

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

DLF2408121-3a

Test Date

2024/9/3

Issue Date

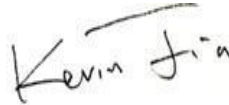
2024/9/6

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		2094
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	105.8
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		19.8
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	13.43%
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	5029±355	5075
		4 step	5029±220	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		84
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	-		13
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		84
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%		-12%
Zonal Lumen Requirement (0°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	85%		100.00%
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		0.169
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		19.8

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/9/3	L2X @ 5000K	N/A	C1
2	Goniophotometer Test	2024/9/3	L2X @ 5000K	N/A	C1
3	THD and PF Test	2024/9/3	L2X @ 5000K	N/A	C1

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: L2X @ 5000K

Electrical Specification: 120V/60Hz

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	L2X @ 5000K	Sample ID.	C1
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
120.05	60	0.168	19.7	0.979

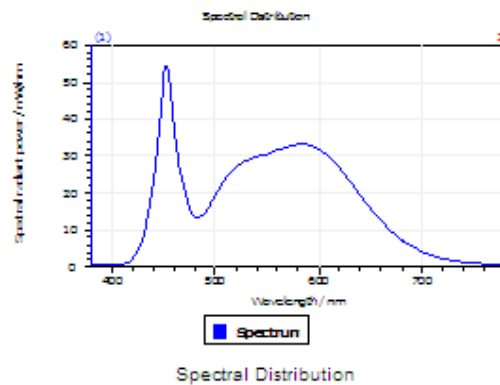
Test Result

CCT (K)	CRI	R9	Duv
5075	84	13	0.00088

Rf	Rg	IES Rcs,h1
84	96	-12%

4.1 Integrating Sphere Test

Results



Spectral values

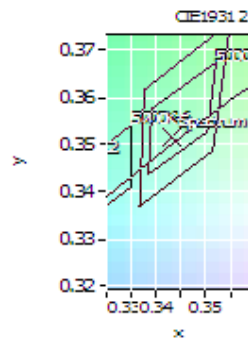
DominantWavelength 570.70 nm
Purity 0.086
PeakWavelength 452.69 nm
Radiant Power 6.591 W
Width50%:

Color Coordinates

Correlated Color Temperat 5075 K
x: 0.3432 u: 0.2100 u': 0.2100
y: 0.3518 v: 0.3230 v': 0.4845

CRI01	82.7	CRI09	13.1
CRI02	89.1	CRI10	73.0
CRI03	92.5	CRI11	82.8
CRI04	83.6	CRI12	61.7
CRI05	82.9	CRI13	84.5
CRI06	83.7	CRI14	96.0
CRI07	87.4	CRI15	77.9
CRI08	69.2	CRI16	76.0

ResultsCRI 83.9



PlanckDistance 8.8E-004

4.1 Integrating Sphere Test

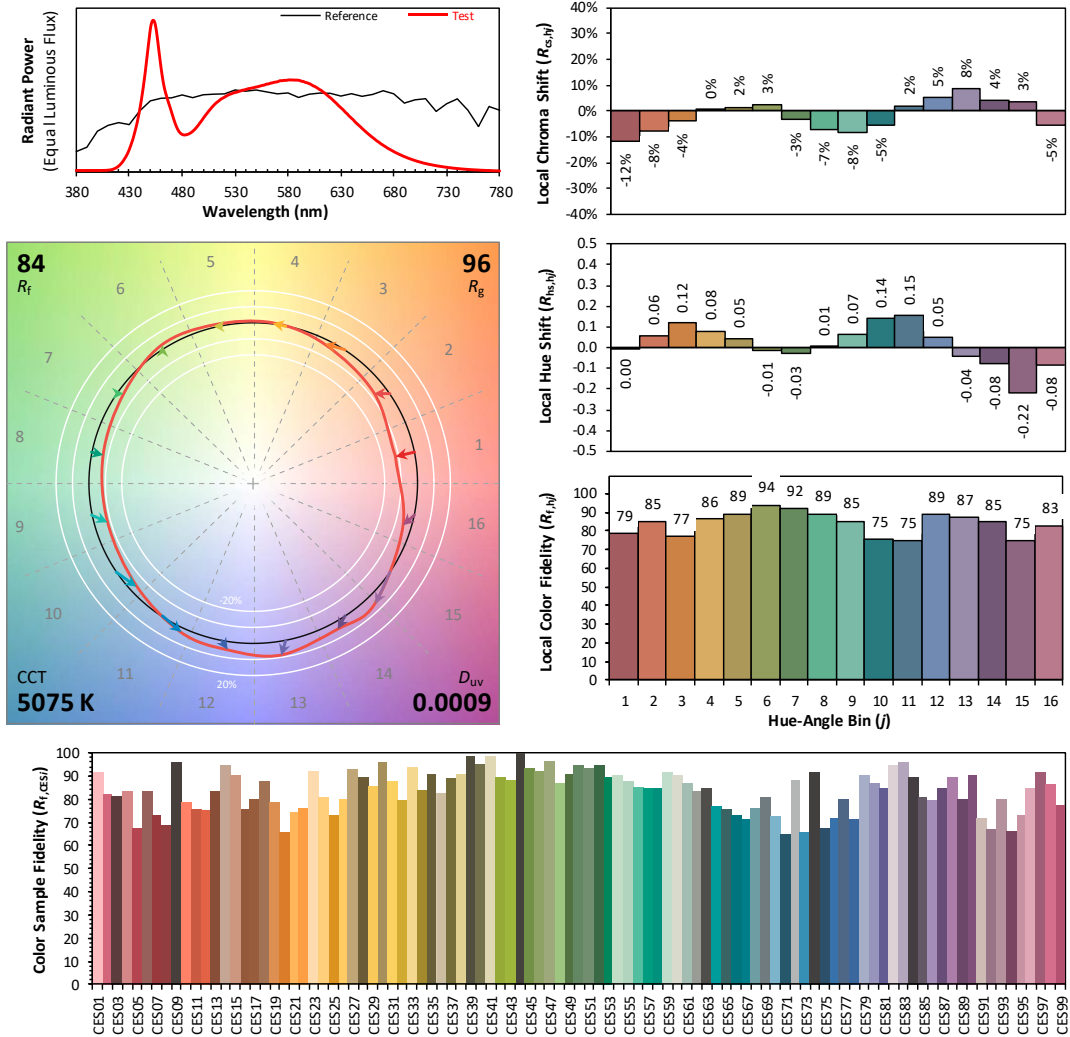
IES TM-30-18 Color Rendition Report

Source: DLF2408121-3a

Manufacturer: RAB Lighting Inc.

Date: 2024/9/3

Model: L2X @ 5000K



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

x 0.3432
 y 0.3518
 u' 0.2100
 v' 0.4845

CIE 13.3-1995
(CRI)
 R_a 84
 R_g 18

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	5.75E-04	485	1.35E-02	590	3.30E-02	695	4.81E-03
385	5.62E-04	490	1.47E-02	595	3.25E-02	700	4.15E-03
390	5.73E-04	495	1.67E-02	600	3.18E-02	705	3.57E-03
395	5.67E-04	500	1.93E-02	605	3.08E-02	710	3.08E-03
400	5.65E-04	505	2.19E-02	610	2.96E-02	715	2.66E-03
405	5.88E-04	510	2.40E-02	615	2.83E-02	720	2.29E-03
410	6.78E-04	515	2.57E-02	620	2.67E-02	725	1.99E-03
415	1.07E-03	520	2.69E-02	625	2.50E-02	730	1.71E-03
420	2.16E-03	525	2.79E-02	630	2.31E-02	735	1.47E-03
425	4.41E-03	530	2.86E-02	635	2.12E-02	740	1.27E-03
430	8.04E-03	535	2.91E-02	640	1.94E-02	745	1.09E-03
435	1.40E-02	540	2.97E-02	645	1.75E-02	750	9.45E-04
440	2.26E-02	545	3.01E-02	650	1.57E-02	755	8.25E-04
445	3.55E-02	550	3.06E-02	655	1.40E-02	760	7.24E-04
450	5.15E-02	555	3.11E-02	660	1.24E-02	765	6.16E-04
455	5.23E-02	560	3.16E-02	665	1.10E-02	770	5.36E-04
460	3.78E-02	565	3.21E-02	670	9.62E-03	775	4.67E-04
465	2.77E-02	570	3.24E-02	675	8.41E-03	780	4.15E-04
470	2.16E-02	575	3.29E-02	680	7.35E-03		
475	1.60E-02	580	3.31E-02	685	6.40E-03		
480	1.35E-02	585	3.31E-02	690	5.55E-03		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	L2X @ 5000K	Sample ID.	C1
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	120.01	60	0.169	19.8	0.979

Test Result

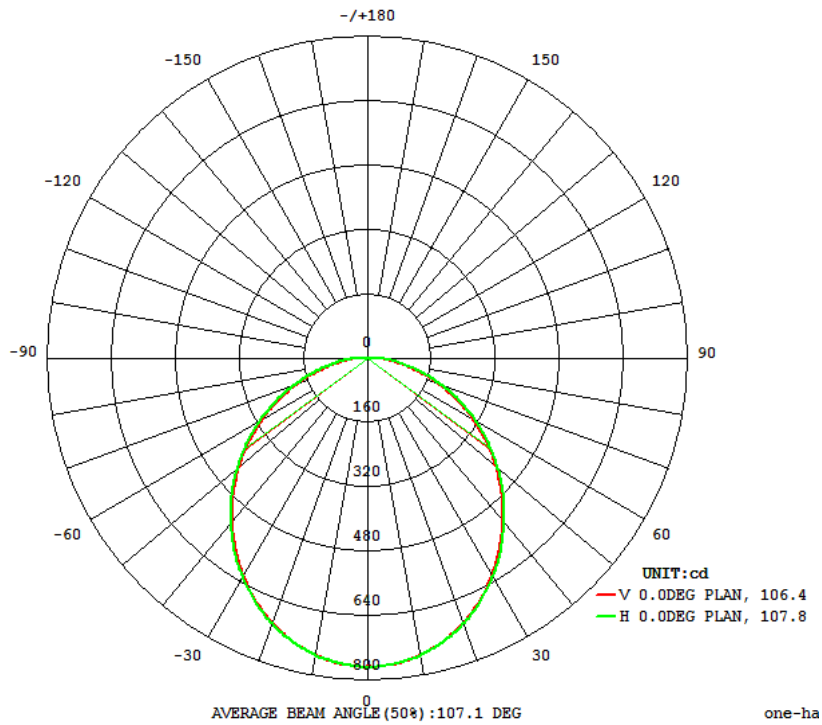
Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	Horizontal	Vertical	Horizontal	Vertical	
2094	164.5	162.0	107.8	106.4	105.8

Zonal Lumen Requirement (0°-90°)

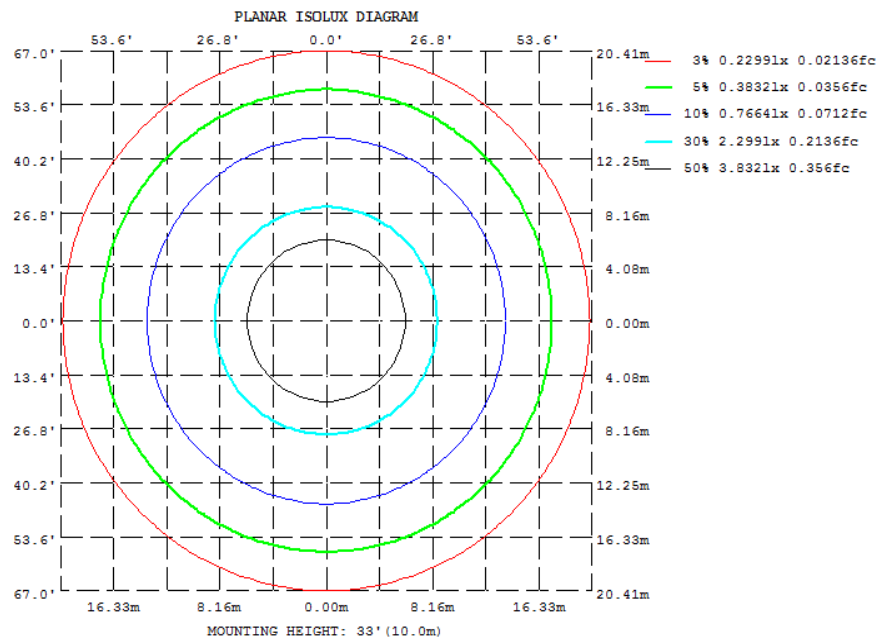
100.00%

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	748.5	750.1	749.6	750.1	748.5	750.1	749.6	750.1
20	699.3	700.9	701.5	700.9	699.3	700.9	701.5	700.9
30	621.0	624.8	626.5	624.8	621.0	624.8	626.5	624.8
40	526.9	529.9	532.7	529.9	526.9	529.9	532.7	529.9
50	419.4	423.5	426.2	423.5	419.4	423.5	426.2	423.5
60	306.8	310.3	314.1	310.3	306.8	310.3	314.1	310.3
70	191.2	195.5	199.2	195.5	191.2	195.5	199.2	195.5
80	85.61	90.77	96.13	90.77	85.61	90.77	96.13	90.77
90	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	72.22	0 - 10	72.22	3.45%
10-20	205.00	0 - 20	277.22	13.24%
20-30	305.75	0 - 30	582.97	27.85%
30-40	361.38	0 - 40	944.35	45.11%
40-50	367.66	0 - 50	1312.01	62.67%
50-60	327.47	0 - 60	1639.48	78.31%
60-70	249.26	0 - 70	1888.74	90.21%
70-80	148.65	0 - 80	2037.39	97.31%
80-90	56.22	0 - 90	2093.60	100.00%
90-100	0.00	0 - 100	2093.60	100.00%
100-110	0.00	0 - 110	2093.60	100.00%
110-120	0.00	0 - 120	2093.60	100.00%
120-130	0.00	0 - 130	2093.60	100.00%
130-140	0.00	0 - 140	2093.60	100.00%
140-150	0.00	0 - 150	2093.60	100.00%
150-160	0.00	0 - 160	2093.60	100.00%
160-170	0.00	0 - 170	2093.60	100.00%
170-180	0.00	0 - 180	2093.60	100.00%

4.2 Goniophotometer Test

Axial Candela

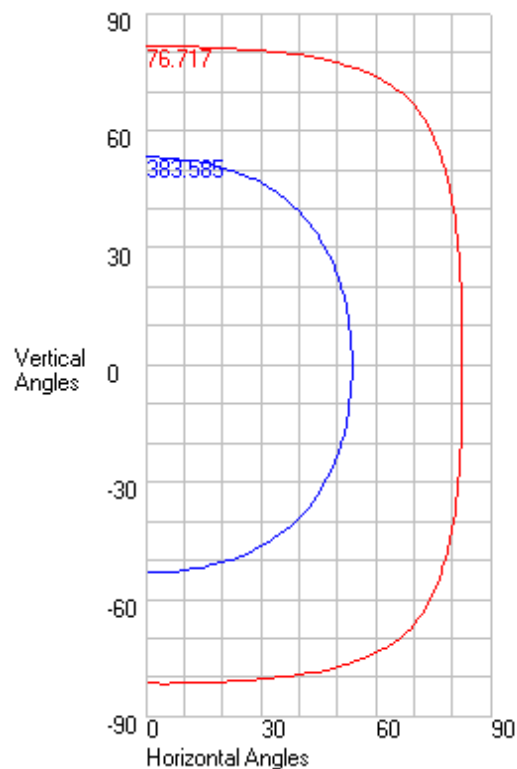
DEG.	HOR.	DEG.	VERT.
90	0.307	90	0.229
85	56.1	85	45.55
75	145.07	75	135.96
65	256.56	65	248.81
55	370.94	55	362.98
47.5	454.45	47.5	446.66
42.5	507.37	42.5	501.395
37.5	556.955	37.5	552.065
33	600.74	33	595.32
29	634.67	29	631.36
25.5	662.73	25.5	659.63
22.5	685.05	22.5	681.895
19.5	704.37	19.5	702.62
17	718.63	17	717.93
15	729.06	15	729.07
13	738.97	13	737.55
11	745.54	11	745.37
9	754.01	9	752.57
7	758.27	7	758.48
5	762.79	5	763.68
3	765.03	3	765.67
1	767	1	767.17
0	766.896	0	766.896
-1	767	-1	767.17
-3	765.03	-3	765.67
-5	762.79	-5	763.68
-7	758.27	-7	758.48
-9	754.01	-9	752.57
-11	745.54	-11	745.37
-13	738.97	-13	737.55
-15	729.06	-15	729.07
-17	718.63	-17	717.93
-19.5	704.37	-19.5	702.62
-22.5	685.05	-22.5	681.895
-25.5	662.73	-25.5	659.63
-29	634.67	-29	631.36
-33	600.74	-33	595.32
-37.5	556.955	-37.5	552.065
-42.5	507.37	-42.5	501.395
-47.5	454.45	-47.5	446.66
-55	370.94	-55	362.98
-65	256.56	-65	248.81
-75	145.07	-75	135.96
-85	56.1	-85	45.55
-90	0.307	-90	0.229

4.2 Goniophotometer Test

Characteristics

NEMA Type	7 H x 7 V
Maximum Candela	767.17
Maximum Candela Angle	0 H -1 V
Horizontal Beam Angle (50%)	107.7
Vertical Beam Angle (50%)	106.3
Horizontal Field Angle (10%)	165.4
Vertical Field Angle (10%)	163.1
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	1446
Beam Efficiency	N.A.
Field Lumens	2064
Field Efficiency	N.A.
Spill Lumens	31
Luminaire Lumens	2094
Total Efficiency	N.A.
Total Luminaire Watts	19.75
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	0.229	0.23	0.23	0.231	0.231	0.231	0.231	0.23	0.229	0.229	0.228	0.226	0.223	0.22	0.215	0.209	0.199	0.188	0.165	0.126	0.079	0.027	0
85	45.55	45.619	45.757	45.895	46.032	46.17	46.308	45.598	45.451	45.369	45.214	44.951	44.607	44.107	43.547	43.038	41.916	40.813	38.889	35.844	32.317	13.354	0.027
75	135.96	136.002	136.086	136.17	135.034	134.328	133.429	132.341	131.093	129.743	127.79	125.103	122.055	118.024	113.215	107.193	99.808	92.05 *	79.965	63.551	47.544	32.387	0.079
65	248.81	248.838	248.894	247.771	246.705	245.276	243.492	241.358	238.946	236.204	232.281	227.068	220.729	212.69	202.612	190.066	174.546	158.121	132.104	97.05 *	64.769	37.189	0.13
55	362.98	363.093	363.319	361.862	360.452	358.479	355.937	353.088	349.259	345.11	339.115	331.014	322.108	310.259	294.895	276.09	253.091	228.116	188.253	133.579	82.815	41.793	0.176
47.5	446.66	446.668	446.16	444.94	442.998	440.471	437.413	433.783	429.288	424.068	416.432	405.988	394.599	380.268	360.968	337.59	309.516	278.755	229.154	160.668	96.268	45.037	0.207
42.5	501.395	501.268	500.402	498.767	496.42	493.404	489.715	486.164	480.007	474.065	465.585	454.894	441.267	424.584	403.195	376.9 *	345.374	310.344	254.773	177.85	104.847	47.028	0.226
37.5	552.065	552.008	551.235	549.631	547.76	543.91	539.664	534.306	528.218	521.305	511.875	498.951	485.021	466.974	442.527	413.328	377.94	339.642	278.628	193.912	112.811	49.066	0.243
33	595.32	595.353	594.227	592.3 *	589.559	586.686	581.199	575.553	569.201	561.624	551.301	537.327	521.541	500.795	475.33	443.404	404.629	363.798	298.281	206.965	119.556	50.399	0.257
29	631.36	631.455	630.214	627.946	624.58	620.482	615.583	609.552	602.739	595.185	583.597	569.434	551.63	530.275	501.867	468.37	426.656	383.548	314 *	217.747	125.004	51.652	0.268
25.5	659.63	659.492	658.331	655.969	652.573	648.467	643.215	637.128	630.073	621.378	609.492	593.463	575.218	552.266	522.594	487.205	444.469	398.425	326.416	226.129	129.361	52.629	0.277
22.5	681.895	681.859	680.913	679.051	675.48	670.948	665.373	659.22	650.844	641.564	629.428	612.959	593.912	570.81	539.542	502.509	458.419	410.164	336 *	232.748	132.69	53.375	0.283
19.5	702.62	702.452	701.245	698.933	695.273	690.84	685.13	677.992	669.658	660.561	647.412	629.779	610.888	585.161	554.104	515.421	469.64	420.984	344.521	238.346	135.667	54.034	0.289
17	717.93	718.089	716.806	714.113	710.068	705.736	698.997	692.06	683.796	674.074	660.734	642.54	622.752	597.146	564.778	525.271	478.681	428.92	350.636	242.569	137.875	54.516	0.294
15	729.07	728.795	726.864	724.651	720.463	714.925	709.445	702.183	693.795	684.051	670.235	652.265	631.139	605.75	572.386	532.553	484.999	434.149	355.047	245.555	139.435	54.857	0.297
13	737.55	737.822	736.497	733.483	729.895	724.572	717.7 *	710.87	702.432	692.623	678.595	659.737	639.031	612.862	579.342	538.862	491.325	439.019	359.277	248.213	140.808	55.157	0.299
11	745.37	745.781	744.545	742.068	738.151	732.897	726.148	718.296	709.746	699.884	686.287	667.024	646.251	618.813	585.223	544.194	495.114	443.507	362.349	250.513	141.993	56.051	0.301
9	752.57	752.706	751.613	749.147	744.373	739.271	733.219	725.114	716.057	706.523	692.378	672.728	652.043	623.724	590.578	548.435	499.036	447.311	365.131	252.452	142.987	56.06	0.303
7	758.48	758.322	756.78	754.022	750.414	744.198	738.195	730.69	721.47	710.92	697.157	677.079	656.339	627.942	594.125	552.374	502.23	450.229	367.375	254.022	143.79	56.069	0.305
5	763.68	763.408	760.859	758.283	753.743	748.857	742.674	734.416	725.399	714.668	700.71	680.593	659.57	631.261	597.337	554.372	504.657	452.258	369.074	255.22	145.009	56.078	0.306
3	765.67	765.17	764.013	761.236	756.838	751.698	745.488	737.448	727.846	717.247	703.105	683.281	661.663	633.445	599.492	556.042	506.333	453.623	370.841	256.471	145.034	56.087	0.306
1	767.17	766.222	765.389	762.782	758.507	753.851	745.968	739.08	729.142	718.674	704.251	684.786	662.641	634.657	600.718	556.865	507.226	454.335	370.907	256.53	145.058	56.1	0.307
0	766.896	767 *	765.03	762.79	758.27	754.01	745.54	738.97	729.06	718.63	704.37	685.05	662.73	634.67	600.74	556.955	507.37	454.45	370.94	256.56	145.07	56.1	0.307
-1	767.17	766.222	765.389	762.782	758.507	753.851	745.968	739.08	729.142	718.674	704.251	684.786	662.641	634.657	600.718	556.865	507.226	454.335	370.907	256.53	145.058	56.096	0.307
-3	765.67	765.17	764.013	761.236	756.838	751.698	745.483	737.448	727.846	717.247	703.105	683.281	661.663	633.445	599.492	556.042	506.333	453.623	370.841	256.471	145.034	56.087	0.306
-5	763.68	763.408	760.859	758.283	753.743	748.857	742.674	734.416	725.399	714.668	700.71	680.593	659.57	631.261	597.337	554.372	504.657	452.258	369.074	255.22	145.009	56.078	0.306
-7	758.48	758.322	756.78	754.022	750.414	744.198	738.195	730.69	721.47	710.92	697.157	677.079	656.339	627.942	594.125	552.374	502.23	450.229	367.375	254.022	143.79	56.069	0.305
-9	752.57	752.706	751.613	749.147	744.373	739.271	733.219	725.114	716.057	706.523	692.378	672.728	652.043	623.724	590.578	548.435	499.036	447.311	365.131	252.452	142.987	56.06	0.303
-11	745.37	745.781	744.545	742.068	738.151	732.897	726.148	718.296	709.746	699.884	686.287	667.024	646.251	618.813	585.223	544.194	495.114	443.507	362.349	250.513	141.993	56.051	0.301
-13	737.55	737.822	736.497	733.483	729.895	724.572	717.7 *	710.87	702.432	692.623	678.595	659.737	639.031	612.862	579.342	538.862	491.325	439.019	359.277	248.213	140.808	55.157	0.299
-15	729.07	728.795	726.864	724.651	720.463	714.925	709.445	702.183	693.795	684.051	670.235	652.265	631.139	605.75	572.386	532.553	484.999	434.149	355.047	245.555	139.435	54.857	0.297
-17	717.93	718.089	716.806	714.113	710.068	705.736	698.997	692.06	683.796	674.074	660.734	642.54	622.752	597.146	564.778	525.271	478.681	428.92	350.636	242.569	137.875	54.516	0.294
-19.5	702.62	702.452	701.245	698.933	695.273	690.84	685.13	677.992	669.658	660.561	647.412	629.779	610.888	585.161	554.104	515.421	469.64	420.984	344.521	238.346	135.667	54.034	0.289
-22.5	681.895	681.859	680.913	679.051	675.48	670.948	665.373	659.22	650.844	641.564	629.428	612.959	593.912	570.81	539.542	502.509	458.419	410.164	336 *	232.748	132.69	53.375	0.283
-25.5	659.63	659.492	658.331	655.969	652.573	648.467	643.215	637.128	630.073	621.378	609.492	593.463	575.218	552.266	522.594	487.205	444.469	398.425	326.416	226.129	129.361	52.629	0.277
-29	631.36	631.455	630.214	627.946	624.58	620.482	615.583	609.552	602.739	595.185	583.597	569.434	551.63	530.275	501.867	468.37	426.656	383.548	314 *	217.747	125.004	51.652	0.268
-33	595.32	595.353	594.227	592.3 *	589.559	586.686	581.199	575.553	569.201	561.624	551.301	537.327	521.541	500.795	475.33	443.404	404.629	363.798	298.281	206.965	119.556	50.399	0.257
-37.5	552.065	552.008	551.235	549.631	547.76	543.91	539.664	534.306	528.218	521.305	511.875	498.951	485.021	466.974	442.527	413.328	377.94	339.642	278.628	193.912	112.811	49.066	0.243
-42.5	501.395	501.268	500.402	498.767	496.42	493.404	489.715	486.164	480.007	474.065	465.585	454.894	441.267	424.584	403.195	376.9 *	345.374	310.344	254.773	177.85	104.847	47.028	0.226
-47.5	446.66	446.668	446.16	444.94	442.998	440.471	437.413	433.783	429.288	424.068	416.432	405.988	394.599	380.268	360.968	337.59	309.516	278.755	229.154	160.668	96.268	45.037	0.207
-55	362.98	363.093	363.319	361.862	360.452	358.479	355.937	353.088	349.259	345.11	339.115	331.014	322.108	310.259	294.895	276.09	253.091	228.116	188.253	133.579	82.815	41.793	0.176
-65	248.81	248.838	248.894	247.771	246.705	245.276	243.492	241.358	238.946	236.204	232.281	227.068	220.729	212.69	202.612	190.066	174.546	158.121	132.104	97.05 *	64.769	37.189	0.13
-75	135.96	136.002	136.086	136.17	135.034	134.328	133.429	132.341	131.093	129.743	127.79	125.103	122.055	118.024	113.215								

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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
85	0.28 *	0.55 *	0.55 *	0.55 *	0.55 *	0.54 *	0.53 *	0.52 *	0.51 *	0.63 *	0.73 *	0.70 *	0.78 *	0.83 *	0.86 *	0.9	0.7	0.9	0.8	0.5	0.2	0	0	
75	0.59 *	1.17 *	1.17 *	1.16 *	1.15 *	1.13 *	1.12 *	1.10 *	1.08 *	1.31 *	1.52 *	1.45 *	1.60 *	1.69 *	1.72 *	1.67 *	1.41 *	1.65 *	1.42 *	0.7	0.2	0	0	
65	0.93 *	1.86 *	1.86 *	1.84 *	1.83 *	1.80 *	1.78 *	1.75 *	1.71 *	2.08 *	2.41 *	2.30 *	2.53 *	2.66 *	2.70 *	2.61 *	2.19 *	2.52 *	2.10 *	0.98 *	0.3	0	0	
55	0.92 *	1.85 *	1.84 *	1.83 *	1.81 *	1.79 *	1.77 *	1.73 *	1.70 *	2.07 *	2.39 *	2.28 *	2.50 *	2.64 *	2.66 *	2.57 *	2.16 *	2.48 *	2.03 *	0.92 *	0.3	0	0	
47.5	0.72 *	1.44 *	1.44 *	1.43 *	1.41 *	1.40 *	1.38 *	1.35 *	1.32 *	1.61 *	1.86 *	1.77 *	1.94 *	2.05 *	2.07 *	2.00 *	1.67 *	1.92 *	1.56 *	0.70 *	0.2	0	0	
42.5	0.80 *	1.60 *	1.60 *	1.58 *	1.57 *	1.55 *	1.53 *	1.50 *	1.47 *	1.78 *	2.06 *	1.96 *	2.15 *	2.27 *	2.29 *	2.21 *	1.85 *	2.11 *	1.72 *	0.77 *	0.21 *	0	0	
37.5	0.79 *	1.57 *	1.56 *	1.55 *	1.54 *	1.52 *	1.50 *	1.47 *	1.44 *	1.75 *	2.01 *	1.92 *	2.10 *	2.22 *	2.23 *	2.15 *	1.80 *	2.06 *	1.67 *	0.74 *	0.20 *	0	0	
33	0.75 *	1.49 *	1.49 *	1.47 *	1.46 *	1.44 *	1.42 *	1.39 *	1.36 *	1.66 *	1.91 *	1.82 *	1.99 *	2.10 *	2.11 *	2.03 *	1.70 *	1.94 *	1.58 *	0.70 *	0.18 *	0	0	
29	0.69 *	1.37 *	1.37 *	1.36 *	1.34 *	1.33 *	1.31 *	1.28 *	1.26 *	1.52 *	1.76 *	1.67 *	1.83 *	1.93 *	1.94 *	1.86 *	1.56 *	1.78 *	1.44 *	0.64 *	0.17 *	0	0	
25.5	0.61 *	1.22 *	1.22 *	1.21 *	1.20 *	1.18 *	1.16 *	1.14 *	1.12 *	1.36 *	1.56 *	1.49 *	1.63 *	1.71 *	1.72 *	1.66 *	1.38 *	1.58 *	1.28 *	0.56 *	0.15 *	0	0	
22.5	0.63 *	1.26 *	1.26 *	1.25 *	1.24 *	1.22 *	1.20 *	1.18 *	1.15 *	1.40 *	1.61 *	1.53 *	1.68 *	1.76 *	1.77 *	1.70 *	1.42 *	1.62 *	1.31 *	0.58 *	0.15 *	0	0	
19.5	0.54 *	1.08 *	1.08 *	1.07 *	1.06 *	1.04 *	1.03 *	1.01 *	0.98 *	1.19 *	1.38 *	1.31 *	1.43 *	1.50 *	1.51 *	1.45 *	1.21 *	1.38 *	1.12 *	0.49 *	0.13 *	0	0	
17	0.44 *	0.88 *	0.88 *	0.87 *	0.86 *	0.85 *	0.84 *	0.82 *	0.80 *	0.97 *	1.12 *	1.06 *	1.16 *	1.22 *	1.23 *	1.18 *	0.98 *	1.12 *	0.91 *	0.40 *	0.10 *	0	0	
15	0.45 *	0.89 *	0.89 *	0.88 *	0.87 *	0.86 *	0.85 *	0.83 *	0.81 *	0.99 *	1.13 *	1.08 *	1.18 *	1.24 *	1.24 *	1.19 *	1.00 *	1.13 *	0.92 *	0.40 *	0.10 *	0	0	
13	0.45 *	0.90 *	0.90 *	0.89 *	0.88 *	0.87 *	0.86 *	0.84 *	0.82 *	1.00 *	1.15 *	1.09 *	1.19 *	1.25 *	1.26 *	1.21 *	1.01 *	1.15 *	0.93 *	0.41 *	0.10 *	0	0	
11	0.46 *	0.91 *	0.91 *	0.90 *	0.89 *	0.88 *	0.86 *	0.85 *	0.83 *	1.01 *	1.16 *	1.10 *	1.20 *	1.26 *	1.27 *	1.22 *	1.01 *	1.16 *	0.94 *	0.41 *	0.10 *	0	0	
9	0.46 *	0.92 *	0.92 *	0.91 *	0.90 *	0.89 *	0.87 *	0.86 *	0.84 *	1.01 *	1.17 *	1.11 *	1.21 *	1.27 *	1.28 *	1.23 *	1.02 *	1.16 *	0.94 *	0.41 *	0.11 *	0	0	
7	0.46 *	0.93 *	0.92 *	0.91 *	0.90 *	0.89 *	0.88 *	0.86 *	0.84 *	1.02 *	1.18 *	1.12 *	1.22 *	1.28 *	1.29 *	1.23 *	1.03 *	1.17 *	0.95 *	0.42 *	0.11 *	0	0	
5	0.47 *	0.93 *	0.93 *	0.92 *	0.91 *	0.90 *	0.88 *	0.86 *	0.84 *	1.03 *	1.18 *	1.12 *	1.23 *	1.29 *	1.29 *	1.24 *	1.03 *	1.18 *	0.95 *	0.42 *	0.11 *	0	0	
3	0.47 *	0.93 *	0.93 *	0.92 *	0.91 *	0.90 *	0.88 *	0.87 *	0.85 *	1.03 *	1.18 *	1.12 *	1.23 *	1.29 *	1.29 *	1.24 *	1.03 *	1.18 *	0.95 *	0.42 *	0.11 *	0	0	
1	0.23 *	0.47 *	0.46 *	0.46 *	0.46 *	0.45 *	0.44 *	0.43 *	0.42 *	0.51 *	0.59 *	0.56 *	0.61 *	0.65 *	0.65 *	0.62 *	0.52 *	0.59 *	0.48 *	0.21 *	0.05 *	0	0	
0	0.23 *	0.47 *	0.46 *	0.46 *	0.46 *	0.45 *	0.44 *	0.43 *	0.42 *	0.51 *	0.59 *	0.56 *	0.61 *	0.65 *	0.65 *	0.62 *	0.52 *	0.59 *	0.48 *	0.21 *	0.05 *	0	0	

-1	0.47 *	0.93 *	0.93 *	0.92 *	0.91 *	0.90 *	0.88 *	0.87 *	0.85 *	1.03 *	1.18 *	1.12 *	1.23 *	1.29 *	1.29 *	1.24 *	1.03 *	1.18 *	0.95 *	0.42 *	0.11 *	0	0
-3	0.47 *	0.93 *	0.93 *	0.92 *	0.91 *	0.90 *	0.88 *	0.86 *	0.84 *	1.03 *	1.18 *	1.12 *	1.23 *	1.29 *	1.29 *	1.24 *	1.03 *	1.18 *	0.95 *	0.42 *	0.11 *	0	0
-5	0.46 *	0.93 *	0.92 *	0.91 *	0.90 *	0.89 *	0.88 *	0.86 *	0.84 *	1.02 *	1.18 *	1.12 *	1.22 *	1.28 *	1.29 *	1.23 *	1.03 *	1.17 *	0.95 *	0.42 *	0.11 *	0	0
-7	0.46 *	0.92 *	0.92 *	0.91 *	0.90 *	0.89 *	0.87 *	0.86 *	0.84 *	1.01 *	1.17 *	1.11 *	1.21 *	1.27 *	1.28 *	1.23 *	1.02 *	1.16 *	0.94 *	0.41 *	0.11 *	0	0
-9	0.46 *	0.91 *	0.91 *	0.90 *	0.89 *	0.88 *	0.86 *	0.85 *	0.83 *	1.01 *	1.16 *	1.10 *	1.20 *	1.26 *	1.27 *	1.22 *	1.01 *	1.16 *	0.94 *	0.41 *	0.10 *	0	0
-11	0.45 *	0.90 *	0.90 *	0.89 *	0.88 *	0.87 *	0.86 *	0.84 *	0.82 *	1.00 *	1.15 *	1.09 *	1.19 *	1.25 *	1.26 *	1.21 *	1.01 *	1.15 *	0.93 *	0.41 *	0.10 *	0	0
-13	0.45 *	0.89 *	0.89 *	0.88 *	0.87 *	0.86 *	0.85 *	0.83 *	0.81 *	0.99 *	1.13 *	1.08 *	1.18 *	1.24 *	1.24 *	1.19 *	1.00 *	1.13 *	0.92 *	0.40 *	0.10 *	0	0
-15	0.44 *	0.88 *	0.88 *	0.87 *	0.86 *	0.85 *	0.84 *	0.82 *	0.80 *	0.97 *	1.12 *	1.06 *	1.16 *	1.22 *	1.23 *	1.18 *	0.98 *	1.12 *	0.91 *	0.40 *	0.10 *	0	0
-17	0.54 *	1.08 *	1.08 *	1.07 *	1.06 *	1.04 *	1.03 *	1.01 *	0.98 *	1.19 *	1.38 *	1.31 *	1.43 *	1.50 *	1.51 *	1.45 *	1.21 *	1.38 *	1.12 *	0.49 *	0.13 *	0	0
-20	0.63 *	1.26 *	1.26 *	1.25 *	1.24 *	1.22 *	1.20 *	1.18 *	1.15 *	1.40 *	1.61 *	1.53 *	1.68 *	1.76 *	1.77 *	1.70 *	1.42 *	1.62 *	1.31 *	0.58 *	0.15 *	0	0
-23	0.61 *	1.22 *	1.22 *	1.21 *	1.20 *	1.18 *	1.16 *	1.14 *	1.12 *	1.36 *	1.56 *	1.49 *	1.63 *	1.71 *	1.72 *	1.66 *	1.38 *	1.58 *	1.28 *	0.56 *	0.15 *	0	0
-26	0.69 *	1.37 *	1.37 *	1.36 *	1.34 *	1.33 *	1.31 *	1.28 *	1.26 *	1.52 *	1.76 *	1.67 *	1.83 *	1.93 *	1.94 *	1.86 *	1.56 *	1.78 *	1.44 *	0.64 *	0.17 *	0	0
-29	0.75 *	1.49 *	1.49 *	1.47 *	1.46 *	1.44 *	1.42 *	1.39 *	1.36 *	1.66 *	1.91 *	1.82 *	1.99 *	2.10 *	2.11 *	2.03 *	1.70 *	1.94 *	1.58 *	0.70 *	0.18 *	0	0
-33	0.79 *	1.57 *	1.56 *	1.55 *	1.54 *	1.52 *	1.50 *	1.47 *	1.44 *	1.75 *	2.01 *	1.92 *	2.10 *	2.22 *	2.23 *	2.15 *	1.80 *	2.06 *	1.67 *	0.74 *	0.20 *	0	0
-38	0.80 *	1.60 *	1.60 *	1.58 *	1.57 *	1.55 *	1.53 *	1.50 *	1.47 *	1.78 *	2.06 *	1.96 *	2.15 *	2.27 *	2.29 *	2.21 *	1.85 *	2.11 *	1.72 *	0.77 *	0.21 *	0	0
-43	0.72 *	1.44 *	1.44 *	1.43 *	1.41 *	1.40 *	1.38 *	1.35 *	1.32 *	1.61 *	1.86 *	1.77 *	1.94 *	2.05 *	2.07 *	2.00 *	1.67 *	1.92 *	1.56 *	0.70 *	0.2	0	0
-48	0.92 *	1.85 *	1.84 *	1.83 *	1.81 *	1.79 *	1.77 *	1.73 *	1.70 *	2.07 *	2.39 *	2.28 *	2.50 *	2.64 *	2.66 *	2.57 *	2.16 *	2.48 *	2.03 *	0.92 *	0.3	0	0
-55	0.93 *	1.86 *	1.86 *	1.84 *	1.83 *	1.80 *	1.78 *	1.75 *	1.71 *	2.08 *	2.41 *	2.30 *	2.53 *	2.66 *	2.70 *	2.61 *	2.19 *	2.52 *	2.10 *	0.98 *	0.3	0	0
-65	0.59 *	1.17 *	1.17 *	1.16 *	1.15 *	1.13 *	1.12 *	1.10 *	1.08 *	1.31 *	1.52 *	1.45 *	1.60 *	1.69 *	1.72 *	1.67 *	1.41 *	1.65 *	1.42 *	0.7	0.2	0	0
-75	0.28 *	0.55 *	0.55 *	0.55 *	0.55 *	0.54 *	0.53 *	0.52 *	0.51 *	0.63 *	0.73 *	0.70 *	0.78 *	0.83 *	0.86 *	0.9	0.7	0.9	0.8	0.5	0.2	0	0
-85	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0
-90	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0
Total	24.3	48.6	48.4	48.1	47.6	47	46.3	45.4	44.5	54	62.3	59.3	65	68.4	69	66.5	55.7	63.8	52.3	23.7	6.5	0.3	1047.14

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	L2X @ 5000K	Sample ID.	C1
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
120.05	60	0.168	19.7	0.979	13.43%

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*****