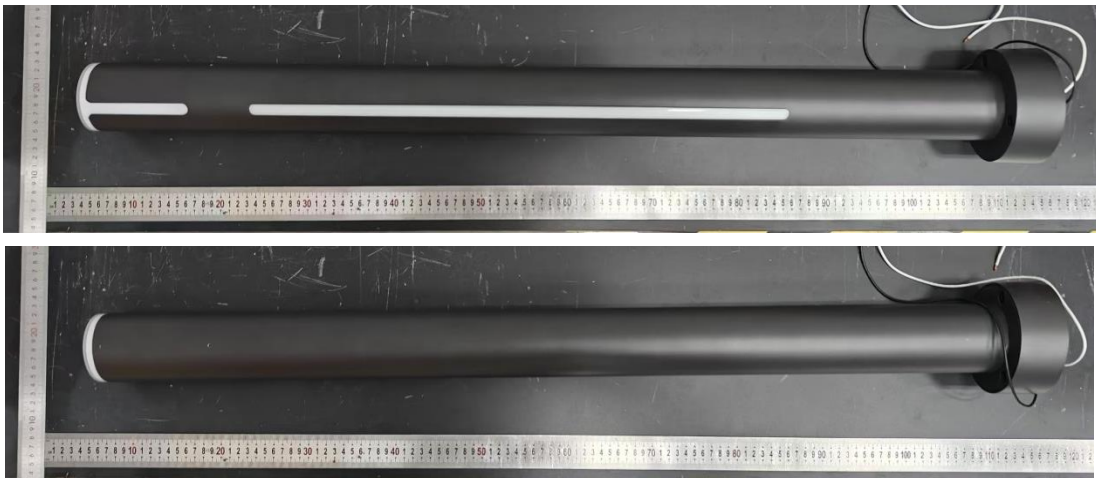
Remark(If any)
1、This report shall not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the US government.
2、The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full 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-SLB

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-SLB	Sample ID.	A1
Opreate 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 paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º 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
120.02	60	0.073	8.67	0.991
277.04	60	0.039	9.97	0.927

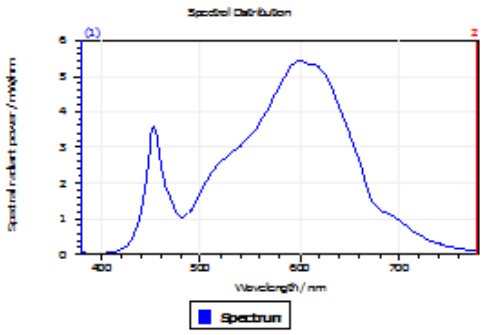
Test Result

CCT (K)	CRI	R9	Duv
3026	85	18	-0.0028

Rf	Rg	IES Rcs,h1
85	97	-10%

4.1 Integrating Sphere Test

Results



Spectral Distribution

Spectral values

DominantWavelength	583.80 nm
Purity	0.479
PeakWavelength	604.10 nm
Radiant Power	0.8344 W
Width50%:	

Color Coordinates

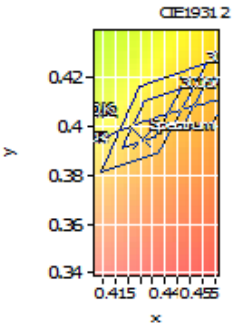
Correlated Color Temperat 3026 K

x: 0.4310 u: 0.2507 u': 0.2507

y: 0.3950 v: 0.3446 v': 0.5169

CRI01	84.1	CRI09	18.3
CRI02	92.8	CRI10	82.9
CRI03	96.3	CRI11	82.8
CRI04	83.0	CRI12	72.4
CRI05	84.2	CRI13	86.3
CRI06	90.7	CRI14	98.8
CRI07	83.9	CRI15	78.0
CRI08	63.8	CRI16	75.5

ResultsCRI 84.9

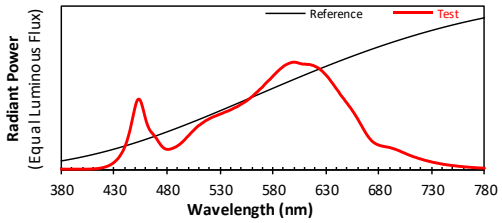


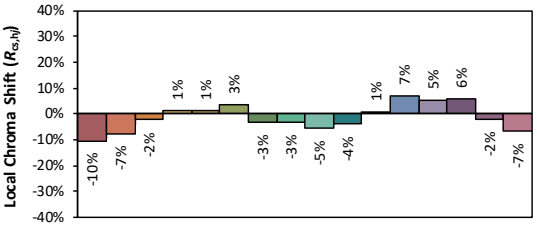
PlanckDistance 2.8E-003

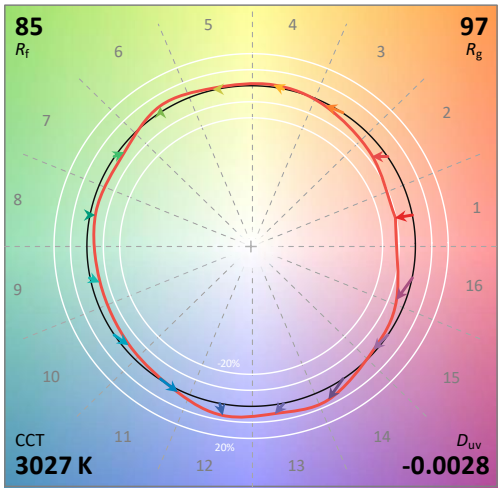
4.1 Integrating Sphere Test

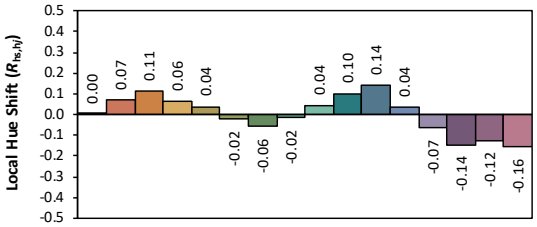
IES TM-30-18 Color Rendition Report

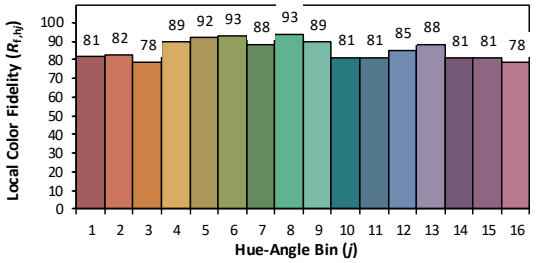
Source:	DLF2409105-1a	Manufacturer:	RAB Lighting Inc.
Date:	2024/9/12	Model:	SA-SLB

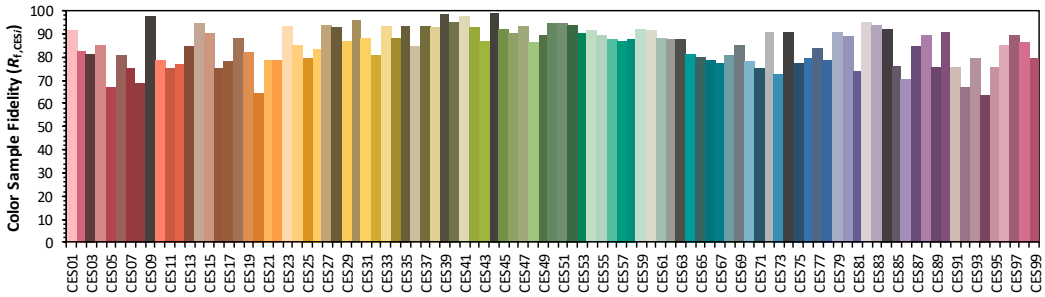












Notes: This is a recommended method for displaying IES TM-30-18 information.

x	0.4310
y	0.3950
u'	0.2507
v'	0.5169

CIE 13.3-1995 (CRI)

R_a	85
R_9	20

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	4.54E-05	485	1.09E-03	590	5.23E-03	695	1.06E-03
385	4.19E-05	490	1.22E-03	595	5.38E-03	700	9.56E-04
390	4.20E-05	495	1.44E-03	600	5.44E-03	705	8.38E-04
395	4.35E-05	500	1.72E-03	605	5.38E-03	710	7.29E-04
400	4.12E-05	505	1.99E-03	610	5.34E-03	715	6.35E-04
405	4.34E-05	510	2.24E-03	615	5.32E-03	720	5.49E-04
410	5.44E-05	515	2.43E-03	620	5.23E-03	725	4.73E-04
415	7.88E-05	520	2.59E-03	625	5.06E-03	730	4.05E-04
420	1.28E-04	525	2.71E-03	630	4.80E-03	735	3.50E-04
425	2.21E-04	530	2.82E-03	635	4.47E-03	740	2.99E-04
430	3.89E-04	535	2.93E-03	640	4.10E-03	745	2.57E-04
435	6.74E-04	540	3.03E-03	645	3.72E-03	750	2.22E-04
440	1.16E-03	545	3.16E-03	650	3.37E-03	755	1.91E-04
445	2.02E-03	550	3.32E-03	655	3.00E-03	760	1.65E-04
450	3.22E-03	555	3.48E-03	660	2.59E-03	765	1.41E-04
455	3.47E-03	560	3.69E-03	665	2.12E-03	770	1.22E-04
460	2.52E-03	565	3.93E-03	670	1.69E-03	775	1.04E-04
465	1.91E-03	570	4.18E-03	675	1.40E-03	780	9.17E-05
470	1.59E-03	575	4.46E-03	680	1.26E-03		
475	1.20E-03	580	4.73E-03	685	1.19E-03		
480	1.04E-03	585	5.00E-03	690	1.14E-03		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	SA-SLB	Sample ID.	A1
Opreate 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 paramters were measured using a type C 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 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^{o} vertical intervals and 10^{o} horizontal intervals.

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	277.03	60	0.039	9.96	0.927
NON-WROST CASE	120.04	60	0.073	8.66	0.991

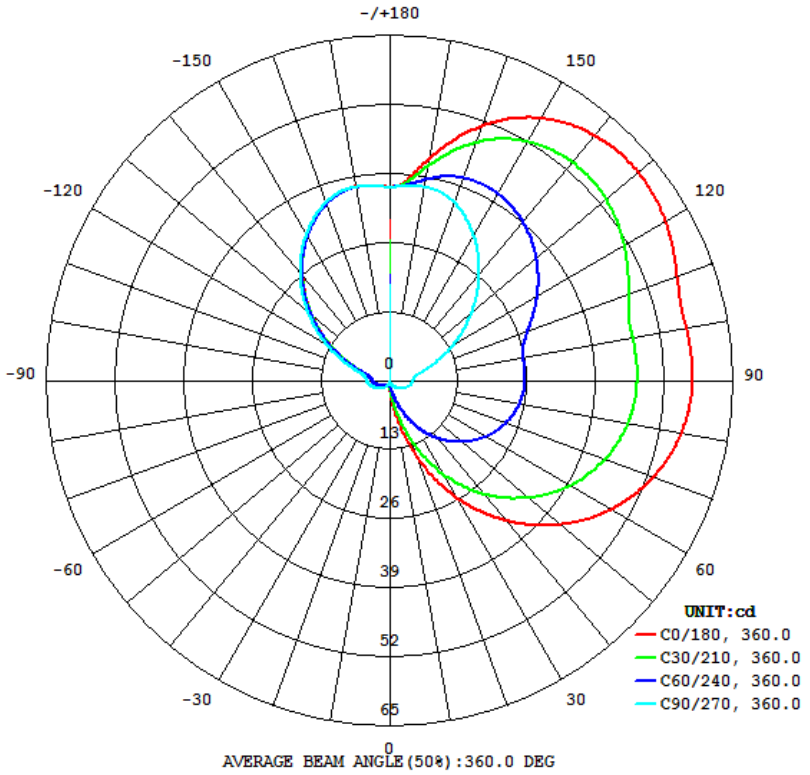
Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
262	360.0	360.0	360.0	360.0	26.3

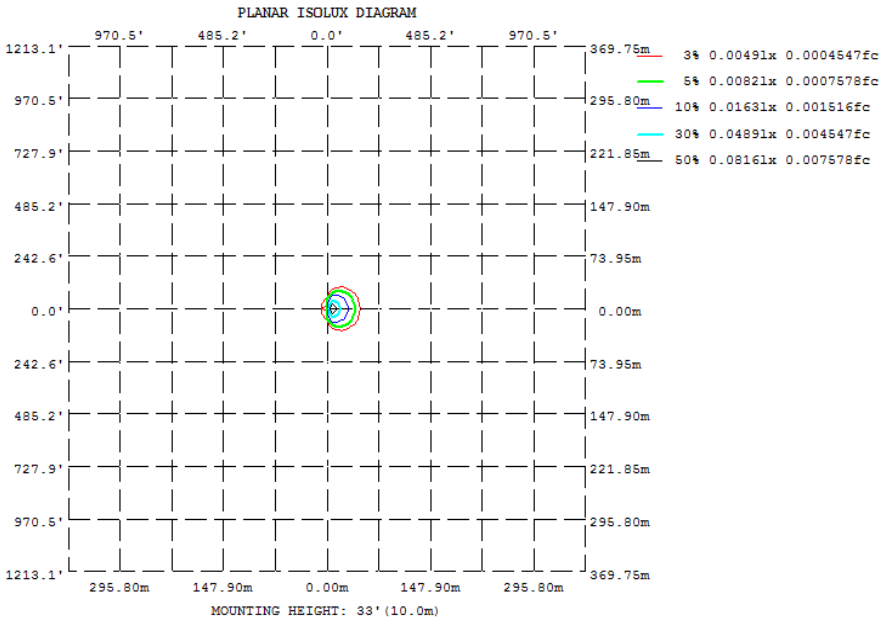
Zonal Lumen Requirement (0°-90°)	Zonal Lumen Requirement (80°-90°)	BUG rating
33.44%	7.84%	B0-U3-G1

4.2 Goniophotometer Test

Light Distrubtion Curve



Isolux Plot



4.2 Goniophotometer Test

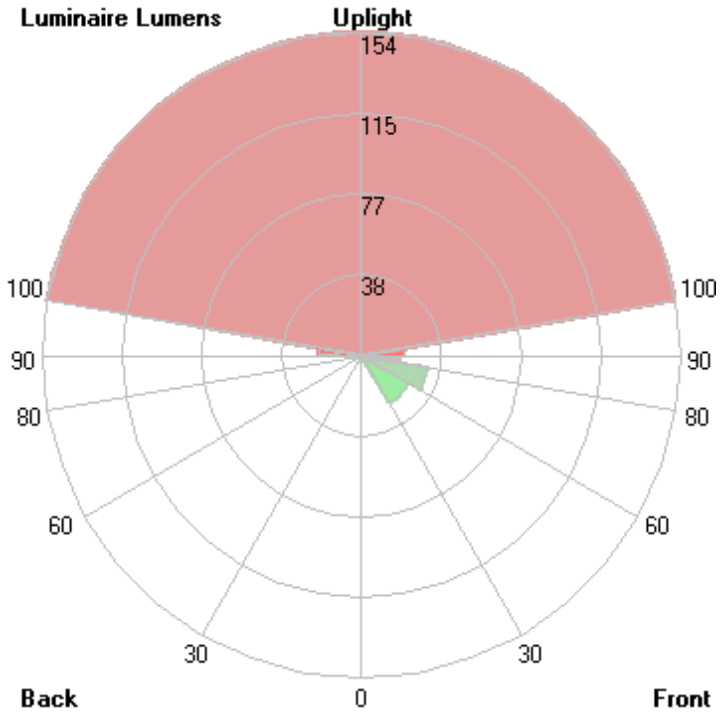
Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	5.327	2.410	0.1600	0.1090	0.0996	0.1090	0.1600	2.410
20	15.29	8.389	0.4701	0.3849	0.3707	0.3849	0.4701	8.389
30	25.39	15.55	1.098	0.7549	0.7325	0.7549	1.098	15.55
40	34.43	21.82	1.796	1.170	1.140	1.170	1.796	21.82
50	42.13	27.04	2.411	1.608	1.571	1.608	2.411	27.04
60	48.35	31.27	3.022	2.074	2.037	2.074	3.022	31.27
70	53.04	34.48	3.641	2.588	2.544	2.588	3.641	34.48
80	56.11	36.59	4.195	3.098	3.054	3.098	4.195	36.59
90	57.31	37.45	4.483	3.393	3.371	3.393	4.483	37.45
100	57.11	37.47	4.861	3.756	3.715	3.756	4.861	37.47
110	57.92	39.13	7.714	6.584	6.482	6.584	7.714	39.13
120	60.30	42.90	13.88	12.81	12.67	12.81	13.88	42.90
130	61.31	45.83	20.34	19.50	19.32	19.50	20.34	45.83
140	60.41	47.34	26.52	25.93	25.79	25.93	26.52	47.34
150	57.14	47.03	31.89	31.50	31.49	31.50	31.89	47.03
160	51.12	44.60	35.84	35.58	35.70	35.58	35.84	44.60
170	42.41	39.83	37.18	37.08	37.19	37.08	37.18	39.83
180	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	0.06	0 - 10	0.06	0.02%
10-20	0.81	0 - 20	0.87	0.33%
20-30	2.80	0 - 30	3.67	1.40%
30-40	5.82	0 - 40	9.49	3.62%
40-50	9.36	0 - 50	18.85	7.19%
50-60	12.98	0 - 60	31.83	12.14%
60-70	16.30	0 - 70	48.13	18.36%
70-80	18.96	0 - 80	67.09	25.60%
80-90	20.56	0 - 90	87.65	33.44%
90-100	20.88	0 - 100	108.53	41.41%
100-110	21.16	0 - 110	129.69	49.48%
110-120	23.82	0 - 120	153.51	58.57%
120-130	26.09	0 - 130	179.60	68.52%
130-140	26.09	0 - 140	205.69	78.48%
140-150	23.41	0 - 150	229.10	87.41%
150-160	18.23	0 - 160	247.33	94.36%
160-170	11.18	0 - 170	258.51	98.63%
170-180	3.59	0 - 180	262.10	100.00%

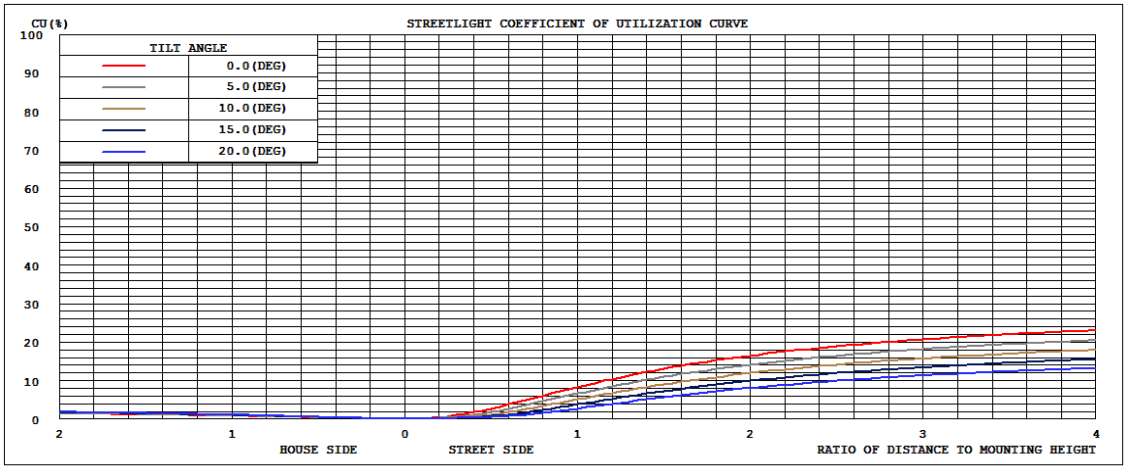
4.2 Goniophotometer Test

LCS/BUG

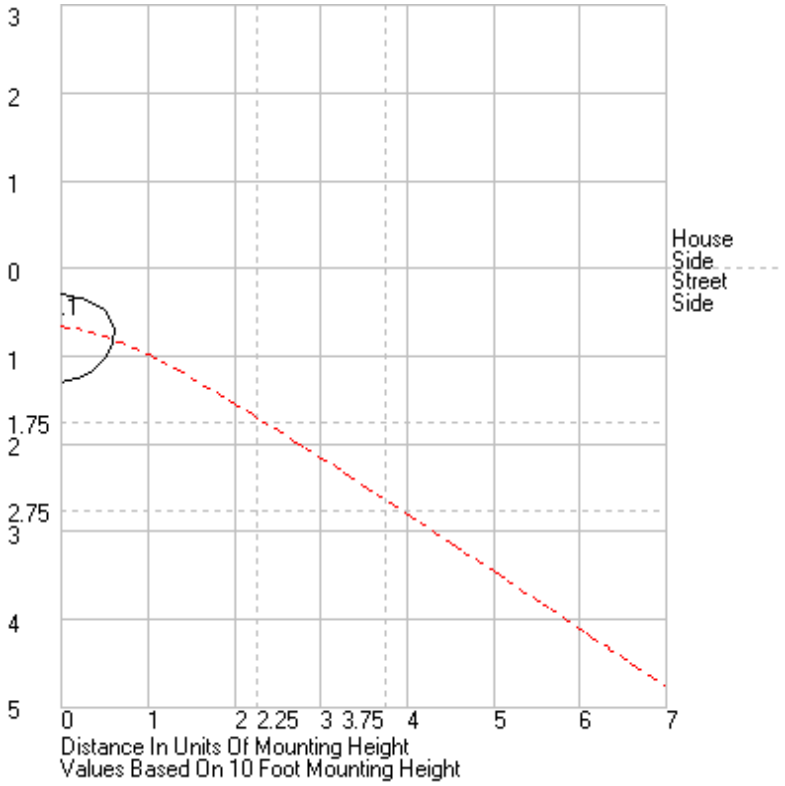


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	3.5	N.A.	1.3
FM - Front-Medium (30-60)	26.4	N.A.	10.1
FH - Front-High (60-80)	32.5	N.A.	12.4
FVH - Front-Very High (80-90)	18.7	N.A.	7.1
BL - Back-Low (0-30)	0.2	N.A.	0.1
BM - Back-Medium (30-60)	1.7	N.A.	0.7
BH - Back-High (60-80)	2.8	N.A.	1.1
BVH - Back-Very High (80-90)	1.8	N.A.	0.7
UL - Uplight-Low (90-100)	20.9	N.A.	8.0
UH - Uplight-High (100-180)	153.6	N.A.	58.6
Total	262.1	N.A.	100.0
BUG Rating	B0-U3-G1		

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	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
1	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03
2	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
3	0.16	0.12	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.06	0.12	0.16
4	0.64	0.52	0.3	0.13	0.07	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.07	0.13	0.3	0.52	0.64
5	1.34	1.13	0.74	0.36	0.15	0.07	0.07	0.06	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.06	0.07	0.07	0.15	0.36	0.74	1.13	1.34
6	2.12	1.83	1.32	0.72	0.29	0.11	0.13	0.12	0.06	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.06	0.12	0.13	0.11	0.29	0.72	1.32	1.83	2.12
7	2.83	2.46	1.89	1.17	0.48	0.16	0.2	0.1	0.08	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.08	0.1	0.2	0.16	0.48	1.17	1.89	2.46	2.83
8	3.6	3.14	2.44	1.58	0.7	0.22	0.18	0.2	0.1	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.1	0.2	0.18	0.22	0.7	1.58	2.44	3.14	3.6
9	4.45	3.89	3.03	1.98	0.93	0.28	0.15	0.14	0.11	0.09	0.09	0.08	0.08	0.08	0.09	0.09	0.11	0.14	0.15	0.28	0.93	1.98	3.03	3.89	4.45
10	5.33	4.67	3.67	2.41	1.18	0.36	0.16	0.14	0.12	0.11	0.1	0.1	0.1	0.1	0.1	0.11	0.12	0.14	0.16	0.36	1.18	2.41	3.67	4.67	5.33
11	6.22	5.51	4.34	2.89	1.43	0.44	0.17	0.16	0.14	0.13	0.12	0.12	0.12	0.12	0.12	0.13	0.14	0.16	0.17	0.44	1.43	2.89	4.34	5.51	6.22
12	7.15	6.36	5.05	3.39	1.71	0.52	0.19	0.18	0.16	0.15	0.15	0.14	0.14	0.14	0.15	0.15	0.16	0.18	0.19	0.52	1.71	3.39	5.05	6.36	7.15
13	8.13	7.23	5.79	3.93	2.01	0.62	0.22	0.2	0.19	0.18	0.17	0.17	0.17	0.17	0.17	0.18	0.19	0.2	0.22	0.62	2.01	3.93	5.79	7.23	8.13
14	9.12	8.16	6.54	4.49	2.33	0.72	0.25	0.23	0.21	0.2	0.19	0.19	0.19	0.19	0.19	0.2	0.21	0.23	0.25	0.72	2.33	4.49	6.54	8.16	9.12
15	10.13	9.09	7.34	5.09	2.68	0.84	0.28	0.26	0.24	0.23	0.22	0.22	0.22	0.22	0.22	0.23	0.24	0.26	0.28	0.84	2.68	5.09	7.34	9.09	10.13
16	11.16	10.06	8.16	5.71	3.05	0.98	0.31	0.29	0.27	0.26	0.25	0.24	0.25	0.24	0.25	0.26	0.27	0.29	0.31	0.98	3.05	5.71	8.16	10.06	11.16
17	12.18	11.03	9	6.35	3.47	1.13	0.35	0.32	0.3	0.29	0.28	0.27	0.28	0.27	0.28	0.29	0.3	0.32	0.35	1.13	3.47	6.35	9	11.03	12.18
18	13.21	12.02	9.86	7	3.9	1.3	0.39	0.35	0.33	0.32	0.31	0.3	0.31	0.3	0.31	0.32	0.33	0.35	0.39	1.3	3.9	7	9.86	12.02	13.21
19	14.27	13.02	10.74	7.69	4.33	1.48	0.43	0.38	0.36	0.35	0.34	0.33	0.34	0.33	0.34	0.35	0.36	0.38	0.43	1.48	4.33	7.69	10.74	13.02	14.27
20	15.29	14.02	11.63	8.39	4.78	1.68	0.47	0.42	0.4	0.38	0.37	0.37	0.37	0.37	0.37	0.38	0.4	0.42	0.47	1.68	4.78	8.39	11.63	14.02	15.29
21	16.33	15.03	12.51	9.11	5.26	1.89	0.52	0.45	0.43	0.42	0.41	0.4	0.4	0.4	0.41	0.42	0.43	0.45	0.52	1.89	5.26	9.11	12.51	15.03	16.33
22	17.37	16.02	13.41	9.83	5.75	2.11	0.57	0.49	0.47	0.45	0.44	0.43	0.44	0.43	0.44	0.45	0.47	0.49	0.57	2.11	5.75	9.83	13.41	16.02	17.37
23	18.4	17.02	14.31	10.56	6.24	2.35	0.63	0.53	0.51	0.49	0.48	0.47	0.47	0.47	0.48	0.49	0.51	0.53	0.63	2.35	6.24	10.56	14.31	17.02	18.4
24	19.41	18.01	15.19	11.29	6.75	2.59	0.68	0.56	0.54	0.53	0.51	0.5	0.51	0.5	0.51	0.53	0.54	0.56	0.68	2.59	6.75	11.29	15.19	18.01	19.41
25	20.43	19.01	16.06	12	7.26	2.84	0.75	0.6	0.58	0.56	0.55	0.54	0.55	0.54	0.55	0.56	0.58	0.6	0.75	2.84	7.26	12	16.06	19.01	20.43
26	21.44	19.99	16.95	12.73	7.77	3.1	0.81	0.64	0.62	0.6	0.59	0.58	0.58	0.58	0.59	0.6	0.62	0.64	0.81	3.1	7.77	12.73	16.95	19.99	21.44
27	22.43	20.97	17.81	13.44	8.28	3.36	0.88	0.68	0.66	0.64	0.62	0.61	0.62	0.61	0.62	0.64	0.66	0.68	0.88	3.36	8.28	13.44	17.81	20.97	22.43
28	23.43	21.92	18.68	14.16	8.78	3.62	0.95	0.72	0.7	0.68	0.66	0.65	0.66	0.65	0.66	0.68	0.7	0.72	0.95	3.62	8.78	14.16	18.68	21.92	23.43
29	24.4	22.87	19.52	14.86	9.28	3.88	1.03	0.76	0.73	0.72	0.7	0.69	0.69	0.69	0.7	0.72	0.73	0.76	1.03	3.88	9.28	14.86	19.52	22.87	24.4
30	25.39	23.82	20.36	15.55	9.77	4.14	1.1	0.8	0.77	0.75	0.74	0.73	0.73	0.73	0.74	0.75	0.77	0.8	1.1	4.14	9.77	15.55	20.36	23.82	25.39
31	26.33	24.74	21.18	16.23	10.26	4.39	1.17	0.84	0.82	0.79	0.78	0.77	0.77	0.77	0.78	0.79	0.82	0.84	1.17	4.39	10.26	16.23	21.18	24.74	26.33
32	27.28	25.65	21.99	16.9	10.74	4.65	1.24	0.88	0.86	0.84	0.82	0.8	0.81	0.8	0.82	0.84	0.86	0.88	1.24	4.65	10.74	16.9	21.99	25.65	27.28
33	28.23	26.55	22.78	17.55	11.21	4.89	1.31	0.92	0.9	0.88	0.86	0.85	0.85	0.85	0.86	0.88	0.9	0.92	1.31	4.89	11.21	17.55	22.78	26.55	28.23
34	29.14	27.43	23.57	18.19	11.66	5.13	1.39	0.96	0.94	0.92	0.9	0.89	0.89	0.89	0.9	0.92	0.94	0.96	1.39	5.13	11.66	18.19	23.57	27.43	29.14
35	30.07	28.31	24.33	18.81	12.11	5.37	1.46	1	0.98	0.96	0.94	0.93	0.93	0.93	0.94	0.96	0.98	1	1.46	5.37	12.11	18.81	24.33	28.31	30.07
36	30.96	29.17	25.09	19.44	12.56	5.6	1.53	1.05	1.02	1	0.98	0.97	0.97	0.97	0.98	1	1.02	1.05	1.53	5.6	12.56	19.44	25.09	29.17	30.96
37	31.83	30.02	25.85	20.06	13	5.84	1.6	1.09	1.06	1.04	1.02	1.01	1.01	1.01	1.02	1.04	1.06	1.09	1.6	5.84	13	20.06	25.85	30.02	31.83
38	32.72	30.85	26.57	20.66	13.44	6.07	1.66	1.13	1.11	1.08	1.07	1.05	1.06	1.05	1.07	1.08	1.11	1.13	1.66	6.07	13.44	20.66	26.57	30.85	32.72
39	33.58	31.67	27.29	21.25	13.86	6.3	1.73	1.17	1.15	1.13	1.11	1.09	1.1	1.09	1.11	1.13	1.15	1.17	1.73	6.3	13.86	21.25	27.29	31.67	33.58
40	34.43	32.47	27.99	21.82	14.26	6.51	1.8	1.22	1.19	1.17	1.15	1.14	1.14	1.14	1.15	1.17	1.19	1.22	1.8	6.51	14.26	21.82	27.99	32.47	34.43
41	35.27	33.25	28.68	22.39	14.67	6.72	1.86	1.26	1.24	1.21	1.19	1.18	1.18	1.18	1.19	1.21	1.24	1.26	1.86	6.72	14.67	22.39	28.68	33.25	35.27
42	36.09	34.03	29.37	22.94	15.07	6.93	1.92	1.3	1.28	1.26	1.24	1.22	1.22	1.22	1.24	1.26	1.28	1.3	1.92	6.93	15.07	22.94	29.37	34.03	36.09
43	36.88	34.79	30.03	23.49	15.46	7.14	1.99	1.35	1.32	1.3	1.28	1.26	1.27	1.26	1.28	1.3	1.32	1.35	1.99	7.14	15.46	23.49	30.03	34.79	36.88
44	37.68	35.54	30.68	24.03	15.85	7.34	2.05	1.39	1.37	1.34	1.32	1.31	1.31	1.31	1.32	1.34	1.37	1.39	2.05	7.34	15.85	24.03	30.68	35.54	37.68
45	38.46	36.27	31.32	24.55	16.22	7.54	2.11	1.44	1.41	1.39	1.37	1.35	1.35	1.35	1.37	1.39	1.41	1.44	2.11	7.54	16.22	24.55	31.32	36.27	38.46
46	39.22	36.98	31.95	25.07	16.59	7.73	2.17	1.48	1.45	1.43	1.41	1.39	1.4	1.39	1.41	1.43	1.45	1.48	2.17	7.73	16.59	25.07	31.95	36.98	39.22
47	39.97	37.7	32.56	25.58	16.95	7.92	2.23	1.52	1.5	1.47	1.45	1.44	1.44	1.44	1.45	1.47	1.5	1.52	2.23	7.92	16.95	25.58	32.56	37.7	39.97
48	40.7	38.39	33.16	26.07	17.31	8.11	2.29	1.57	1.54	1.52	1.5	1.48	1.48	1.48	1.5	1.52	1.54	1.57	2.29	8.11	17.31	26.07	33.16	38.39	40.7
49	41.43	39.07	33.75	26.56	17.66	8.3	2.35	1.61	1.59	1.56	1.54	1.53	1.53	1.53	1.54	1.56	1.59	1.61	2.35	8.3	17.66	26.56	33.75	39.07	41.43
50	42.13	39.72	34.32	27.04	18	8.48	2.41	1.66	1.63	1.61	1.59	1.57	1.57	1.57	1.59	1.61	1.63	1.66	2.41	8.48	18	27.04	34.32	39.72	42.13

51	42.81	40.38	34.9	27.5	18.34	8.64	2.47	1.71	1.68	1.65	1.63	1.61	1.62	1.61	1.63	1.65	1.68	1.71	2.47	8.64	18.34	27.5	34.9	40.38	42.81
52	43.49	41.01	35.45	27.97	18.67	8.81	2.53	1.75	1.72	1.7	1.68	1.66	1.66	1.66	1.68	1.7	1.72	1.75	2.53	8.81	18.67	27.97	35.45	41.01	43.49
53	44.15	41.63	35.99	28.41	19	8.98	2.59	1.8	1.77	1.74	1.72	1.71	1.71	1.71	1.72	1.74	1.77	1.8	2.59	8.98	19	28.41	35.99	41.63	44.15
54	44.79	42.24	36.52	28.85	19.31	9.15	2.66	1.84	1.81	1.79	1.77	1.75	1.75	1.75	1.77	1.79	1.81	1.84	2.66	9.15	19.31	28.85	36.52	42.24	44.79
55	45.43	42.82	37.03	29.28	19.62	9.31	2.72	1.89	1.86	1.84	1.81	1.8	1.8	1.8	1.81	1.84	1.86	1.89	2.72	9.31	19.62	29.28	37.03	42.82	45.43
56	46.04	43.41	37.53	29.7	19.92	9.47	2.78	1.94	1.91	1.88	1.86	1.84	1.85	1.84	1.86	1.88	1.91	1.94	2.78	9.47	19.92	29.7	37.53	43.41	46.04
57	46.64	43.97	38.02	30.11	20.21	9.62	2.84	1.99	1.96	1.93	1.91	1.89	1.89	1.89	1.91	1.93	1.96	1.99	2.84	9.62	20.21	30.11	38.02	43.97	46.64
58	47.24	44.51	38.5	30.51	20.49	9.78	2.9	2.04	2	1.98	1.95	1.94	1.94	1.94	1.95	1.98	2	2.04	2.9	9.78	20.49	30.51	38.5	44.51	47.24
59	47.79	45.05	38.98	30.89	20.77	9.92	2.96	2.08	2.05	2.03	2	1.99	1.99	1.99	2	2.03	2.05	2.08	2.96	9.92	20.77	30.89	38.98	45.05	47.79
60	48.35	45.56	39.43	31.27	21.04	10.07	3.02	2.13	2.1	2.07	2.05	2.03	2.04	2.03	2.05	2.07	2.1	2.13	3.02	10.07	21.04	31.27	39.43	45.56	48.35
61	48.88	46.07	39.88	31.64	21.31	10.22	3.08	2.18	2.15	2.12	2.1	2.08	2.09	2.08	2.1	2.12	2.15	2.18	3.08	10.22	21.31	31.64	39.88	46.07	48.88
62	49.41	46.55	40.32	32	21.57	10.36	3.15	2.24	2.2	2.17	2.15	2.13	2.14	2.13	2.15	2.17	2.2	2.24	3.15	10.36	21.57	32	40.32	46.55	49.41
63	49.92	47.04	40.73	32.35	21.82	10.51	3.21	2.29	2.25	2.22	2.2	2.18	2.19	2.18	2.2	2.22	2.25	2.29	3.21	10.51	21.82	32.35	40.73	47.04	49.92
64	50.43	47.5	41.13	32.69	22.06	10.64	3.27	2.34	2.31	2.28	2.25	2.23	2.24	2.23	2.25	2.28	2.31	2.34	3.27	10.64	22.06	32.69	41.13	47.5	50.43
65	50.9	47.94	41.53	33.02	22.31	10.78	3.33	2.39	2.36	2.33	2.3	2.28	2.29	2.28	2.3	2.33	2.36	2.39	3.33	10.78	22.31	33.02	41.53	47.94	50.9
66	51.36	48.37	41.91	33.33	22.54	10.91	3.4	2.45	2.41	2.38	2.35	2.34	2.34	2.34	2.35	2.38	2.41	2.45	3.4	10.91	22.54	33.33	41.91	48.37	51.36
67	51.82	48.79	42.29	33.64	22.76	11.04	3.46	2.5	2.46	2.43	2.4	2.39	2.39	2.39	2.4	2.43	2.46	2.5	3.46	11.04	22.76	33.64	42.29	48.79	51.82
68	52.25	49.19	42.64	33.93	22.98	11.16	3.52	2.55	2.51	2.48	2.46	2.44	2.44	2.44	2.46	2.48	2.51	2.55	3.52	11.16	22.98	33.93	42.64	49.19	52.25
69	52.64	49.58	42.99	34.21	23.19	11.29	3.58	2.61	2.57	2.53	2.51	2.49	2.49	2.49	2.51	2.53	2.57	2.61	3.58	11.29	23.19	34.21	42.99	49.58	52.64
70	53.04	49.95	43.31	34.48	23.39	11.4	3.64	2.66	2.62	2.59	2.56	2.54	2.54	2.54	2.56	2.59	2.62	2.66	3.64	11.4	23.39	34.48	43.31	49.95	53.04
71	53.43	50.3	43.62	34.75	23.58	11.52	3.7	2.71	2.67	2.64	2.62	2.6	2.6	2.6	2.62	2.64	2.67	2.71	3.7	11.52	23.58	34.75	43.62	50.3	53.43
72	53.8	50.65	43.93	35	23.77	11.63	3.76	2.77	2.73	2.69	2.67	2.65	2.65	2.65	2.67	2.69	2.73	2.77	3.76	11.63	23.77	35	43.93	50.65	53.8
73	54.14	50.97	44.23	35.23	23.95	11.74	3.82	2.82	2.78	2.75	2.72	2.7	2.7	2.7	2.72	2.75	2.78	2.82	3.82	11.74	23.95	35.23	44.23	50.97	54.14
74	54.46	51.28	44.49	35.47	24.13	11.85	3.88	2.87	2.83	2.8	2.77	2.75	2.75	2.75	2.77	2.8	2.83	2.87	3.88	11.85	24.13	35.47	44.49	51.28	54.46
75	54.79	51.58	44.75	35.68	24.29	11.95	3.94	2.92	2.88	2.85	2.82	2.81	2.81	2.81	2.82	2.85	2.88	2.92	3.94	11.95	24.29	35.68	44.75	51.58	54.79
76	55.08	51.86	44.99	35.89	24.45	12.05	3.99	2.97	2.93	2.9	2.88	2.86	2.86	2.86	2.88	2.9	2.93	2.97	3.99	12.05	24.45	35.89	44.99	51.86	55.08
77	55.37	52.12	45.23	36.09	24.6	12.14	4.04	3.03	2.99	2.95	2.93	2.91	2.91	2.91	2.93	2.95	2.99	3.03	4.04	12.14	24.6	36.09	45.23	52.12	55.37
78	55.62	52.38	45.45	36.26	24.73	12.22	4.1	3.07	3.04	3	2.98	2.96	2.96	2.96	2.98	3	3.04	3.07	4.1	12.22	24.73	36.26	45.45	52.38	55.62
79	55.86	52.61	45.66	36.44	24.87	12.31	4.15	3.12	3.08	3.05	3.02	3.01	3.01	3.01	3.02	3.05	3.08	3.12	4.15	12.31	24.87	36.44	45.66	52.61	55.86
80	56.11	52.82	45.84	36.59	24.98	12.38	4.19	3.17	3.13	3.1	3.07	3.06	3.05	3.06	3.07	3.1	3.13	3.17	4.19	12.38	24.98	36.59	45.84	52.82	56.11
81	56.31	53.02	46.01	36.74	25.1	12.45	4.24	3.21	3.17	3.14	3.12	3.1	3.1	3.1	3.12	3.14	3.17	3.21	4.24	12.45	25.1	36.74	46.01	53.02	56.31
82	56.48	53.2	46.17	36.86	25.2	12.52	4.28	3.25	3.21	3.18	3.16	3.14	3.14	3.14	3.16	3.18	3.21	3.25	4.28	12.52	25.2	36.86	46.17	53.2	56.48
83	56.65	53.36	46.3	36.98	25.3	12.57	4.32	3.29	3.25	3.22	3.2	3.18	3.18	3.18	3.2	3.22	3.25	3.29	4.32	12.57	25.3	36.98	46.3	53.36	56.65
84	56.81	53.51	46.44	37.1	25.38	12.63	4.35	3.32	3.29	3.26	3.24	3.22	3.22	3.22	3.24	3.26	3.29	3.32	4.35	12.63	25.38	37.1	46.44	53.51	56.81
85	56.95	53.63	46.55	37.19	25.46	12.67	4.39	3.36	3.32	3.29	3.27	3.26	3.26	3.26	3.27	3.29	3.32	3.36	4.39	12.67	25.46	37.19	46.55	53.63	56.95
86	57.06	53.75	46.65	37.28	25.52	12.72	4.42	3.39	3.35	3.33	3.3	3.29	3.29	3.29	3.3	3.33	3.35	3.39	4.42	12.72	25.52	37.28	46.65	53.75	57.06
87	57.14	53.84	46.73	37.33	25.57	12.75	4.44	3.42	3.38	3.35	3.33	3.32	3.32	3.32	3.33	3.35	3.38	3.42	4.44	12.75	25.57	37.33	46.73	53.84	57.14
88	57.24	53.92	46.79	37.4	25.61	12.77	4.46	3.44	3.4	3.38	3.36	3.35	3.35	3.35	3.36	3.38	3.4	3.44	4.46	12.77	25.61	37.4	46.79	53.92	57.24
89	57.27	53.96	46.83	37.42	25.64	12.79	4.47	3.45	3.41	3.39	3.37	3.37	3.37	3.37	3.37	3.39	3.41	3.45	4.47	12.79	25.64	37.42	46.83	53.96	57.27
90	57.31	53.99	46.87	37.45	25.66	12.8	4.48	3.46	3.42	3.39	3.38	3.37	3.37	3.37	3.38	3.39	3.42	3.46	4.48	12.8	25.66	37.45	46.87	53.99	57.31
91	57.34	54.03	46.92	37.5	25.69	12.83	4.5	3.48	3.43	3.41	3.39	3.38	3.38	3.38	3.39	3.41	3.43	3.48	4.5	12.83	25.69	37.5	46.92	54.03	57.34
92	57.37	54.06	46.94	37.51	25.71	12.84	4.53	3.5	3.46	3.43	3.41	3.4	3.39	3.4	3.41	3.43	3.46	3.5	4.53	12.84	25.71	37.51	46.94	54.06	57.37
93	57.37	54.09	46.95	37.53	25.73	12.87	4.56	3.53	3.49	3.46	3.44	3.43	3.43	3.43	3.44	3.46	3.49	3.53	4.56	12.87	25.73	37.53	46.95	54.09	57.37
94	57.37	54.06	46.94	37.52	25.73	12.87	4.58	3.56	3.52	3.48	3.47	3.46	3.46	3.46	3.47	3.48	3.52	3.56	4.58	12.87	25.73	37.52	46.94	54.06	57.37
95	57.33	54.02	46.91	37.5	25.71	12.87	4.59	3.57	3.53	3.5	3.48	3.48	3.48	3.48	3.48	3.5	3.53	3.57	4.59	12.87	25.71	37.5	46.91	54.02	57.33
96	57.27	53.98	46.88	37.48	25.71	12.87	4.6	3.59	3.53	3.5	3.48	3.47	3.47	3.47	3.48	3.5	3.53	3.59	4.6	12.87	25.71	37.48	46.88	53.98	57.27
97	57.24	53.96	46.88	37.48	25.72	12.9	4.65	3.63	3.57	3.53	3.51	3.49	3.48	3.49	3.51	3.53	3.57	3.63	4.65	12.9	25.72	37.48	46.88	53.96	57.24
98	57.24	53.93	46.87	37.49	25.75	12.96	4.72	3.71	3.65	3.61	3.58	3.56	3.56	3.56	3.58	3.61	3.65	3.71	4.72	12.96	25.75	37.49	46.87	53.93	57.24
99	57.18	53.9	46.86	37.49	25.76	13	4.79	3.78	3.72	3.68	3.66	3.64	3.64	3.64	3.66	3.68	3.72	3.78	4.79	13	25.76	37.49	46.86	53.9	57.18
100	57.11	53.84	46.81	37.47	25.77	13.03	4.86	3.86	3.8	3.76	3.74	3.72	3.71	3.72	3.74	3.76	3.8	3.86	4.86	13.03	25.77	37.47	46.81	53.84	57.11
101	57.03	53.77	46.76	37.44	25.77	13.07	4.92	3.93	3.87	3.82	3.8	3.78	3.78	3.78	3.8	3.82	3.87	3.93	4.92	13.07	25.77	37.44	46.76	53.77	57.03
102	56.94	53.71	46.73	37.44	25.79	13.12	5.01	4.01	3.94	3.89	3.86	3.84	3.84	3.84	3.86	3.89	3.94	4.01	5.01	13.12	25.79	37.44	46.73	53.71	56.94
103	56.93	53.73	46.76	37.49	25.87	13.24	5.15	4.16	4.08	4.03	3.99	3.97	3.97	3.97	3.99	4.03	4.08	4.16	5.15	13.24	25.87	37.49	46.76	53.73	56.93
104	56.96	53.75	46.83	37.58	26	13.41	5.36	4.36	4.28	4.22	4.18	4.15	4.15	4.15	4.18	4.22	4.28	4.36	5.36	13.41	26	37.58	46.83	53.75	56.96
105	57.04	53.85	46.96	37.75	26.19	13.64	5.63	4.63	4.55	4.49	4.44	4.41	4.41	4.41	4.44	4.49	4.55	4.63	5.63	13.64	26.19	37.75	46.96	53.85	57.04

106	57.18	54	47.15	37.96	26.44	13.94	5.97	4.97	4.88	4.81	4.77	4.73	4.73	4.73	4.77	4.81	4.88	4.97	5.97	13.94	26.44	37.96	47.15	54	57.18
107	57.37	54.21	47.38	38.25	26.76	14.3	6.37	5.38	5.29	5.21	5.17	5.14	5.15	5.14	5.17	5.21	5.29	5.38	6.37	14.3	26.76	38.25	47.38	54.21	57.37
108	57.57	54.42	47.64	38.54	27.12	14.73	6.84	5.85	5.75	5.68	5.63	5.6	5.61	5.6	5.63	5.68	5.75	5.85	6.84	14.73	27.12	38.54	47.64	54.42	57.57
109	57.71	54.6	47.86	38.81	27.43	15.1	7.26	6.3	6.19	6.11	6.06	6.03	6.04	6.03	6.06	6.11	6.19	6.3	7.26	15.1	27.43	38.81	47.86	54.6	57.71
110	57.92	54.82	48.14	39.13	27.77	15.51	7.71	6.76	6.66	6.58	6.53	6.48	6.48	6.48	6.53	6.58	6.66	6.76	7.71	15.51	27.77	39.13	48.14	54.82	57.92
111	58.18	55.11	48.46	39.49	28.19	15.99	8.25	7.28	7.18	7.09	7.02	6.97	7.01	6.97	7.02	7.09	7.18	7.28	8.25	15.99	28.19	39.49	48.46	55.11	58.18
112	58.45	55.41	48.81	39.89	28.65	16.53	8.85	7.89	7.78	7.68	7.61	7.55	7.59	7.55	7.61	7.68	7.78	7.89	8.85	16.53	28.65	39.89	48.81	55.41	58.45
113	58.73	55.7	49.16	40.29	29.11	17.08	9.46	8.51	8.4	8.31	8.23	8.17	8.21	8.17	8.23	8.31	8.4	8.51	9.46	17.08	29.11	40.29	49.16	55.7	58.73
114	58.97	56	49.48	40.68	29.57	17.62	10.07	9.14	9.03	8.93	8.86	8.8	8.85	8.8	8.86	8.93	9.03	9.14	10.07	17.62	29.57	40.68	49.48	56	58.97
115	59.22	56.26	49.82	41.06	30.03	18.17	10.69	9.77	9.66	9.57	9.48	9.42	9.44	9.42	9.48	9.57	9.66	9.77	10.69	18.17	30.03	41.06	49.82	56.26	59.22
116	59.47	56.53	50.13	41.44	30.47	18.71	11.31	10.39	10.28	10.19	10.1	10.03	10.06	10.03	10.1	10.19	10.28	10.39	11.31	18.71	30.47	41.44	50.13	56.53	59.47
117	59.7	56.8	50.45	41.81	30.95	19.26	11.95	11.05	10.93	10.84	10.74	10.67	10.71	10.67	10.74	10.84	10.93	11.05	11.95	19.26	30.95	41.81	50.45	56.8	59.7
118	59.92	57.05	50.75	42.18	31.4	19.82	12.59	11.69	11.59	11.49	11.4	11.32	11.36	11.32	11.4	11.49	11.59	11.69	12.59	19.82	31.4	42.18	50.75	57.05	59.92
119	60.13	57.28	51.06	42.56	31.85	20.38	13.24	12.36	12.25	12.15	12.06	11.98	12.01	11.98	12.06	12.15	12.25	12.36	13.24	20.38	31.85	42.56	51.06	57.28	60.13
120	60.3	57.5	51.34	42.9	32.29	20.93	13.88	13.02	12.91	12.81	12.71	12.64	12.67	12.64	12.71	12.81	12.91	13.02	13.88	20.93	32.29	42.9	51.34	57.5	60.3
121	60.49	57.72	51.61	43.25	32.73	21.49	14.51	13.68	13.57	13.48	13.38	13.3	13.33	13.3	13.38	13.48	13.57	13.68	14.51	21.49	32.73	43.25	51.61	57.72	60.49
122	60.65	57.9	51.88	43.58	33.17	22.05	15.18	14.34	14.23	14.15	14.05	13.97	13.99	13.97	14.05	14.15	14.23	14.34	15.18	22.05	33.17	43.58	51.88	57.9	60.65
123	60.79	58.08	52.12	43.9	33.59	22.6	15.81	15	14.9	14.81	14.7	14.62	14.64	14.62	14.7	14.81	14.9	15	15.81	22.6	33.59	43.9	52.12	58.08	60.79
124	60.93	58.26	52.36	44.21	34.01	23.14	16.46	15.66	15.56	15.48	15.37	15.28	15.31	15.28	15.37	15.48	15.56	15.66	16.46	23.14	34.01	44.21	52.36	58.26	60.93
125	61.02	58.4	52.57	44.52	34.41	23.69	17.11	16.33	16.23	16.15	16.03	15.95	15.97	15.95	16.03	16.15	16.23	16.33	17.11	23.69	34.41	44.52	52.57	58.4	61.02
126	61.13	58.52	52.77	44.81	34.81	24.23	17.75	16.99	16.89	16.82	16.71	16.62	16.64	16.62	16.71	16.82	16.89	16.99	17.75	24.23	34.81	44.81	52.77	58.52	61.13
127	61.2	58.64	52.96	45.07	35.2	24.77	18.4	17.66	17.57	17.5	17.38	17.29	17.31	17.29	17.38	17.5	17.57	17.66	18.4	24.77	35.2	45.07	52.96	58.64	61.2
128	61.25	58.73	53.13	45.34	35.58	25.29	19.05	18.31	18.23	18.16	18.04	17.95	17.97	17.95	18.04	18.16	18.23	18.31	19.05	25.29	35.58	45.34	53.13	58.73	61.25
129	61.33	58.81	53.28	45.59	35.96	25.81	19.69	18.99	18.9	18.83	18.72	18.63	18.64	18.63	18.72	18.83	18.9	18.99	19.69	25.81	35.96	45.59	53.28	58.81	61.33
130	61.31	58.88	53.42	45.83	36.31	26.34	20.34	19.64	19.56	19.5	19.38	19.29	19.32	19.29	19.38	19.5	19.56	19.64	20.34	26.34	36.31	45.83	53.42	58.88	61.31
131	61.34	58.91	53.56	46.05	36.66	26.86	20.97	20.3	20.21	20.16	20.05	19.95	19.99	19.95	20.05	20.16	20.21	20.3	20.97	26.86	36.66	46.05	53.56	58.91	61.34
132	61.33	58.93	53.66	46.26	37	27.36	21.62	20.95	20.88	20.83	20.71	20.62	20.64	20.62	20.71	20.83	20.88	20.95	21.62	27.36	37	46.26	53.66	58.93	61.33
133	61.28	58.94	53.75	46.46	37.32	27.85	22.24	21.6	21.52	21.48	21.37	21.27	21.31	21.27	21.37	21.48	21.52	21.6	22.24	27.85	37.32	46.46	53.75	58.94	61.28
134	61.24	58.93	53.83	46.65	37.65	28.36	22.89	22.25	22.18	22.15	22.04	21.95	21.97	21.95	22.04	22.15	22.18	22.25	22.89	28.36	37.65	46.65	53.83	58.93	61.24
135	61.13	58.87	53.86	46.8	37.95	28.83	23.49	22.88	22.82	22.79	22.68	22.58	22.62	22.58	22.68	22.79	22.82	22.88	23.49	28.83	37.95	46.8	53.86	58.87	61.13
136	61.03	58.82	53.88	46.94	38.24	29.3	24.11	23.52	23.46	23.44	23.33	23.23	23.26	23.23	23.33	23.44	23.46	23.52	24.11	29.3	38.24	46.94	53.88	58.82	61.03
137	60.91	58.74	53.89	47.07	38.51	29.78	24.73	24.14	24.09	24.07	23.97	23.87	23.91	23.87	23.97	24.07	24.09	24.14	24.73	29.78	38.51	47.07	53.89	58.74	60.91
138	60.77	58.63	53.89	47.18	38.77	30.23	25.33	24.76	24.7	24.69	24.59	24.5	24.54	24.5	24.59	24.69	24.7	24.76	25.33	30.23	38.77	47.18	53.89	58.63	60.77
139	60.61	58.51	53.86	47.27	39.02	30.67	25.93	25.38	25.32	25.32	25.22	25.13	25.17	25.13	25.22	25.32	25.32	25.38	25.93	30.67	39.02	47.27	53.86	58.51	60.61
140	60.41	58.37	53.81	47.34	39.26	31.1	26.52	25.97	25.92	25.93	25.84	25.74	25.79	25.74	25.84	25.93	25.92	25.97	26.52	31.1	39.26	47.34	53.81	58.37	60.41
141	60.17	58.21	53.74	47.4	39.49	31.54	27.09	26.58	26.52	26.53	26.45	26.36	26.4	26.36	26.45	26.53	26.52	26.58	27.09	31.54	39.49	47.4	53.74	58.21	60.17
142	59.97	58.01	53.66	47.44	39.71	31.95	27.67	27.17	27.12	27.13	27.05	26.96	27	26.96	27.05	27.13	27.12	27.17	27.67	31.95	39.71	47.44	53.66	58.01	59.97
143	59.69	57.79	53.55	47.46	39.9	32.35	28.23	27.75	27.7	27.71	27.64	27.56	27.6	27.56	27.64	27.71	27.7	27.75	28.23	32.35	39.9	47.46	53.55	57.79	59.69
144	59.41	57.54	53.41	47.45	40.1	32.75	28.79	28.32	28.27	28.28	28.23	28.15	28.18	28.15	28.23	28.28	28.27	28.32	28.79	32.75	40.1	47.45	53.41	57.54	59.41
145	59.09	57.28	53.25	47.43	40.26	33.15	29.34	28.88	28.83	28.86	28.8	28.72	28.76	28.72	28.8	28.86	28.83	28.88	29.34	33.15	40.26	47.43	53.25	57.28	59.09
146	58.75	57	53.07	47.39	40.42	33.53	29.87	29.44	29.38	29.42	29.37	29.3	29.34	29.3	29.37	29.42	29.38	29.44	29.87	33.53	40.42	47.39	53.07	57	58.75
147	58.4	56.66	52.86	47.33	40.55	33.89	30.4	29.98	29.92	29.96	29.92	29.85	29.9	29.85	29.92	29.96	29.92	29.98	30.4	33.89	40.55	47.33	52.86	56.66	58.4
148	58	56.34	52.64	47.26	40.68	34.24	30.92	30.51	30.45	30.49	30.46	30.39	30.44	30.39	30.46	30.49	30.45	30.51	30.92	34.24	40.68	47.26	52.64	56.34	58
149	57.6	55.95	52.37	47.15	40.79	34.59	31.4	31.02	30.97	31	30.98	30.92	30.97	30.92	30.98	31	30.97	31.02	31.4	34.59	40.79	47.15	52.37	55.95	57.6
150	57.14	55.56	52.09	47.03	40.88	34.91	31.89	31.53	31.46	31.5	31.49	31.45	31.49	31.45	31.49	31.5	31.46	31.53	31.89	34.91	40.88	47.03	52.09	55.56	57.14
151	56.64	55.13	51.78	46.88	40.95	35.22	32.36	32.02	31.95	31.99	31.99	31.95	32	31.95	31.99	31.99	31.95	32.02	32.36	35.22	40.95	46.88	51.78	55.13	56.64
152	56.17	54.69	51.44	46.73	41	35.53	32.81	32.5	32.41	32.45	32.47	32.43	32.48	32.43	32.47	32.45	32.41	32.5	32.81	35.53	41	46.73	51.44	54.69	56.17
153	55.62	54.2	51.08	46.53	41.05	35.82	33.25	32.96	32.86	32.91	32.93	32.9	32.97	32.9	32.93	32.91	32.86	32.96	33.25	35.82	41.05	46.53	51.08	54.2	55.62
154	55.07	53.7	50.69	46.33	41.06	36.09	33.68	33.4	33.3	33.34	33.38	33.36	33.42	33.36	33.38	33.34	33.3	33.4	33.68	36.09	41.06	46.33	50.69	53.7	55.07
155	54.48	53.16	50.28	46.09	41.06	36.35	34.1	33.84	33.73	33.78	33.8	33.79	33.85	33.79	33.8	33.78	33.73	33.84	34.1	36.35	41.06	46.09	50.28	53.16	54.48
156	53.87	52.6	49.84	45.84	41.04	36.59	34.49	34.25	34.13	34.18	34.22	34.21	34.26	34.21	34.22	34.18	34.13	34.25	34.49	36.59	41.04	45.84	49.84	52.6	53.87
157	53.23	52.01	49.39	45.58	41.01	36.82	34.87	34.64	34.53	34.57	34.62	34.6	34.67	34.6	34.62	34.57	34.53	34.64	34.87	36.82	41.01	45.58	49.39	52.01	53.23
158	52.55	51.39	48.89	45.28	40.94	37.02	35.22	35.02	34.9	34.93	34.98	34.98	35.05	34.98	34.98	34.93	34.9	35.02	35.22	37.02	40.94	45.28	48.89	51.39	52.55
159	51.88	50.74	48.38	44.95	40.87	37.21	35.54	35.36	35.23	35.25	35.32	35.32	35.38	35.32	35.32	35.25	35.23	35.36	35.54	37.21	40.87	44.95	48.38	50.74	51.88
160	51.12	50.07	47.82	44.6	40.76	37.35	35.84	35.67	35.56	35.58	35.64	35.65	35.7	35.65	35.64	35.58	35.56	35.67	35.84	37.35	40.76	44.6	47.82	50.07	51.12

161	50.35	49.35	47.24	44.22	40.62	37.48	36.11	35.96	35.85	35.86	35.93	35.94	35.98	35.94	35.93	35.86	35.85	35.96	36.11	37.48	40.62	44.22	47.24	49.35	50.35
162	49.57	48.62	46.64	43.81	40.47	37.57	36.34	36.21	36.1	36.12	36.18	36.2	36.26	36.2	36.18	36.12	36.1	36.21	36.34	37.57	40.47	43.81	46.64	48.62	49.57
163	48.75	47.84	46.01	43.38	40.29	37.64	36.55	36.43	36.32	36.33	36.39	36.43	36.5	36.43	36.39	36.33	36.32	36.43	36.55	37.64	40.29	43.38	46.01	47.84	48.75
164	47.91	47.08	45.37	42.93	40.09	37.71	36.74	36.64	36.53	36.53	36.59	36.63	36.71	36.63	36.59	36.53	36.53	36.64	36.74	37.71	40.09	42.93	45.37	47.08	47.91
165	47.05	46.26	44.7	42.47	39.88	37.74	36.91	36.82	36.72	36.71	36.77	36.8	36.89	36.8	36.77	36.71	36.72	36.82	36.91	37.74	39.88	42.47	44.7	46.26	47.05
166	46.16	45.44	44.01	41.98	39.65	37.74	37.04	36.95	36.86	36.85	36.9	36.93	37.01	36.93	36.9	36.85	36.86	36.95	37.04	37.74	39.65	41.98	44.01	45.44	46.16
167	45.24	44.59	43.31	41.47	39.4	37.73	37.13	37.06	36.98	36.98	37.01	37.03	37.11	37.03	37.01	36.98	36.98	37.06	37.13	37.73	39.4	41.47	43.31	44.59	45.24
168	44.33	43.72	42.57	40.92	39.12	37.68	37.19	37.13	37.07	37.04	37.08	37.08	37.18	37.08	37.08	37.04	37.07	37.13	37.19	37.68	39.12	40.92	42.57	43.72	44.33
169	43.36	42.83	41.82	40.39	38.82	37.63	37.19	37.15	37.09	37.08	37.08	37.11	37.21	37.11	37.08	37.08	37.09	37.15	37.19	37.63	38.82	40.39	41.82	42.83	43.36
170	42.41	41.93	41.05	39.83	38.51	37.51	37.18	37.13	37.11	37.08	37.09	37.11	37.19	37.11	37.09	37.08	37.11	37.13	37.18	37.51	38.51	39.83	41.05	41.93	42.41
171	41.48	41.05	40.32	39.28	38.21	37.41	37.14	37.11	37.08	37.05	37.07	37.08	37.14	37.08	37.07	37.05	37.08	37.11	37.14	37.41	38.21	39.28	40.32	41.05	41.48
172	40.53	40.18	39.57	38.76	37.9	37.28	37.09	37.06	37.04	37.01	37.02	37.02	37.09	37.02	37.02	37.01	37.04	37.06	37.09	37.28	37.9	38.76	39.57	40.18	40.53
173	39.63	39.33	38.88	38.26	37.59	37.14	37.02	36.99	36.97	36.96	36.97	36.95	37.01	36.95	36.97	36.96	36.97	36.99	37.02	37.14	37.59	38.26	38.88	39.33	39.63
174	38.76	38.55	38.22	37.77	37.32	37.02	36.94	36.92	36.92	36.9	36.89	36.87	36.94	36.87	36.89	36.9	36.92	36.92	36.94	37.02	37.32	37.77	38.22	38.55	38.76
175	38.02	37.84	37.62	37.33	37.05	36.89	36.86	36.85	36.86	36.84	36.83	36.81	36.85	36.81	36.83	36.84	36.86	36.85	36.86	36.89	37.05	37.33	37.62	37.84	38.02
176	37.4	37.28	37.15	36.98	36.82	36.76	36.77	36.75	36.76	36.76	36.75	36.74	36.79	36.74	36.75	36.76	36.76	36.75	36.77	36.76	36.82	36.98	37.15	37.28	37.4
177	36.94	36.85	36.8	36.73	36.68	36.67	36.67	36.67	36.67	36.66	36.67	36.66	36.71	36.66	36.67	36.66	36.67	36.67	36.67	36.67	36.68	36.73	36.8	36.85	36.94
178	36.66	36.6	36.6	36.59	36.6	36.6	36.59	36.6	36.6	36.6	36.6	36.59	36.65	36.59	36.6	36.6	36.6	36.6	36.59	36.6	36.6	36.59	36.6	36.6	36.66
179	36.58	36.52	36.54	36.55	36.55	36.54	36.53	36.54	36.54	36.55	36.54	36.52	36.58	36.52	36.54	36.55	36.54	36.54	36.53	36.54	36.55	36.55	36.54	36.52	36.58
180	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57	36.57

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	SA-SLB	Sample ID.	A1
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 25º C ± 1º 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
120.02	60	0.073	8.67	0.991	8.45%
277.04	60	0.039	9.97	0.927	16.36%

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**********