

ANSI/IES LM-79-19

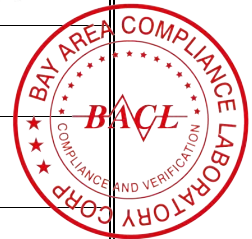
MEASUREMENT AND TEST REPORT

For

P.Q.L., Inc.
2285 WARD AVE.SIMI VALLEY, CA 93065 United States

Test Model: SBT14303CUW

Report Type:	Electrical and Photometric tests including: Luminous Flux, Power Factor, Chromaticity, Luminous Intensity Distribution
Reviewed By:	Ezer Pan <i>Ezer Pan</i>
Report Number:	2502S09792E-EE-M1
Test Date:	2024-10-25 to 2024-11-05
Report Date:	2025-09-03
Approved by:	Blake Zhang / EE Engineer <i>Blake Zhang</i>
Revised Note:	The previous report 2502S09792E-EE is replaced by this report on 2025-09-03.
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5F (B-West), 6F, 7F, the 3rd Phase of Wan Li Industrial Building D Shihua Road, Futian Free Trade Zone Shenzhen 518038 China Tel: +86-755-33320018 Fax: +86-755-33320008
Test Location 1:	Test facility was located at No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China.
Test Location 2:	Test facility was located at Room 301, No.113, Pingkang Road, Dalang, Dongguan, Guangdong, China.



Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.(Shenzhen). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government. *This report contains data that are not covered by the NVLAP accreditation.

1. Product Description[#]

General Information:

One test sample was in good condition and received on 2024-10-25, and used for testing. All tests and evaluations were performed at the least efficient white light setting.

Model Tested: SBT14303CUW
Manufacturer: N/A
Brand Name: 
Product Designation: LED Luminaires
Burning Time Before Test: 0hour(For New Products)

Rated Values:

Rated Voltage/Frequency: AC 120-277V 50/60Hz
Rated Power: 30W
Nominal CCT: 3000K/3500K/4000K
Nominal Lumen Output: 3750lm/3990lm/3840lm

Family Declaration

P.Q.L., Inc. declares that there are some differences between multiple models and tested model. Details as below:

Tested Model	Multiple Models	Variations	Details	Additional Test
SBT14303CUW	SBT14253CUW	Power	SBT14303CUW: 30W SBT14253CUW: 25W SBT14153CUW: 15W	See report
	SBT14153CUW			2502S09792E-EE-1
				See report
				2502S09792E-EE-2

2. Standards Used

- ANSI/IES LM-79-19: Approved method :Optical and Electrical Measurements of Solid-State Lighting Products
- ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting
- *IES TM-30-18: IES Method for Evaluating Light Source Color Rendition (This method is not in NVLAP accreditation scope)

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	2024-07-25	2025-07-24
spectroradiometer	EVERFINE	HAAS-2000	G112048TS81331121	2024-07-25	2025-07-24
Digital Power Meter	EVERFINE	PF2010A	1011004	2024-07-25	2025-07-24
Digital CC&CV DC Power Supply	EVERFINE	WY305-V1	1101047	2024-07-25	2025-07-24
Standard Light Source	EVERFINE	D204	N/A	2023-05-12	2025-05-11

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	2024-07-25	2025-07-24
AC POWER SUPPLY	EVERFINE	VPS1030 PWM	1012017	2024-08-30	2025-08-29
Digital CC&CV DC Power Supply	EVERFINE	WY12010	1009009	2024-08-30	2025-08-29
Digital power meter	YOKOGAWA	WT-210	91J926132	2024-08-30	2025-08-29
full-field speed goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	2024-07-25	2025-07-24
wireless remote thermohygrometer	N/A	AOK-5017B	N/A	2024-09-06	2025-09-05
Standard Light Source	EVERFINE	D908	N/A	2023-05-12	2025-05-11

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

4. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with ANSI/IES LM-79-19. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ during measurement. And relative humidity is maintained between 10% and 65%. The air flow around the SSL product is less than 0.2m/s.

Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement.

4 π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

The uncertainty of the light output (luminous flux) measurements is $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=32\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.1$ ($K=2$), at the 95% confidence level.

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.18\%$ of rdg, Power $U=0.46\%$ ($K=2$), at the 95% confidence level.

Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. For luminous intensity distribution, The vertical angle (γ) test intervals were set no more than 2.5 degree, The horizontal angle (C plane) test intervals were set no more than 22.5 degree. For color spatial uniformity, The vertical angle (γ) test intervals were set no more than 90 degree, The horizontal angle (C plane) test intervals were set no more than 10 degree.

The uncertainty of the luminous intensity is $U=2.00\%$ ($K=2$), at the 95% confidence level.

Fidelity Index and Gamut Index Calculation

The R_i , 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. Test Result

[Integrating Sphere System]

Test facility was located at Room 301, No.113, Pingkang Road, Dalang, Dongguan, Guangdong, China.

The diameter of the sphere: **2m**

The coating reflectance of sphere: **98%**

The Stabilization time: **30 minutes**

Total operating time for integrating sphere test: **1.0 hour**

Test orientation: **Downward**

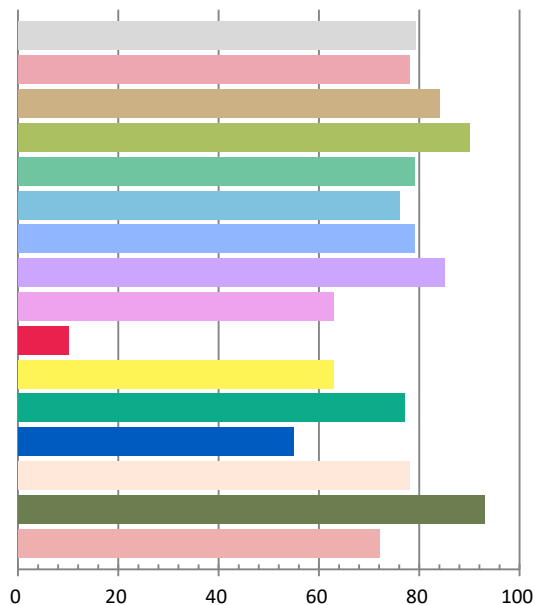
Photometric and Electrical Measurement Result

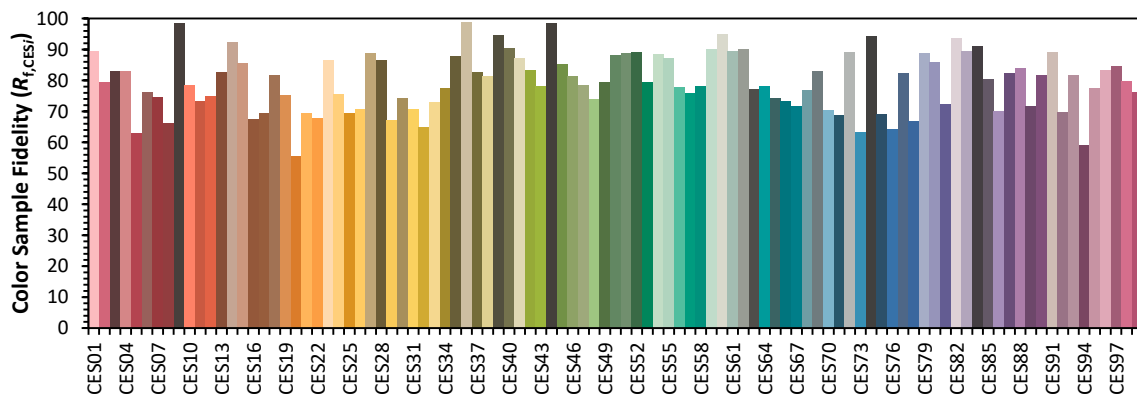
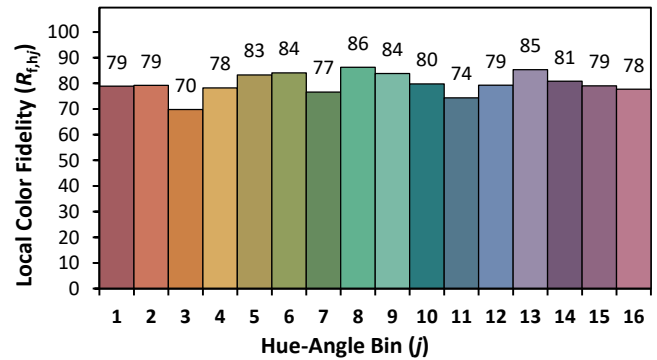
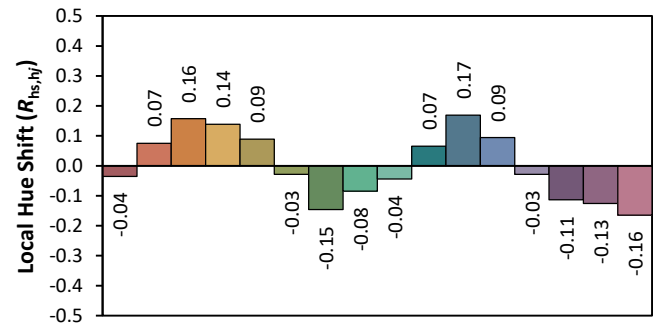
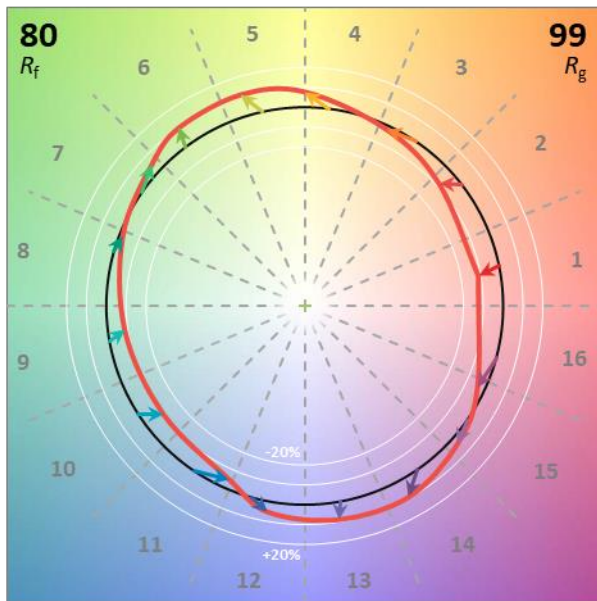
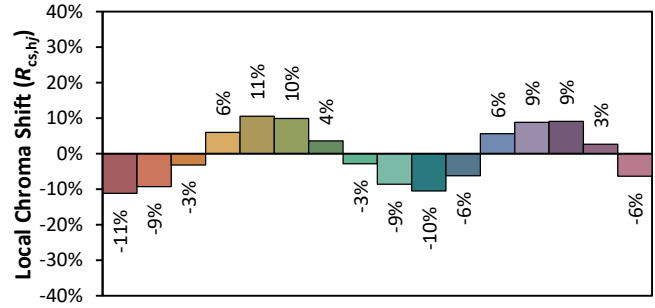
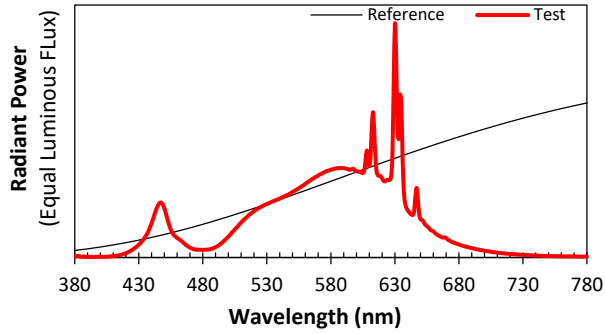
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120.1	60	0.2575	30.75	0.9947	3856.6	125.42

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
10.747	2911	0.00238	0.4471	0.4135	0.2530	0.5266

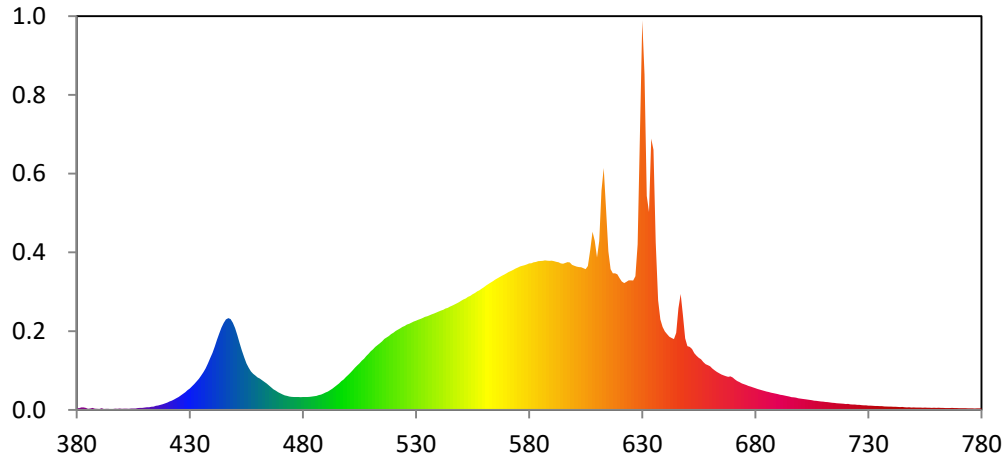
Color Rendering Index

Ra			
79.3			
R1	R2	R3	R4
78	84	90	79
R5	R6	R7	R8
76	79	85	63
R9	R10	R11	R12
10	63	77	55
R13	R14	R15	
78	93	72	





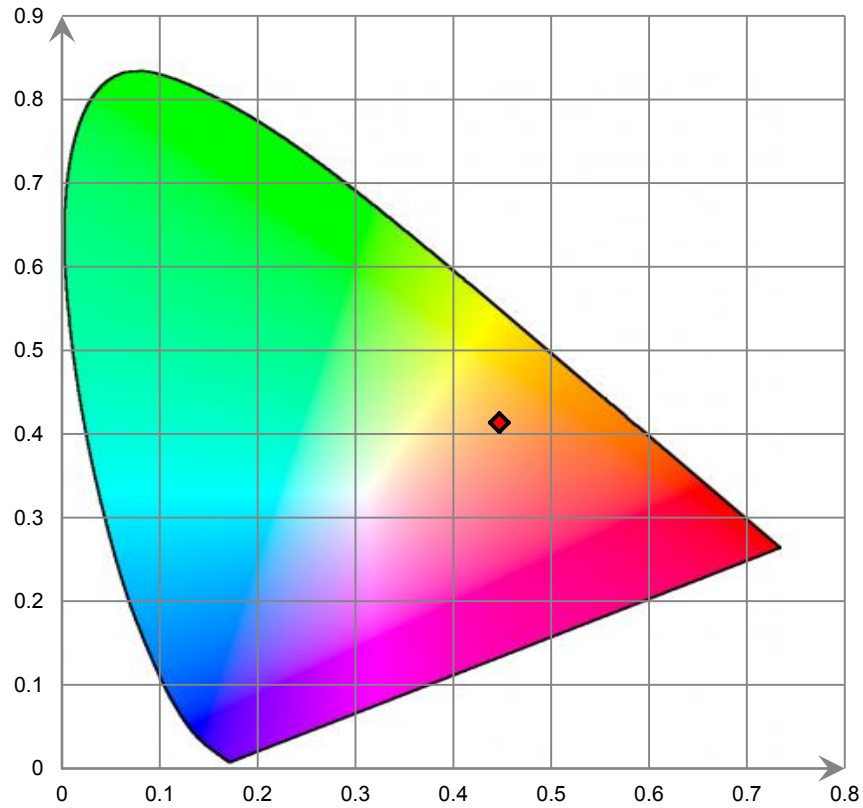
Relative Spectral Power Distribution



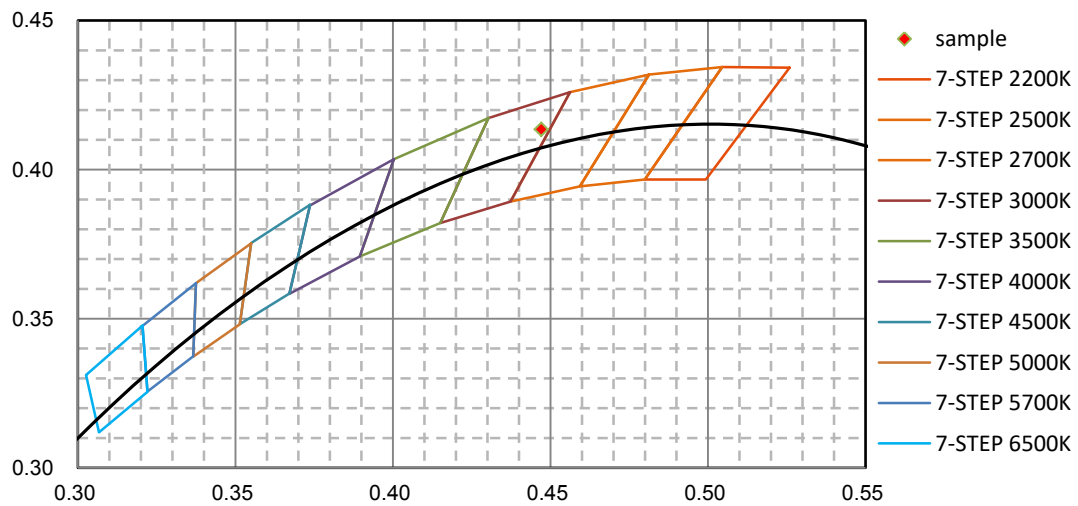
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.071E+00	421	3.939E+00	462	1.390E+01	503	1.978E+01	544	4.792E+01
381	8.326E-01	422	4.361E+00	463	1.314E+01	504	2.083E+01	545	4.850E+01
382	1.179E+00	423	4.847E+00	464	1.236E+01	505	2.195E+01	546	4.895E+01
383	1.192E+00	424	5.489E+00	465	1.145E+01	506	2.315E+01	547	4.952E+01
384	9.556E-01	425	6.109E+00	466	1.061E+01	507	2.402E+01	548	5.005E+01
385	5.440E-01	426	6.819E+00	467	9.698E+00	508	2.533E+01	549	5.062E+01
386	6.774E-01	427	7.551E+00	468	9.045E+00	509	2.636E+01	550	5.132E+01
387	9.472E-01	428	8.350E+00	469	8.315E+00	510	2.754E+01	551	5.186E+01
388	5.995E-01	429	9.254E+00	470	7.776E+00	511	2.846E+01	552	5.235E+01
389	5.095E-01	430	1.007E+01	471	7.300E+00	512	2.957E+01	553	5.310E+01
390	4.661E-01	431	1.113E+01	472	6.807E+00	513	3.045E+01	554	5.355E+01
391	7.753E-01	432	1.219E+01	473	6.580E+00	514	3.131E+01	555	5.430E+01
392	4.357E-01	433	1.340E+01	474	6.327E+00	515	3.220E+01	556	5.492E+01
393	5.185E-01	434	1.462E+01	475	6.149E+00	516	3.335E+01	557	5.561E+01
394	5.032E-01	435	1.616E+01	476	6.094E+00	517	3.404E+01	558	5.619E+01
395	3.791E-01	436	1.775E+01	477	6.079E+00	518	3.472E+01	559	5.690E+01
396	4.477E-01	437	1.953E+01	478	6.066E+00	519	3.555E+01	560	5.763E+01
397	5.578E-01	438	2.174E+01	479	6.013E+00	520	3.629E+01	561	5.846E+01
398	5.205E-01	439	2.425E+01	480	6.041E+00	521	3.707E+01	562	5.907E+01
399	6.647E-01	440	2.680E+01	481	6.062E+00	522	3.765E+01	563	5.981E+01
400	4.980E-01	441	2.976E+01	482	6.085E+00	523	3.830E+01	564	6.044E+01
401	5.571E-01	442	3.292E+01	483	6.154E+00	524	3.899E+01	565	6.119E+01
402	5.809E-01	443	3.588E+01	484	6.270E+00	525	3.940E+01	566	6.177E+01
403	5.163E-01	444	3.864E+01	485	6.406E+00	526	4.007E+01	567	6.240E+01
404	6.233E-01	445	4.082E+01	486	6.584E+00	527	4.047E+01	568	6.300E+01
405	6.696E-01	446	4.248E+01	487	6.936E+00	528	4.099E+01	569	6.353E+01
406	6.777E-01	447	4.309E+01	488	7.213E+00	529	4.149E+01	570	6.411E+01
407	8.436E-01	448	4.261E+01	489	7.631E+00	530	4.191E+01	571	6.483E+01
408	9.444E-01	449	4.095E+01	490	8.175E+00	531	4.232E+01	572	6.524E+01
409	9.429E-01	450	3.842E+01	491	8.647E+00	532	4.270E+01	573	6.579E+01
410	1.125E+00	451	3.512E+01	492	9.283E+00	533	4.319E+01	574	6.639E+01
411	1.249E+00	452	3.146E+01	493	9.995E+00	534	4.371E+01	575	6.682E+01
412	1.300E+00	453	2.800E+01	494	1.079E+01	535	4.404E+01	576	6.739E+01
413	1.507E+00	454	2.469E+01	495	1.160E+01	536	4.449E+01	577	6.770E+01
414	1.575E+00	455	2.187E+01	496	1.247E+01	537	4.491E+01	578	6.800E+01
415	1.945E+00	456	1.982E+01	497	1.350E+01	538	4.530E+01	579	6.832E+01
416	2.063E+00	457	1.809E+01	498	1.436E+01	539	4.573E+01	580	6.880E+01
417	2.375E+00	458	1.693E+01	499	1.548E+01	540	4.618E+01	581	6.890E+01
418	2.655E+00	459	1.614E+01	500	1.640E+01	541	4.661E+01	582	6.932E+01
419	3.024E+00	460	1.522E+01	501	1.748E+01	542	4.700E+01	583	6.946E+01
420	3.443E+00	461	1.468E+01	502	1.863E+01	543	4.763E+01	584	6.987E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	6.988E+01	626	6.075E+01	667	1.581E+01	708	4.097E+00	749	1.152E+00
586	7.000E+01	627	6.277E+01	668	1.556E+01	709	4.001E+00	750	1.166E+00
587	7.024E+01	628	7.776E+01	669	1.577E+01	710	3.863E+00	751	1.113E+00
588	7.008E+01	629	1.318E+02	670	1.524E+01	711	3.731E+00	752	1.143E+00
589	6.996E+01	630	1.829E+02	671	1.431E+01	712	3.643E+00	753	1.091E+00
590	7.004E+01	631	1.575E+02	672	1.360E+01	713	3.513E+00	754	1.052E+00
591	6.981E+01	632	1.005E+02	673	1.309E+01	714	3.341E+00	755	1.115E+00
592	6.952E+01	633	9.295E+01	674	1.247E+01	715	3.280E+00	756	1.016E+00
593	6.932E+01	634	1.274E+02	675	1.208E+01	716	3.125E+00	757	1.001E+00
594	6.882E+01	635	1.221E+02	676	1.166E+01	717	3.037E+00	758	9.890E-01
595	6.866E+01	636	7.862E+01	677	1.127E+01	718	2.996E+00	759	9.917E-01
596	6.904E+01	637	5.152E+01	678	1.097E+01	719	2.940E+00	760	9.746E-01
597	6.941E+01	638	4.247E+01	679	1.057E+01	720	2.800E+00	761	9.990E-01
598	6.926E+01	639	3.897E+01	680	1.020E+01	721	2.802E+00	762	9.774E-01
599	6.812E+01	640	3.691E+01	681	9.842E+00	722	2.641E+00	763	9.335E-01
600	6.765E+01	641	3.563E+01	682	9.511E+00	723	2.549E+00	764	8.915E-01
601	6.728E+01	642	3.437E+01	683	9.181E+00	724	2.519E+00	765	8.592E-01
602	6.709E+01	643	3.381E+01	684	8.901E+00	725	2.393E+00	766	9.012E-01
603	6.697E+01	644	3.329E+01	685	8.631E+00	726	2.361E+00	767	9.176E-01
604	6.651E+01	645	3.618E+01	686	8.380E+00	727	2.232E+00	768	8.824E-01
605	6.612E+01	646	4.779E+01	687	8.099E+00	728	2.154E+00	769	8.585E-01
606	6.759E+01	647	5.447E+01	688	7.857E+00	729	2.136E+00	770	8.160E-01
607	7.524E+01	648	4.450E+01	689	7.657E+00	730	2.042E+00	771	8.291E-01
608	8.364E+01	649	3.367E+01	690	7.388E+00	731	2.014E+00	772	7.924E-01
609	7.939E+01	650	2.999E+01	691	7.154E+00	732	1.960E+00	773	8.249E-01
610	7.157E+01	651	2.954E+01	692	6.972E+00	733	1.880E+00	774	7.316E-01
611	7.933E+01	652	2.860E+01	693	6.707E+00	734	1.848E+00	775	7.275E-01
612	1.030E+02	653	2.666E+01	694	6.507E+00	735	1.790E+00	776	6.961E-01
613	1.136E+02	654	2.549E+01	695	6.263E+00	736	1.768E+00	777	6.385E-01
614	9.504E+01	655	2.450E+01	696	6.027E+00	737	1.665E+00	778	7.245E-01
615	7.453E+01	656	2.378E+01	697	5.889E+00	738	1.628E+00	779	7.254E-01
616	6.609E+01	657	2.253E+01	698	5.741E+00	739	1.583E+00	780	7.264E-01
617	6.410E+01	658	2.151E+01	699	5.499E+00	740	1.530E+00		
618	6.411E+01	659	2.103E+01	700	5.300E+00	741	1.505E+00		
619	6.366E+01	660	2.049E+01	701	5.148E+00	742	1.463E+00		
620	6.192E+01	661	1.942E+01	702	5.012E+00	743	1.409E+00		
621	6.029E+01	662	1.863E+01	703	4.878E+00	744	1.360E+00		
622	5.955E+01	663	1.790E+01	704	4.698E+00	745	1.399E+00		
623	6.019E+01	664	1.725E+01	705	4.561E+00	746	1.277E+00		
624	6.080E+01	665	1.665E+01	706	4.349E+00	747	1.224E+00		
625	6.086E+01	666	1.622E+01	707	4.286E+00	748	1.292E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

Test facility was located at No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The photometric distance: **2.519m**

The Stabilization time: **30 minutes**

Total operating time for luminous intensity distribution: **1.0 hour**

Test orientation: **Downward**

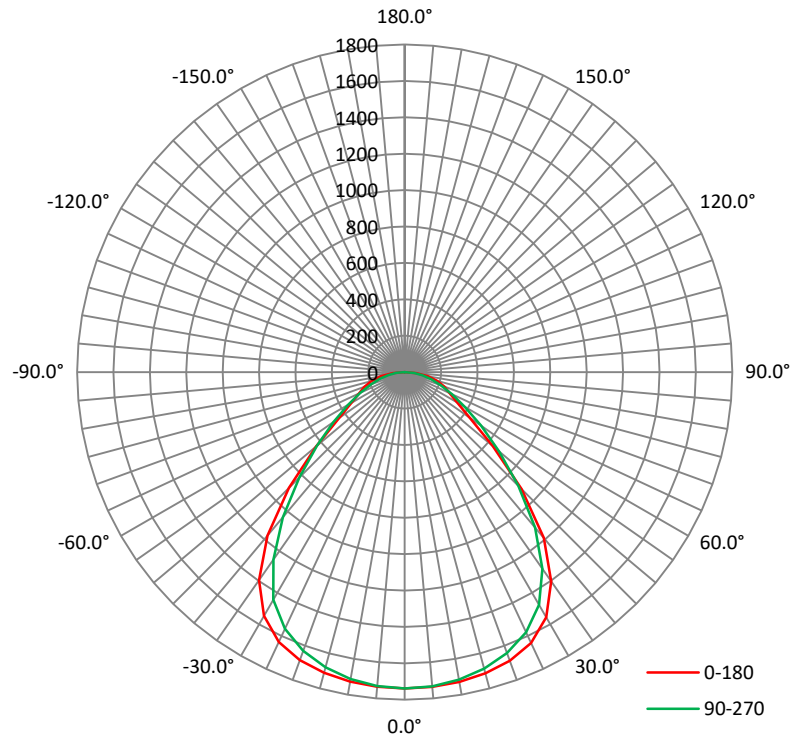
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
120.03	60	0.2574	30.710	0.9940

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
3859.75	125.68	1739	1.29	1.25

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	91.2	91.1	89.1	90.4	90.5
Field Angle (10% I_{max}):	152.3	147.9	144.9	147.8	148.2

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0°	1738	1738	1738	1738	1738	1738	1738	1738
1°	1738	1738	1738	1738	1738	1738	1738	1738
2°	1738	1738	1738	1737	1737	1737	1738	1738
3°	1737	1737	1737	1736	1736	1736	1737	1737
4°	1737	1736	1736	1735	1734	1734	1735	1736
5°	1736	1735	1734	1733	1732	1732	1734	1735
6°	1734	1734	1732	1730	1729	1730	1732	1733
7°	1733	1732	1730	1727	1726	1727	1729	1732
8°	1731	1730	1727	1723	1722	1723	1726	1730
9°	1729	1727	1724	1719	1717	1719	1723	1727
10°	1727	1725	1720	1715	1712	1714	1719	1725
11°	1724	1722	1716	1710	1707	1709	1715	1722
12°	1721	1719	1712	1704	1701	1704	1711	1719
13°	1718	1715	1706	1698	1694	1697	1706	1715
14°	1715	1711	1701	1692	1687	1691	1700	1711
15°	1711	1706	1695	1685	1679	1683	1694	1706
16°	1706	1702	1689	1677	1671	1676	1687	1701
17°	1701	1696	1682	1669	1662	1667	1681	1696
18°	1696	1690	1675	1660	1652	1658	1673	1690
19°	1690	1683	1667	1650	1642	1648	1664	1683
20°	1684	1677	1658	1639	1630	1637	1655	1676
21°	1677	1668	1648	1628	1617	1625	1645	1668
22°	1669	1660	1638	1615	1604	1612	1634	1658
23°	1659	1650	1626	1601	1589	1597	1622	1649
24°	1648	1639	1613	1586	1573	1582	1608	1637
25°	1637	1627	1599	1570	1556	1565	1593	1624
26°	1623	1613	1583	1552	1537	1546	1576	1609
27°	1607	1598	1566	1533	1518	1526	1558	1593
28°	1589	1580	1547	1512	1495	1503	1537	1575
29°	1569	1561	1525	1488	1471	1479	1514	1554
30°	1547	1539	1501	1462	1444	1451	1488	1532
31°	1522	1515	1475	1433	1414	1421	1461	1507
32°	1495	1490	1447	1401	1380	1388	1430	1480
33°	1465	1462	1415	1366	1341	1351	1397	1451
34°	1432	1432	1381	1331	1299	1314	1362	1419
35°	1395	1399	1345	1295	1257	1277	1323	1386
36°	1356	1366	1306	1247	1216	1229	1281	1349
37°	1314	1333	1264	1198	1173	1180	1237	1312
38°	1269	1299	1219	1147	1130	1128	1191	1275
39°	1221	1257	1172	1097	1085	1078	1144	1238
40°	1172	1214	1126	1046	1041	1027	1095	1193
41°	1120	1168	1077	994	997	975	1046	1146
42°	1067	1121	1027	941	952	924	995	1098
43°	1011	1074	976	890	906	874	943	1049
44°	955	1026	924	839	861	824	891	1000
45°	899	978	874	790	819	776	840	952
46°	842	931	822	742	777	729	790	905
47°	787	886	775	696	737	684	743	861
48°	732	843	727	653	698	642	698	818

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
49°	680	803	682	612	661	601	655	778
50°	635	763	644	574	629	564	618	739
51°	590	726	606	538	597	530	581	703
52°	546	692	568	505	565	497	543	668
53°	506	658	532	475	534	468	509	635
54°	471	625	498	447	505	440	477	604
55°	439	593	466	421	477	415	448	573
56°	413	563	439	398	451	392	421	544
57°	390	532	413	376	425	371	396	516
58°	370	503	389	358	402	353	374	488
59°	353	474	367	341	380	336	353	460
60°	337	447	348	325	358	321	335	434
61°	322	420	328	310	339	306	318	408
62°	309	393	310	296	319	292	302	381
63°	297	368	295	283	302	279	287	356
64°	286	344	279	271	284	268	273	332
65°	276	321	266	260	269	256	260	308
66°	267	299	253	249	253	245	248	286
67°	258	279	242	239	239	234	236	265
68°	251	260	231	228	225	224	225	245
69°	243	241	221	218	211	213	214	227
70°	235	225	211	207	198	202	204	211
71°	226	210	201	196	185	191	195	196
72°	217	197	192	184	174	180	186	183
73°	208	185	182	173	163	169	177	172
74°	198	175	172	163	152	159	167	163
75°	188	166	163	152	142	148	158	155
76°	178	158	153	141	132	137	148	147
77°	167	149	143	130	122	127	139	140
78°	157	141	132	120	112	117	128	132
79°	146	133	122	109	101	106	118	123
80°	134	123	111	98	90	95	107	113
81°	122	112	100	87	78	84	95	102
82°	109	101	89	75	71	72	83	91
83°	94	89	76	65	63	63	68	79
84°	80	77	63	57	55	54	58	67
85°	66	64	53	48	47	46	47	53
86°	51	51	42	39	37	37	36	40
87°	37	37	32	26	27	25	26	30
88°	23	24	20	13	6	12	12	20
89°	8	12	14	0	3	0	8	10
90°	0	0	0	0	0	0	0	0
91°	0	0	0	0	0	0	0	0
92°	0	0	0	0	0	0	0	0
93°	0	0	0	0	0	0	0	0
94°	0	0	0	0	0	0	0	0
95°	0	0	0	0	0	0	0	0
96°	0	0	0	0	0	0	0	0
97°	0	0	0	0	0	0	0	0

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
98°	0	0	0	0	0	0	0	0
99°	0	0	0	0	0	0	0	0
100°	0	0	0	0	0	0	0	0
101°	0	0	0	0	0	0	0	0
102°	0	0	0	0	0	0	0	0
103°	0	0	0	0	0	0	0	0
104°	0	0	0	0	0	0	0	0
105°	0	0	0	0	0	0	0	0
106°	0	0	0	0	0	0	0	0
107°	0	0	0	0	0	0	0	0
108°	0	0	0	0	0	0	0	0
109°	0	0	0	0	0	0	0	0
110°	0	0	0	0	0	0	0	0
111°	0	0	0	0	0	0	0	0
112°	0	0	0	0	0	0	0	0
113°	0	0	0	0	0	0	0	0
114°	0	0	0	0	0	0	0	0
115°	0	0	0	0	0	0	0	0
116°	0	0	0	0	0	0	0	0
117°	0	0	0	0	0	0	0	0
118°	0	0	0	0	0	0	0	0
119°	0	0	0	0	0	0	0	0
120°	0	0	0	0	0	0	0	0
121°	0	0	0	0	0	0	0	0
122°	0	0	0	0	0	0	0	0
123°	0	0	0	0	0	0	0	0
124°	0	0	0	0	0	0	0	0
125°	0	0	0	0	0	0	0	0
126°	0	0	0	0	0	0	0	0
127°	0	0	0	0	0	0	0	0
128°	0	0	0	0	0	0	0	0
129°	0	0	0	0	0	0	0	0
130°	0	0	0	0	0	0	0	0
131°	0	0	0	0	0	0	0	0
132°	0	0	0	0	0	0	0	0
133°	0	0	0	0	0	0	0	0
134°	0	0	0	0	0	0	0	0
135°	0	0	0	0	0	0	0	0
136°	0	0	0	0	0	0	0	0
137°	0	0	0	0	0	0	0	0
138°	0	0	0	0	0	0	0	0
139°	0	0	0	0	0	0	0	0
140°	0	0	0	0	0	0	0	0
141°	0	0	0	0	0	0	0	0
142°	0	0	0	0	0	0	0	0
143°	0	0	0	0	0	0	0	0
144°	0	0	0	0	0	0	0	0
145°	0	0	0	0	0	0	0	0
146°	0	0	0	0	0	0	0	0

Luminous Intensity (cd) Distribution Data

$\begin{matrix} C \\ \backslash \\ Y \end{matrix}$	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
147°	0	0	0	0	0	0	0	0
148°	0	0	0	0	0	0	0	0
149°	0	0	0	0	0	0	0	0
150°	0	0	0	0	0	0	0	0
151°	0	0	0	0	0	0	0	0
152°	0	0	0	0	0	0	0	0
153°	0	0	0	0	0	0	0	0
154°	0	0	0	0	0	0	0	0
155°	0	0	0	0	0	0	0	0
156°	0	0	0	0	0	0	0	0
157°	0	0	0	0	0	0	0	0
158°	0	0	0	0	0	0	0	0
159°	0	0	0	0	0	0	0	0
160°	0	0	0	0	0	0	0	0
161°	0	0	0	0	0	0	0	0
162°	0	0	0	0	0	0	0	0
163°	0	0	0	0	0	0	0	0
164°	0	0	0	0	0	0	0	0
165°	0	0	0	0	0	0	0	0
166°	0	0	0	0	0	0	0	0
167°	0	0	0	0	0	0	0	0
168°	0	0	0	0	0	0	0	0
169°	0	0	0	0	0	0	0	0
170°	0	0	0	0	0	0	0	0
171°	0	0	0	0	0	0	0	0
172°	0	0	0	0	0	0	0	0
173°	0	0	0	0	0	0	0	0
174°	0	0	0	0	0	0	0	0
175°	0	0	0	0	0	0	0	0
176°	0	0	0	0	0	0	0	0
177°	0	0	0	0	0	0	0	0
178°	0	0	0	0	0	0	0	0
179°	0	0	0	0	0	0	0	0
180°	0	0	0	0	0	0	0	0

Luminous Intensity (cd) Distribution Data (cont.)

$\begin{matrix} \text{C} \\ \diagdown \\ \text{Y} \end{matrix}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0°	1738	1738	1738	1738	1738	1738	1738	1738
1°	1738	1738	1738	1738	1738	1738	1739	1738
2°	1738	1738	1738	1738	1738	1737	1738	1738
3°	1737	1737	1737	1737	1737	1737	1738	1738
4°	1737	1736	1736	1736	1735	1735	1737	1737
5°	1736	1735	1735	1734	1733	1734	1735	1736
6°	1735	1734	1733	1732	1731	1732	1734	1735
7°	1733	1732	1731	1729	1728	1729	1732	1733
8°	1732	1731	1728	1726	1725	1726	1729	1731
9°	1730	1729	1726	1722	1721	1722	1726	1729
10°	1728	1726	1722	1718	1716	1718	1724	1727
11°	1726	1724	1719	1713	1711	1714	1720	1724
12°	1723	1721	1715	1708	1706	1708	1716	1721
13°	1720	1717	1711	1703	1700	1703	1711	1718
14°	1717	1714	1705	1697	1694	1697	1706	1714
15°	1713	1710	1700	1690	1686	1690	1701	1710
16°	1709	1705	1694	1683	1679	1683	1695	1705
17°	1705	1700	1688	1676	1672	1676	1689	1700
18°	1700	1695	1681	1667	1663	1668	1682	1695
19°	1695	1689	1674	1659	1653	1659	1674	1689
20°	1688	1682	1665	1649	1643	1649	1666	1682
21°	1682	1675	1657	1638	1632	1638	1657	1675
22°	1674	1667	1647	1627	1619	1626	1648	1666
23°	1665	1658	1636	1614	1607	1614	1637	1657
24°	1655	1647	1625	1601	1592	1600	1625	1646
25°	1643	1636	1611	1586	1577	1586	1612	1635
26°	1630	1623	1597	1570	1560	1570	1598	1622
27°	1614	1607	1581	1552	1542	1551	1581	1606
28°	1597	1591	1564	1533	1522	1532	1564	1590
29°	1577	1572	1543	1512	1501	1510	1544	1572
30°	1555	1551	1521	1488	1477	1486	1522	1552
31°	1531	1528	1497	1462	1451	1459	1498	1529
32°	1503	1502	1471	1433	1420	1430	1472	1504
33°	1473	1474	1442	1400	1388	1397	1444	1477
34°	1440	1444	1410	1363	1354	1361	1412	1448
35°	1404	1412	1377	1323	1319	1321	1379	1416
36°	1365	1376	1341	1280	1285	1278	1343	1383
37°	1327	1338	1304	1233	1245	1232	1307	1346
38°	1288	1298	1268	1185	1203	1185	1271	1309
39°	1240	1256	1222	1135	1160	1136	1226	1268
40°	1189	1212	1175	1084	1114	1086	1178	1226
41°	1136	1166	1127	1032	1067	1036	1131	1181
42°	1081	1118	1078	979	1020	985	1079	1135
43°	1023	1069	1027	926	974	933	1028	1088
44°	966	1020	975	873	928	881	975	1040
45°	907	971	922	822	882	831	923	992
46°	848	923	871	771	837	782	869	945
47°	792	877	821	723	795	734	819	898
48°	736	833	773	676	753	688	769	854

Luminous Intensity (cd) Distribution Data (cont.)

$\begin{matrix} \text{C} \\ \backslash \\ \text{Y} \end{matrix}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
49°	682	791	726	637	714	646	723	810
50°	632	751	681	597	677	609	678	770
51°	585	713	638	558	641	572	633	731
52°	541	678	596	522	607	537	594	694
53°	501	655	557	489	574	503	556	659
54°	465	620	521	459	542	473	517	629
55°	435	584	487	432	511	444	484	599
56°	408	553	455	406	482	418	453	569
57°	385	524	428	384	455	394	425	540
58°	365	495	402	363	429	372	401	512
59°	347	467	379	344	404	353	378	484
60°	331	440	357	328	381	335	358	457
61°	317	413	337	312	359	319	339	432
62°	304	388	319	298	340	303	323	407
63°	292	364	301	285	320	290	306	382
64°	282	341	284	273	302	277	291	358
65°	272	318	269	262	286	266	277	334
66°	263	298	255	252	270	256	263	312
67°	255	278	242	242	254	246	251	290
68°	247	260	230	232	240	235	239	269
69°	240	242	219	222	225	225	228	250
70°	232	226	210	212	211	214	217	232
71°	223	211	201	201	197	203	207	215
72°	214	196	192	190	185	191	198	200
73°	204	183	183	179	173	180	189	186
74°	194	171	174	168	162	169	179	175
75°	183	162	165	157	151	159	170	164
76°	173	153	154	147	140	149	160	156
77°	162	145	144	136	128	138	150	148
78°	151	137	133	125	118	128	140	141
79°	140	128	123	114	108	117	130	133
80°	128	119	112	103	98	106	120	124
81°	117	109	102	92	87	95	109	115
82°	104	98	90	80	75	83	98	104
83°	91	85	79	68	67	71	86	92
84°	77	73	66	59	60	63	72	80
85°	63	60	54	51	52	54	59	68
86°	49	46	45	42	44	45	49	54
87°	35	33	35	34	36	36	40	41
88°	24	21	23	24	24	27	30	27
89°	12	8	12	4	12	8	20	15
90°	0	0	0	0	0	0	0	0
91°	0	0	0	0	0	0	0	0
92°	0	0	0	0	0	0	0	0
93°	0	0	0	0	0	0	0	0
94°	0	0	0	0	0	0	0	0
95°	0	0	0	0	0	0	0	0
96°	0	0	0	0	0	0	0	0
97°	0	0	0	0	0	0	0	0

Luminous Intensity (cd) Distribution Data (cont.)

C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
98°	0	0	0	0	0	0	0	0
99°	0	0	0	0	0	0	0	0
100°	0	0	0	0	0	0	0	0
101°	0	0	0	0	0	0	0	0
102°	0	0	0	0	0	0	0	0
103°	0	0	0	0	0	0	0	0
104°	0	0	0	0	0	0	0	0
105°	0	0	0	0	0	0	0	0
106°	0	0	0	0	0	0	0	0
107°	0	0	0	0	0	0	0	0
108°	0	0	0	0	0	0	0	0
109°	0	0	0	0	0	0	0	0
110°	0	0	0	0	0	0	0	0
111°	0	0	0	0	0	0	0	0
112°	0	0	0	0	0	0	0	0
113°	0	0	0	0	0	0	0	0
114°	0	0	0	0	0	0	0	0
115°	0	0	0	0	0	0	0	0
116°	0	0	0	0	0	0	0	0
117°	0	0	0	0	0	0	0	0
118°	0	0	0	0	0	0	0	0
119°	0	0	0	0	0	0	0	0
120°	0	0	0	0	0	0	0	0
121°	0	0	0	0	0	0	0	0
122°	0	0	0	0	0	0	0	0
123°	0	0	0	0	0	0	0	0
124°	0	0	0	0	0	0	0	0
125°	0	0	0	0	0	0	0	0
126°	0	0	0	0	0	0	0	0
127°	0	0	0	0	0	0	0	0
128°	0	0	0	0	0	0	0	0
129°	0	0	0	0	0	0	0	0
130°	0	0	0	0	0	0	0	0
131°	0	0	0	0	0	0	0	0
132°	0	0	0	0	0	0	0	0
133°	0	0	0	0	0	0	0	0
134°	0	0	0	0	0	0	0	0
135°	0	0	0	0	0	0	0	0
136°	0	0	0	0	0	0	0	0
137°	0	0	0	0	0	0	0	0
138°	0	0	0	0	0	0	0	0
139°	0	0	0	0	0	0	0	0
140°	0	0	0	0	0	0	0	0
141°	0	0	0	0	0	0	0	0
142°	0	0	0	0	0	0	0	0
143°	0	0	0	0	0	0	0	0
144°	0	0	0	0	0	0	0	0
145°	0	0	0	0	0	0	0	0
146°	0	0	0	0	0	0	0	0

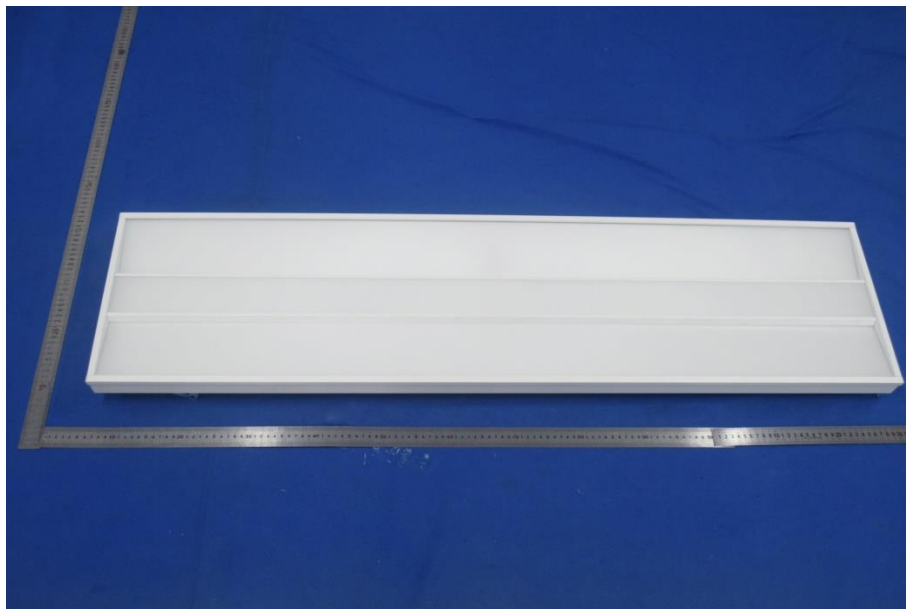
Luminous Intensity (cd) Distribution Data (cont.)

$\begin{matrix} C \\ \backslash \\ Y \end{matrix}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
147°	0	0	0	0	0	0	0	0
148°	0	0	0	0	0	0	0	0
149°	0	0	0	0	0	0	0	0
150°	0	0	0	0	0	0	0	0
151°	0	0	0	0	0	0	0	0
152°	0	0	0	0	0	0	0	0
153°	0	0	0	0	0	0	0	0
154°	0	0	0	0	0	0	0	0
155°	0	0	0	0	0	0	0	0
156°	0	0	0	0	0	0	0	0
157°	0	0	0	0	0	0	0	0
158°	0	0	0	0	0	0	0	0
159°	0	0	0	0	0	0	0	0
160°	0	0	0	0	0	0	0	0
161°	0	0	0	0	0	0	0	0
162°	0	0	0	0	0	0	0	0
163°	0	0	0	0	0	0	0	0
164°	0	0	0	0	0	0	0	0
165°	0	0	0	0	0	0	0	0
166°	0	0	0	0	0	0	0	0
167°	0	0	0	0	0	0	0	0
168°	0	0	0	0	0	0	0	0
169°	0	0	0	0	0	0	0	0
170°	0	0	0	0	0	0	0	0
171°	0	0	0	0	0	0	0	0
172°	0	0	0	0	0	0	0	0
173°	0	0	0	0	0	0	0	0
174°	0	0	0	0	0	0	0	0
175°	0	0	0	0	0	0	0	0
176°	0	0	0	0	0	0	0	0
177°	0	0	0	0	0	0	0	0
178°	0	0	0	0	0	0	0	0
179°	0	0	0	0	0	0	0	0
180°	0	0	0	0	0	0	0	0

Zonal Lumen Density Measurement

Deg	Flux (lm)	%	Deg	Flux (lm)	%
0-5	41.5	1.08	0-5	41.5	1.08
5-10	123.6	3.20	0-10	165.1	4.28
10-15	202.8	5.25	0-15	367.9	9.53
15-20	276.9	7.18	0-20	644.8	16.71
20-25	342.7	8.87	0-25	987.5	25.58
25-30	394.4	10.22	0-30	1381.9	35.80
30-35	422.0	10.94	0-35	1803.9	46.74
35-40	415.8	10.77	0-40	2219.7	57.51
40-45	374.0	9.69	0-45	2593.6	67.20
45-50	310.0	8.03	0-50	2903.6	75.23
50-55	247.4	6.41	0-55	3151.0	81.64
55-60	196.0	5.08	0-60	3347.0	86.72
60-65	156.7	4.06	0-65	3503.7	90.78
65-70	125.1	3.24	0-70	3628.8	94.02
70-75	97.9	2.53	0-75	3726.7	96.55
75-80	73.1	1.90	0-80	3799.9	98.45
80-85	45.2	1.17	0-85	3845.0	99.62
85-90	14.7	0.38	0-90	3859.8	100.00
90-95	0.0	0.00	0-95	3859.8	100.00
95-100	0.0	0.00	0-100	3859.8	100.00
100-105	0.0	0.00	0-105	3859.8	100.00
105-110	0.0	0.00	0-110	3859.8	100.00
110-115	0.0	0.00	0-115	3859.8	100.00
115-120	0.0	0.00	0-120	3859.8	100.00
120-125	0.0	0.00	0-125	3859.8	100.00
125-130	0.0	0.00	0-130	3859.8	100.00
130-135	0.0	0.00	0-135	3859.8	100.00
135-140	0.0	0.00	0-140	3859.8	100.00
140-145	0.0	0.00	0-145	3859.8	100.00
145-150	0.0	0.00	0-150	3859.8	100.00
150-155	0.0	0.00	0-155	3859.8	100.00
155-160	0.0	0.00	0-160	3859.8	100.00
160-165	0.0	0.00	0-165	3859.8	100.00
165-170	0.0	0.00	0-170	3859.8	100.00
170-175	0.0	0.00	0-175	3859.8	100.00
175-180	0.0	0.00	0-180	3859.8	100.00

6. Product Photo



7. Report Revision

Report Number	Report Date	Contents
2502S09792E-EE	2025-05-20	Original report.
2502S09792E-EE-M1	2025-09-03	Update the Family Declaration in Page 2.

Directions

1. The information marked "superscript #" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. This report includes some test methods are not in NVLAP accreditation scope marked *.
3. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor $K=2$ with the 95% confidence interval.
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*****END OF REPORT*****