



LM-79-19 TEST REPORT

for

Beyond LED Technology

1939 Parker Court, Stone Mountain, GA 30087

LED Downlight

Model: FXF01172E-12A5T90W

Laboratory: Leading Testing Laboratories

NVLAP CODE: 200960-0

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Report No.:HZ25050019n

The laboratory that conducted the testing detailed in this report has been accredited for SSL by NVLAP.

Review by:

Approved by:

Engineer:

Jul. 23, 2025

Manager:

Jul. 23, 2025

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

TEST SUMMARY

Sample Tested: **FXF01172E-12A5T90W**

Luminous Efficacy (Lumens /Watt)	Total Luminous Flux (Lumens)	Power (Watts)	Power Factor
87.3	1033.3	11.83	0.9539
CCT (K)	CRI	Stabilization Time (Light & Power)	
2759	92.9	50 mins	

Table 1: Executive Data Summary

Test specifications:

Date of Receipt : May 29, 2025

Date of Test : Jun. 10, 2025

Test item : Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters

Reference Standard : IESNA LM-79-2019 Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products

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SAMPLE PHOTO

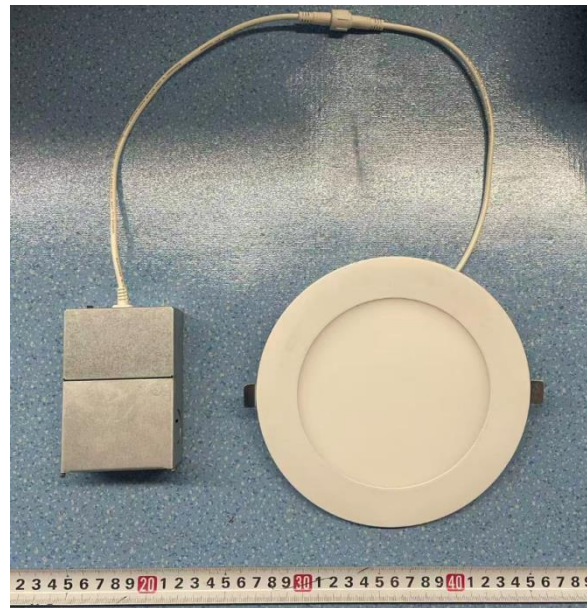


Figure 1- Overview of the sample

Equipment Under Test(EUT)

Name	: LED Downlight
Model	: FXF01172E-12A5T90W
Electrical Ratings	: 120V, 60Hz, 12W
Product Description	: Color- Tunable 2700K/3000K/3500K/4000K/5000K
Manufacturer	: Zhejiang MEKA Optoelectronic Co.,Ltd
Address	: 8 Canghai Road, Lihai Industrial Park, Binhai New City, Yuecheng District, Shaoxing City, Zhejiang Province, China

TEST RESULTS

Test ambient temperature was 24.6 °C.

Test orientation was base up. Test was conducted without a dimmer in the circuit.

The stabilization time of the sample was 50 minutes, and the total operating time including stabilization was 70 minutes.

The photometric distance is 2.47m.

Luminous data was taken at 0.5 °vertical intervals and 10 °horizontal intervals.

Parameter	Result	Special Rendering Indices	Color
Test Voltage (V)	120.0	R1	93
Voltage frequency (Hz)	60	R2	97
Test Current (A)	0.103	R3	99
Power Factor	0.9539	R4	93
Test Power (W)	11.83	R5	93
THD A%	17.97	R6	97
Luminous Efficacy (lm/W)	87.3	R7	91
Total Luminous Flux (lm)	1033.3	R8	80
Color Rendering Index (CRI)	92.9	R9	57
R9	57	R10	93
Correlated Color Temperature (CCT) (K)	2759	R11	94
Chromaticity (Chroma x, Chroma y)	(0.4557, 0.4105)	R12	83
Chromaticity (Chroma u, Chroma v)	(0.2599, 0.3511)	R13	94
Chromaticity (Chroma u', Chroma v')	(0.2599, 0.5267)	R14	99
Duv	0.0003		
Average Beam Angle (°)	112.0		
Center Beam Candle Power (cd)	359		
Spacing Criteria	1.25 (0 °-180 °)/ 1.27(90 °-270 °)		
Zonal Lumens in the 0 °-60 °Zone	78.43%		
Zonal Lumens in the 60 °-90 °Zone	21.45%		
Zonal Lumens in the 90 °-120 °Zone	0.04%		
Zonal Lumens in the 120 °-180 °Zone	0.08%		

Table 2: Test data per Goniophotometer Method

Spectral Power Distribution- Goniophotometer Method

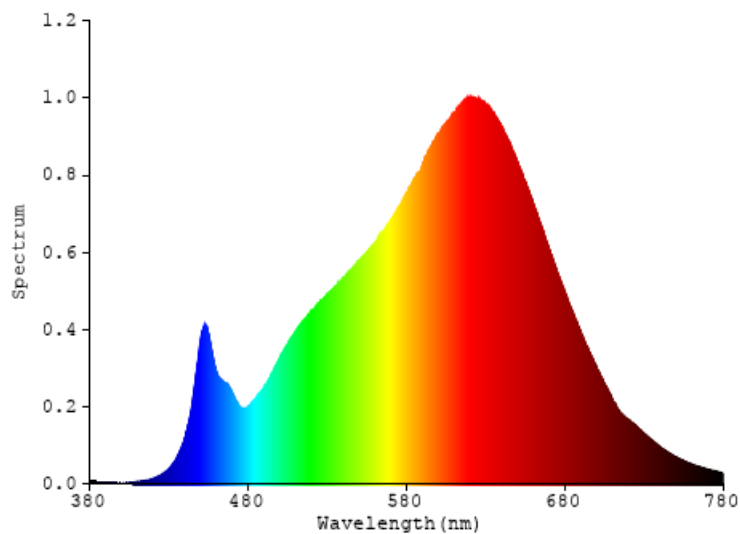


Chart 1: Spectral Power Distribution

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Zonal Lumen Tabulation- Goniophotometer Method

$\gamma(^{\circ})$	Lumens	% Total
0- 10	34.011	3.29%
10- 20	97.647	9.45%
20- 30	148.429	14.36%
30- 40	179.096	17.33%
40- 50	185.081	17.91%
50- 60	166.117	16.08%
60- 70	126.611	12.25%
70- 80	74.255	7.19%
80- 90	20.802	2.01%
90-100	0.106	0.01%
100-110	0.134	0.01%
110-120	0.161	0.02%
120-130	0.18	0.02%
130-140	0.199	0.02%
140-150	0.191	0.02%
150-160	0.155	0.02%
160-170	0.101	0.01%
170-180	0.037	0.00%
Total	1033.3	100%

$\gamma(^{\circ})$	Lumens	% Total
0- 60	810.381	78.43%
60- 90	221.668	21.45%
0-90	1032.049	99.88%
90- 180	1.264	0.12%
0- 180	1033.3	100%

Table 3: Zonal Lumen Data

Illuminance Plots- Goniophotometer Method

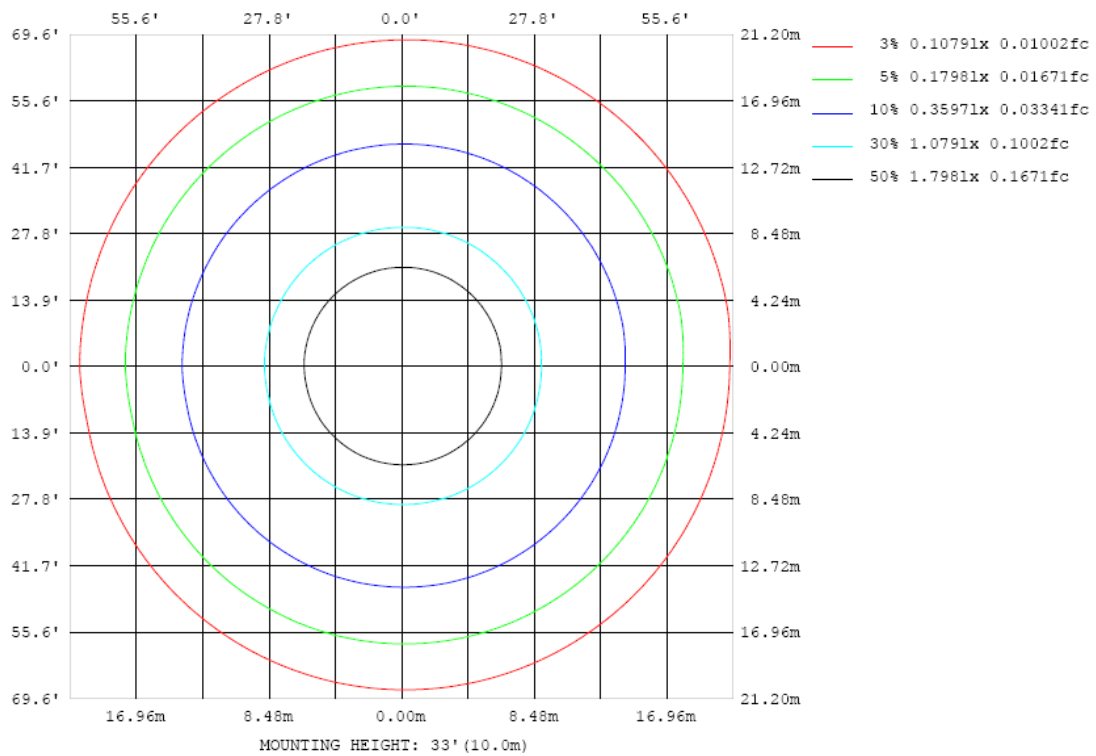


Chart 2: Illuminance Plot (Footcandles)

Luminous Intensity Distribution Plots- Goniophotometer Method

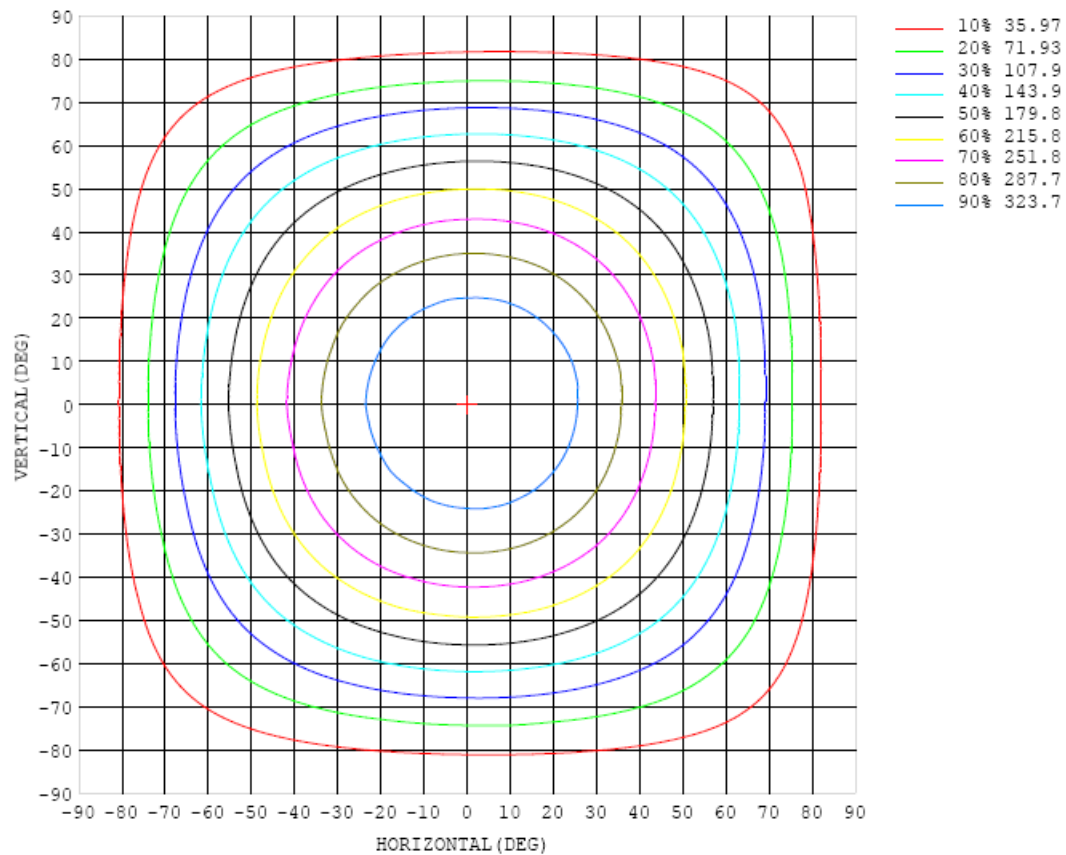


Chart 3: Isocandela Plot

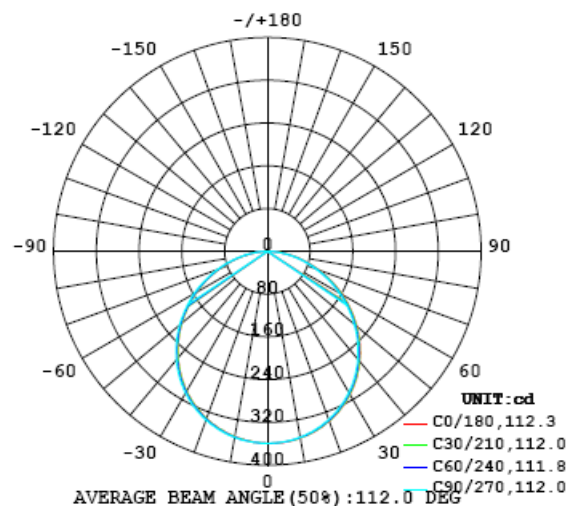


Chart 4: Polar Candela Distribution

Luminous Intensity Data- Goniophotometer Method

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359
5	359	358	358	358	359	358	358	358	358	358	358	357	357	357	357	358	356	357	356
10	355	354	354	354	355	354	354	354	353	353	353	352	352	352	352	352	351	351	352
15	348	347	347	347	348	347	346	346	346	345	345	345	344	344	344	344	343	343	344
20	338	338	337	337	338	337	336	336	335	335	335	334	333	333	332	333	332	332	333
25	325	325	324	325	324	324	323	323	322	321	321	320	320	319	319	319	318	318	319
30	309	309	308	308	309	308	307	306	306	304	304	303	303	302	301	301	300	301	302
35	290	290	290	290	289	288	287	287	286	285	284	283	283	282	282	281	281	281	282
40	269	268	268	268	268	266	265	265	263	263	262	261	261	260	260	260	258	258	260
45	245	244	244	243	243	242	241	240	239	238	238	236	236	235	235	235	233	233	236
50	219	218	217	217	216	215	214	213	213	212	211	210	209	209	208	208	207	207	209
55	191	190	190	189	189	187	186	186	185	184	183	182	181	181	180	180	179	179	182
60	162	161	161	160	159	159	157	157	156	155	154	153	153	152	151	151	150	150	153
65	132	132	131	131	130	129	128	127	126	125	125	124	123	123	122	122	121	121	124
70	103	102	102	101	100	99.5	98.7	97.8	96.9	96.2	95.5	94.8	94.1	93.7	92.9	92.6	91.8	91.5	94.8
75	74.1	73.7	73.2	72.3	72.1	71.3	70.5	69.6	69.5	68.4	67.7	66.8	66.6	66.0	65.5	65.1	64.6	64.2	66.5
80	47.1	46.7	46.3	45.7	45.2	44.4	43.7	43.0	42.4	41.6	41.0	40.4	39.9	39.3	38.8	38.3	37.8	37.5	39.9
85	21.4	21.2	20.9	20.4	20.0	19.4	18.8	18.1	17.6	16.9	16.3	15.6	15.1	14.5	14.1	13.7	13.3	13.1	15.4
90	0.27	0.28	0.26	0.17	0.12	0.09	0.07	0.06	0.05	0.05	0.05	0.39	0.05	0.05	0.05	0.05	0.05	0.05	0.11
95	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.14
100	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.16
105	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.18
110	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.20
115	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.12	0.13	0.13	0.13	0.13	0.13	0.21
120	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.22
125	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18	0.24
130	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.26
135	0.21	0.22	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.31
140	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.35
145	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.37
150	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.39
155	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.39
160	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.38
165	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.38
170	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.39
175	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.40
180	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40

Table 4: Luminous Intensity Data

Table--2

UNIT: cd

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359	359		
5	356	357	357	358	357	358	357	358	358	359	358	359	359	358	360	359	359		
10	352	352	352	353	353	353	353	353	354	354	354	355	355	355	355	354	355		
15	344	344	344	345	345	345	346	346	346	347	347	348	349	348	349	349	349		
20	333	333	333	335	334	334	335	335	336	337	337	338	338	339	340	339	339		
25	318	319	319	320	321	321	321	322	323	324	324	325	326	326	326	326	327		
30	302	302	302	304	304	304	305	306	306	307	308	309	310	310	311	310	311		
35	282	283	283	284	284	285	285	286	288	289	289	291	291	291	292	292	293		
40	260	260	261	262	262	263	263	265	266	267	268	269	270	270	271	271	271		
45	235	235	236	237	237	238	239	240	241	242	243	245	246	246	247	247	247		
50	209	209	210	211	211	212	213	214	215	216	217	219	220	221	221	221	222		
55	181	181	182	182	183	184	185	186	187	188	190	191	192	193	194	194	194		
60	153	153	154	154	155	156	157	158	159	161	162	163	164	165	166	166	166		
65	124	124	124	125	125	126	127	128	130	131	132	133	135	136	137	136	137		
70	94.6	94.6	95.0	95.4	95.9	96.5	97.7	98.7	100	101	103	104	105	106	107	107	107		
75	66.3	66.3	66.6	67.0	67.5	68.2	69.2	70.2	71.3	72.5	73.7	74.8	76.0	76.7	77.4	77.7	77.9		
80	39.7	39.7	39.9	40.4	40.8	41.6	42.3	43.1	44.2	45.3	46.3	47.3	48.1	49.0	49.5	49.7	50.0		
85	15.4	15.4	15.7	16.1	16.6	17.1	17.8	18.5	19.3	20.1	21.0	21.7	22.4	23.0	23.5	23.8	23.9		
90	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.16	0.27	0.44	0.67	0.88	1.15	1.31	1.43		
95	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12		
100	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.14		
105	0.18	0.18	0.18	0.18	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17		
110	0.20	0.20	0.20	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.18	0.18		
115	0.21	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.19	0.19		
120	0.22	0.22	0.22	0.22	0.22	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21		
125	0.24	0.24	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.22	0.22	0.22	0.22	0.22	0.22		
130	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.25	0.26	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
135	0.31	0.31	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30		
140	0.35	0.35	0.35	0.35	0.35	0.35	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34		
145	0.38	0.38	0.37	0.38	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37		
150	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
155	0.39	0.39	0.40	0.40	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
160	0.38	0.38	0.39	0.39	0.39	0.38	0.39	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38		
165	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.37	0.37	0.38	0.38	0.38		
170	0.40	0.40	0.40	0.40	0.39	0.39	0.39	0.39	0.40	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39		
175	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40		
180	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40		

Table 5: Luminous Intensity Data

EQUIPMENT LIST

Test Equipment	Model	Equipment No.	Calibration Date	Calibration Due date
Goniophotometer system	GO-R5000	HZTE011-01	Feb. 05, 2025	-
Digital Power Meter	PF2010A	HZTE028-01	Aug. 08, 2024	Aug. 07, 2025
AC Power Supply	DPS1060	HZTE001-06	Aug. 08, 2024	Aug. 07, 2025
DC Power Supply	WY12010	HZTE004-03	Aug. 08, 2024	Aug. 07, 2025
Standard Source	D908	HZTE012-01	Aug. 14, 2018	-
Standard source	SCL-1400	HZTE012-06	Nov. 04, 2021	-
Temperature and humidity recorder	JR900	HZTE018-01	Aug. 08, 2024	Aug. 07, 2025
Temperature recorder	JM624U	HZTE018-08	Aug. 08, 2024	Aug. 07, 2025

Table 6: Test Equipment List

TEST METHODS

Seasoning of SSL Product

For the purpose of rating new SSL products, SSL products shall be tested with no seasoning. Therefore, no seasoning was performed.

Goniophotometer Method

Photometric and Electrical Measurements

An EVERFINE Type C Model GO-R5000 Goniophotometer was used to measure the intensity at each angle of distribution for each sample. The photometric distance is 2.475m for near-field measurement or 30m for far-field measurement. Bandwidth of spectroradiometer is 380nm-780nm.

Ambient temperature was measured at the same height of the sample mounted on the Goniophotometer equipment. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation.

The stabilization time typically ranges from 30 min (small integrated LED lamps) to 2 or more hours for large SSL luminaires). It can be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 20 min, taken 10 minutes apart, is less than 0.5 %.

Electrical measurements including voltage, current, and power were measured using the Everfine Digital Power Meter.

Some graphics were created with Photometric Plus software.

The standard reference of the Goniophotometer system is halogen incandescent lamp, the intensity distribution type is omni-directional, and is traceable to the National Institute of Metrology P.R. China.

The uncertainty of goniophotometer system reported in this document is expanded uncertainty is 2.3% with a coverage factor k=2.

Color Characteristics Measurements

The color characteristics of SSL products include chromaticity coordinates, correlated color temperature, and color rendering index. These characteristics of SSL products may be spatially non-uniform, and thus, in order that they can be specified accurately, the color quantities shall be measured as values that are spatially average, weighted to intensity, over the angular range where light is intentionally emitted from the SSL product. The color characteristics measurements are using gonio-spectroradiometer.

*** End of Report ***

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