NVLAP TESTING NVLAP LAB CODE:600177-0

GTG Global Testing Group

Test Report Of ANSI/IES LM-79-19

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

Report Number	:	N02A23090145L00101
Client	:	Luci Pte. Ltd.
Address	:	52A Tanjong Pagar Road, Singapore 088473
Test Model	:	LREY-1000-L27-DF-I-10 LREY-1000-L27-DF-I-21 LREY-1000-L27-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:	**Checked by:**	**Approved by:**
Jarvis Zhang	Sandy Chen	
Jarvis Zhang/ Test Engineer	Sandy Chen/ Project Engineer	Jessie Li/ Technical Manager

Guangdong Meide Testing Technology Co., Ltd. CERTIFICATE

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:	LREY-1000-L27-DF-I-10 LREY-1000-L27-DF-I-21 LREY-1000-L27-DF-I-31
Manufacturer:	
Product Type:	SHIN RECTA
Rated Voltage/Frequency:	DC24V
Rated Power:	10W, 21W, 31W
Rated luminous flux:	/
Nominal CCT:	2700K

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°C±1.2°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 paramters 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 LREY-1000-L27-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	0.3727	23.998	8.9441	1113.1	0.4589	0.4092	0.2625	0.5267	2703	94.4
1	00h00m10s	0.3728	23.998	8.9465	1113.7	0.4588	0.4093	0.2624	0.5267	2705	94.5
2	00h00m20s	0.3729	23.998	8.9489	1113.5	0.4588	0.409	0.2625	0.5266	2703	94.4
3	00h00m30s	0.373	23.998	8.9513	1113.4	0.4589	0.4092	0.2625	0.5267	2703	94.4
4	00h00m40s	0.3731	23.998	8.9537	1113	0.4587	0.4089	0.2625	0.5265	2703	94.5
5	00h00m50s	0.3732	23.998	8.9561	1114.1	0.4589	0.409	0.2626	0.5266	2702	94.4
6	00h01m00s	0.3733	23.998	8.9585	1114	0.4589	0.409	0.2626	0.5266	2701	94.3
7	00h01m10s	0.3734	23.998	8.9609	1114	0.4589	0.4091	0.2625	0.5266	2702	94.4
8	00h01m20s	0.3735	23.998	8.9633	1113.5	0.4588	0.409	0.2625	0.5266	2702	94.4
9	00h01m30s	0.3735	23.998	8.9633	1114.1	0.4589	0.4091	0.2625	0.5266	2702	94.4
10	00h01m40s	0.3736	23.998	8.9657	1113.8	0.4588	0.409	0.2626	0.5266	2702	94.4
11	00h01m50s	0.3737	23.998	8.9681	1114.4	0.4589	0.409	0.2626	0.5266	2701	94.4
12	00h02m00s	0.3738	23.998	8.9705	1114.7	0.4589	0.409	0.2626	0.5266	2701	94.4
13	00h02m10s	0.3738	23.998	8.9705	1114.5	0.459	0.409	0.2626	0.5266	2700	94.4
14	00h02m20s	0.3739	23.998	8.9729	1114.5	0.4588	0.409	0.2625	0.5266	2703	94.5
15	00h02m30s	0.374	23.998	8.9753	1114.4	0.4589	0.4088	0.2627	0.5265	2700	94.4
16	00h02m40s	0.374	23.998	8.9753	1115.3	0.459	0.4089	0.2627	0.5266	2699	94.4
17	00h02m50s	0.3741	23.998	8.9777	1114.9	0.4589	0.4089	0.2626	0.5266	2700	94.4
18	00h03m00s	0.3742	23.998	8.9801	1114.9	0.459	0.409	0.2627	0.5266	2700	94.4
19	00h03m10s	0.3742	23.998	8.9801	1114.9	0.4589	0.409	0.2626	0.5266	2701	94.3
20	00h03m20s	0.3743	23.998	8.9825	1114.9	0.4591	0.4089	0.2627	0.5266	2698	94.4
21	00h03m30s	0.3743	23.998	8.9825	1115	0.4589	0.409	0.2626	0.5266	2700	94.4

22	00h03m40s	0.3744	23.998	8.9849	1115.1	0.4588	0.4087	0.2627	0.5265	2700	94.4
23	00h03m50s	0.3745	23.998	8.9873	1115.4	0.459	0.409	0.2626	0.5266	2700	94.4
24	00h04m00s	0.3745	23.998	8.9873	1115	0.4589	0.4088	0.2627	0.5265	2700	94.4
25	00h04m10s	0.3746	23.998	8.9897	1115.4	0.459	0.4089	0.2627	0.5266	2699	94.4
26	00h04m20s	0.3746	23.998	8.9897	1116	0.4588	0.4088	0.2626	0.5265	2701	94.4
27	00h04m30s	0.3747	23.998	8.9921	1114.7	0.459	0.4089	0.2627	0.5266	2699	94.4
28	00h04m40s	0.3747	23.998	8.9921	1115	0.4588	0.4087	0.2627	0.5265	2700	94.4
29	00h04m50s	0.3748	23.998	8.9944	1114.9	0.4589	0.4089	0.2627	0.5265	2699	94.4
30	00h05m00s	0.3748	23.998	8.9944	1115.3	0.459	0.4087	0.2627	0.5265	2698	94.4
31	00h05m10s	0.3748	23.998	8.9944	1115.2	0.4591	0.4089	0.2627	0.5266	2698	94.4
32	00h05m20s	0.3749	23.998	8.9969	1115.3	0.459	0.4088	0.2627	0.5265	2698	94.4
33	00h05m30s	0.3749	23.998	8.9969	1115.3	0.4589	0.4087	0.2627	0.5265	2699	94.4
34	00h05m40s	0.375	23.998	8.9992	1115.9	0.4589	0.4089	0.2627	0.5265	2700	94.4
35	00h05m50s	0.375	23.998	8.9992	1115.3	0.459	0.4089	0.2627	0.5266	2699	94.4
36	00h06m00s	0.375	23.998	8.9992	1115.2	0.4589	0.4087	0.2627	0.5265	2699	94.4
37	00h06m10s	0.3751	23.998	9.0016	1115.5	0.4589	0.4089	0.2626	0.5266	2700	94.5
38	00h06m20s	0.3751	23.998	9.0016	1115.6	0.4591	0.4088	0.2628	0.5266	2697	94.3
39	00h06m30s	0.3752	23.998	9.004	1115.7	0.459	0.4087	0.2628	0.5265	2698	94.4
40	00h06m40s	0.3752	23.998	9.004	1115.5	0.459	0.4088	0.2627	0.5265	2699	94.4
41	00h06m50s	0.3752	23.998	9.004	1115.6	0.4589	0.4086	0.2628	0.5265	2698	94.4
42	00h07m00s	0.3753	23.998	9.0064	1115.6	0.4591	0.4088	0.2628	0.5266	2697	94.4
43	00h07m10s	0.3753	23.998	9.0064	1116.2	0.459	0.4087	0.2628	0.5265	2697	94.4
44	00h07m20s	0.3753	23.998	9.0064	1115.5	0.4588	0.4084	0.2628	0.5264	2698	94.4
45	00h07m30s	0.3754	23.998	9.0088	1116.1	0.4588	0.4087	0.2627	0.5264	2699	94.4
46	00h07m40s	0.3754	23.998	9.0088	1115.2	0.4588	0.4085	0.2627	0.5264	2699	94.4
47	00h07m50s	0.3754	23.998	9.0088	1115.7	0.4588	0.4086	0.2627	0.5264	2699	94.4
48	00h08m00s	0.3754	23.998	9.0088	1116.2	0.4589	0.4086	0.2628	0.5265	2698	94.4
49	00h08m10s	0.3755	23.998	9.0112	1115.4	0.459	0.4085	0.2629	0.5264	2696	94.3
50	00h08m20s	0.3755	23.998	9.0112	1115.9	0.4588	0.4085	0.2628	0.5264	2698	94.4
51	00h08m30s	0.3755	23.998	9.0112	1115.6	0.4591	0.4087	0.2628	0.5265	2696	94.4
52	00h08m40s	0.3756	23.998	9.0136	1116.8	0.4589	0.4086	0.2628	0.5265	2698	94.4

53	00h08m50s	0.3756	23.998	9.0136	1115.3	0.4588	0.4087	0.2627	0.5265	2699	94.4
54	00h09m00s	0.3756	23.998	9.0136	1116	0.459	0.4087	0.2628	0.5265	2697	94.4
55	00h09m10s	0.3756	23.998	9.0136	1116.3	0.459	0.4087	0.2628	0.5265	2696	94.4
56	00h09m20s	0.3757	23.998	9.016	1116.1	0.4591	0.4086	0.2629	0.5265	2696	94.4
57	00h09m30s	0.3757	23.998	9.016	1116.1	0.4591	0.4087	0.2628	0.5265	2696	94.4
58	00h09m40s	0.3757	23.998	9.016	1116.2	0.459	0.4087	0.2628	0.5265	2697	94.4
59	00h09m50s	0.3757	23.998	9.016	1116.1	0.4591	0.4087	0.2629	0.5265	2696	94.3
60	00h10m00s	0.3758	23.998	9.0184	1116.9	0.4591	0.4087	0.2629	0.5265	2696	94.4
61	00h10m10s	0.3758	23.998	9.0184	1115.9	0.4589	0.4084	0.2628	0.5264	2697	94.4
62	00h10m20s	0.3758	23.998	9.0184	1116.9	0.4589	0.4085	0.2628	0.5264	2698	94.3
63	00h10m30s	0.3758	23.998	9.0184	1115.6	0.4588	0.4084	0.2628	0.5264	2698	94.4
64	00h10m40s	0.3758	23.998	9.0184	1116.1	0.459	0.4086	0.2629	0.5265	2696	94.4
65	00h10m50s	0.3758	23.998	9.0184	1116.5	0.459	0.4085	0.2629	0.5264	2696	94.4
66	00h11m00s	0.3759	23.998	9.0208	1115.8	0.4589	0.4085	0.2628	0.5264	2698	94.4
67	00h11m10s	0.3759	23.998	9.0208	1116.8	0.4591	0.4086	0.2629	0.5265	2696	94.4
68	00h11m20s	0.3759	23.998	9.0208	1116	0.459	0.4085	0.2629	0.5264	2696	94.4
69	00h11m30s	0.3759	23.998	9.0208	1116.8	0.459	0.4086	0.2629	0.5265	2696	94.4
70	00h11m40s	0.3759	23.998	9.0208	1116.4	0.4588	0.4086	0.2627	0.5264	2700	94.4
71	00h11m50s	0.3759	23.998	9.0208	1116	0.459	0.4085	0.2629	0.5264	2696	94.4
72	00h12m00s	0.376	23.998	9.0232	1115.9	0.4589	0.4083	0.2629	0.5263	2696	94.4
73	00h12m10s	0.376	23.998	9.0232	1116.7	0.4589	0.4086	0.2628	0.5264	2697	94.3
74	00h12m20s	0.376	23.998	9.0232	1116	0.4592	0.4086	0.2629	0.5265	2695	94.4
75	00h12m30s	0.376	23.998	9.0232	1116.5	0.459	0.4084	0.2629	0.5264	2695	94.4
76	00h12m40s	0.376	23.998	9.0232	1116.6	0.4589	0.4085	0.2628	0.5264	2697	94.4
77	00h12m50s	0.376	23.998	9.0232	1116.6	0.4591	0.4087	0.2628	0.5265	2696	94.4
78	00h13m00s	0.3761	23.998	9.0256	1116.8	0.4591	0.4088	0.2628	0.5265	2697	94.4
79	00h13m10s	0.3761	23.998	9.0256	1116.8	0.4591	0.4087	0.2629	0.5265	2695	94.4
80	00h13m20s	0.3761	23.998	9.0256	1116.5	0.4589	0.4085	0.2628	0.5264	2697	94.4
81	00h13m30s	0.3761	23.998	9.0256	1115.9	0.4591	0.4086	0.2629	0.5265	2695	94.4
82	00h13m40s	0.3761	23.998	9.0256	1116.6	0.4589	0.4083	0.2629	0.5263	2696	94.4
83	00h13m50s	0.3761	23.998	9.0256	1116.6	0.4589	0.4086	0.2628	0.5264	2697	94.4

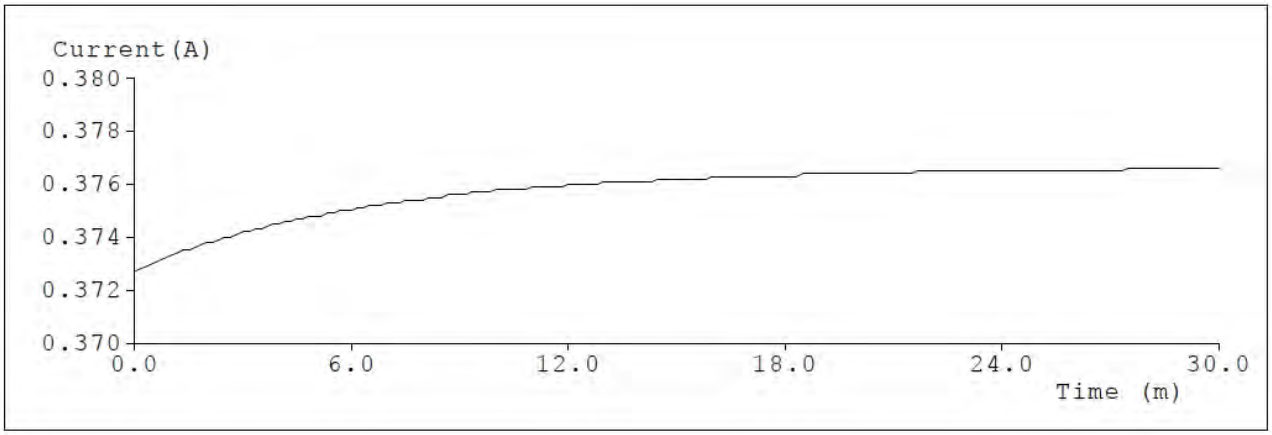
84	00h14m00s	0.3761	23.998	9.0256	1117	0.4589	0.4085	0.2628	0.5264	2697	94.4
85	00h14m10s	0.3761	23.998	9.0256	1117.1	0.459	0.4085	0.2629	0.5264	2695	94.4
86	00h14m20s	0.3761	23.998	9.0256	1115.4	0.4588	0.4085	0.2628	0.5264	2698	94.5
87	00h14m30s	0.3762	23.998	9.028	1116.4	0.459	0.4086	0.2629	0.5265	2696	94.4
88	00h14m40s	0.3762	23.998	9.028	1116.9	0.459	0.4085	0.2629	0.5264	2696	94.4
89	00h14m50s	0.3762	23.998	9.028	1116	0.459	0.4083	0.263	0.5263	2694	94.3
90	00h15m00s	0.3762	23.998	9.028	1116.5	0.459	0.4085	0.2629	0.5264	2696	94.4
91	00h15m10s	0.3762	23.998	9.028	1117.1	0.459	0.4086	0.2629	0.5265	2696	94.4
92	00h15m20s	0.3762	23.998	9.028	1116.4	0.4589	0.4085	0.2628	0.5264	2697	94.4
93	00h15m30s	0.3762	23.998	9.028	1117	0.4588	0.4084	0.2628	0.5263	2698	94.4
94	00h15m40s	0.3762	23.998	9.028	1116.9	0.459	0.4084	0.2629	0.5264	2695	94.3
95	00h15m50s	0.3762	23.998	9.028	1116.5	0.4588	0.4083	0.2629	0.5263	2697	94.4
96	00h16m00s	0.3763	23.998	9.0304	1116.2	0.459	0.4083	0.2629	0.5264	2695	94.4
97	00h16m10s	0.3763	23.998	9.0304	1116.8	0.4591	0.4084	0.263	0.5264	2694	94.4
98	00h16m20s	0.3763	23.998	9.0304	1116.4	0.4589	0.4084	0.2629	0.5263	2697	94.4
99	00h16m30s	0.3763	23.998	9.0304	1117.1	0.459	0.4085	0.2629	0.5264	2696	94.4
100	00h16m40s	0.3763	23.998	9.0304	1116.1	0.4589	0.4082	0.2629	0.5263	2695	94.4
101	00h16m50s	0.3763	23.998	9.0304	1117.1	0.4589	0.4085	0.2628	0.5264	2697	94.4
102	00h17m00s	0.3763	23.998	9.0304	1117	0.4591	0.4084	0.263	0.5264	2694	94.4
103	00h17m10s	0.3763	23.998	9.0304	1116.4	0.4591	0.4086	0.2629	0.5265	2696	94.4
104	00h17m20s	0.3763	23.998	9.0304	1117	0.4589	0.4085	0.2628	0.5264	2697	94.4
105	00h17m30s	0.3763	23.998	9.0304	1117	0.4591	0.4085	0.263	0.5264	2694	94.4
106	00h17m40s	0.3763	23.998	9.0304	1116.9	0.459	0.4086	0.2628	0.5265	2697	94.4
107	00h17m50s	0.3763	23.998	9.0304	1116.6	0.4591	0.4085	0.263	0.5264	2694	94.4
108	00h18m00s	0.3763	23.998	9.0304	1117.5	0.4589	0.4084	0.2629	0.5264	2696	94.4
109	00h18m10s	0.3763	23.998	9.0304	1116.3	0.4589	0.4083	0.263	0.5263	2695	94.4
110	00h18m20s	0.3763	23.998	9.0304	1116.6	0.4589	0.4082	0.263	0.5263	2695	94.4
111	00h18m30s	0.3764	23.998	9.0328	1117.1	0.459	0.4085	0.2629	0.5264	2696	94.3
112	00h18m40s	0.3764	23.998	9.0328	1117	0.459	0.4085	0.2629	0.5264	2696	94.4
113	00h18m50s	0.3764	23.998	9.0328	1117	0.459	0.4085	0.2629	0.5264	2695	94.4
114	00h19m00s	0.3764	23.998	9.0328	1116.3	0.4589	0.4083	0.263	0.5263	2695	94.3

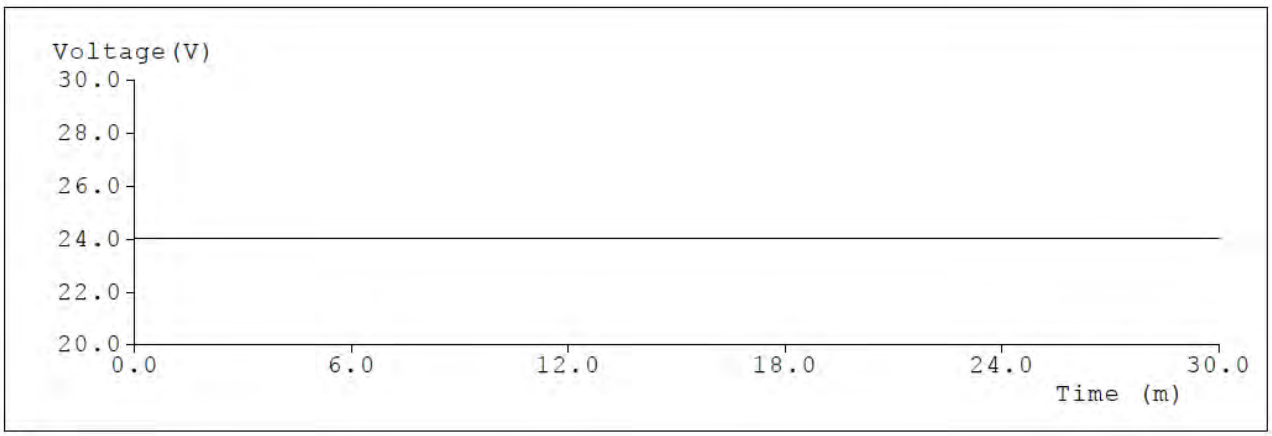
115	00h19m10s	0.3764	23.998	9.0328	1117	0.4589	0.4085	0.2628	0.5264	2697	94.4
116	00h19m20s	0.3764	23.998	9.0328	1117.5	0.4589	0.4083	0.2629	0.5263	2696	94.4
117	00h19m30s	0.3764	23.998	9.0328	1116.6	0.4591	0.4084	0.263	0.5264	2694	94.4
118	00h19m40s	0.3764	23.998	9.0328	1116.5	0.459	0.4085	0.2629	0.5264	2695	94.4
119	00h19m50s	0.3764	23.998	9.0328	1116.7	0.4589	0.4084	0.2629	0.5264	2696	94.4
120	00h20m00s	0.3764	23.998	9.0328	1116.8	0.4589	0.4084	0.2629	0.5264	2696	94.4
121	00h20m10s	0.3764	23.998	9.0328	1117.1	0.459	0.4085	0.2629	0.5264	2696	94.4
122	00h20m20s	0.3764	23.998	9.0328	1117.2	0.4591	0.4084	0.263	0.5264	2694	94.4
123	00h20m30s	0.3764	23.998	9.0328	1117.7	0.4591	0.4085	0.2629	0.5264	2695	94.3
124	00h20m40s	0.3764	23.998	9.0328	1117.1	0.4588	0.4085	0.2628	0.5264	2698	94.4
125	00h20m50s	0.3764	23.998	9.0328	1117.4	0.4589	0.4084	0.2629	0.5264	2696	94.4
126	00h21m00s	0.3764	23.998	9.0328	1117.6	0.459	0.4084	0.2629	0.5264	2695	94.4
127	00h21m10s	0.3764	23.998	9.0328	1116.8	0.4589	0.4084	0.2629	0.5264	2697	94.4
128	00h21m20s	0.3764	23.998	9.0328	1117.1	0.4589	0.4084	0.2629	0.5264	2696	94.4
129	00h21m30s	0.3764	23.998	9.0328	1116.8	0.459	0.4083	0.263	0.5263	2694	94.4
130	00h21m40s	0.3765	23.998	9.0352	1117.1	0.459	0.4084	0.2629	0.5264	2695	94.4
131	00h21m50s	0.3765	23.998	9.0352	1116.6	0.459	0.4084	0.2629	0.5264	2695	94.4
132	00h22m00s	0.3765	23.998	9.0352	1117.1	0.459	0.4085	0.2629	0.5264	2695	94.3
133	00h22m10s	0.3765	23.998	9.0352	1116.4	0.459	0.4084	0.263	0.5264	2695	94.4
134	00h22m20s	0.3765	23.998	9.0352	1116.6	0.459	0.4084	0.263	0.5264	2694	94.4
135	00h22m30s	0.3765	23.998	9.0352	1116.7	0.4591	0.4083	0.2631	0.5263	2693	94.3
136	00h22m40s	0.3765	23.998	9.0352	1117.8	0.459	0.4084	0.2629	0.5264	2696	94.4
137	00h22m50s	0.3765	23.998	9.0352	1116.7	0.4592	0.4085	0.263	0.5264	2694	94.4
138	00h23m00s	0.3765	23.998	9.0352	1116.9	0.459	0.4084	0.2629	0.5264	2695	94.4
139	00h23m10s	0.3765	23.998	9.0352	1117	0.459	0.4084	0.2629	0.5264	2695	94.4
140	00h23m20s	0.3765	23.998	9.0352	1117.8	0.4591	0.4086	0.2629	0.5264	2695	94.4
141	00h23m30s	0.3765	23.998	9.0352	1117	0.459	0.4084	0.2629	0.5264	2695	94.4
142	00h23m40s	0.3765	23.998	9.0352	1117.2	0.459	0.4083	0.263	0.5264	2694	94.3
143	00h23m50s	0.3765	23.998	9.0352	1116.9	0.459	0.4084	0.2629	0.5264	2696	94.4
144	00h24m00s	0.3765	23.998	9.0352	1117.1	0.459	0.4086	0.2629	0.5264	2696	94.4
145	00h24m10s	0.3765	23.998	9.0352	1116.8	0.4592	0.4086	0.263	0.5265	2694	94.4

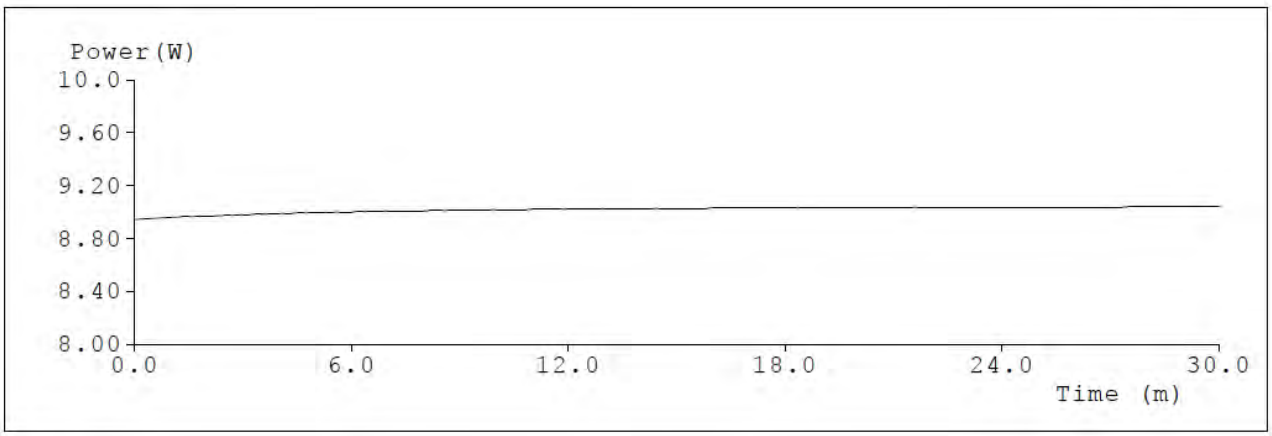
146	00h24m20s	0.3765	23.998	9.0352	1117.5	0.4591	0.4086	0.2629	0.5265	2695	94.4
147	00h24m30s	0.3765	23.998	9.0352	1117.2	0.4589	0.4086	0.2628	0.5264	2698	94.4
148	00h24m40s	0.3765	23.998	9.0352	1117	0.459	0.4083	0.2629	0.5263	2695	94.4
149	00h24m50s	0.3765	23.998	9.0352	1117	0.4588	0.4084	0.2628	0.5264	2698	94.4
150	00h25m00s	0.3765	23.998	9.0352	1116.9	0.459	0.4084	0.2629	0.5264	2695	94.4
151	00h25m10s	0.3765	23.998	9.0352	1116.8	0.459	0.4085	0.2629	0.5264	2695	94.4
152	00h25m20s	0.3765	23.998	9.0352	1117.3	0.459	0.4085	0.2629	0.5264	2696	94.4
153	00h25m30s	0.3765	23.998	9.0352	1117.8	0.4591	0.4085	0.2629	0.5264	2695	94.3
154	00h25m40s	0.3765	23.998	9.0352	1117.6	0.459	0.4085	0.2629	0.5264	2696	94.4
155	00h25m50s	0.3765	23.998	9.0352	1117.2	0.459	0.4084	0.263	0.5264	2694	94.4
156	00h26m00s	0.3765	23.998	9.0352	1117.8	0.459	0.4085	0.2629	0.5264	2695	94.3
157	00h26m10s	0.3765	23.998	9.0352	1117	0.459	0.4085	0.2629	0.5264	2695	94.4
158	00h26m20s	0.3765	23.998	9.0352	1117.4	0.4589	0.4083	0.2629	0.5263	2695	94.4
159	00h26m30s	0.3765	23.998	9.0352	1116.7	0.4589	0.4083	0.263	0.5263	2695	94.3
160	00h26m40s	0.3765	23.998	9.0352	1117	0.459	0.4084	0.2629	0.5264	2696	94.4
161	00h26m50s	0.3765	23.998	9.0352	1116.5	0.459	0.4084	0.2629	0.5264	2695	94.4
162	00h27m00s	0.3765	23.998	9.0352	1118.1	0.4591	0.4084	0.263	0.5264	2693	94.3
163	00h27m10s	0.3765	23.998	9.0352	1117.6	0.4592	0.4085	0.263	0.5265	2693	94.3
164	00h27m20s	0.3765	23.998	9.0352	1116.9	0.4589	0.4082	0.2629	0.5263	2695	94.3
165	00h27m30s	0.3766	23.998	9.0376	1117.3	0.459	0.4083	0.2629	0.5263	2695	94.4
166	00h27m40s	0.3766	23.998	9.0376	1116.7	0.459	0.4083	0.263	0.5263	2694	94.3
167	00h27m50s	0.3766	23.998	9.0376	1117.1	0.459	0.4085	0.2629	0.5264	2696	94.3
168	00h28m00s	0.3766	23.998	9.0376	1117.1	0.4589	0.4082	0.2629	0.5263	2695	94.4
169	00h28m10s	0.3766	23.998	9.0376	1116.5	0.4591	0.4084	0.263	0.5264	2693	94.4
170	00h28m20s	0.3766	23.998	9.0376	1117.1	0.4591	0.4085	0.2629	0.5264	2695	94.4
171	00h28m30s	0.3766	23.998	9.0376	1117.4	0.459	0.4085	0.2629	0.5264	2696	94.4
172	00h28m40s	0.3766	23.998	9.0376	1117.2	0.4589	0.4084	0.2629	0.5264	2696	94.4
173	00h28m50s	0.3766	23.998	9.0376	1116.9	0.459	0.4085	0.2629	0.5264	2696	94.4
174	00h29m00s	0.3766	23.998	9.0376	1117.5	0.459	0.4084	0.263	0.5264	2694	94.4
175	00h29m10s	0.3766	23.998	9.0376	1116.9	0.4589	0.4084	0.2628	0.5264	2697	94.4
176	00h29m20s	0.3766	23.998	9.0376	1117.1	0.459	0.4084	0.2629	0.5264	2695	94.3

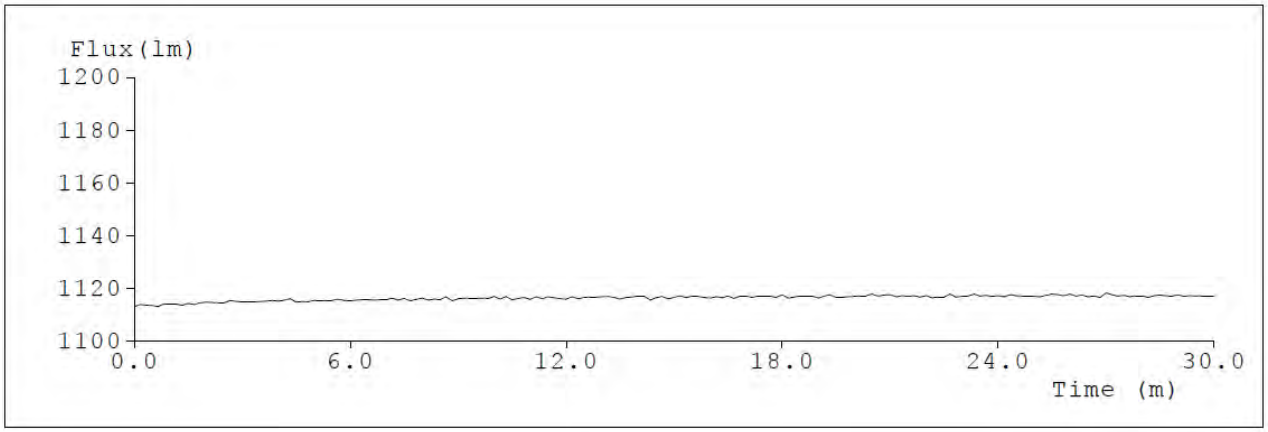
177	00h29m30s	0.3766	23.998	9.0376	1117.1	0.4591	0.4085	0.2629	0.5264	2695	94.4
178	00h29m40s	0.3766	23.998	9.0376	1117.1	0.4591	0.4084	0.263	0.5264	2694	94.4
179	00h29m50s	0.3766	23.998	9.0376	1117.2	0.4591	0.4084	0.263	0.5264	2694	94.4
180	00h30m00s	0.3766	23.998	9.0376	1117.1	0.459	0.4085	0.2629	0.5264	2696	94.4

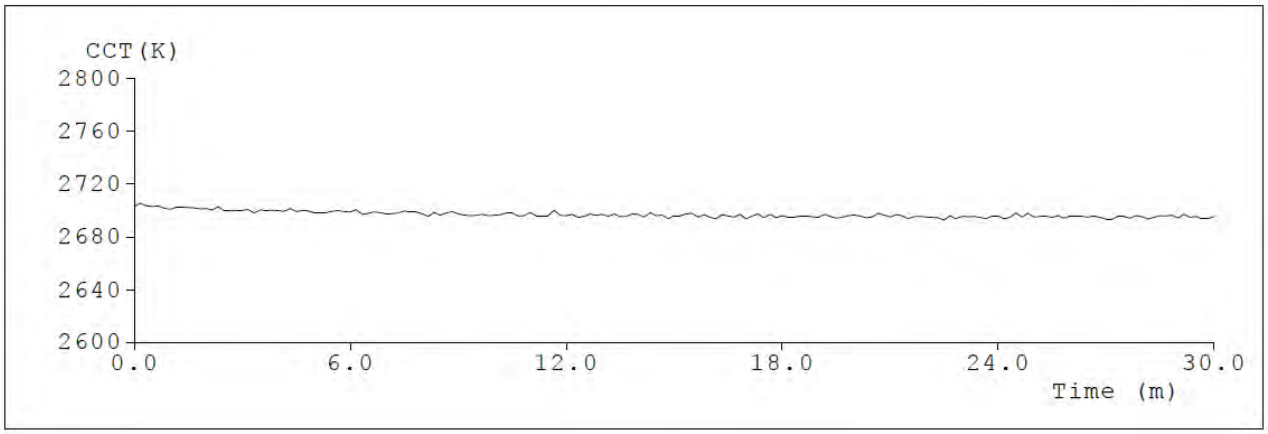
Test curves

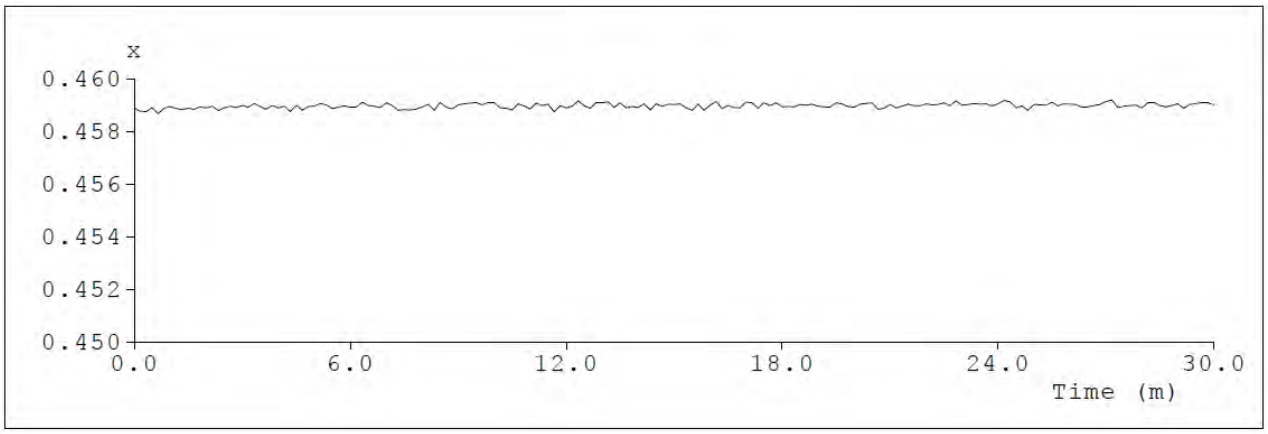


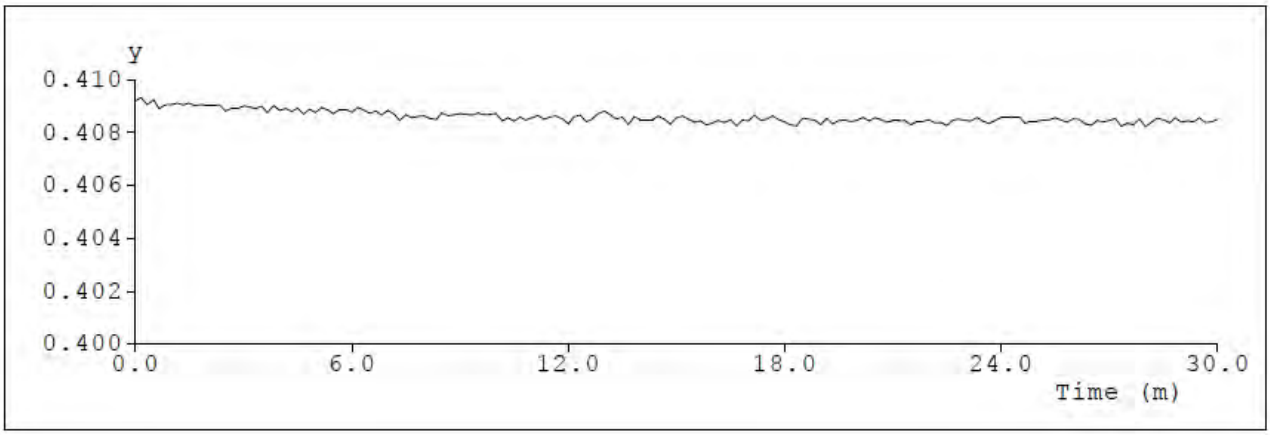


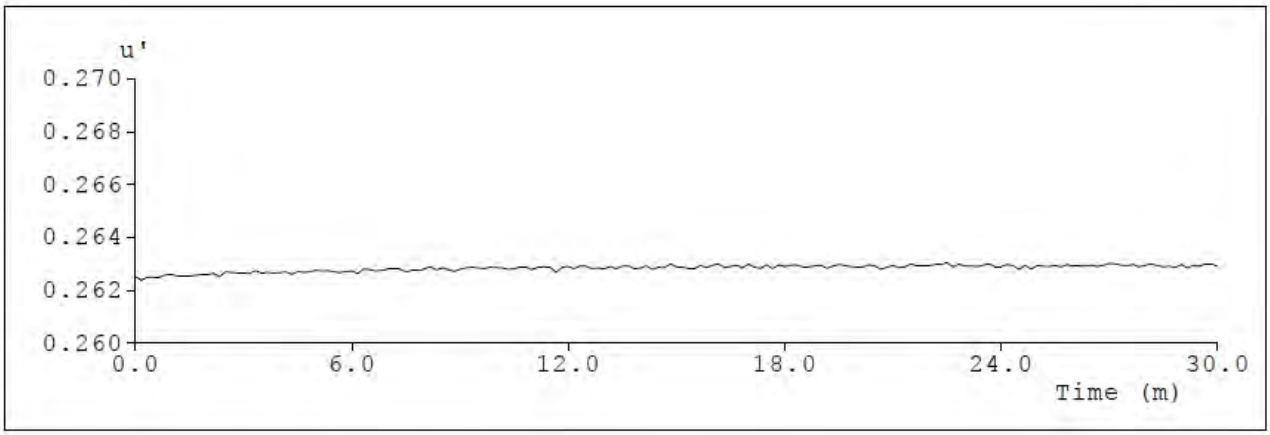


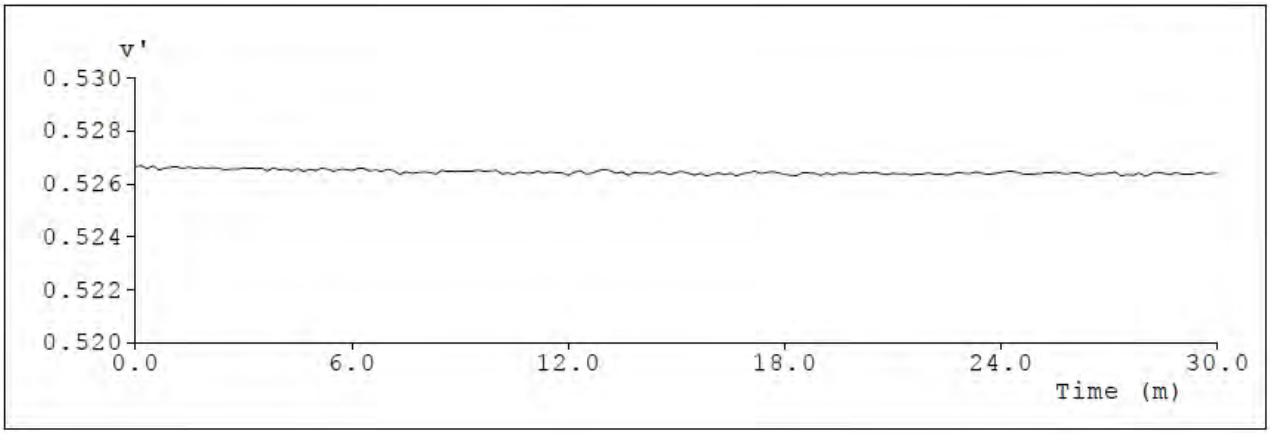

Flux(lm)
1200
1180
1160
1140
1120
1100
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


CCT(K)
2800
2760
2720
2680
2640
2600
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


x
0.460
0.458
0.456
0.454
0.452
0.450
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


y
0.410
0.408
0.406
0.404
0.402
0.400
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


u'
0.270
0.268
0.266
0.264
0.262
0.260
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)

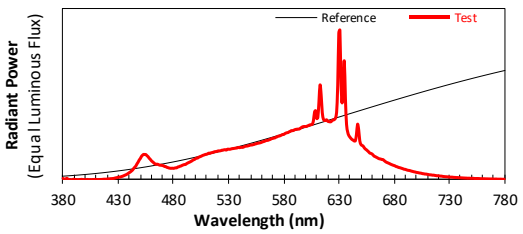

v'
0.530
0.528
0.526
0.524
0.522
0.520
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)

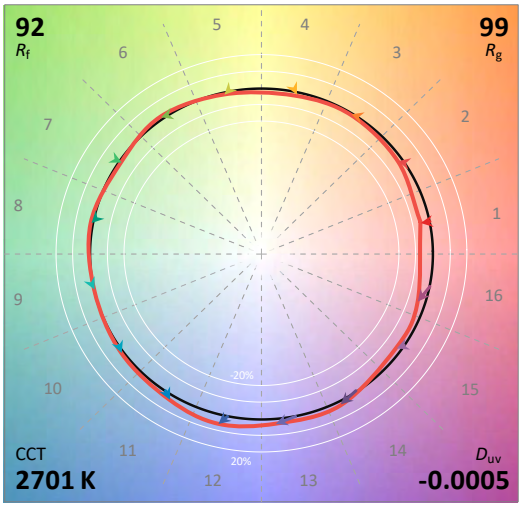
*5.2 ANSI/IES TM-30-18 Color Rendition Report

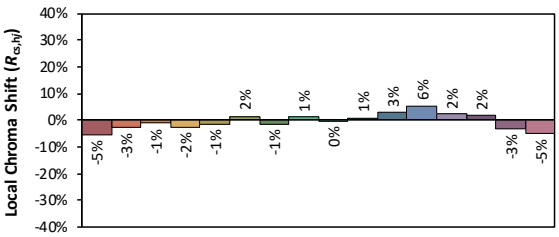
ANSI/IES TM-30-18 Color Rendition Report

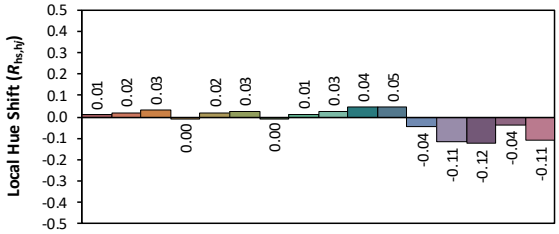
Source: Manufacturer:

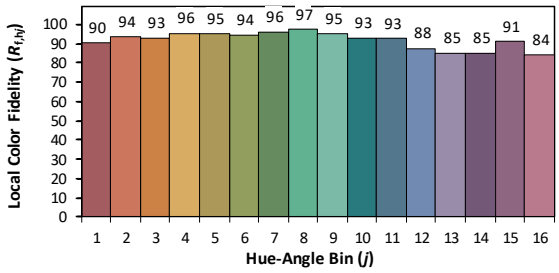
Date: 2023/9/15 Model: LREY-1000-L27-DF-I-10

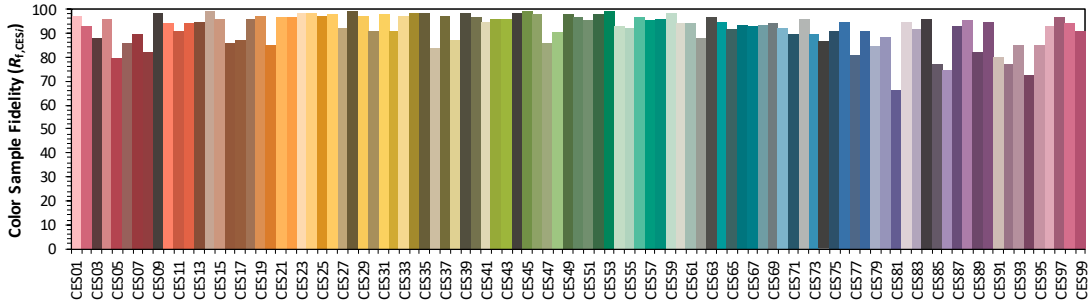












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

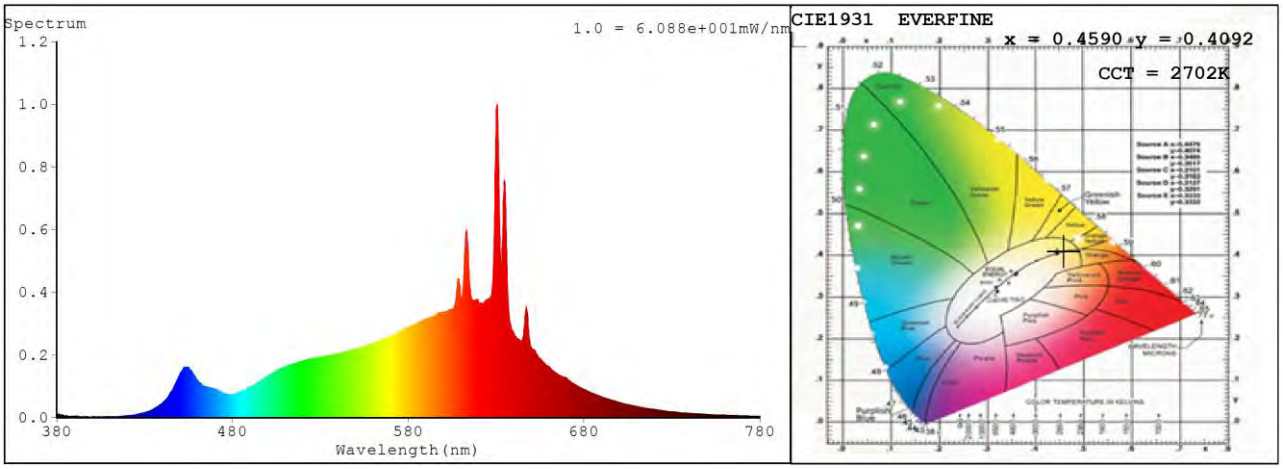
x	0.4590
y	0.4091
u'	0.2626
v'	0.5267

CIE 13.3-1995 (CRI)

R_a	94
R_9	59

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	0.0096	414	0.0028	448	0.1116	482	0.0758	516	0.1731
381	0.004	415	0.003	449	0.125	483	0.076	517	0.1759
382	0.0023	416	0.0038	450	0.1344	484	0.081	518	0.1775
383	0.0099	417	0.0045	451	0.1471	485	0.0825	519	0.178
384	0.007	418	0.0045	452	0.1548	486	0.0859	520	0.1806
385	0.003	419	0.0046	453	0.16	487	0.0877	521	0.1821
386	0.0025	420	0.0054	454	0.1591	488	0.0915	522	0.182
387	0.0011	421	0.0067	455	0.159	489	0.0942	523	0.1834
388	0	422	0.0067	456	0.1518	490	0.0963	524	0.1863
389	0.0036	423	0.0078	457	0.1459	491	0.0971	525	0.1869
390	0.0043	424	0.008	458	0.1363	492	0.1023	526	0.1889
391	0	425	0.0088	459	0.1292	493	0.1061	527	0.1893
392	0.0025	426	0.0096	460	0.1205	494	0.1094	528	0.187
393	0.001	427	0.0117	461	0.1143	495	0.1125	529	0.1923
394	0.0013	428	0.0133	462	0.1085	496	0.1163	530	0.1926
395	0.0025	429	0.0148	463	0.1021	497	0.1203	531	0.1921
396	0.0029	430	0.0159	464	0.0979	498	0.1258	532	0.1936
397	0.0036	431	0.0182	465	0.0988	499	0.1278	533	0.1956
398	0.0018	432	0.0188	466	0.0974	500	0.1328	534	0.1965
399	0.0023	433	0.0212	467	0.0941	501	0.1364	535	0.1977
400	0.0022	434	0.0235	468	0.0921	502	0.1372	536	0.1988
401	0.0002	435	0.0264	469	0.0921	503	0.1425	537	0.1997
402	0.0032	436	0.0296	470	0.09	504	0.1452	538	0.2012
403	0.0011	437	0.0326	471	0.0889	505	0.148	539	0.2041
404	0.0016	438	0.0363	472	0.0841	506	0.1516	540	0.2021
405	0.0017	439	0.0409	473	0.0836	507	0.1547	541	0.2042
406	0.0008	440	0.0458	474	0.0792	508	0.1569	542	0.2042
407	0.0027	441	0.0504	475	0.0772	509	0.1597	543	0.2045
408	0.0014	442	0.0562	476	0.0746	510	0.1609	544	0.2074
409	0.0038	443	0.0625	477	0.0734	511	0.1633	545	0.2106
410	0.0028	444	0.0722	478	0.0728	512	0.1677	546	0.2118
411	0.002	445	0.0799	479	0.0735	513	0.1669	547	0.2124
412	0.0022	446	0.0881	480	0.0725	514	0.1696	548	0.2144
413	0.0026	447	0.1013	481	0.0741	515	0.1713	549	0.2164

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.2191	599	0.335	648	0.3158	697	0.0533	746	0.0112
551	0.2188	600	0.3346	649	0.2462	698	0.0513	747	0.0105
552	0.2206	601	0.3366	650	0.2231	699	0.05	748	0.0109
553	0.2222	602	0.3395	651	0.2165	700	0.048	749	0.0104
554	0.2249	603	0.3428	652	0.2127	701	0.0466	750	0.0098
555	0.2267	604	0.3454	653	0.2024	702	0.0455	751	0.0099
556	0.2291	605	0.3467	654	0.1942	703	0.0437	752	0.0099
557	0.2305	606	0.3496	655	0.1892	704	0.0428	753	0.009
558	0.2318	607	0.372	656	0.1827	705	0.0414	754	0.0087
559	0.2334	608	0.4253	657	0.1765	706	0.0393	755	0.0088
560	0.236	609	0.4335	658	0.1689	707	0.0386	756	0.0088
561	0.239	610	0.3844	659	0.1663	708	0.0369	757	0.0086
562	0.2409	611	0.3928	660	0.1632	709	0.0367	758	0.008
563	0.2435	612	0.4916	661	0.1568	710	0.0354	759	0.0075
564	0.2467	613	0.5962	662	0.1492	711	0.0342	760	0.0076
565	0.2477	614	0.5317	663	0.1461	712	0.0324	761	0.0073
566	0.249	615	0.4228	664	0.1422	713	0.0319	762	0.0072
567	0.2521	616	0.3816	665	0.1387	714	0.0312	763	0.0068
568	0.2545	617	0.3724	666	0.1346	715	0.0297	764	0.0067
569	0.259	618	0.3737	667	0.1321	716	0.0299	765	0.0065
570	0.2598	619	0.377	668	0.131	717	0.0283	766	0.0062
571	0.2628	620	0.368	669	0.128	718	0.0274	767	0.0061
572	0.2634	621	0.3656	670	0.1277	719	0.026	768	0.0059
573	0.2679	622	0.3643	671	0.1221	720	0.0263	769	0.0063
574	0.2702	623	0.3653	672	0.1164	721	0.0252	770	0.0057
575	0.2743	624	0.3731	673	0.1115	722	0.024	771	0.0052
576	0.2752	625	0.3756	674	0.1085	723	0.0238	772	0.0055
577	0.2778	626	0.379	675	0.1054	724	0.0224	773	0.0055
578	0.2812	627	0.3878	676	0.1023	725	0.0214	774	0.0047
579	0.2847	628	0.4231	677	0.0986	726	0.0207	775	0.0048
580	0.2849	629	0.593	678	0.0957	727	0.02	776	0.0047
581	0.29	630	0.9207	679	0.0928	728	0.0197	777	0.0049
582	0.2935	631	0.9384	680	0.0906	729	0.0188	778	0.0042
583	0.296	632	0.6088	681	0.0879	730	0.0182	779	0.0042
584	0.2972	633	0.4827	682	0.0839	731	0.0177	780	0.0043
585	0.3019	634	0.6306	683	0.0823	732	0.0175		
586	0.3046	635	0.7446	684	0.0788	733	0.0173		
587	0.3092	636	0.5102	685	0.0771	734	0.0162		
588	0.3087	637	0.3488	686	0.0752	735	0.0157		
589	0.3112	638	0.3017	687	0.0727	736	0.0154		
590	0.3146	639	0.28	688	0.0706	737	0.0147		
591	0.3168	640	0.2693	689	0.0674	738	0.0148		
592	0.3178	641	0.2603	690	0.0665	739	0.0137		
593	0.3187	642	0.2535	691	0.0644	740	0.0138		
594	0.3189	643	0.2494	692	0.0617	741	0.013		
595	0.3234	644	0.2441	693	0.06	742	0.0127		
596	0.328	645	0.2455	694	0.0592	743	0.0122		
597	0.3324	646	0.284	695	0.0572	744	0.0118		
598	0.3344	647	0.3489	696	0.0549	745	0.0115		

6. Goniophotometer Test results for LREY-1000-L27-DF-I-10

6.1 Test Data

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

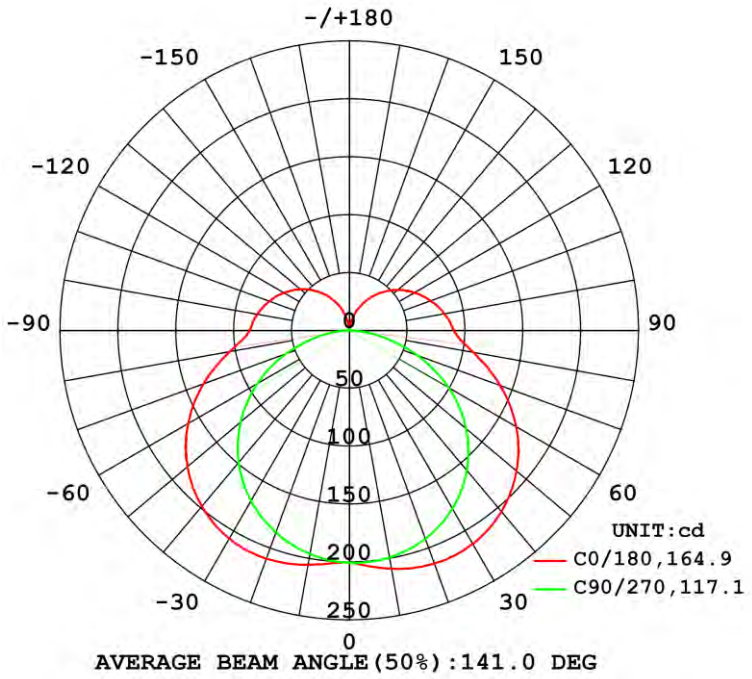
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current(A)	Power Factor	Power(W)
24	--	0.39	1.0000	9.36

Optical Measurement

Luminous Flux (lm)	Efficacy(lm/W)	Imax (cd)	η up (%)	η down (%)
1082.03	115.60	214.6	21.7	78.3

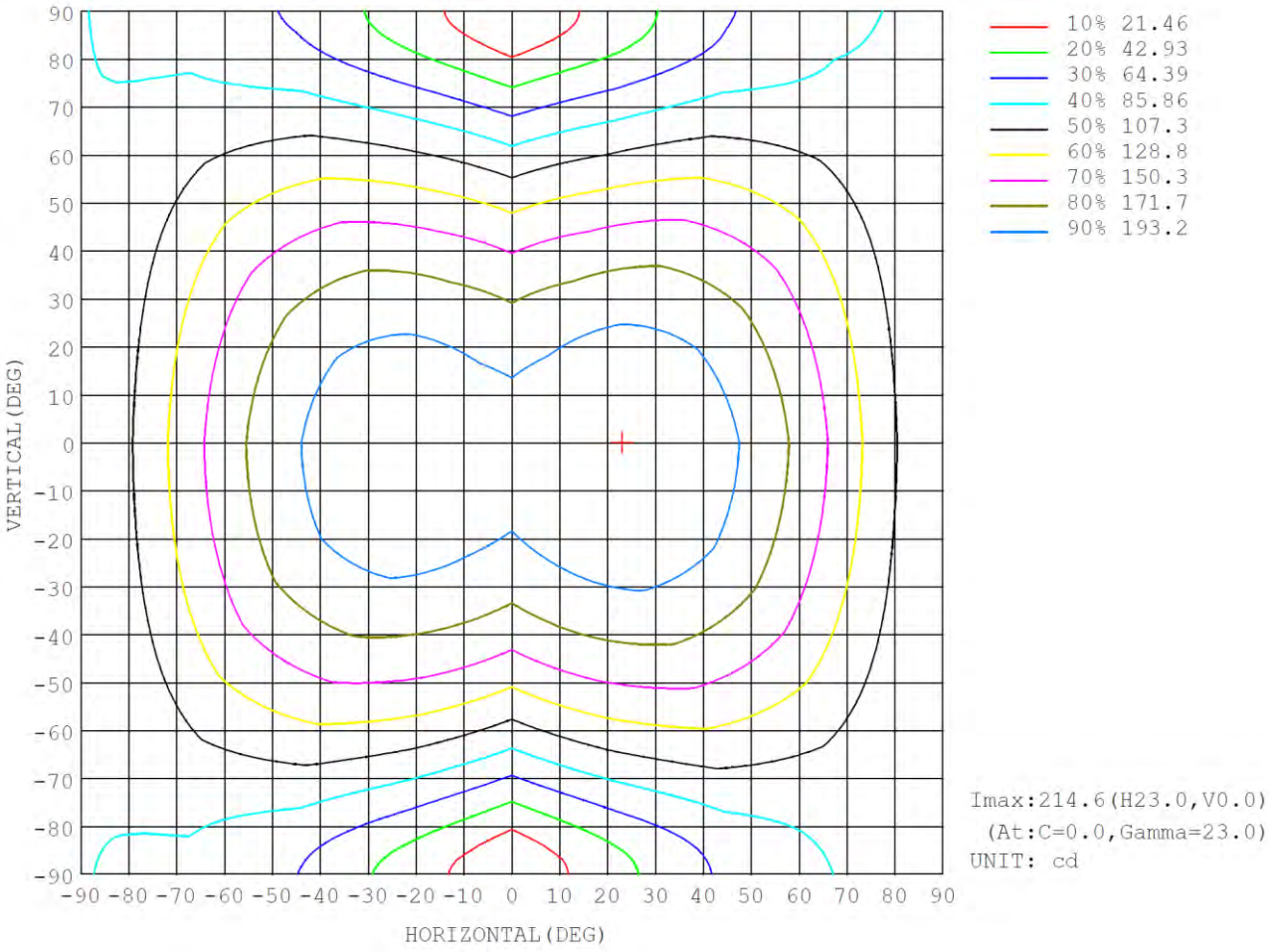
6.2 Luminous Intensity Distribution



6.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	208.9	206.0	199.1	203.1	205.5	201.2	196.1	203.7	0- 10	19.30	19.30	1.78,1.78
20	214.2	208.1	191.6	204.4	209.8	200.1	185.9	202.9	10- 20	57.56	76.87	7.1,7.1
30	213.0	204.3	177.9	200.2	207.6	193.6	170.2	196.3	20- 30	92.30	169.2	15.6,15.6
40	204.3	193.6	157.9	189.6	198.6	181.4	149.1	183.7	30- 40	119.1	288.3	26.6,26.6
50	188.7	175.9	131.6	172.3	182.9	163.0	122.9	164.7	40- 50	134.4	422.7	39.1,39.1
60	166.5	151.4	99.32	148.4	161.1	139.1	92.06	139.9	50- 60	135.7	558.4	51.6,51.6
70	138.6	120.7	61.93	118.7	134.0	110.4	57.48	110.2	60- 70	122.3	680.8	62.9,62.9
80	108.6	87.97	23.79	86.31	104.9	80.08	22.72	79.33	70- 80	96.77	777.5	71.9,71.9
90	90.44	68.79	3.909	64.81	86.37	61.31	3.492	62.79	80- 90	69.75	847.3	78.3,78.3
100	83.58	63.15	0.6431	60.37	81.05	57.29	0.4032	57.68	90-100	59.36	906.7	83.8,83.8
110	75.18	56.22	0.6918	54.66	74.06	51.99	0.5093	51.45	100-110	52.52	959.2	88.6,88.6
120	65.45	48.24	0.7322	47.64	65.44	45.49	0.4709	44.28	110-120	43.61	1003	92.7,92.7
130	54.70	39.41	0.7730	39.52	55.52	37.99	0.5296	35.60	120-130	33.41	1036	95.8,95.8
140	43.01	29.94	0.8020	30.61	44.48	30.19	0.6375	25.59	130-140	23.20	1059	97.9,97.9
150	30.52	19.29	0.7594	21.31	32.43	23.28	0.9658	15.25	140-150	13.91	1073	99.2,99.2
160	17.62	10.13	0.7087	11.69	19.36	14.99	1.720	4.408	150-160	6.613	1080	99.8,99.8
170	5.804	2.656	0.5877	3.937	6.199	5.121	0.9690	1.218	160-170	1.924	1082	100,100
180	0.4314	0.6007	0.5958	0.5136	0.4338	0.4798	0.5408	0.4918	170-180	0.1873	1082	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	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201	201
5	204	204	203	202	201	201	201	202	202	202	201	199	199	200	202	204
10	209	208	206	202	199	201	203	205	206	204	201	198	196	199	204	208
15	212	212	208	201	196	199	204	208	208	206	201	195	192	196	204	210
20	214	213	208	199	192	197	204	209	210	207	200	191	186	193	203	211
25	215	214	207	196	186	194	203	209	210	206	198	187	179	188	200	210
30	213	212	204	191	178	188	200	207	208	203	194	180	170	181	196	207
35	210	208	200	184	169	182	196	204	204	199	188	173	160	173	191	203
40	204	203	194	176	158	174	190	198	199	193	181	164	149	164	184	197
45	197	196	186	166	146	164	182	191	191	186	173	154	137	153	175	189
50	189	187	176	155	132	153	172	183	183	177	163	142	123	141	165	180
55	178	176	164	141	116	140	161	172	173	166	152	129	108	128	153	169
60	166	164	151	127	99.3	125	148	161	161	154	139	115	92.1	113	140	157
65	153	151	137	110	81.1	109	134	147	148	141	125	99.6	75.1	97.7	126	143
70	139	136	121	92.8	61.9	91.9	119	133	134	127	110	83.4	57.5	81.1	110	129
75	123	120	104	74.7	42.4	73.9	102	118	119	112	95.1	67.0	39.7	64.4	94.4	113
80	109	105	88.0	57.1	23.8	56.3	86.3	103	105	97.9	80.1	51.1	22.7	48.5	79.3	98.8
85	96.5	92.2	74.8	43.0	9.51	41.3	72.4	89.7	92.9	85.8	67.6	38.0	9.28	36.2	67.6	87.4
90	90.4	86.1	68.8	37.3	3.91	33.9	64.8	82.1	86.4	79.4	61.3	32.1	3.49	32.0	62.8	82.2
95	87.1	83.0	66.1	35.5	1.31	32.5	62.7	79.5	83.8	77.0	59.4	30.9	0.60	30.4	60.4	79.2
100	83.6	79.5	63.2	33.7	0.64	31.1	60.4	76.9	81.0	74.4	57.3	29.6	0.40	28.8	57.7	75.9
105	79.6	75.6	59.8	31.6	0.65	29.5	57.7	73.7	77.8	71.4	54.8	28.2	0.46	27.1	54.7	72.2
110	75.2	71.3	56.2	29.5	0.69	27.6	54.7	70.1	74.1	67.9	52.0	26.5	0.51	24.8	51.5	68.1
115	70.5	66.7	52.3	27.0	0.71	25.6	51.3	66.2	69.9	64.1	48.9	24.7	0.49	23.1	48.0	63.7
120	65.4	61.8	48.2	24.1	0.73	23.3	47.6	61.8	65.4	59.9	45.5	22.6	0.47	19.9	44.3	59.1
125	60.2	56.7	43.9	21.3	0.76	20.8	43.7	57.2	60.6	55.4	41.8	20.3	0.52	18.3	39.0	54.2
130	54.7	51.4	39.4	18.6	0.77	18.3	39.5	52.2	55.5	50.7	38.0	18.0	0.53	16.0	35.6	49.1
135	49.0	45.8	34.7	15.9	0.80	15.6	35.1	47.0	50.1	45.7	34.1	15.5	0.56	13.4	31.3	43.7
140	43.0	40.1	29.9	13.3	0.80	13.1	30.6	41.5	44.5	40.7	30.2	13.0	0.64	10.6	25.6	37.1
145	36.9	34.2	25.1	10.8	0.79	10.6	26.0	35.9	38.6	35.6	26.6	11.5	0.71	7.44	20.7	31.2
150	30.5	28.2	19.3	8.38	0.76	8.04	21.3	30.1	32.4	30.5	23.3	10.7	0.97	4.05	15.2	24.1
155	24.1	22.1	15.1	5.78	0.72	5.87	16.3	24.2	26.1	25.1	19.5	9.68	1.39	1.72	9.42	17.7
160	17.6	16.1	10.1	3.61	0.71	4.25	11.7	17.8	19.4	19.0	15.0	7.87	1.72	0.92	4.41	10.8
165	11.4	9.87	5.79	2.06	0.66	2.57	7.05	11.7	12.1	12.3	10.1	5.43	1.40	0.75	2.21	5.26
170	5.80	4.45	2.66	1.25	0.59	1.35	3.94	6.02	6.20	6.17	5.12	3.36	0.97	0.65	1.22	2.39
175	1.78	1.19	1.11	0.84	0.58	0.80	1.38	2.11	2.36	2.39	1.76	1.06	0.67	0.58	0.82	0.96
180	0.43	0.51	0.60	0.61	0.60	0.45	0.51	0.51	0.43	0.44	0.48	0.49	0.54	0.58	0.49	0.51

7. Integrating Sphere Test Results for LREY-1000-L27-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	0.7445	23.998	17.867	2154.2	0.4579	0.41	0.2615	0.5268	2722	94.2
1	00h00m10s	0.7451	23.998	17.881	2154.1	0.458	0.41	0.2616	0.5269	2722	94.2
2	00h00m20s	0.7455	23.998	17.891	2156.5	0.458	0.4102	0.2615	0.5269	2724	94.2
3	00h00m30s	0.7459	23.998	17.9	2154.2	0.4581	0.4102	0.2615	0.5269	2722	94.2
4	00h00m40s	0.7463	23.998	17.91	2155.7	0.458	0.4101	0.2615	0.5269	2722	94.2
5	00h00m50s	0.7467	23.998	17.919	2157.3	0.4581	0.41	0.2617	0.5269	2720	94.2
6	00h01m00s	0.7471	23.998	17.929	2157.1	0.4581	0.41	0.2616	0.5269	2720	94.2
7	00h01m10s	0.7474	23.998	17.936	2156.8	0.458	0.4099	0.2616	0.5268	2721	94.2
8	00h01m20s	0.7478	23.998	17.946	2156.4	0.4581	0.41	0.2616	0.5268	2721	94.2
9	00h01m30s	0.7481	23.998	17.953	2156.6	0.4581	0.4099	0.2616	0.5268	2720	94.2
10	00h01m40s	0.7484	23.998	17.96	2157.1	0.458	0.4098	0.2617	0.5268	2719	94.2
11	00h01m50s	0.7487	23.998	17.967	2157.4	0.4581	0.4098	0.2617	0.5268	2719	94.2
12	00h02m00s	0.749	23.998	17.975	2157.8	0.4581	0.4098	0.2617	0.5268	2719	94.2
13	00h02m10s	0.7493	23.998	17.982	2157.4	0.458	0.4097	0.2617	0.5267	2720	94.2
14	00h02m20s	0.7496	23.998	17.989	2158	0.458	0.4097	0.2617	0.5267	2719	94.2
15	00h02m30s	0.7499	23.998	17.996	2158.9	0.4581	0.4098	0.2617	0.5268	2718	94.2
16	00h02m40s	0.7502	23.998	18.003	2158.1	0.4582	0.4097	0.2618	0.5268	2717	94.2
17	00h02m50s	0.7504	23.998	18.008	2158	0.4581	0.4097	0.2618	0.5268	2717	94.2
18	00h03m00s	0.7507	23.998	18.015	2158.3	0.458	0.4094	0.2618	0.5266	2717	94.2
19	00h03m10s	0.751	23.998	18.022	2159	0.458	0.4096	0.2618	0.5267	2718	94.2
20	00h03m20s	0.7514	23.998	18.032	2159.4	0.4582	0.4096	0.2619	0.5267	2716	94.1
21	00h03m30s	0.7516	23.998	18.037	2159	0.4581	0.4095	0.2619	0.5267	2716	94.2

22	00h03m40s	0.7518	23.998	18.042	2158.9	0.4581	0.4095	0.2618	0.5267	2717	94.2
23	00h03m50s	0.752	23.998	18.046	2159.2	0.4583	0.4097	0.2619	0.5268	2715	94.2
24	00h04m00s	0.7522	23.998	18.051	2159.8	0.4581	0.4095	0.2618	0.5266	2716	94.2
25	00h04m10s	0.7525	23.998	18.058	2160	0.458	0.4093	0.2619	0.5266	2716	94.2
26	00h04m20s	0.7526	23.998	18.061	2161.2	0.4582	0.4095	0.2619	0.5267	2715	94.2
27	00h04m30s	0.7529	23.998	18.068	2160.6	0.4581	0.4095	0.2619	0.5267	2716	94.2
28	00h04m40s	0.7531	23.998	18.073	2159.4	0.4584	0.4095	0.262	0.5267	2713	94.1
29	00h04m50s	0.7532	23.998	18.075	2160.2	0.4581	0.4095	0.2618	0.5266	2717	94.2
30	00h05m00s	0.7534	23.998	18.08	2160.2	0.4581	0.4092	0.262	0.5266	2715	94.2
31	00h05m10s	0.7536	23.998	18.085	2159.7	0.4582	0.4095	0.262	0.5267	2714	94.2
32	00h05m20s	0.7538	23.998	18.09	2158.9	0.4582	0.4093	0.262	0.5266	2713	94.2
33	00h05m30s	0.754	23.998	18.094	2160.1	0.4581	0.4093	0.262	0.5266	2714	94.2
34	00h05m40s	0.7541	23.998	18.097	2160.6	0.4581	0.4093	0.2619	0.5266	2715	94.2
35	00h05m50s	0.7543	23.998	18.102	2160.4	0.4581	0.4092	0.262	0.5266	2714	94.2
36	00h06m00s	0.7544	23.998	18.104	2161	0.4581	0.4093	0.262	0.5266	2714	94.2
37	00h06m10s	0.7546	23.998	18.109	2159.4	0.4582	0.4092	0.262	0.5266	2713	94.2
38	00h06m20s	0.7547	23.998	18.111	2161.5	0.4583	0.4093	0.2621	0.5266	2712	94.1
39	00h06m30s	0.7549	23.998	18.116	2161	0.4584	0.4093	0.2621	0.5266	2711	94.2
40	00h06m40s	0.755	23.998	18.118	2160.9	0.4581	0.4091	0.262	0.5265	2713	94.2
41	00h06m50s	0.7552	23.998	18.123	2160.2	0.4581	0.409	0.262	0.5265	2713	94.2
42	00h07m00s	0.7553	23.998	18.126	2162	0.4583	0.4092	0.2621	0.5266	2711	94.1
43	00h07m10s	0.7554	23.998	18.128	2161.5	0.4583	0.4093	0.2621	0.5266	2712	94.1
44	00h07m20s	0.7556	23.998	18.133	2161.8	0.4581	0.4092	0.262	0.5266	2714	94.2
45	00h07m30s	0.7557	23.998	18.135	2161.5	0.4582	0.4091	0.2621	0.5265	2712	94.1
46	00h07m40s	0.7558	23.998	18.138	2162.2	0.4582	0.4093	0.262	0.5266	2713	94.2
47	00h07m50s	0.7559	23.998	18.14	2160.6	0.4584	0.4091	0.2622	0.5266	2710	94.1
48	00h08m00s	0.756	23.998	18.142	2161.9	0.4582	0.4091	0.2621	0.5265	2712	94.2
49	00h08m10s	0.7561	23.998	18.145	2162.5	0.4584	0.4092	0.2622	0.5266	2710	94.2
50	00h08m20s	0.7563	23.998	18.15	2162.3	0.4581	0.4091	0.262	0.5265	2713	94.2
51	00h08m30s	0.7564	23.998	18.152	2161.4	0.4584	0.4091	0.2622	0.5266	2710	94.2
52	00h08m40s	0.7565	23.998	18.154	2162.4	0.4582	0.4091	0.2621	0.5265	2712	94.2

53	00h08m50s	0.7566	23.998	18.157	2162.3	0.4581	0.409	0.2621	0.5265	2712	94.2
54	00h09m00s	0.7567	23.998	18.159	2161.6	0.4583	0.4092	0.2621	0.5266	2711	94.2
55	00h09m10s	0.7568	23.998	18.162	2162.1	0.4583	0.4092	0.2621	0.5266	2710	94.2
56	00h09m20s	0.7569	23.998	18.164	2162.4	0.4583	0.4092	0.2621	0.5266	2712	94.2
57	00h09m30s	0.757	23.998	18.166	2163.4	0.4583	0.409	0.2622	0.5265	2711	94.1
58	00h09m40s	0.757	23.998	18.166	2162.8	0.4582	0.4091	0.2621	0.5265	2711	94.2
59	00h09m50s	0.7571	23.998	18.169	2163.1	0.4582	0.4091	0.2621	0.5265	2711	94.2
60	00h10m00s	0.7572	23.998	18.171	2162.8	0.4583	0.4091	0.2622	0.5265	2710	94.2
61	00h10m10s	0.7573	23.998	18.174	2161.6	0.4582	0.409	0.2622	0.5265	2711	94.2
62	00h10m20s	0.7574	23.998	18.176	2162.5	0.4583	0.4091	0.2621	0.5265	2711	94.2
63	00h10m30s	0.7574	23.998	18.176	2162.8	0.4583	0.409	0.2622	0.5265	2709	94.2
64	00h10m40s	0.7575	23.998	18.178	2162.6	0.4583	0.4089	0.2622	0.5265	2710	94.1
65	00h10m50s	0.7576	23.998	18.181	2163.8	0.4583	0.4092	0.2621	0.5266	2712	94.2
66	00h11m00s	0.7577	23.998	18.183	2163.2	0.4583	0.4089	0.2622	0.5265	2709	94.2
67	00h11m10s	0.7577	23.998	18.183	2163.4	0.4583	0.409	0.2622	0.5265	2710	94.1
68	00h11m20s	0.7578	23.998	18.186	2163.9	0.4583	0.409	0.2622	0.5265	2710	94.2
69	00h11m30s	0.7579	23.998	18.188	2162.7	0.4583	0.4089	0.2622	0.5265	2709	94.1
70	00h11m40s	0.7579	23.998	18.188	2162.2	0.4583	0.4089	0.2622	0.5264	2709	94.2
71	00h11m50s	0.758	23.998	18.19	2164.7	0.4581	0.4089	0.2621	0.5264	2711	94.2
72	00h12m00s	0.7581	23.998	18.193	2164.2	0.4583	0.4088	0.2623	0.5264	2709	94.2
73	00h12m10s	0.7581	23.998	18.193	2162.6	0.4583	0.409	0.2622	0.5265	2710	94.2
74	00h12m20s	0.7582	23.998	18.195	2164.2	0.4581	0.4089	0.2621	0.5264	2712	94.2
75	00h12m30s	0.7582	23.998	18.195	2163.9	0.4582	0.4089	0.2622	0.5265	2710	94.2
76	00h12m40s	0.7583	23.998	18.198	2163.6	0.4584	0.409	0.2623	0.5265	2709	94.2
77	00h12m50s	0.7583	23.998	18.198	2163.9	0.4582	0.4089	0.2622	0.5265	2710	94.1
78	00h13m00s	0.7584	23.998	18.2	2164.2	0.4584	0.409	0.2622	0.5265	2709	94.1
79	00h13m10s	0.7584	23.998	18.2	2163.8	0.4582	0.4089	0.2622	0.5264	2710	94.1
80	00h13m20s	0.7585	23.998	18.202	2163.1	0.4583	0.4089	0.2622	0.5265	2709	94.1
81	00h13m30s	0.7585	23.998	18.202	2162.6	0.4584	0.4088	0.2623	0.5265	2707	94.1
82	00h13m40s	0.7586	23.998	18.205	2163.7	0.4583	0.409	0.2622	0.5265	2710	94.2
83	00h13m50s	0.7586	23.998	18.205	2164.4	0.4582	0.4089	0.2622	0.5264	2710	94.2

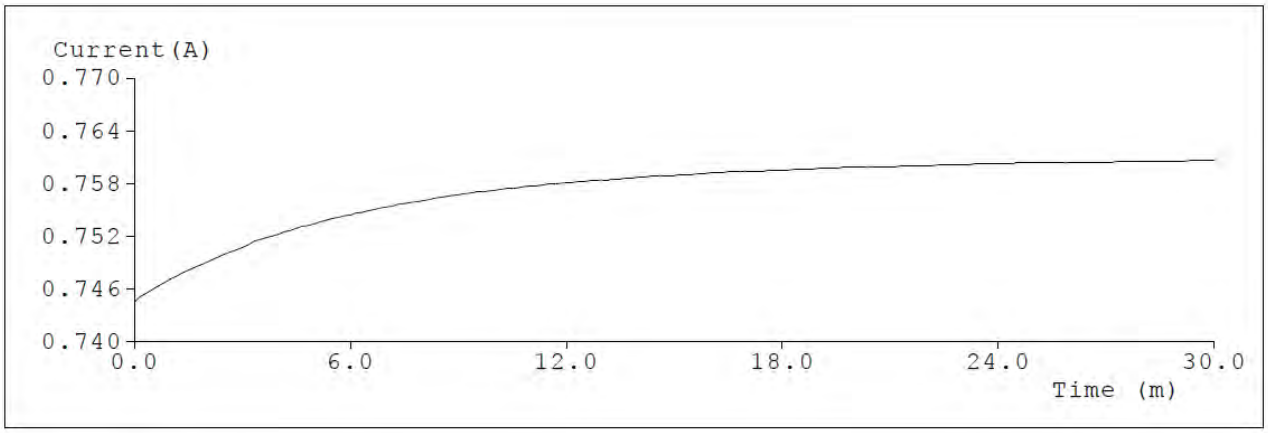
84	00h14m00s	0.7587	23.998	18.207	2164	0.4583	0.4089	0.2622	0.5265	2709	94.2
85	00h14m10s	0.7587	23.998	18.207	2163.5	0.4583	0.409	0.2622	0.5265	2709	94.2
86	00h14m20s	0.7588	23.998	18.21	2163.5	0.4583	0.4089	0.2623	0.5265	2708	94.2
87	00h14m30s	0.7588	23.998	18.21	2162.9	0.4583	0.4089	0.2623	0.5265	2709	94.2
88	00h14m40s	0.7589	23.998	18.212	2164.6	0.4583	0.4091	0.2621	0.5265	2711	94.1
89	00h14m50s	0.7589	23.998	18.212	2164.5	0.4582	0.4089	0.2622	0.5265	2710	94.2
90	00h15m00s	0.7589	23.998	18.212	2164.3	0.4582	0.4089	0.2622	0.5265	2710	94.2
91	00h15m10s	0.759	23.998	18.214	2163.4	0.4583	0.4088	0.2623	0.5264	2707	94.2
92	00h15m20s	0.759	23.998	18.214	2164.1	0.4583	0.4088	0.2623	0.5264	2708	94.2
93	00h15m30s	0.759	23.998	18.214	2163.5	0.4584	0.4089	0.2623	0.5265	2708	94.2
94	00h15m40s	0.7591	23.998	18.217	2163.1	0.4583	0.409	0.2622	0.5265	2709	94.2
95	00h15m50s	0.7591	23.998	18.217	2164.2	0.4584	0.4089	0.2623	0.5265	2708	94.2
96	00h16m00s	0.7592	23.998	18.219	2164.1	0.4583	0.4089	0.2623	0.5265	2708	94.2
97	00h16m10s	0.7592	23.998	18.219	2163.8	0.4584	0.4089	0.2623	0.5265	2708	94.2
98	00h16m20s	0.7592	23.998	18.219	2163.5	0.4583	0.4089	0.2623	0.5265	2709	94.2
99	00h16m30s	0.7593	23.998	18.222	2163.7	0.4584	0.4087	0.2624	0.5264	2706	94.1
100	00h16m40s	0.7593	23.998	18.222	2164	0.4583	0.4089	0.2622	0.5265	2709	94.2
101	00h16m50s	0.7593	23.998	18.222	2163.8	0.4583	0.4088	0.2623	0.5264	2708	94.1
102	00h17m00s	0.7594	23.998	18.224	2164.4	0.4584	0.4088	0.2624	0.5265	2706	94.1
103	00h17m10s	0.7594	23.998	18.224	2164.2	0.4584	0.4087	0.2624	0.5264	2707	94.1
104	00h17m20s	0.7594	23.998	18.224	2165.2	0.4585	0.409	0.2623	0.5265	2707	94.2
105	00h17m30s	0.7594	23.998	18.224	2165.7	0.4584	0.4088	0.2623	0.5265	2707	94.2
106	00h17m40s	0.7595	23.998	18.226	2164.1	0.4584	0.4089	0.2623	0.5265	2707	94.2
107	00h17m50s	0.7595	23.998	18.226	2165.2	0.4584	0.409	0.2623	0.5265	2708	94.2
108	00h18m00s	0.7595	23.998	18.226	2164.1	0.4584	0.4089	0.2623	0.5265	2708	94.1
109	00h18m10s	0.7595	23.998	18.226	2164.9	0.4584	0.4088	0.2623	0.5264	2707	94.1
110	00h18m20s	0.7596	23.998	18.229	2166.3	0.4583	0.4089	0.2623	0.5265	2709	94.1
111	00h18m30s	0.7596	23.998	18.229	2163.9	0.4583	0.4088	0.2623	0.5264	2709	94.1
112	00h18m40s	0.7596	23.998	18.229	2163.9	0.4584	0.4088	0.2623	0.5265	2707	94.1
113	00h18m50s	0.7596	23.998	18.229	2164.7	0.4582	0.4088	0.2622	0.5264	2710	94.2
114	00h19m00s	0.7597	23.998	18.231	2163.1	0.4584	0.4087	0.2624	0.5264	2706	94.1

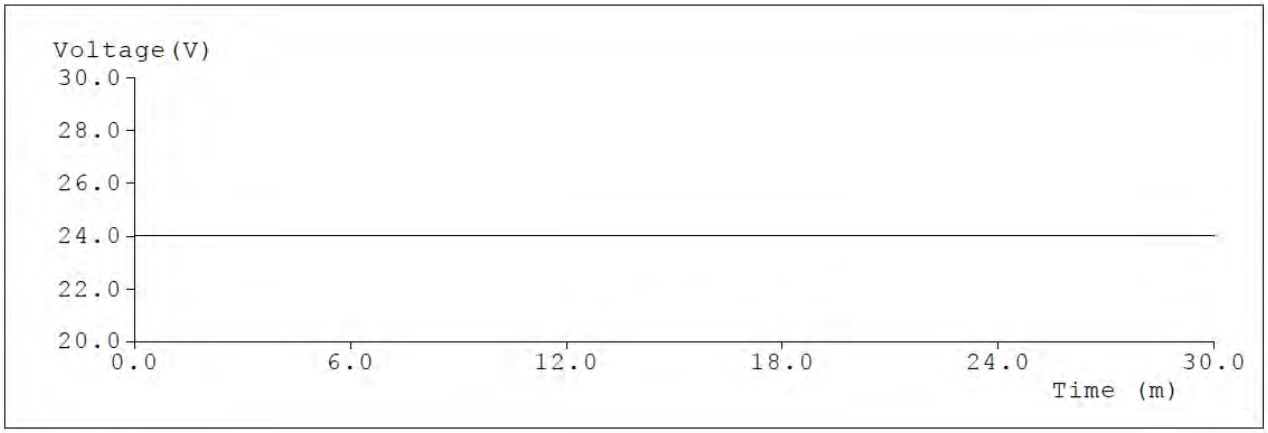
115	00h19m10s	0.7597	23.998	18.231	2164.6	0.4584	0.4089	0.2623	0.5265	2708	94.1
116	00h19m20s	0.7597	23.998	18.231	2164.9	0.4584	0.4089	0.2623	0.5265	2707	94.1
117	00h19m30s	0.7597	23.998	18.231	2165.3	0.4584	0.4089	0.2623	0.5265	2707	94.2
118	00h19m40s	0.7598	23.998	18.234	2164.7	0.4584	0.4088	0.2624	0.5264	2707	94.2
119	00h19m50s	0.7598	23.998	18.234	2164.9	0.4583	0.4089	0.2623	0.5265	2708	94.2
120	00h20m00s	0.7598	23.998	18.234	2164.9	0.4582	0.4087	0.2623	0.5264	2708	94.2
121	00h20m10s	0.7598	23.998	18.234	2164.7	0.4582	0.4086	0.2623	0.5264	2707	94.2
122	00h20m20s	0.7598	23.998	18.234	2164.4	0.4584	0.4089	0.2624	0.5265	2706	94.2
123	00h20m30s	0.7599	23.998	18.236	2164.5	0.4582	0.4088	0.2623	0.5264	2709	94.2
124	00h20m40s	0.7599	23.998	18.236	2164.9	0.4584	0.4089	0.2623	0.5265	2708	94.1
125	00h20m50s	0.7599	23.998	18.236	2165.6	0.4584	0.4088	0.2624	0.5264	2706	94.2
126	00h21m00s	0.7599	23.998	18.236	2164.4	0.4583	0.4087	0.2624	0.5264	2707	94.1
127	00h21m10s	0.7599	23.998	18.236	2163.2	0.4583	0.4088	0.2623	0.5264	2708	94.1
128	00h21m20s	0.76	23.998	18.238	2164.1	0.4583	0.4089	0.2623	0.5264	2709	94.2
129	00h21m30s	0.76	23.998	18.238	2164.3	0.4584	0.4089	0.2623	0.5265	2707	94.2
130	00h21m40s	0.76	23.998	18.238	2163.8	0.4584	0.4088	0.2624	0.5264	2707	94.1
131	00h21m50s	0.76	23.998	18.238	2163.6	0.4584	0.4089	0.2623	0.5265	2707	94.2
132	00h22m00s	0.76	23.998	18.238	2167.1	0.4583	0.4089	0.2623	0.5265	2709	94.2
133	00h22m10s	0.76	23.998	18.238	2164.8	0.4585	0.4089	0.2624	0.5265	2706	94.1
134	00h22m20s	0.7601	23.998	18.241	2164.8	0.4582	0.4088	0.2622	0.5264	2709	94.2
135	00h22m30s	0.7601	23.998	18.241	2165.3	0.4584	0.4088	0.2624	0.5265	2706	94.2
136	00h22m40s	0.7601	23.998	18.241	2164.4	0.4583	0.4087	0.2624	0.5264	2707	94.2
137	00h22m50s	0.7601	23.998	18.241	2164.8	0.4583	0.4087	0.2623	0.5264	2708	94.1
138	00h23m00s	0.7601	23.998	18.241	2165.1	0.4583	0.4088	0.2623	0.5264	2707	94.1
139	00h23m10s	0.7601	23.998	18.241	2166	0.4583	0.4089	0.2622	0.5265	2709	94.2
140	00h23m20s	0.7602	23.998	18.243	2165.4	0.4585	0.4089	0.2624	0.5265	2706	94.1
141	00h23m30s	0.7602	23.998	18.243	2165.2	0.4584	0.4086	0.2624	0.5264	2705	94.2
142	00h23m40s	0.7602	23.998	18.243	2165.6	0.4584	0.4088	0.2623	0.5264	2707	94.2
143	00h23m50s	0.7602	23.998	18.243	2167.2	0.4583	0.4089	0.2623	0.5265	2708	94.2
144	00h24m00s	0.7602	23.998	18.243	2165.2	0.4583	0.4087	0.2624	0.5264	2707	94.1
145	00h24m10s	0.7602	23.998	18.243	2163.9	0.4585	0.4088	0.2624	0.5265	2706	94.2

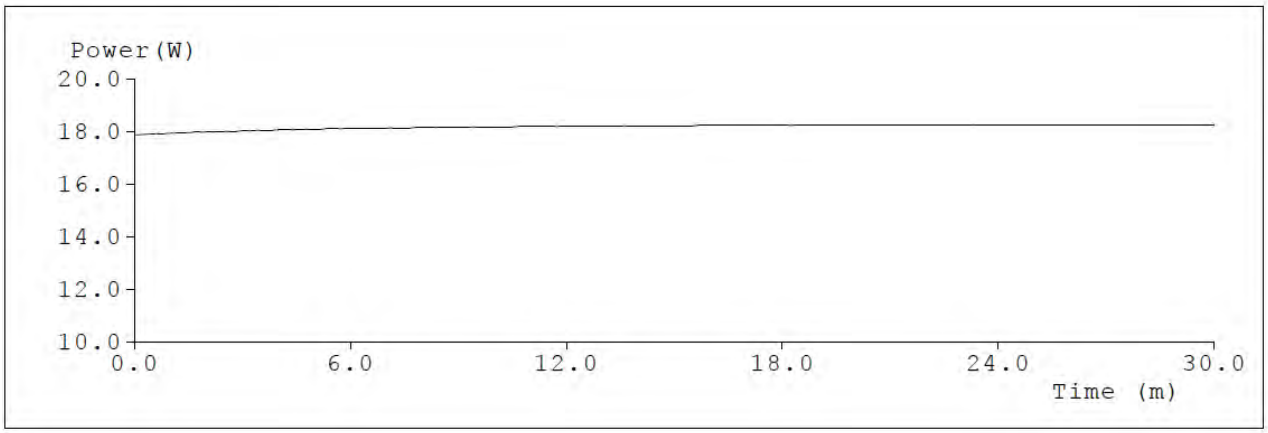
146	00h24m20s	0.7602	23.998	18.243	2165.3	0.4583	0.4089	0.2623	0.5265	2708	94.1
147	00h24m30s	0.7603	23.998	18.246	2165.4	0.4584	0.409	0.2623	0.5265	2708	94.1
148	00h24m40s	0.7603	23.998	18.246	2164.8	0.4584	0.4088	0.2623	0.5264	2707	94.1
149	00h24m50s	0.7603	23.998	18.246	2165.1	0.4583	0.4088	0.2623	0.5264	2708	94.2
150	00h25m00s	0.7603	23.998	18.246	2166.2	0.4583	0.4089	0.2623	0.5265	2709	94.2
151	00h25m10s	0.7603	23.998	18.246	2166.7	0.4583	0.409	0.2622	0.5265	2709	94.2
152	00h25m20s	0.7603	23.998	18.246	2164.8	0.4583	0.4087	0.2623	0.5264	2708	94.2
153	00h25m30s	0.7603	23.998	18.246	2165.8	0.4583	0.4089	0.2623	0.5265	2708	94.2
154	00h25m40s	0.7603	23.998	18.246	2165	0.4584	0.4087	0.2624	0.5264	2705	94.1
155	00h25m50s	0.7603	23.998	18.246	2165.1	0.4583	0.4088	0.2623	0.5264	2707	94.2
156	00h26m00s	0.7604	23.998	18.248	2165.2	0.4583	0.4088	0.2623	0.5264	2708	94.2
157	00h26m10s	0.7604	23.998	18.248	2165.1	0.4584	0.4086	0.2624	0.5264	2705	94.1
158	00h26m20s	0.7604	23.998	18.248	2165.5	0.4583	0.4087	0.2623	0.5264	2707	94.2
159	00h26m30s	0.7604	23.998	18.248	2165.8	0.4584	0.4087	0.2624	0.5264	2706	94.1
160	00h26m40s	0.7604	23.998	18.248	2163.9	0.4584	0.4087	0.2624	0.5264	2706	94.2
161	00h26m50s	0.7604	23.998	18.248	2165.6	0.4584	0.4089	0.2624	0.5265	2706	94.2
162	00h27m00s	0.7604	23.998	18.248	2166.4	0.4583	0.4089	0.2623	0.5265	2708	94.2
163	00h27m10s	0.7604	23.998	18.248	2165.9	0.4582	0.4088	0.2623	0.5264	2709	94.1
164	00h27m20s	0.7605	23.998	18.25	2165.3	0.4584	0.4086	0.2624	0.5264	2705	94.2
165	00h27m30s	0.7605	23.998	18.25	2166.5	0.4582	0.4088	0.2622	0.5264	2709	94.2
166	00h27m40s	0.7605	23.998	18.25	2165.1	0.4586	0.409	0.2624	0.5265	2706	94.1
167	00h27m50s	0.7605	23.998	18.25	2166.6	0.4585	0.4089	0.2623	0.5265	2707	94.1
168	00h28m00s	0.7605	23.998	18.25	2165.4	0.4585	0.409	0.2623	0.5265	2707	94.2
169	00h28m10s	0.7605	23.998	18.25	2165.6	0.4584	0.4087	0.2624	0.5264	2706	94.1
170	00h28m20s	0.7605	23.998	18.25	2165.8	0.4583	0.4088	0.2623	0.5264	2707	94.2
171	00h28m30s	0.7605	23.998	18.25	2165.7	0.4584	0.4089	0.2623	0.5265	2707	94.2
172	00h28m40s	0.7605	23.998	18.25	2165.5	0.4584	0.4087	0.2624	0.5264	2705	94.2
173	00h28m50s	0.7605	23.998	18.25	2165	0.4584	0.4087	0.2624	0.5264	2706	94.2
174	00h29m00s	0.7605	23.998	18.25	2164.8	0.4582	0.4087	0.2622	0.5264	2709	94.2
175	00h29m10s	0.7605	23.998	18.25	2166.5	0.4584	0.4088	0.2623	0.5264	2707	94.1
176	00h29m20s	0.7606	23.998	18.253	2165.4	0.4583	0.4088	0.2623	0.5264	2707	94.2

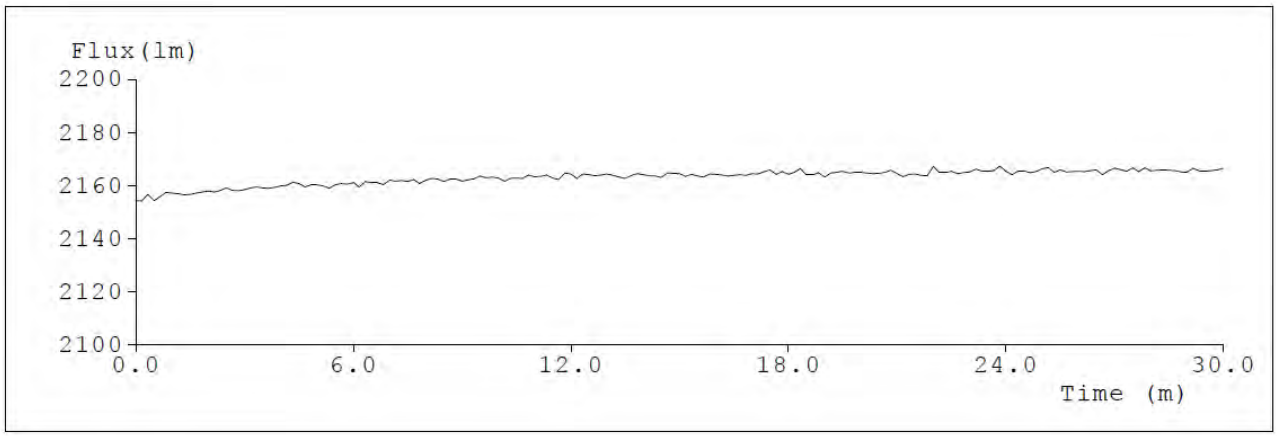
177	00h29m30s	0.7606	23.998	18.253	2165.3	0.4584	0.4088	0.2623	0.5264	2707	94.2
178	00h29m40s	0.7606	23.998	18.253	2165.5	0.4583	0.4088	0.2623	0.5264	2708	94.1
179	00h29m50s	0.7606	23.998	18.253	2165.8	0.4584	0.4088	0.2623	0.5264	2707	94.2
180	00h30m00s	0.7606	23.998	18.253	2166.5	0.4585	0.409	0.2623	0.5265	2707	94.2

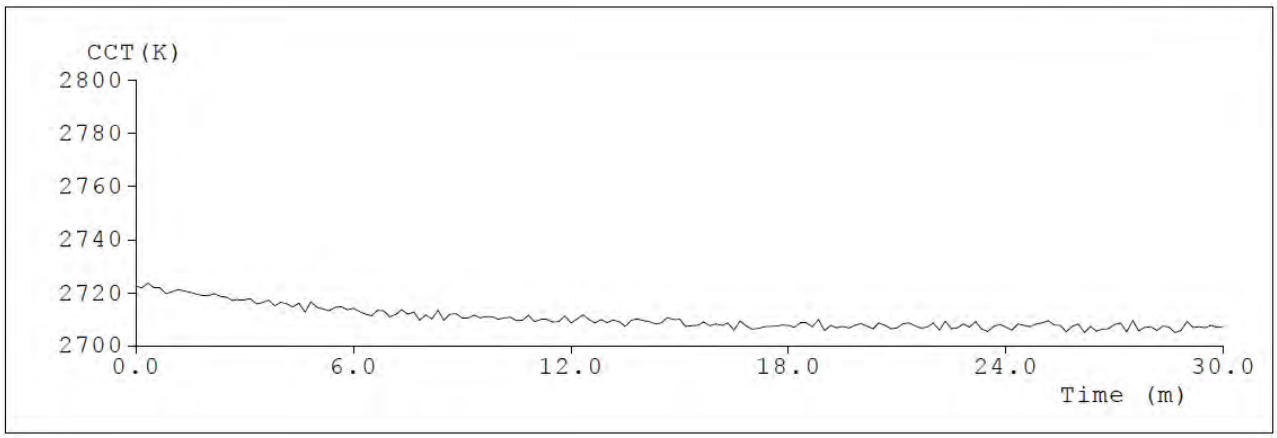
Test curves

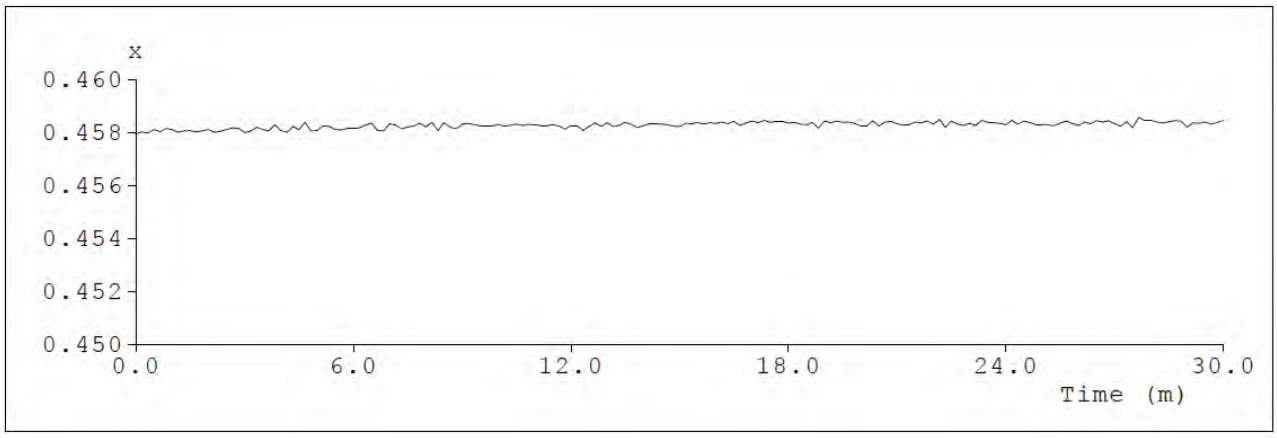


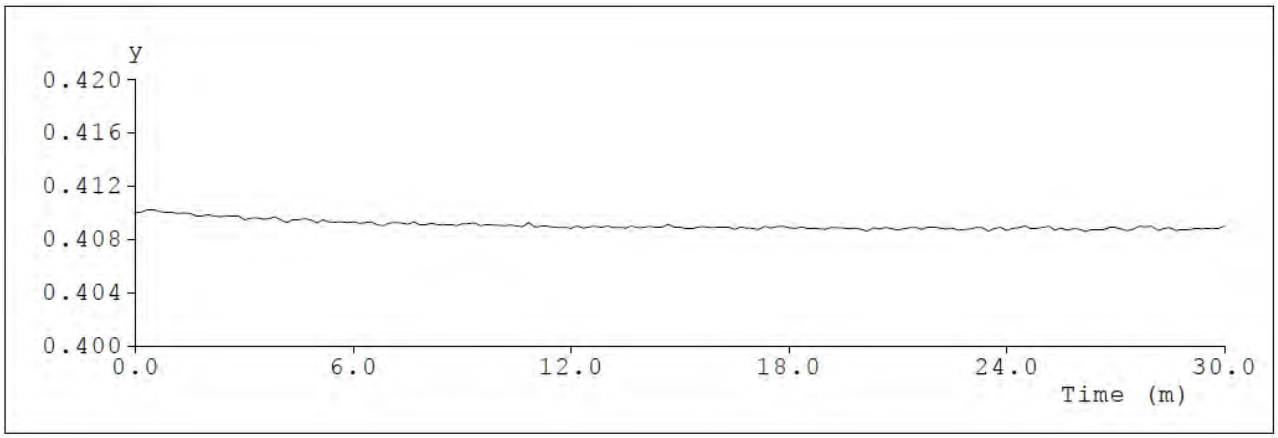


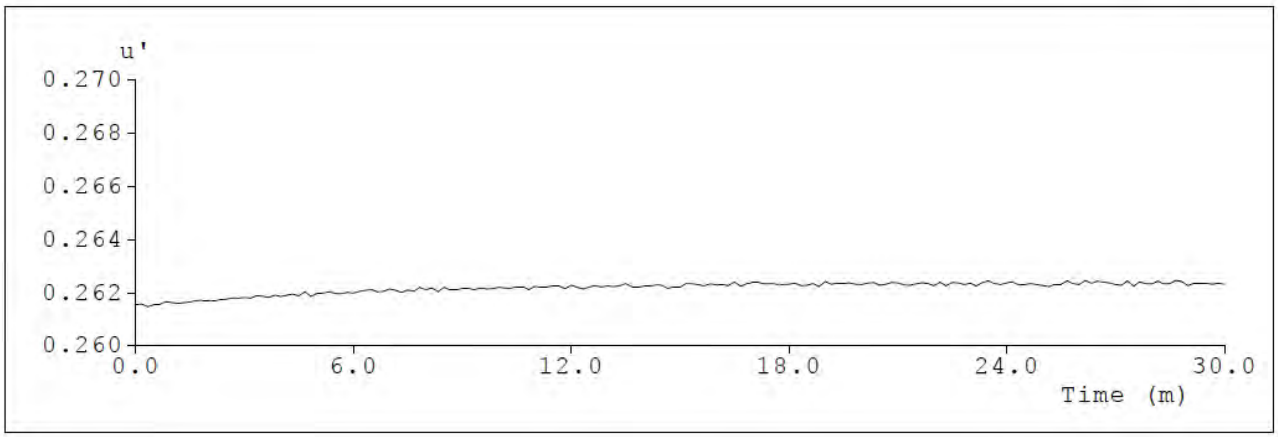


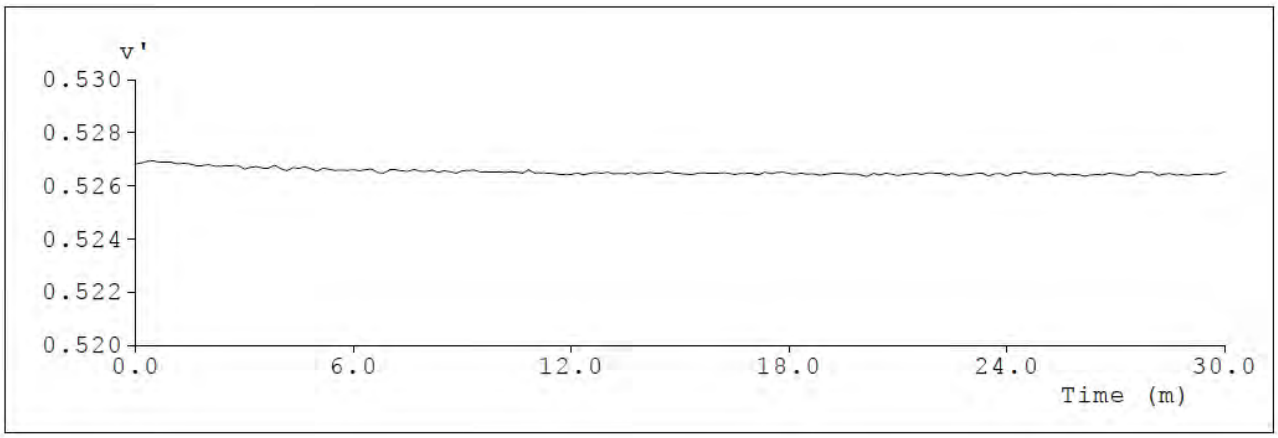

Flux(lm)
2200
2180
2160
2140
2120
2100
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


CCT(K)
2800
2780
2760
2740
2720
2700
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


x
0.460
0.458
0.456
0.454
0.452
0.450
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


y
0.420
0.416
0.412
0.408
0.404
0.400
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


u'
0.270
0.268
0.266
0.264
0.262
0.260
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)

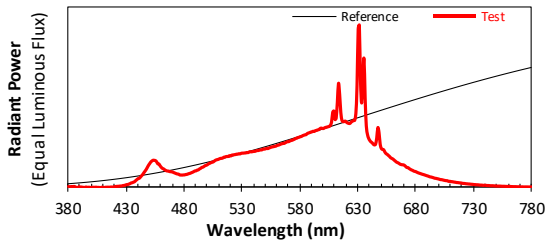

v'
0.530
0.528
0.526
0.524
0.522
0.520
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)

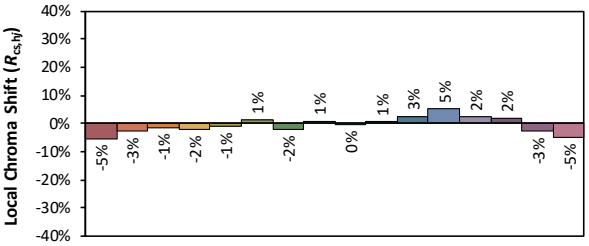
*7.2 ANSI/IES TM-30-18 Color Rendition Report

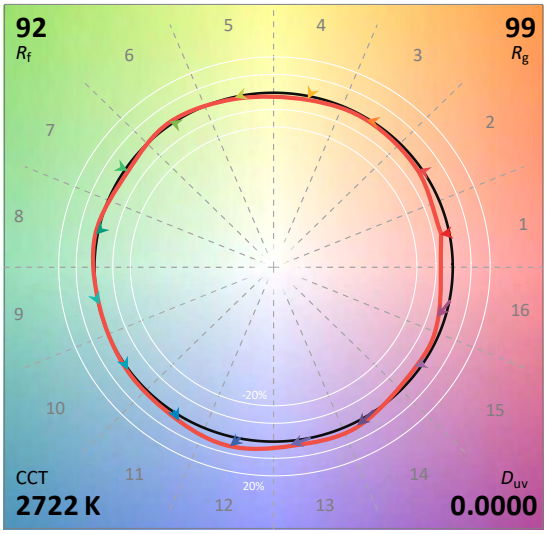
ANSI/IES TM-30-18 Color Rendition Report

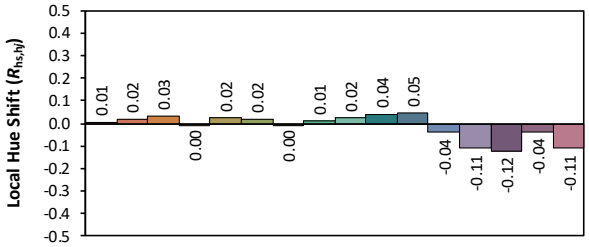
Source: Manufacturer:

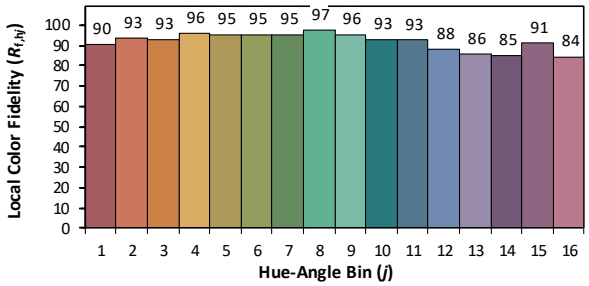
Date: 2023/9/15 Model: LREY-1000-L27-DF-I-21

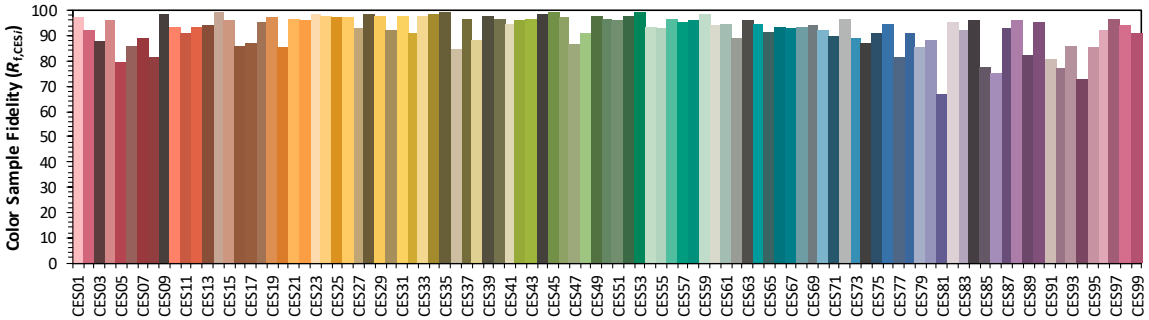












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

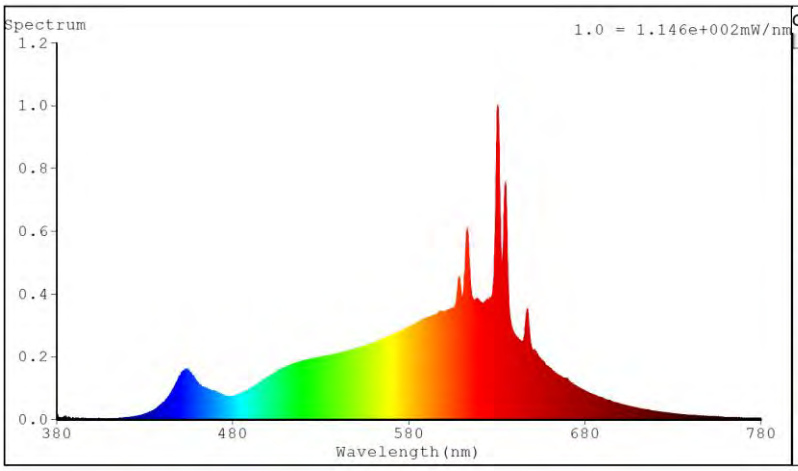
x	0.4579
y	0.4101
u'	0.2615
v'	0.5269

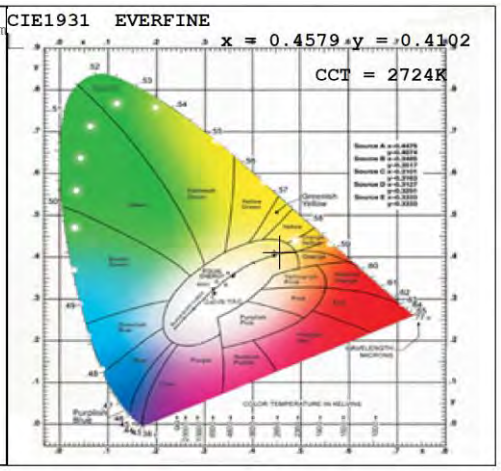
CIE 13.3-1995 (CRI)

R_a	94
R_9	58

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	0.0081	414	0.0039	448	0.1181	482	0.0775	516	0.1803
381	0.0056	415	0.0033	449	0.1301	483	0.0798	517	0.1808
382	0.0073	416	0.0042	450	0.1397	484	0.0823	518	0.1812
383	0.0073	417	0.0047	451	0.1493	485	0.084	519	0.1862
384	0.0075	418	0.0044	452	0.1551	486	0.0872	520	0.1837
385	0.0079	419	0.0053	453	0.1592	487	0.0899	521	0.1889
386	0.005	420	0.0072	454	0.1585	488	0.0933	522	0.1896
387	0.0021	421	0.0081	455	0.1569	489	0.0972	523	0.191
388	0.0014	422	0.0087	456	0.1501	490	0.098	524	0.192
389	0.0068	423	0.0089	457	0.1386	491	0.1021	525	0.1941
390	0.0039	424	0.0098	458	0.1374	492	0.1036	526	0.1942
391	0.0047	425	0.0106	459	0.1271	493	0.109	527	0.1967
392	0.0035	426	0.0108	460	0.1186	494	0.1124	528	0.1956
393	0.0027	427	0.0132	461	0.1123	495	0.1177	529	0.199
394	0.0018	428	0.0137	462	0.1092	496	0.1195	530	0.2001
395	0.0049	429	0.0161	463	0.104	497	0.1239	531	0.2002
396	0.0026	430	0.0182	464	0.1001	498	0.1283	532	0.2012
397	0.0033	431	0.0191	465	0.0973	499	0.1305	533	0.2014
398	0.0032	432	0.0215	466	0.0967	500	0.1343	534	0.2038
399	0.002	433	0.0242	467	0.0943	501	0.1392	535	0.2031
400	0.0024	434	0.028	468	0.0931	502	0.142	536	0.207
401	0.0033	435	0.0298	469	0.0923	503	0.1456	537	0.208
402	0.0031	436	0.0327	470	0.0903	504	0.1476	538	0.2077
403	0.0034	437	0.0358	471	0.0874	505	0.1501	539	0.2092
404	0.0036	438	0.0422	472	0.0846	506	0.1554	540	0.2101
405	0.0024	439	0.0477	473	0.0818	507	0.1597	541	0.2107
406	0.0027	440	0.0531	474	0.0798	508	0.1622	542	0.2135
407	0.0017	441	0.0551	475	0.0788	509	0.1637	543	0.2152
408	0.002	442	0.062	476	0.0742	510	0.1667	544	0.2153
409	0.0038	443	0.0697	477	0.0741	511	0.1695	545	0.2182
410	0.0027	444	0.0772	478	0.0735	512	0.1703	546	0.2185
411	0.0019	445	0.0871	479	0.0745	513	0.1717	547	0.2195
412	0.0035	446	0.0963	480	0.0746	514	0.1763	548	0.2236
413	0.0034	447	0.106	481	0.0765	515	0.1777	549	0.2233

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.225	599	0.3427	648	0.3175	697	0.0548	746	0.0121
551	0.2276	600	0.3421	649	0.2509	698	0.0531	747	0.0116
552	0.2263	601	0.3461	650	0.2267	699	0.0517	748	0.011
553	0.2296	602	0.3486	651	0.2217	700	0.0497	749	0.0103
554	0.2322	603	0.3503	652	0.2197	701	0.0477	750	0.0102
555	0.2346	604	0.3523	653	0.2069	702	0.0472	751	0.0101
556	0.2364	605	0.3545	654	0.1978	703	0.0456	752	0.01
557	0.2376	606	0.361	655	0.1933	704	0.0439	753	0.0098
558	0.2393	607	0.3785	656	0.1872	705	0.0424	754	0.0091
559	0.2408	608	0.4346	657	0.1814	706	0.0414	755	0.009
560	0.2447	609	0.4424	658	0.1739	707	0.0409	756	0.009
561	0.2461	610	0.3937	659	0.1697	708	0.0374	757	0.0085
562	0.2484	611	0.4028	660	0.1661	709	0.0376	758	0.0082
563	0.2516	612	0.493	661	0.1601	710	0.0363	759	0.008
564	0.2538	613	0.6023	662	0.1546	711	0.0355	760	0.0081
565	0.2561	614	0.5372	663	0.1488	712	0.0344	761	0.0081
566	0.2562	615	0.4346	664	0.1455	713	0.0331	762	0.0074
567	0.2597	616	0.3888	665	0.142	714	0.0322	763	0.0071
568	0.2634	617	0.3814	666	0.1372	715	0.0306	764	0.0068
569	0.2665	618	0.3826	667	0.1345	716	0.0304	765	0.0067
570	0.2664	619	0.3849	668	0.1331	717	0.0291	766	0.0068
571	0.2701	620	0.3777	669	0.1325	718	0.0286	767	0.0063
572	0.2728	621	0.3738	670	0.1293	719	0.0277	768	0.0061
573	0.2744	622	0.3713	671	0.1232	720	0.0261	769	0.0062
574	0.2776	623	0.3719	672	0.1173	721	0.0254	770	0.0055
575	0.2805	624	0.3796	673	0.1167	722	0.0249	771	0.0055
576	0.2849	625	0.3839	674	0.1113	723	0.0236	772	0.0058
577	0.2864	626	0.3883	675	0.1071	724	0.0232	773	0.005
578	0.29	627	0.3898	676	0.1031	725	0.0223	774	0.0054
579	0.2918	628	0.4282	677	0.1007	726	0.022	775	0.0053
580	0.2947	629	0.5894	678	0.0965	727	0.0211	776	0.0053
581	0.2964	630	0.9154	679	0.0947	728	0.0205	777	0.005
582	0.3005	631	0.9369	680	0.0925	729	0.0199	778	0.005
583	0.3031	632	0.6162	681	0.0889	730	0.0188	779	0.0051
584	0.3056	633	0.4891	682	0.0862	731	0.0186	780	0.0051
585	0.3067	634	0.6294	683	0.0838	732	0.0178		
586	0.3128	635	0.7461	684	0.0816	733	0.0177		
587	0.3159	636	0.5189	685	0.0791	734	0.017		
588	0.3181	637	0.3567	686	0.0771	735	0.0161		
589	0.3213	638	0.3085	687	0.0752	736	0.0157		
590	0.3227	639	0.2861	688	0.0728	737	0.0154		
591	0.3261	640	0.2734	689	0.0704	738	0.0143		
592	0.325	641	0.2652	690	0.0685	739	0.015		
593	0.3294	642	0.2601	691	0.0659	740	0.0147		
594	0.3313	643	0.2522	692	0.0633	741	0.0135		
595	0.334	644	0.2475	693	0.0622	742	0.0134		
596	0.3356	645	0.2511	694	0.0603	743	0.0131		
597	0.3413	646	0.2873	695	0.0582	744	0.0122		
598	0.3444	647	0.3471	696	0.0556	745	0.012		

8. Goniophotometer Test results for LREY-1000-L27-DF-I-21

8.1 Test Data

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

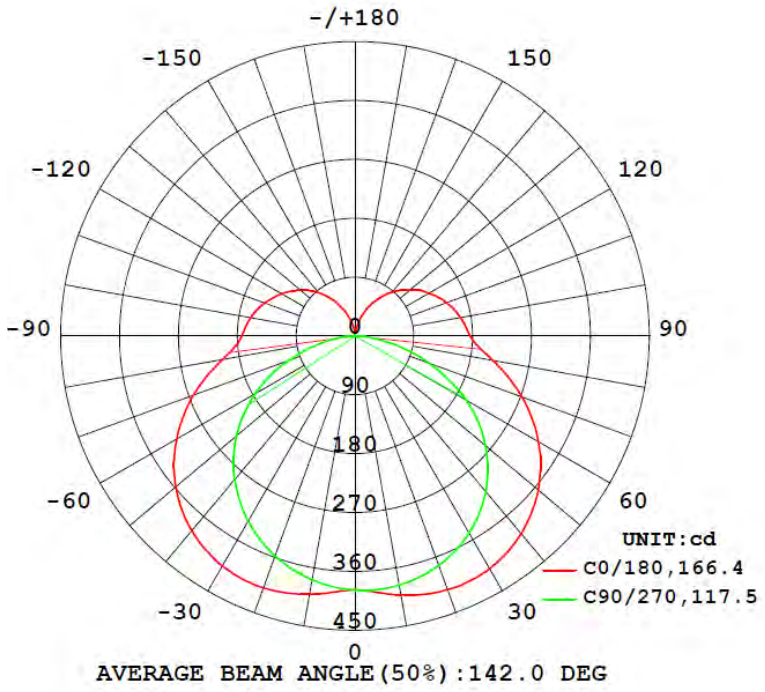
Electrical Measurement

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)	Imax (cd)	η up (%)	η down (%)
2120.21	114.73	413.6	22	78

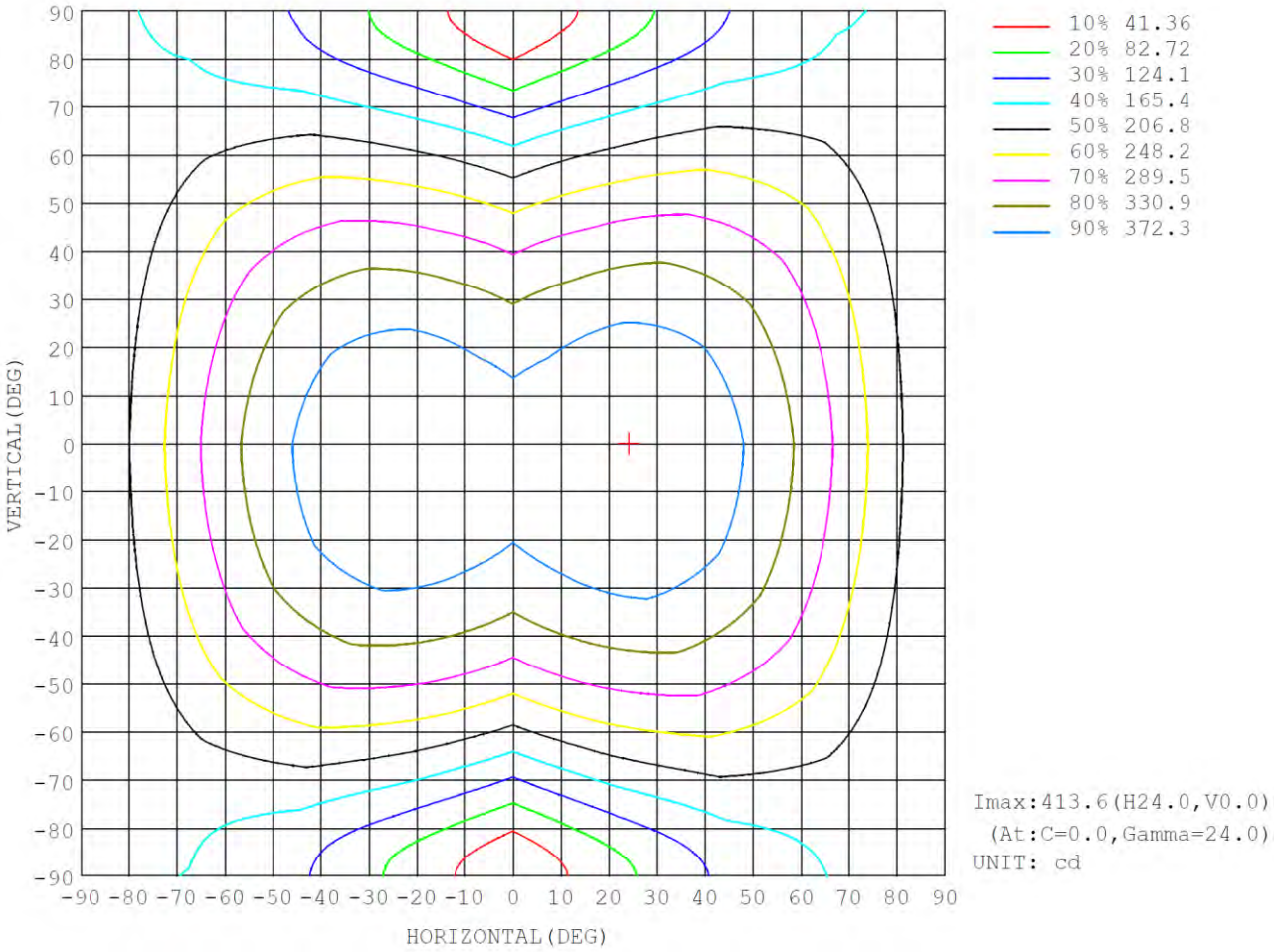
8.2 Luminous Intensity Distribution



8.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	401.6	397.1	386.6	397.6	400.7	391.0	378.3	390.9	0- 10	37.36	37.36	1.76,1.76
20	412.7	402.2	373.4	401.0	409.7	388.8	357.8	390.0	10- 20	111.6	148.9	7.02,7.02
30	410.9	396.4	348.3	393.1	405.9	376.0	327.1	378.9	20- 30	179.2	328.1	15.5,15.5
40	394.7	377.3	310.7	372.1	388.7	351.7	286.6	355.9	30- 40	231.7	559.8	26.4,26.4
50	365.5	344.3	260.2	337.7	358.2	315.8	236.7	321.2	40- 50	262.0	821.8	38.8,38.8
60	323.7	297.9	196.9	289.7	315.5	269.9	177.1	276.5	50- 60	265.1	1087	51.3,51.3
70	271.1	239.7	119.3	230.0	263.0	213.4	106.8	221.0	60- 70	239.5	1326	62.6,62.6
80	213.7	175.6	45.28	166.3	206.1	154.6	40.88	161.7	70- 80	189.8	1516	71.5,71.5
90	175.8	135.2	7.854	131.3	173.6	121.2	7.635	123.7	80- 90	137.9	1654	78,78
100	164.1	126.1	1.096	122.3	162.4	112.7	0.8848	114.8	90-100	117.9	1772	83.6,83.6
110	149.3	113.4	1.159	109.6	147.7	101.6	1.084	103.8	100-110	104.6	1877	88.5,88.5
120	131.3	97.94	1.088	94.40	129.9	88.38	1.074	90.49	110-120	86.96	1964	92.6,92.6
130	111.2	80.40	1.014	77.22	109.6	72.82	1.070	73.76	120-130	66.56	2030	95.8,95.8
140	87.92	61.37	0.9606	57.92	86.89	55.15	1.353	56.31	130-140	46.06	2076	97.9,97.9
150	62.77	40.06	0.8656	38.09	60.78	40.67	2.112	33.42	140-150	27.30	2103	99.2,99.2
160	36.44	21.03	0.7543	20.05	34.59	26.19	3.152	10.35	150-160	12.73	2116	99.8,99.8
170	11.69	5.125	0.7291	6.158	12.46	10.00	2.110	2.260	160-170	3.648	2120	100,100
180	0.7362	0.9348	0.9107	0.5138	0.8834	1.024	0.9243	0.9154	170-180	0.3470	2120	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	388	388	388	388	388	388	388	388	388	388	388	388	388	388	388	388
5	393	393	392	390	389	391	393	394	393	392	389	386	385	386	389	392
10	402	401	397	391	387	391	398	402	401	397	391	383	378	383	391	398
15	409	408	401	389	381	390	401	407	407	401	391	378	369	378	391	403
20	413	412	402	386	373	386	401	410	410	403	389	371	358	371	390	405
25	414	413	401	380	362	379	399	409	409	401	384	361	344	361	386	405
30	411	410	396	371	348	370	393	406	406	396	376	349	327	349	379	400
35	404	404	389	359	331	357	384	399	399	388	365	334	308	335	369	393
40	395	394	377	344	311	341	372	388	389	376	352	317	287	318	356	382
45	382	381	362	325	287	322	357	374	375	362	335	297	263	298	340	369
50	365	364	344	304	260	299	338	357	358	344	316	275	237	277	321	352
55	346	344	323	278	230	273	315	336	338	324	294	250	208	252	300	332
60	324	321	298	250	197	244	290	312	315	301	270	222	177	225	276	309
65	299	295	270	218	159	212	261	286	290	276	243	192	144	195	250	284
70	271	267	240	184	119	178	230	257	263	248	213	161	107	164	221	257
75	242	237	207	149	81.1	142	198	226	234	219	183	129	71.8	132	191	229
80	214	207	176	115	45.3	108	166	197	206	191	155	97.8	40.9	101	162	200
85	189	182	149	86.3	18.6	80.5	141	175	184	169	131	73.2	18.3	75.9	137	176
90	176	168	135	73.9	7.85	70.1	131	165	174	158	121	62.9	7.63	63.9	124	162
95	170	163	131	70.7	3.14	66.9	127	160	168	153	117	60.2	0.79	61.1	119	156
100	164	157	126	67.3	1.10	63.5	122	154	162	148	113	57.3	0.88	58.2	115	151
105	157	150	120	63.5	1.12	59.8	116	147	156	142	107	54.1	1.10	55.1	110	144
110	149	142	113	59.2	1.16	55.7	110	139	148	134	102	50.7	1.08	49.8	104	137
115	141	134	106	54.6	1.09	51.0	102	130	139	126	95.3	46.1	1.09	47.5	97.4	129
120	131	125	97.9	49.0	1.09	46.0	94.4	122	130	118	88.4	40.6	1.07	43.3	90.5	121
125	122	115	89.4	43.2	1.06	40.3	86.0	112	120	109	81.0	34.4	1.08	37.2	81.6	111
130	111	105	80.4	37.9	1.01	34.8	77.2	102	110	99.2	72.8	29.5	1.07	33.7	73.8	102
135	99.8	93.6	71.0	32.4	1.01	29.0	67.8	91.1	98.6	89.1	63.9	25.7	1.10	28.7	65.6	91.0
140	87.9	82.0	61.4	27.1	0.96	23.3	57.9	79.5	86.9	78.4	55.2	21.9	1.35	23.2	56.3	77.5
145	75.6	70.2	48.4	21.9	0.92	18.9	47.9	67.5	74.2	67.5	47.2	19.7	1.86	16.5	44.0	66.5
150	62.8	58.0	40.1	16.9	0.87	14.6	38.1	54.7	60.8	56.2	40.7	18.7	2.11	9.47	33.4	53.5
155	49.7	45.6	31.0	11.6	0.78	10.9	28.0	42.5	47.7	45.4	34.0	17.7	2.65	3.87	21.2	38.9
160	36.4	33.2	21.0	7.06	0.75	7.52	20.0	29.8	34.6	33.9	26.2	15.3	3.15	1.40	10.3	24.9
165	23.5	20.0	11.8	3.76	0.74	4.69	12.8	19.5	22.1	21.9	18.8	11.0	2.50	0.93	5.03	11.7
170	11.7	8.95	5.13	1.91	0.73	2.64	6.16	10.4	12.5	12.5	10.0	6.02	2.11	0.95	2.26	5.58
175	3.02	2.01	1.72	1.00	0.89	2.17	2.69	3.25	4.59	4.69	3.43	2.30	1.74	0.96	1.07	1.88
180	0.74	0.95	0.93	0.93	0.91	0.61	0.51	1.05	0.88	0.93	1.02	0.96	0.92	0.91	0.92	0.92

9. Integrating Sphere Test Results for LREY-1000-L27-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	1.0936	23.998	26.244	3081	0.4567	0.4098	0.2608	0.5266	2738	94.1
1	00h00m10s	1.0954	23.998	26.287	3084	0.4569	0.4101	0.2608	0.5267	2738	94.1
2	00h00m20s	1.0965	23.998	26.314	3085.1	0.4569	0.41	0.2609	0.5267	2737	94
3	00h00m30s	1.0975	23.998	26.338	3086.2	0.4569	0.4099	0.2609	0.5266	2737	94
4	00h00m40s	1.0984	23.998	26.359	3087.1	0.4567	0.4099	0.2608	0.5266	2739	94.1
5	00h00m50s	1.0993	23.998	26.381	3084.7	0.4569	0.4099	0.2609	0.5266	2736	94.1
6	00h01m00s	1.1002	23.998	26.403	3086.7	0.4569	0.4099	0.2609	0.5266	2737	94.1
7	00h01m10s	1.1009	23.998	26.419	3087	0.457	0.4097	0.261	0.5266	2734	94.1
8	00h01m20s	1.1017	23.998	26.439	3087.5	0.4569	0.4096	0.261	0.5265	2734	94.1
9	00h01m30s	1.1025	23.998	26.458	3086.6	0.4569	0.4095	0.2611	0.5265	2734	94
10	00h01m40s	1.1032	23.998	26.475	3089.1	0.457	0.4097	0.2611	0.5266	2733	94
11	00h01m50s	1.104	23.998	26.494	3087.7	0.4569	0.4094	0.2611	0.5265	2733	94.1
12	00h02m00s	1.1046	23.998	26.508	3089.9	0.4569	0.4096	0.261	0.5265	2734	94
13	00h02m10s	1.1053	23.998	26.525	3086.4	0.457	0.4092	0.2612	0.5264	2731	94.1
14	00h02m20s	1.106	23.998	26.542	3090.4	0.457	0.4096	0.2611	0.5265	2733	94.1
15	00h02m30s	1.1066	23.998	26.556	3090.4	0.4571	0.4094	0.2612	0.5265	2730	94
16	00h02m40s	1.1072	23.998	26.571	3087.2	0.457	0.4093	0.2612	0.5264	2731	94.1
17	00h02m50s	1.1078	23.998	26.585	3090.4	0.4572	0.4094	0.2613	0.5265	2728	94
18	00h03m00s	1.1084	23.998	26.599	3089.7	0.4569	0.4092	0.2612	0.5264	2730	94.1
19	00h03m10s	1.109	23.998	26.614	3090.7	0.4571	0.4092	0.2614	0.5264	2728	94.1
20	00h03m20s	1.1095	23.998	26.626	3091.3	0.4572	0.4093	0.2613	0.5265	2728	94
21	00h03m30s	1.11	23.998	26.638	3091.7	0.4572	0.4092	0.2614	0.5264	2727	94

22	00h03m40s	1.1105	23.998	26.65	3091.3	0.4571	0.4091	0.2614	0.5264	2726	94.1
23	00h03m50s	1.1111	23.998	26.664	3090.9	0.4572	0.4091	0.2614	0.5264	2727	94
24	00h04m00s	1.1115	23.998	26.674	3091.3	0.4571	0.409	0.2614	0.5263	2727	94.1
25	00h04m10s	1.112	23.998	26.686	3092.7	0.457	0.4089	0.2614	0.5263	2728	94
26	00h04m20s	1.1125	23.998	26.698	3089.2	0.4571	0.4089	0.2614	0.5263	2726	94.1
27	00h04m30s	1.1129	23.998	26.707	3092.1	0.4571	0.409	0.2614	0.5263	2727	94.1
28	00h04m40s	1.1134	23.998	26.719	3090.6	0.4572	0.4088	0.2616	0.5263	2724	94
29	00h04m50s	1.1138	23.998	26.729	3092.7	0.4571	0.409	0.2615	0.5263	2726	94
30	00h05m00s	1.1142	23.998	26.739	3092.9	0.4572	0.4091	0.2615	0.5264	2726	94.1
31	00h05m10s	1.1146	23.998	26.748	3090.7	0.457	0.4088	0.2615	0.5262	2726	94
32	00h05m20s	1.1149	23.998	26.755	3092.1	0.4572	0.4088	0.2616	0.5263	2723	94.1
33	00h05m30s	1.1153	23.998	26.765	3095.2	0.4571	0.4089	0.2615	0.5263	2726	94.1
34	00h05m40s	1.1157	23.998	26.775	3094.8	0.4573	0.409	0.2616	0.5263	2723	94.1
35	00h05m50s	1.116	23.998	26.782	3095	0.4571	0.4088	0.2615	0.5263	2725	94
36	00h06m00s	1.1164	23.998	26.791	3092	0.4572	0.4088	0.2616	0.5262	2724	94.1
37	00h06m10s	1.1167	23.998	26.799	3090.9	0.4571	0.4086	0.2616	0.5262	2723	94
38	00h06m20s	1.1171	23.998	26.808	3092.9	0.4572	0.4086	0.2617	0.5262	2722	94
39	00h06m30s	1.1174	23.998	26.815	3093.5	0.4571	0.4086	0.2616	0.5262	2723	94
40	00h06m40s	1.1177	23.998	26.823	3093.5	0.4572	0.4086	0.2617	0.5262	2722	94.1
41	00h06m50s	1.118	23.998	26.83	3094.7	0.4572	0.4087	0.2616	0.5262	2723	94
42	00h07m00s	1.1182	23.998	26.835	3096.3	0.4571	0.4087	0.2616	0.5262	2723	94.1
43	00h07m10s	1.1185	23.998	26.842	3094.8	0.4572	0.4085	0.2617	0.5262	2722	94
44	00h07m20s	1.1188	23.998	26.849	3093.1	0.4572	0.4085	0.2617	0.5261	2721	94
45	00h07m30s	1.1191	23.998	26.856	3095.7	0.4572	0.4087	0.2616	0.5262	2723	94
46	00h07m40s	1.1193	23.998	26.861	3095.1	0.457	0.4086	0.2616	0.5261	2724	94.1
47	00h07m50s	1.1196	23.998	26.868	3094.2	0.4572	0.4085	0.2617	0.5261	2721	94
48	00h08m00s	1.1198	23.998	26.873	3092.9	0.4571	0.4085	0.2617	0.5261	2722	94.1
49	00h08m10s	1.1201	23.998	26.88	3095.3	0.4572	0.4085	0.2617	0.5261	2721	94
50	00h08m20s	1.1203	23.998	26.885	3094.3	0.4571	0.4085	0.2616	0.5261	2723	94.1
51	00h08m30s	1.1205	23.998	26.89	3093.5	0.4572	0.4084	0.2618	0.5261	2720	94
52	00h08m40s	1.1207	23.998	26.895	3095.3	0.4573	0.4085	0.2618	0.5262	2719	94.1

53	00h08m50s	1.1209	23.998	26.899	3093.1	0.4572	0.4084	0.2618	0.5261	2721	94
54	00h09m00s	1.1211	23.998	26.904	3096.4	0.457	0.4084	0.2616	0.5261	2723	94.1
55	00h09m10s	1.1214	23.998	26.911	3095.2	0.4571	0.4084	0.2617	0.5261	2722	94
56	00h09m20s	1.1215	23.998	26.914	3096	0.4573	0.4086	0.2617	0.5262	2722	94
57	00h09m30s	1.1217	23.998	26.919	3093.9	0.4573	0.4085	0.2618	0.5262	2720	94.1
58	00h09m40s	1.1219	23.998	26.923	3096.6	0.4573	0.4084	0.2618	0.5261	2719	94
59	00h09m50s	1.1221	23.998	26.928	3093.6	0.4572	0.4083	0.2618	0.5261	2720	94.1
60	00h10m00s	1.1223	23.998	26.933	3095	0.4572	0.4086	0.2617	0.5262	2721	94.1
61	00h10m10s	1.1224	23.998	26.935	3094.3	0.4573	0.4086	0.2617	0.5262	2721	94.1
62	00h10m20s	1.1226	23.998	26.94	3095.9	0.4572	0.4084	0.2618	0.5261	2720	94.1
63	00h10m30s	1.1228	23.998	26.945	3095.1	0.4573	0.4083	0.2619	0.5261	2719	94
64	00h10m40s	1.1229	23.998	26.947	3094.4	0.4575	0.4084	0.2619	0.5262	2717	94
65	00h10m50s	1.1231	23.998	26.952	3094.9	0.4574	0.4085	0.2618	0.5262	2719	94.1
66	00h11m00s	1.1232	23.998	26.955	3094.1	0.4574	0.4084	0.2619	0.5261	2718	94
67	00h11m10s	1.1234	23.998	26.959	3096	0.4573	0.4084	0.2618	0.5261	2719	94.1
68	00h11m20s	1.1235	23.998	26.962	3094.9	0.4573	0.4083	0.2619	0.5261	2719	94.1
69	00h11m30s	1.1236	23.998	26.964	3094.4	0.4572	0.4082	0.2619	0.526	2719	94.1
70	00h11m40s	1.1238	23.998	26.969	3095.6	0.4573	0.4082	0.2619	0.5261	2718	94
71	00h11m50s	1.1239	23.998	26.971	3095.1	0.4572	0.4082	0.2619	0.526	2718	94
72	00h12m00s	1.124	23.998	26.974	3096.9	0.4572	0.4084	0.2617	0.5261	2721	94
73	00h12m10s	1.1241	23.998	26.976	3096.4	0.4572	0.4081	0.2619	0.526	2718	94
74	00h12m20s	1.1243	23.998	26.981	3096.4	0.4571	0.4082	0.2618	0.526	2721	94
75	00h12m30s	1.1244	23.998	26.983	3096.4	0.4572	0.4085	0.2617	0.5261	2721	94
76	00h12m40s	1.1245	23.998	26.986	3094.4	0.4571	0.4082	0.2618	0.526	2720	94.1
77	00h12m50s	1.1246	23.998	26.988	3094.3	0.4572	0.4082	0.2618	0.526	2719	94
78	00h13m00s	1.1247	23.998	26.991	3096.7	0.4573	0.4083	0.2619	0.5261	2718	94
79	00h13m10s	1.1248	23.998	26.993	3095.2	0.4572	0.408	0.2619	0.526	2718	94
80	00h13m20s	1.1249	23.998	26.995	3095.6	0.4575	0.4084	0.262	0.5261	2716	94
81	00h13m30s	1.125	23.998	26.998	3095.1	0.4573	0.4082	0.2619	0.5261	2717	94.1
82	00h13m40s	1.1251	23.998	27	3095.5	0.4572	0.4081	0.2619	0.526	2719	94
83	00h13m50s	1.1252	23.998	27.003	3096.2	0.4572	0.4083	0.2618	0.5261	2719	94.1

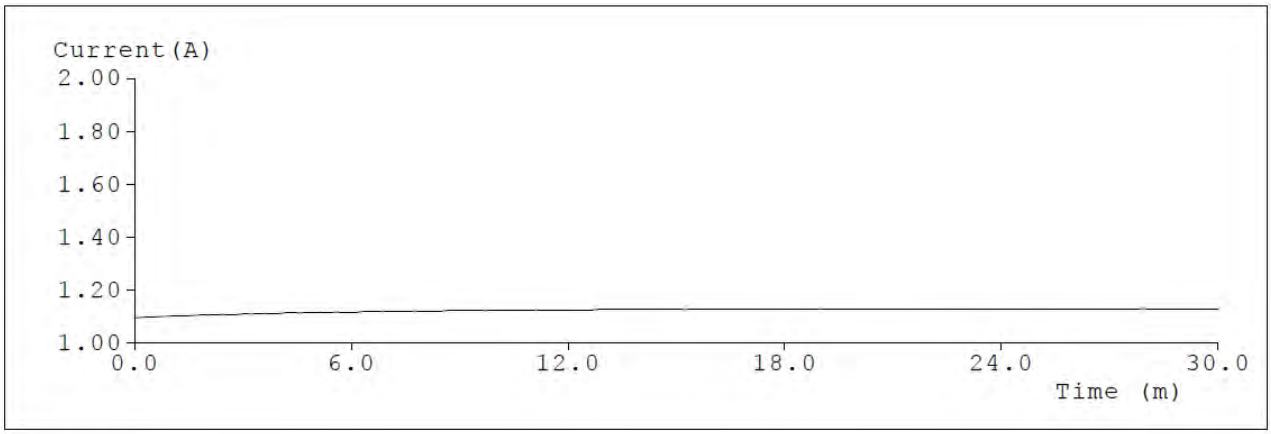
84	00h14m00s	1.1253	23.998	27.005	3094.3	0.4573	0.4082	0.2619	0.526	2717	94
85	00h14m10s	1.1254	23.998	27.007	3096.6	0.4573	0.4082	0.2619	0.5261	2718	94
86	00h14m20s	1.1254	23.998	27.007	3092.5	0.4575	0.4083	0.262	0.5261	2715	94
87	00h14m30s	1.1255	23.998	27.01	3095.6	0.4573	0.4082	0.2619	0.5261	2718	94
88	00h14m40s	1.1256	23.998	27.012	3096.2	0.4574	0.4083	0.2619	0.5261	2717	94
89	00h14m50s	1.1257	23.998	27.015	3093.8	0.4572	0.408	0.2619	0.526	2718	94.1
90	00h15m00s	1.1257	23.998	27.015	3094.7	0.4573	0.4081	0.262	0.526	2717	94
91	00h15m10s	1.1258	23.998	27.017	3095.3	0.4572	0.4082	0.2619	0.526	2718	94.1
92	00h15m20s	1.1259	23.998	27.019	3095.7	0.4573	0.4083	0.2619	0.5261	2718	94.1
93	00h15m30s	1.126	23.998	27.022	3095.9	0.4573	0.4081	0.262	0.526	2717	94
94	00h15m40s	1.126	23.998	27.022	3095.4	0.4572	0.4082	0.2619	0.526	2719	94.1
95	00h15m50s	1.1261	23.998	27.024	3096.7	0.4572	0.4082	0.2618	0.526	2719	94
96	00h16m00s	1.1262	23.998	27.027	3094.8	0.457	0.4081	0.2618	0.526	2721	94
97	00h16m10s	1.1262	23.998	27.027	3094.3	0.4572	0.4079	0.262	0.5259	2717	94.1
98	00h16m20s	1.1263	23.998	27.029	3096.3	0.4572	0.4082	0.2618	0.526	2719	94.1
99	00h16m30s	1.1264	23.998	27.031	3097.5	0.4573	0.4082	0.2619	0.526	2717	94
100	00h16m40s	1.1264	23.998	27.031	3094.5	0.4573	0.408	0.262	0.526	2717	94
101	00h16m50s	1.1265	23.998	27.034	3096	0.4573	0.4083	0.2619	0.5261	2718	94.1
102	00h17m00s	1.1265	23.998	27.034	3095	0.4569	0.4079	0.2618	0.5259	2721	94.1
103	00h17m10s	1.1266	23.998	27.036	3097.7	0.4574	0.4082	0.262	0.5261	2716	94
104	00h17m20s	1.1266	23.998	27.036	3097.9	0.4573	0.4081	0.2619	0.526	2717	94
105	00h17m30s	1.1267	23.998	27.039	3095.3	0.4573	0.4082	0.2619	0.5261	2718	94.1
106	00h17m40s	1.1267	23.998	27.039	3095.3	0.4572	0.408	0.262	0.526	2717	94.1
107	00h17m50s	1.1268	23.998	27.041	3095.9	0.4574	0.4082	0.262	0.526	2716	94
108	00h18m00s	1.1268	23.998	27.041	3095.5	0.4572	0.4081	0.2619	0.526	2718	94.1
109	00h18m10s	1.1269	23.998	27.043	3095.3	0.4574	0.4081	0.262	0.526	2715	94.1
110	00h18m20s	1.1269	23.998	27.043	3096.1	0.4574	0.4082	0.262	0.5261	2716	94
111	00h18m30s	1.127	23.998	27.046	3099	0.4574	0.4082	0.262	0.5261	2717	94
112	00h18m40s	1.127	23.998	27.046	3095.9	0.4574	0.4081	0.262	0.526	2716	94
113	00h18m50s	1.127	23.998	27.046	3098	0.4574	0.4084	0.2619	0.5261	2718	94
114	00h19m00s	1.1271	23.998	27.048	3095.7	0.4572	0.4081	0.2619	0.526	2717	94.1

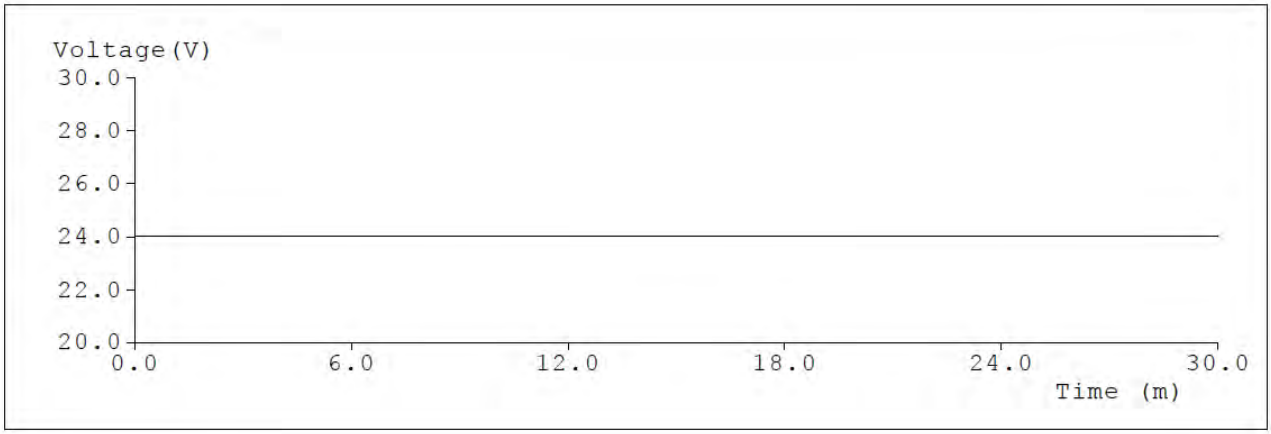
115	00h19m10s	1.1271	23.998	27.048	3095.4	0.4574	0.408	0.2621	0.526	2714	94
116	00h19m20s	1.1272	23.998	27.051	3096	0.4575	0.4082	0.262	0.5261	2715	94
117	00h19m30s	1.1272	23.998	27.051	3097.7	0.4573	0.4082	0.2619	0.526	2717	94
118	00h19m40s	1.1272	23.998	27.051	3096.1	0.4573	0.4083	0.2619	0.5261	2718	94.1
119	00h19m50s	1.1273	23.998	27.053	3095.1	0.4571	0.408	0.2619	0.526	2718	94
120	00h20m00s	1.1273	23.998	27.053	3096.1	0.4574	0.4083	0.2619	0.5261	2717	94.1
121	00h20m10s	1.1273	23.998	27.053	3094.8	0.4572	0.408	0.262	0.5259	2717	94.1
122	00h20m20s	1.1274	23.998	27.055	3094.8	0.4573	0.408	0.262	0.526	2716	94
123	00h20m30s	1.1274	23.998	27.055	3095.8	0.4573	0.4082	0.2619	0.526	2718	94.1
124	00h20m40s	1.1274	23.998	27.055	3095.4	0.4574	0.4081	0.262	0.526	2716	94.1
125	00h20m50s	1.1275	23.998	27.058	3096.3	0.4574	0.4084	0.2619	0.5261	2717	94
126	00h21m00s	1.1275	23.998	27.058	3096.4	0.4571	0.408	0.2619	0.5259	2718	94.1
127	00h21m10s	1.1275	23.998	27.058	3094.3	0.4573	0.408	0.262	0.526	2716	94.1
128	00h21m20s	1.1276	23.998	27.06	3095.3	0.4572	0.4081	0.2619	0.526	2718	94.1
129	00h21m30s	1.1276	23.998	27.06	3096.7	0.4572	0.4083	0.2619	0.5261	2719	94
130	00h21m40s	1.1276	23.998	27.06	3095.9	0.4572	0.408	0.262	0.5259	2717	94
131	00h21m50s	1.1276	23.998	27.06	3096	0.4573	0.4082	0.2619	0.526	2717	94
132	00h22m00s	1.1277	23.998	27.063	3097.9	0.4574	0.4082	0.2619	0.5261	2717	94
133	00h22m10s	1.1277	23.998	27.063	3095.9	0.4572	0.4081	0.2619	0.526	2717	94
134	00h22m20s	1.1277	23.998	27.063	3095.2	0.4573	0.408	0.262	0.526	2716	94
135	00h22m30s	1.1278	23.998	27.065	3096.3	0.4573	0.4082	0.2619	0.526	2717	94.1
136	00h22m40s	1.1278	23.998	27.065	3095.5	0.4573	0.408	0.262	0.526	2716	94
137	00h22m50s	1.1278	23.998	27.065	3096	0.4571	0.4079	0.2619	0.5259	2719	94
138	00h23m00s	1.1278	23.998	27.065	3096.7	0.4573	0.4081	0.262	0.526	2717	94
139	00h23m10s	1.1278	23.998	27.065	3094.7	0.4573	0.408	0.262	0.526	2716	94
140	00h23m20s	1.1279	23.998	27.067	3096.4	0.4572	0.4081	0.2619	0.526	2717	94
141	00h23m30s	1.1279	23.998	27.067	3094.7	0.4574	0.4079	0.2621	0.526	2713	94
142	00h23m40s	1.1279	23.998	27.067	3099.2	0.4572	0.4081	0.2619	0.526	2718	94.1
143	00h23m50s	1.1279	23.998	27.067	3095.6	0.4573	0.408	0.262	0.526	2716	94.1
144	00h24m00s	1.128	23.998	27.07	3095.2	0.4572	0.4081	0.2619	0.526	2718	94.1
145	00h24m10s	1.128	23.998	27.07	3096	0.4573	0.4081	0.262	0.526	2716	94

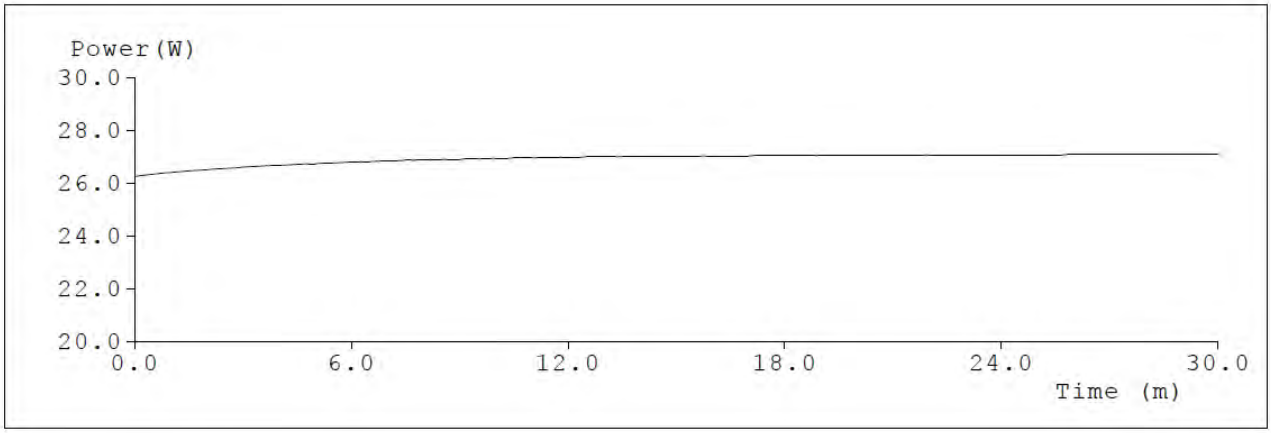
146	00h24m20s	1.128	23.998	27.07	3096	0.4572	0.4082	0.2619	0.526	2718	94
147	00h24m30s	1.128	23.998	27.07	3096.4	0.4573	0.4081	0.2619	0.526	2717	94
148	00h24m40s	1.128	23.998	27.07	3096.7	0.4573	0.4081	0.262	0.526	2716	94
149	00h24m50s	1.1281	23.998	27.072	3096.7	0.4575	0.4082	0.262	0.5261	2715	94.1
150	00h25m00s	1.1281	23.998	27.072	3097.2	0.4574	0.4081	0.262	0.526	2716	94.1
151	00h25m10s	1.1281	23.998	27.072	3096.8	0.4573	0.4081	0.262	0.526	2717	94
152	00h25m20s	1.1281	23.998	27.072	3094.8	0.4574	0.4081	0.262	0.526	2716	94.1
153	00h25m30s	1.1281	23.998	27.072	3095.5	0.4573	0.4081	0.262	0.526	2717	94.1
154	00h25m40s	1.1281	23.998	27.072	3096.2	0.4573	0.4081	0.262	0.526	2717	94
155	00h25m50s	1.1282	23.998	27.075	3096.2	0.4571	0.4079	0.262	0.5259	2717	94
156	00h26m00s	1.1282	23.998	27.075	3097.6	0.4573	0.408	0.262	0.526	2717	94
157	00h26m10s	1.1282	23.998	27.075	3095.1	0.4573	0.4082	0.2619	0.526	2718	94
158	00h26m20s	1.1282	23.998	27.075	3095.8	0.4575	0.4082	0.262	0.5261	2716	94
159	00h26m30s	1.1282	23.998	27.075	3097	0.4572	0.4081	0.2619	0.526	2718	94
160	00h26m40s	1.1282	23.998	27.075	3097.7	0.4573	0.4082	0.262	0.526	2717	94.1
161	00h26m50s	1.1283	23.998	27.077	3095.8	0.4573	0.4079	0.2621	0.5259	2715	94
162	00h27m00s	1.1283	23.998	27.077	3095.9	0.4572	0.4079	0.262	0.5259	2716	94
163	00h27m10s	1.1283	23.998	27.077	3096.7	0.4573	0.408	0.262	0.526	2716	94.1
164	00h27m20s	1.1283	23.998	27.077	3096.3	0.4572	0.4081	0.2619	0.526	2718	94
165	00h27m30s	1.1283	23.998	27.077	3095.4	0.4575	0.4081	0.2621	0.526	2715	94
166	00h27m40s	1.1283	23.998	27.077	3095.5	0.4572	0.4079	0.262	0.5259	2717	94
167	00h27m50s	1.1283	23.998	27.077	3096.6	0.4573	0.408	0.262	0.526	2716	94
168	00h28m00s	1.1284	23.998	27.079	3099.1	0.4574	0.4081	0.262	0.526	2716	94
169	00h28m10s	1.1284	23.998	27.079	3096.9	0.4574	0.4081	0.262	0.526	2716	94
170	00h28m20s	1.1284	23.998	27.079	3097.3	0.4572	0.4081	0.2619	0.526	2717	94
171	00h28m30s	1.1284	23.998	27.079	3096.5	0.4574	0.4082	0.262	0.5261	2715	94
172	00h28m40s	1.1284	23.998	27.079	3095.3	0.4573	0.408	0.262	0.526	2716	94
173	00h28m50s	1.1284	23.998	27.079	3096.3	0.4573	0.408	0.262	0.526	2716	94
174	00h29m00s	1.1284	23.998	27.079	3096.5	0.4572	0.4081	0.2619	0.526	2717	94.1
175	00h29m10s	1.1284	23.998	27.079	3096.9	0.4573	0.408	0.262	0.526	2715	94.1
176	00h29m20s	1.1285	23.998	27.082	3097.3	0.4573	0.4081	0.2619	0.526	2717	94

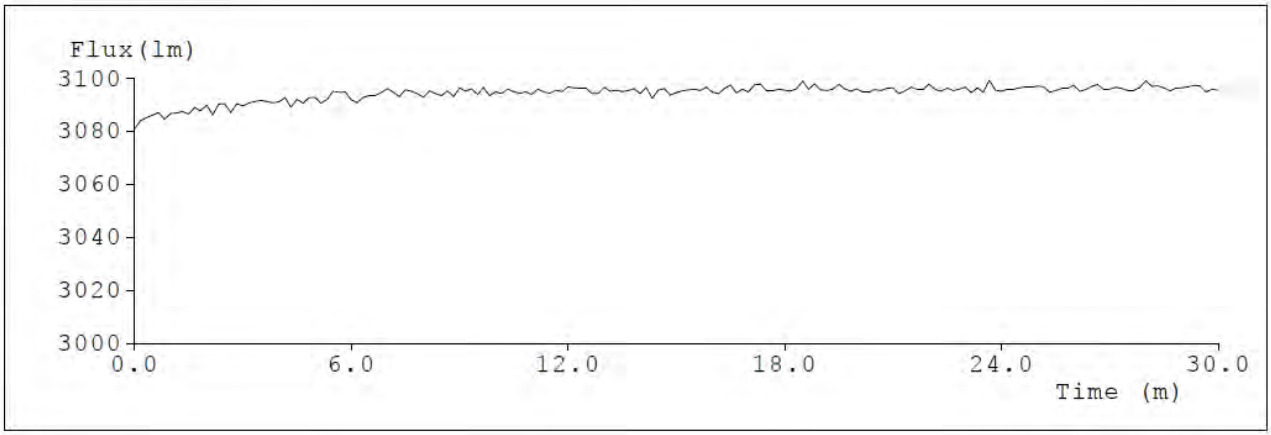
177	00h29m30s	1.1285	23.998	27.082	3097.3	0.4572	0.4079	0.262	0.5259	2717	94
178	00h29m40s	1.1285	23.998	27.082	3095	0.4573	0.4081	0.262	0.526	2716	94.1
179	00h29m50s	1.1285	23.998	27.082	3096	0.4573	0.4081	0.262	0.526	2717	94
180	00h30m00s	1.1285	23.998	27.082	3095.6	0.4571	0.4078	0.262	0.5259	2718	94.1

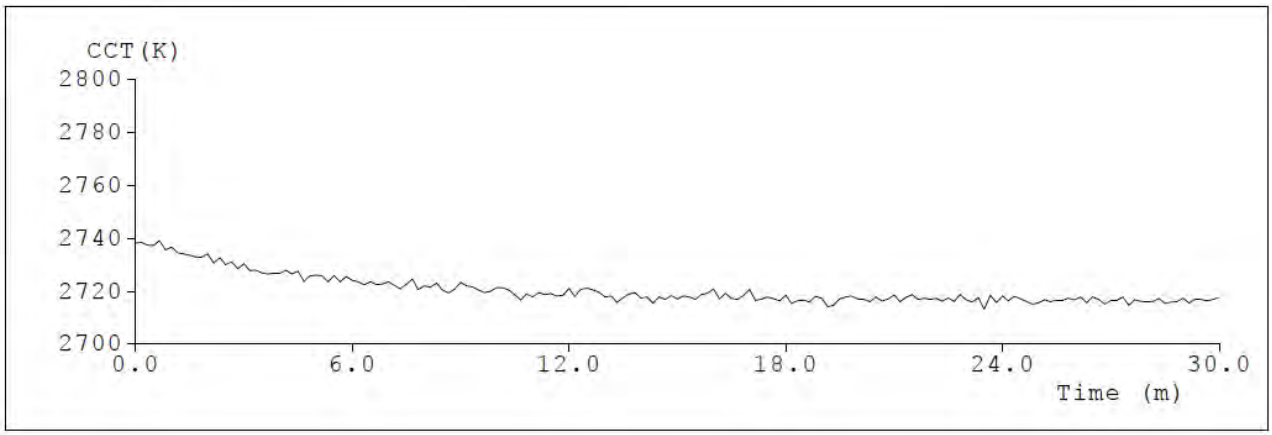
Test curves

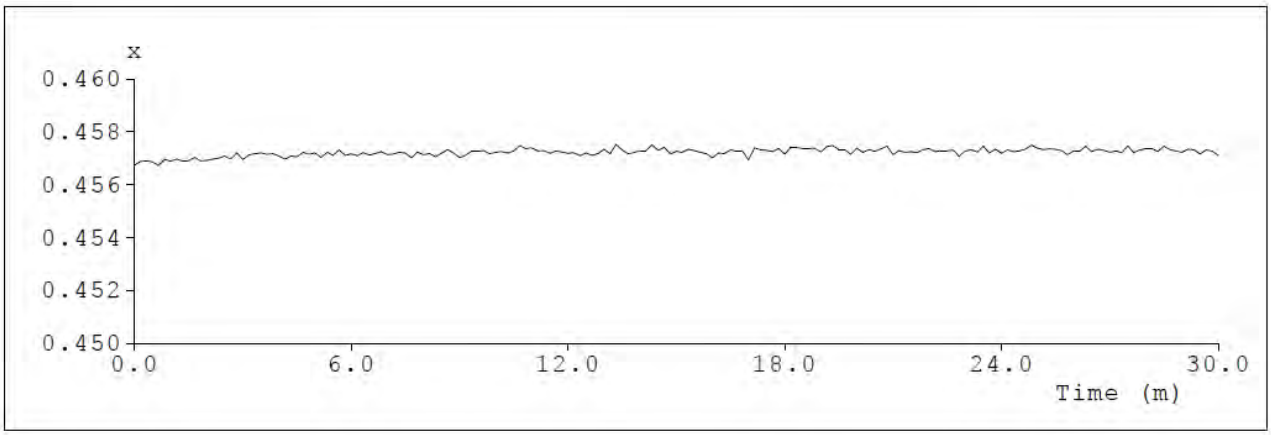


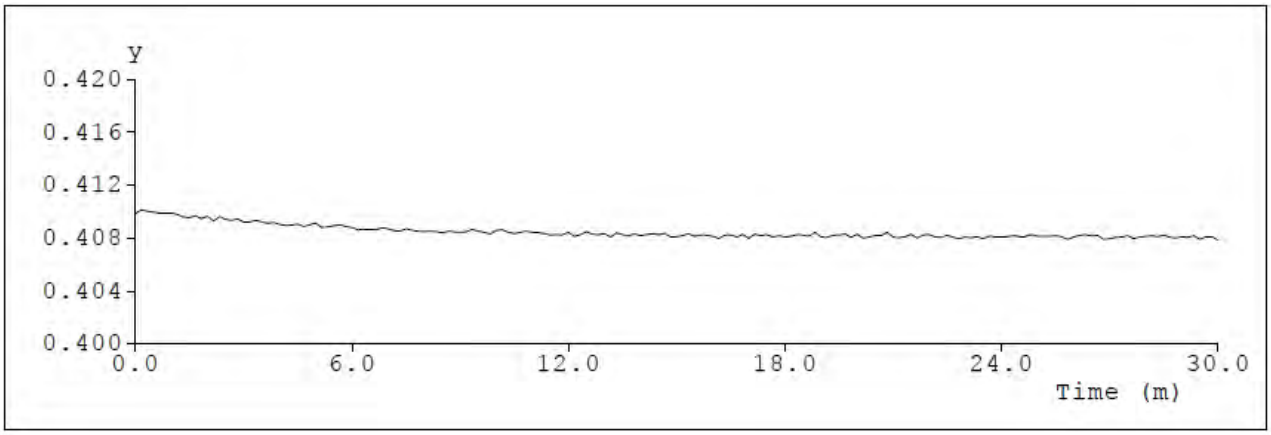


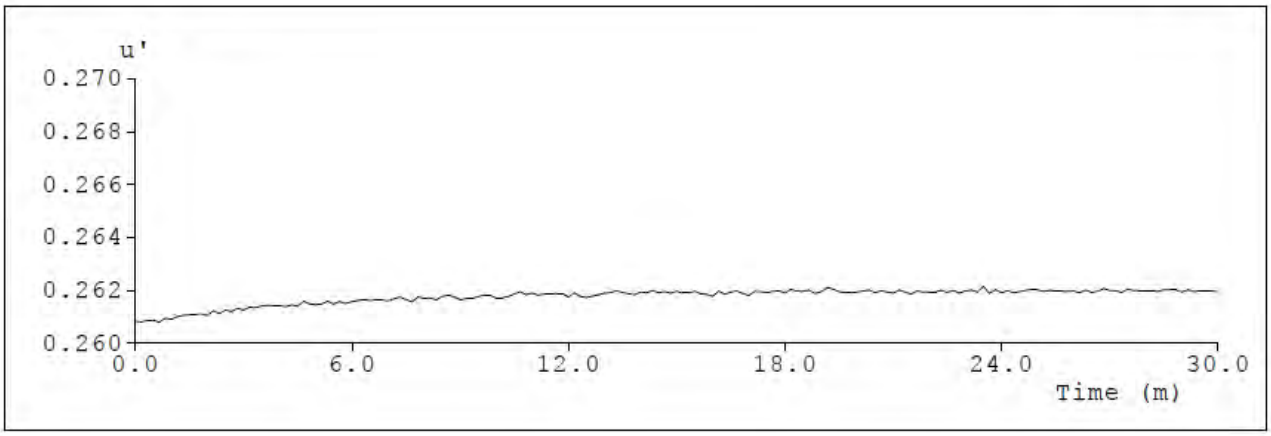


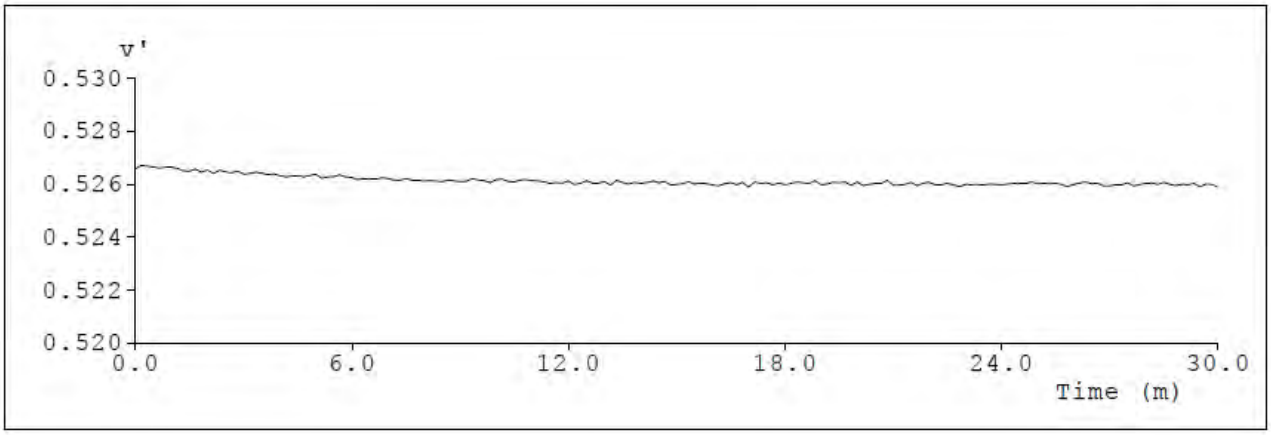

Flux(lm)
3100
3080
3060
3040
3020
3000
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


CCT(K)
2800
2780
2760
2740
2720
2700
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


x
0.460
0.458
0.456
0.454
0.452
0.450
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


y
0.420
0.416
0.412
0.408
0.404
0.400
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)


u'
0.270
0.268
0.266
0.264
0.262
0.260
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)

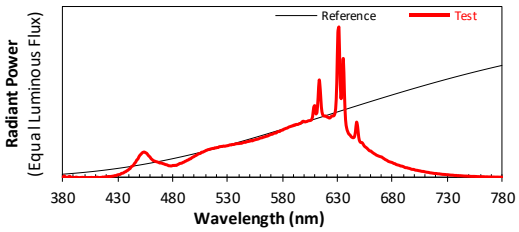

v'
0.530
0.528
0.526
0.524
0.522
0.520
0.0
6.0
12.0
18.0
24.0
30.0
Time (m)

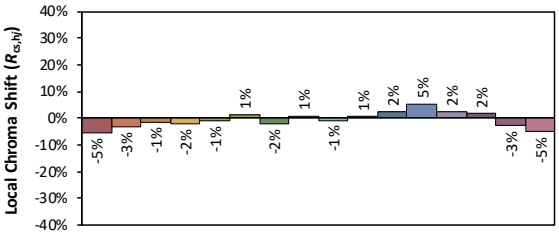
*9.2 ANSI/IES TM-30-18 Color Rendition Report

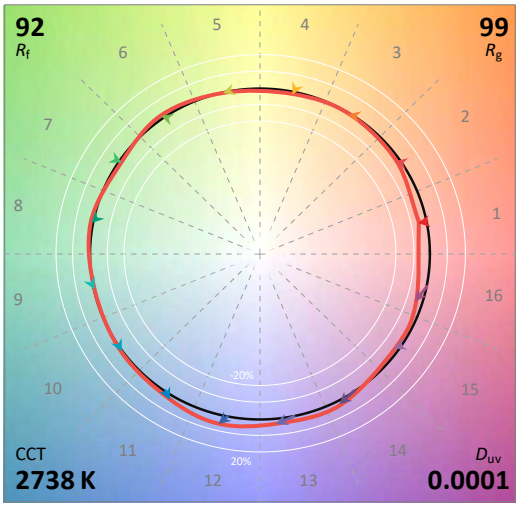
ANSI/IES TM-30-18 Color Rendition Report

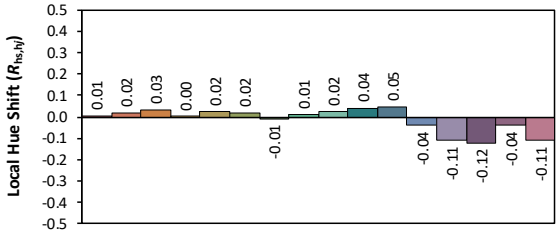
Source: Manufacturer:

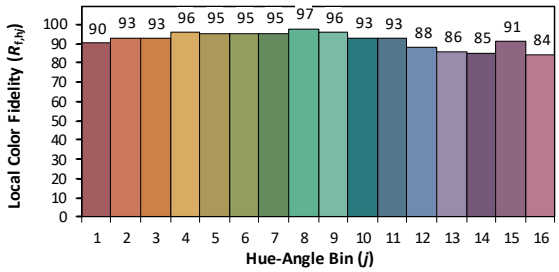
Date: 2023/9/15 Model: LREY-1000-L27-DF-I-31

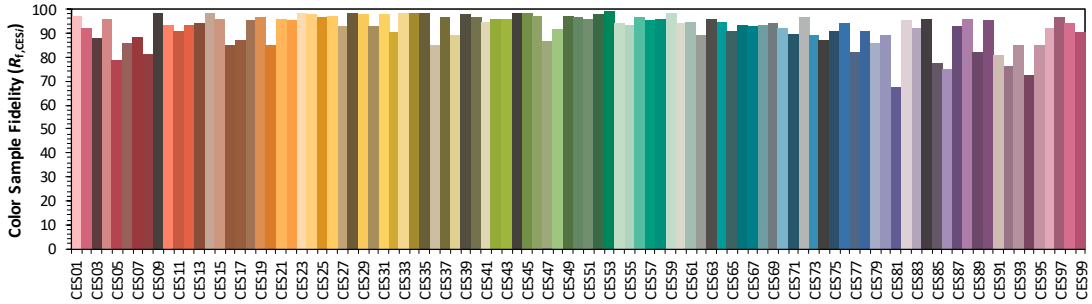












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

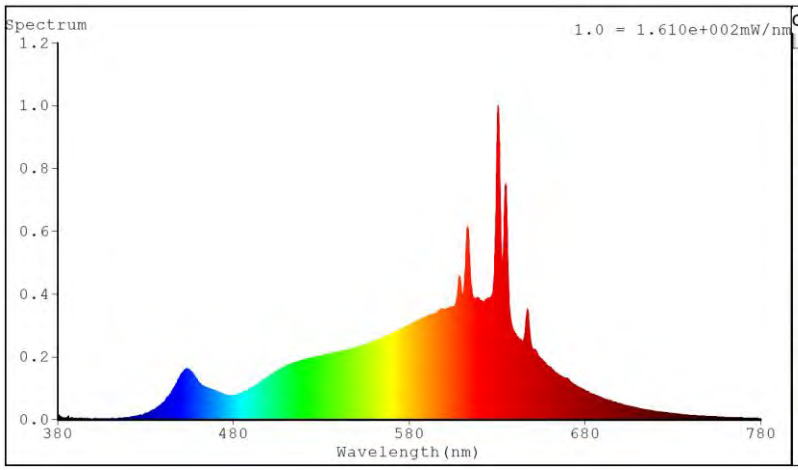
x	0.4569
y	0.4101
u'	0.2608
v'	0.5267

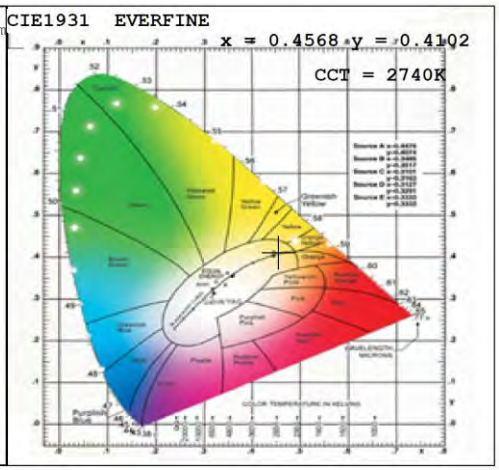
CIE 13.3-1995 (CRI)

R_a	94
R_9	57

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	0.0054	414	0.0033	448	0.1183	482	0.0793	516	0.1845
381	0.0129	415	0.0032	449	0.1328	483	0.0781	517	0.1841
382	0.004	416	0.0058	450	0.1427	484	0.0826	518	0.1883
383	0.0046	417	0.0046	451	0.1496	485	0.0855	519	0.1875
384	0.0033	418	0.0067	452	0.1571	486	0.0901	520	0.1905
385	0.0074	419	0.0067	453	0.1608	487	0.0914	521	0.1899
386	0.0103	420	0.0077	454	0.1616	488	0.0929	522	0.1951
387	0.0046	421	0.009	455	0.1575	489	0.0969	523	0.1955
388	0.0037	422	0.0089	456	0.1542	490	0.0993	524	0.197
389	0.0026	423	0.0091	457	0.1455	491	0.104	525	0.1969
390	0.0021	424	0.0099	458	0.137	492	0.1064	526	0.1995
391	0.004	425	0.0111	459	0.1312	493	0.1109	527	0.198
392	0.0048	426	0.0122	460	0.1208	494	0.1128	528	0.1997
393	0.0034	427	0.0145	461	0.115	495	0.1185	529	0.2011
394	0.002	428	0.0147	462	0.1086	496	0.1197	530	0.2022
395	0	429	0.0178	463	0.1063	497	0.1259	531	0.2047
396	0.0032	430	0.0201	464	0.103	498	0.13	532	0.207
397	0.0032	431	0.0211	465	0.1014	499	0.1332	533	0.2062
398	0.0041	432	0.0227	466	0.0991	500	0.138	534	0.2095
399	0.0014	433	0.0281	467	0.0966	501	0.141	535	0.2089
400	0.0031	434	0.0294	468	0.0932	502	0.1455	536	0.2106
401	0.0028	435	0.0321	469	0.0944	503	0.1496	537	0.2132
402	0.0019	436	0.0372	470	0.0916	504	0.1524	538	0.214
403	0.0026	437	0.0395	471	0.0892	505	0.1538	539	0.2149
404	0.0028	438	0.045	472	0.087	506	0.1609	540	0.2148
405	0.0029	439	0.0485	473	0.0839	507	0.161	541	0.2164
406	0.0034	440	0.0552	474	0.0826	508	0.1646	542	0.2164
407	0.0023	441	0.0595	475	0.0802	509	0.1678	543	0.2184
408	0.0026	442	0.0703	476	0.0764	510	0.1719	544	0.2217
409	0.0031	443	0.0738	477	0.0761	511	0.1742	545	0.2228
410	0.0038	444	0.0802	478	0.0749	512	0.1773	546	0.2227
411	0.0048	445	0.0911	479	0.0759	513	0.1782	547	0.2264
412	0.0034	446	0.099	480	0.0785	514	0.181	548	0.2273
413	0.0017	447	0.1122	481	0.0775	515	0.1824	549	0.2288

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
550	0.2302	599	0.354	648	0.3194	697	0.0545	746	0.0118
551	0.2346	600	0.3501	649	0.2544	698	0.0534	747	0.0119
552	0.2314	601	0.3518	650	0.2278	699	0.0533	748	0.0112
553	0.2351	602	0.3534	651	0.2217	700	0.0503	749	0.0107
554	0.237	603	0.357	652	0.221	701	0.0484	750	0.0104
555	0.2397	604	0.3581	653	0.2115	702	0.0479	751	0.0099
556	0.2409	605	0.3594	654	0.1999	703	0.0464	752	0.0096
557	0.2426	606	0.3637	655	0.1937	704	0.0449	753	0.0098
558	0.2447	607	0.3841	656	0.1887	705	0.0438	754	0.0097
559	0.2483	608	0.4401	657	0.1823	706	0.0418	755	0.0094
560	0.2503	609	0.4514	658	0.1749	707	0.0409	756	0.0091
561	0.2513	610	0.4005	659	0.1691	708	0.0406	757	0.0084
562	0.2542	611	0.4096	660	0.1685	709	0.0386	758	0.0084
563	0.2561	612	0.5015	661	0.1619	710	0.037	759	0.0077
564	0.2584	613	0.6116	662	0.157	711	0.0358	760	0.0079
565	0.2606	614	0.5499	663	0.1519	712	0.0351	761	0.0081
566	0.2621	615	0.4429	664	0.1482	713	0.0338	762	0.0078
567	0.2655	616	0.3991	665	0.143	714	0.0319	763	0.0078
568	0.2688	617	0.3886	666	0.1401	715	0.0314	764	0.0067
569	0.2722	618	0.3865	667	0.137	716	0.0301	765	0.007
570	0.2726	619	0.3873	668	0.1345	717	0.0292	766	0.0071
571	0.2757	620	0.3816	669	0.1323	718	0.0279	767	0.0064
572	0.2797	621	0.3791	670	0.1306	719	0.028	768	0.0065
573	0.2806	622	0.3749	671	0.1248	720	0.0275	769	0.0062
574	0.2817	623	0.376	672	0.1207	721	0.0257	770	0.006
575	0.2881	624	0.3841	673	0.1155	722	0.026	771	0.0058
576	0.2904	625	0.3883	674	0.1123	723	0.0246	772	0.0058
577	0.2902	626	0.3876	675	0.1085	724	0.0239	773	0.0054
578	0.2959	627	0.3959	676	0.1034	725	0.0226	774	0.0053
579	0.2983	628	0.4336	677	0.1013	726	0.0222	775	0.0055
580	0.3	629	0.5927	678	0.0988	727	0.0219	776	0.0054
581	0.3054	630	0.9093	679	0.0974	728	0.0213	777	0.0049
582	0.3075	631	0.9406	680	0.0941	729	0.0203	778	0.0053
583	0.3106	632	0.6283	681	0.0902	730	0.0204	779	0.0044
584	0.312	633	0.4952	682	0.0891	731	0.0192	780	0.0044
585	0.3166	634	0.6343	683	0.0842	732	0.0184		
586	0.3198	635	0.7447	684	0.0821	733	0.0177		
587	0.3214	636	0.5263	685	0.0803	734	0.0176		
588	0.3248	637	0.3629	686	0.0784	735	0.0171		
589	0.3252	638	0.312	687	0.0749	736	0.0158		
590	0.331	639	0.2893	688	0.0742	737	0.0156		
591	0.3291	640	0.2745	689	0.0723	738	0.0157		
592	0.3345	641	0.2691	690	0.0696	739	0.014		
593	0.3341	642	0.259	691	0.0654	740	0.0139		
594	0.3353	643	0.2536	692	0.0642	741	0.0144		
595	0.3401	644	0.2514	693	0.0637	742	0.0137		
596	0.3404	645	0.256	694	0.0611	743	0.0133		
597	0.3472	646	0.2888	695	0.06	744	0.0126		
598	0.3533	647	0.3482	696	0.0574	745	0.0122		

10. Goniophotometer Test results for LREY-1000-L27-DF-I-31

10.1 Test Data

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

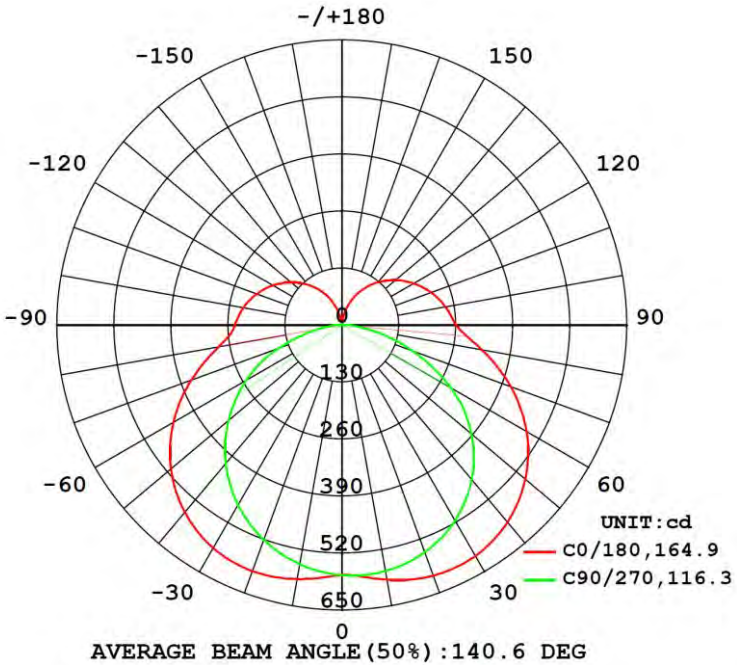
Electrical Measurement

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)	Imax (cd)	η up (%)	η down (%)
3077.34	110.54	610.8	21.7	78.3

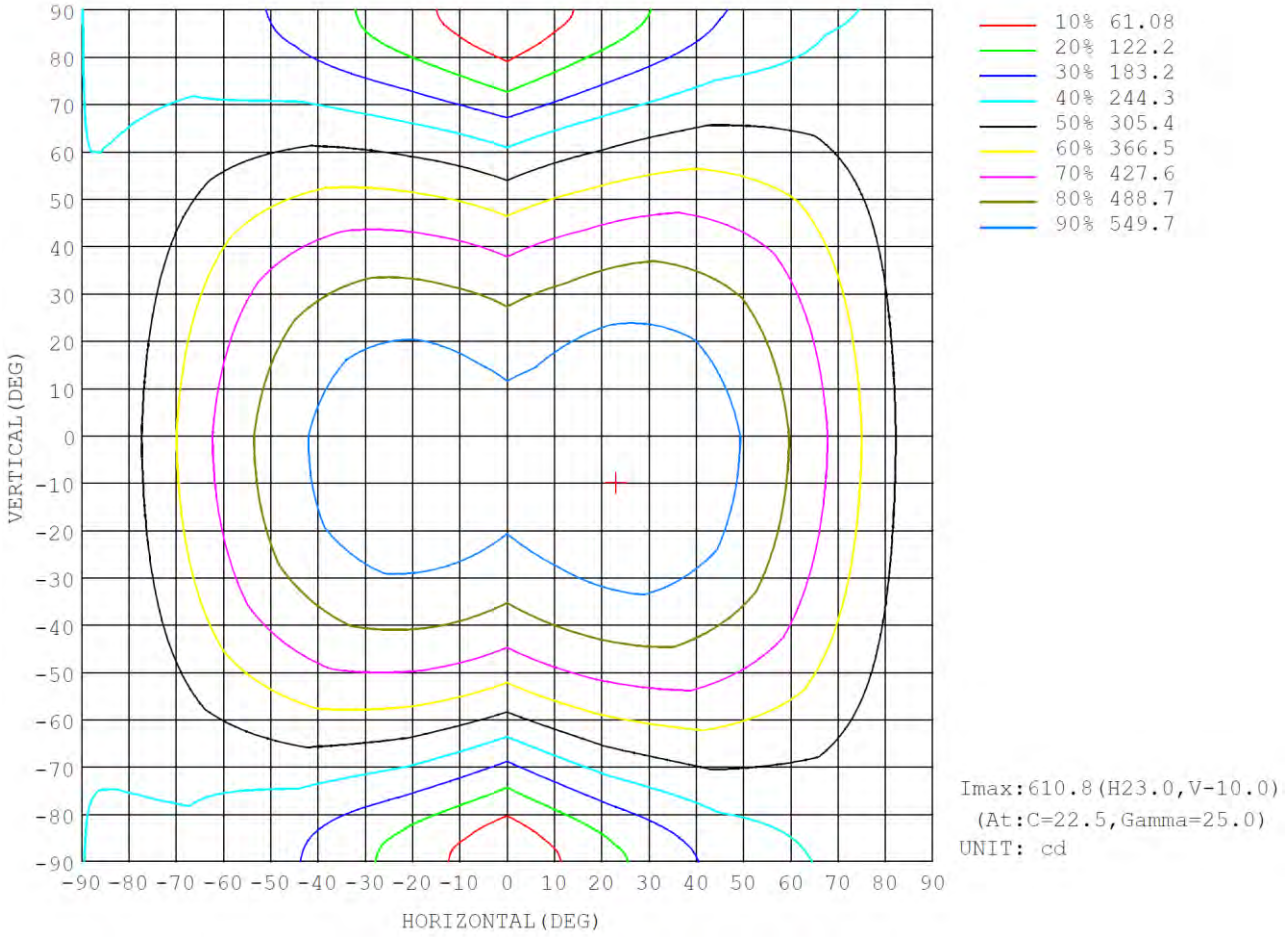
10.2 Luminous Intensity Distribution



10.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	589.6	583.6	569.8	584.8	587.9	572.9	553.8	571.5	0- 10	54.84	54.84	1.78,1.78
20	608.2	593.9	551.8	588.6	597.2	565.7	521.5	569.8	10- 20	163.6	218.5	7.1,7.1
30	608.2	587.8	515.6	575.3	587.4	542.8	474.1	553.4	20- 30	262.4	480.9	15.6,15.6
40	587.5	562.4	460.5	542.6	557.7	503.4	412.7	520.3	30- 40	338.9	819.7	26.6,26.6
50	546.4	516.1	385.8	489.7	509.6	447.7	338.0	470.0	40- 50	382.4	1202	39.1,39.1
60	486.5	448.8	287.3	417.3	444.4	377.2	252.3	403.8	50- 60	386.0	1588	51.6,51.6
70	409.6	362.9	170.1	328.5	365.6	295.1	151.0	324.1	60- 70	347.6	1936	62.9,62.9
80	323.8	267.2	64.31	235.3	285.4	212.0	53.68	238.9	70- 80	274.6	2210	71.8,71.8
90	260.7	201.6	11.28	188.0	244.6	169.1	10.16	179.0	80- 90	199.3	2410	78.3,78.3
100	240.2	185.2	2.112	173.7	228.9	156.9	1.300	165.1	90-100	169.7	2579	83.8,83.8
110	217.1	165.7	2.344	154.9	207.6	141.1	2.017	149.1	100-110	149.8	2729	88.7,88.7
120	190.0	143.0	2.611	132.3	181.9	122.0	2.245	130.3	110-120	124.1	2853	92.7,92.7
130	160.1	118.7	2.683	107.6	152.6	100.2	2.498	107.5	120-130	94.94	2948	95.8,95.8
140	127.7	87.49	2.893	80.27	120.2	77.75	2.401	79.53	130-140	65.75	3014	97.9,97.9
150	93.21	62.04	2.824	51.51	85.11	56.81	2.073	51.70	140-150	39.35	3053	99.2,99.2
160	56.67	35.03	2.471	24.68	46.35	34.61	2.877	18.24	150-160	18.43	3072	99.8,99.8
170	21.33	10.47	2.200	5.510	12.68	9.868	2.161	6.043	160-170	5.185	3077	100,100
180	1.329	2.447	2.697	2.535	1.581	2.308	2.655	2.655	170-180	0.5026	3077	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	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570
5	577	577	575	572	572	575	578	580	578	576	572	568	564	565	569	574
10	590	590	584	574	570	577	585	589	588	583	573	562	554	559	572	583
15	601	601	591	573	563	575	589	596	595	586	571	553	539	551	572	591
20	608	608	594	569	552	570	589	599	597	586	566	541	521	539	570	595
25	611	611	593	561	536	560	584	597	595	581	556	525	500	525	564	594
30	608	608	588	549	516	546	575	590	587	571	543	505	474	507	553	589
35	600	601	578	532	490	527	562	578	575	557	525	482	445	485	539	579
40	587	588	562	511	461	503	543	560	558	538	503	455	413	460	520	564
45	569	570	542	484	426	474	519	538	536	515	478	425	377	431	497	545
50	546	546	516	452	386	441	490	511	510	488	448	390	338	398	470	521
55	519	518	485	416	341	402	456	480	479	456	414	353	296	362	439	492
60	486	485	449	374	287	359	417	444	444	421	377	312	252	323	404	459
65	450	447	408	328	228	311	375	404	406	383	337	269	205	281	365	423
70	410	405	363	278	170	259	328	362	366	342	295	224	151	237	324	383
75	367	360	315	225	116	206	281	318	324	301	253	178	97.6	191	281	340
80	324	315	267	173	64.3	155	235	277	285	263	212	134	53.7	147	239	298
85	285	275	225	129	27.4	116	201	246	257	234	181	100.0	24.5	110	201	261
90	261	251	202	110	11.3	102	188	234	245	222	169	87.1	10.2	91.1	179	237
95	250	241	193	105	5.82	96.5	181	227	237	215	164	83.1	1.11	87.2	172	227
100	240	231	185	99.7	2.11	91.2	174	218	229	207	157	78.8	1.30	83.3	165	219
105	229	220	176	94.3	2.03	85.3	165	208	219	198	149	74.2	1.87	79.3	157	209
110	217	208	166	88.3	2.34	78.8	155	197	208	188	141	69.0	2.02	74.1	149	198
115	204	195	155	81.0	2.60	71.5	144	184	195	176	132	63.2	2.15	69.5	140	186
120	190	181	143	72.8	2.61	63.6	132	171	182	164	122	56.7	2.24	60.8	130	174
125	175	167	131	66.0	2.67	55.5	121	157	168	151	111	49.7	2.39	56.5	118	160
130	160	152	119	58.6	2.68	47.4	108	142	153	137	100	42.1	2.50	51.3	107	146
135	144	136	105	50.8	2.83	39.3	94.1	126	137	123	88.8	34.7	2.56	44.6	96.0	129
140	128	120	87.5	43.3	2.89	31.4	80.3	110	120	108	77.8	29.1	2.40	37.1	79.5	114
145	111	104	73.6	36.1	2.90	23.8	66.1	93.7	103	93.8	67.3	25.6	2.04	27.8	67.1	97.7
150	93.2	86.8	62.0	28.9	2.82	17.1	51.5	76.3	85.1	79.1	56.8	23.1	2.07	17.4	51.7	75.9
155	75.0	69.6	49.1	21.3	2.65	11.4	37.6	58.0	66.1	62.9	46.0	21.0	2.43	8.91	34.5	59.4
160	56.7	50.2	35.0	14.1	2.47	6.98	24.7	40.0	46.3	45.3	34.6	16.7	2.88	4.40	18.2	39.1
165	38.6	34.2	21.6	8.65	2.33	3.96	13.3	23.7	27.7	27.8	21.7	10.9	2.69	3.04	10.7	19.8
170	21.3	17.3	10.5	5.20	2.20	2.00	5.51	10.5	12.7	12.8	9.87	5.23	2.16	2.84	6.04	11.3
175	8.37	4.96	4.85	3.28	2.49	1.96	2.11	2.69	3.83	3.91	3.11	2.27	2.27	2.77	3.64	5.31
180	1.33	2.18	2.45	2.64	2.70	2.65	2.53	2.35	1.58	1.51	2.31	2.53	2.66	2.69	2.65	2.51

11. Photo of sample

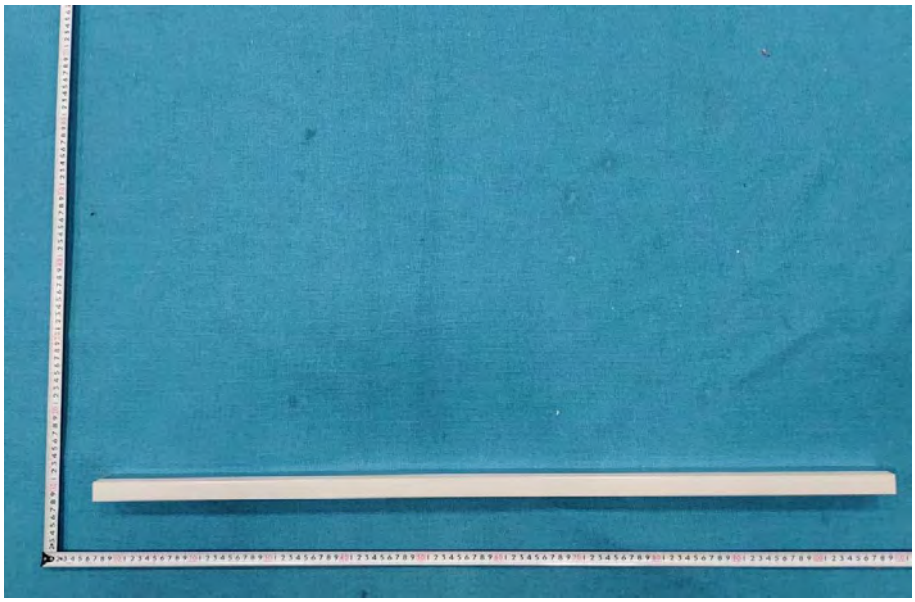


Figure 1 Overview

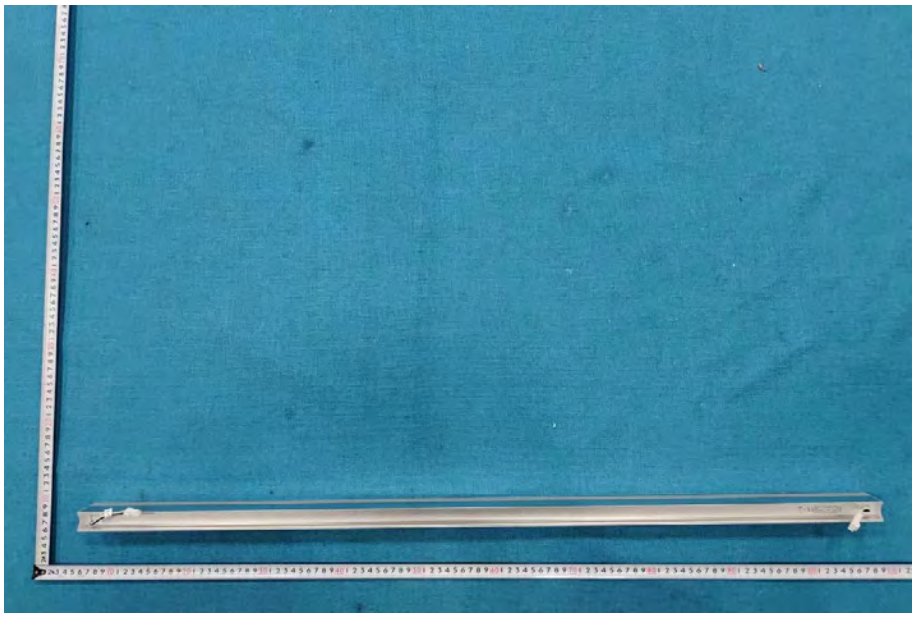


Figure 2 Overview

---End of Report---