

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

DLF2408121-4a

Test Date

2024/9/3

Issue Date

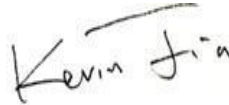
2024/9/6

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		1006
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	51.3
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	13.31%
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	3069
		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%		-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		0.167
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	D1
2	Goniophotometer Test	2024/9/3	L2X @ 3000K	N/A	D1
3	THD and PF Test	2024/9/3	L2X @ 3000K	N/A	D1

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 @ 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.	D1
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
120.08	60	0.168	19.7	0.979

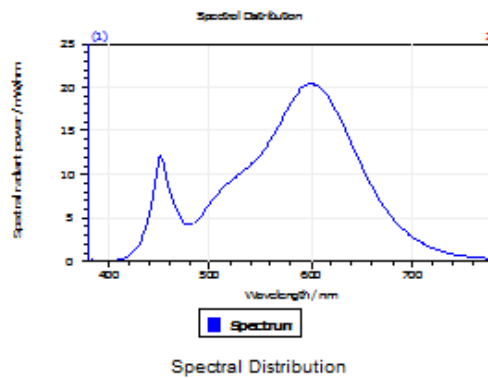
Test Result

CCT (K)	CRI	R9	Duv
3069	81	-2	-0.002

Rf	Rg	IES Rcs,h1
83	96	-12%

4.1 Integrating Sphere Test

Results



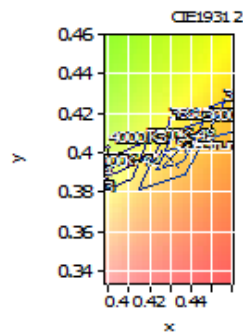
Spectral values

DominantWavelength 583.29 nm
Purity 0.479
PeakWavelength 600.11 nm
Radiant Power 3.013 W
Width50%:

Color Coordinates

Correlated Color Temperat 3069 K
x: 0.4293 u: 0.2489 u': 0.2489
y: 0.3965 v: 0.3448 v': 0.5172

CRI01	79.2	CRI09	-2.2
CRI02	91.1	CRI10	80.1
CRI03	94.0	CRI11	76.5
CRI04	77.4	CRI12	72.3
CRI05	79.5	CRI13	82.2
CRI06	89.1	CRI14	97.3
CRI07	80.0	CRI15	71.3
CRI08	54.4	CRI16	68.4
ResultsCRI	80.6		



PlanckDistance 2.0E-003

4.1 Integrating Sphere Test

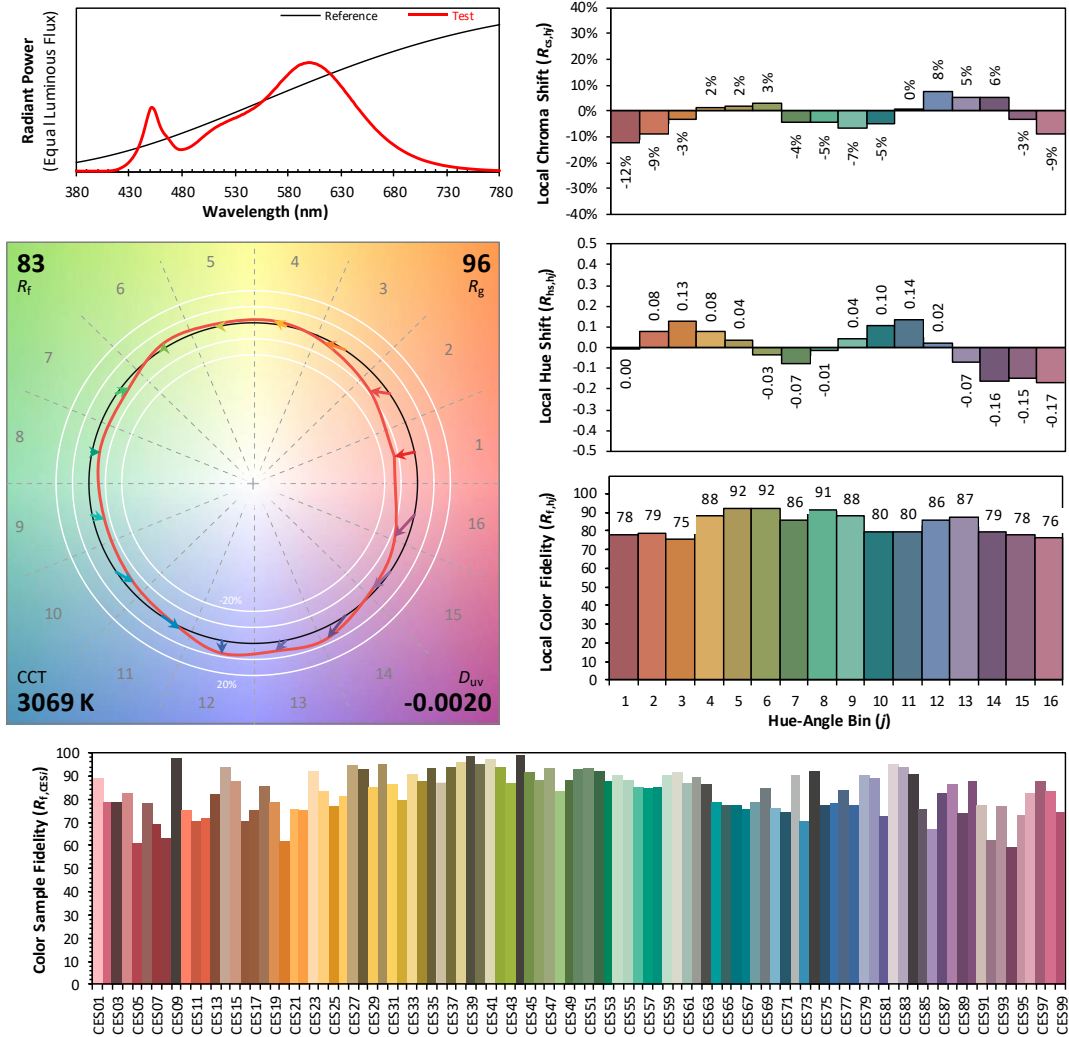
IES TM-30-18 Color Rendition Report

Source: DLF2408121-4a

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 0.4293
 y 0.3965
 u' 0.2489
 v' 0.5172

CIE 13.3-1995
(CRI)
 R_a 82
 R_g 3

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	1.77E-04	485	4.45E-03	590	1.99E-02	695	3.27E-03
385	1.74E-04	490	4.98E-03	595	2.03E-02	700	2.82E-03
390	1.80E-04	495	5.73E-03	600	2.04E-02	705	2.42E-03
395	1.73E-04	500	6.60E-03	605	2.03E-02	710	2.07E-03
400	1.72E-04	505	7.38E-03	610	1.99E-02	715	1.78E-03
405	1.73E-04	510	8.12E-03	615	1.92E-02	720	1.54E-03
410	1.94E-04	515	8.70E-03	620	1.83E-02	725	1.31E-03
415	2.98E-04	520	9.20E-03	625	1.72E-02	730	1.12E-03
420	5.62E-04	525	9.68E-03	630	1.61E-02	735	9.73E-04
425	1.07E-03	530	1.01E-02	635	1.48E-02	740	8.35E-04
430	1.88E-03	535	1.05E-02	640	1.35E-02	745	7.17E-04
435	3.19E-03	540	1.10E-02	645	1.22E-02	750	6.19E-04
440	5.22E-03	545	1.16E-02	650	1.10E-02	755	5.35E-04
445	8.44E-03	550	1.22E-02	655	9.75E-03	760	4.60E-04
450	1.18E-02	555	1.30E-02	660	8.64E-03	765	4.00E-04
455	1.11E-02	560	1.39E-02	665	7.60E-03	770	3.46E-04
460	8.21E-03	565	1.50E-02	670	6.67E-03	775	2.98E-04
465	6.72E-03	570	1.60E-02	675	5.81E-03	780	2.58E-04
470	5.44E-03	575	1.72E-02	680	5.06E-03		
475	4.40E-03	580	1.82E-02	685	4.39E-03		
480	4.19E-03	585	1.91E-02	690	3.79E-03		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	L2X @ 3000K	Sample ID.	D1
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	120.08	60	0.167	19.6	0.979

Test Result

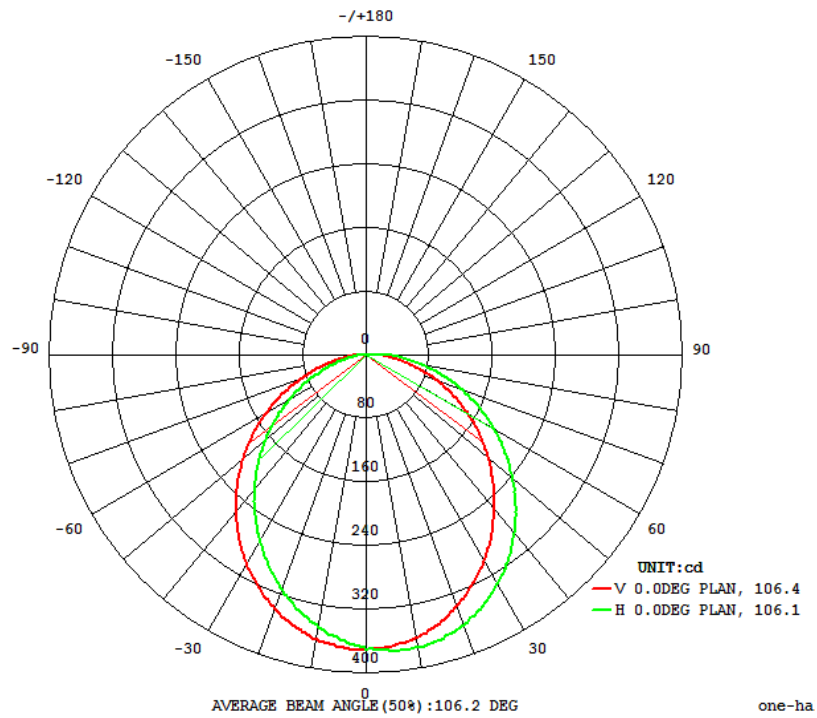
Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	Horizontal	Vertical	Horizontal	Vertical	
1006	161.8	161.9	106.1	106.4	51.3

Zonal Lumen Requirement (0°-90°)

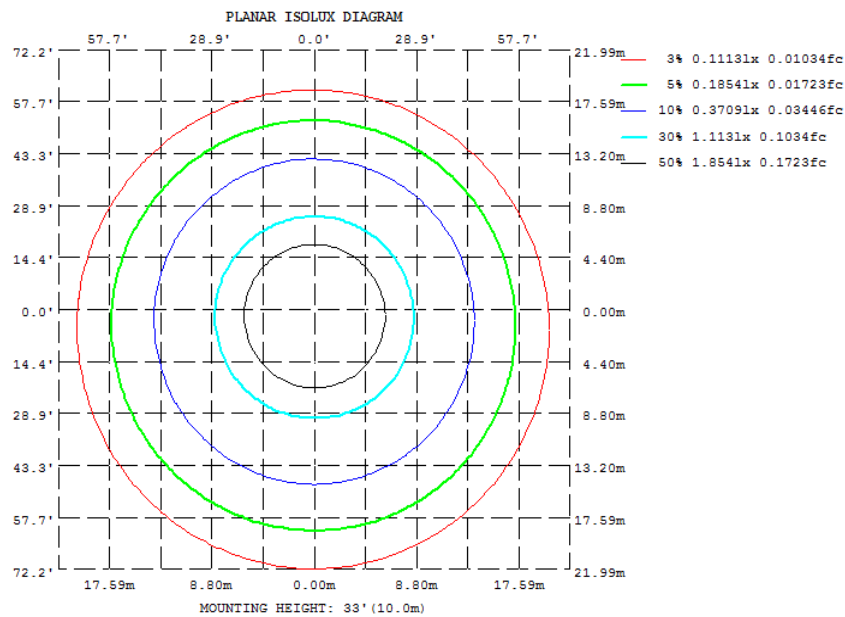
100.00%

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	363.5	371.8	373.2	366.9	362.0	350.7	347.8	352.3
20	338.8	355.8	361.4	352.8	336.0	318.9	313.1	320.9
30	302.2	324.3	332.4	320.5	298.9	276.9	269.5	278.6
40	256.3	281.8	292.0	277.4	253.6	228.9	219.6	229.2
50	203.6	231.0	243.0	228.7	203.0	176.8	166.3	175.9
60	146.7	174.7	187.3	174.6	150.0	124.3	113.1	120.7
70	88.69	115.9	129.7	119.4	96.11	72.54	61.08	66.58
80	36.43	58.18	71.26	64.41	46.00	28.08	19.97	22.38
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	34.73	0 - 10	34.73	3.45%
10-20	98.59	0 - 20	133.32	13.26%
20-30	147.02	0 - 30	280.34	27.87%
30-40	173.71	0 - 40	454.06	45.15%
40-50	176.69	0 - 50	630.75	62.72%
50-60	157.40	0 - 60	788.14	78.37%
60-70	119.73	0 - 70	907.88	90.27%
70-80	71.20	0 - 80	979.07	97.35%
80-90	26.65	0 - 90	1005.72	100.00%
90-100	0.00	0 - 100	1005.72	100.00%
100-110	0.00	0 - 110	1005.72	100.00%
110-120	0.00	0 - 120	1005.72	100.00%
120-130	0.00	0 - 130	1005.72	100.00%
130-140	0.00	0 - 140	1005.72	100.00%
140-150	0.00	0 - 150	1005.72	100.00%
150-160	0.00	0 - 160	1005.72	100.00%
160-170	0.00	0 - 170	1005.72	100.00%
170-180	0.00	0 - 180	1005.72	100.00%

4.2 Goniophotometer Test

Axial Candela

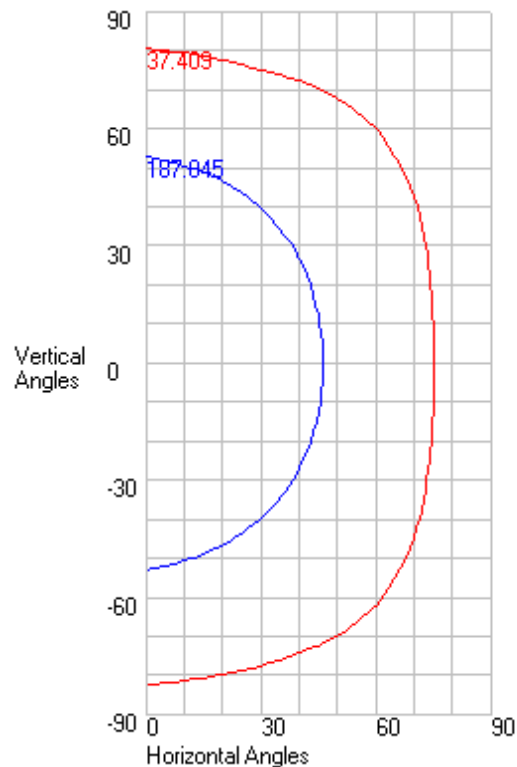
DEG.	HOR.	DEG.	VERT.
90	0.012	90	0.082
85	7.82	85	17.94
75	38.19	75	60.79
65	86.53	65	117.74
55	140.12	55	175.28
47.5	179.705	47.5	216.955
42.5	205.99	42.5	243.415
37.5	232.26	37.5	268.33
33	254.11	33	289.66
29	273.96	29	307.72
25.5	289.62	25.5	320.4
22.5	302.865	22.5	331.04
19.5	315.345	19.5	340.63
17	324.4	17	348.14
15	332.81	15	352.72
13	338.33	13	357.86
11	344.29	11	362.02
9	350.61	9	364.88
7	354.92	7	366.38
5	360.28	5	369.42
3	363.98	3	370.78
1	367	1	370.59
0	368.848	0	368.848
-1	369.38	-1	370.03
-3	371	-3	369.34
-5	373.41	-5	367.24
-7	373.02	-7	364.92
-9	374.09	-9	363.23
-11	373.6	-11	360.04
-13	372.32	-13	354.56
-15	370.61	-15	351.53
-17	366.67	-17	345.21
-19.5	362.345	-19.5	337.705
-22.5	355.135	-22.5	328.175
-25.5	347.21	-25.5	317.025
-29	336.45	-29	303.31
-33	321.69	-33	286.7
-37.5	303.505	-37.5	265.415
-42.5	280.34	-42.5	240.75
-47.5	255.95	-47.5	215.72
-55	215.48	-55	176.37
-65	158.49	-65	123.02
-75	100.02	-75	70.15
-85	44.97	-85	25.53
-90	0.274	-90	0.137

4.2 Goniophotometer Test

Characteristics

NEMA Type	7 H x 7 V
Maximum Candela	374.09
Maximum Candela Angle	-9 H 0 V
Horizontal Beam Angle (50%)	106.1
Vertical Beam Angle (50%)	107.2
Horizontal Field Angle (10%)	161.1
Vertical Field Angle (10%)	164.3
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	686
Beam Efficiency	N.A.
Field Lumens	990
Field Efficiency	N.A.
Spill Lumens	15
Luminaire Lumens	1006
Total Efficiency	N.A.
Total Luminaire Watts	19.6
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	0.082	0.08	0.077	0.074	0.07	0.067	0.063	0.06	0.056	0.053	0.05	0.046	0.042	0.037	0.033	0.028	0.023	0.019	0.014	0.008	0.004	0.001	0
85	17.94	17.695	17.205	16.715	16.226	15.736	15.246	14.429	13.84	13.311	12.636	11.812	10.973	9.983	9.05	8.117	6.985	6.023	4.732	3.218	1.834	0.569	0.001
75	60.79 *	60.263	59.21 *	58.157	56.531	55.107	53.594	51.992	50.345	48.749	46.652	44.034	41.328	38.051	34.611	30.598	26.182	22.149	16.69	10.419	5.597	1.761	0.003
65	117.74	116.984	115.472	113.382	111.327	109.103	106.716	104.173	101.674	99.089	95.639	91.303	86.42 *	80.75 *	74.214	66.203	56.933	48.275	35.492	20.942	10.147	3.045	0.005
55	175.28	174.38	172.581	169.927	167.351	164.558	161.57	158.614	155.331	151.884	147.141	140.891	134.145	126.129	116.813	105.535	92.389	79.147	58.759	34.271	15.656	4.231	0.007
47.5	216.955	215.888	213.501	210.786	207.755	204.421	200.867	197.281	193.34	189.2 *	183.638	176.256	168.574	159.241	147.614	133.502	118.051	101.85	76.901	45.085	19.924	5.045	0.008
42.5	243.415	242.246	239.635	236.689	233.443	229.6 *	225.462	221.699	216.9 *	212.312	206.364	198.834	189.82	179.59	166.619	151.564	134.443	115.843	88.35 *	52.226	22.898	5.54	0.009
37.5	268.33	267.084	264.291	261.119	257.832	253.361	249.051	244.637	240.126	234.997	227.883	219.359	210.178	199.047	184.503	168.09	148.899	129.079	98.943	58.926	25.806	6.047	0.01
33	289.66	288.304	285.057	281.428	277.391	273.463	268.472	263.708	258.514	252.842	245.988	236.524	226.812	214.329	199.487	181.856	161.059	139.843	107.781	64.682	28.293	6.382	0.01
29	307.72	306.242	302.555	298.386	293.738	289.356	285.017	280.158	274.679	268.638	260.646	250.788	239.717	227.741	211.623	193.076	171.386	148.959	114.729	69.461	30.33	6.697	0.011
25.5	320.4 *	318.839	315.249	311.142	306.628	302.175	297.328	292.08	286.446	280.9 *	272.637	261.829	250.801	237.217	220.537	201.054	178.968	155.93	119.873	73.224	32.003	6.942	0.011
22.5	331.04	329.392	325.728	321.577	317.29	312.903	308 *	302.206	296.301	289.898	281.491	270.758	259.28	245.175	228.014	208.329	185.619	161.172	124.16	76.206	33.279	7.13	0.011
19.5	340.63	338.84	334.734	330.008	325.933	321.329	316.366	310.832	304.791	298.271	289.612	278.673	266.52	252.094	234.668	213.623	190.437	165.679	128.093	78.623	34.435	7.296	0.012
17	348.14	346.19	341.613	336.977	333.072	328.611	323.234	317.32	310.856	304.288	295.612	284.347	272.179	257.305	239.402	218.222	193.899	168.739	130.826	80.448	35.309	7.417	0.012
15	352.72	350.863	346.296	341.766	337.577	332.791	327.977	322.498	316.161	308.691	299.779	288.312	276.13	261.004	242.775	221.642	196.583	171.218	132.718	81.761	35.926	7.503	0.012
13	357.86	355.633	350.202	345.888	342.288	337.5 *	332.128	326.178	320.145	312.897	303.396	291.816	279.624	264.198	245.72	223.748	199.778	173.474	134.531	82.959	36.471	7.579	0.012
11	362.02	359.26	353.614	350.094	345.228	340.746	335.593	329.716	323.058	316.182	306.85	294.968	282.708	267.102	248.135	225.747	201.562	175.384	136.042	83.985	36.943	7.803	0.012
9	364.88	361.658	356.133	353.036	348.907	343.768	338.077	332.229	325.283	319.175	309.541	298.048	285.381	269.504	250.641	228.15	203.273	176.906	137.408	84.838	37.34	7.806	0.012
7	366.38	363.848	359.687	355.573	352.409	346.435	340.532	334.531	328.191	321.101	311.565	299.826	286.762	271.467	252.232	230.334	204.504	178.113	138.498	85.518	37.662	7.809	0.012
5	369.42	364.686	361.707	357.75	353.078	347.496	342.945	336.622	330.224	323.076	313.24	301.216	288.052	272.9 *	253.54	231.219	205.345	179.023	139.311	86.025	38.147	7.812	0.012
3	370.78	364.906	361.945	358.326	354.632	349.365	343.519	338.53	331.763	324.359	314.609	302.311	289.236	273.757	254.207	231.96	205.873	179.567	140.159	86.551	38.164	7.815	0.012
1	370.59	365.961	363.229	359.731	355.351	350.769	344.492	338.846	332.85	324.722	315.291	302.864	289.677	274.107	254.345	232.273	206.047	179.748	140.133	86.537	38.181	7.82	0.012
0	368.848	367 *	363.98	360.78	354.92	350.61	344.29	338.33	332.81	324.4 *	315.345	302.865	289.62	273.96	254.11	232.26	205.99	179.705	140.12	86.53 *	38.19 *	7.82	0.012
-1	370.03	367.946	364.477	359.716	355.637	350.459	344.567	338.673	332.641	324.459	315.242	302.846	289.619	273.926	254.248	232.27	206.031	179.783	140.19	86.587	38.224	7.825	0.012
-3	369.34	367.133	363.607	358.838	354.77	349.421	344.288	338.136	331.154	323.663	314.467	302.201	289.062	273.219	253.942	231.943	205.812	179.676	140.33	86.7 *	38.293	7.836	0.012
-5	367.24	366.847	362.572	358.212	353.615	347.994	343.479	336.517	329.579	322.283	313.041	300.868	287.768	272.013	253.18	231.158	205.202	179.222	139.594	86.279	38.361	7.847	0.012
-7	364.92	363.6 *	360.581	355.895	350.95	346.399	340.537	334.875	327.925	320.551	311.324	299.371	286.068	270.246	251.896	230.195	204.215	178.425	138.893	85.884	37.959	7.857	0.012
-9	363.23	361.834	358.144	354.192	348.627	344 *	338.272	332.005	325.415	318.27	309.343	297.514	284.215	268.13	250.443	228.181	202.906	177.335	137.912	85.324	37.721	7.868	0.012
-11	360.04	358.096	353.591	350.271	346.139	340.846	334.89	329.613	322.402	314.87	306.463	294.793	282.023	266.04	247.457	226.055	201.151	175.918	136.654	84.604	37.405	7.879	0.012
-13	354.56	353.356	350.173	346.313	342.44	337.333	331.637	325.415	318.662	312.225	302.981	291.479	278.774	263.267	244.876	223.689	199.336	174.118	135.247	83.725	37.013	7.667	0.012
-15	351.53	350.01	346.079	342.123	337.333	332.16	327.276	321.025	315.234	307.942	299.238	287.293	274.772	260.284	242.108	221.005	196.333	171.991	133.438	82.691	36.546	7.604	0.012
-17	345.21	343.736	340.115	336.335	332.333	327.652	322.067	316.652	309.889	303.633	294.87	283.511	271.031	256.82	239.004	217.953	194.305	169.662	131.514	81.527	36.003	7.531	0.012
-19.5	337.705	336.349	333.199	329.498	325.318	320.838	315.177	309.78	303.723	297.12	288.38	277.604	265.786	251.247	233.939	213.786	190.211	166.555	128.936	79.872	35.22	7.424	0.012
-22.5	328.175	326.925	324.033	320.715	316.463	311.584	306.355	300.406	295.101	288.773	280.535	269.728	258.673	244.834	227.512	207.745	185.785	162.027	125.61	77.663	34.173	7.276	0.011
-25.5	317.025	315.722	312.704	309.064	305.385	301.653	296.539	290.979	285.128	279.42	271.439	261.273	250.249	236.908	220.447	201.424	179.664	156.848	121.612	74.763	33.007	7.104	0.011
-29	303.31	302.219	299.396	296.061	292.133	287.823	283.314	278.438	273.084	267.77	259.947	250.279	239.898	227.453	211.208	193.271	172.3 *	150.461	116.508	71.145	31.46	6.876	0.011
-33	286.7 *	285.586	282.796	279.485	275.521	271.526	267.069	262.346	257.671	252.118	245.089	235.803	226.283	214.076	199.624	182.575	162.207	141.486	109.743	66.748	29.507	6.58	0.01
-37.5	265.415	264.31	261.726	258.68	255.503	251.639	247.792	243.54	238.847	233.924	227.168	219.323	210.05	198.962	185.325	169.565	150.856	130.83	101.302	61.393	27.092	6.263	0.01
-42.5	240.75	239.808	237.656	235.143	232.265	228.865	225.094	221.497	217.066	212.548	206.335	199.52	190.718	180.506	168.567	153.819	136.831	118.928	91.305	54.905	24.335	5.771	0.009
-47.5	215.72	214.812	212.746	210.341	207.589	204.541	201.239	197.819	194.025	189.927	184.428	177.412	170.531	161.355	150.315	136.853	121.412	105.133	80.38 *	47.962	21.371	5.289	0.008
-55	176.37	175.602	174.066	171.733	169.427	166.858	164.027	161.117	157.98	154.692	150.219	144.333	137.901	130.414	120.925	109.793	97.029	83.606	63.175	37.343	17.006	4.491	0.007
-65	123.02	122.338	120.975	119.068	117.194	115.162	112.978	110.648	108.214	105.61	102.169	97.929	93.182	87.437	80.672	72.665	63.391	54.02 *	40.111	23.911	11.422	3.335	0.005
-75	70.15 *	69.592	68.475	67.359	65.682	64.202	62.634	60.98 *	59.27 *	57.57 *	55.331	52.528	49.603	46.005	42.097	37.53 *	32.274	27.424	20.489	12.796	6.606	2.02	0.003
-85	25.53	25.205	24.556	23.907	23.258	22.609	21.96	20.919	20.166	19.452	18.5												



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	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	
85	0.12 *	0.24 *	0.24 *	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.2	0.1	0	0	
75	0.27 *	0.54 *	0.54 *	0.54 *	0.53 *	0.52 *	0.52 *	0.51 *	0.50 *	0.61 *	0.70 *	0.67 *	0.74 *	0.78 *	0.79 *	0.76 *	0.65 *	0.8	0.7	0.3	0.1	0	0	
65	0.45 *	0.89 *	0.89 *	0.88 *	0.87 *	0.86 *	0.85 *	0.83 *	0.81 *	0.99 *	1.14 *	1.09 *	1.19 *	1.26 *	1.27 *	1.23 *	1.03 *	1.18 *	1	0.5	0.1	0	0	
55	0.45 *	0.89 *	0.89 *	0.88 *	0.87 *	0.86 *	0.85 *	0.83 *	0.82 *	0.99 *	1.15 *	1.09 *	1.20 *	1.26 *	1.27 *	1.22 *	1.03 *	1.17 *	0.96 *	0.4	0.1	0	0	
47.5	0.35 *	0.70 *	0.70 *	0.69 *	0.68 *	0.67 *	0.66 *	0.65 *	0.64 *	0.78 *	0.90 *	0.85 *	0.93 *	0.98 *	0.99 *	0.96 *	0.80 *	0.91 *	0.74 *	0.3	0.1	0	0	
42.5	0.39 *	0.78 *	0.77 *	0.77 *	0.76 *	0.75 *	0.74 *	0.72 *	0.71 *	0.86 *	0.99 *	0.95 *	1.04 *	1.09 *	1.10 *	1.06 *	0.88 *	1.01 *	0.82 *	0.36 *	0.1	0	0	
37.5	0.38 *	0.76 *	0.76 *	0.75 *	0.75 *	0.74 *	0.72 *	0.71 *	0.69 *	0.84 *	0.97 *	0.93 *	1.02 *	1.07 *	1.07 *	1.03 *	0.86 *	0.98 *	0.80 *	0.35 *	0.1	0	0	
33	0.36 *	0.73 *	0.72 *	0.71 *	0.71 *	0.70 *	0.69 *	0.67 *	0.66 *	0.80 *	0.92 *	0.88 *	0.96 *	1.01 *	1.02 *	0.98 *	0.82 *	0.93 *	0.75 *	0.33 *	0.1	0	0	
29	0.33 *	0.67 *	0.66 *	0.66 *	0.65 *	0.64 *	0.63 *	0.62 *	0.61 *	0.74 *	0.85 *	0.81 *	0.88 *	0.93 *	0.93 *	0.90 *	0.75 *	0.85 *	0.69 *	0.30 *	0.1	0	0	
25.5	0.30 *	0.59 *	0.59 *	0.59 *	0.58 *	0.57 *	0.56 *	0.55 *	0.54 *	0.66 *	0.75 *	0.72 *	0.78 *	0.82 *	0.83 *	0.80 *	0.66 *	0.76 *	0.61 *	0.27 *	0.1	0	0	
22.5	0.31 *	0.61 *	0.61 *	0.60 *	0.60 *	0.59 *	0.58 *	0.57 *	0.56 *	0.68 *	0.78 *	0.74 *	0.81 *	0.85 *	0.85 *	0.82 *	0.68 *	0.78 *	0.63 *	0.27 *	0.1	0	0	
19.5	0.26 *	0.52 *	0.52 *	0.51 *	0.51 *	0.50 *	0.50 *	0.49 *	0.47 *	0.58 *	0.66 *	0.63 *	0.69 *	0.72 *	0.73 *	0.70 *	0.58 *	0.66 *	0.53 *	0.23 *	0.1	0	0	
17	0.21 *	0.43 *	0.42 *	0.42 *	0.41 *	0.41 *	0.40 *	0.40 *	0.39 *	0.47 *	0.54 *	0.51 *	0.56 *	0.59 *	0.59 *	0.57 *	0.47 *	0.54 *	0.43 *	0.19 *	0.1	0	0	
15	0.22 *	0.43 *	0.43 *	0.42 *	0.42 *	0.42 *	0.41 *	0.40 *	0.39 *	0.47 *	0.55 *	0.52 *	0.57 *	0.60 *	0.60 *	0.57 *	0.48 *	0.54 *	0.44 *	0.19 *	0.1	0	0	
13	0.22 *	0.44 *	0.43 *	0.43 *	0.43 *	0.42 *	0.41 *	0.40 *	0.40 *	0.48 *	0.55 *	0.53 *	0.57 *	0.60 *	0.60 *	0.58 *	0.48 *	0.55 *	0.44 *	0.19 *	0.1	0	0	
11	0.22 *	0.44 *	0.44 *	0.43 *	0.43 *	0.42 *	0.42 *	0.41 *	0.40 *	0.48 *	0.56 *	0.53 *	0.58 *	0.61 *	0.61 *	0.58 *	0.49 *	0.55 *	0.45 *	0.20 *	0.1	0	0	
9	0.22 *	0.44 *	0.44 *	0.44 *	0.43 *	0.43 *	0.42 *	0.41 *	0.40 *	0.49 *	0.56 *	0.53 *	0.58 *	0.61 *	0.62 *	0.59 *	0.49 *	0.56 *	0.45 *	0.20 *	0.1	0	0	
7	0.22 *	0.45 *	0.44 *	0.44 *	0.44 *	0.43 *	0.42 *	0.41 *	0.40 *	0.49 *	0.57 *	0.54 *	0.59 *	0.62 *	0.62 *	0.59 *	0.49 *	0.56 *	0.45 *	0.20 *	0.1	0	0	
5	0.22 *	0.45 *	0.44 *	0.44 *	0.44 *	0.43 *	0.42 *	0.42 *	0.41 *	0.49 *	0.57 *	0.54 *	0.59 *	0.62 *	0.62 *	0.59 *	0.49 *	0.56 *	0.46 *	0.20 *	0.1	0	0	
3	0.23 *	0.45 *	0.45 *	0.44 *	0.44 *	0.43 *	0.43 *	0.42 *	0.41 *	0.49 *	0.57 *	0.54 *	0.59 *	0.62 *	0.62 *	0.60 *	0.50 *	0.56 *	0.46 *	0.20 *	0.1	0	0	
1	0.11 *	0.22 *	0.22 *	0.22 *	0.22 *	0.22 *	0.21 *	0.21 *	0.20 *	0.25 *	0.28 *	0.27 *	0.30 *	0.31 *	0.31 *	0.30 *	0.25 *	0.28 *	0.23 *	0.10 *	0	0	0	
0	0.11 *	0.22 *	0.22 *	0.22 *	0.22 *	0.22 *	0.21 *	0.21 *	0.20 *	0.25 *	0.28 *	0.27 *	0.30 *	0.31 *	0.31 *	0.30 *	0.25 *	0.28 *	0.23 *	0.10 *	0	0	0	

-1	0.22 *	0.45 *	0.45 *	0.44 *	0.44 *	0.43 *	0.43 *	0.42 *	0.41 *	0.49 *	0.57 *	0.54 *	0.59 *	0.62 *	0.62 *	0.60 *	0.50 *	0.56 *	0.46 *	0.20 *	0.1	0	0
-3	0.22 *	0.45 *	0.44 *	0.44 *	0.44 *	0.43 *	0.42 *	0.42 *	0.41 *	0.49 *	0.57 *	0.54 *	0.59 *	0.62 *	0.62 *	0.59 *	0.49 *	0.56 *	0.46 *	0.20 *	0.1	0	0
-5	0.22 *	0.44 *	0.44 *	0.44 *	0.43 *	0.43 *	0.42 *	0.41 *	0.40 *	0.49 *	0.56 *	0.54 *	0.58 *	0.61 *	0.62 *	0.59 *	0.49 *	0.56 *	0.45 *	0.20 *	0.1	0	0
-7	0.22 *	0.44 *	0.44 *	0.44 *	0.43 *	0.42 *	0.42 *	0.41 *	0.40 *	0.49 *	0.56 *	0.53 *	0.58 *	0.61 *	0.61 *	0.59 *	0.49 *	0.56 *	0.45 *	0.20 *	0.1	0	0
-9	0.22 *	0.44 *	0.44 *	0.43 *	0.43 *	0.42 *	0.41 *	0.41 *	0.40 *	0.48 *	0.56 *	0.53 *	0.58 *	0.60 *	0.61 *	0.58 *	0.49 *	0.55 *	0.45 *	0.20 *	0.1	0	0
-11	0.22 *	0.43 *	0.43 *	0.43 *	0.42 *	0.42 *	0.41 *	0.40 *	0.39 *	0.48 *	0.55 *	0.52 *	0.57 *	0.60 *	0.60 *	0.58 *	0.48 *	0.55 *	0.44 *	0.19 *	0.1	0	0
-13	0.21 *	0.43 *	0.43 *	0.42 *	0.42 *	0.41 *	0.41 *	0.40 *	0.39 *	0.47 *	0.54 *	0.52 *	0.56 *	0.59 *	0.60 *	0.57 *	0.48 *	0.54 *	0.44 *	0.19 *	0.1	0	0
-15	0.21 *	0.42 *	0.42 *	0.42 *	0.41 *	0.41 *	0.40 *	0.39 *	0.38 *	0.47 *	0.54 *	0.51 *	0.56 *	0.59 *	0.59 *	0.56 *	0.47 *	0.54 *	0.44 *	0.19 *	0.1	0	0
-17	0.26 *	0.52 *	0.51 *	0.51 *	0.51 *	0.50 *	0.49 *	0.48 *	0.47 *	0.57 *	0.66 *	0.63 *	0.68 *	0.72 *	0.72 *	0.69 *	0.58 *	0.66 *	0.54 *	0.24 *	0.1	0	0
-20	0.30 *	0.61 *	0.60 *	0.60 *	0.59 *	0.58 *	0.57 *	0.56 *	0.55 *	0.67 *	0.77 *	0.73 *	0.80 *	0.84 *	0.85 *	0.81 *	0.68 *	0.78 *	0.63 *	0.28 *	0.1	0	0
-23	0.29 *	0.59 *	0.58 *	0.58 *	0.57 *	0.57 *	0.56 *	0.55 *	0.53 *	0.65 *	0.75 *	0.71 *	0.78 *	0.82 *	0.82 *	0.79 *	0.66 *	0.76 *	0.61 *	0.27 *	0.1	0	0
-26	0.33 *	0.66 *	0.66 *	0.65 *	0.64 *	0.63 *	0.62 *	0.61 *	0.60 *	0.73 *	0.84 *	0.80 *	0.88 *	0.92 *	0.93 *	0.89 *	0.75 *	0.85 *	0.69 *	0.31 *	0.1	0	0
-29	0.36 *	0.72 *	0.71 *	0.71 *	0.70 *	0.69 *	0.68 *	0.67 *	0.65 *	0.79 *	0.91 *	0.87 *	0.95 *	1.00 *	1.01 *	0.97 *	0.82 *	0.93 *	0.76 *	0.34 *	0.1	0	0
-33	0.38 *	0.75 *	0.75 *	0.74 *	0.73 *	0.72 *	0.71 *	0.70 *	0.69 *	0.83 *	0.96 *	0.92 *	1.01 *	1.06 *	1.07 *	1.03 *	0.86 *	0.99 *	0.81 *	0.36 *	0.1	0	0
-38	0.39 *	0.77 *	0.76 *	0.76 *	0.75 *	0.74 *	0.73 *	0.72 *	0.70 *	0.85 *	0.98 *	0.94 *	1.03 *	1.09 *	1.10 *	1.06 *	0.89 *	1.02 *	0.83 *	0.37 *	0.1	0	0
-43	0.35 *	0.69 *	0.69 *	0.68 *	0.68 *	0.67 *	0.66 *	0.65 *	0.63 *	0.77 *	0.89 *	0.85 *	0.93 *	0.98 *	1.00 *	0.96 *	0.81 *	0.93 *	0.76 *	0.3	0.1	0	0
-48	0.45 *	0.89 *	0.89 *	0.88 *	0.87 *	0.86 *	0.85 *	0.83 *	0.82 *	0.99 *	1.15 *	1.10 *	1.21 *	1.27 *	1.29 *	1.24 *	1.04 *	1.20 *	0.99 *	0.5	0.1	0	0
-55	0.46 *	0.91 *	0.91 *	0.90 *	0.89 *	0.88 *	0.86 *	0.85 *	0.83 *	1.01 *	1.17 *	1.12 *	1.23 *	1.30 *	1.32 *	1.27 *	1.07 *	1.24 *	1.03 *	0.5	0.1	0	0
-65	0.29 *	0.59 *	0.59 *	0.58 *	0.57 *	0.57 *	0.56 *	0.55 *	0.54 *	0.65 *	0.76 *	0.72 *	0.80 *	0.84 *	0.86 *	0.83 *	0.70 *	0.8	0.7	0.4	0.1	0	0
-75	0.15 *	0.29 *	0.29 *	0.29 *	0.29 *	0.28 *	0.28 *	0.27 *	0.27 *	0.33 *	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.2	0.1	0	0
-85	0	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0
-90	0	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0
Total	11.8	23.5	23.3	23.1	22.9	22.6	22.2	21.8	21.4	26	29.9	28.5	31.2	32.8	33.1	31.9	26.7	30.6	25	11.3	3.1	0.1	502.81

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	L2X @ 3000K	Sample ID.	D1
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
120.08	60	0.168	19.7	0.979	13.31%

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*****