

Photometric Test Report

Relevant Standards

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

Prepared For RAB Lighting Inc.

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Project Number

DLF2408121

Report Number

DLF2408121-6a

Test Date

2024/9/3

Issue Date

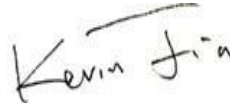
2024/9/6

Prepared By



Wangzun Zhu

Approved By



Kevin Jia

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1.0 Test Summary

DLC Technical Requirements v5.1

Outdoor - Architectural Flood and Spot Luminaires				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2008	1000		1819
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	92.8
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		19.6
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	13.34%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.979
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	3065
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		81
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	-		-2
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		83
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥89		96
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-13%
Zonal Lumen Requirement (0°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	85%		89.80%
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		120
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		0.167
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		19.6

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/9/3	L2X @ 3000K	N/A	F1
2	Goniophotometer Test	2024/9/3	L2X @ 3000K	N/A	F1
3	THD and PF Test	2024/9/3	L2X @ 3000K	N/A	F1

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.

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3.0 Production Description

Luminaire Description: L2X @ 3000K

Electrical Specification: 120V/60Hz

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	L2X @ 3000K	Sample ID.	F1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.4	Humidity (%RH)	54.0

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
120.06	60	0.168	19.7	0.979

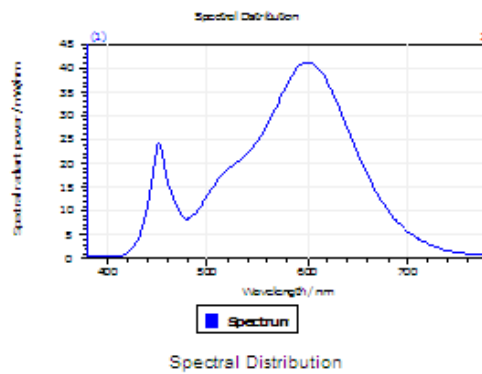
Test Result

CCT (K)	CRI	R9	Duv
3065	81	-2	-0.0019

Rf	Rg	IES Rcs,h1
83	96	-13%

4.1 Integrating Sphere Test

Results

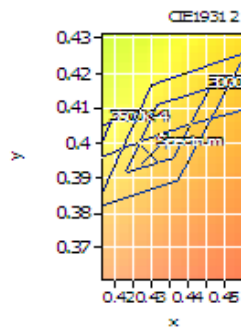


Spectral values

DominantWavelength 583.29 nm
Purity 0.480
PeakWavelength 600.12 nm
Radiant Power 6.073 W
Width50%:

Color Coordinates

Correlated Color Temperat 3065 K
x: 0.4297 u: 0.2491 u': 0.2491
y: 0.3967 v: 0.3449 v': 0.5174
CRI01 79.1 CRI09 -2.2
CRI02 91.0 CRI10 79.8
CRI03 94.2 CRI11 76.6
CRI04 77.5 CRI12 72.1
CRI05 79.5 CRI13 82.1
CRI06 88.9 CRI14 97.4
CRI07 80.1 CRI15 71.3
CRI08 54.5 CRI16 68.5
ResultsCRI 80.6



PlanckDistance 1.9E-003

4.1 Integrating Sphere Test

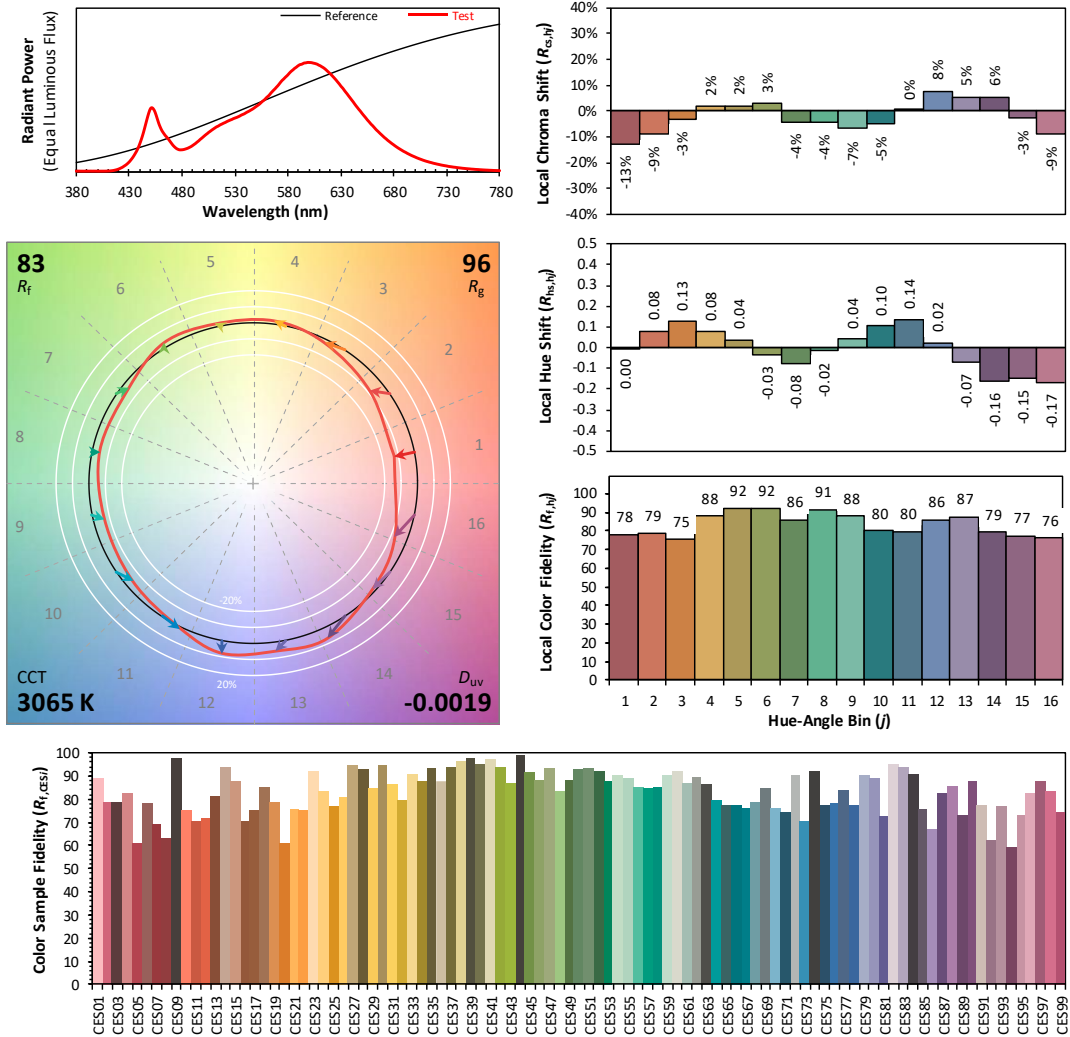
IES TM-30-18 Color Rendition Report

Source: DLF2408121-6a

Manufacturer: RAB Lighting Inc.

Date: 2024/9/3

Model: L2X @ 3000K



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

x 0.4297
 y 0.3967
 u' 0.2491
 v' 0.5174

CIE 13.3-1995
(CRI)
 R_a 82
 R_g 2

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	3.59E-04	485	8.93E-03	590	4.01E-02	695	6.59E-03
385	3.43E-04	490	1.00E-02	595	4.10E-02	700	5.69E-03
390	3.50E-04	495	1.15E-02	600	4.12E-02	705	4.87E-03
395	3.52E-04	500	1.33E-02	605	4.09E-02	710	4.16E-03
400	3.46E-04	505	1.49E-02	610	4.01E-02	715	3.60E-03
405	3.50E-04	510	1.63E-02	615	3.88E-02	720	3.09E-03
410	3.98E-04	515	1.75E-02	620	3.70E-02	725	2.64E-03
415	5.94E-04	520	1.85E-02	625	3.48E-02	730	2.28E-03
420	1.14E-03	525	1.95E-02	630	3.23E-02	735	1.95E-03
425	2.19E-03	530	2.03E-02	635	2.99E-02	740	1.68E-03
430	3.81E-03	535	2.12E-02	640	2.72E-02	745	1.43E-03
435	6.52E-03	540	2.22E-02	645	2.46E-02	750	1.24E-03
440	1.07E-02	545	2.34E-02	650	2.21E-02	755	1.08E-03
445	1.72E-02	550	2.47E-02	655	1.96E-02	760	9.36E-04
450	2.38E-02	555	2.63E-02	660	1.75E-02	765	8.00E-04
455	2.19E-02	560	2.81E-02	665	1.53E-02	770	6.94E-04
460	1.63E-02	565	3.02E-02	670	1.34E-02	775	6.02E-04
465	1.33E-02	570	3.23E-02	675	1.17E-02	780	5.37E-04
470	1.08E-02	575	3.47E-02	680	1.02E-02		
475	8.78E-03	580	3.66E-02	685	8.84E-03		
480	8.39E-03	585	3.86E-02	690	7.64E-03		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	L2X @ 3000K	Sample ID.	F1
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	120.07	60	0.167	19.6	0.979

Test Result

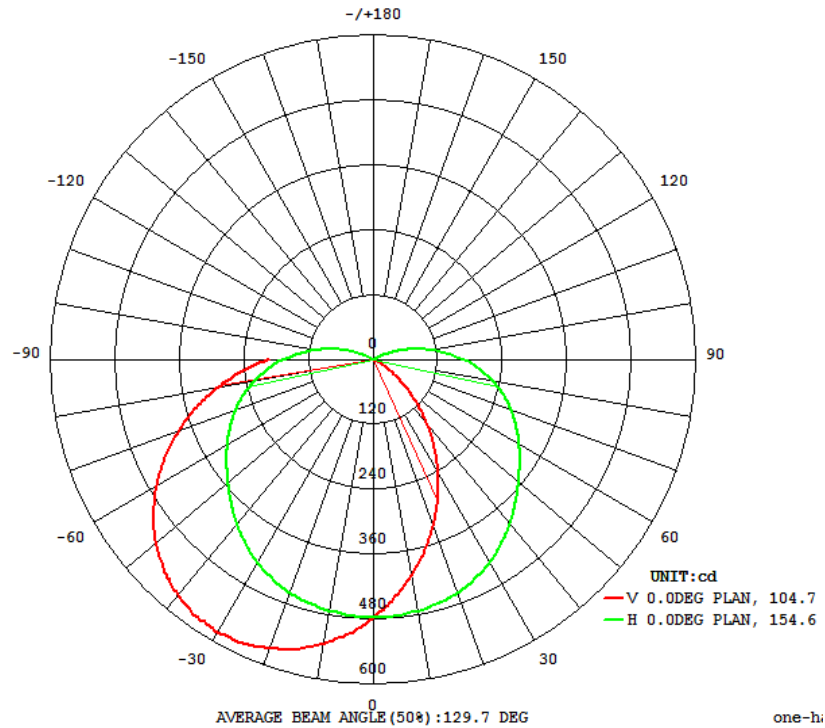
Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	Horizontal	Vertical	Horizontal	Vertical	
1819	222.4	143.4	154.6	104.7	92.8

Zonal Lumen Requirement (0°-90°)

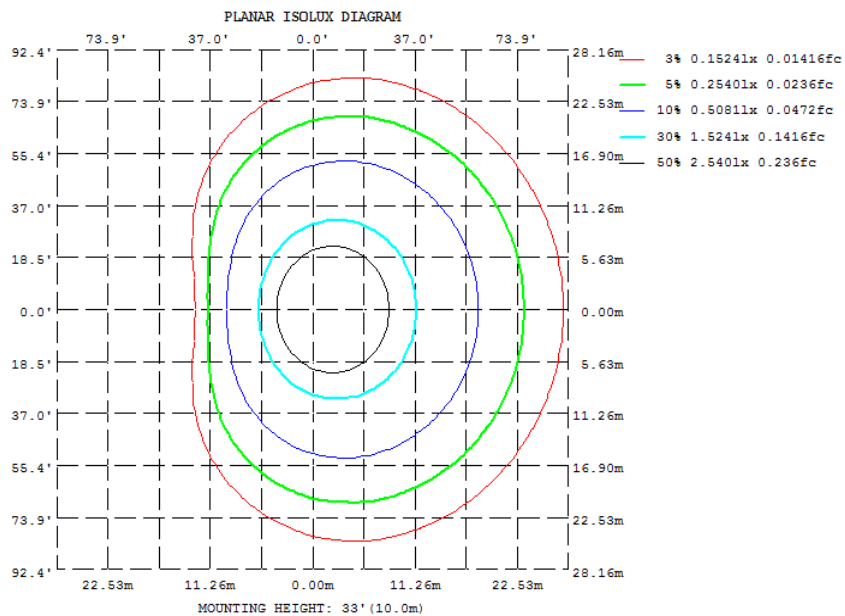
89.80%

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	531.7	516.1	472.3	425.9	405.9	425.9	472.3	516.1
20	567.8	541.2	458.9	366.2	327.4	366.2	458.9	541.2
30	580.5	548.5	433.3	298.5	243.3	298.5	433.3	548.5
40	566.7	534.9	395.8	230.6	158.2	230.6	395.8	534.9
50	528.5	496.7	352.9	173.9	80.14	173.9	352.9	496.7
60	465.3	438.1	313.9	131.8	24.82	131.8	313.9	438.1
70	385.4	365.7	273.4	92.42	1.943	92.42	273.4	365.7
80	294.4	292.4	224.4	53.13	0.1193	53.13	224.4	292.4
90	194.8	223.8	169.2	21.41	0.1674	21.41	169.2	223.8
100	98.76	156.8	109.9	4.025	0.3051	4.025	109.9	156.8
110	30.38	89.94	53.74	0.4182	0.4383	0.4182	53.74	89.94
120	2.391	32.95	14.27	0.4487	0.5243	0.4487	14.27	32.95
130	0.1911	4.084	0.8269	0.5242	0.6256	0.5242	0.8269	4.084
140	0.2728	0.3747	0.4932	0.5944	0.7273	0.5944	0.4932	0.3747
150	0.3593	0.4515	0.5321	0.6130	0.7419	0.6130	0.5321	0.4515
160	0.4377	0.5144	0.5447	0.5951	0.6850	0.5951	0.5447	0.5144
170	0.4961	0.5231	0.5089	0.5280	0.5575	0.5280	0.5089	0.5231
180	0.5406	0.5371	0.5284	0.5464	0.5399	0.5464	0.5284	0.5371
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	40.56	0 - 10	40.56	2.23%
10-20	117.50	0 - 20	158.06	8.69%
20-30	181.95	0 - 30	340.01	18.69%
30-40	226.42	0 - 40	566.44	31.14%
40-50	247.19	0 - 50	813.63	44.73%
50-60	246.66	0 - 60	1060.29	58.29%
60-70	228.50	0 - 70	1288.78	70.85%
70-80	194.74	0 - 80	1483.52	81.55%
80-90	150.05	0 - 90	1633.57	89.80%
90-100	101.40	0 - 100	1734.97	95.37%
100-110	56.25	0 - 110	1791.21	98.47%
110-120	22.14	0 - 120	1813.35	99.68%
120-130	4.63	0 - 130	1817.98	99.94%
130-140	0.46	0 - 140	1818.43	99.96%
140-150	0.29	0 - 150	1818.72	99.98%
150-160	0.23	0 - 160	1818.96	99.99%
160-170	0.13	0 - 170	1819.09	100.00%
170-180	0.04	0 - 180	1819.13	100.00%

4.2 Goniophotometer Test

Axial Candela

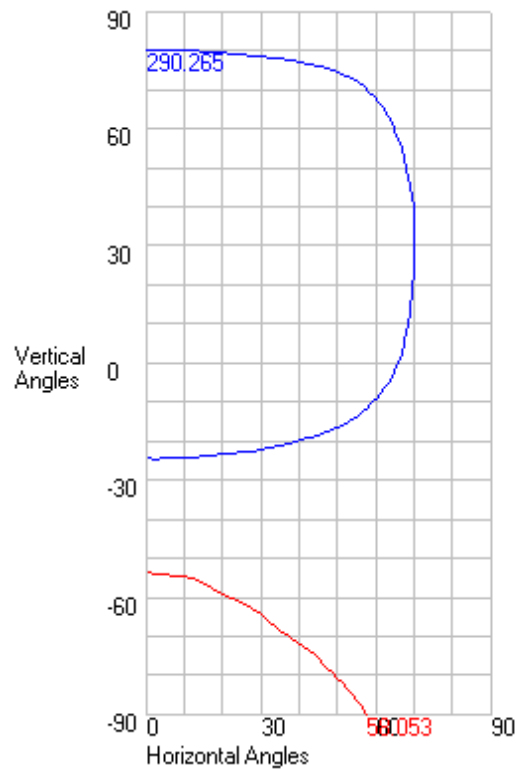
DEG.	HOR.	DEG.	VERT.
90	169.239	90	194.898
85	197.43	85	244.26
75	250.21	75	340.91
65	294.49	65	427.85
55	333.05	55	499.32
47.5	363.77	47.5	538.8
42.5	385.045	42.5	558.865
37.5	405.445	37.5	572.44
33	422.72	33	578.17
29	436.43	29	580.53
25.5	445.555	25.5	579.25
22.5	453.195	22.5	574.25
19.5	459.61	19.5	566.625
17	463.79	17	560.05
15	466.76	15	554.33
13	468.86	13	544.66
11	472	11	537.31
9	472.76	9	527.42
7	474.26	7	517.88
5	475	5	507.32
3	476.96	3	496.12
1	476.19	1	482.06
0	476.762	0	476.762
-1	476.19	-1	469.15
-3	476.96	-3	456.82
-5	475	-5	443.38
-7	474.26	-7	428.58
-9	472.76	-9	414.02
-11	472	-11	398.05
-13	468.86	-13	383.18
-15	466.76	-15	367.64
-17	463.79	-17	350.62
-19.5	459.61	-19.5	331.07
-22.5	453.195	-22.5	306.16
-25.5	445.555	-25.5	281.02
-29	436.43	-29	251.52
-33	422.72	-33	217.51
-37.5	405.445	-37.5	179.465
-42.5	385.045	-42.5	137.445
-47.5	363.77	-47.5	98.14
-55	333.05	-55	48.57
-65	294.49	-65	9.2
-75	250.21	-75	0.16
-85	197.43	-85	0.14
-90	169.239	-90	0.17

4.2 Goniophotometer Test

Characteristics

NEMA Type	6 H x 6 V
Maximum Candela	580.53
Maximum Candela Angle	0 H 29 V
Horizontal Beam Angle (50%)	140.3
Vertical Beam Angle (50%)	104.6
Horizontal Field Angle (10%)	107.1
Vertical Field Angle (10%)	107.1
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	1334
Beam Efficiency	N.A.
Field Lumens	1804
Field Efficiency	N.A.
Spill Lumens	15
Luminaire Lumens	1819
Total Efficiency	N.A.
Total Luminaire Watts	19.61
Ballast Factor	1

ISOCANDELA CURVES



Axial Candela

	0	1	3	5	7	9	11	13	15	17	19.5	22.5	25.5	29	33	37.5	42.5	47.5	55	65	75	85	90
90	194.898	195.025	195.281	195.536	195.791	196.047	196.302	196.557	196.811	198.162	199.85	201.876	203.901	206.264	210.313	215.374	220.998	224.448	226.365	221.184	208.266	182.209	169.18
85	244.26	244.264	244.272	244.28	244.288	244.296	244.304	243.057	242.669	242.652	242.577	242.416	242.187	241.853	242.862	244.736	246.327	246.53	244.628	234.169	216.172	184.783	169.185
75	340.91	340.869	340.786	340.703	339.584	338.808	337.846	336.695	335.201	333.073	330.189	326.491	322.628	317.911	312.289	305.938	299.297	292.195	281.173	259.402	230.109	189.495	169.195
65	427.85	427.721	427.464	426.415	425.424	424.214	422.799	421.192	418.737	415.553	411.133	405.549	399.582	391.139	379.153	366.421	351.713	336.225	314.703	280.719	242.665	193.433	169.205
55	499.32	499.262	499.147	498.015	496.898	495.423	493.579	491.194	487.585	483.752	478.61	471.968	464.332	452.534	437.451	419.99	397.39	374.955	343.107	298.771	251.871	196.455	169.214
47.5	538.8 *	538.698	538.254	537.455	536.258	534.838	533.277	530.223	526.736	523.202	517.888	510.399	501.126	487.434	471.992	451.442	424.753	398.594	359.218	309.539	256.673	198.295	169.22
42.5	558.865	558.656	558.027	557.161	556.112	554.654	552.242	549.02	545.676	542.083	537.87	529.061	517.958	505.485	489.696	465.758	438.753	410.52	367.369	315.557	259.477	199.272	169.223
37.5	572.44	572.232	571.714	571.069	570.385	568.975	565.861	562.283	558.663	555.224	549.716	540.445	530.587	518.164	500.556	476.536	447.411	418.546	372.924	319.402	261.588	200.223	169.227
33	578.17	578.056	577.934	577.705	577.217	575.669	572.336	569.081	565.394	562.081	555.394	546.638	537.217	525.238	505.02	481.88	453.657	421.705	375.889	320.969	262.171	200.418	169.229
29	580.53	580.201	579.56	578.971	578.473	576.035	573.467	570.394	567.397	563.131	556.479	549.136	539.279	526.02	506.9 *	484.059	454.553	422.082	376.747	320.381	262.146	200.601	169.232
25.5	579.25	578.726	577.759	576.837	575.564	573.077	570.739	568.082	564.352	560.439	554.343	546.666	537.654	522.871	505.711	483.924	452.748	421.511	376.301	319.391	261.847	200.635	169.233
22.5	574.25	573.886	573.354	573.097	571.198	568.466	567.312	564.895	560.643	556.412	551.065	542.591	532.219	520.141	503.129	479.189	450.057	419.53	374.94	318.183	261.314	200.571	169.234
19.5	566.625	566.329	565.955	565.751	563.711	562.114	560.623	557.351	553.666	550.681	545.475	536.501	526.849	515.032	497.246	473.945	445.543	415.746	371.551	316.231	260.613	200.421	169.236
17	560.05	559.415	558.997	558.36	556.63	555.055	552.847	549.725	547.357	543.482	537.675	529.965	521.849	508.474	490.652	468.655	440.899	412.027	368.15	314.333	259.909	200.231	169.236
15	554.33	553.443	552.559	551.267	550.098	548.84	545.807	543.844	540.592	536.673	531.303	524.633	515.474	502.075	485.201	463.558	436.938	408.25	365.058	312.653	259.206	200.037	169.237
13	544.66	544.329	544.905	543.49	542.548	540.822	539.215	536.702	533.029	529.013	524.366	516.955	507.628	495.54	479.453	458.397	432.261	403.597	361.738	310.849	258.381	199.806	169.237
11	537.31	536.543	536.781	535.248	534.34	532.796	531.186	528.028	524.694	521.267	516.2 *	508.361	499.812	488.381	473.038	452.254	425.671	398.187	358.085	308.836	257.435	200.038	169.238
9	527.42	526.677	526.994	526.473	524.721	523.417	521.702	518.548	516.373	512.193	507.05	500.391	492.132	480.426	465.696	444.713	419.008	392.541	354.189	306.623	256.372	199.569	169.238
7	517.88	516.907	517.001	516.049	515.489	513.266	511.397	508.708	505.925	502.875	497.776	491.308	483.243	471.416	456.658	436.885	412.037	386.7 *	349.971	304.222	255.194	199.096	169.238
5	507.32	505.961	505.802	505.124	504.57	502.661	501.317	498.601	495.907	492.938	488.465	480.97	472.847	461.882	447.41	428.186	404.852	380.57	345.455	301.642	254.221	198.622	169.239
3	496.12	495.129	495.23	494.413	493.157	491.407	490.393	487.239	484.796	481.483	477.134	470.032	462.123	451.986	437.796	419.352	397.223	374.086	340.899	299.053	252.619	198.145	169.239
1	482.06	482.441	482.292	481.837	480.284	478.989	478.006	475.03	472.867	469.784	465.508	458.903	451.156	441.759	427.869	410.173	389.194	367.281	335.669	296.012	251.013	197.43	169.239
0	476.762	476.19	476.96	475 *	474.26	472.76	472 *	468.86	466.76	463.79	459.61	453.195	445.555	436.43	422.72	405.445	385.045	363.77	333.05	294.49	250.21	197.43	169.239
-1	469.15	469.93	470.106	468.63	468.069	466.614	465.429	462.635	460.435	457.578	453.367	447.157	439.65	430.638	417.344	400.491	380.586	359.94	330.187	292.657	249.178	197.115	169.238
-3	456.82	456.568	456.266	455.93	455.091	453.242	452.012	449.703	447.253	444.609	440.584	434.763	427.502	418.639	406.187	390.289	371.447	352.094	324.469	288.995	247.116	196.485	169.237
-5	443.38	443.893	442.001	441.948	440.911	439.291	439.254	436.773	433.931	431.17	427.212	422.128	414.806	406.396	394.654	379.701	362.052	344.018	318.192	284.914	245.058	195.857	169.236
-7	428.58	429.183	428.539	427.929	426.72	426.269	424.187	422.881	419.998	417.433	413.862	408.995	401.733	393.923	382.645	368.997	352.448	335.737	311.995	280.865	242.405	195.23	169.234
-9	414.02	414.92	414.012	413.166	412.665	410.99	410.329	408.029	405.239	403.355	400.325	395.47	388.927	381.142	370.465	357.517	342.471	327.244	305.693	276.7 *	239.978	194.607	169.233
-11	398.05	399.005	398.178	398.711	398.116	396.601	394.757	393.586	391.12	389.595	385.789	380.808	375.683	368.159	357.788	345.913	332.146	318.573	299.309	272.425	237.472	193.986	169.231
-13	383.18	384.091	383.401	383.343	382.016	381.595	380.325	377.576	376.776	374.61	371.075	366.061	361.705	354.483	345.517	334.558	321.909	309.779	292.945	268.046	234.892	192.679	169.23
-15	367.64	368.414	367.774	367.605	366.962	365.383	364.361	363.042	360.888	359.122	356.499	352.19	347.256	340.598	333.143	323.2 *	311.68	301.076	286.389	263.57	232.243	191.841	169.228
-17	350.62	351.577	351.594	350.91	350.998	349.417	348.73	347.263	345.398	343.877	340.885	337.817	332.863	326.669	320.001	311.051	301.644	292.503	279.873	259.08	229.53	190.977	169.226
-19.5	331.07	331.839	332.103	330.504	330.817	330.052	328.317	327.825	326.473	323.912	321.592	318.754	314.621	309.109	303.133	295.867	288.404	281.502	271.464	253.441	226.058	189.863	169.224
-22.5	306.16	306.916	307.374	306.484	305.934	305.766	304.56	302.923	302.514	300.968	298.129	295.216	292.522	289.089	283.035	277.892	273.13	268.06	260.908	246.644	221.813	188.479	169.221
-25.5	281.02	281.748	282.305	281.655	280.45	280.889	280.139	278.392	277.271	276.69	275.086	271.835	269.693	267.391	263.875	259.726	257.138	254.783	250.649	239.401	217.472	187.047	169.218
-29	251.52	252.339	252.837	252.489	251.22	251.445	251.22	250.231	248.469	247.938	247.424	246.635	243.435	243.17	241.378	239.941	239.451	239.466	238.64	230.821	212.263	185.321	169.215
-33	217.51	218.314	218.888	218.743	217.846	217.922	217.853	217.648	217.029	215.713	215.662	215.91	215.726	214.803	216.216	217.692	219.624	222.336	225.071	220.938	206.149	183.284	169.211
-37.5	179.465	180.203	181.118	181.284	181.14	179.548	180.624	181.307	181.418	181.256	180.506	183.061	184.566	186.572	188.912	193.794	198.706	204.008	209.588	209.499	199.145	181.11	169.206
-42.5	137.445	138.291	139.516	140.134	140.163	139.691	139.977	142.517	143.588	144.845	145.908	148.51	152.045	156.708	161.453	168.511	177.209	184.189	192.381	196.364	191.304	178.105	169.2 *
-47.5	98.14 *	99.117	100.732	101.896	102.61	102.873	102.722	105.448	108.281	110.916	113.773	116.769	122.377	129.114	136.657	145.322	155.961	164.615	175.073	183.215	183.153	175.243	169.194
-55	48.57	49.728	50.043	53.535	55.061	56.329	57.341	59.378	63.67 *	67.874	72.887	78.48 *	84.214	93.535	103.504	113.662	125.2 *	136.056	149.36	163.765	170.943	170.943	169.186
-65	9.2	10.205	12.214	13.996	15.77	17.451	19.031	20.503	24.089	28.601	33.976	40.026	45.511	53.013	63.853	75.075	86.144	99.529	117.153	138.354	154.826	165.434	169.174
-75	0.16	0.4																					





LUMEN TABULATION

	0	1	3	5	7	9	11	13	15	17	20	23	26	29	33	38	43	48	55	65	75	85	90	Total
90	0.33 *	0.67 *	0.67 *	0.67 *	0.66 *	0.66 *	0.66 *	0.65 *	0.64 *	0.80 *	0.95 *	0.93 *	1.06 *	1.18 *	1.28 *	1.35 *	1.26 *	1.68 *	1.76 *	1.14 *	0.52 *	0.06 *		0
85	0.89 *	1.78 *	1.78 *	1.77 *	1.76 *	1.75 *	1.73 *	1.71 *	1.69 *	2.08 *	2.43 *	2.37 *	2.66 *	2.91 *	3.09 *	3.20 *	2.92 *	3.80 *	3.88 *	2.45 *	1.08 *	0.12 *		0
75	1.17 *	2.34 *	2.33 *	2.32 *	2.30 *	2.29 *	2.26 *	2.23 *	2.20 *	2.69 *	3.14 *	3.03 *	3.39 *	3.66 *	3.82 *	3.86 *	3.44 *	4.37 *	4.32 *	2.63 *	1.13 *	0.12 *		0
65	1.41 *	2.82 *	2.81 *	2.80 *	2.78 *	2.75 *	2.72 *	2.69 *	2.64 *	3.23 *	3.77 *	3.63 *	4.05 *	4.33 *	4.49 *	4.48 *	3.93 *	4.89 *	4.71 *	2.79 *	1.17 *	0.12 *		0
55	1.19 *	2.37 *	2.36 *	2.35 *	2.33 *	2.31 *	2.29 *	2.26 *	2.22 *	2.72 *	3.17 *	3.05 *	3.39 *	3.62 *	3.74 *	3.70 *	3.22 *	3.95 *	3.74 *	2.18 *	0.89 *	0.09 *		0
47.5	0.84 *	1.67 *	1.66 *	1.66 *	1.65 *	1.63 *	1.61 *	1.59 *	1.56 *	1.92 *	2.23 *	2.15 *	2.38 *	2.55 *	2.63 *	2.60 *	2.25 *	2.74 *	2.57 *	1.48 *	0.60 *	0.06 *		0
42.5	0.86 *	1.72 *	1.72 *	1.71 *	1.70 *	1.68 *	1.66 *	1.64 *	1.61 *	1.98 *	2.30 *	2.21 *	2.45 *	2.63 *	2.70 *	2.67 *	2.31 *	2.80 *	2.61 *	1.50 *	0.61 *	0.06 *		0
37.5	0.79 *	1.58 *	1.57 *	1.57 *	1.56 *	1.54 *	1.52 *	1.50 *	1.48 *	1.81 *	2.10 *	2.02 *	2.25 *	2.41 *	2.47 *	2.44 *	2.11 *	2.55 *	2.38 *	1.36 *	0.55 *	0.06 *		0
33	0.71 *	1.41 *	1.41 *	1.40 *	1.39 *	1.38 *	1.36 *	1.34 *	1.32 *	1.62 *	1.88 *	1.81 *	2.02 *	2.15 *	2.21 *	2.19 *	1.89 *	2.28 *	2.12 *	1.21 *	0.49 *	0.05 *		0
29	0.62 *	1.23 *	1.23 *	1.22 *	1.22 *	1.20 *	1.19 *	1.17 *	1.16 *	1.41 *	1.65 *	1.59 *	1.76 *	1.88 *	1.94 *	1.91 *	1.65 *	2.00 *	1.85 *	1.06 *	0.43 *	0.04 *		0
25.5	0.53 *	1.05 *	1.05 *	1.04 *	1.04 *	1.03 *	1.01 *	1.00 *	0.98 *	1.21 *	1.40 *	1.35 *	1.50 *	1.61 *	1.66 *	1.63 *	1.41 *	1.71 *	1.58 *	0.91 *	0.37 *	0.04 *		0
22.5	0.52 *	1.04 *	1.04 *	1.03 *	1.03 *	1.02 *	1.01 *	0.99 *	0.98 *	1.20 *	1.39 *	1.34 *	1.49 *	1.59 *	1.64 *	1.62 *	1.40 *	1.70 *	1.58 *	0.90 *	0.37 *	0.04 *		0
19.5	0.43 *	0.86 *	0.85 *	0.85 *	0.84 *	0.84 *	0.83 *	0.82 *	0.80 *	0.98 *	1.15 *	1.10 *	1.23 *	1.31 *	1.35 *	1.33 *	1.15 *	1.40 *	1.30 *	0.75 *	0.30 *	0.03 *		0
17	0.34 *	0.68 *	0.67 *	0.67 *	0.67 *	0.66 *	0.65 *	0.64 *	0.63 *	0.78 *	0.91 *	0.87 *	0.97 *	1.04 *	1.07 *	1.06 *	0.91 *	1.11 *	1.03 *	0.60 *	0.24 *	0.02 *		0
15	0.33 *	0.67 *	0.67 *	0.66 *	0.66 *	0.65 *	0.65 *	0.64 *	0.63 *	0.77 *	0.89 *	0.86 *	0.96 *	1.02 *	1.06 *	1.04 *	0.90 *	1.10 *	1.03 *	0.59 *	0.24 *	0.02 *		0
13	0.33 *	0.66 *	0.66 *	0.65 *	0.65 *	0.64 *	0.64 *	0.63 *	0.62 *	0.76 *	0.88 *	0.85 *	0.94 *	1.01 *	1.04 *	1.03 *	0.89 *	1.09 *	1.02 *	0.59 *	0.24 *	0.02 *		0
11	0.32 *	0.65 *	0.65 *	0.64 *	0.64 *	0.63 *	0.63 *	0.62 *	0.61 *	0.74 *	0.87 *	0.84 *	0.93 *	1.00 *	1.03 *	1.02 *	0.88 *	1.07 *	1.01 *	0.59 *	0.24 *	0.02 *		0
9	0.32 *	0.64 *	0.63 *	0.63 *	0.63 *	0.62 *	0.61 *	0.61 *	0.60 *	0.73 *	0.85 *	0.82 *	0.91 *	0.98 *	1.01 *	1.00 *	0.87 *	1.06 *	1.00 *	0.58 *	0.24 *	0.02 *		0
7	0.31 *	0.62 *	0.62 *	0.62 *	0.61 *	0.61 *	0.60 *	0.59 *	0.58 *	0.72 *	0.84 *	0.80 *	0.90 *	0.96 *	0.99 *	0.98 *	0.85 *	1.05 *	0.99 *	0.58 *	0.24 *	0.02 *		0
5	0.31 *	0.61 *	0.61 *	0.61 *	0.60 *	0.60 *	0.59 *	0.58 *	0.57 *	0.70 *	0.82 *	0.79 *	0.88 *	0.94 *	0.97 *	0.96 *	0.84 *	1.03 *	0.98 *	0.58 *	0.24 *	0.02 *		0
3	0.30 *	0.60 *	0.59 *	0.59 *	0.59 *	0.58 *	0.58 *	0.57 *	0.56 *	0.68 *	0.80 *	0.77 *	0.86 *	0.92 *	0.95 *	0.94 *	0.82 *	1.01 *	0.97 *	0.57 *	0.24 *	0.02 *		0
1	0.15 *	0.29 *	0.29 *	0.29 *	0.29 *	0.29 *	0.28 *	0.28 *	0.27 *	0.34 *	0.39 *	0.38 *	0.42 *	0.45 *	0.47 *	0.46 *	0.41 *	0.50 *	0.48 *	0.28 *	0.12 *	0.01 *		0
0	0.14 *	0.29 *	0.29 *	0.29 *	0.28 *	0.28 *	0.28 *	0.27 *	0.27 *	0.33 *	0.39 *	0.37 *	0.42 *	0.45 *	0.46 *	0.46 *	0.40 *	0.50 *	0.48 *	0.28 *	0.12 *	0.01 *		0

-1	0.28 *	0.56 *	0.56 *	0.56 *	0.56 *	0.55 *	0.55 *	0.54 *	0.53 *	0.65 *	0.76 *	0.73 *	0.81 *	0.87 *	0.90 *	0.90 *	0.79 *	0.98 *	0.94 *	0.56 *	0.24 *	0.02 *	0
-3	0.27 *	0.55 *	0.55 *	0.54 *	0.54 *	0.54 *	0.53 *	0.52 *	0.51 *	0.63 *	0.74 *	0.71 *	0.79 *	0.85 *	0.88 *	0.88 *	0.77 *	0.96 *	0.93 *	0.55 *	0.23 *	0.02 *	0
-5	0.27 *	0.53 *	0.53 *	0.53 *	0.52 *	0.52 *	0.51 *	0.51 *	0.50 *	0.61 *	0.71 *	0.69 *	0.77 *	0.82 *	0.85 *	0.85 *	0.75 *	0.94 *	0.91 *	0.55 *	0.23 *	0.02 *	0
-7	0.26 *	0.51 *	0.51 *	0.51 *	0.51 *	0.50 *	0.50 *	0.49 *	0.48 *	0.59 *	0.69 *	0.67 *	0.74 *	0.80 *	0.83 *	0.83 *	0.73 *	0.92 *	0.89 *	0.54 *	0.23 *	0.02 *	0
-9	0.25 *	0.50 *	0.49 *	0.49 *	0.49 *	0.48 *	0.48 *	0.47 *	0.47 *	0.57 *	0.67 *	0.64 *	0.72 *	0.77 *	0.80 *	0.80 *	0.71 *	0.89 *	0.88 *	0.53 *	0.23 *	0.02 *	0
-11	0.24 *	0.48 *	0.48 *	0.47 *	0.47 *	0.47 *	0.46 *	0.45 *	0.45 *	0.55 *	0.64 *	0.62 *	0.69 *	0.74 *	0.77 *	0.78 *	0.69 *	0.87 *	0.86 *	0.53 *	0.23 *	0.02 *	0
-13	0.23 *	0.46 *	0.46 *	0.45 *	0.45 *	0.45 *	0.44 *	0.44 *	0.43 *	0.53 *	0.62 *	0.60 *	0.67 *	0.72 *	0.75 *	0.75 *	0.67 *	0.85 *	0.84 *	0.52 *	0.22 *	0.02 *	0
-15	0.22 *	0.44 *	0.44 *	0.44 *	0.43 *	0.43 *	0.42 *	0.42 *	0.41 *	0.51 *	0.59 *	0.57 *	0.64 *	0.69 *	0.72 *	0.73 *	0.65 *	0.83 *	0.83 *	0.51 *	0.22 *	0.02 *	0
-17	0.26 *	0.52 *	0.52 *	0.52 *	0.51 *	0.51 *	0.50 *	0.50 *	0.49 *	0.60 *	0.70 *	0.68 *	0.76 *	0.82 *	0.86 *	0.87 *	0.78 *	1.01 *	1.01 *	0.63 *	0.28 *	0.03 *	0
-20	0.29 *	0.58 *	0.58 *	0.58 *	0.58 *	0.57 *	0.56 *	0.56 *	0.55 *	0.68 *	0.79 *	0.76 *	0.86 *	0.93 *	0.97 *	0.99 *	0.90 *	1.16 *	1.18 *	0.74 *	0.33 *	0.04 *	0
-23	0.27 *	0.54 *	0.54 *	0.53 *	0.53 *	0.53 *	0.52 *	0.51 *	0.51 *	0.62 *	0.73 *	0.71 *	0.80 *	0.86 *	0.91 *	0.93 *	0.85 *	1.11 *	1.14 *	0.72 *	0.32 *	0.04 *	0
-26	0.28 *	0.57 *	0.57 *	0.57 *	0.56 *	0.56 *	0.55 *	0.55 *	0.54 *	0.66 *	0.78 *	0.75 *	0.85 *	0.93 *	0.98 *	1.02 *	0.93 *	1.23 *	1.28 *	0.82 *	0.37 *	0.04 *	0
-29	0.29 *	0.57 *	0.57 *	0.57 *	0.57 *	0.56 *	0.56 *	0.55 *	0.54 *	0.67 *	0.79 *	0.77 *	0.87 *	0.96 *	1.02 *	1.07 *	0.99 *	1.32 *	1.39 *	0.91 *	0.42 *	0.05 *	0
-33	0.27 *	0.55 *	0.55 *	0.54 *	0.54 *	0.54 *	0.53 *	0.53 *	0.52 *	0.65 *	0.76 *	0.75 *	0.85 *	0.95 *	1.03 *	1.09 *	1.02 *	1.38 *	1.48 *	0.98 *	0.46 *	0.05 *	0
-38	0.24 *	0.49 *	0.49 *	0.49 *	0.48 *	0.48 *	0.48 *	0.48 *	0.48 *	0.59 *	0.70 *	0.70 *	0.81 *	0.91 *	1.00 *	1.08 *	1.03 *	1.41 *	1.54 *	1.04 *	0.50 *	0.06 *	0
-43	0.18 *	0.36 *	0.37 *	0.37 *	0.37 *	0.36 *	0.37 *	0.37 *	0.37 *	0.47 *	0.56 *	0.56 *	0.66 *	0.76 *	0.86 *	0.94 *	0.92 *	1.28 *	1.42 *	0.98 *	0.48 *	0.06 *	0
-48	0.17 *	0.34 *	0.35 *	0.36 *	0.36 *	0.36 *	0.36 *	0.37 *	0.39 *	0.50 *	0.61 *	0.63 *	0.76 *	0.91 *	1.05 *	1.18 *	1.17 *	1.67 *	1.91 *	1.37 *	0.69 *	0.09 *	0
-55	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.52 *	0.65 *	0.82 *	1.00 *	1.17 *	1.20 *	1.79 *	2.16 *	1.63 *	0.87 *	0.11 *	0
-65	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.5	0.6	0.75 *	0.82 *	1.32 *	1.74 *	1.42 *	0.82 *	0.11 *	0
-75	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.91 *	1.35 *	1.22 *	0.76 *	0.11 *	0
-85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0.2	0.3	0.54 *	0.54 *	0.36 *	0.05 *	0
-90																							
Total	17.5	35	35	34.8	34.6	34.3	34	33.6	33.2	40.8	47.8	46.3	52	56.4	59.2	60.1	53.8	68.6	68.6	42.9	19	2.1	909.69

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	L2X @ 3000K	Sample ID.	F1
Temperature (°C)	25.4	Humidity (%RH)	54.0

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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a digital power meter and power supply. The sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion were calculated.

Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
120.06	60	0.168	19.7	0.979	13.34%

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*****