



Test Report Of ANSI/IES LM-79-19

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

Report Number..... : N02A23090145L00201

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

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

Test Model..... : LTHY-1000-NL27-DF-I-10

LTHY-1000-NL27-DF-I-21

LTHY-1000-NL27-DF-I-31

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. 09, 2023

Date of test : Sep. 09, 2023 – Sep. 15, 2023

Date of report..... : Sep. 15, 2023

Tested by:

Jarvis Zhang

Jarvis Zhang/ Test Engineer

Checked by:

Sandy Chen

Sandy Chen/ Project Engineer

Approved by:

Jessie Li

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.

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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: LTHY-1000-NL27-DF-I-10
 LTHY-1000-NL27-DF-I-21
 LTHY-1000-NL27-DF-I-31

Manufacturer:

Product Type: SHIN THOF

Rated Voltage/Frequency: DC24V

Rated Power: 10W, 21W, 31W

Rated luminous flux: /

Nominal CCT: 4000K

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	2023/09/17
Digital Power Meter	MD-E001	PF2010	2023/09/17
AC Testing Power Source	MD-E002	DPS1060	2023/09/17
Total Spectral Radiant Flux Standard Lamp	MD-E007	D908S	2023/10/13
Integrating Sphere System	MD-E029	2M	2023/09/17
High Accuracy Array Spectroradio Meter	MD-E011	HAAS-3000	2023/09/17
Digital Power Meter	MD-E008	PF310	2023/09/17
AC Testing Power Source	MD-E010	DPS1010	2023/09/17
Standard Lamp	MD-E036	D204	2023/10/13

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 LTHY-1000-NL27-DF-I-10

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	0.3711	23.998	8.9057	1169.2	0.397	0.3833	0.2333	0.5069	3630	96.1
1	00h00m10s	0.3712	23.998	8.9081	1169.3	0.3969	0.3829	0.2334	0.5067	3628	96.1
2	00h00m20s	0.3713	23.998	8.9105	1169.5	0.3968	0.3831	0.2333	0.5068	3632	96
3	00h00m30s	0.3714	23.998	8.9129	1168.2	0.3969	0.383	0.2334	0.5067	3628	96.1
4	00h00m40s	0.3715	23.998	8.9153	1169.1	0.3969	0.3831	0.2334	0.5068	3629	96.1
5	00h00m50s	0.3716	23.998	8.9177	1169.3	0.3969	0.3828	0.2334	0.5067	3628	96.1
6	00h01m00s	0.3717	23.998	8.9201	1169.7	0.3969	0.3831	0.2333	0.5068	3630	96.1
7	00h01m10s	0.3718	23.998	8.9225	1170.8	0.3969	0.3832	0.2333	0.5068	3631	96.1
8	00h01m20s	0.3718	23.998	8.9225	1170.2	0.3968	0.383	0.2333	0.5068	3631	96.1
9	00h01m30s	0.3719	23.998	8.9249	1171	0.397	0.3831	0.2334	0.5068	3627	96.1
10	00h01m40s	0.372	23.998	8.9273	1170.1	0.3967	0.3829	0.2333	0.5067	3632	96.1
11	00h01m50s	0.3721	23.998	8.9297	1170	0.3969	0.3828	0.2334	0.5067	3629	96.2
12	00h02m00s	0.3721	23.998	8.9297	1171.2	0.3971	0.3831	0.2335	0.5068	3625	96.1
13	00h02m10s	0.3722	23.998	8.9321	1170.7	0.3968	0.3828	0.2334	0.5066	3630	96.1
14	00h02m20s	0.3723	23.998	8.9345	1170.5	0.3969	0.3828	0.2335	0.5066	3628	96.1
15	00h02m30s	0.3723	23.998	8.9345	1170.3	0.3968	0.3826	0.2335	0.5066	3629	96.1
16	00h02m40s	0.3724	23.998	8.9369	1171.2	0.3968	0.3827	0.2334	0.5066	3629	96.2
17	00h02m50s	0.3725	23.998	8.9393	1170.5	0.3968	0.3827	0.2334	0.5066	3629	96.2
18	00h03m00s	0.3725	23.998	8.9393	1171.3	0.3969	0.383	0.2334	0.5067	3629	96.1
19	00h03m10s	0.3726	23.998	8.9417	1171.8	0.3968	0.3827	0.2334	0.5066	3629	96.1
20	00h03m20s	0.3726	23.998	8.9417	1170.5	0.3969	0.3827	0.2335	0.5066	3627	96.2
21	00h03m30s	0.3727	23.998	8.9441	1171.8	0.397	0.3828	0.2335	0.5067	3626	96.2

22	00h03m40s	0.3728	23.998	8.9465	1171.6	0.3968	0.3827	0.2335	0.5066	3628	96.2
23	00h03m50s	0.3728	23.998	8.9465	1171.2	0.3968	0.3826	0.2335	0.5066	3627	96.1
24	00h04m00s	0.3729	23.998	8.9489	1171.6	0.3969	0.3825	0.2336	0.5065	3625	96.2
25	00h04m10s	0.3729	23.998	8.9489	1172.2	0.3968	0.3827	0.2335	0.5066	3628	96.2
26	00h04m20s	0.373	23.998	8.9513	1172.2	0.397	0.3828	0.2336	0.5067	3624	96.2
27	00h04m30s	0.373	23.998	8.9513	1171.6	0.397	0.3828	0.2335	0.5067	3625	96.2
28	00h04m40s	0.3731	23.998	8.9537	1172.3	0.3968	0.3827	0.2334	0.5066	3629	96.2
29	00h04m50s	0.3731	23.998	8.9537	1172	0.3969	0.3826	0.2336	0.5066	3626	96.2
30	00h05m00s	0.3732	23.998	8.9561	1172.2	0.3969	0.3826	0.2336	0.5066	3625	96.2
31	00h05m10s	0.3732	23.998	8.9561	1171.3	0.397	0.3826	0.2336	0.5066	3623	96.2
32	00h05m20s	0.3732	23.998	8.9561	1171.6	0.3969	0.3825	0.2336	0.5065	3626	96.2
33	00h05m30s	0.3733	23.998	8.9585	1172.1	0.397	0.3826	0.2336	0.5066	3624	96.2
34	00h05m40s	0.3733	23.998	8.9585	1172	0.3971	0.3827	0.2336	0.5066	3623	96.2
35	00h05m50s	0.3734	23.998	8.9609	1171.6	0.397	0.3826	0.2336	0.5066	3624	96.2
36	00h06m00s	0.3734	23.998	8.9609	1171.9	0.397	0.3827	0.2336	0.5066	3624	96.2
37	00h06m10s	0.3734	23.998	8.9609	1172.6	0.3971	0.3826	0.2337	0.5066	3622	96.2
38	00h06m20s	0.3735	23.998	8.9633	1172.1	0.3969	0.3824	0.2336	0.5065	3625	96.2
39	00h06m30s	0.3735	23.998	8.9633	1172	0.397	0.3825	0.2336	0.5065	3623	96.2
40	00h06m40s	0.3735	23.998	8.9633	1172.3	0.397	0.3826	0.2336	0.5066	3623	96.3
41	00h06m50s	0.3736	23.998	8.9657	1172.1	0.397	0.3826	0.2336	0.5066	3623	96.2
42	00h07m00s	0.3736	23.998	8.9657	1172.7	0.3971	0.3827	0.2336	0.5066	3622	96.2
43	00h07m10s	0.3736	23.998	8.9657	1172.4	0.3971	0.3827	0.2337	0.5066	3622	96.2
44	00h07m20s	0.3737	23.998	8.9681	1172.8	0.397	0.3824	0.2337	0.5065	3622	96.2
45	00h07m30s	0.3737	23.998	8.9681	1172.4	0.3969	0.3826	0.2335	0.5066	3626	96.2
46	00h07m40s	0.3737	23.998	8.9681	1172.3	0.3971	0.3826	0.2337	0.5066	3622	96.2
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48	00h08m00s	0.3738	23.998	8.9705	1173.4	0.397	0.3827	0.2336	0.5067	3625	96.2
49	00h08m10s	0.3738	23.998	8.9705	1172.5	0.397	0.3827	0.2336	0.5066	3624	96.2
50	00h08m20s	0.3738	23.998	8.9705	1172.8	0.397	0.3826	0.2336	0.5066	3623	96.2
51	00h08m30s	0.3739	23.998	8.9729	1172.9	0.3971	0.3825	0.2337	0.5066	3621	96.2
52	00h08m40s	0.3739	23.998	8.9729	1173.1	0.3971	0.3827	0.2337	0.5066	3621	96.2

53	00h08m50s	0.3739	23.998	8.9729	1172.9	0.397	0.3826	0.2336	0.5066	3623	96.2
54	00h09m00s	0.3739	23.998	8.9729	1173.2	0.3971	0.3825	0.2337	0.5066	3621	96.2
55	00h09m10s	0.374	23.998	8.9753	1173.4	0.3972	0.3826	0.2337	0.5066	3620	96.2
56	00h09m20s	0.374	23.998	8.9753	1173.6	0.397	0.3827	0.2336	0.5066	3623	96.2
57	00h09m30s	0.374	23.998	8.9753	1173.3	0.3968	0.3824	0.2336	0.5065	3626	96.2
58	00h09m40s	0.374	23.998	8.9753	1172.8	0.397	0.3826	0.2336	0.5066	3623	96.2
59	00h09m50s	0.3741	23.998	8.9777	1173.6	0.3969	0.3822	0.2337	0.5064	3622	96.2
60	00h10m00s	0.3741	23.998	8.9777	1173.3	0.3971	0.3824	0.2337	0.5065	3620	96.2
61	00h10m10s	0.3741	23.998	8.9777	1172.7	0.397	0.3822	0.2338	0.5064	3621	96.3
62	00h10m20s	0.3741	23.998	8.9777	1173.2	0.3969	0.3824	0.2336	0.5065	3624	96.3
63	00h10m30s	0.3741	23.998	8.9777	1173.1	0.397	0.3825	0.2337	0.5065	3622	96.2
64	00h10m40s	0.3741	23.998	8.9777	1172.9	0.3968	0.3823	0.2336	0.5064	3625	96.3
65	00h10m50s	0.3742	23.998	8.9801	1172.5	0.3969	0.3822	0.2337	0.5064	3623	96.3
66	00h11m00s	0.3742	23.998	8.9801	1173.2	0.397	0.3824	0.2337	0.5065	3621	96.3
67	00h11m10s	0.3742	23.998	8.9801	1174.2	0.3968	0.3823	0.2336	0.5065	3626	96.2
68	00h11m20s	0.3742	23.998	8.9801	1173.2	0.3969	0.3823	0.2337	0.5065	3623	96.2
69	00h11m30s	0.3742	23.998	8.9801	1173.7	0.3969	0.3826	0.2336	0.5066	3626	96.2
70	00h11m40s	0.3742	23.998	8.9801	1172.9	0.3969	0.3822	0.2337	0.5064	3621	96.3
71	00h11m50s	0.3743	23.998	8.9825	1173	0.397	0.3822	0.2338	0.5064	3621	96.3
72	00h12m00s	0.3743	23.998	8.9825	1173.4	0.397	0.3825	0.2337	0.5065	3623	96.2
73	00h12m10s	0.3743	23.998	8.9825	1173.6	0.397	0.3824	0.2337	0.5065	3621	96.2
74	00h12m20s	0.3743	23.998	8.9825	1173.7	0.397	0.3824	0.2337	0.5065	3622	96.3
75	00h12m30s	0.3743	23.998	8.9825	1173.9	0.3969	0.3824	0.2336	0.5065	3624	96.2
76	00h12m40s	0.3743	23.998	8.9825	1173	0.397	0.3823	0.2337	0.5065	3622	96.2
77	00h12m50s	0.3743	23.998	8.9825	1173.4	0.3971	0.3824	0.2338	0.5065	3619	96.3
78	00h13m00s	0.3744	23.998	8.9849	1173.9	0.397	0.3825	0.2337	0.5065	3621	96.3
79	00h13m10s	0.3744	23.998	8.9849	1173.1	0.397	0.3822	0.2338	0.5064	3620	96.2
80	00h13m20s	0.3744	23.998	8.9849	1173.5	0.397	0.3824	0.2337	0.5065	3622	96.3
81	00h13m30s	0.3744	23.998	8.9849	1174	0.3969	0.3824	0.2336	0.5065	3625	96.2
82	00h13m40s	0.3744	23.998	8.9849	1173.1	0.397	0.3824	0.2337	0.5065	3621	96.3
83	00h13m50s	0.3744	23.998	8.9849	1173.7	0.397	0.3824	0.2337	0.5065	3622	96.3

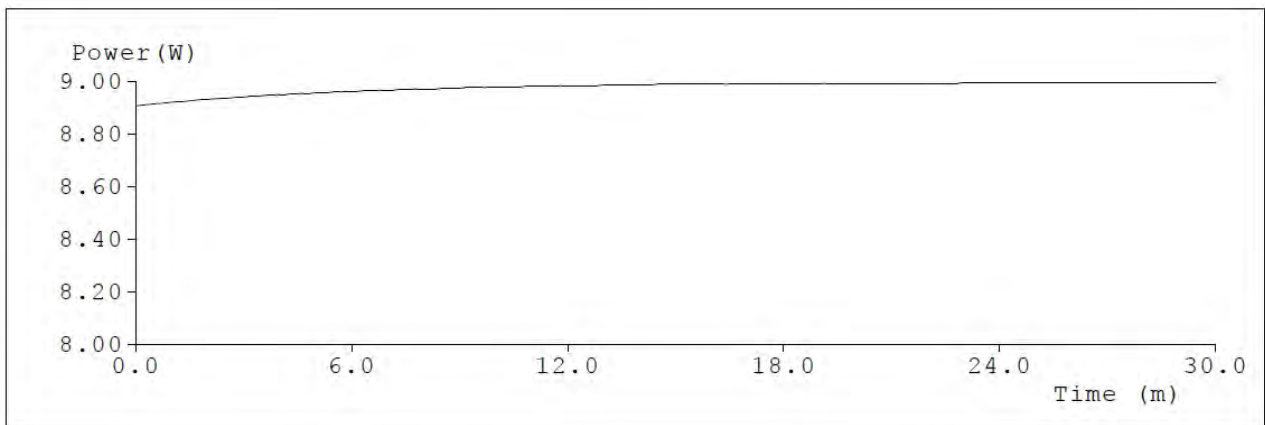
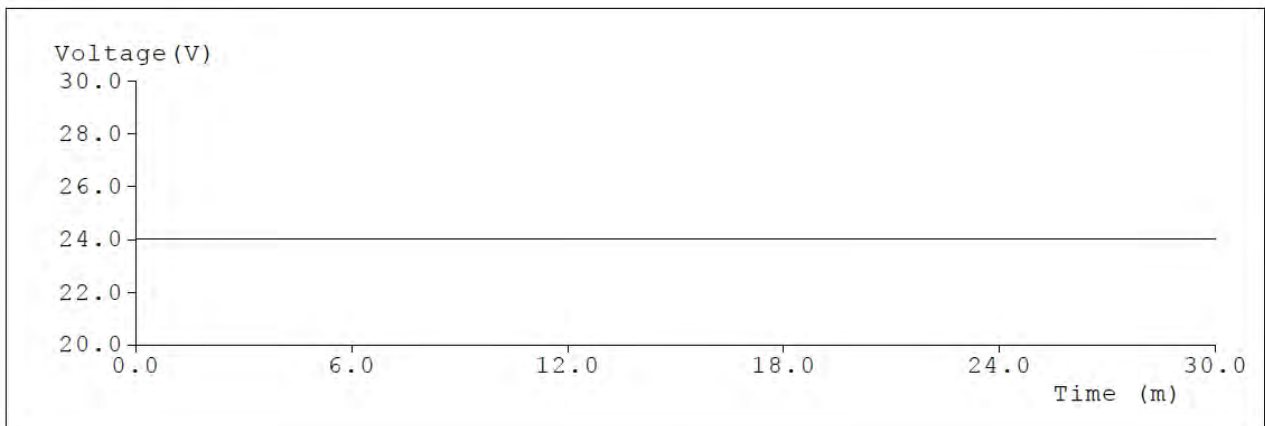
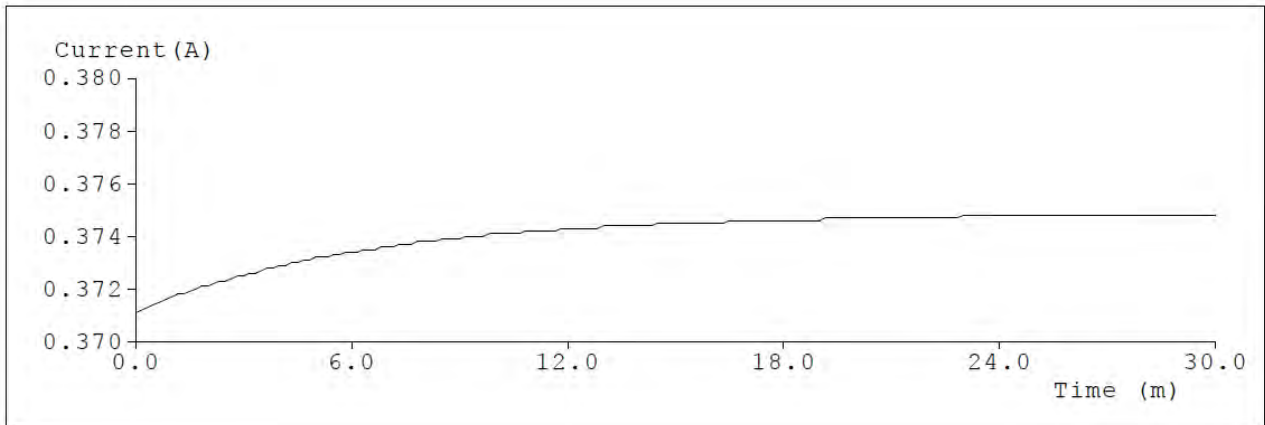
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85	00h14m10s	0.3744	23.998	8.9849	1173.9	0.3969	0.3824	0.2337	0.5065	3623	96.2
86	00h14m20s	0.3744	23.998	8.9849	1174	0.397	0.3824	0.2337	0.5065	3622	96.2
87	00h14m30s	0.3745	23.998	8.9873	1172.9	0.3968	0.3822	0.2337	0.5064	3624	96.3
88	00h14m40s	0.3745	23.998	8.9873	1173.2	0.397	0.3823	0.2337	0.5065	3621	96.2
89	00h14m50s	0.3745	23.998	8.9873	1173.6	0.3971	0.3824	0.2338	0.5065	3619	96.2
90	00h15m00s	0.3745	23.998	8.9873	1174.9	0.3971	0.3826	0.2337	0.5066	3620	96.2
91	00h15m10s	0.3745	23.998	8.9873	1173.5	0.3971	0.3825	0.2337	0.5066	3620	96.3
92	00h15m20s	0.3745	23.998	8.9873	1173.6	0.3969	0.3824	0.2337	0.5065	3623	96.2
93	00h15m30s	0.3745	23.998	8.9873	1173.9	0.397	0.3824	0.2337	0.5065	3621	96.2
94	00h15m40s	0.3745	23.998	8.9873	1172.9	0.3971	0.3823	0.2338	0.5065	3619	96.3
95	00h15m50s	0.3745	23.998	8.9873	1173.7	0.3971	0.3825	0.2337	0.5066	3621	96.2
96	00h16m00s	0.3745	23.998	8.9873	1174	0.3971	0.3824	0.2338	0.5065	3619	96.3
97	00h16m10s	0.3745	23.998	8.9873	1173.1	0.397	0.3822	0.2338	0.5064	3621	96.3
98	00h16m20s	0.3745	23.998	8.9873	1173.8	0.397	0.3825	0.2337	0.5065	3623	96.3
99	00h16m30s	0.3746	23.998	8.9897	1173.8	0.397	0.3823	0.2338	0.5065	3620	96.3
100	00h16m40s	0.3746	23.998	8.9897	1173.3	0.397	0.3823	0.2337	0.5064	3621	96.3
101	00h16m50s	0.3746	23.998	8.9897	1173	0.397	0.3823	0.2337	0.5065	3622	96.2
102	00h17m00s	0.3746	23.998	8.9897	1173.8	0.397	0.3824	0.2337	0.5065	3621	96.2
103	00h17m10s	0.3746	23.998	8.9897	1173.7	0.397	0.3822	0.2337	0.5064	3621	96.3
104	00h17m20s	0.3746	23.998	8.9897	1172.6	0.3967	0.382	0.2337	0.5063	3625	96.3
105	00h17m30s	0.3746	23.998	8.9897	1173.1	0.397	0.3823	0.2337	0.5065	3621	96.3
106	00h17m40s	0.3746	23.998	8.9897	1173.9	0.3968	0.3823	0.2336	0.5064	3625	96.3
107	00h17m50s	0.3746	23.998	8.9897	1173.9	0.397	0.3823	0.2338	0.5064	3620	96.2
108	00h18m00s	0.3746	23.998	8.9897	1174.2	0.397	0.3823	0.2337	0.5065	3621	96.3
109	00h18m10s	0.3746	23.998	8.9897	1173.2	0.3969	0.3821	0.2338	0.5064	3621	96.3
110	00h18m20s	0.3746	23.998	8.9897	1174.2	0.397	0.3823	0.2337	0.5065	3621	96.3
111	00h18m30s	0.3746	23.998	8.9897	1173.8	0.3969	0.3823	0.2337	0.5065	3623	96.3
112	00h18m40s	0.3746	23.998	8.9897	1173.5	0.3972	0.3825	0.2338	0.5066	3619	96.3
113	00h18m50s	0.3746	23.998	8.9897	1173.7	0.3969	0.3822	0.2337	0.5064	3623	96.2
114	00h19m00s	0.3746	23.998	8.9897	1173.9	0.3969	0.3822	0.2337	0.5064	3623	96.3

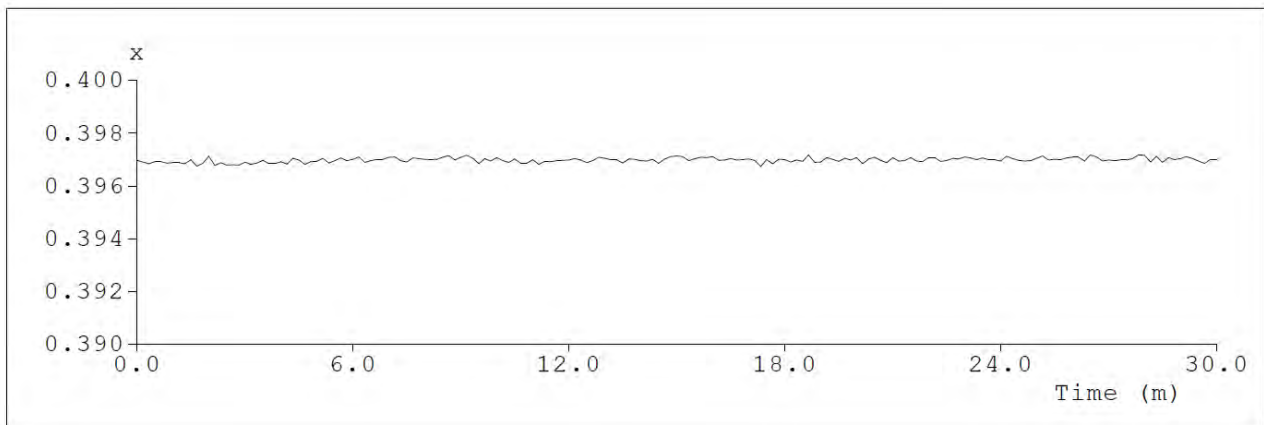
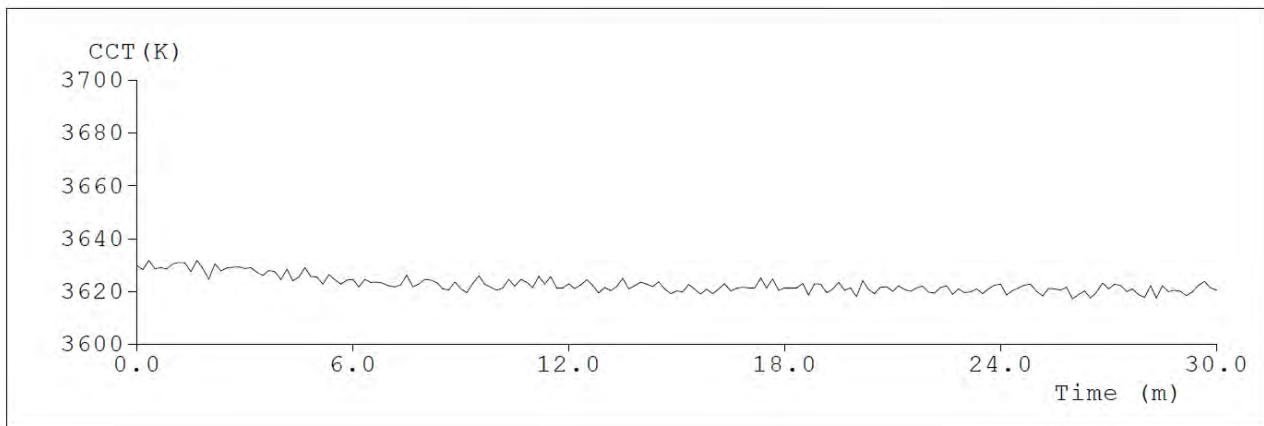
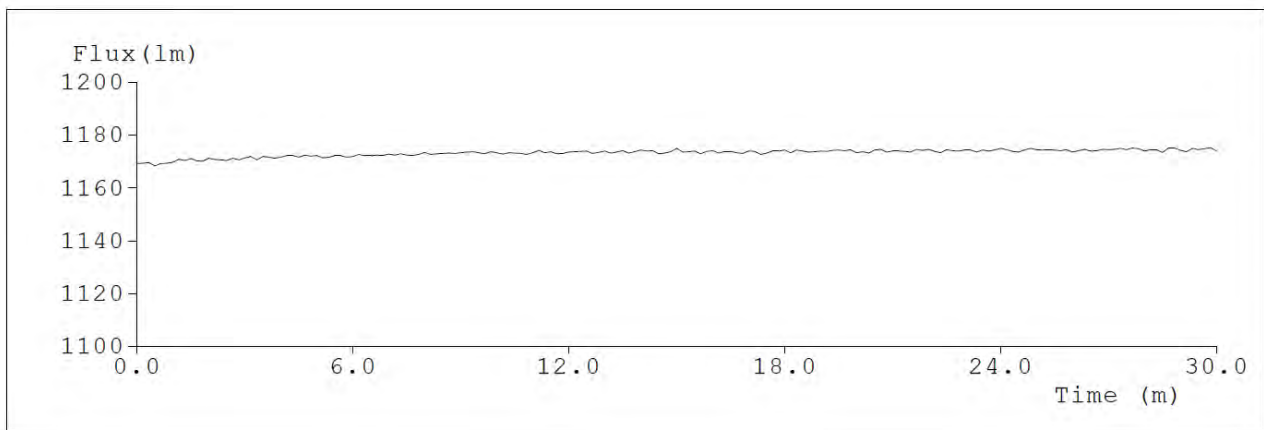
115	00h19m10s	0.3747	23.998	8.9921	1173.7	0.3971	0.3823	0.2338	0.5065	3620	96.3
116	00h19m20s	0.3747	23.998	8.9921	1174.2	0.397	0.3823	0.2338	0.5065	3621	96.2
117	00h19m30s	0.3747	23.998	8.9921	1174.2	0.3969	0.3824	0.2337	0.5065	3623	96.3
118	00h19m40s	0.3747	23.998	8.9921	1174	0.397	0.3824	0.2337	0.5065	3620	96.3
119	00h19m50s	0.3747	23.998	8.9921	1174.4	0.397	0.3823	0.2337	0.5065	3621	96.3
120	00h20m00s	0.3747	23.998	8.9921	1173.3	0.3971	0.3821	0.2339	0.5064	3618	96.3
121	00h20m10s	0.3747	23.998	8.9921	1173.6	0.3968	0.3822	0.2337	0.5064	3624	96.2
122	00h20m20s	0.3747	23.998	8.9921	1173.2	0.397	0.3823	0.2338	0.5065	3621	96.3
123	00h20m30s	0.3747	23.998	8.9921	1174.3	0.3971	0.3823	0.2338	0.5065	3619	96.3
124	00h20m40s	0.3747	23.998	8.9921	1174.6	0.397	0.3823	0.2337	0.5064	3622	96.3
125	00h20m50s	0.3747	23.998	8.9921	1173.5	0.3969	0.382	0.2338	0.5063	3622	96.3
126	00h21m00s	0.3747	23.998	8.9921	1173.9	0.3971	0.3824	0.2338	0.5065	3620	96.3
127	00h21m10s	0.3747	23.998	8.9921	1173.9	0.3969	0.3823	0.2337	0.5064	3622	96.3
128	00h21m20s	0.3747	23.998	8.9921	1173.7	0.397	0.3821	0.2338	0.5064	3621	96.3
129	00h21m30s	0.3747	23.998	8.9921	1173.6	0.3971	0.3824	0.2338	0.5065	3620	96.2
130	00h21m40s	0.3747	23.998	8.9921	1174.5	0.3969	0.3822	0.2338	0.5064	3621	96.2
131	00h21m50s	0.3747	23.998	8.9921	1174.1	0.3969	0.3822	0.2337	0.5064	3622	96.3
132	00h22m00s	0.3747	23.998	8.9921	1174.5	0.3971	0.3824	0.2338	0.5065	3620	96.2
133	00h22m10s	0.3747	23.998	8.9921	1173.8	0.3971	0.3823	0.2338	0.5065	3619	96.3
134	00h22m20s	0.3747	23.998	8.9921	1173.3	0.3969	0.3822	0.2338	0.5064	3621	96.3
135	00h22m30s	0.3747	23.998	8.9921	1174.4	0.397	0.3823	0.2337	0.5065	3622	96.3
136	00h22m40s	0.3747	23.998	8.9921	1174	0.397	0.3822	0.2338	0.5064	3619	96.3
137	00h22m50s	0.3747	23.998	8.9921	1173.8	0.397	0.3823	0.2337	0.5065	3621	96.2
138	00h23m00s	0.3748	23.998	8.9944	1174.3	0.3971	0.3824	0.2338	0.5065	3620	96.3
139	00h23m10s	0.3748	23.998	8.9944	1174.3	0.397	0.3823	0.2338	0.5065	3620	96.2
140	00h23m20s	0.3748	23.998	8.9944	1173.4	0.397	0.3823	0.2338	0.5064	3621	96.3
141	00h23m30s	0.3748	23.998	8.9944	1174.2	0.3971	0.3822	0.2338	0.5064	3619	96.3
142	00h23m40s	0.3748	23.998	8.9944	1173.8	0.397	0.3823	0.2338	0.5064	3621	96.3
143	00h23m50s	0.3748	23.998	8.9944	1174.3	0.397	0.3824	0.2337	0.5065	3622	96.3
144	00h24m00s	0.3748	23.998	8.9944	1175	0.3969	0.3824	0.2337	0.5065	3623	96.3
145	00h24m10s	0.3748	23.998	8.9944	1174.4	0.3971	0.3824	0.2338	0.5065	3619	96.2

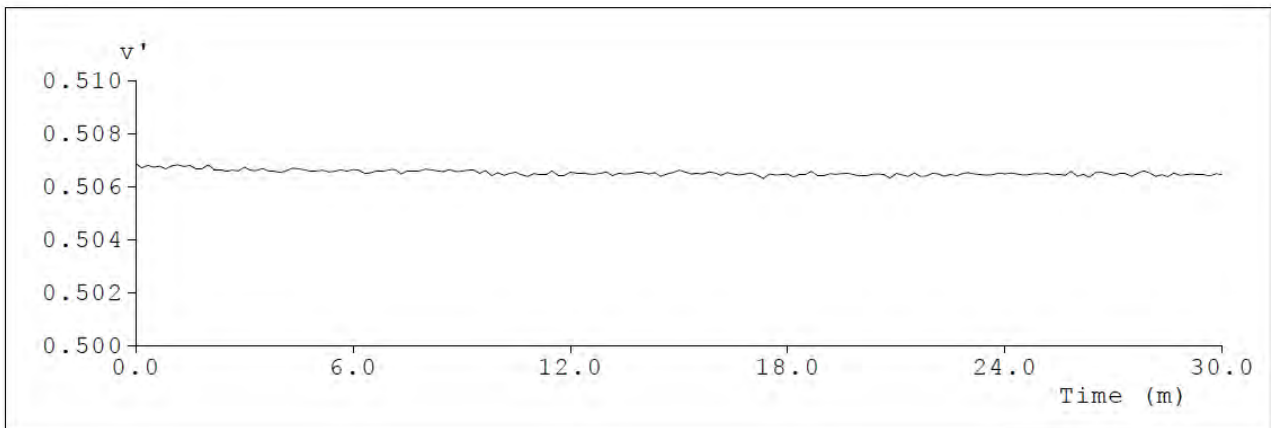
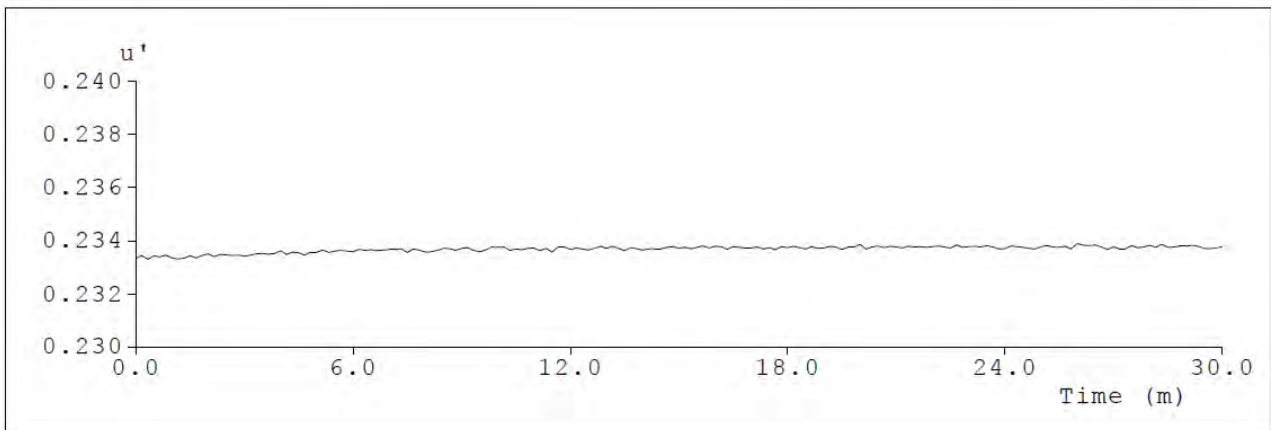
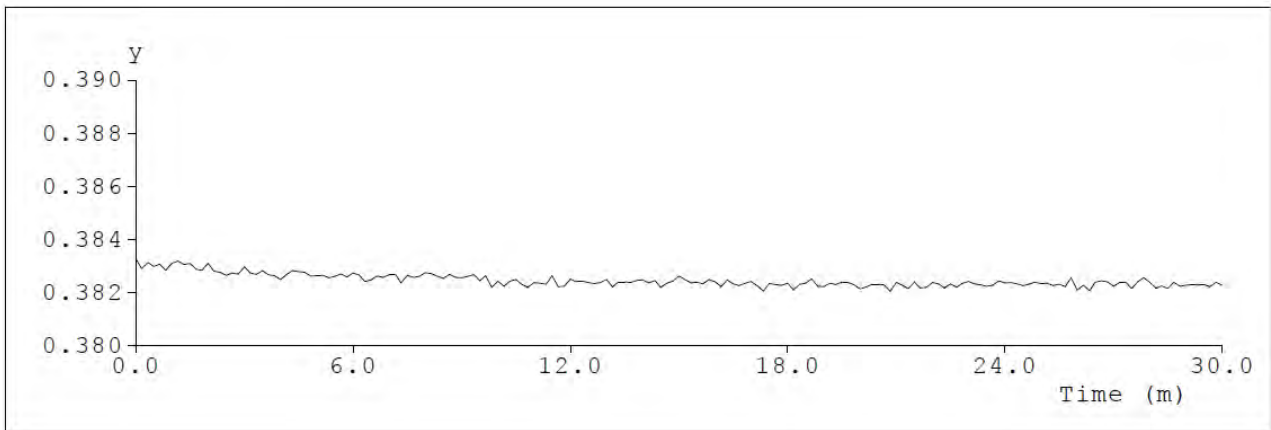
146	00h24m20s	0.3748	23.998	8.9944	1173.8	0.397	0.3823	0.2338	0.5065	3620	96.3
147	00h24m30s	0.3748	23.998	8.9944	1173.5	0.397	0.3823	0.2337	0.5064	3621	96.3
148	00h24m40s	0.3748	23.998	8.9944	1174.3	0.3969	0.3823	0.2337	0.5065	3622	96.3
149	00h24m50s	0.3748	23.998	8.9944	1175	0.3969	0.3824	0.2337	0.5065	3623	96.2
150	00h25m00s	0.3748	23.998	8.9944	1174.4	0.397	0.3823	0.2338	0.5065	3620	96.3
151	00h25m10s	0.3748	23.998	8.9944	1174.2	0.3971	0.3823	0.2338	0.5065	3618	96.3
152	00h25m20s	0.3748	23.998	8.9944	1174.5	0.397	0.3823	0.2338	0.5064	3621	96.3
153	00h25m30s	0.3748	23.998	8.9944	1174.3	0.397	0.3823	0.2337	0.5065	3621	96.3
154	00h25m40s	0.3748	23.998	8.9944	1174.1	0.397	0.3822	0.2338	0.5064	3620	96.3
155	00h25m50s	0.3748	23.998	8.9944	1174.4	0.3971	0.3826	0.2337	0.5066	3622	96.3
156	00h26m00s	0.3748	23.998	8.9944	1173.5	0.3971	0.3821	0.2339	0.5064	3617	96.3
157	00h26m10s	0.3748	23.998	8.9944	1174	0.3971	0.3823	0.2338	0.5065	3619	96.2
158	00h26m20s	0.3748	23.998	8.9944	1174.5	0.3969	0.3821	0.2338	0.5064	3620	96.3
159	00h26m30s	0.3748	23.998	8.9944	1173.9	0.3972	0.3824	0.2338	0.5065	3617	96.3
160	00h26m40s	0.3748	23.998	8.9944	1174	0.3971	0.3824	0.2338	0.5065	3620	96.2
161	00h26m50s	0.3748	23.998	8.9944	1174.5	0.3969	0.3824	0.2337	0.5065	3623	96.3
162	00h27m00s	0.3748	23.998	8.9944	1174.4	0.397	0.3822	0.2338	0.5064	3621	96.2
163	00h27m10s	0.3748	23.998	8.9944	1174.5	0.397	0.3824	0.2337	0.5065	3623	96.2
164	00h27m20s	0.3748	23.998	8.9944	1175	0.397	0.3824	0.2337	0.5065	3622	96.2
165	00h27m30s	0.3748	23.998	8.9944	1174.3	0.397	0.3821	0.2338	0.5064	3620	96.3
166	00h27m40s	0.3748	23.998	8.9944	1175	0.397	0.3824	0.2337	0.5065	3621	96.2
167	00h27m50s	0.3748	23.998	8.9944	1174.8	0.3972	0.3825	0.2338	0.5066	3619	96.2
168	00h28m00s	0.3748	23.998	8.9944	1173.9	0.3972	0.3824	0.2338	0.5065	3618	96.3
169	00h28m10s	0.3748	23.998	8.9944	1174.4	0.3969	0.3822	0.2337	0.5064	3622	96.3
170	00h28m20s	0.3748	23.998	8.9944	1174.3	0.3971	0.3822	0.2339	0.5065	3617	96.3
171	00h28m30s	0.3748	23.998	8.9944	1173.4	0.3969	0.3821	0.2337	0.5064	3622	96.3
172	00h28m40s	0.3748	23.998	8.9944	1175	0.3971	0.3824	0.2338	0.5065	3620	96.2
173	00h28m50s	0.3748	23.998	8.9944	1175	0.397	0.3822	0.2338	0.5064	3620	96.3
174	00h29m00s	0.3748	23.998	8.9944	1174.1	0.397	0.3823	0.2338	0.5065	3620	96.2
175	00h29m10s	0.3748	23.998	8.9944	1173.7	0.3971	0.3823	0.2338	0.5065	3618	96.3
176	00h29m20s	0.3748	23.998	8.9944	1174.9	0.397	0.3823	0.2338	0.5065	3620	96.3

177	00h29m30s	0.3748	23.998	8.9944	1174.4	0.3969	0.3823	0.2337	0.5065	3622	96.3
178	00h29m40s	0.3748	23.998	8.9944	1174.8	0.3968	0.3822	0.2337	0.5064	3624	96.3
179	00h29m50s	0.3748	23.998	8.9944	1175.2	0.397	0.3824	0.2337	0.5065	3621	96.3
180	00h30m00s	0.3748	23.998	8.9944	1173.9	0.397	0.3823	0.2338	0.5064	3620	96.3

Test curves







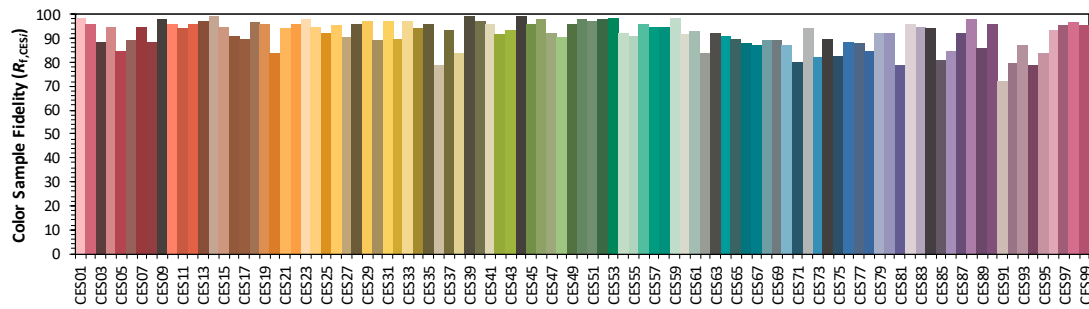
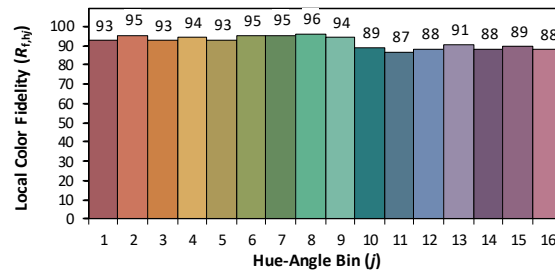
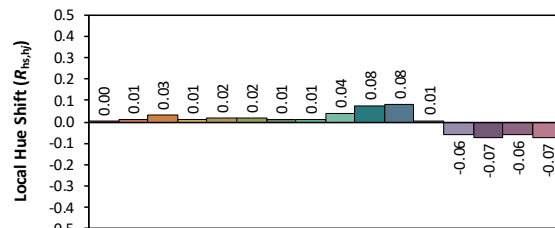
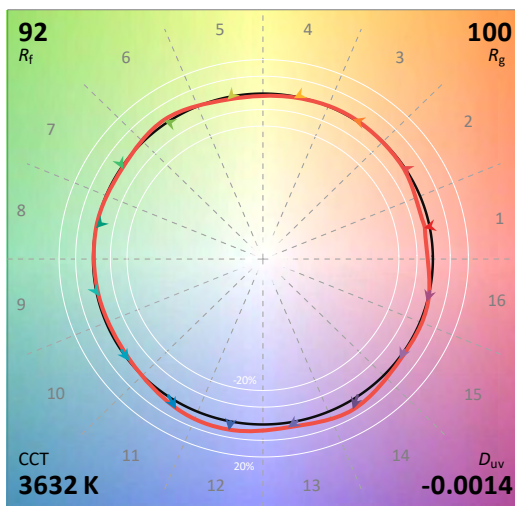
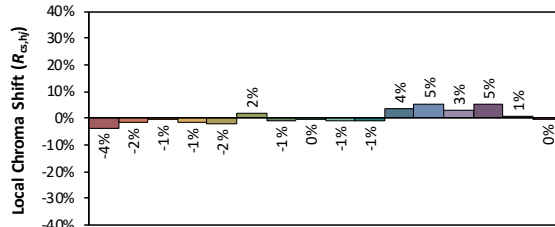
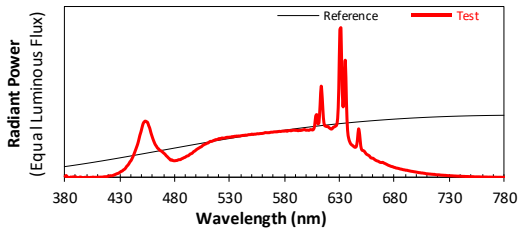
5.2 ANSI/IES TM-30-18 Color Rendition Report*ANSI/IES TM-30-18 Color Rendition Report**

Source:

Manufacturer:

Date: 2023/9/15

Model: LTHY-1000-NL27-DF-I-10

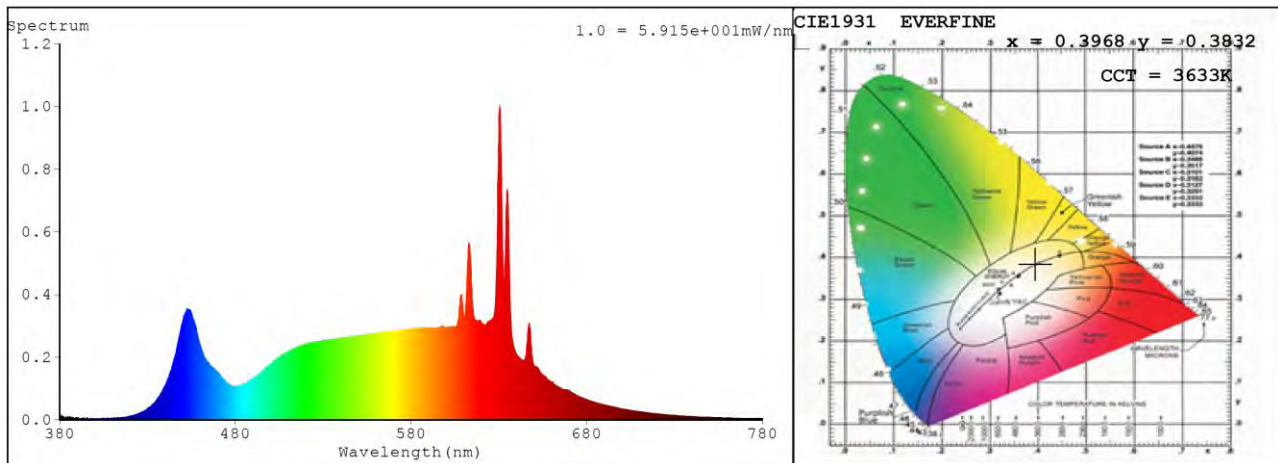


Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

 x 0.3968 y 0.3831 u' 0.2333 v' 0.5068CIE 13.3-1995
(CRI) R_a 96 R_g 78

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	0.0095	414	0.005	448	0.2622	482	0.1078	516	0.2324
381	0.0146	415	0.0063	449	0.2841	483	0.1114	517	0.2356
382	0.0042	416	0.0072	450	0.3109	484	0.1123	518	0.2359
383	0.0036	417	0.0073	451	0.3347	485	0.1128	519	0.2377
384	0	418	0.0077	452	0.3449	486	0.1177	520	0.2425
385	0.0057	419	0.0101	453	0.3499	487	0.1202	521	0.2395
386	0.0025	420	0.0115	454	0.3455	488	0.1242	522	0.2439
387	0.0062	421	0.0136	455	0.3417	489	0.1264	523	0.2456
388	0.0063	422	0.0128	456	0.3224	490	0.131	524	0.2449
389	0.0071	423	0.0139	457	0.3055	491	0.1348	525	0.245
390	0.0056	424	0.0166	458	0.2794	492	0.1363	526	0.2478
391	0.001	425	0.0194	459	0.258	493	0.1419	527	0.2495
392	0	426	0.0223	460	0.238	494	0.1477	528	0.2502
393	0.0043	427	0.0255	461	0.2207	495	0.1496	529	0.2503
394	0.0054	428	0.0274	462	0.2054	496	0.1547	530	0.2512
395	0.0033	429	0.0308	463	0.1956	497	0.1621	531	0.2515
396	0.0015	430	0.0354	464	0.1844	498	0.1655	532	0.2544
397	0.0019	431	0.0399	465	0.1787	499	0.1715	533	0.2523
398	0.0035	432	0.0428	466	0.1706	500	0.1766	534	0.2561
399	0.0034	433	0.0491	467	0.1671	501	0.1808	535	0.256
400	0.0043	434	0.053	468	0.1631	502	0.1848	536	0.2576
401	0.003	435	0.0604	469	0.1568	503	0.1892	537	0.2571
402	0.0021	436	0.0709	470	0.1511	504	0.1922	538	0.2583
403	0.0033	437	0.0777	471	0.1448	505	0.1986	539	0.2576
404	0.0029	438	0.0871	472	0.1363	506	0.203	540	0.2596
405	0.0047	439	0.0989	473	0.1303	507	0.2068	541	0.2605
406	0.0044	440	0.1071	474	0.1228	508	0.2093	542	0.2619
407	0.0032	441	0.1209	475	0.1171	509	0.2132	543	0.2616
408	0.004	442	0.1354	476	0.1092	510	0.215	544	0.2636
409	0.0034	443	0.1526	477	0.1115	511	0.2198	545	0.263
410	0.0049	444	0.1704	478	0.1071	512	0.2247	546	0.2643
411	0.0044	445	0.1893	479	0.1056	513	0.2245	547	0.2663
412	0.0048	446	0.2085	480	0.1058	514	0.2263	548	0.2664
413	0.0048	447	0.2338	481	0.1071	515	0.2302	549	0.2674

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.2697	599	0.2936	648	0.2667	697	0.0386	746	0.0085
551	0.2675	600	0.2942	649	0.1977	698	0.0376	747	0.0083
552	0.2693	601	0.2938	650	0.1723	699	0.0364	748	0.0078
553	0.2692	602	0.293	651	0.1684	700	0.035	749	0.0076
554	0.2704	603	0.297	652	0.1654	701	0.0338	750	0.0073
555	0.272	604	0.2971	653	0.1568	702	0.0322	751	0.0076
556	0.2714	605	0.2952	654	0.1475	703	0.0321	752	0.0069
557	0.2726	606	0.2987	655	0.1429	704	0.0302	753	0.0062
558	0.2733	607	0.3198	656	0.1392	705	0.0304	754	0.0065
559	0.2735	608	0.3792	657	0.1341	706	0.029	755	0.0064
560	0.2745	609	0.389	658	0.1251	707	0.0283	756	0.0064
561	0.2762	610	0.3327	659	0.1219	708	0.0266	757	0.0064
562	0.2788	611	0.3406	660	0.1213	709	0.0253	758	0.0059
563	0.2786	612	0.4488	661	0.1166	710	0.0252	759	0.0056
564	0.2783	613	0.5652	662	0.1113	711	0.0239	760	0.0061
565	0.2783	614	0.4878	663	0.1073	712	0.0238	761	0.0055
566	0.2787	615	0.371	664	0.1044	713	0.0228	762	0.0054
567	0.2811	616	0.3237	665	0.1023	714	0.0225	763	0.0054
568	0.2815	617	0.3191	666	0.098	715	0.0216	764	0.0053
569	0.2817	618	0.316	667	0.0953	716	0.0218	765	0.0046
570	0.2834	619	0.3169	668	0.0947	717	0.0201	766	0.0051
571	0.2836	620	0.3101	669	0.0957	718	0.0193	767	0.0048
572	0.2837	621	0.3052	670	0.0916	719	0.019	768	0.0046
573	0.284	622	0.3009	671	0.0887	720	0.0189	769	0.0045
574	0.2854	623	0.3026	672	0.0854	721	0.0181	770	0.0043
575	0.2866	624	0.3117	673	0.0818	722	0.0172	771	0.0043
576	0.2858	625	0.3141	674	0.0781	723	0.0168	772	0.0043
577	0.2872	626	0.3189	675	0.0755	724	0.0164	773	0.0039
578	0.2881	627	0.3246	676	0.0728	725	0.0158	774	0.0039
579	0.288	628	0.3667	677	0.0701	726	0.0157	775	0.004
580	0.2887	629	0.5505	678	0.0692	727	0.0148	776	0.004
581	0.2898	630	0.9107	679	0.0654	728	0.0142	777	0.0037
582	0.287	631	0.9233	680	0.0643	729	0.0139	778	0.0035
583	0.2907	632	0.5674	681	0.0612	730	0.0132	779	0.0038
584	0.2917	633	0.4373	682	0.0601	731	0.0132	780	0.0038
585	0.2906	634	0.5991	683	0.0588	732	0.013		
586	0.2907	635	0.7217	684	0.057	733	0.0125		
587	0.2934	636	0.465	685	0.0547	734	0.0119		
588	0.2936	637	0.2934	686	0.0538	735	0.0117		
589	0.2933	638	0.2445	687	0.0517	736	0.0112		
590	0.2927	639	0.2222	688	0.05	737	0.0108		
591	0.2931	640	0.2087	689	0.0492	738	0.0109		
592	0.2904	641	0.2026	690	0.0471	739	0.01		
593	0.2929	642	0.1971	691	0.0472	740	0.0102		
594	0.2919	643	0.1912	692	0.0451	741	0.0098		
595	0.293	644	0.1883	693	0.0437	742	0.0092		
596	0.2946	645	0.1939	694	0.0421	743	0.0094		
597	0.2968	646	0.2345	695	0.0408	744	0.0088		
598	0.2977	647	0.3011	696	0.0399	745	0.0086		

6. Goniophotometer Test results for LTHY-1000-NL27-DF-I-10

6.1 Test Data

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

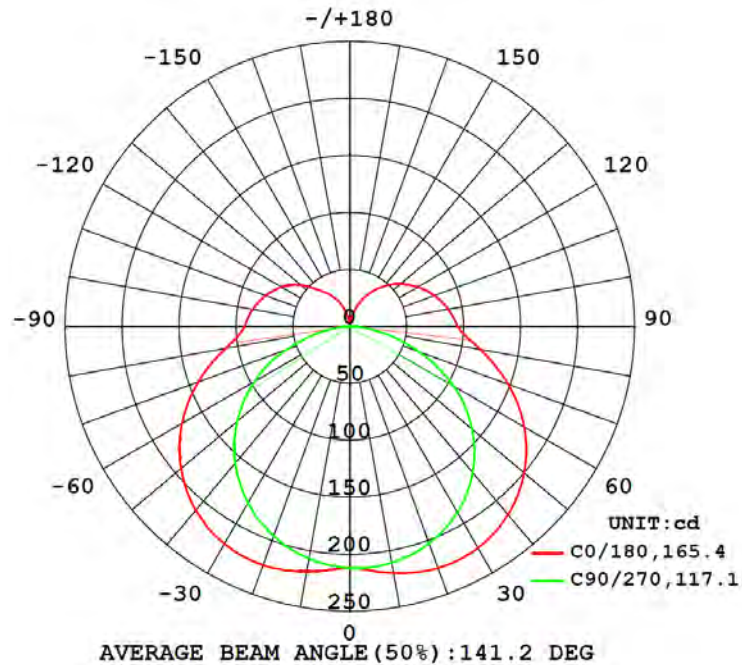
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
24	--	0.38	1.0000	9.12

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	η up (%)	η down (%)
1141.9	125.21	226.1	21.5	78.5

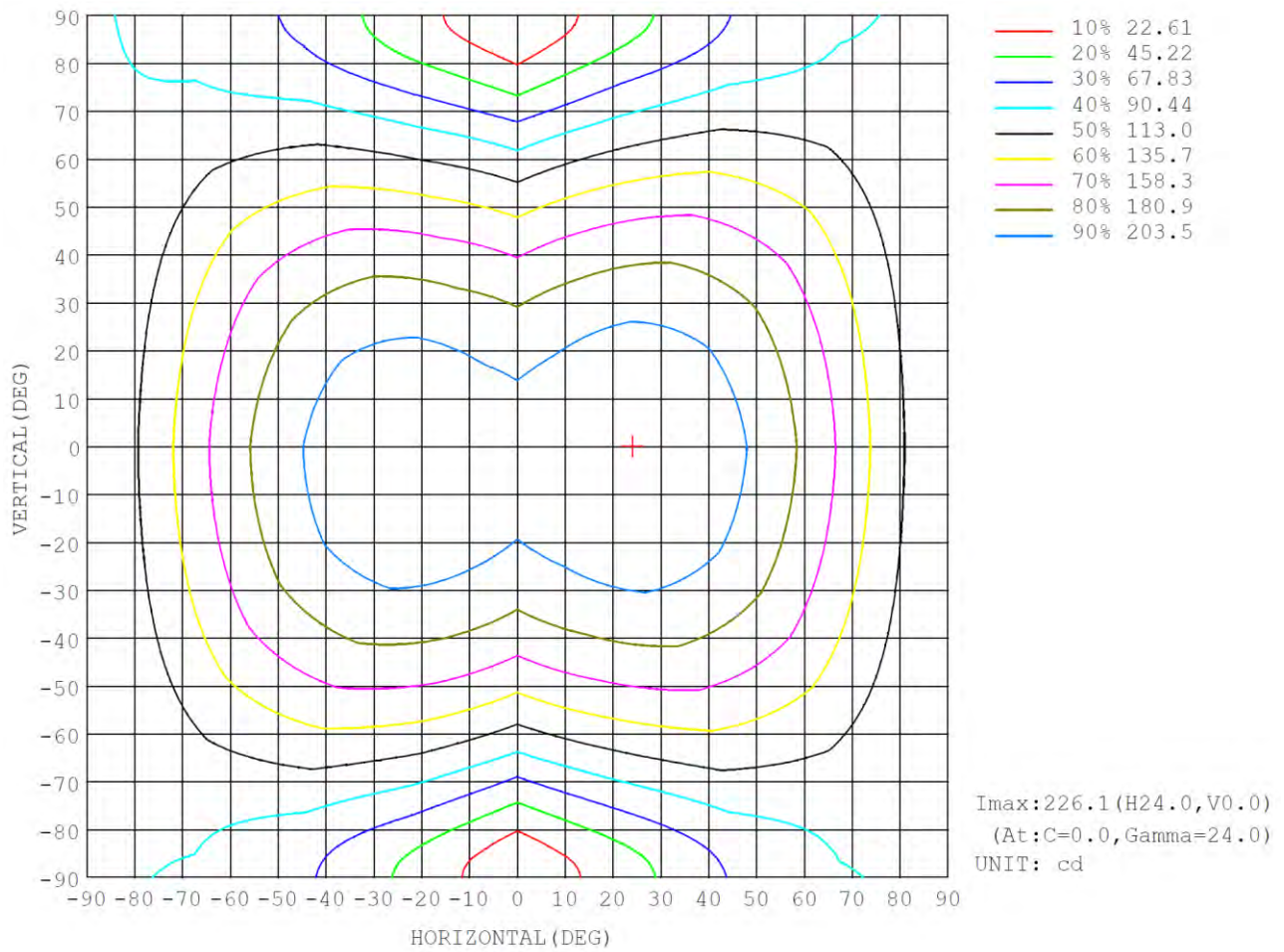
6.2 Luminous Intensity Distribution



6.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	$\Phi_{lum, lamp}$
10	219.7	216.5	210.6	216.3	218.3	213.1	206.9	214.2	0- 10	20.39	20.39	1.79,1.79
20	225.6	218.5	202.8	217.9	222.9	211.5	195.9	214.2	10- 20	60.84	81.23	7.11,7.11
30	224.6	214.4	188.5	213.4	220.5	204.2	179.1	208.3	20- 30	97.59	178.8	15.7,15.7
40	215.8	203.2	167.7	201.9	210.6	190.5	156.7	196.0	30- 40	126.0	304.8	26.7,26.7
50	199.7	184.5	140.0	183.0	193.7	170.5	129.2	177.1	40- 50	142.2	447.1	39.2,39.2
60	176.8	158.7	105.5	157.2	170.4	144.6	96.66	152.1	50- 60	143.6	590.7	51.7,51.7
70	147.8	126.4	63.64	125.4	141.6	113.8	58.31	121.8	60- 70	129.5	720.2	63.1,63.1
80	116.0	91.37	23.68	91.44	110.9	81.58	21.72	89.33	70- 80	102.3	822.4	72,72
90	94.92	69.72	4.276	71.91	92.73	63.29	4.023	68.30	80- 90	73.89	896.3	78.5,78.5
100	87.69	64.04	0.9464	66.82	86.89	58.81	1.299	62.98	90-100	63.02	959.3	84,84
110	79.10	57.17	0.8138	60.02	79.10	52.98	1.272	56.64	100-110	55.58	1015	88.9,88.9
120	69.11	49.25	0.6988	51.35	69.55	43.10	1.145	49.27	110-120	45.79	1061	92.9,92.9
130	58.06	40.42	0.6136	40.12	56.53	31.73	1.112	40.35	120-130	34.59	1095	95.9,95.9
140	45.99	29.38	0.5988	30.28	41.55	25.94	1.032	30.98	130-140	23.53	1119	98,98
150	33.09	20.61	0.6291	20.90	30.43	20.74	0.6392	19.14	140-150	14.08	1133	99.2,99.2
160	19.66	11.05	0.6581	11.29	18.66	14.23	0.9908	6.989	150-160	6.785	1140	99.8,99.8
170	6.948	3.074	0.7428	3.096	6.250	4.753	0.7272	1.994	160-170	2.003	1142	100,100
180	0.5503	0.8165	0.8554	0.7668	0.4960	0.7718	0.8493	0.8472	170-180	0.1897	1142	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	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212	212			
5	215	215	214	213	212	213	214	215	214	214	212	211	210	211	213	214			
10	220	219	217	213	211	213	216	218	218	217	213	209	207	210	214	218			
15	223	223	218	212	208	212	218	221	221	218	213	206	202	207	215	221			
20	226	224	218	209	203	210	218	223	223	219	212	202	196	204	214	222			
25	226	225	217	205	197	206	217	222	223	218	209	196	188	199	212	222			
30	225	223	214	200	189	201	213	220	221	215	204	190	179	193	208	220			
35	221	219	210	193	179	194	209	216	216	210	198	181	169	185	203	216			
40	216	214	203	184	168	185	202	210	211	204	191	171	157	176	196	210			
45	209	206	195	174	155	175	193	202	203	196	181	160	144	165	187	202			
50	200	197	185	161	140	163	183	193	194	186	171	148	129	153	177	193			
55	189	186	173	147	124	149	171	182	183	175	158	134	114	139	165	182			
60	177	173	159	131	106	133	157	169	170	162	145	118	96.7	125	152	170			
65	163	159	143	114	85.3	116	142	155	157	148	130	102	78.8	109	138	156			
70	148	143	126	95.3	63.6	97.9	125	139	142	133	114	84.5	58.3	91.7	122	141			
75	132	127	109	75.9	42.6	78.9	108	123	126	117	97.4	66.9	38.6	74.3	105	125			
80	116	110	91.4	57.2	23.7	60.6	91.4	108	111	102	81.6	50.0	21.7	57.4	89.3	109			
85	103	96.6	76.8	41.7	9.70	45.8	77.9	95.0	98.8	89.8	68.9	36.5	9.28	43.4	75.6	95.6			
90	94.9	89.2	69.7	35.4	4.28	40.0	71.9	89.0	92.7	83.9	63.3	31.1	4.02	36.8	68.3	87.9			
95	91.3	85.8	67.0	33.7	2.11	38.3	69.6	86.3	90.0	81.4	61.2	29.6	2.34	35.2	65.7	84.5			
100	87.7	82.3	64.0	31.9	0.95	36.5	66.8	83.2	86.9	78.5	58.8	28.2	1.30	33.5	63.0	81.2			
105	83.6	78.4	60.8	30.1	0.83	34.4	63.6	79.6	83.3	75.1	56.1	25.1	1.39	31.8	60.0	77.4			
110	79.1	74.0	57.2	28.1	0.81	31.9	60.0	75.4	79.1	71.3	53.0	20.5	1.27	28.6	56.6	73.3			
115	74.3	69.4	53.3	25.6	0.76	28.6	56.0	70.9	74.5	67.1	48.8	18.1	1.15	27.7	53.1	68.8			
120	69.1	64.4	49.2	22.8	0.70	25.5	51.4	65.8	69.5	62.2	43.1	17.1	1.14	25.3	49.3	64.1			
125	63.7	59.2	45.0	20.5	0.62	22.5	45.8	60.0	63.7	56.2	36.6	15.5	1.13	22.0	43.7	59.1			
130	58.1	53.8	40.4	18.0	0.61	19.7	40.1	53.0	56.5	48.8	31.7	14.1	1.11	20.0	40.4	53.8			
135	52.2	48.1	35.7	15.4	0.60	17.0	35.1	45.7	48.7	41.5	29.0	12.5	1.08	17.5	36.0	48.3			
140	46.0	42.2	29.4	13.1	0.60	14.1	30.3	39.5	41.6	36.3	25.9	11.1	1.03	14.4	31.0	41.5			
145	39.6	36.2	24.5	10.8	0.61	11.4	25.4	34.0	36.1	32.4	23.1	10.0	0.84	10.8	24.8	35.5			
150	33.1	30.0	20.6	8.52	0.63	8.70	20.9	28.1	30.4	27.9	20.7	9.36	0.64	6.86	19.1	28.8			
155	26.4	23.8	16.1	5.85	0.65	6.25	16.0	22.6	24.7	23.5	17.8	8.70	0.76	3.50	13.0	21.4			
160	19.7	16.9	11.0	3.71	0.66	4.08	11.3	16.6	18.7	18.2	14.2	7.54	0.99	1.61	6.99	14.4			
165	13.1	11.1	6.16	2.14	0.69	2.16	6.88	10.7	12.1	11.9	9.60	5.15	0.93	1.04	3.80	7.87			
170	6.95	4.95	3.07	1.44	0.74	1.02	3.10	5.29	6.25	6.29	4.75	2.54	0.73	0.93	1.99	3.81			
175	2.47	1.49	1.42	1.04	0.87	0.63	0.94	1.37	1.87	1.92	1.32	0.84	0.64	0.86	1.12	1.63			
180	0.55	0.76	0.82	0.86	0.86	0.87	0.77	0.68	0.50	0.48	0.77	0.82	0.85	0.86	0.85	0.81			

7. Integrating Sphere Test Results for LTHY-1000-NL27-DF-I-21

7.1 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	0.7386	23.998	17.725	2255.8	0.3959	0.383	0.2327	0.5066	3653	95.7
1	00h00m10s	0.7393	23.998	17.742	2258	0.396	0.3833	0.2327	0.5067	3654	95.6
2	00h00m20s	0.7398	23.998	17.754	2256.8	0.3961	0.3833	0.2328	0.5068	3650	95.7
3	00h00m30s	0.7402	23.998	17.763	2257.5	0.3961	0.3834	0.2327	0.5068	3650	95.6
4	00h00m40s	0.7407	23.998	17.775	2258.7	0.3963	0.3833	0.2329	0.5068	3646	95.7
5	00h00m50s	0.7411	23.998	17.785	2258.2	0.3961	0.3832	0.2328	0.5067	3650	95.7
6	00h01m00s	0.7414	23.998	17.792	2260.5	0.3962	0.3833	0.2328	0.5067	3649	95.6
7	00h01m10s	0.7418	23.998	17.802	2258.4	0.396	0.3831	0.2328	0.5067	3650	95.8
8	00h01m20s	0.7422	23.998	17.811	2259.4	0.3962	0.3832	0.2329	0.5067	3647	95.7
9	00h01m30s	0.7426	23.998	17.821	2260.4	0.3962	0.3831	0.2329	0.5067	3646	95.7
10	00h01m40s	0.7429	23.998	17.828	2260.2	0.3961	0.383	0.2328	0.5066	3649	95.7
11	00h01m50s	0.7432	23.998	17.835	2259.4	0.3962	0.383	0.2329	0.5067	3646	95.7
12	00h02m00s	0.7435	23.998	17.843	2261.2	0.3963	0.3831	0.233	0.5067	3644	95.7
13	00h02m10s	0.7439	23.998	17.852	2261.1	0.3963	0.3829	0.233	0.5066	3643	95.7
14	00h02m20s	0.7442	23.998	17.859	2262.2	0.3963	0.3829	0.233	0.5066	3644	95.7
15	00h02m30s	0.7445	23.998	17.867	2260.5	0.3962	0.3828	0.233	0.5066	3645	95.8
16	00h02m40s	0.7447	23.998	17.871	2262.4	0.3963	0.3829	0.233	0.5066	3642	95.7
17	00h02m50s	0.745	23.998	17.879	2262	0.3962	0.3828	0.233	0.5066	3645	95.8
18	00h03m00s	0.7453	23.998	17.886	2260.3	0.3962	0.3827	0.2331	0.5065	3642	95.8
19	00h03m10s	0.7456	23.998	17.893	2260.8	0.3962	0.3827	0.2331	0.5065	3643	95.8
20	00h03m20s	0.7458	23.998	17.898	2262	0.3963	0.3829	0.2331	0.5066	3642	95.8
21	00h03m30s	0.7461	23.998	17.905	2262.7	0.3962	0.3827	0.233	0.5065	3644	95.8

22	00h03m40s	0.7463	23.998	17.91	2263.1	0.3963	0.3828	0.2331	0.5066	3641	95.9
23	00h03m50s	0.7465	23.998	17.915	2262.2	0.3964	0.3828	0.2331	0.5066	3640	95.8
24	00h04m00s	0.7468	23.998	17.922	2264.5	0.3963	0.3828	0.2331	0.5066	3641	95.8
25	00h04m10s	0.747	23.998	17.927	2264.5	0.3964	0.3829	0.2331	0.5066	3641	95.8
26	00h04m20s	0.7472	23.998	17.931	2262.8	0.3964	0.3827	0.2332	0.5065	3638	95.8
27	00h04m30s	0.7474	23.998	17.936	2262.4	0.3963	0.3826	0.2332	0.5065	3639	95.8
28	00h04m40s	0.7476	23.998	17.941	2262.8	0.3964	0.3828	0.2332	0.5066	3639	95.9
29	00h04m50s	0.7478	23.998	17.946	2262.9	0.3966	0.3826	0.2333	0.5065	3634	95.9
30	00h05m00s	0.748	23.998	17.951	2264.8	0.3964	0.3828	0.2332	0.5066	3639	95.8
31	00h05m10s	0.7482	23.998	17.955	2264.9	0.3963	0.3825	0.2332	0.5065	3639	95.9
32	00h05m20s	0.7484	23.998	17.96	2263.7	0.3964	0.3825	0.2332	0.5065	3638	95.9
33	00h05m30s	0.7486	23.998	17.965	2264.3	0.3965	0.3827	0.2333	0.5065	3635	95.9
34	00h05m40s	0.7488	23.998	17.97	2264.6	0.3966	0.3826	0.2334	0.5065	3633	95.9
35	00h05m50s	0.7489	23.998	17.972	2265.3	0.3964	0.3826	0.2332	0.5065	3638	95.8
36	00h06m00s	0.7491	23.998	17.977	2264.5	0.3965	0.3827	0.2333	0.5066	3635	95.9
37	00h06m10s	0.7493	23.998	17.982	2265.5	0.3964	0.3826	0.2333	0.5065	3637	95.8
38	00h06m20s	0.7494	23.998	17.984	2263.9	0.3963	0.3825	0.2332	0.5064	3639	95.9
39	00h06m30s	0.7496	23.998	17.989	2265.1	0.3962	0.3823	0.2332	0.5064	3639	95.9
40	00h06m40s	0.7497	23.998	17.991	2264.5	0.3964	0.3825	0.2333	0.5065	3637	95.9
41	00h06m50s	0.7498	23.998	17.994	2265.4	0.3965	0.3826	0.2333	0.5065	3635	95.9
42	00h07m00s	0.75	23.998	17.998	2265.8	0.3965	0.3825	0.2333	0.5065	3635	95.9
43	00h07m10s	0.7501	23.998	18.001	2264.5	0.3961	0.3821	0.2333	0.5063	3640	95.9
44	00h07m20s	0.7502	23.998	18.003	2265.5	0.3964	0.3822	0.2334	0.5063	3636	95.9
45	00h07m30s	0.7504	23.998	18.008	2265.5	0.3966	0.3826	0.2333	0.5065	3634	95.9
46	00h07m40s	0.7505	23.998	18.01	2266.3	0.3965	0.3824	0.2334	0.5064	3634	95.9
47	00h07m50s	0.7506	23.998	18.013	2266.2	0.3965	0.3825	0.2333	0.5065	3634	96
48	00h08m00s	0.7507	23.998	18.015	2267.4	0.3966	0.3825	0.2334	0.5065	3632	96
49	00h08m10s	0.7508	23.998	18.018	2266	0.3964	0.3825	0.2332	0.5065	3637	95.9
50	00h08m20s	0.7509	23.998	18.02	2264.6	0.3965	0.3823	0.2334	0.5064	3632	95.9
51	00h08m30s	0.751	23.998	18.022	2266	0.3964	0.3824	0.2333	0.5064	3637	96
52	00h08m40s	0.7511	23.998	18.025	2265.9	0.3965	0.3825	0.2334	0.5065	3633	95.9

53	00h08m50s	0.7512	23.998	18.027	2266.8	0.3965	0.3824	0.2334	0.5064	3635	95.9
54	00h09m00s	0.7513	23.998	18.03	2266.9	0.3965	0.3824	0.2334	0.5064	3633	95.9
55	00h09m10s	0.7514	23.998	18.032	2265.5	0.3965	0.3823	0.2334	0.5064	3632	96
56	00h09m20s	0.7515	23.998	18.034	2267.3	0.3965	0.3823	0.2334	0.5064	3633	96
57	00h09m30s	0.7516	23.998	18.037	2263.9	0.3964	0.3821	0.2334	0.5063	3634	96
58	00h09m40s	0.7517	23.998	18.039	2266.1	0.3967	0.3824	0.2335	0.5065	3630	95.9
59	00h09m50s	0.7518	23.998	18.042	2266.6	0.3964	0.3823	0.2334	0.5064	3634	95.9
60	00h10m00s	0.7519	23.998	18.044	2266.4	0.3966	0.3824	0.2335	0.5065	3630	95.9
61	00h10m10s	0.7519	23.998	18.044	2267.5	0.3964	0.3824	0.2334	0.5064	3635	96
62	00h10m20s	0.752	23.998	18.046	2266.9	0.3965	0.3824	0.2334	0.5064	3634	95.9
63	00h10m30s	0.7521	23.998	18.049	2266.5	0.3965	0.3823	0.2334	0.5064	3633	96
64	00h10m40s	0.7522	23.998	18.051	2265.5	0.3965	0.3824	0.2334	0.5064	3633	96
65	00h10m50s	0.7522	23.998	18.051	2266.8	0.3965	0.3822	0.2335	0.5063	3632	95.9
66	00h11m00s	0.7523	23.998	18.054	2267.7	0.3965	0.3823	0.2334	0.5064	3633	95.9
67	00h11m10s	0.7524	23.998	18.056	2266.8	0.3965	0.3823	0.2334	0.5064	3634	96
68	00h11m20s	0.7524	23.998	18.056	2267.3	0.3965	0.3824	0.2334	0.5064	3633	96
69	00h11m30s	0.7525	23.998	18.058	2267.1	0.3966	0.3822	0.2335	0.5064	3630	96
70	00h11m40s	0.7525	23.998	18.058	2266.9	0.3964	0.3821	0.2334	0.5063	3635	96
71	00h11m50s	0.7526	23.998	18.061	2266.9	0.3966	0.3822	0.2335	0.5064	3630	96
72	00h12m00s	0.7527	23.998	18.063	2267	0.3965	0.3822	0.2335	0.5064	3632	96
73	00h12m10s	0.7527	23.998	18.063	2267.4	0.3966	0.3822	0.2335	0.5064	3630	96
74	00h12m20s	0.7528	23.998	18.066	2267.5	0.3967	0.3823	0.2335	0.5064	3629	95.9
75	00h12m30s	0.7528	23.998	18.066	2268.6	0.3965	0.3822	0.2335	0.5064	3631	95.9
76	00h12m40s	0.7529	23.998	18.068	2267.7	0.3965	0.3821	0.2335	0.5063	3631	96
77	00h12m50s	0.7529	23.998	18.068	2266.5	0.3966	0.3823	0.2335	0.5064	3631	96
78	00h13m00s	0.753	23.998	18.07	2266.8	0.3965	0.3822	0.2334	0.5064	3633	96
79	00h13m10s	0.753	23.998	18.07	2266.3	0.3966	0.3821	0.2336	0.5063	3629	96
80	00h13m20s	0.7531	23.998	18.073	2266.5	0.3965	0.3821	0.2335	0.5063	3631	96
81	00h13m30s	0.7531	23.998	18.073	2267.9	0.3966	0.3823	0.2335	0.5064	3631	96
82	00h13m40s	0.7531	23.998	18.073	2266.7	0.3964	0.3821	0.2334	0.5063	3633	96
83	00h13m50s	0.7532	23.998	18.075	2268.7	0.3967	0.3823	0.2336	0.5064	3628	95.9

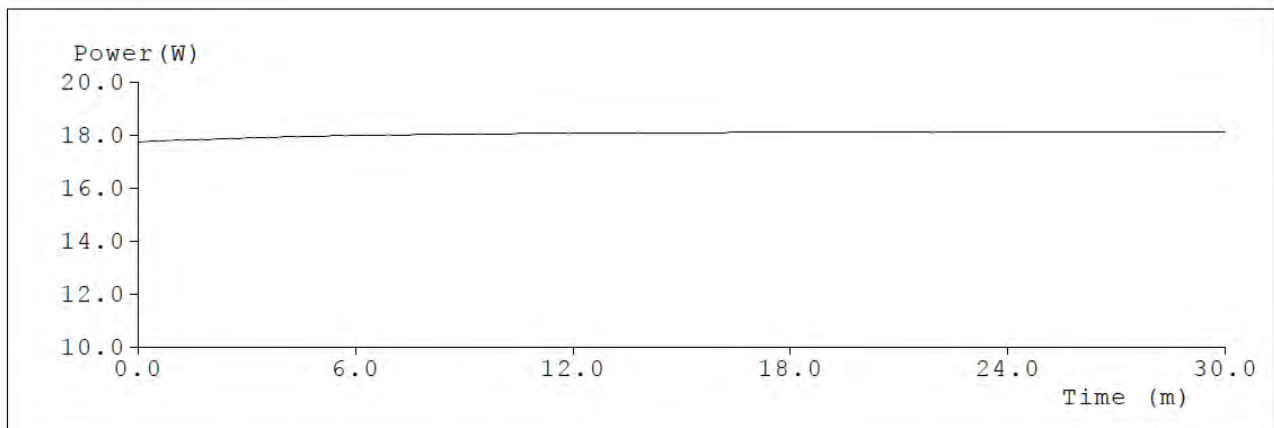
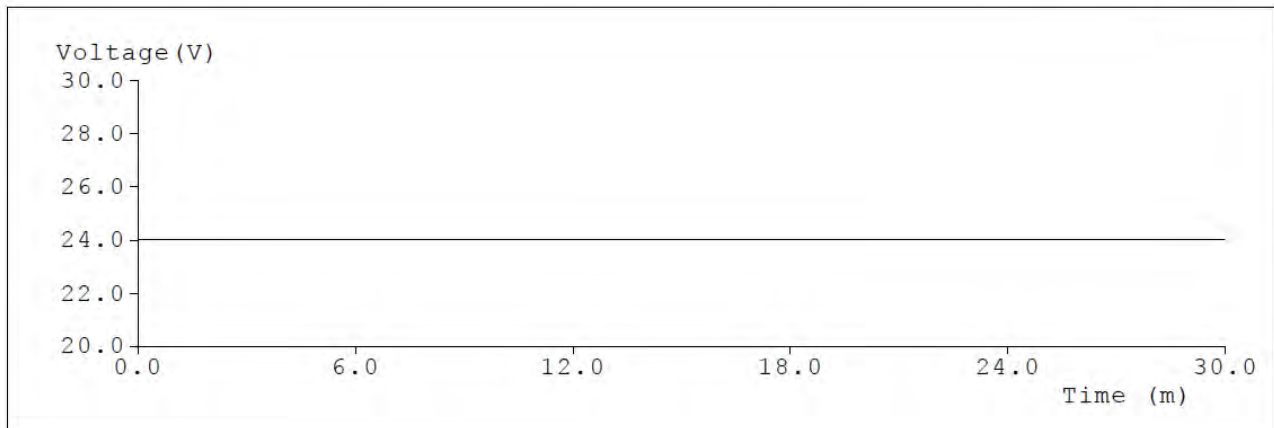
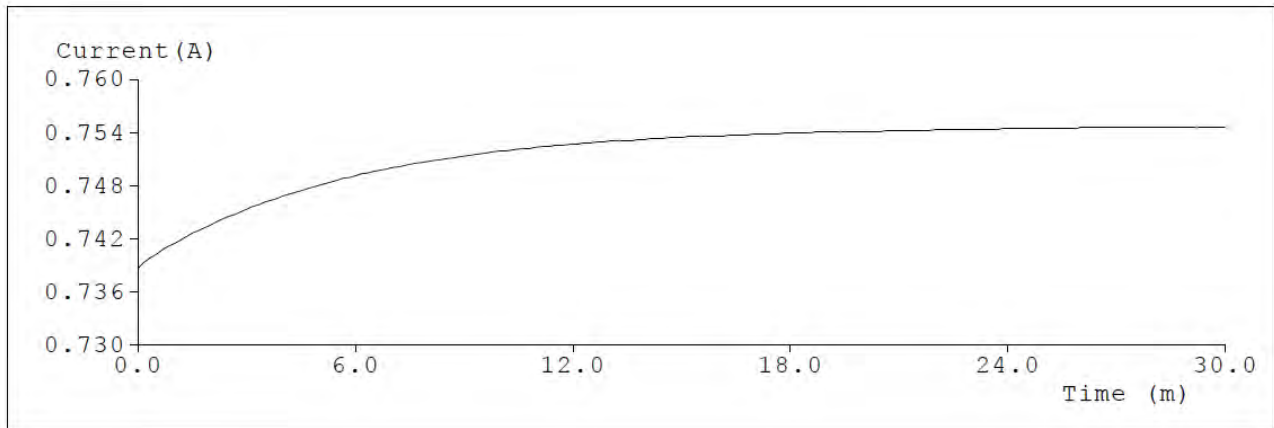
84	00h14m00s	0.7532	23.998	18.075	2266.1	0.3966	0.3822	0.2335	0.5064	3630	96
85	00h14m10s	0.7533	23.998	18.078	2267.4	0.3964	0.382	0.2335	0.5062	3632	96
86	00h14m20s	0.7533	23.998	18.078	2268.1	0.3966	0.3822	0.2335	0.5064	3629	96
87	00h14m30s	0.7533	23.998	18.078	2268.3	0.3965	0.3822	0.2335	0.5063	3631	96
88	00h14m40s	0.7534	23.998	18.08	2267.9	0.3966	0.3821	0.2336	0.5063	3629	96
89	00h14m50s	0.7534	23.998	18.08	2268.6	0.3967	0.3823	0.2335	0.5064	3629	96
90	00h15m00s	0.7534	23.998	18.08	2267.6	0.3965	0.382	0.2335	0.5063	3631	96
91	00h15m10s	0.7535	23.998	18.082	2267.6	0.3966	0.3823	0.2335	0.5064	3630	96
92	00h15m20s	0.7535	23.998	18.082	2266.7	0.3966	0.3822	0.2335	0.5064	3631	96
93	00h15m30s	0.7535	23.998	18.082	2269.1	0.3964	0.3822	0.2334	0.5063	3633	96
94	00h15m40s	0.7536	23.998	18.085	2266.4	0.3966	0.3822	0.2335	0.5064	3630	96
95	00h15m50s	0.7536	23.998	18.085	2267.4	0.3966	0.3822	0.2336	0.5064	3628	95.9
96	00h16m00s	0.7536	23.998	18.085	2268.7	0.3967	0.3823	0.2335	0.5064	3628	96
97	00h16m10s	0.7536	23.998	18.085	2268	0.3966	0.3821	0.2335	0.5063	3630	96
98	00h16m20s	0.7537	23.998	18.087	2267.6	0.3966	0.382	0.2336	0.5063	3628	96
99	00h16m30s	0.7537	23.998	18.087	2267.9	0.3966	0.3823	0.2335	0.5064	3629	96
100	00h16m40s	0.7537	23.998	18.087	2266.3	0.3966	0.3821	0.2335	0.5063	3630	96
101	00h16m50s	0.7537	23.998	18.087	2267	0.3966	0.3819	0.2337	0.5063	3626	96
102	00h17m00s	0.7538	23.998	18.09	2267.3	0.3966	0.3821	0.2335	0.5063	3630	96
103	00h17m10s	0.7538	23.998	18.09	2268.6	0.3967	0.3823	0.2335	0.5064	3629	96
104	00h17m20s	0.7538	23.998	18.09	2267.2	0.3965	0.382	0.2336	0.5062	3630	96
105	00h17m30s	0.7538	23.998	18.09	2267.5	0.3965	0.382	0.2335	0.5063	3630	95.9
106	00h17m40s	0.7538	23.998	18.09	2266.5	0.3966	0.382	0.2336	0.5063	3628	96
107	00h17m50s	0.7539	23.998	18.092	2268.6	0.3966	0.3822	0.2336	0.5063	3629	96
108	00h18m00s	0.7539	23.998	18.092	2266.5	0.3965	0.3819	0.2336	0.5062	3629	96
109	00h18m10s	0.7539	23.998	18.092	2267.9	0.3966	0.3821	0.2336	0.5063	3629	96
110	00h18m20s	0.7539	23.998	18.092	2267.1	0.3965	0.3819	0.2336	0.5062	3629	96
111	00h18m30s	0.7539	23.998	18.092	2268.3	0.3965	0.3821	0.2335	0.5063	3631	96
112	00h18m40s	0.754	23.998	18.094	2269	0.3966	0.3822	0.2335	0.5063	3629	96
113	00h18m50s	0.754	23.998	18.094	2268.4	0.3965	0.3821	0.2335	0.5063	3632	96.1
114	00h19m00s	0.754	23.998	18.094	2267.8	0.3967	0.3821	0.2336	0.5063	3627	96

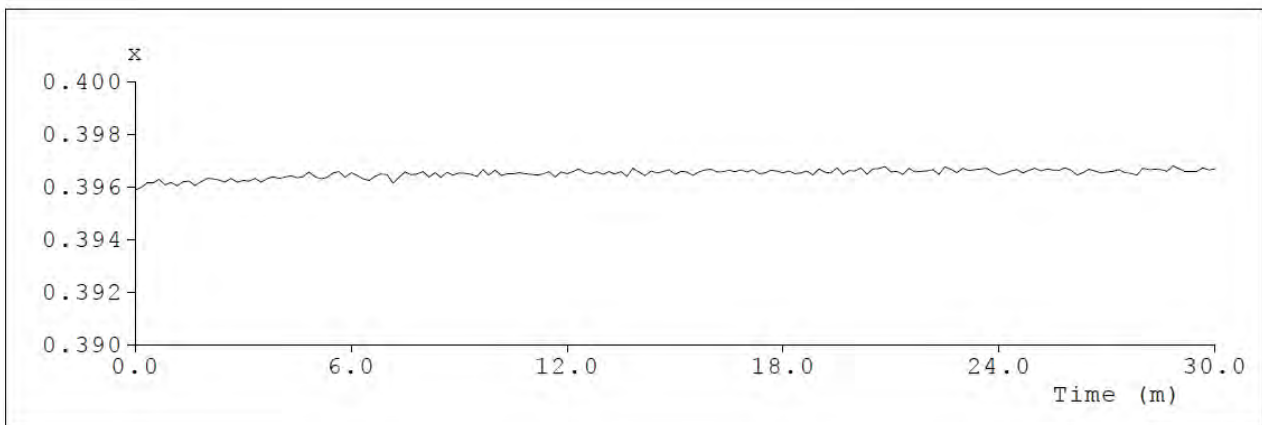
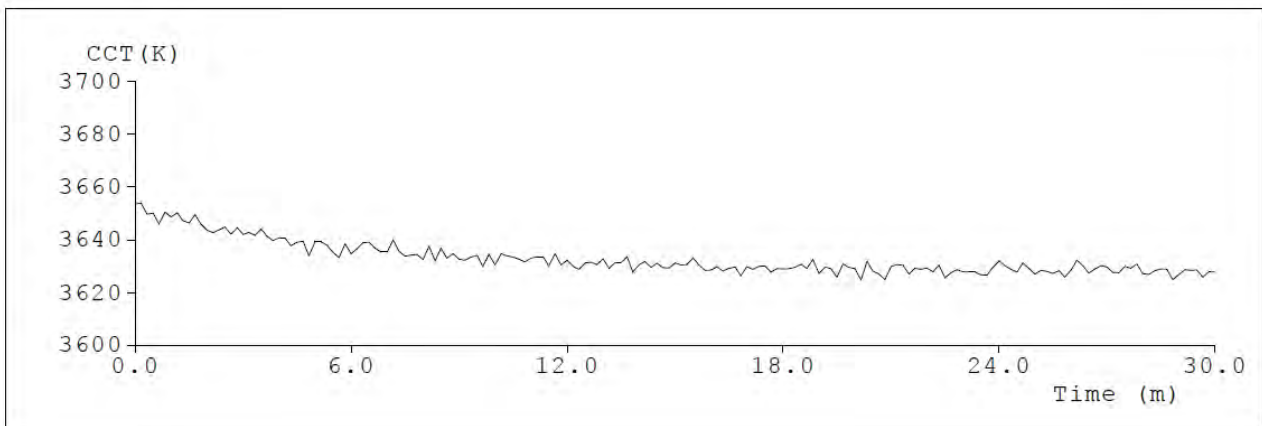
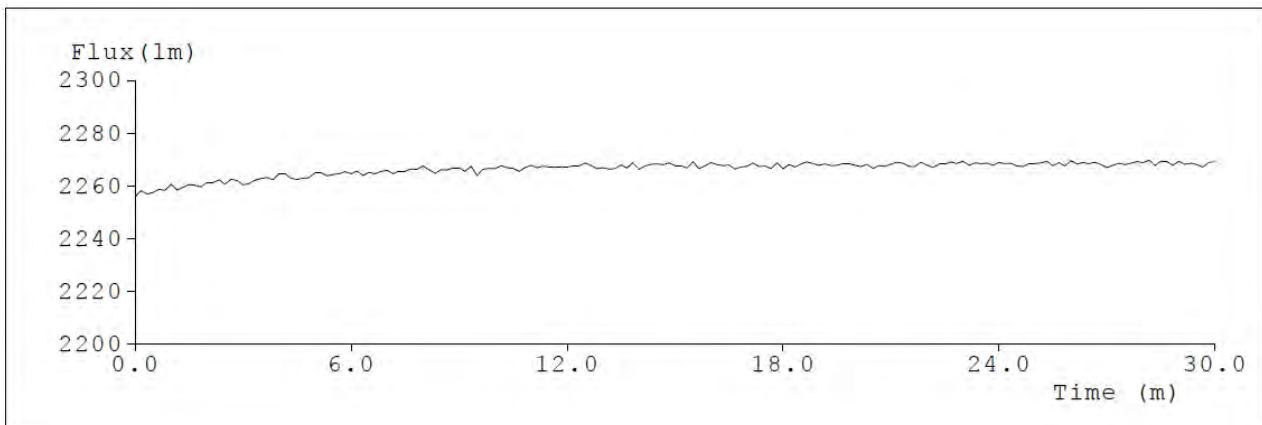
115	00h19m10s	0.754	23.998	18.094	2268.3	0.3966	0.3821	0.2335	0.5063	3630	96
116	00h19m20s	0.754	23.998	18.094	2267.6	0.3965	0.3819	0.2336	0.5062	3629	96
117	00h19m30s	0.7541	23.998	18.097	2267.8	0.3967	0.3821	0.2337	0.5063	3626	96
118	00h19m40s	0.7541	23.998	18.097	2268.4	0.3965	0.382	0.2335	0.5062	3631	96
119	00h19m50s	0.7541	23.998	18.097	2268.4	0.3966	0.3822	0.2335	0.5064	3629	96
120	00h20m00s	0.7541	23.998	18.097	2267.8	0.3966	0.3821	0.2336	0.5063	3629	96
121	00h20m10s	0.7541	23.998	18.097	2267.2	0.3967	0.382	0.2337	0.5063	3625	96
122	00h20m20s	0.7541	23.998	18.097	2268.2	0.3965	0.3821	0.2335	0.5063	3632	96
123	00h20m30s	0.7541	23.998	18.097	2266.6	0.3967	0.3823	0.2336	0.5064	3628	96
124	00h20m40s	0.7542	23.998	18.099	2267.5	0.3967	0.3822	0.2336	0.5064	3627	96
125	00h20m50s	0.7542	23.998	18.099	2267.3	0.3968	0.3821	0.2337	0.5064	3625	95.9
126	00h21m00s	0.7542	23.998	18.099	2268.1	0.3966	0.3821	0.2335	0.5063	3630	96
127	00h21m10s	0.7542	23.998	18.099	2268.8	0.3966	0.3823	0.2335	0.5064	3631	96
128	00h21m20s	0.7542	23.998	18.099	2268.5	0.3965	0.3819	0.2336	0.5062	3630	96
129	00h21m30s	0.7542	23.998	18.099	2267.4	0.3967	0.3822	0.2336	0.5064	3627	96
130	00h21m40s	0.7542	23.998	18.099	2267.2	0.3966	0.3821	0.2336	0.5063	3629	96
131	00h21m50s	0.7542	23.998	18.099	2268.8	0.3966	0.3821	0.2336	0.5063	3629	96
132	00h22m00s	0.7543	23.998	18.102	2267.7	0.3966	0.3822	0.2335	0.5064	3629	96
133	00h22m10s	0.7543	23.998	18.102	2266.9	0.3967	0.3821	0.2336	0.5063	3628	96
134	00h22m20s	0.7543	23.998	18.102	2268.1	0.3965	0.3819	0.2336	0.5062	3630	96
135	00h22m30s	0.7543	23.998	18.102	2268.1	0.3968	0.3822	0.2336	0.5064	3626	96
136	00h22m40s	0.7543	23.998	18.102	2269	0.3967	0.3822	0.2336	0.5064	3627	96
137	00h22m50s	0.7543	23.998	18.102	2268.3	0.3965	0.3819	0.2336	0.5062	3629	96
138	00h23m00s	0.7543	23.998	18.102	2269.3	0.3967	0.3823	0.2336	0.5064	3628	96
139	00h23m10s	0.7543	23.998	18.102	2267.7	0.3966	0.382	0.2336	0.5063	3628	96
140	00h23m20s	0.7543	23.998	18.102	2268.6	0.3967	0.3822	0.2336	0.5063	3628	96
141	00h23m30s	0.7543	23.998	18.102	2268.3	0.3967	0.3821	0.2336	0.5063	3627	96
142	00h23m40s	0.7543	23.998	18.102	2268.5	0.3967	0.3821	0.2336	0.5063	3627	96
143	00h23m50s	0.7544	23.998	18.104	2267.7	0.3966	0.3821	0.2335	0.5063	3629	96
144	00h24m00s	0.7544	23.998	18.104	2268.7	0.3965	0.3821	0.2335	0.5063	3632	96
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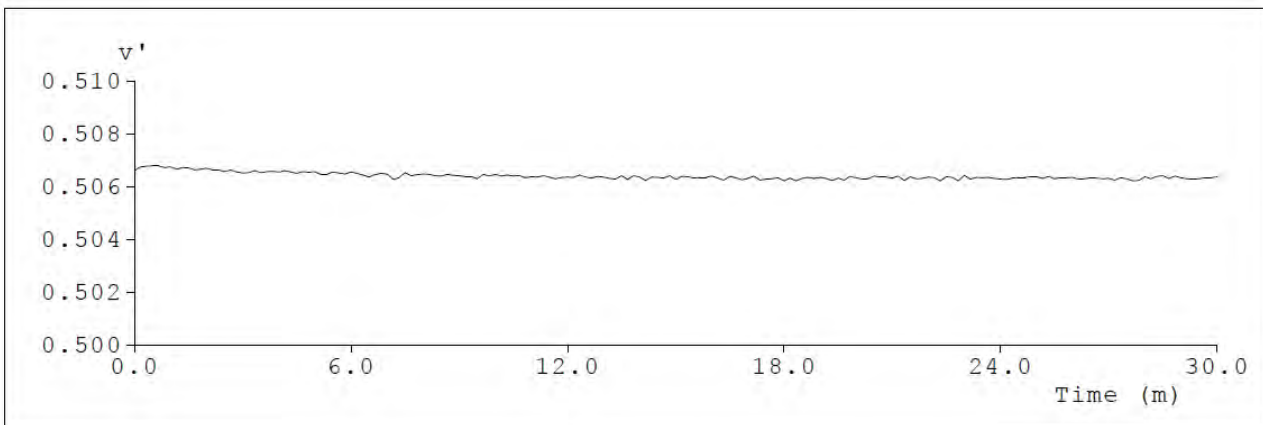
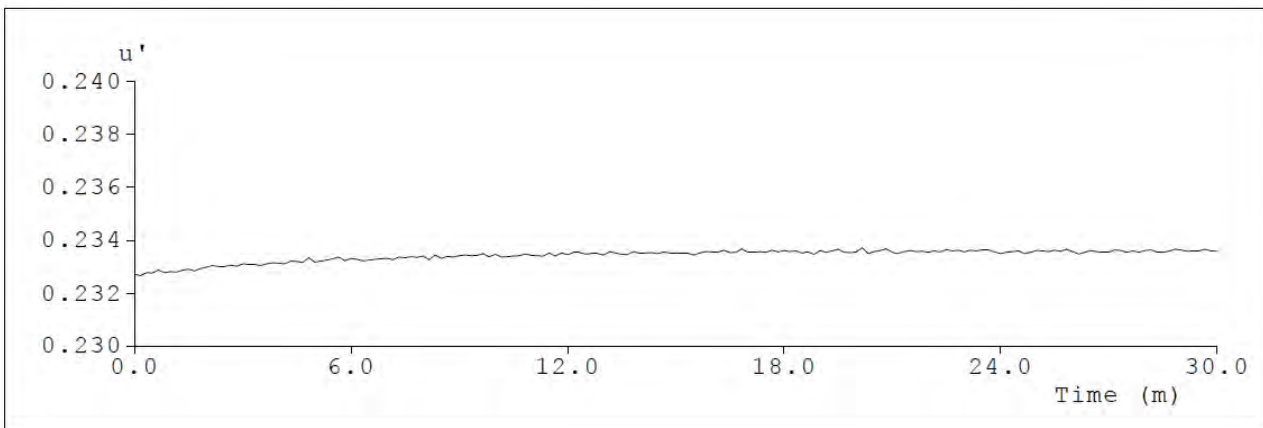
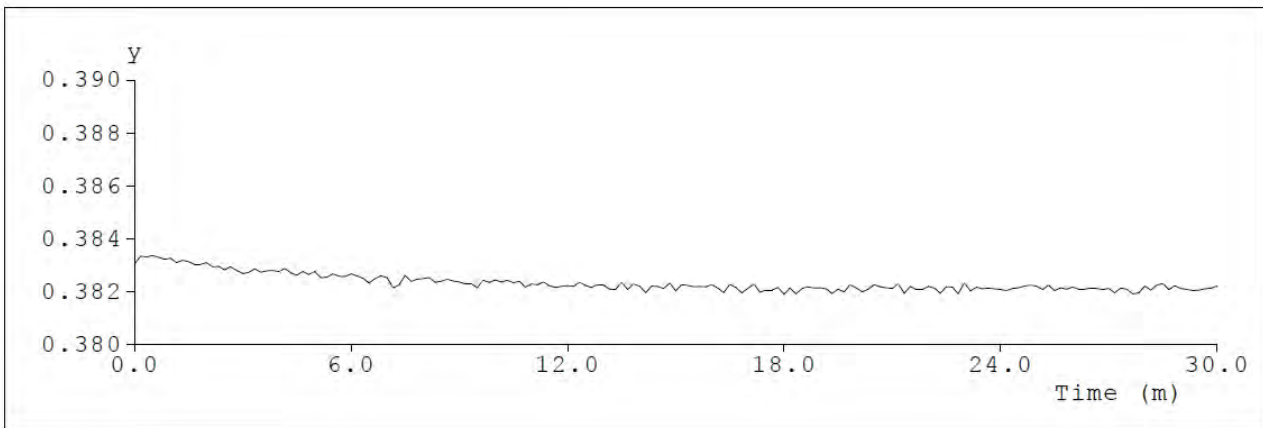
146	00h24m20s	0.7544	23.998	18.104	2268.5	0.3966	0.3821	0.2336	0.5063	3629	96
147	00h24m30s	0.7544	23.998	18.104	2267.4	0.3967	0.3821	0.2336	0.5063	3628	96
148	00h24m40s	0.7544	23.998	18.104	2267.1	0.3965	0.3822	0.2335	0.5064	3631	96
149	00h24m50s	0.7544	23.998	18.104	2268.4	0.3966	0.3822	0.2335	0.5064	3629	96
150	00h25m00s	0.7544	23.998	18.104	2268.4	0.3967	0.3822	0.2336	0.5064	3627	96
151	00h25m10s	0.7544	23.998	18.104	2268.6	0.3966	0.3821	0.2336	0.5063	3628	96
152	00h25m20s	0.7544	23.998	18.104	2269.3	0.3967	0.3822	0.2336	0.5064	3628	96
153	00h25m30s	0.7544	23.998	18.104	2267.6	0.3966	0.382	0.2336	0.5063	3627	96
154	00h25m40s	0.7544	23.998	18.104	2268.7	0.3966	0.3821	0.2336	0.5063	3628	96
155	00h25m50s	0.7544	23.998	18.104	2267.4	0.3967	0.3821	0.2337	0.5063	3626	96
156	00h26m00s	0.7545	23.998	18.106	2269.5	0.3966	0.3822	0.2336	0.5063	3628	96
157	00h26m10s	0.7545	23.998	18.106	2268.2	0.3965	0.3821	0.2335	0.5063	3632	96
158	00h26m20s	0.7545	23.998	18.106	2268.8	0.3965	0.3821	0.2335	0.5063	3630	96
159	00h26m30s	0.7545	23.998	18.106	2268.3	0.3967	0.3821	0.2336	0.5063	3627	96
160	00h26m40s	0.7545	23.998	18.106	2268.9	0.3966	0.3821	0.2336	0.5063	3629	96
161	00h26m50s	0.7545	23.998	18.106	2268	0.3965	0.3821	0.2335	0.5063	3630	96
162	00h27m00s	0.7545	23.998	18.106	2266.9	0.3966	0.3821	0.2335	0.5063	3630	96
163	00h27m10s	0.7545	23.998	18.106	2267.7	0.3966	0.3819	0.2336	0.5063	3628	96
164	00h27m20s	0.7545	23.998	18.106	2268.5	0.3967	0.3821	0.2336	0.5063	3627	96.1
165	00h27m30s	0.7545	23.998	18.106	2268	0.3965	0.3821	0.2335	0.5063	3630	96
166	00h27m40s	0.7545	23.998	18.106	2268.5	0.3965	0.3819	0.2336	0.5062	3629	96
167	00h27m50s	0.7545	23.998	18.106	2269.2	0.3965	0.3819	0.2335	0.5062	3631	96
168	00h28m00s	0.7545	23.998	18.106	2268.8	0.3967	0.3822	0.2336	0.5064	3627	96
169	00h28m10s	0.7545	23.998	18.106	2269.6	0.3967	0.382	0.2336	0.5063	3627	96
170	00h28m20s	0.7545	23.998	18.106	2267.5	0.3967	0.3822	0.2336	0.5064	3628	96
171	00h28m30s	0.7545	23.998	18.106	2269.3	0.3967	0.3823	0.2335	0.5064	3629	96
172	00h28m40s	0.7545	23.998	18.106	2269.2	0.3966	0.3821	0.2336	0.5063	3629	96
173	00h28m50s	0.7545	23.998	18.106	2267.8	0.3968	0.3822	0.2337	0.5064	3625	96
174	00h29m00s	0.7545	23.998	18.106	2269.2	0.3967	0.3821	0.2336	0.5063	3627	96
175	00h29m10s	0.7545	23.998	18.106	2268.2	0.3966	0.3821	0.2336	0.5063	3629	96
176	00h29m20s	0.7546	23.998	18.109	2268.5	0.3966	0.382	0.2336	0.5063	3628	96.1

177	00h29m30s	0.7546	23.998	18.109	2267.9	0.3966	0.3821	0.2336	0.5063	3628	96
178	00h29m40s	0.7546	23.998	18.109	2267.1	0.3967	0.3821	0.2336	0.5063	3626	96
179	00h29m50s	0.7546	23.998	18.109	2268.9	0.3966	0.3821	0.2336	0.5063	3628	96
180	00h30m00s	0.7546	23.998	18.109	2269.1	0.3967	0.3822	0.2336	0.5064	3628	96

Test curves







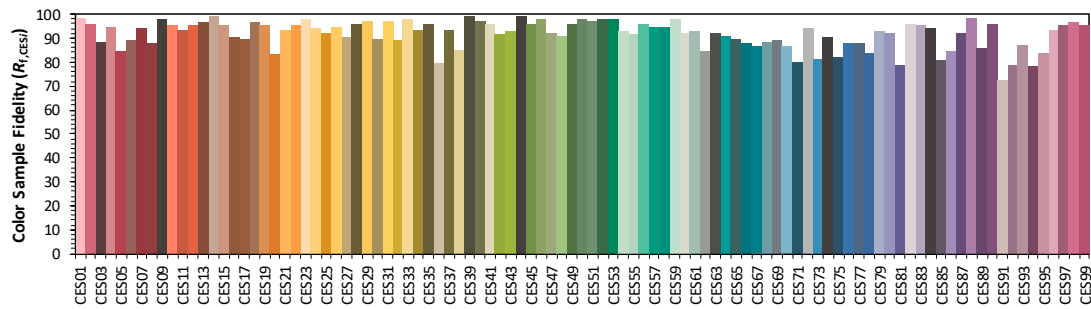
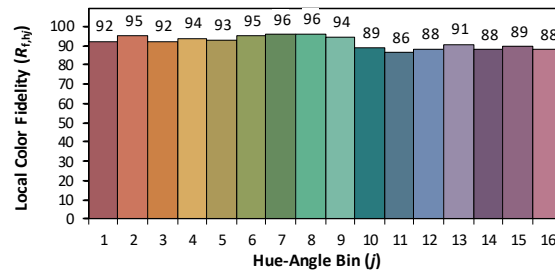
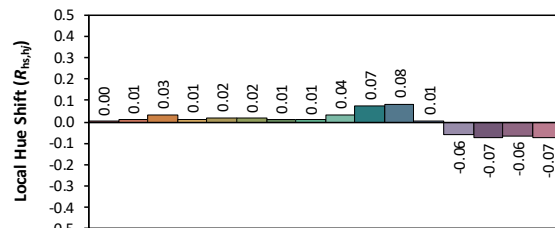
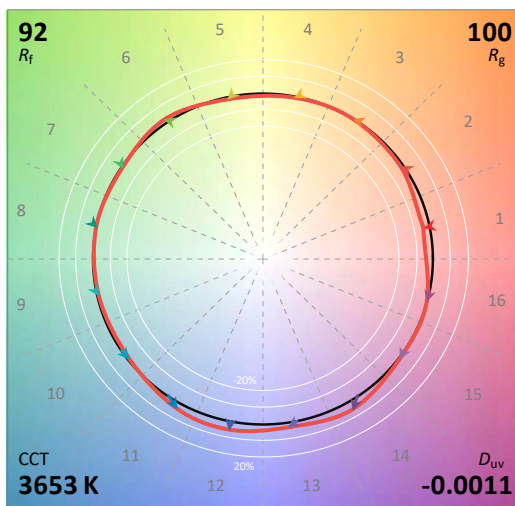
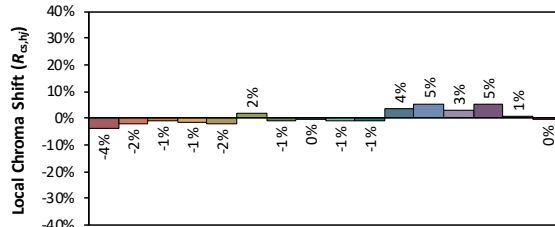
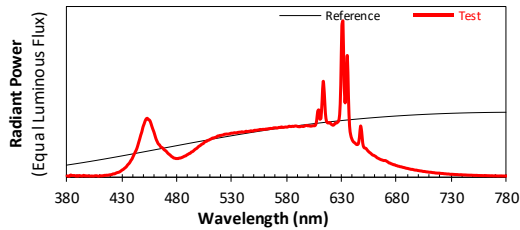
7.2 ANSI/IES TM-30-18 Color Rendition Report*ANSI/IES TM-30-18 Color Rendition Report**

Source:

Manufacturer:

Date: 2023/9/15

Model: LTHY-1000-NL27-DF-I-21

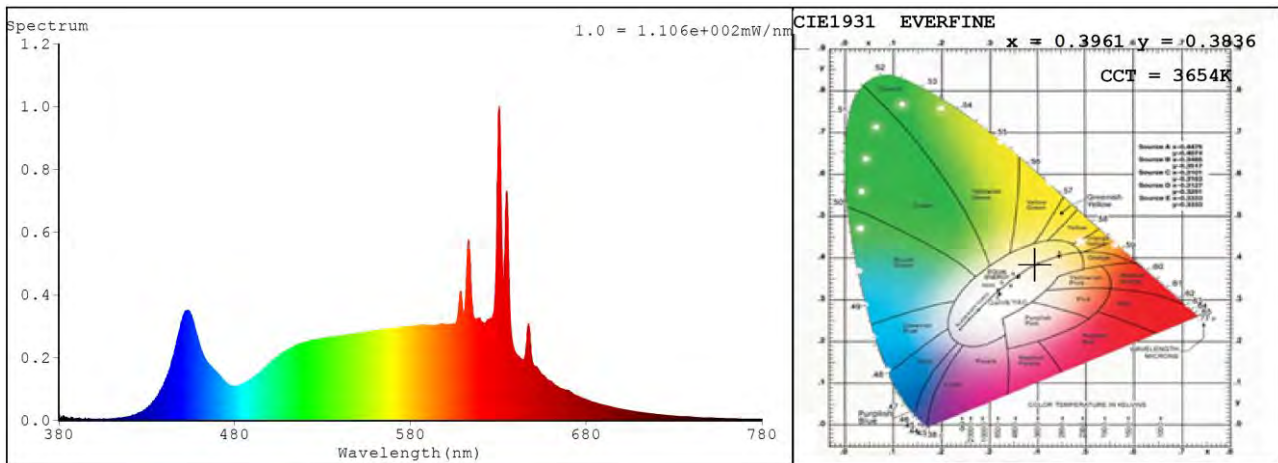


Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

 x 0.3961 y 0.3835 u' 0.2327 v' 0.5068CIE 13.3-1995
(CRI) R_a 96 R_g 75

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

7.3 Relative Spectral Power Distribution



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0046	414	0.0077	448	0.2702	482	0.1115	516	0.2391
381	0.0031	415	0.0077	449	0.2978	483	0.1117	517	0.2443
382	0.0021	416	0.0086	450	0.3158	484	0.1141	518	0.2448
383	0.0097	417	0.0084	451	0.3349	485	0.1168	519	0.2476
384	0.0077	418	0.0098	452	0.3472	486	0.1201	520	0.2478
385	0.0064	419	0.0112	453	0.3504	487	0.1237	521	0.2494
386	0.0066	420	0.0118	454	0.3422	488	0.1252	522	0.2507
387	0.0061	421	0.0139	455	0.3393	489	0.131	523	0.2543
388	0.0031	422	0.0168	456	0.3251	490	0.1339	524	0.2551
389	0.0053	423	0.0165	457	0.3044	491	0.1388	525	0.2561
390	0.0024	424	0.0196	458	0.285	492	0.1406	526	0.2558
391	0.0069	425	0.0229	459	0.2676	493	0.1479	527	0.2563
392	0.0049	426	0.0249	460	0.2454	494	0.15	528	0.2582
393	0.0042	427	0.0265	461	0.2246	495	0.1553	529	0.2606
394	0.0035	428	0.0297	462	0.2101	496	0.1615	530	0.2613
395	0.008	429	0.0344	463	0.1964	497	0.1665	531	0.2612
396	0.0039	430	0.0397	464	0.1912	498	0.1703	532	0.2637
397	0.0053	431	0.0432	465	0.1804	499	0.177	533	0.2634
398	0.0037	432	0.0491	466	0.1758	500	0.1829	534	0.263
399	0.0048	433	0.0543	467	0.1717	501	0.1863	535	0.2653
400	0.0035	434	0.0607	468	0.1637	502	0.1923	536	0.2664
401	0.0033	435	0.0701	469	0.1584	503	0.1963	537	0.2674
402	0.0038	436	0.0769	470	0.1537	504	0.1998	538	0.2669
403	0.0036	437	0.085	471	0.1457	505	0.2071	539	0.2699
404	0.003	438	0.0968	472	0.1385	506	0.2106	540	0.2672
405	0.0046	439	0.106	473	0.1334	507	0.213	541	0.2684
406	0.0054	440	0.1205	474	0.1279	508	0.2177	542	0.2702
407	0.0051	441	0.1347	475	0.1213	509	0.2197	543	0.2729
408	0.0029	442	0.1485	476	0.1173	510	0.2236	544	0.2703
409	0.003	443	0.162	477	0.1122	511	0.2264	545	0.2723
410	0.0054	444	0.1805	478	0.1111	512	0.2309	546	0.2724
411	0.0047	445	0.2035	479	0.1085	513	0.2326	547	0.2752
412	0.0052	446	0.2257	480	0.1092	514	0.234	548	0.2746
413	0.006	447	0.25	481	0.1085	515	0.2364	549	0.2736

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.2774	599	0.3053	648	0.2707	697	0.0391	746	0.0087
551	0.2787	600	0.306	649	0.2012	698	0.039	747	0.0088
552	0.2779	601	0.3039	650	0.1764	699	0.037	748	0.0088
553	0.2798	602	0.3036	651	0.1716	700	0.0362	749	0.008
554	0.2801	603	0.3048	652	0.1693	701	0.0348	750	0.0078
555	0.2827	604	0.3062	653	0.1603	702	0.0342	751	0.0076
556	0.2835	605	0.3057	654	0.1528	703	0.033	752	0.0076
557	0.2826	606	0.3099	655	0.1464	704	0.0312	753	0.0077
558	0.2842	607	0.3341	656	0.1418	705	0.0312	754	0.0067
559	0.2842	608	0.3915	657	0.1357	706	0.03	755	0.0069
560	0.2841	609	0.4004	658	0.1299	707	0.0287	756	0.0064
561	0.2862	610	0.3454	659	0.128	708	0.0283	757	0.0064
562	0.2858	611	0.3518	660	0.1239	709	0.027	758	0.0062
563	0.2879	612	0.4557	661	0.1202	710	0.0263	759	0.006
564	0.2886	613	0.572	662	0.1135	711	0.0263	760	0.0061
565	0.2899	614	0.5034	663	0.1107	712	0.025	761	0.0063
566	0.2891	615	0.3833	664	0.1069	713	0.024	762	0.006
567	0.2905	616	0.3334	665	0.1039	714	0.0238	763	0.0055
568	0.2932	617	0.3234	666	0.101	715	0.0221	764	0.0057
569	0.2933	618	0.323	667	0.0994	716	0.0216	765	0.005
570	0.2937	619	0.3259	668	0.0967	717	0.0211	766	0.0053
571	0.292	620	0.317	669	0.097	718	0.0211	767	0.0052
572	0.2939	621	0.3121	670	0.0957	719	0.0208	768	0.0043
573	0.2961	622	0.309	671	0.0916	720	0.0194	769	0.0049
574	0.295	623	0.3129	672	0.0876	721	0.0192	770	0.0046
575	0.2991	624	0.322	673	0.0821	722	0.0188	771	0.0046
576	0.2961	625	0.3219	674	0.0811	723	0.0175	772	0.0038
577	0.2962	626	0.3264	675	0.0768	724	0.0172	773	0.0043
578	0.2974	627	0.3346	676	0.0752	725	0.0165	774	0.0042
579	0.2985	628	0.3731	677	0.0715	726	0.0156	775	0.0046
580	0.2975	629	0.5512	678	0.0716	727	0.016	776	0.004
581	0.2995	630	0.9064	679	0.0674	728	0.0147	777	0.004
582	0.3029	631	0.9334	680	0.0661	729	0.0139	778	0.0038
583	0.3015	632	0.5776	681	0.0632	730	0.0143	779	0.0038
584	0.3009	633	0.4433	682	0.0623	731	0.0137	780	0.0038
585	0.3029	634	0.6014	683	0.0597	732	0.0134		
586	0.3015	635	0.7255	684	0.0591	733	0.0129		
587	0.3036	636	0.4774	685	0.0569	734	0.0125		
588	0.3045	637	0.3045	686	0.0551	735	0.0125		
589	0.3033	638	0.252	687	0.0539	736	0.0116		
590	0.3009	639	0.2282	688	0.0515	737	0.0111		
591	0.3002	640	0.214	689	0.05	738	0.0117		
592	0.3002	641	0.2065	690	0.0491	739	0.0113		
593	0.3024	642	0.2018	691	0.0471	740	0.0105		
594	0.3021	643	0.1949	692	0.0456	741	0.0103		
595	0.3014	644	0.1927	693	0.0438	742	0.0102		
596	0.3038	645	0.1979	694	0.0438	743	0.0099		
597	0.3064	646	0.237	695	0.0421	744	0.0092		
598	0.308	647	0.3035	696	0.0402	745	0.009		

8. Goniophotometer Test results for LTHY-1000-NL27-DF-I-21

8.1 Test Data

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

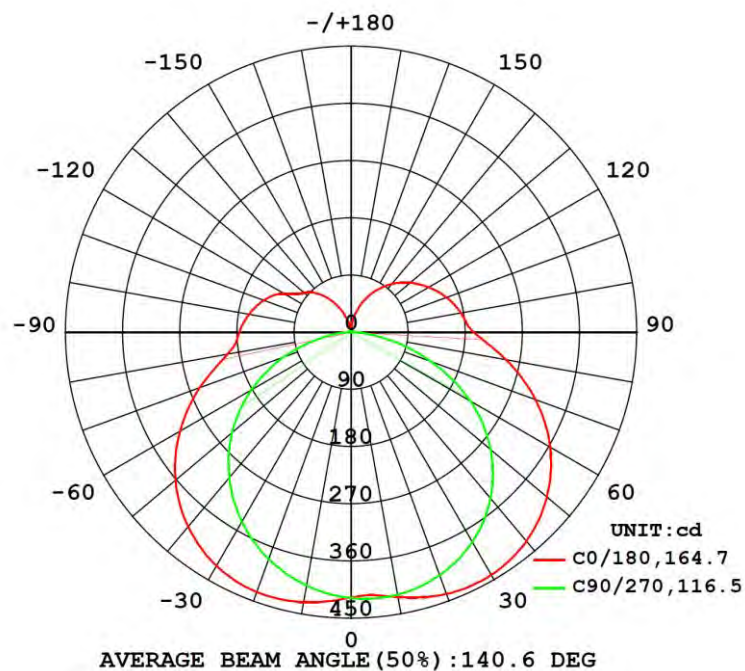
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
24	--	0.77	1.0000	18.48

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	η up (%)	η down (%)
2233.33	120.85	442.5	21.5	78.5

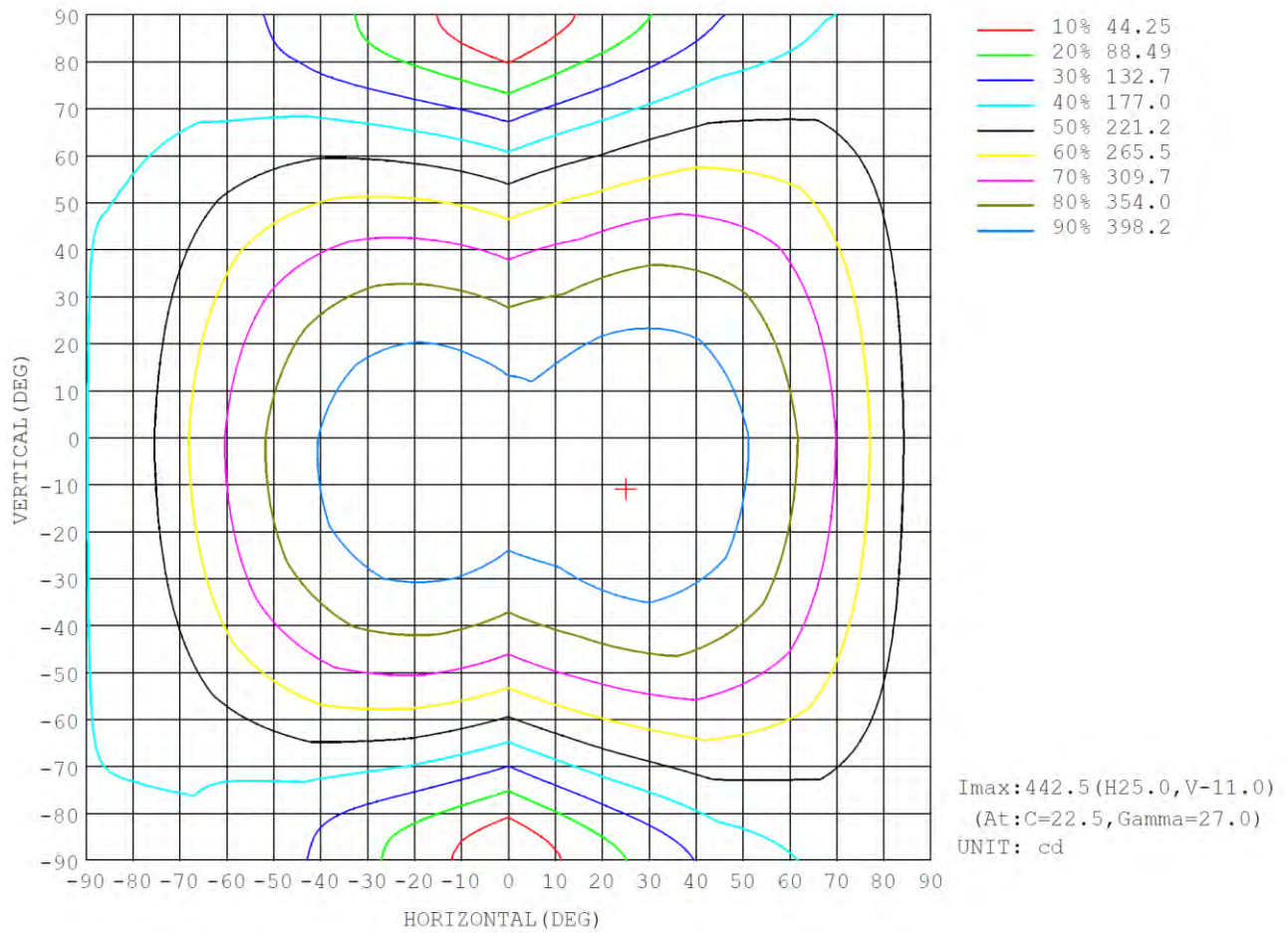
8.2 Luminous Intensity Distribution



8.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	422.9	420.1	419.2	430.9	431.2	419.9	404.7	409.7	0- 10	39.98	39.98	1.79,1.79
20	438.1	428.5	407.0	432.9	434.9	412.0	380.1	408.2	10- 20	118.9	158.9	7.11,7.11
30	440.9	426.7	381.3	421.8	424.5	392.3	344.5	397.2	20- 30	190.5	349.4	15.6,15.6
40	429.2	411.2	341.4	395.9	399.7	360.7	299.0	374.8	30- 40	245.9	595.3	26.7,26.7
50	402.5	380.8	286.8	355.1	361.7	317.6	245.2	340.9	40- 50	277.5	872.8	39.1,39.1
60	362.0	334.6	217.0	299.8	311.7	265.3	181.9	295.3	50- 60	280.3	1153	51.6,51.6
70	308.9	274.5	132.6	232.7	253.6	204.2	112.5	240.6	60- 70	252.8	1406	62.9,62.9
80	247.2	205.0	50.61	165.4	197.6	144.9	42.26	179.2	70- 80	200.3	1606	71.9,71.9
90	193.4	149.4	8.057	138.5	176.6	120.6	7.365	130.4	80- 90	146.4	1753	78.5,78.5
100	175.7	136.9	2.155	126.8	164.0	110.6	1.598	119.7	90-100	123.1	1876	84,84
110	160.5	125.0	2.668	110.1	147.4	94.34	2.085	109.8	100-110	108.1	1984	88.8,88.8
120	142.0	109.8	3.236	90.47	121.0	71.06	2.492	97.81	110-120	88.58	2072	92.8,92.8
130	122.1	92.62	3.720	72.05	96.87	63.70	3.069	82.66	120-130	66.99	2139	95.8,95.8
140	99.35	70.48	4.067	51.10	78.99	47.61	2.925	64.40	130-140	47.34	2187	97.9,97.9
150	74.83	52.97	4.183	30.28	53.43	32.88	2.049	44.37	140-150	28.60	2215	99.2,99.2
160	48.93	32.62	3.806	13.07	26.71	20.03	1.342	18.43	150-160	13.54	2229	99.8,99.8
170	22.36	12.49	3.403	1.917	5.782	4.178	2.214	8.181	160-170	3.983	2233	100,100
180	1.766	3.472	3.893	3.422	2.127	2.929	3.752	3.838	170-180	0.4973	2233	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

8.4 Isocandela Diagram



8.5 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	417	418	418	418	418	418	418	418	417	418	418	418	418	418	418	418			
5	415	416	416	418	420	423	425	427	425	423	420	416	413	411	412	413			
10	423	424	420	416	419	425	431	433	431	427	420	412	405	403	410	418			
15	432	432	425	414	415	425	434	438	435	428	417	405	394	395	410	424			
20	438	439	428	411	407	421	433	438	435	426	412	395	380	385	408	427			
25	441	442	429	406	396	414	429	435	432	421	404	382	363	375	404	428			
30	441	442	427	397	381	403	422	429	425	412	392	367	345	362	397	426			
35	437	438	421	386	363	389	411	418	414	400	378	349	323	346	387	420			
40	429	431	411	371	341	372	396	404	400	385	361	329	299	328	375	411			
45	418	419	398	353	316	351	377	387	382	366	340	306	274	308	359	398			
50	402	404	381	331	287	325	355	366	362	345	318	281	245	285	341	382			
55	384	385	360	305	254	296	329	341	338	321	292	253	214	261	319	362			
60	362	362	335	276	217	263	300	314	312	295	265	222	182	233	295	340			
65	337	336	306	243	175	227	267	284	283	267	235	190	148	203	269	315			
70	309	307	274	207	133	188	233	252	254	237	204	157	113	172	241	287			
75	279	275	240	169	90.8	148	198	220	223	207	173	123	75.2	140	210	258			
80	247	242	205	131	50.6	111	165	192	198	180	145	92.3	42.3	109	179	227			
85	217	211	172	98.7	19.7	83.6	145	176	182	165	126	69.3	18.1	81.4	151	198			
90	193	187	149	80.2	8.06	75.5	139	171	177	159	121	61.9	7.36	65.4	130	175			
95	182	176	142	77.2	4.96	70.9	133	165	171	154	116	58.3	1.24	62.8	124	165			
100	176	170	137	74.5	2.16	66.0	127	157	164	147	111	53.1	1.60	60.9	120	159			
105	169	163	131	71.5	2.19	59.6	120	149	156	140	104	39.0	1.84	58.8	115	153			
110	160	155	125	68.1	2.67	54.2	110	140	147	132	94.3	40.7	2.08	56.0	110	146			
115	152	146	118	63.6	2.97	47.9	98.7	129	137	121	77.8	38.9	2.29	53.4	104	138			
120	142	136	110	59.1	3.24	41.1	90.5	114	121	103	71.1	34.1	2.49	48.4	97.8	130			
125	132	127	101	54.2	3.44	34.7	81.9	103	105	90.9	69.5	28.9	2.80	45.7	88.9	121			
130	122	117	92.6	49.2	3.72	28.3	72.1	94.7	96.9	86.1	63.7	23.7	3.07	42.4	82.7	111			
135	111	106	83.4	44.0	3.92	22.6	61.6	84.3	89.4	79.3	55.8	19.7	3.26	38.1	75.0	101			
140	99.4	94.3	70.5	38.6	4.07	17.4	51.1	72.6	79.0	70.0	47.6	16.6	2.92	33.0	64.4	88.1			
145	87.3	82.6	61.9	33.2	4.22	12.5	40.5	60.0	66.6	59.6	39.9	14.7	2.32	26.4	55.2	77.5			
150	74.8	70.5	53.0	27.9	4.18	8.27	30.3	47.2	53.4	48.9	32.9	13.0	2.05	18.3	44.4	62.4			
155	62.0	58.3	43.5	22.1	3.99	4.84	21.2	34.2	39.6	37.4	26.7	11.2	1.71	11.0	31.8	50.4			
160	48.9	45.6	32.6	16.0	3.81	2.55	13.1	22.6	26.7	26.2	20.0	8.68	1.34	6.23	18.4	35.1			
165	35.5	32.0	22.0	11.0	3.56	1.45	6.07	12.4	15.5	15.5	11.6	4.95	1.57	4.14	12.4	20.3			
170	22.4	18.5	12.5	7.76	3.40	1.85	1.92	4.10	5.78	5.85	4.18	2.05	2.21	3.77	8.18	12.7			
175	10.8	7.22	7.39	5.60	3.70	2.58	2.21	1.33	1.44	1.47	1.46	2.23	2.58	3.75	5.70	7.72			
180	1.77	2.83	3.47	3.75	3.89	3.81	3.42	2.81	2.13	1.82	2.93	3.42	3.75	3.88	3.84	3.60			

9. Integrating Sphere Test Results for LTHY-1000-NL27-DF-I-31

9.1 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	1.0785	23.998	25.882	3150.6	0.3967	0.3843	0.2328	0.5073	3644	95.4
1	00h00m10s	1.0799	23.998	25.915	3152.7	0.397	0.3844	0.2328	0.5074	3639	95.4
2	00h00m20s	1.0809	23.998	25.939	3152.6	0.3969	0.3844	0.2328	0.5073	3641	95.4
3	00h00m30s	1.0818	23.998	25.961	3151.4	0.397	0.3843	0.233	0.5073	3636	95.4
4	00h00m40s	1.0828	23.998	25.985	3153.8	0.3969	0.3843	0.2329	0.5073	3638	95.4
5	00h00m50s	1.0836	23.998	26.004	3154	0.3971	0.3842	0.233	0.5073	3636	95.4
6	00h01m00s	1.0845	23.998	26.026	3156.1	0.3969	0.3841	0.233	0.5072	3637	95.5
7	00h01m10s	1.0853	23.998	26.045	3156.2	0.397	0.3841	0.233	0.5073	3635	95.4
8	00h01m20s	1.086	23.998	26.062	3156.4	0.3969	0.3838	0.2331	0.5071	3635	95.5
9	00h01m30s	1.0868	23.998	26.081	3158.4	0.3971	0.3841	0.233	0.5072	3634	95.5
10	00h01m40s	1.0875	23.998	26.098	3157.7	0.3971	0.384	0.2331	0.5072	3633	95.5
11	00h01m50s	1.0883	23.998	26.117	3157.1	0.397	0.3838	0.2331	0.5071	3634	95.5
12	00h02m00s	1.0889	23.998	26.131	3159.5	0.397	0.3839	0.2331	0.5071	3634	95.5
13	00h02m10s	1.0896	23.998	26.148	3159.3	0.397	0.3837	0.2331	0.5071	3633	95.6
14	00h02m20s	1.0902	23.998	26.163	3158.8	0.3972	0.3838	0.2333	0.5071	3629	95.6
15	00h02m30s	1.0909	23.998	26.179	3160.6	0.397	0.3837	0.2332	0.5071	3631	95.6
16	00h02m40s	1.0915	23.998	26.194	3159.8	0.3971	0.3838	0.2332	0.5071	3630	95.6
17	00h02m50s	1.0921	23.998	26.208	3160.6	0.3969	0.3836	0.2332	0.507	3633	95.6
18	00h03m00s	1.0927	23.998	26.223	3160.3	0.397	0.3836	0.2333	0.507	3630	95.6
19	00h03m10s	1.0932	23.998	26.235	3161.8	0.3972	0.3837	0.2333	0.5071	3628	95.6
20	00h03m20s	1.0937	23.998	26.247	3160.5	0.397	0.3835	0.2333	0.507	3629	95.6
21	00h03m30s	1.0943	23.998	26.261	3162.3	0.3971	0.3836	0.2333	0.507	3630	95.6

22	00h03m40s	1.0948	23.998	26.273	3160.7	0.3971	0.3835	0.2333	0.507	3628	95.7
23	00h03m50s	1.0953	23.998	26.285	3162.6	0.3971	0.3835	0.2333	0.507	3628	95.6
24	00h04m00s	1.0958	23.998	26.297	3163.6	0.397	0.3834	0.2333	0.5069	3631	95.6
25	00h04m10s	1.0962	23.998	26.307	3162.4	0.3972	0.3836	0.2334	0.507	3626	95.6
26	00h04m20s	1.0967	23.998	26.319	3163.4	0.3972	0.3834	0.2334	0.5069	3626	95.6
27	00h04m30s	1.0971	23.998	26.328	3162.9	0.3972	0.3834	0.2334	0.507	3625	95.6
28	00h04m40s	1.0976	23.998	26.34	3164.2	0.3972	0.3834	0.2334	0.5069	3625	95.7
29	00h04m50s	1.0979	23.998	26.347	3163.9	0.3972	0.3834	0.2334	0.507	3626	95.7
30	00h05m00s	1.0984	23.998	26.359	3163.4	0.3972	0.3833	0.2335	0.5069	3624	95.7
31	00h05m10s	1.0987	23.998	26.367	3164.5	0.3973	0.3834	0.2335	0.507	3624	95.7
32	00h05m20s	1.0991	23.998	26.376	3165.4	0.3972	0.3834	0.2334	0.507	3626	95.7
33	00h05m30s	1.0995	23.998	26.386	3164.7	0.3973	0.3834	0.2335	0.507	3622	95.7
34	00h05m40s	1.0998	23.998	26.393	3162.9	0.3973	0.3832	0.2335	0.5069	3622	95.7
35	00h05m50s	1.1002	23.998	26.403	3165.4	0.3973	0.3833	0.2335	0.5069	3622	95.7
36	00h06m00s	1.1005	23.998	26.41	3164.1	0.3973	0.3834	0.2335	0.507	3623	95.7
37	00h06m10s	1.1009	23.998	26.419	3167	0.3972	0.3833	0.2335	0.5069	3625	95.7
38	00h06m20s	1.1012	23.998	26.427	3165.5	0.3972	0.383	0.2336	0.5068	3622	95.7
39	00h06m30s	1.1015	23.998	26.434	3164.2	0.3973	0.3831	0.2336	0.5068	3621	95.7
40	00h06m40s	1.1018	23.998	26.441	3164.4	0.3973	0.383	0.2336	0.5068	3620	95.8
41	00h06m50s	1.1021	23.998	26.448	3164.6	0.3972	0.383	0.2336	0.5068	3621	95.7
42	00h07m00s	1.1024	23.998	26.455	3165.4	0.3973	0.3831	0.2336	0.5069	3620	95.8
43	00h07m10s	1.1027	23.998	26.463	3164.4	0.3972	0.3829	0.2336	0.5068	3621	95.7
44	00h07m20s	1.1029	23.998	26.467	3166.4	0.3973	0.3831	0.2336	0.5069	3621	95.7
45	00h07m30s	1.1032	23.998	26.475	3164.3	0.3973	0.3828	0.2337	0.5067	3618	95.8
46	00h07m40s	1.1034	23.998	26.479	3165.9	0.3973	0.3831	0.2336	0.5068	3619	95.8
47	00h07m50s	1.1037	23.998	26.487	3167	0.3973	0.3831	0.2336	0.5069	3619	95.8
48	00h08m00s	1.1039	23.998	26.491	3166.2	0.3973	0.383	0.2337	0.5068	3620	95.8
49	00h08m10s	1.1042	23.998	26.499	3165.4	0.3973	0.3829	0.2337	0.5068	3620	95.8
50	00h08m20s	1.1044	23.998	26.503	3167.8	0.3973	0.3829	0.2337	0.5068	3618	95.8
51	00h08m30s	1.1046	23.998	26.508	3166.5	0.3974	0.383	0.2337	0.5068	3618	95.8
52	00h08m40s	1.1048	23.998	26.513	3165.2	0.3973	0.3829	0.2337	0.5068	3619	95.8

53	00h08m50s	1.105	23.998	26.518	3167.4	0.3972	0.3828	0.2337	0.5067	3621	95.7
54	00h09m00s	1.1052	23.998	26.523	3167.5	0.3973	0.3829	0.2337	0.5067	3618	95.8
55	00h09m10s	1.1054	23.998	26.527	3169.3	0.3975	0.3832	0.2337	0.5069	3615	95.8
56	00h09m20s	1.1056	23.998	26.532	3168.7	0.3973	0.3829	0.2337	0.5068	3619	95.8
57	00h09m30s	1.1058	23.998	26.537	3166.5	0.3971	0.3827	0.2337	0.5066	3621	95.8
58	00h09m40s	1.106	23.998	26.542	3169.3	0.3974	0.3829	0.2338	0.5068	3617	95.8
59	00h09m50s	1.1061	23.998	26.544	3169.7	0.3974	0.3829	0.2338	0.5068	3617	95.8
60	00h10m00s	1.1063	23.998	26.549	3169.1	0.3973	0.3829	0.2337	0.5068	3619	95.8
61	00h10m10s	1.1065	23.998	26.554	3168.5	0.3974	0.3829	0.2338	0.5068	3616	95.8
62	00h10m20s	1.1066	23.998	26.556	3167.3	0.3973	0.3828	0.2337	0.5067	3618	95.8
63	00h10m30s	1.1068	23.998	26.561	3168.4	0.3973	0.3828	0.2337	0.5067	3618	95.8
64	00h10m40s	1.1069	23.998	26.563	3167.7	0.3974	0.3828	0.2338	0.5067	3616	95.8
65	00h10m50s	1.1071	23.998	26.568	3169	0.3974	0.3827	0.2338	0.5067	3615	95.8
66	00h11m00s	1.1072	23.998	26.571	3167.3	0.3973	0.3827	0.2338	0.5067	3617	95.8
67	00h11m10s	1.1074	23.998	26.575	3169.7	0.3974	0.3829	0.2338	0.5068	3616	95.8
68	00h11m20s	1.1075	23.998	26.578	3170.1	0.3974	0.3829	0.2338	0.5068	3615	95.8
69	00h11m30s	1.1076	23.998	26.58	3169	0.3975	0.3829	0.2338	0.5068	3615	95.8
70	00h11m40s	1.1078	23.998	26.585	3169	0.3975	0.383	0.2338	0.5068	3614	95.8
71	00h11m50s	1.1079	23.998	26.587	3169.1	0.3974	0.3827	0.2338	0.5067	3615	95.8
72	00h12m00s	1.108	23.998	26.59	3167.3	0.3973	0.3826	0.2338	0.5066	3616	95.9
73	00h12m10s	1.1081	23.998	26.592	3170.7	0.3974	0.3829	0.2337	0.5068	3617	95.8
74	00h12m20s	1.1082	23.998	26.595	3171.6	0.3973	0.3829	0.2337	0.5068	3618	95.8
75	00h12m30s	1.1083	23.998	26.597	3169	0.3974	0.3827	0.2339	0.5067	3614	95.8
76	00h12m40s	1.1085	23.998	26.602	3170.3	0.3973	0.3826	0.2338	0.5066	3616	95.9
77	00h12m50s	1.1086	23.998	26.604	3170.2	0.3974	0.3827	0.2339	0.5067	3614	95.8
78	00h13m00s	1.1087	23.998	26.607	3170	0.3973	0.3828	0.2338	0.5067	3616	95.9
79	00h13m10s	1.1088	23.998	26.609	3170.1	0.3975	0.3828	0.2338	0.5067	3614	95.8
80	00h13m20s	1.1089	23.998	26.611	3171	0.3974	0.3828	0.2338	0.5067	3615	95.8
81	00h13m30s	1.109	23.998	26.614	3169.6	0.3976	0.3828	0.2339	0.5068	3611	95.9
82	00h13m40s	1.1091	23.998	26.616	3170.9	0.3972	0.3826	0.2338	0.5066	3618	95.9
83	00h13m50s	1.1091	23.998	26.616	3168.9	0.3973	0.3826	0.2338	0.5066	3616	95.8

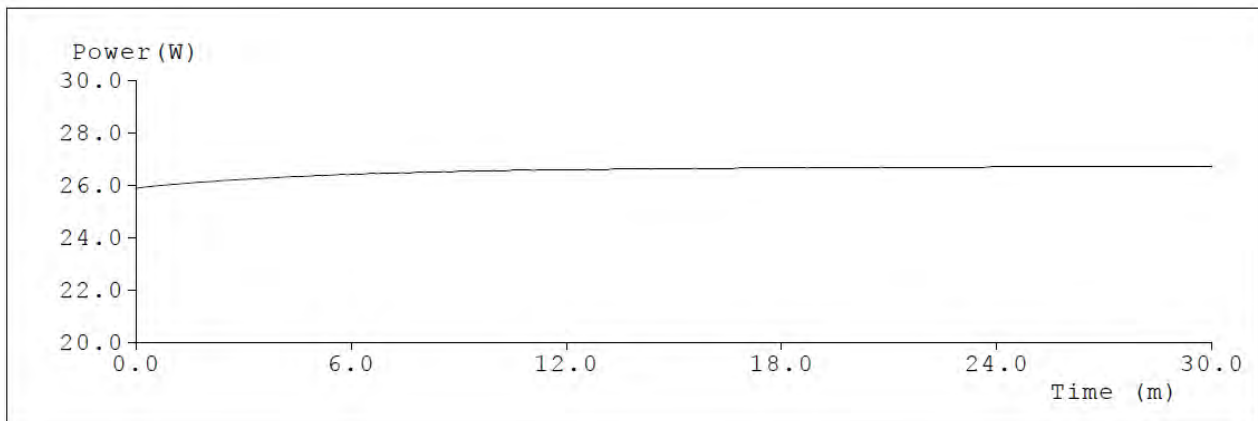
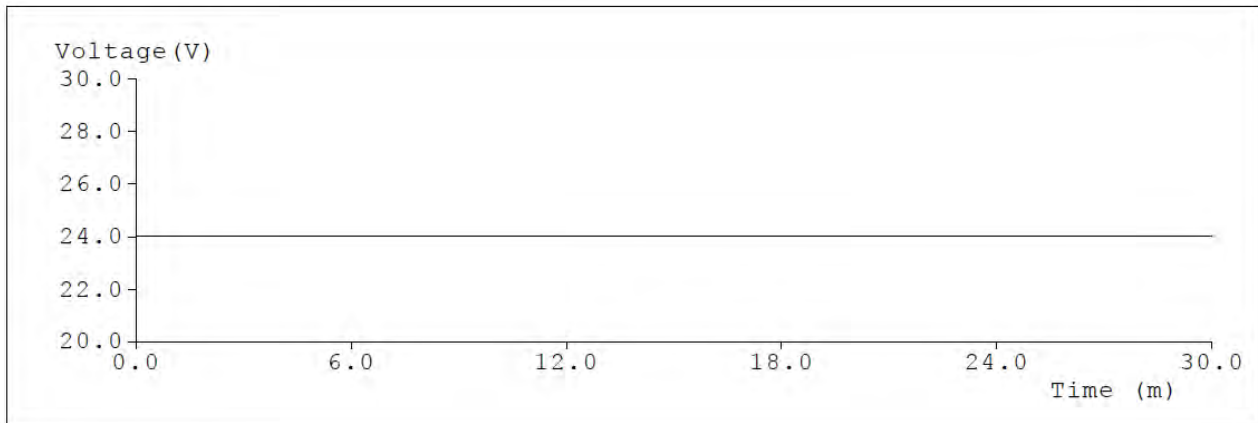
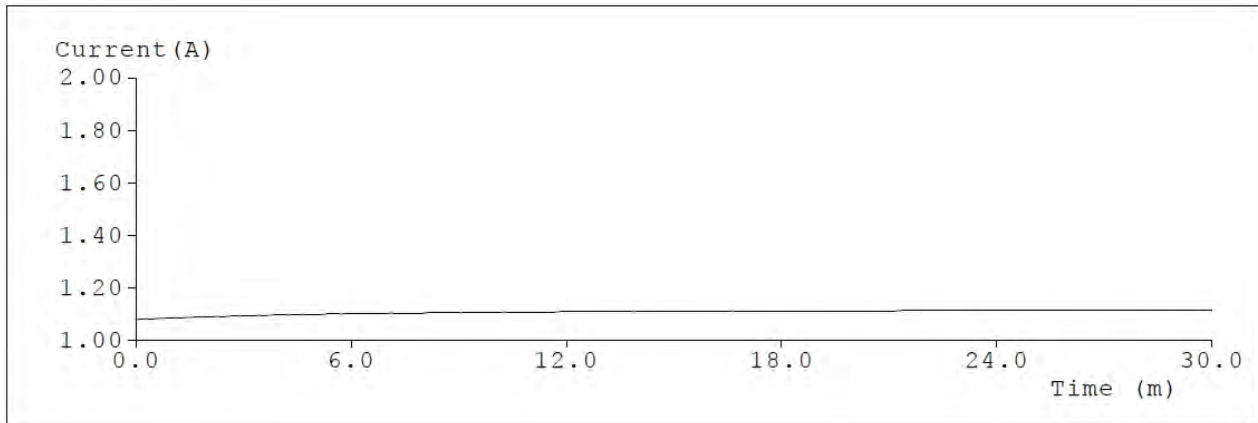
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85	00h14m10s	1.1093	23.998	26.621	3171	0.3975	0.3827	0.2339	0.5067	3613	95.9
86	00h14m20s	1.1094	23.998	26.623	3172.2	0.3973	0.3827	0.2338	0.5067	3617	95.9
87	00h14m30s	1.1095	23.998	26.626	3170.9	0.3973	0.3827	0.2338	0.5067	3616	95.9
88	00h14m40s	1.1096	23.998	26.628	3169.1	0.3975	0.3826	0.2339	0.5067	3612	95.9
89	00h14m50s	1.1097	23.998	26.631	3170.4	0.3973	0.3826	0.2338	0.5066	3616	95.9
90	00h15m00s	1.1097	23.998	26.631	3170.6	0.3974	0.3827	0.2338	0.5067	3615	95.9
91	00h15m10s	1.1098	23.998	26.633	3171.9	0.3972	0.3827	0.2337	0.5067	3619	95.8
92	00h15m20s	1.1099	23.998	26.635	3172.9	0.3974	0.3827	0.2338	0.5067	3616	95.8
93	00h15m30s	1.1099	23.998	26.635	3170.4	0.3974	0.3826	0.2339	0.5067	3615	95.9
94	00h15m40s	1.11	23.998	26.638	3171	0.3976	0.3827	0.234	0.5067	3611	95.9
95	00h15m50s	1.1101	23.998	26.64	3170.5	0.3973	0.3826	0.2338	0.5066	3616	95.9
96	00h16m00s	1.1101	23.998	26.64	3170.1	0.3975	0.3826	0.2339	0.5067	3612	95.9
97	00h16m10s	1.1102	23.998	26.643	3171.4	0.3973	0.3826	0.2338	0.5066	3616	95.9
98	00h16m20s	1.1103	23.998	26.645	3168.9	0.3975	0.3827	0.2339	0.5067	3612	95.9
99	00h16m30s	1.1103	23.998	26.645	3170.4	0.3975	0.3826	0.2339	0.5067	3612	95.8
100	00h16m40s	1.1104	23.998	26.647	3171.2	0.3974	0.3826	0.2339	0.5067	3613	95.8
101	00h16m50s	1.1105	23.998	26.65	3170.9	0.3975	0.3827	0.2339	0.5067	3613	95.9
102	00h17m00s	1.1105	23.998	26.65	3169.2	0.3975	0.3826	0.2339	0.5067	3612	95.9
103	00h17m10s	1.1106	23.998	26.652	3170.4	0.3974	0.3826	0.2339	0.5066	3614	95.9
104	00h17m20s	1.1106	23.998	26.652	3170.9	0.3973	0.3824	0.2339	0.5065	3614	95.9
105	00h17m30s	1.1107	23.998	26.655	3170.8	0.3974	0.3826	0.2339	0.5067	3614	95.8
106	00h17m40s	1.1107	23.998	26.655	3169.7	0.3975	0.3826	0.2339	0.5067	3612	95.9
107	00h17m50s	1.1108	23.998	26.657	3173	0.3973	0.3826	0.2338	0.5066	3615	95.8
108	00h18m00s	1.1108	23.998	26.657	3172.5	0.3974	0.3825	0.2339	0.5066	3613	95.9
109	00h18m10s	1.1109	23.998	26.659	3172.7	0.3974	0.3827	0.2338	0.5067	3616	95.8
110	00h18m20s	1.1109	23.998	26.659	3170.3	0.3975	0.3825	0.234	0.5066	3612	95.9
111	00h18m30s	1.111	23.998	26.662	3173	0.3974	0.3826	0.2339	0.5067	3614	95.8
112	00h18m40s	1.111	23.998	26.662	3170.9	0.3972	0.3824	0.2338	0.5065	3618	95.9
113	00h18m50s	1.1111	23.998	26.664	3171.1	0.3974	0.3827	0.2339	0.5067	3613	95.9
114	00h19m00s	1.1111	23.998	26.664	3175.1	0.3975	0.3828	0.2339	0.5068	3613	95.8

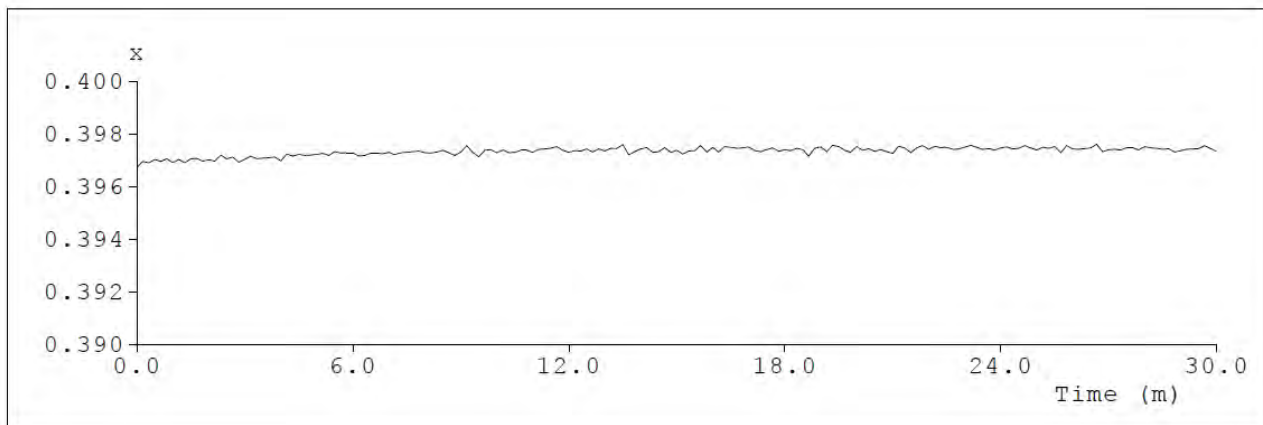
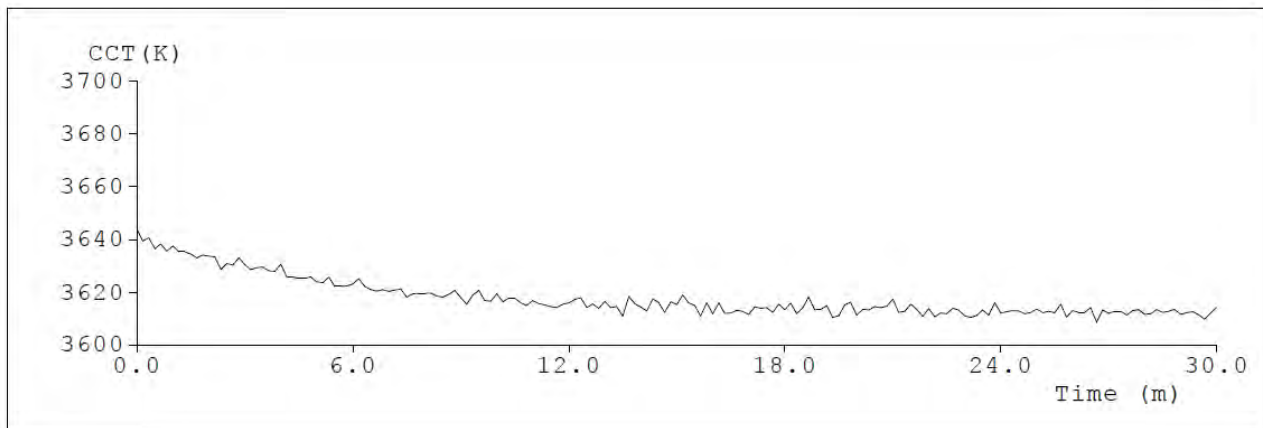
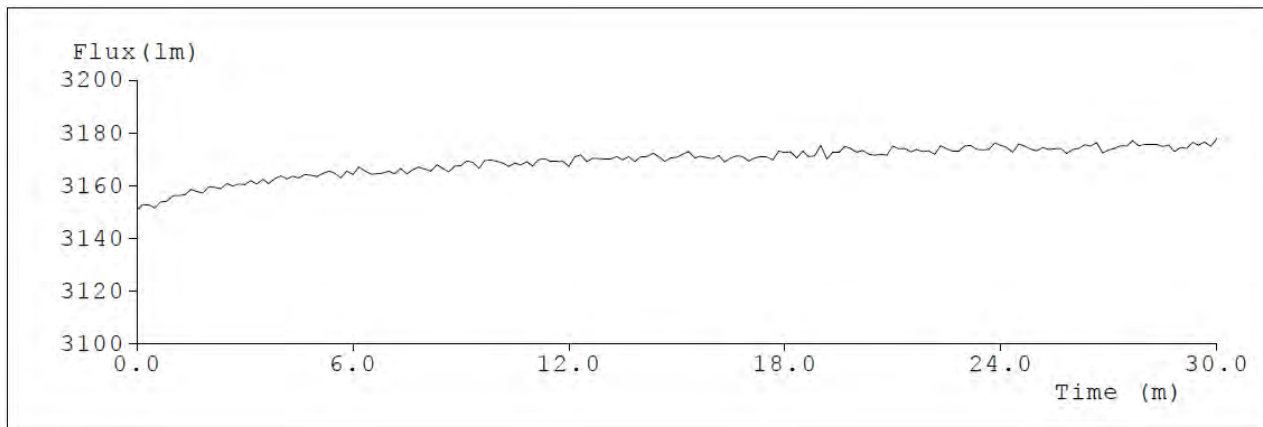
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116	00h19m20s	1.1112	23.998	26.667	3172.5	0.3976	0.3827	0.234	0.5067	3610	95.9
117	00h19m30s	1.1112	23.998	26.667	3172.5	0.3975	0.3826	0.234	0.5067	3611	95.9
118	00h19m40s	1.1113	23.998	26.669	3174.7	0.3974	0.3827	0.2338	0.5067	3615	95.8
119	00h19m50s	1.1113	23.998	26.669	3174	0.3973	0.3826	0.2338	0.5066	3616	95.9
120	00h20m00s	1.1114	23.998	26.671	3172.6	0.3975	0.3826	0.234	0.5067	3611	95.9
121	00h20m10s	1.1114	23.998	26.671	3173.3	0.3974	0.3825	0.2339	0.5066	3613	95.9
122	00h20m20s	1.1114	23.998	26.671	3171.8	0.3974	0.3827	0.2339	0.5067	3613	95.9
123	00h20m30s	1.1115	23.998	26.674	3171.5	0.3973	0.3825	0.2339	0.5066	3615	95.9
124	00h20m40s	1.1115	23.998	26.674	3171.8	0.3974	0.3826	0.2339	0.5067	3614	95.9
125	00h20m50s	1.1116	23.998	26.676	3171.4	0.3973	0.3825	0.2339	0.5066	3615	95.8
126	00h21m00s	1.1116	23.998	26.676	3174.9	0.3973	0.3826	0.2338	0.5066	3617	95.9
127	00h21m10s	1.1116	23.998	26.676	3173.8	0.3975	0.3828	0.2339	0.5068	3612	95.9
128	00h21m20s	1.1117	23.998	26.679	3174	0.3975	0.3826	0.2339	0.5067	3613	95.8
129	00h21m30s	1.1117	23.998	26.679	3172.8	0.3973	0.3825	0.2339	0.5066	3615	95.9
130	00h21m40s	1.1117	23.998	26.679	3173.7	0.3975	0.3827	0.2339	0.5067	3614	95.8
131	00h21m50s	1.1117	23.998	26.679	3172.8	0.3976	0.3827	0.234	0.5067	3611	95.8
132	00h22m00s	1.1118	23.998	26.681	3173	0.3974	0.3826	0.2339	0.5067	3614	95.9
133	00h22m10s	1.1118	23.998	26.681	3171.8	0.3975	0.3826	0.234	0.5067	3611	95.9
134	00h22m20s	1.1118	23.998	26.681	3175	0.3975	0.3826	0.2339	0.5067	3612	95.9
135	00h22m30s	1.1118	23.998	26.681	3173.8	0.3975	0.3826	0.2339	0.5067	3612	95.9
136	00h22m40s	1.1119	23.998	26.683	3173	0.3974	0.3826	0.2339	0.5067	3614	95.9
137	00h22m50s	1.1119	23.998	26.683	3173	0.3974	0.3826	0.2339	0.5067	3613	95.9
138	00h23m00s	1.1119	23.998	26.683	3174.9	0.3975	0.3825	0.234	0.5066	3611	95.9
139	00h23m10s	1.112	23.998	26.686	3175.2	0.3976	0.3827	0.234	0.5067	3610	95.9
140	00h23m20s	1.112	23.998	26.686	3173.6	0.3975	0.3825	0.234	0.5066	3611	95.9
141	00h23m30s	1.112	23.998	26.686	3173.5	0.3974	0.3826	0.2339	0.5066	3613	95.9
142	00h23m40s	1.112	23.998	26.686	3173.6	0.3974	0.3824	0.234	0.5066	3611	95.9
143	00h23m50s	1.1121	23.998	26.688	3176.1	0.3974	0.3828	0.2338	0.5067	3616	95.9
144	00h24m00s	1.1121	23.998	26.688	3175.2	0.3975	0.3826	0.2339	0.5066	3612	95.8
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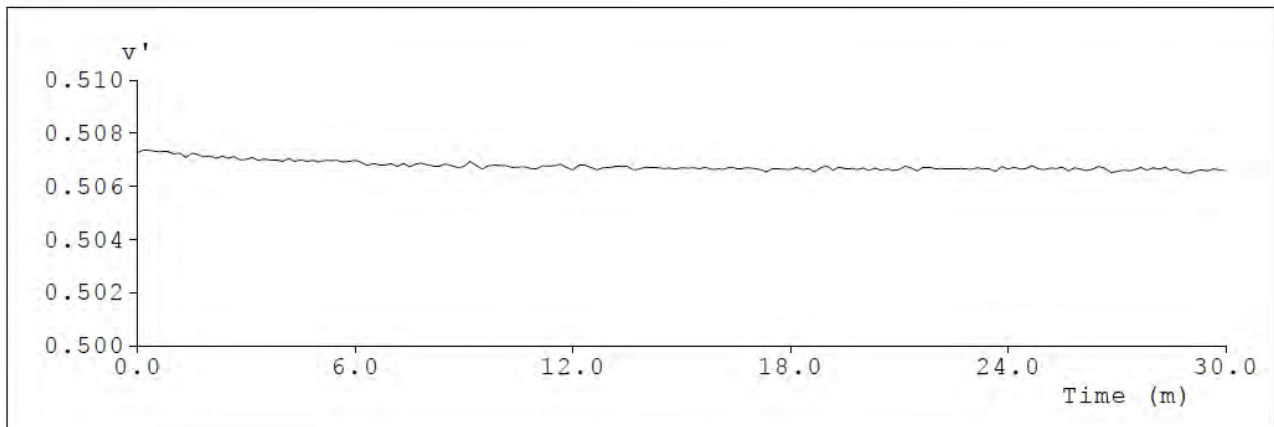
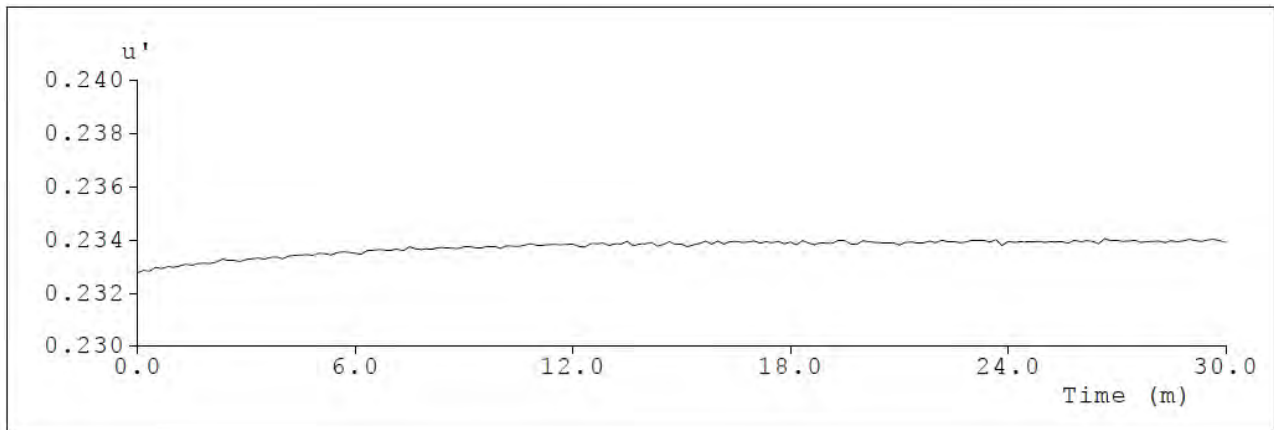
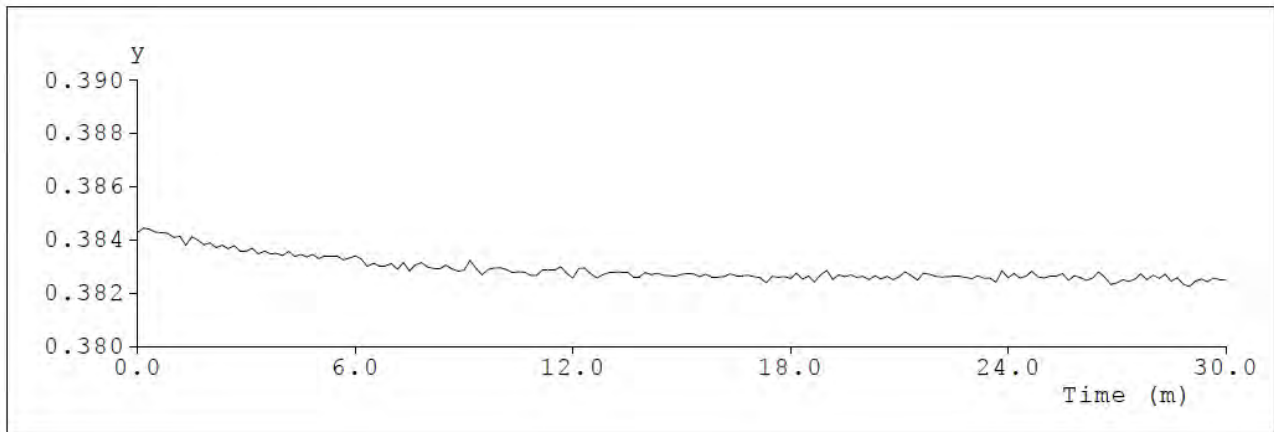
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149	00h24m50s	1.1122	23.998	26.691	3173.8	0.3975	0.3826	0.2339	0.5067	3612	95.9
150	00h25m00s	1.1122	23.998	26.691	3173.1	0.3974	0.3826	0.2339	0.5066	3614	95.9
151	00h25m10s	1.1122	23.998	26.691	3174.3	0.3975	0.3826	0.2339	0.5067	3612	95.9
152	00h25m20s	1.1123	23.998	26.693	3173.6	0.3975	0.3826	0.2339	0.5067	3613	95.9
153	00h25m30s	1.1123	23.998	26.693	3173.9	0.3975	0.3827	0.2339	0.5067	3612	95.9
154	00h25m40s	1.1123	23.998	26.693	3174	0.3973	0.3825	0.2339	0.5066	3615	95.9
155	00h25m50s	1.1123	23.998	26.693	3172	0.3976	0.3827	0.234	0.5067	3611	95.9
156	00h26m00s	1.1123	23.998	26.693	3173.6	0.3974	0.3826	0.2339	0.5066	3613	95.9
157	00h26m10s	1.1124	23.998	26.695	3174	0.3974	0.3825	0.234	0.5066	3612	95.9
158	00h26m20s	1.1124	23.998	26.695	3175.5	0.3974	0.3826	0.2339	0.5066	3612	95.8
159	00h26m30s	1.1124	23.998	26.695	3174.8	0.3975	0.3828	0.2338	0.5067	3614	95.9
160	00h26m40s	1.1124	23.998	26.695	3176.2	0.3976	0.3826	0.234	0.5067	3609	95.9
161	00h26m50s	1.1124	23.998	26.695	3172.3	0.3973	0.3823	0.234	0.5065	3613	95.9
162	00h27m00s	1.1124	23.998	26.695	3173.5	0.3974	0.3824	0.234	0.5066	3612	95.9
163	00h27m10s	1.1125	23.998	26.698	3174	0.3974	0.3825	0.2339	0.5066	3613	95.9
164	00h27m20s	1.1125	23.998	26.698	3175	0.3974	0.3824	0.2339	0.5066	3613	95.9
165	00h27m30s	1.1125	23.998	26.698	3174.9	0.3975	0.3825	0.234	0.5066	3611	95.9
166	00h27m40s	1.1125	23.998	26.698	3177	0.3975	0.3827	0.2339	0.5067	3613	95.9
167	00h27m50s	1.1125	23.998	26.698	3175.1	0.3974	0.3825	0.2339	0.5066	3613	95.9
168	00h28m00s	1.1125	23.998	26.698	3175.5	0.3975	0.3827	0.2339	0.5067	3612	95.8
169	00h28m10s	1.1125	23.998	26.698	3175.5	0.3975	0.3826	0.234	0.5066	3612	95.9
170	00h28m20s	1.1126	23.998	26.7	3175.6	0.3975	0.3827	0.2339	0.5067	3613	95.9
171	00h28m30s	1.1126	23.998	26.7	3174.7	0.3974	0.3824	0.234	0.5066	3612	95.9
172	00h28m40s	1.1126	23.998	26.7	3175.2	0.3974	0.3826	0.2339	0.5066	3613	95.9
173	00h28m50s	1.1126	23.998	26.7	3172.8	0.3973	0.3823	0.2339	0.5065	3613	95.9
174	00h29m00s	1.1126	23.998	26.7	3174.4	0.3974	0.3822	0.234	0.5065	3612	95.9
175	00h29m10s	1.1126	23.998	26.7	3174	0.3974	0.3824	0.234	0.5066	3612	95.9
176	00h29m20s	1.1126	23.998	26.7	3176.3	0.3974	0.3825	0.2339	0.5066	3613	95.9

177	00h29m30s	1.1126	23.998	26.7	3175.2	0.3974	0.3824	0.234	0.5066	3611	95.9
178	00h29m40s	1.1126	23.998	26.7	3176.5	0.3976	0.3826	0.234	0.5067	3610	95.9
179	00h29m50s	1.1126	23.998	26.7	3174.7	0.3974	0.3825	0.234	0.5066	3612	95.9
180	00h30m00s	1.1126	23.998	26.7	3177.7	0.3973	0.3825	0.2339	0.5066	3614	95.9

Test curves







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

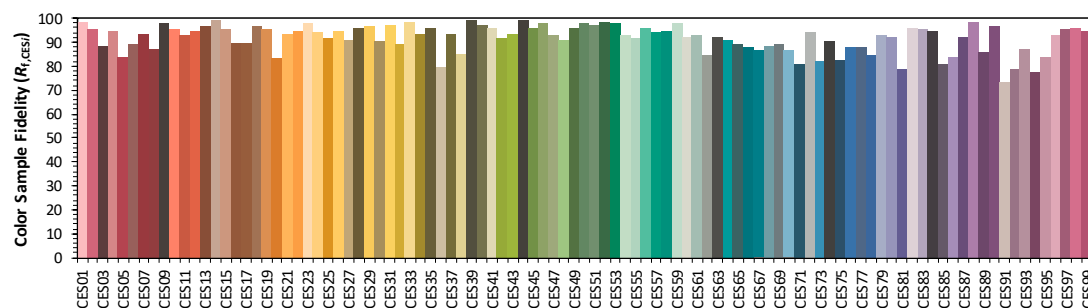
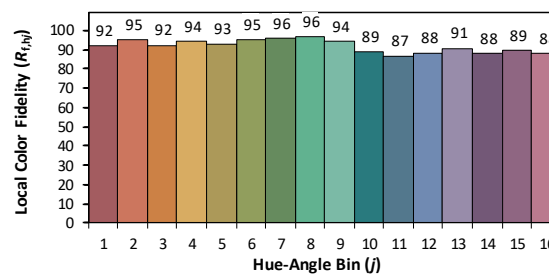
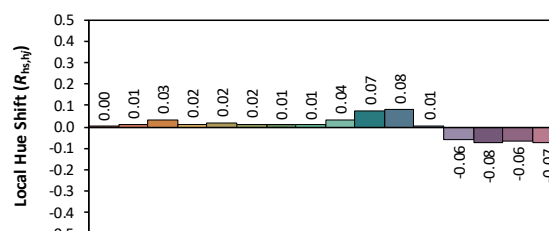
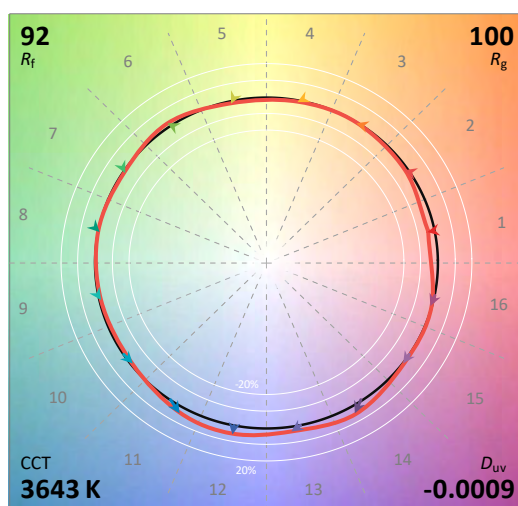
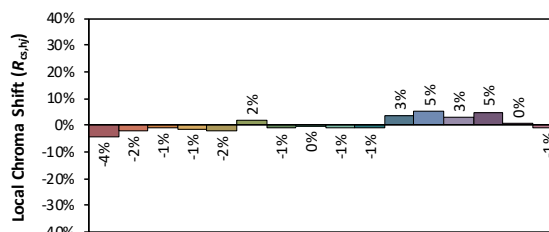
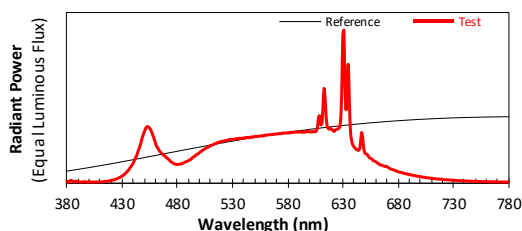
ANSI/IES TM-30-18 Color Rendition Report

Source:

Manufacturer:

Date: 2023/9/15

Model: LTHY-1000-NL27-DF-I-31



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

 x 0.3968 y 0.3844
$$u' \quad 0.2327$$
 $V' \quad 0.5073$

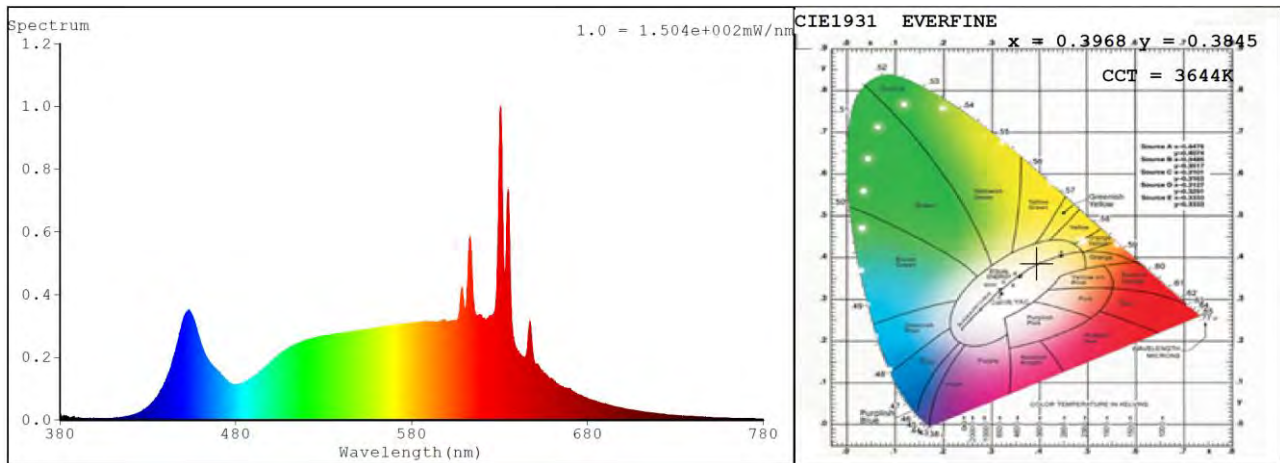
CIE 13.3-1995
(CRI)

R_a 95

 R_9 73

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

9.3 Relative Spectral Power Distribution



nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	0.0087	414	0.0085	448	0.2764	482	0.1138	516	0.2463
381	0.0015	415	0.0081	449	0.2959	483	0.1167	517	0.2479
382	0.0083	416	0.0096	450	0.3152	484	0.1166	518	0.2488
383	0.0136	417	0.0097	451	0.3318	485	0.1196	519	0.2545
384	0.0127	418	0.0106	452	0.344	486	0.1245	520	0.2541
385	0.0099	419	0.0126	453	0.3473	487	0.1267	521	0.2556
386	0.0037	420	0.0143	454	0.3431	488	0.1302	522	0.2567
387	0.0071	421	0.0163	455	0.3348	489	0.1323	523	0.2585
388	0.0097	422	0.0175	456	0.3229	490	0.136	524	0.2599
389	0.0063	423	0.0181	457	0.3068	491	0.1408	525	0.2623
390	0.0075	424	0.0213	458	0.2872	492	0.1436	526	0.2626
391	0.0046	425	0.0236	459	0.2675	493	0.1494	527	0.2667
392	0.0038	426	0.027	460	0.2478	494	0.1571	528	0.266
393	0.0041	427	0.0306	461	0.2255	495	0.1602	529	0.269
394	0.0044	428	0.0333	462	0.2172	496	0.1659	530	0.2684
395	0.0054	429	0.0372	463	0.2032	497	0.1719	531	0.2674
396	0.0055	430	0.0414	464	0.1944	498	0.1755	532	0.2686
397	0.0061	431	0.0469	465	0.186	499	0.1793	533	0.2703
398	0.0036	432	0.0525	466	0.1803	500	0.1853	534	0.2729
399	0.0035	433	0.0581	467	0.1728	501	0.1909	535	0.2693
400	0.005	434	0.0657	468	0.1668	502	0.1956	536	0.2736
401	0.0037	435	0.0728	469	0.1627	503	0.2011	537	0.2744
402	0.005	436	0.0803	470	0.1541	504	0.2044	538	0.2737
403	0.0043	437	0.0927	471	0.1511	505	0.2089	539	0.2746
404	0.0041	438	0.1004	472	0.1437	506	0.2144	540	0.2755
405	0.0036	439	0.1114	473	0.1373	507	0.2179	541	0.276
406	0.0042	440	0.1215	474	0.1297	508	0.2197	542	0.2788
407	0.0049	441	0.1388	475	0.1255	509	0.2238	543	0.279
408	0.0051	442	0.1534	476	0.1212	510	0.2302	544	0.2785
409	0.0048	443	0.1662	477	0.1171	511	0.2306	545	0.277
410	0.0046	444	0.1888	478	0.115	512	0.2335	546	0.281
411	0.0047	445	0.2061	479	0.1133	513	0.2372	547	0.2804
412	0.0055	446	0.2261	480	0.1126	514	0.2411	548	0.2841
413	0.0065	447	0.2486	481	0.1131	515	0.242	549	0.2817

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.2843	599	0.3145	648	0.278	697	0.0411	746	0.0091
551	0.2863	600	0.3137	649	0.2085	698	0.0397	747	0.0091
552	0.2844	601	0.3133	650	0.1834	699	0.0387	748	0.0087
553	0.2867	602	0.314	651	0.1774	700	0.0369	749	0.0085
554	0.2867	603	0.3144	652	0.1758	701	0.0368	750	0.0083
555	0.2883	604	0.317	653	0.1653	702	0.0351	751	0.0079
556	0.2886	605	0.3144	654	0.1551	703	0.034	752	0.0078
557	0.2897	606	0.3198	655	0.1511	704	0.0333	753	0.008
558	0.2883	607	0.3417	656	0.1471	705	0.0324	754	0.0072
559	0.2929	608	0.4019	657	0.1416	706	0.0307	755	0.0069
560	0.2931	609	0.4123	658	0.1346	707	0.0307	756	0.0072
561	0.2938	610	0.3567	659	0.1324	708	0.0294	757	0.0068
562	0.2949	611	0.3637	660	0.1297	709	0.0283	758	0.0066
563	0.2961	612	0.4637	661	0.1237	710	0.028	759	0.0066
564	0.2969	613	0.5818	662	0.119	711	0.0265	760	0.0062
565	0.2965	614	0.5123	663	0.1148	712	0.0259	761	0.0057
566	0.2971	615	0.3957	664	0.1098	713	0.0248	762	0.006
567	0.2986	616	0.3455	665	0.1077	714	0.024	763	0.0056
568	0.2984	617	0.3338	666	0.1067	715	0.0235	764	0.0058
569	0.3014	618	0.331	667	0.1037	716	0.0228	765	0.0059
570	0.3011	619	0.3358	668	0.1011	717	0.0222	766	0.0054
571	0.3012	620	0.3266	669	0.1007	718	0.0223	767	0.0057
572	0.3029	621	0.3247	670	0.1002	719	0.0219	768	0.005
573	0.3029	622	0.3164	671	0.0946	720	0.0201	769	0.005
574	0.3032	623	0.3227	672	0.0903	721	0.0195	770	0.0048
575	0.3039	624	0.3281	673	0.0864	722	0.0188	771	0.0047
576	0.3079	625	0.3308	674	0.0832	723	0.0191	772	0.0047
577	0.306	626	0.3342	675	0.0813	724	0.0175	773	0.0048
578	0.3061	627	0.3417	676	0.0787	725	0.0174	774	0.0042
579	0.3072	628	0.3833	677	0.0768	726	0.017	775	0.0046
580	0.3062	629	0.5569	678	0.0734	727	0.0162	776	0.0042
581	0.3089	630	0.9046	679	0.0715	728	0.0164	777	0.0041
582	0.3071	631	0.9385	680	0.0684	729	0.0151	778	0.0041
583	0.3117	632	0.5923	681	0.066	730	0.0149	779	0.0041
584	0.3104	633	0.4496	682	0.0649	731	0.0147	780	0.0041
585	0.3114	634	0.6033	683	0.0631	732	0.0142		
586	0.3115	635	0.7281	684	0.0611	733	0.0139		
587	0.3131	636	0.4885	685	0.0598	734	0.0125		
588	0.3133	637	0.3123	686	0.0567	735	0.0126		
589	0.3122	638	0.2592	687	0.0554	736	0.0123		
590	0.312	639	0.2348	688	0.0548	737	0.012		
591	0.3159	640	0.2223	689	0.0517	738	0.0118		
592	0.3123	641	0.2151	690	0.0512	739	0.0117		
593	0.3116	642	0.2071	691	0.0492	740	0.0114		
594	0.3112	643	0.2029	692	0.0477	741	0.0106		
595	0.3119	644	0.2	693	0.0471	742	0.0102		
596	0.3123	645	0.2047	694	0.0451	743	0.0101		
597	0.3162	646	0.2424	695	0.0438	744	0.0099		
598	0.32	647	0.3082	696	0.0426	745	0.0095		

10. Goniophotometer Test results for LTHY-1000-NL27-DF-I-31

10.1 Test Data

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

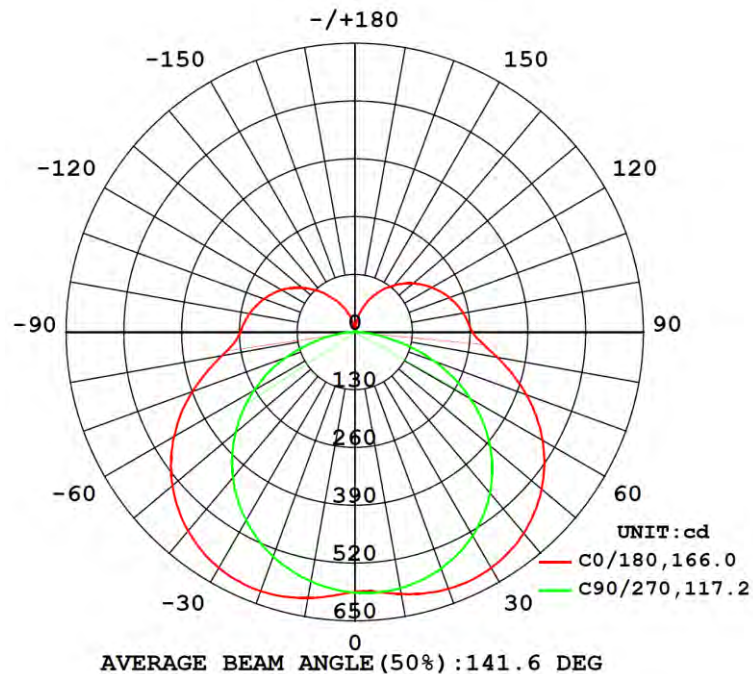
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
24	--	1.16	1.0000	27.84

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	I _{max} (cd)	η up (%)	η down (%)
3181.07	114.26	622.8	21.9	78.1

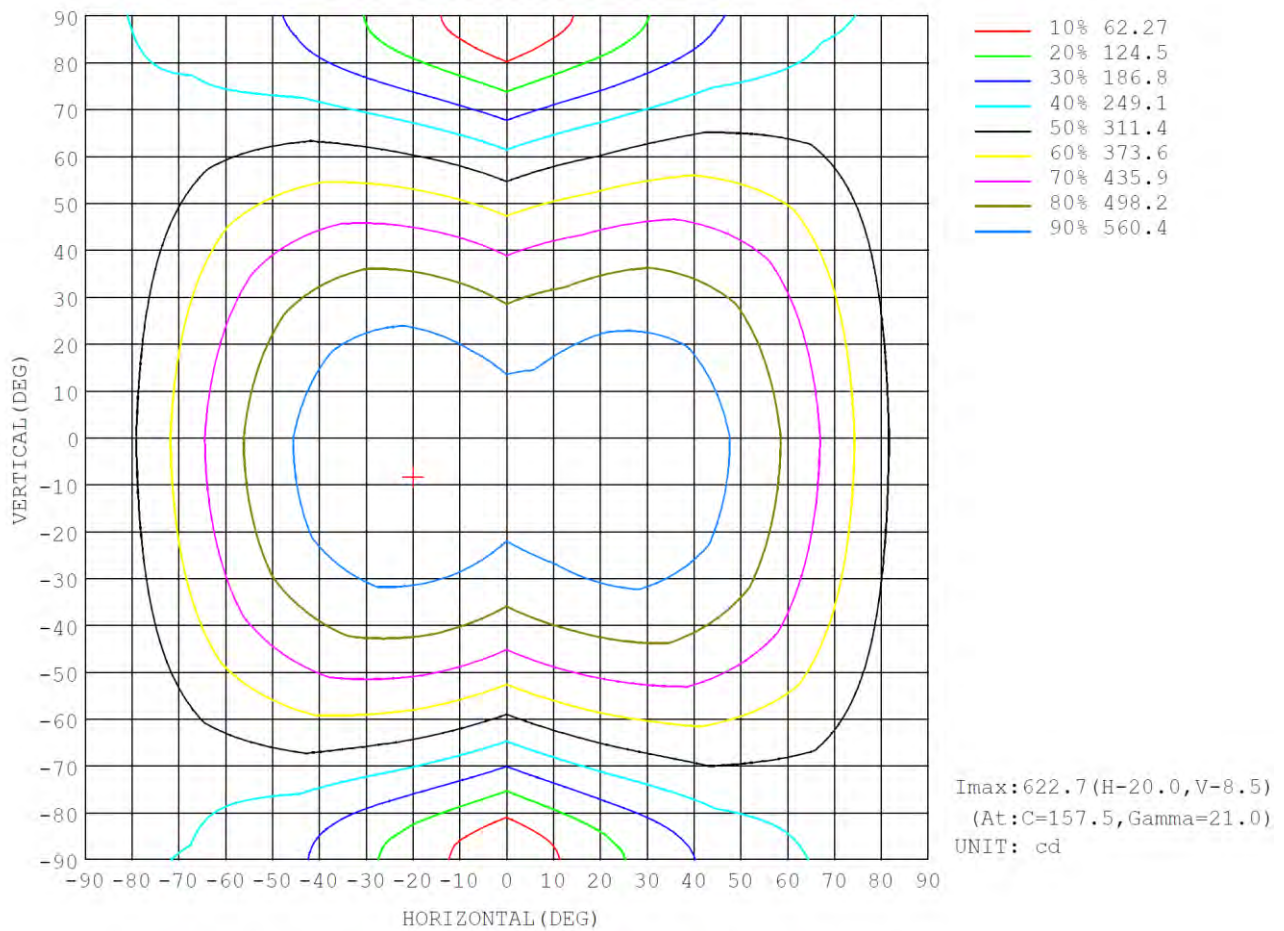
10.2 Luminous Intensity Distribution



10.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	\$lum,lamp
10	598.2	593.5	585.2	603.9	607.2	591.8	569.6	581.7	0- 10	56.25	56.25	1.77,1.77
20	614.7	601.9	566.6	610.3	620.3	587.4	537.5	578.5	10- 20	167.8	224.1	7.04,7.04
30	613.0	594.6	529.6	598.4	612.7	566.6	489.9	561.0	20- 30	269.4	493.5	15.5,15.5
40	591.1	567.9	473.2	566.0	584.4	527.9	427.5	526.8	30- 40	348.3	841.7	26.5,26.5
50	549.0	520.4	397.0	512.7	536.7	471.9	351.2	475.7	40- 50	393.5	1235	38.8,38.8
60	488.2	452.4	301.2	438.7	470.5	400.1	262.7	408.4	50- 60	398.0	1633	51.3,51.3
70	410.6	365.5	188.7	346.7	389.0	314.8	163.2	327.2	60- 70	359.5	1993	62.6,62.6
80	324.8	269.2	72.81	249.0	304.0	227.6	63.74	240.8	70- 80	285.0	2278	71.6,71.6
90	265.2	206.3	10.74	197.4	258.5	179.9	10.12	182.5	80- 90	206.6	2484	76.1,76.1
100	248.0	192.6	2.764	181.4	241.4	166.2	1.156	170.9	90-100	176.5	2661	83.6,83.6
110	227.2	175.0	3.247	160.9	218.8	148.7	1.646	156.4	100-110	156.7	2817	88.6,88.6
120	201.2	153.1	3.878	136.4	190.9	122.1	2.314	137.6	110-120	129.9	2947	92.7,92.7
130	171.5	128.3	4.460	107.9	156.2	93.64	2.875	115.9	120-130	98.90	3046	95.8,95.8
140	138.2	101.5	4.829	76.05	118.3	69.01	2.301	87.76	130-140	68.16	3114	97.9,97.9
150	102.8	70.30	4.807	49.29	80.06	54.90	1.549	58.59	140-150	40.73	3155	99.2,99.2
160	64.76	41.77	4.419	23.49	46.63	35.59	1.934	22.39	150-160	19.60	3175	99.8,99.8
170	27.52	14.68	4.112	3.795	11.94	8.803	1.452	8.604	160-170	5.736	3180	100,100
180	2.277	3.725	4.149	4.149	2.252	3.365	4.050	4.100	170-180	0.5895	3181	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

10.4 Isocandela Diagram



10.5 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	584	585	585	586	586	586	586	586	584	585	585	586	586	586	586	586			
5	587	588	587	586	588	592	596	598	595	593	589	584	580	579	581	585			
10	598	599	594	586	585	594	604	610	607	602	592	580	570	571	582	593			
15	608	609	599	584	578	593	609	618	616	608	591	572	556	562	581	599			
20	615	615	602	579	567	588	610	622	620	609	587	560	537	550	578	603			
25	616	617	601	570	550	579	607	622	619	605	579	545	516	535	572	602			
30	613	614	595	558	530	565	598	615	613	597	567	526	490	516	561	596			
35	605	606	584	540	504	546	585	603	601	583	549	503	461	494	546	585			
40	591	592	568	518	473	522	566	586	584	565	528	476	428	468	527	570			
45	573	573	547	491	438	493	542	564	563	542	502	445	391	438	503	550			
50	549	549	520	459	397	458	513	537	537	514	472	411	351	405	476	526			
55	521	521	489	421	352	419	478	505	506	483	438	372	308	368	444	497			
60	488	487	452	379	301	374	439	469	471	447	400	330	263	328	408	464			
65	451	449	411	332	247	324	395	428	431	407	359	285	214	285	369	426			
70	411	407	366	281	189	271	347	383	389	365	315	239	163	240	327	386			
75	368	362	317	227	129	215	297	337	345	321	271	190	112	193	284	343			
80	325	317	269	175	72.8	162	249	294	304	281	228	144	63.7	148	241	301			
85	287	278	228	131	27.0	121	212	261	273	249	194	108	26.9	110	203	264			
90	265	256	206	113	10.7	104	197	247	259	235	180	93.5	10.1	92.3	183	242			
95	256	247	200	109	6.27	98.7	190	239	251	228	173	88.7	0.83	89.2	177	234			
100	248	239	193	105	2.76	92.7	181	230	241	219	166	83.8	1.16	86.2	171	226			
105	238	229	184	100	2.95	86.3	172	219	231	209	158	76.0	1.40	82.7	164	218			
110	227	218	175	94.8	3.25	79.1	161	206	219	198	149	66.1	1.65	78.1	156	208			
115	215	206	164	87.8	3.58	70.7	149	193	206	186	136	57.8	1.97	73.8	148	196			
120	201	193	153	80.5	3.88	60.5	136	178	191	172	122	47.2	2.31	65.3	138	184			
125	187	178	141	73.5	4.17	52.1	123	162	174	155	107	43.5	2.69	61.6	126	171			
130	171	163	128	66.2	4.46	44.1	108	145	156	137	93.6	38.8	2.88	56.4	116	157			
135	155	147	116	58.6	4.60	36.4	91.0	127	137	120	79.0	33.4	2.80	49.8	104	138			
140	138	131	102	51.0	4.83	29.1	76.1	108	118	103	69.0	29.4	2.30	42.3	87.8	125			
145	121	114	83.2	43.4	4.95	21.9	62.7	88.1	97.1	85.8	63.3	26.3	1.45	31.7	74.7	108			
150	103	96.7	70.3	35.1	4.81	15.3	49.3	72.1	80.1	74.3	54.9	23.9	1.55	21.6	58.6	84.8			
155	84.0	78.6	57.0	27.2	4.60	9.60	36.3	55.5	63.8	60.9	46.2	21.2	1.52	12.0	38.4	67.7			
160	64.8	60.5	41.8	19.2	4.42	5.17	23.5	39.1	46.6	45.6	35.6	16.9	1.93	6.10	22.4	46.0			
165	45.8	39.7	27.1	12.6	4.24	2.18	12.2	22.6	28.1	27.8	21.6	10.3	1.70	4.00	14.1	26.3			
170	27.5	22.3	14.7	8.50	4.11	1.31	3.79	8.67	11.9	11.9	8.80	4.17	1.45	3.87	8.60	15.0			
175	11.8	7.70	7.74	5.67	4.26	1.88	1.29	1.41	2.25	2.28	1.77	1.47	1.60	3.92	5.49	7.83			
180	2.28	3.17	3.73	4.04	4.15	4.11	4.15	4.32	2.25	1.81	3.36	3.75	4.05	4.15	4.10	3.82			

11. Photo of sample

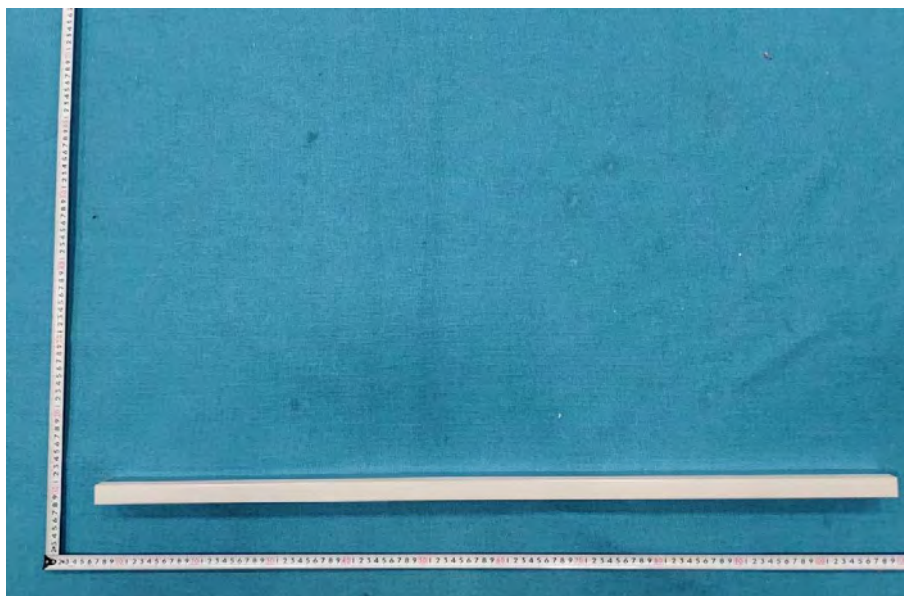


Figure 1 Overview

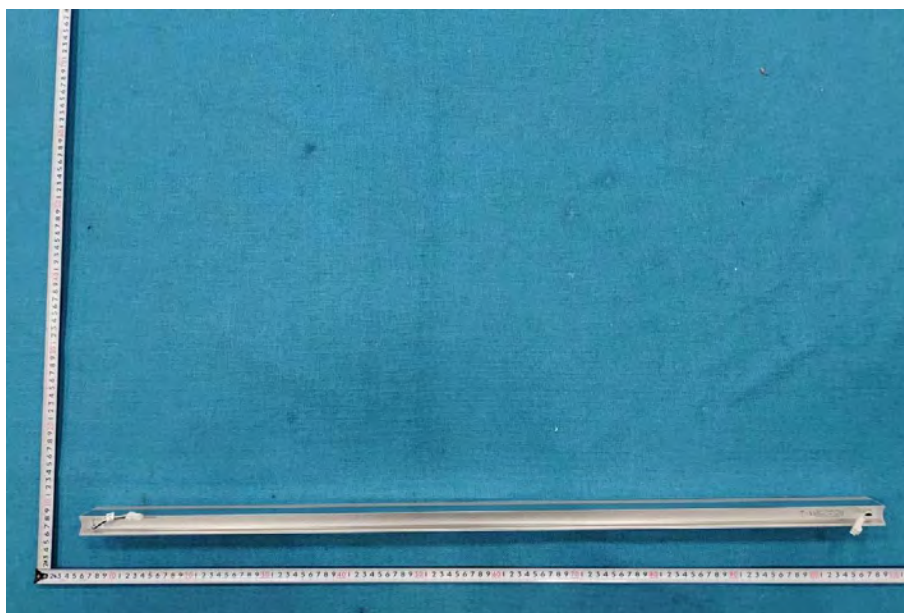


Figure 2 Overview

---End of Report---