



Photometric Test Report

Relevant Standards

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

Prepared For RAB Lighting Inc.

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Project Number

DLF2408110

Report Number

DLF2408110-2a

Test Date

2024/8/16

Issue Date

2024/8/19

Prepared By

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Approved By

Kevin Jia

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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	300		174
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-180° zones)	IES LM-79-2008	Standard 105	Premium 120	32.3
Luminaire Output (lm) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	300		94
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard 105	Premium 120	17.5
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		5.38
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	6.58%
		20.00%	277V	13.93%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.994
		0.9	277V	0.940
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	3098
		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	-		24
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		99
IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18% ≤ IES Rcs,h1 ≤ +23%		-9%
Zonal Lumen Requirement (80°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	≤10%		20.10%
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		0.038
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		5.38
(Goniophotometer - Section 4.2)		Non-Worst Case		4.59

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/8/16	SA-CLWP	ES1-02	B1
2	Goniophotometer Test	2024/8/16	SA-CLWP	ES1-02	B1
3	THD and PF Test	2024/8/16	SA-CLWP	ES1-02	B1

Remark(If any)

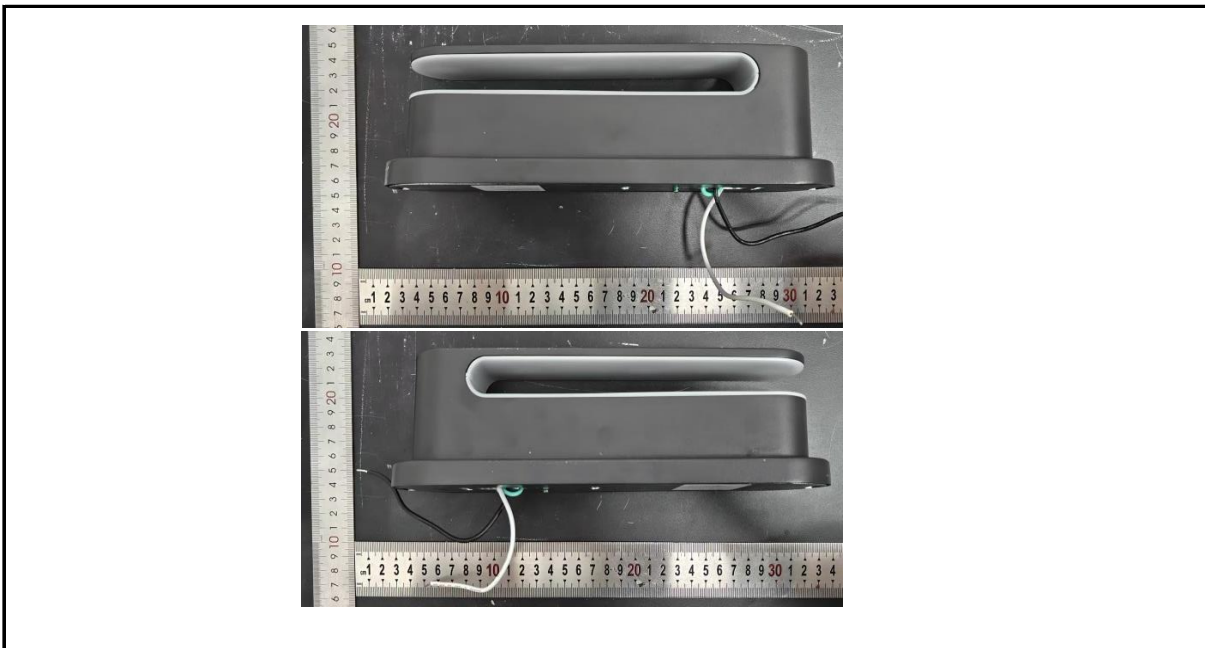
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3.0 Production Description

Luminaire Description: SA-CLWP

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-CLWP	Sample ID.	B1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.1	Humidity (%RH)	57.0

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
120.04	60	0.039	4.63	0.994
277.07	60	0.021	5.42	0.940

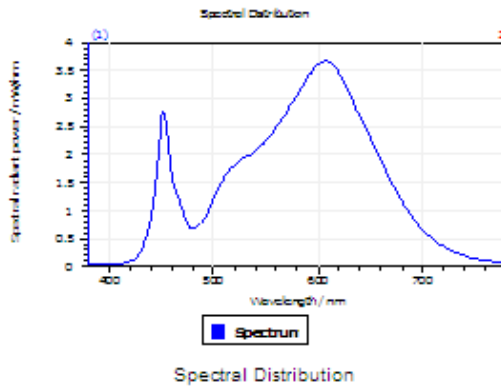
Test Result

CCT (K)	CRI	R9	Duv
3098	86	24	-0.0036

Rf	Rg	IES Rcs,h1
86	99	-9%

4.1 Integrating Sphere Test

Results



Spectral values

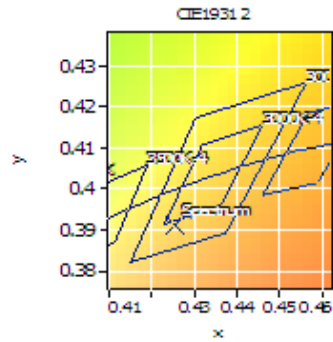
DominantWavelength 583.87 nm
 Purity 0.450
 PeakWavelength 608.59 nm
 Radiant Power 0.5723 W
 Width50%:

Color Coordinates

Correlated Color Temperat 3098 K
 x: 0.4253 u: 0.2486 u': 0.2486
 y: 0.3911 v: 0.3429 v': 0.5144

CRI01	85.9	CRI09	23.5
CRI02	93.3	CRI10	84.4
CRI03	96.3	CRI11	85.5
CRI04	85.1	CRI12	74.0
CRI05	86.3	CRI13	87.9
CRI06	91.7	CRI14	98.7
CRI07	84.5	CRI15	79.9
CRI08	65.8	CRI16	77.3

ResultsCRI 86.1



PlanckDistance 3.6E-003

4.1 Integrating Sphere Test

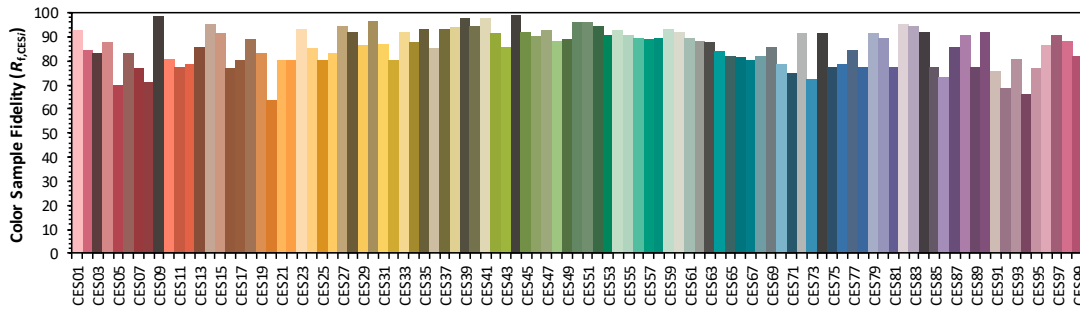
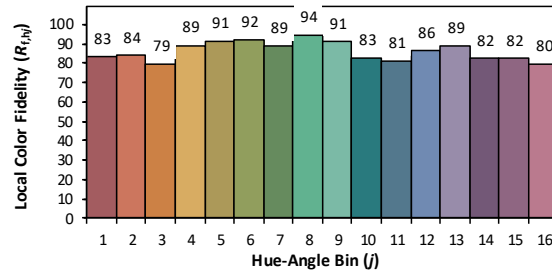
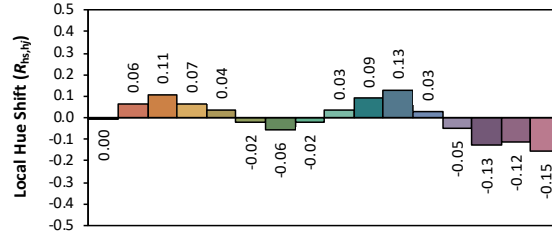
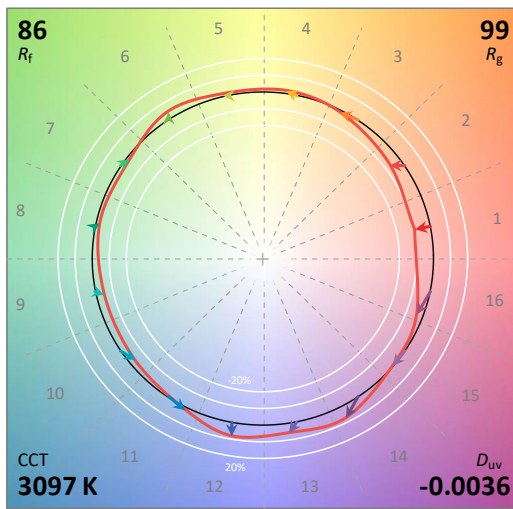
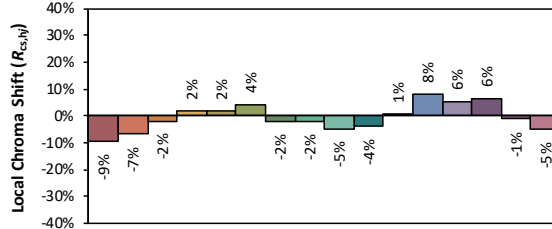
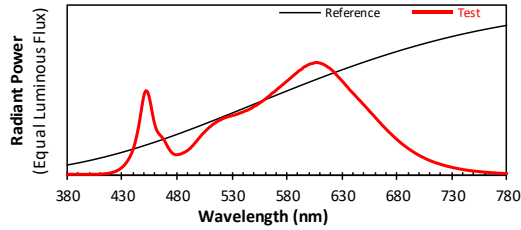
IES TM-30-18 Color Rendition Report

Source: DLF2408110-2a

Manufacturer: RAB Lighting Inc.

Date: 2024/8/16

Model: SA-CLWP



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

x 0.4253
 y 0.3911
 u' 0.2486
 v' 0.5144

CIE 13.3-1995
(CRI)

R_a 87
 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	3.53E-05	485	7.23E-04	590	3.38E-03	695	7.64E-04
385	3.50E-05	490	8.24E-04	595	3.52E-03	700	6.57E-04
390	3.38E-05	495	9.98E-04	600	3.62E-03	705	5.65E-04
395	3.28E-05	500	1.21E-03	605	3.67E-03	710	4.85E-04
400	3.25E-05	505	1.41E-03	610	3.66E-03	715	4.15E-04
405	3.49E-05	510	1.58E-03	615	3.58E-03	720	3.58E-04
410	3.96E-05	515	1.72E-03	620	3.46E-03	725	3.06E-04
415	5.40E-05	520	1.82E-03	625	3.28E-03	730	2.63E-04
420	8.39E-05	525	1.89E-03	630	3.08E-03	735	2.24E-04
425	1.45E-04	530	1.95E-03	635	2.88E-03	740	1.91E-04
430	2.63E-04	535	2.00E-03	640	2.68E-03	745	1.63E-04
435	4.72E-04	540	2.07E-03	645	2.49E-03	750	1.41E-04
440	8.44E-04	545	2.14E-03	650	2.30E-03	755	1.22E-04
445	1.58E-03	550	2.25E-03	655	2.10E-03	760	1.04E-04
450	2.62E-03	555	2.35E-03	660	1.91E-03	765	9.00E-05
455	2.50E-03	560	2.48E-03	665	1.71E-03	770	7.73E-05
460	1.63E-03	565	2.62E-03	670	1.51E-03	775	6.64E-05
465	1.30E-03	570	2.77E-03	675	1.34E-03	780	5.76E-05
470	1.04E-03	575	2.92E-03	680	1.17E-03		
475	7.49E-04	580	3.07E-03	685	1.02E-03		
480	6.75E-04	585	3.23E-03	690	8.85E-04		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	SA-CLWP	Sample ID.	B1
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° vertical intervals and 10° horizontal intervals.

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	277.07	60	0.021	5.38	0.940
NON-WORST CASE	120.04	60	0.038	4.59	0.994

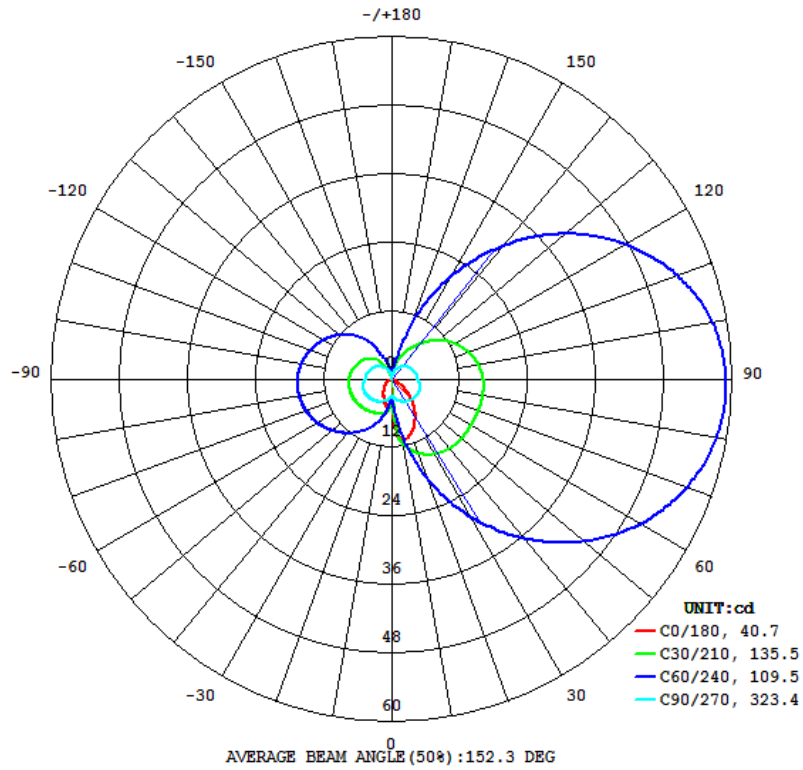
Test Result

Result type	Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		C0-180	C90-270	C0-180	C90-270	
0°-180° zones	174	123.8	343.8	40.7	323.4	32.3
0°-90° zones	94	86.2	179.4	42.6	163.1	17.5

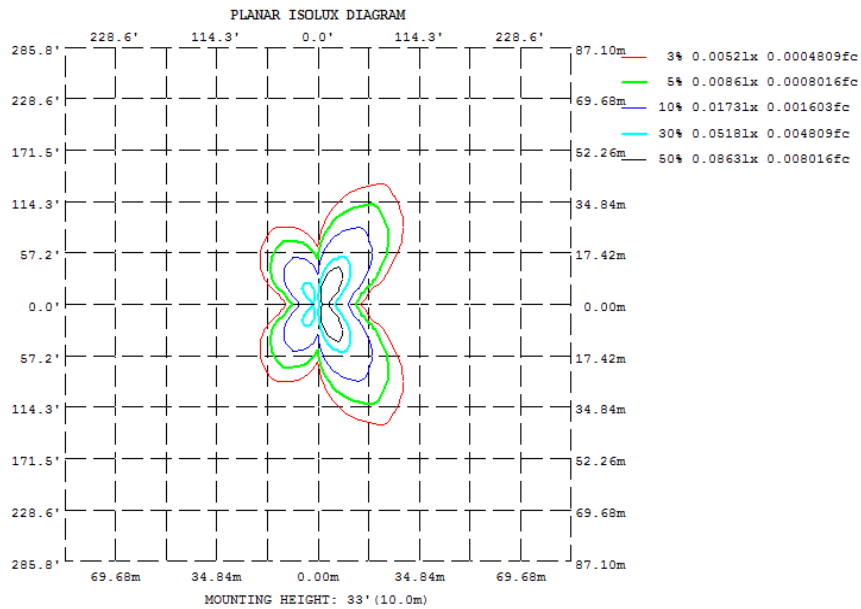
Zonal Lumen Requirement (80°-90°)	BUG rating
20.10%	B0-U3-G1

4.2 Goniophotometer Test

Light Distribution Curve



Isolux Plot



4.2 Goniophotometer Test

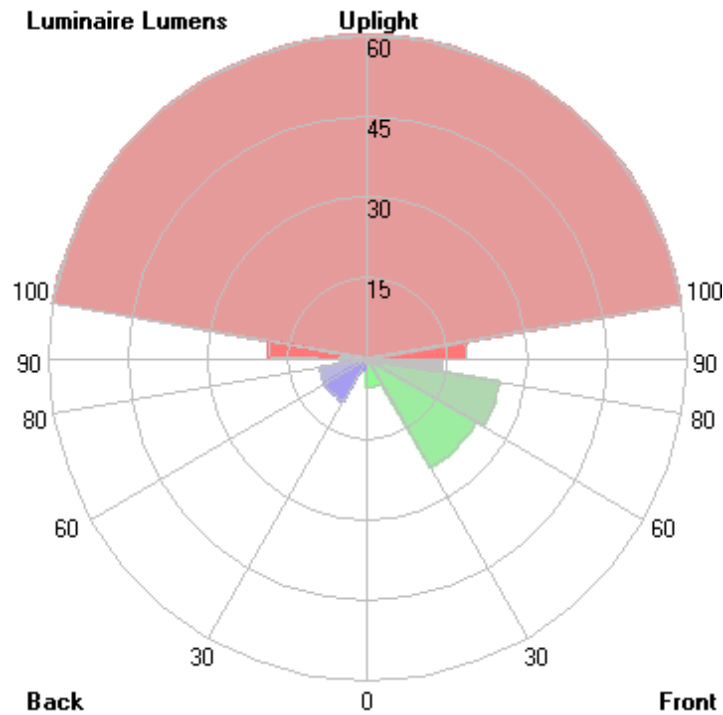
Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	10.71	11.50	3.505	6.101	5.228	6.101	3.505	11.50
20	10.27	17.85	4.170	7.972	4.102	7.972	4.170	17.85
30	8.437	23.35	4.642	9.472	3.044	9.472	4.642	23.35
40	6.304	28.32	5.003	10.69	2.202	10.69	5.003	28.32
50	3.974	32.58	5.267	11.68	1.504	11.68	5.267	32.58
60	1.965	36.03	5.398	12.45	0.8429	12.45	5.398	36.03
70	0.8641	38.57	5.354	12.97	0.2248	12.97	5.354	38.57
80	0.4043	40.11	5.139	13.21	0.0189	13.21	5.139	40.11
90	0.2018	40.36	4.799	13.17	0.0178	13.17	4.799	40.36
100	0.1796	39.12	4.661	12.83	0.0185	12.83	4.661	39.12
110	0.1527	36.25	4.447	12.16	0.0202	12.16	4.447	36.25
120	0.1224	31.99	4.093	11.16	0.0225	11.16	4.093	31.99
130	0.0943	26.60	3.626	9.856	0.0296	9.856	3.626	26.60
140	0.0772	20.50	3.068	8.242	0.0343	8.242	3.068	20.50
150	0.0539	14.40	2.414	5.667	0.0392	5.667	2.414	14.40
160	0.0274	8.562	1.674	3.566	0.0336	3.566	1.674	8.562
170	0.0151	0.4121	0.8064	0.1923	0.0238	0.1923	0.8064	0.4121
180	0.0171	0.0200	0.0153	0.0211	0.0198	0.0211	0.0153	0.0200
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	0.56	0 - 10	0.56	0.32%
10-20	2.46	0 - 20	3.02	1.74%
20-30	5.00	0 - 30	8.02	4.62%
30-40	7.95	0 - 40	15.97	9.20%
40-50	11.03	0 - 50	27.00	15.56%
50-60	13.92	0 - 60	40.92	23.58%
60-70	16.36	0 - 70	57.28	33.01%
70-80	18.11	0 - 80	75.39	43.44%
80-90	18.97	0 - 90	94.36	54.37%
90-100	18.72	0 - 100	113.08	65.16%
100-110	17.33	0 - 110	130.41	75.15%
110-120	14.88	0 - 120	145.29	83.72%
120-130	11.74	0 - 130	157.03	90.49%
130-140	8.33	0 - 140	165.36	95.29%
140-150	5.11	0 - 150	170.47	98.23%
150-160	2.41	0 - 160	172.88	99.62%
160-170	0.65	0 - 170	173.53	99.99%
170-180	0.01	0 - 180	173.54	100.00%

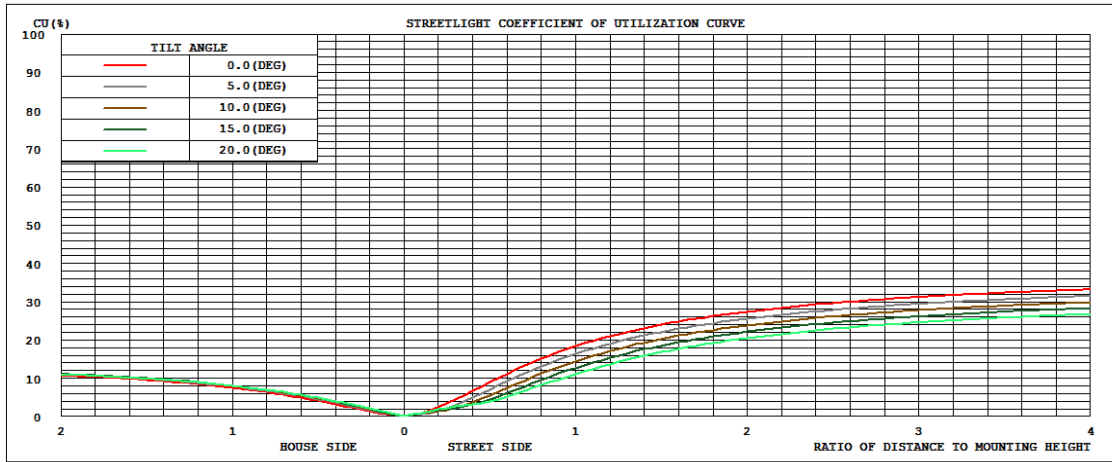
4.2 Goniophotometer Test

LCS/BUG

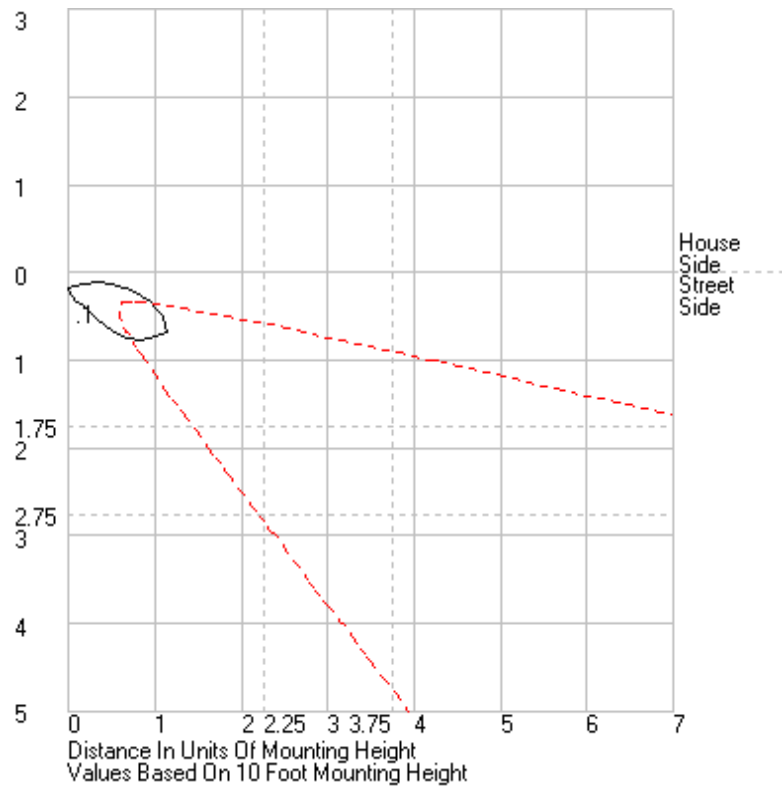


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	5.4	N.A.	3.1
FM - Front-Medium (30-60)	23.6	N.A.	13.6
FH - Front-High (60-80)	25.4	N.A.	14.6
FVH - Front-Very High (80-90)	14.1	N.A.	8.1
BL - Back-Low (0-30)	2.6	N.A.	1.5
BM - Back-Medium (30-60)	9.3	N.A.	5.3
BH - Back-High (60-80)	9.1	N.A.	5.2
BVH - Back-Very High (80-90)	4.9	N.A.	2.8
UL - Uplight-Low (90-100)	18.7	N.A.	10.8
UH - Uplight-High (100-180)	60.5	N.A.	34.8
Total	173.6	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	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974	2.974
1	3.19	3.21	3.18	3.1	3.01	2.96	2.95	2.98	3.04	3.12	3.19	3.21	3.2	3.21	3.19	3.12	3.04	2.98	2.95	2.96	3.01	3.1	3.18	3.21	3.19
2	4.07	4.06	3.88	3.57	3.25	3.03	2.98	3.05	3.21	3.4	3.57	3.65	3.67	3.65	3.57	3.4	3.21	3.05	2.98	3.03	3.25	3.57	3.88	4.06	4.07
3	5.31	5.23	4.93	4.33	3.67	3.17	3.02	3.16	3.44	3.78	4.02	4.13	4.15	4.13	4.02	3.78	3.44	3.16	3.02	3.17	3.67	4.33	4.93	5.23	5.31
4	6.79	6.65	6.13	5.27	4.24	3.36	3.07	3.29	3.75	4.18	4.47	4.59	4.61	4.59	4.47	4.18	3.75	3.29	3.07	3.36	4.24	5.27	6.13	6.65	6.79
5	8.29	8.11	7.43	6.3	4.88	3.6	3.13	3.45	4.06	4.57	4.89	4.99	4.98	4.99	4.89	4.57	4.06	3.45	3.13	3.6	4.88	6.3	7.43	8.11	8.29
6	9.58	9.44	8.77	7.41	5.61	3.89	3.2	3.62	4.37	4.96	5.24	5.24	5.19	5.24	5.24	4.96	4.37	3.62	3.2	3.89	5.61	7.41	8.77	9.44	9.58
7	10.14	10.19	9.94	8.56	6.4	4.21	3.28	3.81	4.69	5.31	5.49	5.4	5.29	5.4	5.49	5.31	4.69	3.81	3.28	4.21	6.4	8.56	9.94	10.19	10.14
8	10.33	10.45	10.61	9.69	7.21	4.55	3.35	4.01	5	5.6	5.68	5.49	5.32	5.49	5.68	5.6	5	4.01	3.35	4.55	7.21	9.69	10.61	10.45	10.33
9	10.55	10.7	11	10.71	8.08	4.92	3.43	4.2	5.32	5.86	5.82	5.52	5.29	5.52	5.82	5.86	5.32	4.2	3.43	4.92	8.08	10.71	11	10.7	10.55
10	10.71	10.92	11.38	11.5	8.98	5.31	3.51	4.4	5.62	6.1	5.93	5.52	5.23	5.52	5.93	6.1	5.62	4.4	3.51	5.31	8.98	11.5	11.38	10.92	10.71
11	10.8	11.08	11.76	12.18	9.91	5.72	3.58	4.6	5.91	6.32	6.01	5.49	5.15	5.49	6.01	6.32	5.91	4.6	3.58	5.72	9.91	12.18	11.76	11.08	10.8
12	10.83	11.19	12.09	12.88	10.86	6.15	3.66	4.79	6.19	6.52	6.09	5.46	5.05	5.46	6.09	6.52	6.19	4.79	3.66	6.15	10.86	12.88	12.09	11.19	10.83
13	10.84	11.26	12.38	13.55	11.82	6.59	3.73	4.98	6.45	6.72	6.15	5.4	4.95	5.4	6.15	6.72	6.45	4.98	3.73	6.59	11.82	13.55	12.38	11.26	10.84
14	10.82	11.31	12.65	14.22	12.78	7.05	3.8	5.17	6.71	6.9	6.21	5.34	4.83	5.34	6.21	6.9	6.71	5.17	3.8	7.05	12.78	14.22	12.65	11.31	10.82
15	10.77	11.34	12.89	14.85	13.74	7.52	3.86	5.36	6.97	7.08	6.26	5.27	4.72	5.27	6.26	7.08	6.97	5.36	3.86	7.52	13.74	14.85	12.89	11.34	10.77
16	10.71	11.34	13.13	15.47	14.71	8.01	3.93	5.54	7.23	7.27	6.32	5.2	4.59	5.2	6.32	7.27	7.23	5.54	3.93	8.01	14.71	15.47	13.13	11.34	10.71
17	10.62	11.33	13.34	16.08	15.68	8.52	3.99	5.71	7.48	7.45	6.37	5.12	4.47	5.12	6.37	7.45	7.48	5.71	3.99	8.52	15.68	16.08	13.34	11.33	10.62
18	10.51	11.3	13.55	16.68	16.65	9.01	4.05	5.89	7.73	7.62	6.41	5.03	4.34	5.03	6.41	7.62	7.73	5.89	4.05	9.01	16.65	16.68	13.55	11.3	10.51
19	10.4	11.27	13.74	17.27	17.6	9.53	4.11	6.06	7.98	7.8	6.46	4.94	4.22	4.94	6.46	7.8	7.98	6.06	4.11	9.53	17.6	17.27	13.74	11.27	10.4
20	10.27	11.21	13.91	17.85	18.57	10.03	4.17	6.23	8.22	7.97	6.5	4.85	4.1	4.85	6.5	7.97	8.22	6.23	4.17	10.03	18.57	17.85	13.91	11.21	10.27
21	10.12	11.14	14.08	18.43	19.52	10.55	4.22	6.39	8.47	8.14	6.54	4.76	3.99	4.76	6.54	8.14	8.47	6.39	4.22	10.55	19.52	18.43	14.08	11.14	10.12
22	9.96	11.05	14.24	19	20.45	11.08	4.28	6.55	8.7	8.3	6.58	4.66	3.87	4.66	6.58	8.3	8.7	6.55	4.28	11.08	20.45	19	14.24	11.05	9.96
23	9.79	10.96	14.39	19.56	21.39	11.6	4.33	6.72	8.93	8.46	6.61	4.57	3.76	4.57	6.61	8.46	8.93	6.72	4.33	11.6	21.39	19.56	14.39	10.96	9.79
24	9.61	10.86	14.52	20.13	22.31	12.13	4.38	6.88	9.16	8.61	6.65	4.49	3.65	4.49	6.65	8.61	9.16	6.88	4.38	12.13	22.31	20.13	14.52	10.86	9.61
25	9.42	10.74	14.65	20.67	23.24	12.65	4.43	7.03	9.39	8.77	6.69	4.4	3.54	4.4	6.69	8.77	9.39	7.03	4.43	12.65	23.24	20.67	14.65	10.74	9.42
26	9.22	10.62	14.77	21.22	24.16	13.19	4.47	7.19	9.62	8.92	6.72	4.32	3.44	4.32	6.72	8.92	9.62	7.19	4.47	13.19	24.16	21.22	14.77	10.62	9.22
27	9.02	10.49	14.88	21.76	25.07	13.7	4.52	7.34	9.83	9.06	6.76	4.24	3.33	4.24	6.76	9.06	9.83	7.34	4.52	13.7	25.07	21.76	14.88	10.49	9.02
28	8.83	10.37	14.99	22.3	25.99	14.22	4.56	7.5	10.06	9.2	6.79	4.16	3.24	4.16	6.79	9.2	10.06	7.5	4.56	14.22	25.99	22.3	14.99	10.37	8.83
29	8.63	10.24	15.09	22.82	26.9	14.75	4.6	7.65	10.27	9.34	6.82	4.08	3.14	4.08	6.82	9.34	10.27	7.65	4.6	14.75	26.9	22.82	15.09	10.24	8.63
30	8.44	10.11	15.19	23.35	27.8	15.27	4.64	7.79	10.48	9.47	6.86	4.01	3.04	4.01	6.86	9.47	10.48	7.79	4.64	15.27	27.8	23.35	15.19	10.11	8.44
31	8.24	9.98	15.29	23.87	28.69	15.79	4.68	7.94	10.69	9.6	6.89	3.93	2.95	3.93	6.89	9.6	10.69	7.94	4.68	15.79	28.69	23.87	15.29	9.98	8.24
32	8.04	9.84	15.39	24.38	29.59	16.31	4.72	8.09	10.9	9.73	6.92	3.86	2.86	3.86	6.92	9.73	10.9	8.09	4.72	16.31	29.59	24.38	15.39	9.84	8.04
33	7.84	9.69	15.48	24.89	30.48	16.82	4.76	8.23	11.1	9.86	6.96	3.79	2.77	3.79	6.96	9.86	11.1	8.23	4.76	16.82	30.48	24.89	15.48	9.69	7.84
34	7.63	9.55	15.56	25.39	31.35	17.33	4.8	8.37	11.3	9.98	6.99	3.73	2.69	3.73	6.99	9.98	11.3	8.37	4.8	17.33	31.35	25.39	15.56	9.55	7.63
35	7.41	9.39	15.62	25.9	32.22	17.84	4.83	8.51	11.5	10.11	7.02	3.66	2.6	3.66	7.02	10.11	11.5	8.51	4.83	17.84	32.22	25.9	15.62	9.39	7.41
36	7.19	9.24	15.69	26.39	33.09	18.35	4.87	8.65	11.7	10.22	7.05	3.6	2.52	3.6	7.05	10.22	11.7	8.65	4.87	18.35	33.09	26.39	15.69	9.24	7.19
37	6.98	9.08	15.75	26.88	33.95	18.85	4.9	8.79	11.89	10.34	7.08	3.54	2.44	3.54	7.08	10.34	11.89	8.79	4.9	18.85	33.95	26.88	15.75	9.08	6.98
38	6.75	8.92	15.79	27.36	34.8	19.34	4.94	8.92	12.07	10.46	7.11	3.48	2.36	3.48	7.11	10.46	12.07	8.92	4.94	19.34	34.8	27.36	15.79	8.92	6.75
39	6.53	8.76	15.85	27.84	35.63	19.83	4.97	9.05	12.26	10.57	7.14	3.42	2.28	3.42	7.14	10.57	12.26	9.05	4.97	19.83	35.63	27.84	15.85	8.76	6.53
40	6.3	8.59	15.89	28.32	36.46	20.32	5	9.18	12.44	10.69	7.17	3.36	2.2	3.36	7.17	10.69	12.44	9.18	5	20.32	36.46	28.32	15.89	8.59	6.3
41	6.07	8.42	15.93	28.77	37.28	20.8	5.03	9.31	12.62	10.79	7.19	3.31	2.13	3.31	7.19	10.79	12.62	9.31	5.03	20.8	37.28	28.77	15.93	8.42	6.07
42	5.85	8.25	15.97	29.23	38.1	21.27	5.07	9.44	12.79	10.9	7.22	3.25	2.05	3.25	7.22	10.9	12.79	9.44	5.07	21.27	38.1	29.23	15.97	8.25	5.85
43	5.61	8.08	16.01	29.68	38.9	21.75	5.09	9.56	12.97	11.01	7.25	3.2	1.98	3.2	7.25	11.01	12.97	9.56	5.09	21.75	38.9	29.68	16.01	8.08	5.61
44	5.38	7.91	16.04	30.12	39.69	22.21	5.12	9.68	13.14	11.11	7.27	3.15	1.91	3.15	7.27	11.11	13.14	9.68	5.12	22.21	39.69	30.12	16.04	7.91	5.38
45	5.15	7.73	16.07	30.55	40.48	22.66	5.15	9.8	13.3	11.21	7.3	3.1	1.84	3.1	7.3	11.21	13.3	9.8	5.15	22.66	40.48	30.55	16.07	7.73	5.15
46	4.91	7.55	16.1	30.97	41.24	23.11	5.18	9.91	13.45	11.31	7.33	3.05	1.77	3.05	7.33	11.31	13.45	9.91	5.18	23.11	41.24	30.97	16.1	7.55	4.91
47	4.67	7.37	16.12	31.39	42	23.56	5.2	10.02	13.61	11.41	7.35	3	1.7	3	7.35	11.41	13.61	10.02	5.2	23.56	42	31.39	16.12	7.37	4.67
48	4.44	7.19	16.14	31.8	42.74	24	5.22	10.14	13.77	11.5	7.38	2.95	1.63	2.95	7.38	11.5	13.77	10.14	5.22	24	42.74	31.8	16.14	7.19	4.44
49	4.21	7.01	16.16	32.19	43.48	24.42																			



50	3.97	6.83	16.17	32.58	44.21	24.84	5.27	10.35	14.06	11.68	7.42	2.86	1.5	2.86	7.42	11.68	14.06	10.35	5.27	24.84	44.21	32.58	16.17	6.83	3.97
51	3.75	6.65	16.18	32.96	44.92	25.27	5.29	10.45	14.21	11.77	7.44	2.81	1.44	2.81	7.44	11.77	14.21	10.45	5.29	25.27	44.92	32.96	16.18	6.65	3.75
52	3.52	6.47	16.19	33.34	45.62	25.66	5.31	10.55	14.35	11.85	7.47	2.77	1.37	2.77	7.47	11.85	14.35	10.55	5.31	25.66	45.62	33.34	16.19	6.47	3.52
53	3.3	6.3	16.2	33.71	46.3	26.07	5.32	10.65	14.48	11.93	7.48	2.72	1.31	2.72	7.48	11.93	14.48	10.65	5.32	26.07	46.3	33.71	16.2	6.3	3.3
54	3.09	6.13	16.2	34.07	46.96	26.45	5.34	10.74	14.61	12.02	7.5	2.68	1.25	2.68	7.5	12.02	14.61	10.74	5.34	26.45	46.96	34.07	16.2	6.13	3.09
55	2.88	5.96	16.21	34.41	47.62	26.82	5.35	10.83	14.75	12.09	7.52	2.64	1.19	2.64	7.52	12.09	14.75	10.83	5.35	26.82	47.62	34.41	16.21	5.96	2.88
56	2.68	5.8	16.21	34.76	48.25	27.2	5.36	10.92	14.87	12.17	7.54	2.59	1.12	2.59	7.54	12.17	14.87	10.92	5.36	27.2	48.25	34.76	16.21	5.8	2.68
57	2.49	5.64	16.21	35.09	48.86	27.56	5.37	11	14.99	12.24	7.56	2.55	1.06	2.55	7.56	12.24	14.99	11	5.37	27.56	48.86	35.09	16.21	5.64	2.49
58	2.3	5.49	16.22	35.41	49.47	27.9	5.38	11.08	15.11	12.31	7.58	2.51	0.99	2.51	7.58	12.31	15.11	11.08	5.38	27.9	49.47	35.41	16.22	5.49	2.3
59	2.13	5.35	16.22	35.73	50.06	28.24	5.39	11.16	15.22	12.38	7.59	2.47	0.92	2.47	7.59	12.38	15.22	11.16	5.39	28.24	50.06	35.73	16.22	5.35	2.13
60	1.97	5.22	16.22	36.03	50.63	28.57	5.4	11.23	15.33	12.45	7.61	2.43	0.84	2.43	7.61	12.45	15.33	11.23	5.4	28.57	50.63	36.03	16.22	5.22	1.97
61	1.81	5.09	16.22	36.33	51.19	28.9	5.4	11.3	15.44	12.51	7.62	2.39	0.77	2.39	7.62	12.51	15.44	11.3	5.4	28.9	51.19	36.33	16.22	5.09	1.81
62	1.67	4.97	16.23	36.62	51.72	29.2	5.4	11.37	15.54	12.58	7.63	2.35	0.69	2.35	7.63	12.58	15.54	11.37	5.4	29.2	51.72	36.62	16.23	4.97	1.67
63	1.54	4.85	16.24	36.9	52.23	29.5	5.41	11.43	15.64	12.63	7.65	2.3	0.62	2.3	7.65	12.63	15.64	11.43	5.41	29.5	52.23	36.9	16.24	4.85	1.54
64	1.42	4.75	16.25	37.17	52.73	29.79	5.4	11.49	15.73	12.69	7.66	2.26	0.55	2.26	7.66	12.69	15.73	11.49	5.4	29.79	52.73	37.17	16.25	4.75	1.42
65	1.3	4.65	16.25	37.42	53.21	30.06	5.4	11.55	15.82	12.75	7.67	2.21	0.48	2.21	7.67	12.75	15.82	11.55	5.4	30.06	53.21	37.42	16.25	4.65	1.3
66	1.2	4.56	16.26	37.67	53.68	30.34	5.4	11.6	15.91	12.8	7.68	2.16	0.41	2.16	7.68	12.8	15.91	11.6	5.4	30.34	53.68	37.67	16.26	4.56	1.2
67	1.1	4.47	16.27	37.92	54.12	30.59	5.39	11.65	15.99	12.84	7.69	2.11	0.36	2.11	7.69	12.84	15.99	11.65	5.39	30.59	54.12	37.92	16.27	4.47	1.1
68	1.02	4.4	16.28	38.14	54.54	30.84	5.38	11.7	16.06	12.89	7.69	2.06	0.32	2.06	7.69	12.89	16.06	11.7	5.38	30.84	54.54	38.14	16.28	4.4	1.02
69	0.94	4.32	16.29	38.37	54.95	31.07	5.37	11.74	16.13	12.93	7.69	2	0.28	2	7.69	12.93	16.13	11.74	5.37	31.07	54.95	38.37	16.29	4.32	0.94
70	0.86	4.26	16.31	38.57	55.34	31.29	5.35	11.78	16.2	12.97	7.69	1.94	0.22	1.94	7.69	12.97	16.2	11.78	5.35	31.29	55.34	38.57	16.31	4.26	0.86
71	0.8	4.2	16.32	38.78	55.72	31.51	5.34	11.81	16.27	13	7.69	1.88	0.17	1.88	7.69	13	16.27	11.81	5.34	31.51	55.72	38.78	16.32	4.2	0.8
72	0.74	4.15	16.33	38.97	56.07	31.7	5.32	11.85	16.33	13.03	7.69	1.83	0.12	1.83	7.69	13.03	16.33	11.85	5.32	31.7	56.07	38.97	16.33	4.15	0.74
73	0.68	4.1	16.34	39.15	56.4	31.88	5.31	11.88	16.38	13.06	7.69	1.78	0.08	1.78	7.69	13.06	16.38	11.88	5.31	31.88	56.4	39.15	16.34	4.1	0.68
74	0.63	4.05	16.36	39.32	56.72	32.07	5.29	11.9	16.44	13.09	7.7	1.75	0.04	1.75	7.7	13.09	16.44	11.9	5.29	32.07	56.72	39.32	16.36	4.05	0.63
75	0.59	4.01	16.37	39.47	57	32.24	5.27	11.92	16.48	13.12	7.69	1.73	0.02	1.73	7.69	13.12	16.48	11.92	5.27	32.24	57	39.47	16.37	4.01	0.59
76	0.54	3.97	16.38	39.63	57.28	32.38	5.24	11.94	16.53	13.14	7.7	1.71	0.02	1.71	7.7	13.14	16.53	11.94	5.24	32.38	57.28	39.63	16.38	3.97	0.54
77	0.51	3.93	16.39	39.77	57.55	32.52	5.22	11.96	16.57	13.16	7.7	1.69	0.02	1.69	7.7	13.16	16.57	11.96	5.22	32.52	57.55	39.77	16.39	3.93	0.51
78	0.47	3.9	16.39	39.89	57.76	32.65	5.19	11.97	16.6	13.18	7.7	1.68	0.02	1.68	7.7	13.18	16.6	11.97	5.19	32.65	57.76	39.89	16.39	3.9	0.47
79	0.44	3.87	16.39	40.01	57.98	32.77	5.17	11.98	16.63	13.2	7.7	1.66	0.02	1.66	7.7	13.2	16.63	11.98	5.17	32.77	57.98	40.01	16.39	3.87	0.44
80	0.4	3.84	16.39	40.11	58.16	32.88	5.14	11.98	16.66	13.21	7.71	1.64	0.02	1.64	7.71	13.21	16.66	11.98	5.14	32.88	58.16	40.11	16.39	3.84	0.4
81	0.37	3.81	16.39	40.19	58.35	32.97	5.11	11.98	16.68	13.22	7.71	1.63	0.02	1.63	7.71	13.22	16.68	11.98	5.11	32.97	58.35	40.19	16.39	3.81	0.37
82	0.35	3.79	16.39	40.26	58.49	33.06	5.08	11.98	16.7	13.23	7.7	1.61	0.02	1.61	7.7	13.23	16.7	11.98	5.08	33.06	58.49	40.26	16.39	3.79	0.35
83	0.32	3.76	16.38	40.33	58.62	33.13	5.05	11.97	16.71	13.23	7.7	1.6	0.02	1.6	7.7	13.23	16.71	11.97	5.05	33.13	58.62	40.33	16.38	3.76	0.32
84	0.3	3.74	16.37	40.38	58.72	33.19	5.01	11.97	16.72	13.23	7.69	1.59	0.02	1.59	7.69	13.23	16.72	11.97	5.01	33.19	58.72	40.38	16.37	3.74	0.3
85	0.27	3.72	16.36	40.41	58.82	33.24	4.98	11.96	16.73	13.23	7.68	1.58	0.02	1.58	7.68	13.23	16.73	11.96	4.98	33.24	58.82	40.41	16.36	3.72	0.27
86	0.25	3.7	16.34	40.44	58.9	33.28	4.94	11.94	16.73	13.22	7.67	1.56	0.02	1.56	7.67	13.22	16.73	11.94	4.94	33.28	58.9	40.44	16.34	3.7	0.25
87	0.23	3.69	16.32	40.45	58.94	33.3	4.91	11.93	16.72	13.21	7.66	1.55	0.02	1.55	7.66	13.21	16.72	11.93	4.91	33.3	58.94	40.45	16.32	3.69	0.23
88	0.21	3.67	16.29	40.44	58.95	33.31	4.87	11.91	16.72	13.2	7.64	1.54	0.02	1.54	7.64	13.2	16.72	11.91	4.87	33.31	58.95	40.44	16.29	3.67	0.21
89	0.2	3.65	16.26	40.41	58.96	33.32	4.83	11.89	16.71	13.19	7.63	1.53	0.02	1.53	7.63	13.19	16.71	11.89	4.83	33.32	58.96	40.41	16.26	3.65	0.2
90	0.2	3.63	16.23	40.36	58.94	33.31	4.8	11.87	16.69	13.17	7.62	1.52	0.02	1.52	7.62	13.17	16.69	11.87	4.8	33.31	58.94	40.36	16.23	3.63	0.2
91	0.2	3.62	16.19	40.32	58.89	33.29	4.77	11.84	16.67	13.16	7.6	1.51	0.02	1.51	7.6	13.16	16.67	11.84	4.77	33.29	58.89	40.32	16.19	3.62	0.2
92	0.2	3.6	16.14	40.25	58.83	33.27	4.74	11.81	16.64	13.13	7.59	1.5	0.02	1.5	7.59	13.13	16.64	11.81	4.74	33.27	58.83	40.25	16.14	3.6	0.2
93	0.19	3.59	16.09	40.16	58.73	33.22	4.72	11.78	16.61	13.1	7.57	1.49	0.02	1.49	7.57	13.1	16.61	11.78	4.72	33.22	58.73	40.16	16.09	3.59	0.19
94	0.19	3.57	16.04	40.06	58.63	33.17	4.71	11.75	16.58	13.07	7.55	1.48	0.02	1.48	7.55	13.07	16.58	11.75	4.71	33.17	58.63	40.06	16.04	3.57	0.19
95	0.19	3.55	15.99	39.95	58.48	33.11	4.7	11.71	16.54	13.04	7.53	1.46	0.02	1.46	7.53	13.04	16.54	11.71	4.7	33.11	58.48	39.95	15.99	3.55	0.19
96	0.19	3.54	15.93	39.81	58.32	33.03	4.7	11.67	16.5	13	7.51	1.45	0.02	1.45	7.51	13	16.5	11.67	4.7	33.03	58.32	39.81	15.93	3.54	0.19
97	0.19	3.52	15.86	39.66	58.15	32.95	4.69	11.63	16.45	12.97	7.48	1.43	0.02	1.43	7.48	12.97	16.45	11.63	4.69	32.95	58.15	39.66	15.86	3.52	0.19
98	0.18	3.5	15.78	39.49	57.93	32.85	4.68	11.59	16.4	12.92	7.46	1.42	0.02	1.42	7.46	12.92	16.4	11.59	4.68	32.85	57.93	39.49	15.78	3.5	0.18
99	0.18	3.49	15.7	39.3	57.71	32.75	4.67	11.54	16.34	12.88	7.43	1.4	0.02												



104	0.17	3.39	15.24	38.16	56.18	32.01	4.6	11.26	15.97	12.6	7.27	1.31	0.02	1.31	7.27	12.6	15.97	11.26	4.6	32.01	56.18	38.16	15.24	3.39	0.17
105	0.17	3.37	15.13	37.88	55.79	31.82	4.57	11.19	15.89	12.53	7.23	1.29	0.02	1.29	7.23	12.53	15.89	11.19	4.57	31.82	55.79	37.88	15.13	3.37	0.17
106	0.16	3.35	15.01	37.59	55.39	31.61	4.55	11.12	15.8	12.47	7.2	1.27	0.02	1.27	7.2	12.47	15.8	11.12	4.55	31.61	55.39	37.59	15.01	3.35	0.16
107	0.16	3.32	14.89	37.28	54.98	31.39	4.53	11.05	15.7	12.39	7.16	1.25	0.02	1.25	7.16	12.39	15.7	11.05	4.53	31.39	54.98	37.28	14.89	3.32	0.16
108	0.16	3.3	14.77	36.94	54.52	31.16	4.5	10.97	15.6	12.32	7.11	1.23	0.02	1.23	7.11	12.32	15.6	10.97	4.5	31.16	54.52	36.94	14.77	3.3	0.16
109	0.16	3.28	14.63	36.61	54.05	30.91	4.48	10.89	15.49	12.24	7.07	1.2	0.02	1.2	7.07	12.24	15.49	10.89	4.48	30.91	54.05	36.61	14.63	3.28	0.16
110	0.15	3.25	14.5	36.25	53.56	30.65	4.45	10.81	15.39	12.16	7.02	1.18	0.02	1.18	7.02	12.16	15.39	10.81	4.45	30.65	53.56	36.25	14.5	3.25	0.15
111	0.15	3.22	14.36	35.89	53.05	30.37	4.42	10.72	15.27	12.07	6.97	1.15	0.02	1.15	6.97	12.07	15.27	10.72	4.42	30.37	53.05	35.89	14.36	3.22	0.15
112	0.15	3.2	14.21	35.51	52.51	30.08	4.39	10.63	15.16	11.99	6.92	1.12	0.02	1.12	6.92	11.99	15.16	10.63	4.39	30.08	52.51	35.51	14.21	3.2	0.15
113	0.14	3.17	14.06	35.1	51.97	29.8	4.35	10.53	15.03	11.89	6.87	1.1	0.02	1.1	6.87	11.89	15.03	10.53	4.35	29.8	51.97	35.1	14.06	3.17	0.14
114	0.14	3.14	13.9	34.7	51.37	29.49	4.32	10.44	14.91	11.8	6.82	1.07	0.02	1.07	6.82	11.8	14.91	10.44	4.32	29.49	51.37	34.7	13.9	3.14	0.14
115	0.14	3.11	13.74	34.28	50.79	29.16	4.29	10.34	14.77	11.7	6.76	1.04	0.02	1.04	6.76	11.7	14.77	10.34	4.29	29.16	50.79	34.28	13.74	3.11	0.14
116	0.13	3.08	13.57	33.85	50.17	28.83	4.25	10.23	14.63	11.6	6.71	1.01	0.02	1.01	6.71	11.6	14.63	10.23	4.25	28.83	50.17	33.85	13.57	3.08	0.13
117	0.13	3.04	13.4	33.4	49.54	28.49	4.21	10.12	14.49	11.5	6.65	0.98	0.02	0.98	6.65	11.5	14.49	10.12	4.21	28.49	49.54	33.4	13.4	3.04	0.13
118	0.13	3.01	13.23	32.94	48.88	28.14	4.17	10.01	14.34	11.39	6.59	0.95	0.02	0.95	6.59	11.39	14.34	10.01	4.17	28.14	48.88	32.94	13.23	3.01	0.13
119	0.13	2.98	13.05	32.48	48.21	27.78	4.13	9.9	14.19	11.28	6.53	0.92	0.02	0.92	6.53	11.28	14.19	9.9	4.13	27.78	48.21	32.48	13.05	2.98	0.13
120	0.12	2.94	12.87	31.99	47.52	27.4	4.09	9.78	14.03	11.16	6.46	0.88	0.02	0.88	6.46	11.16	14.03	9.78	4.09	27.4	47.52	31.99	12.87	2.94	0.12
121	0.12	2.91	12.69	31.49	46.84	27.02	4.05	9.66	13.88	11.05	6.4	0.85	0.02	0.85	6.4	11.05	13.88	9.66	4.05	27.02	46.84	31.49	12.69	2.91	0.12
122	0.12	2.87	12.49	30.99	46.1	26.62	4.01	9.54	13.72	10.93	6.33	0.82	0.02	0.82	6.33	10.93	13.72	9.54	4.01	26.62	46.1	30.99	12.49	2.87	0.12
123	0.11	2.83	12.29	30.47	45.36	26.22	3.96	9.42	13.55	10.81	6.26	0.79	0.02	0.79	6.26	10.81	13.55	9.42	3.96	26.22	45.36	30.47	12.29	2.83	0.11
124	0.11	2.79	12.09	29.94	44.61	25.8	3.92	9.29	13.38	10.68	6.19	0.75	0.02	0.75	6.19	10.68	13.38	9.29	3.92	25.8	44.61	29.94	12.09	2.79	0.11
125	0.11	2.75	11.89	29.4	43.84	25.38	3.87	9.16	13.2	10.55	6.11	0.72	0.03	0.72	6.11	10.55	13.2	9.16	3.87	25.38	43.84	29.4	11.89	2.75	0.11
126	0.1	2.71	11.68	28.86	43.05	24.95	3.83	9.03	13.02	10.42	6.04	0.68	0.03	0.68	6.04	10.42	13.02	9.03	3.83	24.95	43.05	28.86	11.68	2.71	0.1
127	0.1	2.67	11.47	28.31	42.24	24.51	3.78	8.89	12.84	10.28	5.96	0.64	0.03	0.64	5.96	10.28	12.84	8.89	3.78	24.51	42.24	28.31	11.47	2.67	0.1
128	0.1	2.63	11.25	27.75	41.44	24.06	3.73	8.75	12.65	10.14	5.88	0.61	0.03	0.61	5.88	10.14	12.65	8.75	3.73	24.06	41.44	27.75	11.25	2.63	0.1
129	0.1	2.58	11.03	27.18	40.61	23.61	3.68	8.61	12.45	10	5.81	0.57	0.03	0.57	5.81	10	12.45	8.61	3.68	23.61	40.61	27.18	11.03	2.58	0.1
130	0.09	2.54	10.81	26.6	39.77	23.14	3.63	8.47	12.25	9.86	5.72	0.53	0.03	0.53	5.72	9.86	12.25	8.47	3.63	23.14	39.77	26.6	10.81	2.54	0.09
131	0.09	2.49	10.58	26.02	38.92	22.67	3.58	8.32	12.06	9.71	5.64	0.5	0.03	0.5	5.64	9.71	12.06	8.32	3.58	22.67	38.92	26.02	10.58	2.49	0.09
132	0.09	2.44	10.35	25.42	38.04	22.19	3.52	8.17	11.85	9.56	5.56	0.46	0.03	0.46	5.56	9.56	11.85	8.17	3.52	22.19	38.04	25.42	10.35	2.44	0.09
133	0.09	2.4	10.13	24.82	37.17	21.71	3.47	8.02	11.64	9.4	5.47	0.42	0.03	0.42	5.47	9.4	11.64	8.02	3.47	21.71	37.17	24.82	10.13	2.4	0.09
134	0.09	2.35	9.89	24.21	36.29	21.22	3.42	7.87	11.43	9.25	5.38	0.39	0.03	0.39	5.38	9.25	11.43	7.87	3.42	21.22	36.29	24.21	9.89	2.35	0.09
135	0.08	2.3	9.65	23.61	35.39	20.72	3.36	7.71	11.21	9.09	5.29	0.35	0.03	0.35	5.29	9.09	11.21	7.71	3.36	20.72	35.39	23.61	9.65	2.3	0.08
136	0.08	2.25	9.41	22.99	34.47	20.22	3.31	7.56	10.99	8.93	5.2	0.32	0.04	0.32	5.2	8.93	10.99	7.56	3.31	20.22	34.47	22.99	9.41	2.25	0.08
137	0.08	2.2	9.17	22.36	33.55	19.7	3.25	7.4	10.77	8.76	5.1	0.29	0.04	0.29	5.1	8.76	10.77	7.4	3.25	19.7	33.55	22.36	9.17	2.2	0.08
138	0.08	2.15	8.93	21.75	32.64	19.18	3.19	7.24	10.55	8.59	5	0.26	0.04	0.26	5	8.59	10.55	7.24	3.19	19.18	32.64	21.75	8.93	2.15	0.08
139	0.08	2.1	8.69	21.13	31.69	18.64	3.13	7.08	10.31	8.42	4.9	0.23	0.04	0.23	4.9	8.42	10.31	7.08	3.13	18.64	31.69	21.13	8.69	2.1	0.08
140	0.08	2.05	8.45	20.5	30.75	18.1	3.07	6.92	10.08	8.24	4.8	0.21	0.03	0.21	4.8	8.24	10.08	6.92	3.07	18.1	30.75	20.5	8.45	2.05	0.08
141	0.08	2	8.21	19.88	29.8	17.56	3.01	6.76	9.85	8.07	4.7	0.19	0.03	0.19	4.7	8.07	9.85	6.76	3.01	17.56	29.8	19.88	8.21	2	0.08
142	0.07	1.95	7.98	19.25	28.84	17	2.94	6.6	9.61	7.88	4.59	0.17	0.04	0.17	4.59	7.88	9.61	6.6	2.94	17	28.84	19.25	7.98	1.95	0.07
143	0.07	1.9	7.75	18.65	27.88	16.42	2.88	6.45	9.37	7.69	4.47	0.15	0.04	0.15	4.47	7.69	9.37	6.45	2.88	16.42	27.88	18.65	7.75	1.9	0.07
144	0.07	1.86	7.52	18.04	26.92	15.83	2.81	6.29	9.12	7.49	4.33	0.15	0.04	0.15	4.33	7.49	9.12	6.29	2.81	15.83	26.92	18.04	7.52	1.86	0.07
145	0.07	1.81	7.28	17.43	25.94	15.24	2.74	6.14	8.87	7.29	4.16	0.15	0.04	0.15	4.16	7.29	8.87	6.14	2.74	15.24	25.94	17.43	7.28	1.81	0.07
146	0.07	1.76	7.05	16.81	24.96	14.63	2.68	5.98	8.62	7.09	3.96	0.15	0.04	0.15	3.96	7.09	8.62	5.98	2.68	14.63	24.96	16.81	7.05	1.76	0.07
147	0.06	1.72	6.83	16.2	23.97	14.03	2.61	5.82	8.36	6.82	3.75	0.15	0.04	0.15	3.75	6.82	8.36	5.82	2.61	14.03	23.97	16.2	6.83	1.72	0.06
148	0.06	1.67	6.6	15.59	22.99	13.42	2.54	5.66	8.11	6.47	3.53	0.13	0.04	0.13	3.53	6.47	8.11	5.66	2.54	13.42	22.99	15.59	6.6	1.67	0.06
149	0.06	1.63	6.38	14.99	22	12.78	2.48	5.51	7.84	6.07	3.35	0.11	0.04	0.11	3.35	6.07	7.84	5.51	2.48	12.78	22	14.99	6.38	1.63	0.06
150	0.05	1.59	6.17	14.4	20.99	12.13	2.41	5.36	7.53	5.67	3.19	0.09	0.04	0.09	3.19	5.67	7.53	5.36	2.41	12.13	20.99	14.4	6.17	1.59	0.05
151	0.05	1.55	5.96	13.82	19.99	11.47	2.35	5.2	7.05	5.33	3.05	0.08	0.04	0.08	3.05	5.33	7.05	5.2	2.35	11.47	19.99	13.82	5.96	1.55	0.05
152	0.05	1.52	5.76	13.25	18.98	10.8	2.3	5.06	6.53	5.04	2.91	0.06	0.04	0.06	2.91	5.04	6.53	5.06	2.3	10.8	18.98	13.25	5.76	1.52	0.05
153	0.05	1.49	5.56	12.67	17.95	10.12	2.25	4.91	5.99	4.78	2.77	0.05	0.04	0.05	2.77	4.78	5.99	4.91	2.25	10.12	17.95	12.67	5.56	1.49	0.05



158	0.03	1.32	4.57	9.77	12.69	6.76	1.99	3.27	4.41	3.8	2.01	0.03	0.04	0.03	2.01	3.8	4.41	3.27	1.99	6.76	12.69	9.77	4.57	1.32	0.03	
159	0.03	1.28	4.36	9.17	11.61	5.92	1.85	3.07	4.26	3.71	1.74	0.03	0.03	0.03	1.74	3.71	4.26	3.07	1.85	5.92	11.61	9.17	4.36	1.28	0.03	
160	0.03	1.24	4.14	8.56	10.56	5.09	1.67	2.92	4.18	3.57	1.43	0.05	0.03	0.05	1.43	3.57	4.18	2.92	1.67	5.09	10.56	8.56	4.14	1.24	0.03	
161	0.03	1.2	3.92	7.94	9.45	4.35	1.54	2.86	4.08	3.36	1.15	0.06	0.03	0.06	1.15	3.36	4.08	2.86	1.54	4.35	9.45	7.94	3.92	1.2	0.03	
162	0.02	1.15	3.68	7.31	8.13	3.73	1.45	2.85	3.91	3.08	0.9	0.05	0.03	0.05	0.9	3.08	3.91	2.85	1.45	3.73	8.13	7.31	3.68	1.15	0.02	
163	0.02	1.09	3.42	6.66	6.7	3.32	1.4	2.8	3.62	2.8	0.69	0.04	0.03	0.04	0.69	2.8	3.62	2.8	1.4	3.32	6.7	6.66	3.42	1.09	0.02	
164	0.02	1.02	3.15	5.98	5.31	2.98	1.39	2.69	3.28	2.52	0.5	0.03	0.03	0.03	0.5	2.52	3.28	2.69	1.39	2.98	5.31	5.98	3.15	1.02	0.02	
165	0.02	0.95	2.85	5.19	4.22	2.66	1.38	2.49	2.92	2.17	0.34	0.03	0.02	0.03	0.34	2.17	2.92	2.49	1.38	2.66	4.22	5.19	2.85	0.95	0.02	
166	0.02	0.86	2.51	4.28	3.68	2.36	1.35	2.22	2.57	1.74	0.2	0.03	0.02	0.03	0.2	1.74	2.57	2.22	1.35	2.36	3.68	4.28	2.51	0.86	0.02	
167	0.02	0.76	2.13	3.28	3.35	2.07	1.26	1.94	2.22	1.28	0.1	0.02	0.02	0.02	0.1	1.28	2.22	1.94	1.26	2.07	3.35	3.28	2.13	0.76	0.02	
168	0.02	0.65	1.69	2.08	2.99	1.77	1.12	1.65	1.8	0.77	0.05	0.02	0.02	0.02	0.05	0.77	1.8	1.65	1.12	1.77	2.99	2.08	1.69	0.65	0.02	
169	0.02	0.51	1.18	0.98	2.49	1.48	0.97	1.37	1.27	0.41	0.03	0.02	0.02	0.02	0.03	0.41	1.27	1.37	0.97	1.48	2.49	0.98	1.18	0.51	0.02	
170	0.02	0.36	0.63	0.41	1.64	1.19	0.81	0.97	0.71	0.19	0.03	0.02	0.02	0.02	0.03	0.19	0.71	0.97	0.81	1.19	1.64	0.41	0.63	0.36	0.02	
171	0.02	0.21	0.14	0.16	0.72	0.73	0.53	0.55	0.33	0.08	0.03	0.02	0.02	0.02	0.03	0.08	0.33	0.55	0.53	0.73	0.72	0.16	0.14	0.21	0.02	
172	0.02	0.07	0.06	0.06	0.24	0.33	0.27	0.25	0.13	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.13	0.25	0.27	0.33	0.24	0.06	0.06	0.07	0.02	
173	0.02	0.03	0.05	0.03	0.06	0.11	0.11	0.09	0.05	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.05	0.09	0.11	0.11	0.06	0.03	0.05	0.03	0.02	
174	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.02	0.02
175	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
176	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
177	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
178	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
179	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
180	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	SA-CLWP	Sample ID.	B1
Temperature (°C)	25.1	Humidity (%RH)	57.0

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
120.04	60	0.039	4.63	0.994	6.58%
277.07	60	0.021	5.42	0.940	13.93%

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*****