



Test Report Of ANSI/IES LM-79-19

APPROVED METHOD FOR OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS

Report Number..... : N02A23090145L01101

Client..... : Luci Pte. Ltd.

Address..... : 52A Tanjong Pagar Road, Singapore 088473

Test Model..... : LFTHY-1000-NL27-CL-I-2/4/6/10/15

Brand Name..... : N/A

Testing Laboratory... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Testing Location..... : As above

Date of receipt..... : Sep. 28, 2023

Date of test : Sep. 28, 2023 – Oct. 18, 2023

Date of report..... : Oct. 19, 2023

Tested by:

Jarvis Zhang

Jarvis Zhang/ Test Engineer

Checked by:

Sandy Chen

Sandy Chen/ Project Engineer

Approved by:



Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 3: This report contains data that are not covered by the NVLAP accreditation. It is marked * in the title.

1. Product Description for Equipment under Test (EUT)

Representative (Tested) Model: LFTHY-1000-NL27-CL-I-2/4/6/10/15
 Manufacturer:
 Product Type: SHIN FLEX THOF
 Rated Voltage/Frequency: DC24V
 Rated Power: 2W, 4W, 6W, 10W, 15W
 Rated luminous flux: /
 Nominal CCT: 3500K

2. Standards Used

- ANSI/IES LM-79-19:APPROVED METHOD:OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS
- IES TM-30-18 IES Method for Evaluating Light Source Color Rendition (This Method is not in Nvlap accreditation scope)

3. Test equipment list

Test Equipment	Serial No.	Model No.	Calibration due date
Full-field Speed Goniophotometer	MD-E028	GO-R5000	2024/09/17
Digital Power Meter	MD-E001	PF2010	2024/09/17
AC Testing Power Source	MD-E002	DPS1060	2024/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2024/10/13
Integrating Sphere System	MD-E029	2M	2024/09/17
High Accuracy Array Spectroradio Meter	MD-E011	HAAS-3000	2024/09/17
Digital Power Meter	MD-E008	PF310	2024/09/17
AC Testing Power Source	MD-E010	DPS1010	2024/09/17
Standard Lamp	MD-E036	D204	2024/10/13

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit(SI).

4. Test Method

Requirements of Ambient Condition

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ during measurement. And relative humidity between 10% and 65%.

Goniophotometer System

The sample was tested according to the ANSI/IES LM-79-19.

Photometric parameters were measured using a type C goniophotometer and software. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the Largest dimension of the test SSL product.

Integrating Sphere System

The sample was tested according to the ANSI/IES LM-79-19.

The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was 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.

Fidelity Index (R_f) and Gamut Index (R_g) Calculation

The R_f , R_g was calculated according to IES TM-30-18 by using calculation tools. The calculation was based on the measured SPD from 380nm to 780nm with 1nm intervals. All the colors in this report is for reference only.

5. Integrating Sphere Test Results for LFTHY-1000-NL27-CL-I-2/4/6/10/15

5.1 Test Data

Test Ambient Temperature (Integrating sphere internal temperature)	25.1℃	Test orientation	Downward
Operate time(Min.)	30	stabilization time(Min.)	0

Optical and Electrical Measurement Result

Number	Time	Current (A)	Voltage (V)	Power (W)	Flux(lm)	x	y	u'	v'	CCT (K)	Ra
0	00h00m00s	0.5538	23.998	13.29	1934.5	0.3958	0.3808	0.2336	0.5057	3637	96.4
1	00h00m10s	0.5554	23.998	13.328	1933	0.3958	0.3805	0.2337	0.5055	3635	96.5
2	00h00m20s	0.5563	23.998	13.35	1933.2	0.396	0.3807	0.2337	0.5056	3632	96.5
3	00h00m30s	0.5569	23.998	13.364	1933.1	0.3958	0.3805	0.2337	0.5055	3634	96.5
4	00h00m40s	0.5576	23.998	13.381	1934.1	0.396	0.3805	0.2338	0.5055	3631	96.5
5	00h00m50s	0.558	23.998	13.391	1933.7	0.396	0.3804	0.2339	0.5055	3629	96.5
6	00h01m00s	0.5585	23.998	13.403	1931.6	0.396	0.3801	0.234	0.5054	3625	96.5
7	00h01m10s	0.5589	23.998	13.412	1932.9	0.3963	0.3803	0.2341	0.5055	3622	96.5
8	00h01m20s	0.5592	23.998	13.42	1932.8	0.3961	0.3802	0.234	0.5054	3626	96.6
9	00h01m30s	0.5595	23.998	13.427	1931.8	0.396	0.3802	0.234	0.5054	3626	96.5
10	00h01m40s	0.5598	23.998	13.434	1933.6	0.3961	0.3799	0.2341	0.5053	3623	96.5
11	00h01m50s	0.5601	23.998	13.441	1933.6	0.3961	0.3801	0.2341	0.5054	3624	96.5
12	00h02m00s	0.5604	23.998	13.448	1933.7	0.3961	0.3803	0.234	0.5054	3625	96.6
13	00h02m10s	0.5606	23.998	13.453	1932.5	0.3961	0.3798	0.2342	0.5052	3622	96.6
14	00h02m20s	0.5608	23.998	13.458	1932.7	0.396	0.3799	0.2341	0.5053	3625	96.6
15	00h02m30s	0.561	23.998	13.463	1931.4	0.3962	0.3798	0.2343	0.5053	3618	96.6
16	00h02m40s	0.5612	23.998	13.468	1931.8	0.3961	0.3799	0.2342	0.5053	3622	96.6
17	00h02m50s	0.5613	23.998	13.47	1932.9	0.3962	0.3799	0.2342	0.5053	3621	96.6
18	00h03m00s	0.5615	23.998	13.475	1933	0.3962	0.3799	0.2342	0.5053	3619	96.6
19	00h03m10s	0.5616	23.998	13.477	1932.2	0.3963	0.3799	0.2343	0.5053	3618	96.6
20	00h03m20s	0.5618	23.998	13.482	1931.9	0.3962	0.3796	0.2343	0.5052	3617	96.6
21	00h03m30s	0.562	23.998	13.487	1931.5	0.3963	0.3799	0.2343	0.5053	3618	96.6

22	00h03m40s	0.5621	23.998	13.489	1932.5	0.3963	0.3797	0.2344	0.5053	3616	96.6
23	00h03m50s	0.5622	23.998	13.492	1932.2	0.3963	0.3797	0.2344	0.5052	3615	96.6
24	00h04m00s	0.5623	23.998	13.494	1933	0.3962	0.3796	0.2344	0.5052	3617	96.6
25	00h04m10s	0.5624	23.998	13.496	1932.4	0.3963	0.3798	0.2343	0.5053	3617	96.6
26	00h04m20s	0.5625	23.998	13.499	1933.1	0.3964	0.3798	0.2344	0.5053	3615	96.6
27	00h04m30s	0.5626	23.998	13.501	1931.6	0.3961	0.3794	0.2343	0.5051	3619	96.6
28	00h04m40s	0.5627	23.998	13.504	1932.5	0.3963	0.3796	0.2344	0.5052	3615	96.6
29	00h04m50s	0.5628	23.998	13.506	1931.4	0.3963	0.3797	0.2344	0.5052	3616	96.6
30	00h05m00s	0.5629	23.998	13.508	1931.5	0.3961	0.3794	0.2344	0.5051	3617	96.6
31	00h05m10s	0.5629	23.998	13.508	1933.4	0.3963	0.3798	0.2343	0.5053	3617	96.6
32	00h05m20s	0.563	23.998	13.511	1933	0.3964	0.3797	0.2344	0.5053	3614	96.6
33	00h05m30s	0.5631	23.998	13.513	1932.2	0.3963	0.3796	0.2344	0.5052	3615	96.6
34	00h05m40s	0.5631	23.998	13.513	1932	0.3962	0.3796	0.2343	0.5052	3617	96.6
35	00h05m50s	0.5631	23.998	13.513	1932.2	0.3962	0.3795	0.2344	0.5051	3616	96.6
36	00h06m00s	0.5631	23.998	13.513	1931.6	0.3964	0.3797	0.2345	0.5053	3612	96.6
37	00h06m10s	0.5631	23.998	13.513	1931.8	0.3962	0.3794	0.2344	0.5051	3616	96.6
38	00h06m20s	0.5632	23.998	13.516	1932.3	0.3962	0.3796	0.2344	0.5052	3616	96.6
39	00h06m30s	0.5629	23.998	13.508	1933.5	0.3965	0.3798	0.2344	0.5053	3613	96.6
40	00h06m40s	0.5629	23.998	13.508	1932.9	0.3966	0.3798	0.2345	0.5053	3610	96.6
41	00h06m50s	0.5629	23.998	13.508	1933.8	0.3964	0.3797	0.2345	0.5052	3613	96.6
42	00h07m00s	0.563	23.998	13.511	1933.2	0.3965	0.3798	0.2344	0.5053	3613	96.6
43	00h07m10s	0.5629	23.998	13.508	1933.4	0.3967	0.3799	0.2346	0.5054	3607	96.6
44	00h07m20s	0.5628	23.998	13.506	1932.3	0.3965	0.3799	0.2344	0.5054	3612	96.6
45	00h07m30s	0.5628	23.998	13.506	1931.1	0.3964	0.3796	0.2345	0.5052	3613	96.6
46	00h07m40s	0.5628	23.998	13.506	1931.2	0.3965	0.3797	0.2345	0.5053	3612	96.6
47	00h07m50s	0.5629	23.998	13.508	1931.5	0.3967	0.3798	0.2346	0.5053	3608	96.6
48	00h08m00s	0.563	23.998	13.511	1930.6	0.3966	0.3796	0.2346	0.5052	3608	96.6
49	00h08m10s	0.563	23.998	13.511	1932.4	0.3966	0.3798	0.2345	0.5053	3609	96.6
50	00h08m20s	0.563	23.998	13.511	1932	0.3964	0.3797	0.2344	0.5053	3613	96.6
51	00h08m30s	0.563	23.998	13.511	1930.8	0.3965	0.3797	0.2345	0.5052	3611	96.6
52	00h08m40s	0.563	23.998	13.511	1932.9	0.3966	0.3797	0.2346	0.5053	3609	96.6

53	00h08m50s	0.563	23.998	13.511	1931.6	0.3966	0.3796	0.2346	0.5052	3608	96.6
54	00h09m00s	0.5631	23.998	13.513	1933.3	0.3966	0.3798	0.2345	0.5053	3611	96.6
55	00h09m10s	0.5631	23.998	13.513	1931.6	0.3966	0.3797	0.2345	0.5053	3609	96.6
56	00h09m20s	0.5631	23.998	13.513	1930.9	0.3965	0.3797	0.2345	0.5052	3610	96.6
57	00h09m30s	0.5632	23.998	13.516	1931.9	0.3963	0.3795	0.2345	0.5051	3613	96.6
58	00h09m40s	0.5632	23.998	13.516	1933	0.3965	0.3797	0.2345	0.5053	3610	96.6
59	00h09m50s	0.5633	23.998	13.518	1931.5	0.3965	0.3797	0.2345	0.5053	3610	96.6
60	00h10m00s	0.5633	23.998	13.518	1931	0.3966	0.3796	0.2346	0.5052	3608	96.6
61	00h10m10s	0.5633	23.998	13.518	1932.2	0.3966	0.3798	0.2345	0.5053	3611	96.6
62	00h10m20s	0.5634	23.998	13.52	1932.3	0.3966	0.3796	0.2346	0.5053	3607	96.6
63	00h10m30s	0.5633	23.998	13.518	1931.3	0.3966	0.3797	0.2345	0.5053	3609	96.6
64	00h10m40s	0.5633	23.998	13.518	1932.2	0.3966	0.3799	0.2345	0.5054	3610	96.6
65	00h10m50s	0.5633	23.998	13.518	1931.3	0.3964	0.3796	0.2345	0.5052	3612	96.6
66	00h11m00s	0.5633	23.998	13.518	1931.2	0.3965	0.3797	0.2345	0.5052	3611	96.6
67	00h11m10s	0.5633	23.998	13.518	1931.5	0.3965	0.3795	0.2346	0.5052	3610	96.6
68	00h11m20s	0.5633	23.998	13.518	1931.1	0.3964	0.3796	0.2345	0.5052	3613	96.6
69	00h11m30s	0.5632	23.998	13.516	1930.8	0.3965	0.3796	0.2345	0.5052	3610	96.6
70	00h11m40s	0.5633	23.998	13.518	1932	0.3965	0.3798	0.2345	0.5053	3611	96.6
71	00h11m50s	0.5631	23.998	13.513	1931.5	0.3966	0.3798	0.2345	0.5053	3610	96.6
72	00h12m00s	0.5629	23.998	13.508	1928.9	0.3966	0.3798	0.2345	0.5053	3610	96.6
73	00h12m10s	0.5629	23.998	13.508	1930.4	0.3964	0.3796	0.2345	0.5052	3611	96.6
74	00h12m20s	0.5627	23.998	13.504	1928.2	0.3964	0.3795	0.2346	0.5052	3611	96.7
75	00h12m30s	0.5627	23.998	13.504	1930.2	0.3967	0.3798	0.2346	0.5053	3607	96.6
76	00h12m40s	0.5618	23.998	13.482	1926.1	0.3962	0.3794	0.2344	0.5051	3616	96.6
77	00h12m50s	0.5581	23.998	13.393	1915.9	0.396	0.3794	0.2343	0.5051	3620	96.6
78	00h13m00s	0.5581	23.998	13.393	1917	0.3961	0.3794	0.2344	0.5051	3618	96.6
79	00h13m10s	0.5586	23.998	13.405	1917.7	0.3961	0.3794	0.2344	0.5051	3618	96.6
80	00h13m20s	0.5603	23.998	13.446	1922.4	0.3963	0.3794	0.2345	0.5051	3614	96.6
81	00h13m30s	0.5612	23.998	13.468	1926	0.3963	0.3797	0.2344	0.5052	3615	96.6
82	00h13m40s	0.5607	23.998	13.456	1923.5	0.3964	0.3796	0.2344	0.5052	3614	96.6
83	00h13m50s	0.5597	23.998	13.432	1921	0.3961	0.3796	0.2343	0.5052	3620	96.6

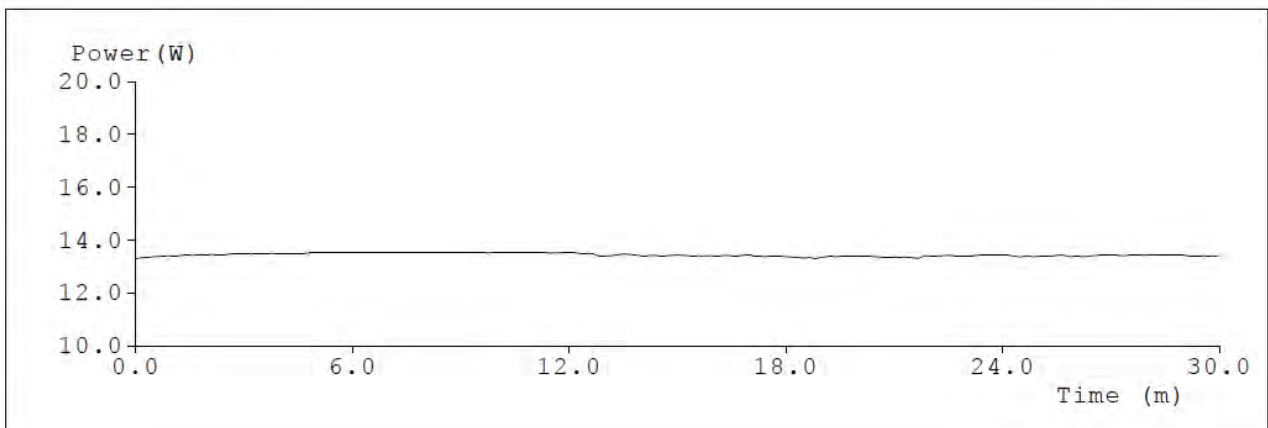
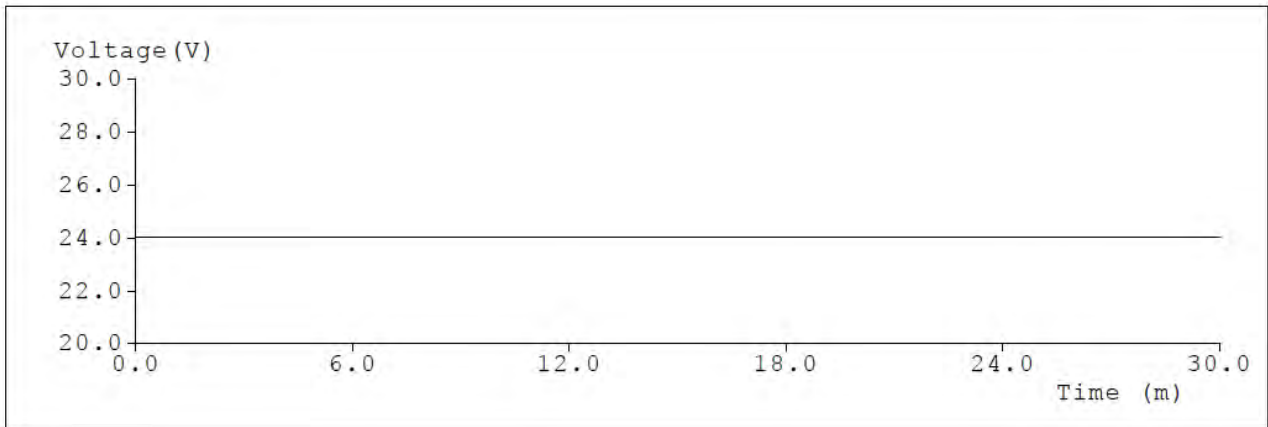
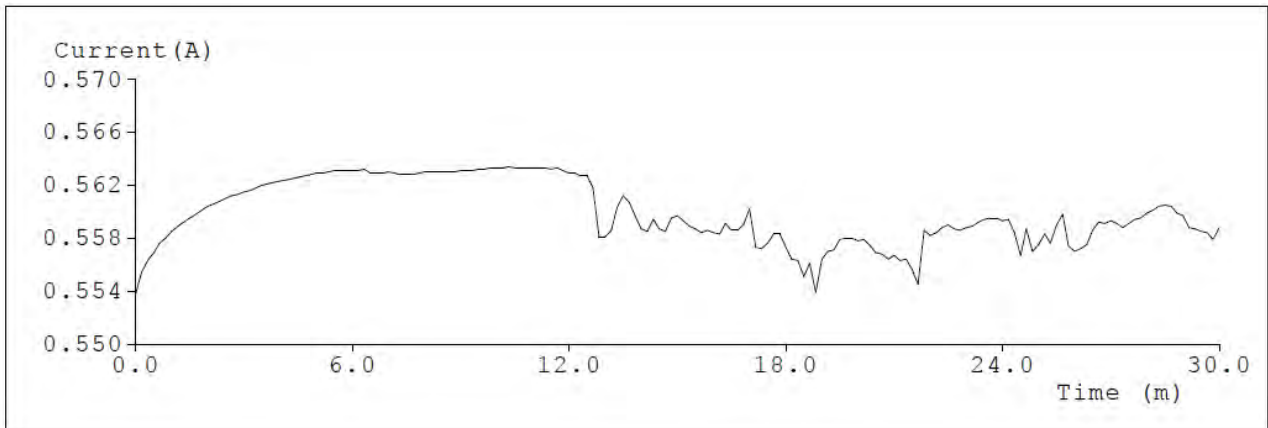
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87	00h14m30s	0.5587	23.998	13.408	1917	0.3961	0.3794	0.2343	0.5051	3619	96.6
88	00h14m40s	0.5585	23.998	13.403	1915.5	0.3961	0.3793	0.2344	0.505	3617	96.6
89	00h14m50s	0.5595	23.998	13.427	1920.7	0.3961	0.3794	0.2344	0.5051	3617	96.6
90	00h15m00s	0.5597	23.998	13.432	1921.3	0.3961	0.3793	0.2344	0.505	3618	96.6
91	00h15m10s	0.5593	23.998	13.422	1919.2	0.3962	0.3795	0.2344	0.5051	3616	96.6
92	00h15m20s	0.5589	23.998	13.412	1917.6	0.3961	0.3794	0.2343	0.5051	3619	96.6
93	00h15m30s	0.5587	23.998	13.408	1918.1	0.3961	0.3794	0.2343	0.5051	3619	96.6
94	00h15m40s	0.5584	23.998	13.4	1916.6	0.3959	0.3793	0.2343	0.505	3621	96.6
95	00h15m50s	0.5586	23.998	13.405	1917.8	0.396	0.3793	0.2344	0.505	3619	96.6
96	00h16m00s	0.5584	23.998	13.4	1915.8	0.3961	0.3794	0.2343	0.505	3619	96.6
97	00h16m10s	0.5583	23.998	13.398	1917.6	0.396	0.3793	0.2344	0.505	3619	96.6
98	00h16m20s	0.5591	23.998	13.417	1919.5	0.3962	0.3796	0.2343	0.5052	3619	96.6
99	00h16m30s	0.5586	23.998	13.405	1918.1	0.3961	0.3794	0.2344	0.5051	3617	96.6
100	00h16m40s	0.5586	23.998	13.405	1917.4	0.3961	0.3796	0.2343	0.5052	3620	96.6
101	00h16m50s	0.559	23.998	13.415	1921.3	0.3961	0.3794	0.2344	0.5051	3618	96.6
102	00h17m00s	0.5602	23.998	13.444	1920.6	0.3961	0.3796	0.2343	0.5052	3619	96.6
103	00h17m10s	0.5573	23.998	13.374	1916.4	0.396	0.3794	0.2343	0.505	3620	96.6
104	00h17m20s	0.5572	23.998	13.372	1914.6	0.396	0.3794	0.2343	0.5051	3621	96.6
105	00h17m30s	0.5576	23.998	13.381	1915.5	0.3959	0.3794	0.2343	0.505	3622	96.6
106	00h17m40s	0.5583	23.998	13.398	1917.5	0.3958	0.3793	0.2342	0.505	3624	96.6
107	00h17m50s	0.5583	23.998	13.398	1915.4	0.3958	0.3793	0.2342	0.505	3624	96.6
108	00h18m00s	0.5573	23.998	13.374	1914	0.396	0.3796	0.2342	0.5051	3621	96.6
109	00h18m10s	0.5564	23.998	13.352	1910.7	0.3959	0.3794	0.2343	0.505	3622	96.6
110	00h18m20s	0.5563	23.998	13.35	1910.4	0.3958	0.3794	0.2342	0.5051	3625	96.6
111	00h18m30s	0.5551	23.998	13.321	1907.1	0.3957	0.3792	0.2342	0.5049	3626	96.6
112	00h18m40s	0.5561	23.998	13.345	1909.5	0.3958	0.3794	0.2342	0.505	3624	96.6
113	00h18m50s	0.5539	23.998	13.292	1901.4	0.3956	0.3793	0.2341	0.5049	3629	96.6
114	00h19m00s	0.5564	23.998	13.352	1912.6	0.3959	0.3794	0.2343	0.505	3622	96.6

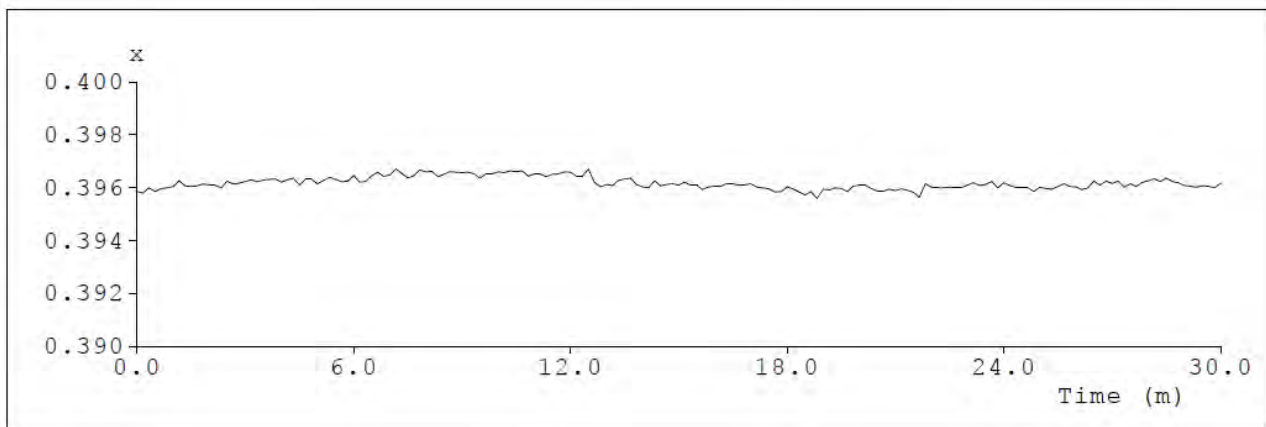
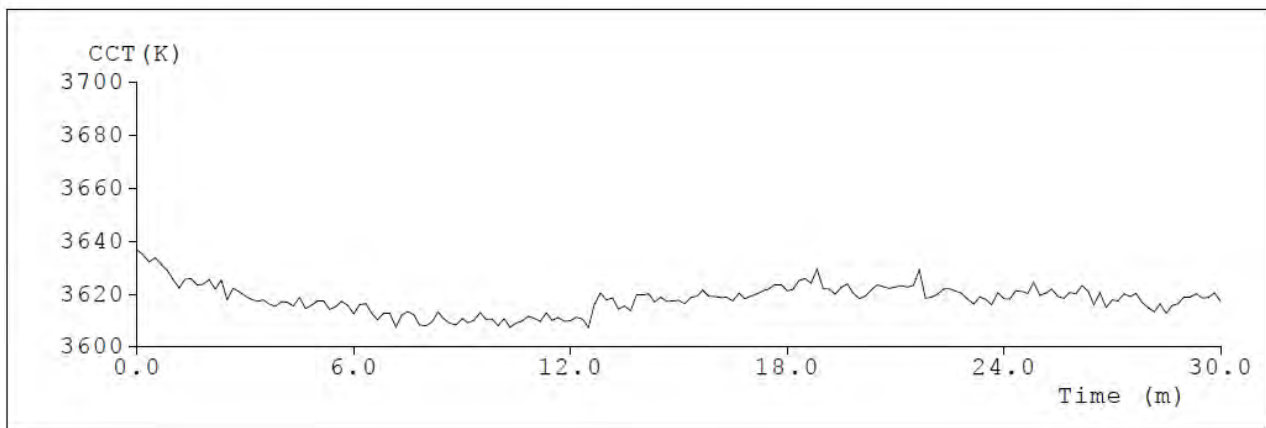
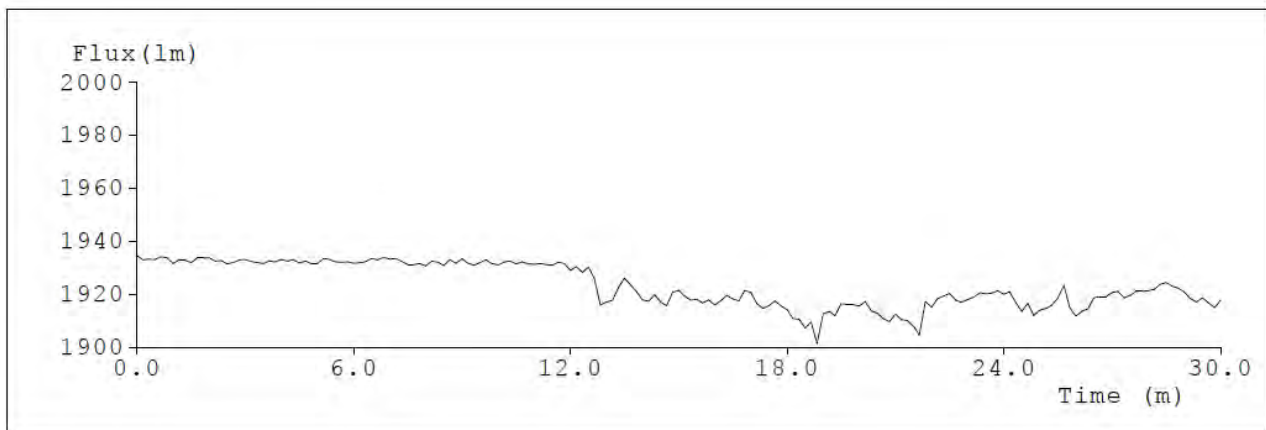
115	00h19m10s	0.557	23.998	13.367	1913.4	0.3959	0.3793	0.2343	0.505	3622	96.6
116	00h19m20s	0.5571	23.998	13.369	1911.8	0.396	0.3793	0.2343	0.505	3620	96.6
117	00h19m30s	0.5579	23.998	13.388	1916.3	0.396	0.3795	0.2342	0.5051	3622	96.7
118	00h19m40s	0.558	23.998	13.391	1915.9	0.3958	0.3793	0.2342	0.505	3624	96.6
119	00h19m50s	0.558	23.998	13.391	1916	0.3961	0.3795	0.2343	0.5051	3620	96.6
120	00h20m00s	0.5578	23.998	13.386	1915.5	0.3961	0.3794	0.2344	0.5051	3618	96.6
121	00h20m10s	0.5579	23.998	13.388	1917.1	0.3961	0.3795	0.2343	0.5051	3619	96.6
122	00h20m20s	0.5574	23.998	13.376	1913.5	0.396	0.3794	0.2343	0.5051	3622	96.6
123	00h20m30s	0.5569	23.998	13.364	1912.8	0.3959	0.3794	0.2342	0.505	3623	96.7
124	00h20m40s	0.5568	23.998	13.362	1910.7	0.3959	0.3793	0.2343	0.505	3623	96.6
125	00h20m50s	0.5564	23.998	13.352	1909.6	0.3959	0.3794	0.2343	0.505	3622	96.6
126	00h21m00s	0.5567	23.998	13.36	1912.4	0.3959	0.3793	0.2343	0.505	3623	96.6
127	00h21m10s	0.5563	23.998	13.35	1910.3	0.3959	0.3795	0.2342	0.5051	3623	96.6
128	00h21m20s	0.5564	23.998	13.352	1909.9	0.3959	0.3793	0.2343	0.505	3623	96.7
129	00h21m30s	0.5556	23.998	13.333	1907.9	0.3958	0.3792	0.2343	0.5049	3623	96.6
130	00h21m40s	0.5545	23.998	13.307	1904.6	0.3956	0.3793	0.2341	0.505	3629	96.6
131	00h21m50s	0.5586	23.998	13.405	1917.1	0.3961	0.3795	0.2343	0.5051	3618	96.6
132	00h22m00s	0.5582	23.998	13.396	1915.1	0.396	0.3792	0.2344	0.505	3619	96.6
133	00h22m10s	0.5584	23.998	13.4	1918.3	0.396	0.3793	0.2343	0.505	3620	96.6
134	00h22m20s	0.5588	23.998	13.41	1919.2	0.396	0.3795	0.2342	0.5051	3622	96.6
135	00h22m30s	0.559	23.998	13.415	1920.2	0.396	0.3796	0.2342	0.5052	3622	96.6
136	00h22m40s	0.5587	23.998	13.408	1917.7	0.396	0.3795	0.2343	0.5051	3621	96.6
137	00h22m50s	0.5586	23.998	13.405	1916.9	0.396	0.3794	0.2343	0.505	3620	96.6
138	00h23m00s	0.5588	23.998	13.41	1917.9	0.3961	0.3794	0.2344	0.5051	3618	96.6
139	00h23m10s	0.5589	23.998	13.412	1918.9	0.3962	0.3794	0.2344	0.5051	3616	96.6
140	00h23m20s	0.5592	23.998	13.42	1920.5	0.3961	0.3794	0.2343	0.5051	3619	96.6
141	00h23m30s	0.5594	23.998	13.424	1920.1	0.3961	0.3794	0.2344	0.5051	3618	96.6
142	00h23m40s	0.5595	23.998	13.427	1920.4	0.3962	0.3795	0.2344	0.5051	3616	96.6
143	00h23m50s	0.5595	23.998	13.427	1921.3	0.396	0.3793	0.2343	0.505	3620	96.6
144	00h24m00s	0.5593	23.998	13.422	1919.9	0.3962	0.3797	0.2343	0.5052	3618	96.6
145	00h24m10s	0.5594	23.998	13.424	1920.9	0.3961	0.3793	0.2344	0.505	3618	96.6

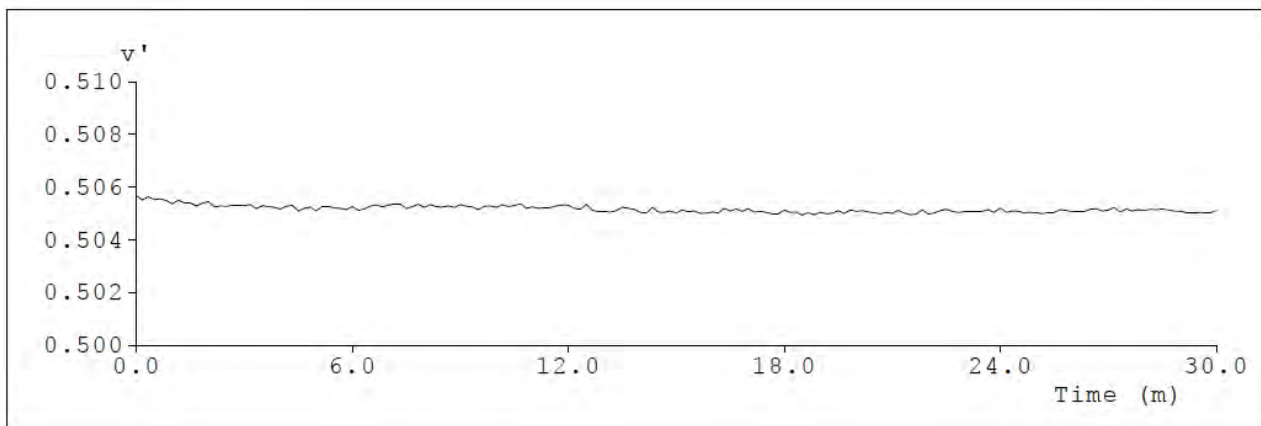
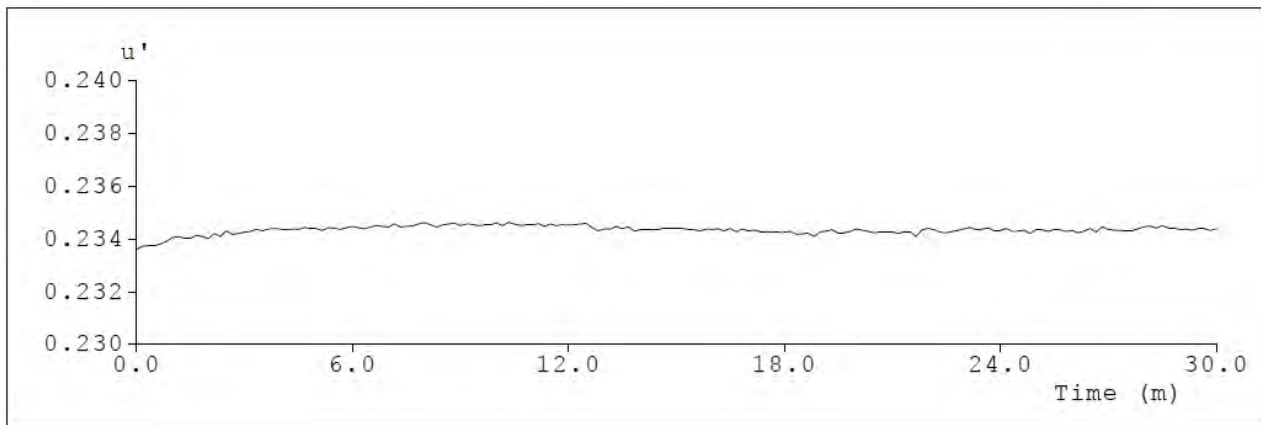
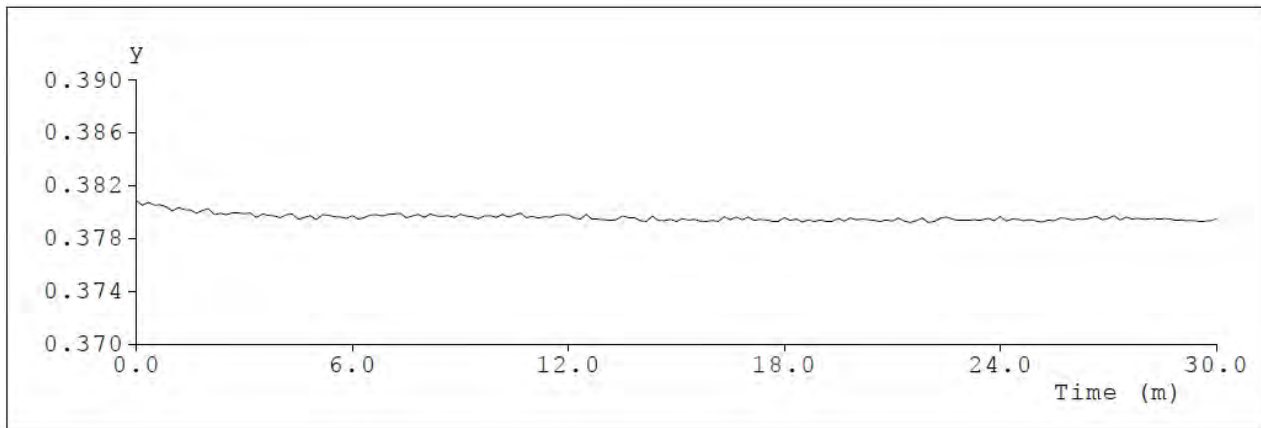
146	00h24m20s	0.5584	23.998	13.4	1916.7	0.396	0.3795	0.2343	0.5051	3621	96.7
147	00h24m30s	0.5567	23.998	13.36	1913.4	0.396	0.3794	0.2343	0.5051	3621	96.6
148	00h24m40s	0.5587	23.998	13.408	1916.4	0.396	0.3793	0.2343	0.505	3620	96.6
149	00h24m50s	0.557	23.998	13.367	1911.9	0.3959	0.3794	0.2342	0.505	3624	96.6
150	00h25m00s	0.5575	23.998	13.379	1914	0.396	0.3793	0.2343	0.505	3619	96.7
151	00h25m10s	0.5583	23.998	13.398	1914.5	0.396	0.3792	0.2343	0.505	3620	96.6
152	00h25m20s	0.5576	23.998	13.381	1915.7	0.3959	0.3794	0.2343	0.505	3622	96.6
153	00h25m30s	0.559	23.998	13.415	1918.5	0.396	0.3793	0.2343	0.505	3619	96.6
154	00h25m40s	0.5598	23.998	13.434	1923.1	0.3961	0.3795	0.2343	0.5051	3618	96.6
155	00h25m50s	0.5574	23.998	13.376	1914.8	0.396	0.3795	0.2343	0.5051	3621	96.6
156	00h26m00s	0.557	23.998	13.367	1911.6	0.396	0.3794	0.2343	0.5051	3620	96.6
157	00h26m10s	0.5572	23.998	13.372	1913.5	0.3959	0.3795	0.2342	0.5051	3623	96.6
158	00h26m20s	0.5575	23.998	13.379	1914.4	0.396	0.3794	0.2343	0.5051	3621	96.6
159	00h26m30s	0.5586	23.998	13.405	1918.6	0.3962	0.3796	0.2344	0.5052	3616	96.6
160	00h26m40s	0.5592	23.998	13.42	1919.1	0.3961	0.3797	0.2342	0.5052	3620	96.7
161	00h26m50s	0.5591	23.998	13.417	1919	0.3962	0.3794	0.2344	0.5051	3615	96.6
162	00h27m00s	0.5593	23.998	13.422	1920.5	0.3962	0.3795	0.2344	0.5051	3618	96.6
163	00h27m10s	0.5591	23.998	13.417	1921	0.3962	0.3797	0.2343	0.5052	3617	96.6
164	00h27m20s	0.5588	23.998	13.41	1918.5	0.396	0.3794	0.2343	0.5051	3620	96.6
165	00h27m30s	0.5591	23.998	13.417	1919.4	0.3961	0.3796	0.2343	0.5052	3619	96.6
166	00h27m40s	0.5594	23.998	13.424	1920.9	0.396	0.3795	0.2343	0.5051	3620	96.6
167	00h27m50s	0.5595	23.998	13.427	1921	0.3962	0.3795	0.2344	0.5051	3617	96.6
168	00h28m00s	0.5599	23.998	13.436	1921.3	0.3963	0.3794	0.2344	0.5051	3615	96.6
169	00h28m10s	0.5601	23.998	13.441	1921.8	0.3963	0.3795	0.2345	0.5051	3613	96.6
170	00h28m20s	0.5604	23.998	13.448	1923.6	0.3962	0.3795	0.2344	0.5051	3616	96.6
171	00h28m30s	0.5605	23.998	13.451	1924.3	0.3964	0.3795	0.2345	0.5052	3613	96.6
172	00h28m40s	0.5604	23.998	13.448	1922.9	0.3962	0.3795	0.2344	0.5051	3616	96.6
173	00h28m50s	0.5599	23.998	13.436	1922.3	0.3962	0.3794	0.2344	0.5051	3616	96.6
174	00h29m00s	0.5597	23.998	13.432	1920.8	0.3961	0.3794	0.2343	0.5051	3619	96.6
175	00h29m10s	0.5588	23.998	13.41	1918.3	0.396	0.3793	0.2344	0.505	3619	96.6
176	00h29m20s	0.5587	23.998	13.408	1917	0.396	0.3794	0.2343	0.505	3620	96.6

177	00h29m30s	0.5585	23.998	13.403	1918.6	0.3961	0.3793	0.2344	0.505	3618	96.6
178	00h29m40s	0.5584	23.998	13.4	1916.8	0.396	0.3793	0.2344	0.505	3619	96.6
179	00h29m50s	0.5579	23.998	13.388	1914.8	0.396	0.3793	0.2343	0.505	3620	96.6
180	00h30m00s	0.5588	23.998	13.41	1917.7	0.3962	0.3795	0.2344	0.5051	3617	96.6

Test curves







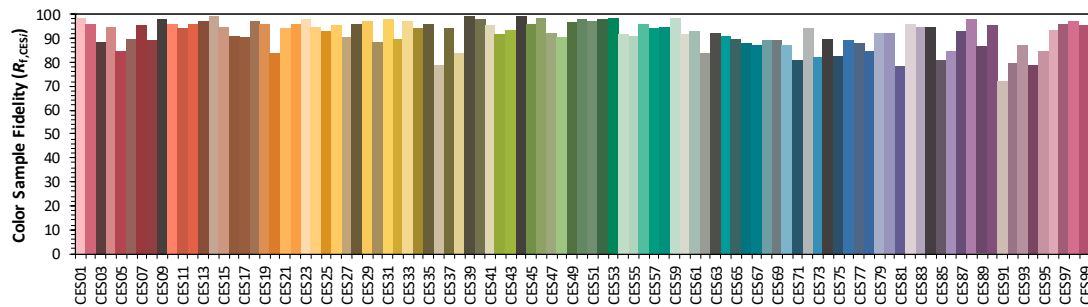
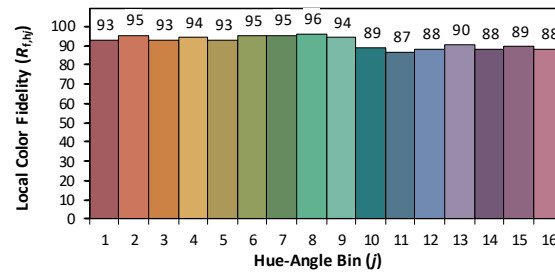
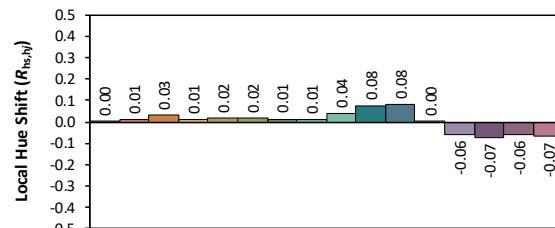
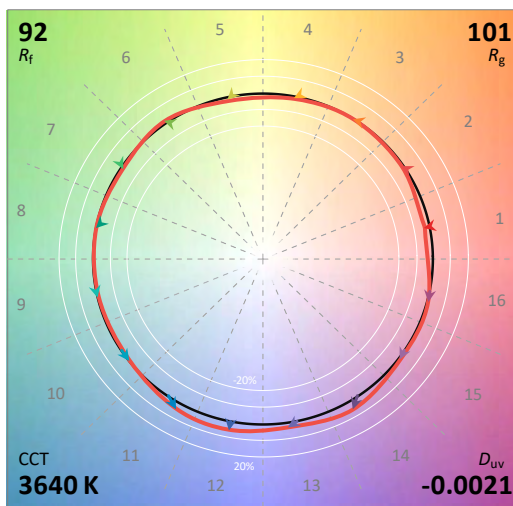
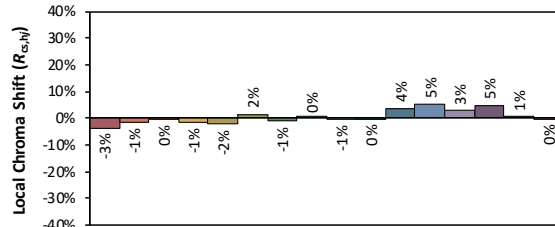
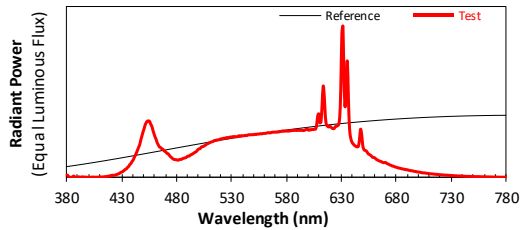
5.2 ANSI/IES TM-30-18 Color Rendition Report*ANSI/IES TM-30-18 Color Rendition Report**

Source:

Manufacturer:

Date: 2023/10/19

Model: LFTHY-1000-NL27-CL-I-2/4/6/10/15



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

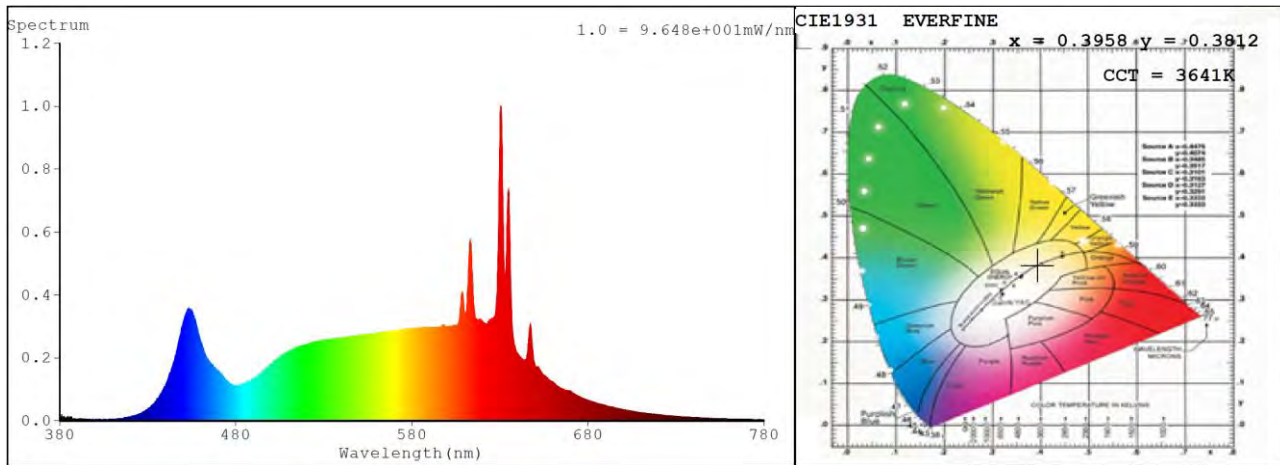
x 0.3958
 y 0.3811
 u' 0.2334
 v' 0.5058

CIE 13.3-1995
(CRI)

R_a 96
 R_g 79

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

5.3 Relative Spectral Power Distribution



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0175	414	0.0063	448	0.26	482	0.1132	516	0.2356
381	0.0113	415	0.0077	449	0.2847	483	0.1149	517	0.2364
382	0	416	0.0065	450	0.306	484	0.115	518	0.2369
383	0.0039	417	0.0101	451	0.3301	485	0.1194	519	0.2407
384	0.0026	418	0.0099	452	0.3446	486	0.1217	520	0.2427
385	0.0061	419	0.0113	453	0.3534	487	0.124	521	0.2433
386	0.0108	420	0.0118	454	0.3547	488	0.1255	522	0.2458
387	0.0043	421	0.016	455	0.353	489	0.1312	523	0.247
388	0.0037	422	0.0151	456	0.3352	490	0.1351	524	0.2461
389	0.0017	423	0.016	457	0.3226	491	0.1346	525	0.2511
390	0.0049	424	0.018	458	0.2982	492	0.1414	526	0.2501
391	0.0056	425	0.0199	459	0.2755	493	0.1442	527	0.2494
392	0.0029	426	0.0232	460	0.2553	494	0.1486	528	0.2544
393	0.0049	427	0.0252	461	0.2388	495	0.1528	529	0.2531
394	0.0057	428	0.0294	462	0.218	496	0.1575	530	0.2554
395	0.0052	429	0.0342	463	0.2044	497	0.1614	531	0.2567
396	0.0025	430	0.0366	464	0.1926	498	0.1668	532	0.2567
397	0.0049	431	0.0414	465	0.189	499	0.1763	533	0.2571
398	0.0024	432	0.0466	466	0.1817	500	0.1802	534	0.2557
399	0.0035	433	0.0532	467	0.1786	501	0.182	535	0.2571
400	0.0026	434	0.056	468	0.1699	502	0.1909	536	0.2613
401	0.0032	435	0.0657	469	0.1646	503	0.1941	537	0.2622
402	0.0034	436	0.0708	470	0.1597	504	0.1957	538	0.2592
403	0.0048	437	0.0826	471	0.1514	505	0.2002	539	0.263
404	0.0043	438	0.0888	472	0.1497	506	0.205	540	0.2619
405	0.0038	439	0.1013	473	0.1403	507	0.2101	541	0.2623
406	0.0036	440	0.1099	474	0.1321	508	0.2129	542	0.2649
407	0.004	441	0.1257	475	0.1263	509	0.2166	543	0.2634
408	0.0042	442	0.1399	476	0.1198	510	0.2198	544	0.2653
409	0.0044	443	0.155	477	0.1152	511	0.2235	545	0.2684
410	0.0059	444	0.1726	478	0.114	512	0.2249	546	0.2687
411	0.0049	445	0.1896	479	0.1124	513	0.2276	547	0.2677
412	0.0055	446	0.2068	480	0.1118	514	0.2328	548	0.2697
413	0.0056	447	0.2352	481	0.1096	515	0.2329	549	0.2689

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.2694	599	0.3005	648	0.2706	697	0.039	746	0.0088
551	0.2722	600	0.2965	649	0.2021	698	0.0376	747	0.0083
552	0.27	601	0.3004	650	0.1778	699	0.0365	748	0.0079
553	0.273	602	0.2993	651	0.1712	700	0.0355	749	0.0078
554	0.2727	603	0.3023	652	0.1687	701	0.0344	750	0.0084
555	0.2736	604	0.3012	653	0.1601	702	0.0332	751	0.007
556	0.2756	605	0.3035	654	0.15	703	0.0315	752	0.0072
557	0.2741	606	0.3037	655	0.1457	704	0.0306	753	0.0074
558	0.2761	607	0.3256	656	0.1411	705	0.0305	754	0.0071
559	0.2767	608	0.3848	657	0.1353	706	0.0293	755	0.0073
560	0.2772	609	0.3988	658	0.1276	707	0.0284	756	0.0066
561	0.2781	610	0.343	659	0.1268	708	0.0277	757	0.0066
562	0.28	611	0.3487	660	0.1238	709	0.0265	758	0.0062
563	0.2822	612	0.4526	661	0.1172	710	0.0251	759	0.0062
564	0.2799	613	0.5724	662	0.1125	711	0.0251	760	0.0059
565	0.2809	614	0.5058	663	0.1086	712	0.0244	761	0.0061
566	0.283	615	0.3802	664	0.1053	713	0.0237	762	0.0057
567	0.2849	616	0.3297	665	0.103	714	0.0226	763	0.0056
568	0.2841	617	0.3224	666	0.1004	715	0.0221	764	0.0057
569	0.2855	618	0.317	667	0.0963	716	0.0215	765	0.0052
570	0.285	619	0.3219	668	0.0943	717	0.021	766	0.0053
571	0.2849	620	0.3171	669	0.0955	718	0.0197	767	0.0048
572	0.2863	621	0.31	670	0.0948	719	0.0195	768	0.0049
573	0.287	622	0.3067	671	0.0888	720	0.0188	769	0.0044
574	0.2892	623	0.3079	672	0.0867	721	0.0185	770	0.0047
575	0.2895	624	0.3185	673	0.0828	722	0.0179	771	0.0045
576	0.2928	625	0.3213	674	0.0793	723	0.0171	772	0.0041
577	0.29	626	0.3251	675	0.0771	724	0.0166	773	0.0041
578	0.2921	627	0.3312	676	0.0733	725	0.0166	774	0.004
579	0.2918	628	0.3725	677	0.0722	726	0.0162	775	0.0036
580	0.2912	629	0.5486	678	0.0683	727	0.0156	776	0.0036
581	0.2921	630	0.8998	679	0.067	728	0.0147	777	0.0038
582	0.2914	631	0.9435	680	0.065	729	0.0145	778	0.0038
583	0.2939	632	0.5929	681	0.0619	730	0.014	779	0.0034
584	0.2937	633	0.4428	682	0.0611	731	0.0135	780	0.0034
585	0.2962	634	0.5963	683	0.0591	732	0.0133		
586	0.2951	635	0.7275	684	0.0574	733	0.0124		
587	0.2972	636	0.4833	685	0.0554	734	0.0126		
588	0.2956	637	0.3051	686	0.0546	735	0.0118		
589	0.2951	638	0.2506	687	0.0525	736	0.0113		
590	0.2976	639	0.2253	688	0.0511	737	0.0117		
591	0.2961	640	0.2139	689	0.0507	738	0.0111		
592	0.2958	641	0.2055	690	0.0491	739	0.011		
593	0.2962	642	0.1998	691	0.047	740	0.0104		
594	0.296	643	0.1952	692	0.0457	741	0.0099		
595	0.295	644	0.1928	693	0.0439	742	0.0094		
596	0.2964	645	0.1966	694	0.0437	743	0.0094		
597	0.3002	646	0.2361	695	0.0416	744	0.0089		
598	0.3056	647	0.3025	696	0.0403	745	0.0088		

6. Goniophotometer Test results for LFTHY-1000-NL27-CL-I-2/4/6/10/15

6.1 Test Data

Test Ambient Temperature	25.2°C	Test orientation	Downward
Operate time(Min.)	90	stabilization time(Min.)	30

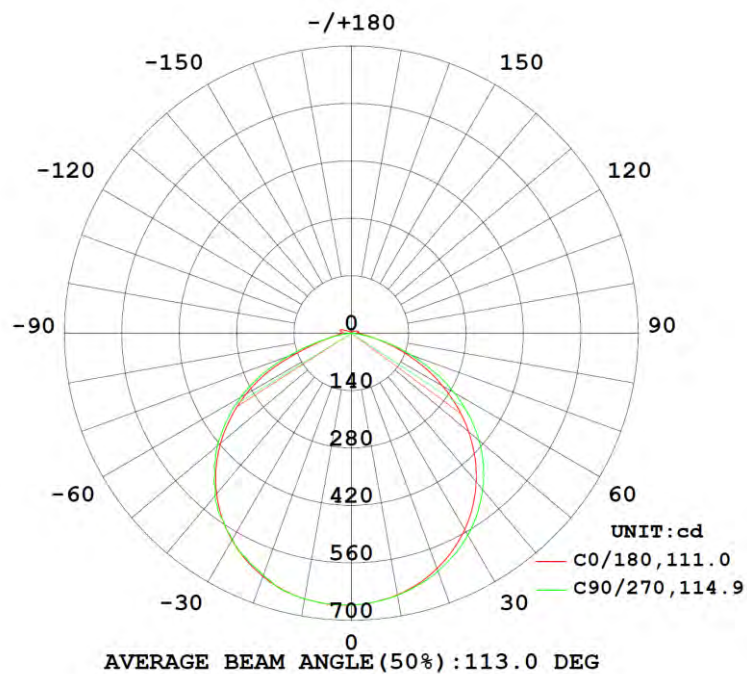
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
24.001	--	0.57526	1.0000	13.807

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	Imax (cd)	η up (%)	η down (%)
1925.67	139.47	664.2	3	97

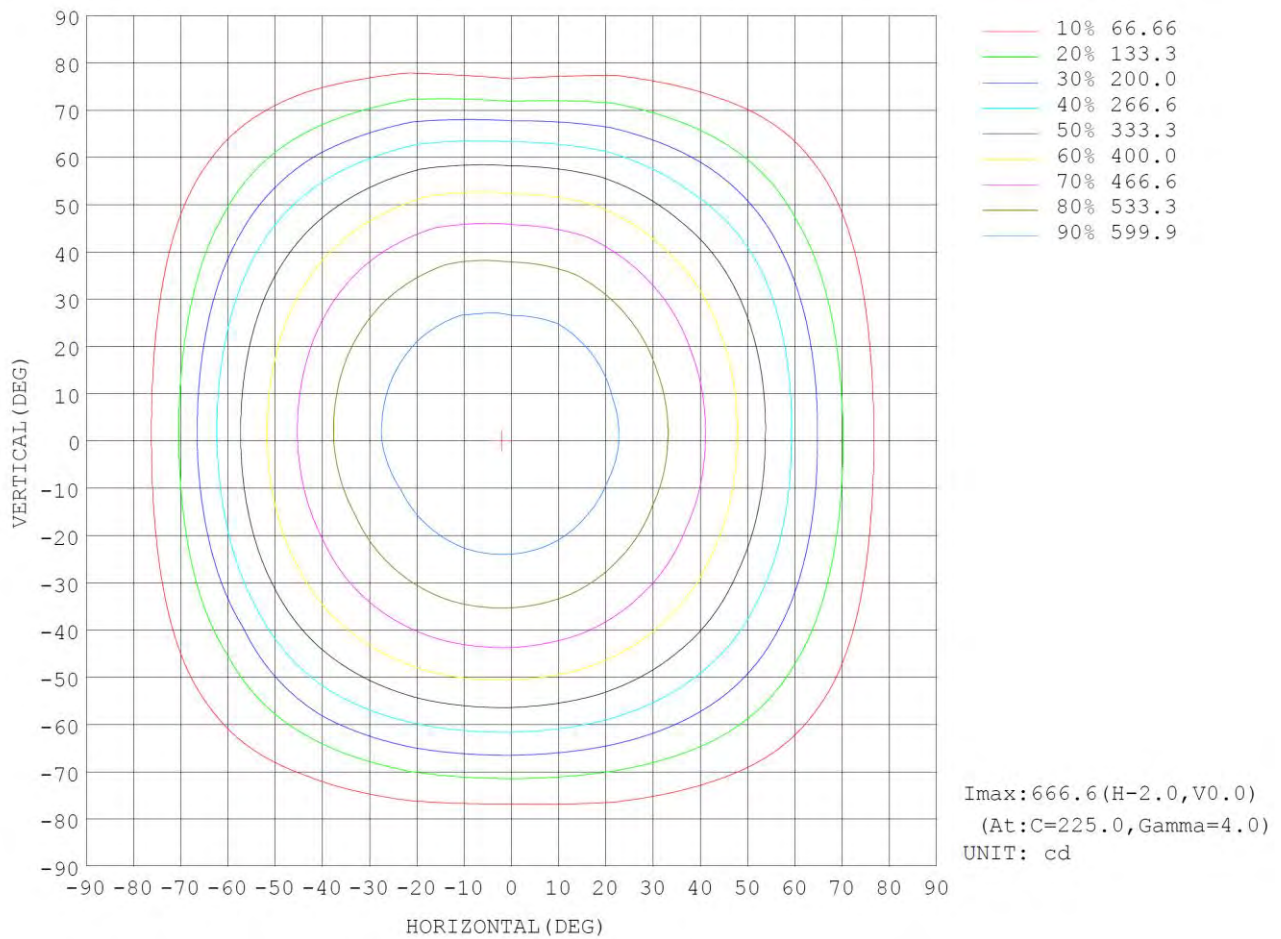
6.2 Luminous Intensity Distribution



6.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	647.7	646.8	648.9	652.5	657.7	660.0	657.7	653.0	0- 10	62.80	62.80	3.26, 3.26
20	611.0	611.1	618.0	623.2	631.2	638.0	628.5	622.9	10- 20	180.9	243.7	12.7, 12.7
30	553.2	556.4	568.6	573.7	582.7	593.2	581.4	571.2	20- 30	276.8	520.5	27, 27
40	473.9	480.7	498.6	503.9	511.5	526.2	518.3	497.7	30- 40	337.9	858.4	44.6, 44.6
50	374.0	383.9	407.1	410.1	416.6	435.8	426.8	401.6	40- 50	352.7	1211	62.9, 62.9
60	256.4	267.3	289.2	291.9	297.1	318.1	312.3	284.8	50- 60	314.2	1525	79.2, 79.2
70	135.0	144.2	152.9	138.7	139.3	171.3	164.2	154.1	60- 70	219.6	1745	90.6, 90.6
80	43.11	44.47	34.98	42.84	43.47	53.64	31.77	49.11	70- 80	95.93	1841	95.6, 95.6
90	13.86	14.26	0.7702	18.84	22.73	22.61	1.088	14.42	80- 90	27.51	1868	97, 97
100	18.62	16.67	0.1746	22.46	25.37	25.16	0.2750	16.88	90-100	15.52	1884	97.8, 97.8
110	16.02	14.77	0.2703	21.52	25.60	21.96	0.3111	16.68	100-110	16.82	1901	98.7, 98.7
120	10.58	7.865	0.3961	12.59	12.02	11.32	0.3482	8.798	110-120	11.53	1912	99.3, 99.3
130	8.573	6.677	0.5604	6.993	7.595	6.563	0.4775	7.433	120-130	6.150	1918	99.6, 99.6
140	7.371	4.070	0.6501	4.819	6.667	4.939	0.6861	4.229	130-140	3.776	1922	99.8, 99.8
150	4.370	1.992	0.6668	2.451	5.132	3.247	0.9076	1.531	140-150	2.147	1924	99.9, 99.9
160	1.739	0.8553	0.7733	1.245	2.454	1.785	1.044	1.142	150-160	0.9082	1925	100, 100
170	1.148	1.104	0.9974	1.032	1.233	1.222	1.106	1.165	160-170	0.3445	1926	100, 100
180	1.113	1.154	1.122	1.187	1.121	1.188	1.115	1.127	170-180	0.1087	1926	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

6.4 Isocandela Diagram



6.5 Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	663	663	663	663	663	663	663	663	663	663	663	663	663	663	663	663			
5	658	657	657	657	658	659	660	661	663	664	664	664	663	662	661	659			
10	648	646	647	648	649	651	653	654	658	659	660	660	658	656	653	650			
15	632	630	631	634	635	638	640	643	647	650	649	647	648	645	640	636			
20	611	609	611	615	618	621	623	625	631	635	638	632	628	630	623	616			
25	585	583	586	592	596	599	601	603	610	615	618	614	606	609	600	591			
30	553	551	556	564	569	572	574	575	583	589	593	591	581	582	571	561			
35	516	514	521	530	536	541	541	543	550	558	563	564	551	551	537	525			
40	474	472	481	492	499	503	504	504	511	521	526	529	518	515	498	484			
45	426	426	435	449	456	460	460	460	467	477	484	488	472	472	452	438			
50	374	373	384	399	407	412	410	411	417	427	436	441	427	423	402	387			
55	317	317	328	343	351	356	354	356	359	371	380	388	372	368	346	332			
60	256	258	267	282	289	293	292	289	297	309	318	328	312	308	285	275			
65	196	199	207	216	222	224	220	200	226	236	250	260	242	241	223	208			
70	135	135	144	151	153	152	139	127	139	148	171	186	164	172	154	136			
75	81.6	79.0	84.3	91.3	88.3	89.0	77.7	73.7	77.1	83.8	99.1	112	86.9	105	90.7	82.0			
80	43.1	43.1	44.5	45.0	35.0	42.8	42.8	45.5	43.5	47.7	53.6	55.2	31.8	50.7	49.1	49.3			
85	21.4	22.5	23.6	18.9	8.47	18.5	26.9	31.5	29.7	32.0	31.3	24.5	7.40	21.7	27.2	26.7			
90	13.9	14.1	14.3	10.2	0.77	11.0	18.8	20.9	22.7	24.5	22.6	12.9	1.09	10.7	14.4	14.3			
95	13.8	14.2	14.5	10.0	0.14	12.9	17.8	18.7	21.8	21.8	20.5	13.2	0.25	10.9	15.3	14.1			
100	18.6	17.7	16.7	9.88	0.17	12.8	22.5	21.8	25.4	24.8	25.2	13.4	0.28	10.8	16.9	18.2			
105	17.4	17.8	16.6	7.89	0.24	11.2	23.1	25.1	29.4	29.0	26.2	10.3	0.29	8.88	17.4	17.9			
110	16.0	16.7	14.8	6.03	0.27	8.92	21.5	24.9	25.6	27.0	22.0	8.19	0.31	6.46	16.7	18.0			
115	13.2	15.0	9.71	4.66	0.32	6.59	16.9	23.0	17.7	20.2	15.2	6.75	0.32	4.84	11.4	18.5			
120	10.6	10.7	7.87	3.42	0.40	4.41	12.6	18.6	12.0	14.0	11.3	4.57	0.35	3.43	8.80	14.7			
125	8.98	8.83	7.49	2.51	0.49	3.18	8.49	14.6	8.95	10.3	7.89	3.20	0.40	2.39	8.44	10.9			
130	8.57	8.27	6.68	1.83	0.56	2.34	6.99	10.2	7.60	8.13	6.56	2.27	0.48	1.38	7.43	9.83			
135	8.20	7.88	5.40	1.30	0.61	1.66	5.90	8.36	7.00	7.13	5.70	1.65	0.58	1.15	5.80	9.32			
140	7.37	6.85	4.07	1.07	0.65	1.28	4.82	7.24	6.67	6.57	4.94	1.34	0.69	0.88	4.23	7.85			
145	5.98	5.38	2.90	0.88	0.63	1.02	3.68	6.08	6.10	5.89	4.09	1.24	0.80	0.86	2.68	5.90			
150	4.37	3.79	1.99	0.88	0.67	0.90	2.45	4.80	5.13	4.98	3.25	1.25	0.91	0.94	1.53	3.88			
155	2.85	2.44	1.35	0.74	0.72	0.84	1.71	3.15	3.63	3.61	2.39	1.26	1.00	1.01	1.18	2.29			
160	1.74	1.52	0.86	0.80	0.77	0.85	1.25	2.02	2.45	2.38	1.78	1.22	1.04	1.05	1.14	1.44			
165	1.18	0.97	0.90	1.01	0.85	0.88	1.02	1.36	1.61	1.65	1.42	1.14	1.07	1.08	1.16	1.25			
170	1.15	1.00	1.10	1.03	1.00	0.98	1.03	1.08	1.23	1.26	1.22	1.15	1.11	1.12	1.17	1.26			
175	1.16	1.18	1.12	1.09	1.07	1.07	1.11	1.19	1.21	1.21	1.22	1.15	1.12	1.13	1.16	1.22			
180	1.11	1.19	1.15	1.12	1.12	1.14	1.19	1.23	1.12	1.12	1.19	1.14	1.12	1.11	1.13	1.17			

7. Photo of sample

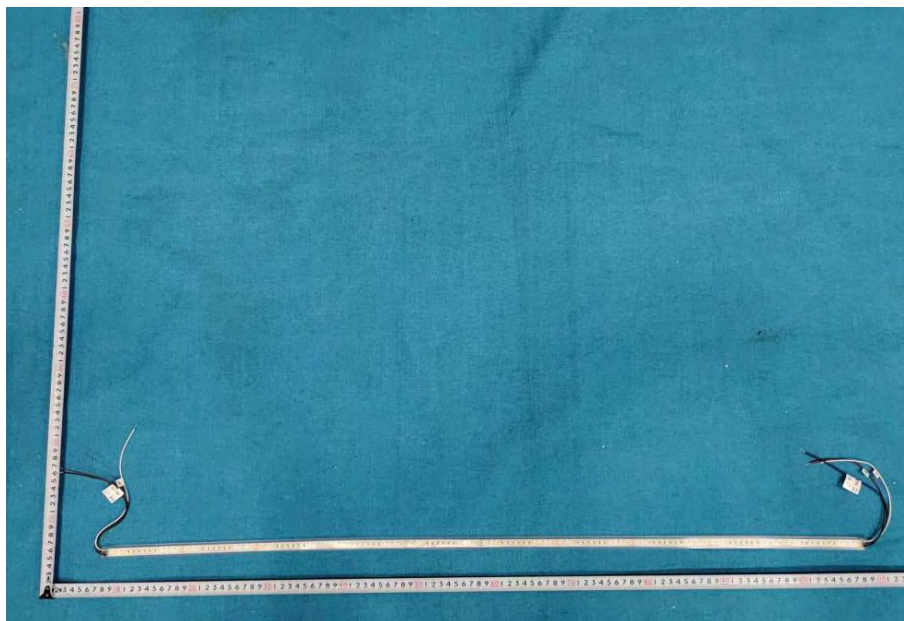


Figure 1 Overview

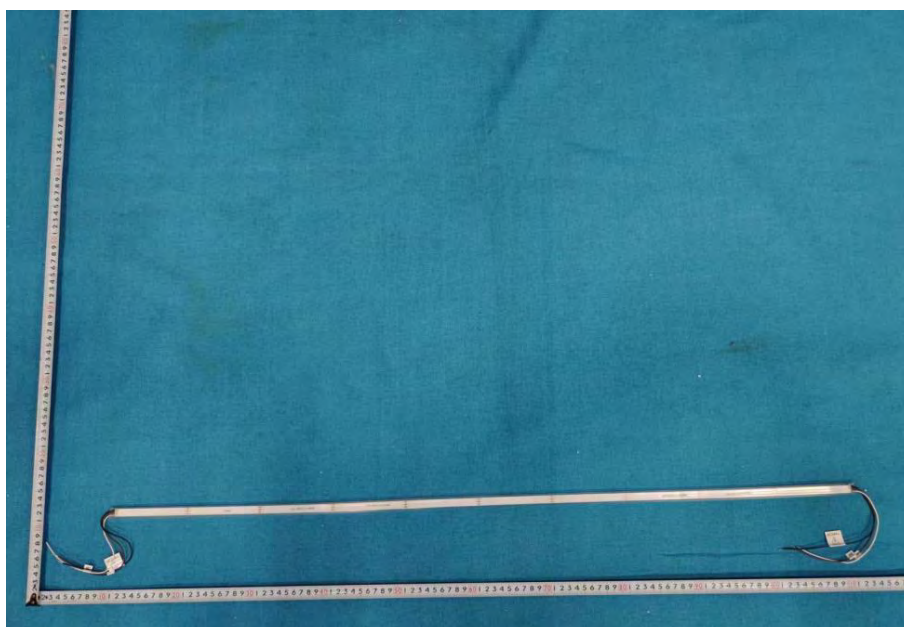


Figure 2 Overview

---End of Report---