



ANSI/IES LM-79-19

MEASUREMENT AND TEST REPORT

For

Shenzhen UI led lighting Photoelectricity CO.,ltd

1401-1402,Building A,Yonghuayuan,No.6 Baotian 2nd Road,Chentian Community,Xixiang Street,Baoan District,Shenzhen,Guangdong, China

Test Model: UL-PL6060-22W-TC

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:	DG5240229-10010E-EE
Test Date:	2024-04-02
Report Date:	2024-04-23
Approved by:	Blake Zhang / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Dongguan). No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China. Tel: +86-0769-86858888 Fax:+86-0769-86858588

1. Product Description[#]

General Information:

One test sample was in good condition and received on 2024-02-29, and used for testing.

Model Tested: UL-PL6060-22W-TC
 Manufacturer: Shenzhen UI led lighting Photoelectricity CO.,Ltd
 Brand Name: ULA1L
 Product Designation: LED Panel Light
 Burning Time Before Test: 0hour(For New Products)

Rated Values:

Rated Voltage/Frequency: 220-240V AC 50/60Hz
 Rated Power: 22W
 Nominal CCT: 4000/5000K
 Nominal Lumen Output: 3300lm

2. Standards Used

- ANSI/IES LM-79-19: Approved method :Optical and Electrical Measurements of Solid-State Lighting Products
- ANSI C82.77-10-2020: Harmonic Emission Limits-Related Power Quality Requirements for Lighting
- IES TM-30-18: IES Method for Evaluating Light Source Color Rendition

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
1.5m temperature integrating sphere	SENSING	SPR-600	S09008	2023-09-02	2024-09-01
High-precision rapid spectral analysis system	EVERFINE	HAAS-2000	M112048CA1361125	2023-09-02	2024-09-01
Digital power meter	YOKOGAWA	WT310	13398	2023-10-13	2024-10-12
Programmable Precision DC Power Supply	EVERFINE	WY5015	11060010	2023-09-02	2024-09-01
thermometer	SENSING	N/A	N/A	2023-10-13	2024-10-12
Standard Light Source	EVERFINE	D204	N/A	2023-05-12	2025-05-11
Precision frequency power supply	ALL Power	APW-105N	970613	2023-09-02	2024-09-01
AC POWER SUPPLY	EVERFINE	VPS1030 PWM	1012017	2023-09-02	2024-09-01
Digital CC&CV DC Power Supply	EVERFINE	WY12010	1009009	2023-09-02	2024-09-01
Digital power meter	YOKOGAWA	WT-210	91j926132	2023-09-02	2024-09-01
full-field speed goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	2023-09-02	2024-09-01
wireless remote thermohygrometer	N/A	AOK-5017B	N/A	2023-09-02	2024-09-01

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Standard Light Source	EVERFINE	D908	N/A	2023-05-12	2025-05-11

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) 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.

4π 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 $U=0.15\%$ of rdg, Power $U=0.20\%$ ($K=2$), 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 10 degree, the horizontal angle (C plane) test intervals were set no more than 90 degree.

The uncertainty of the luminous intensity is $U=2.82\%$ ($K=2$), 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]

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

Test orientation: **Downward**

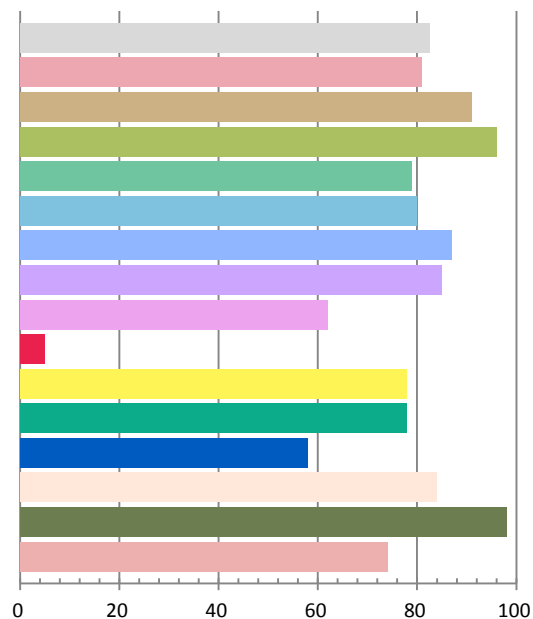
Photometric and Electrical Measurement Result

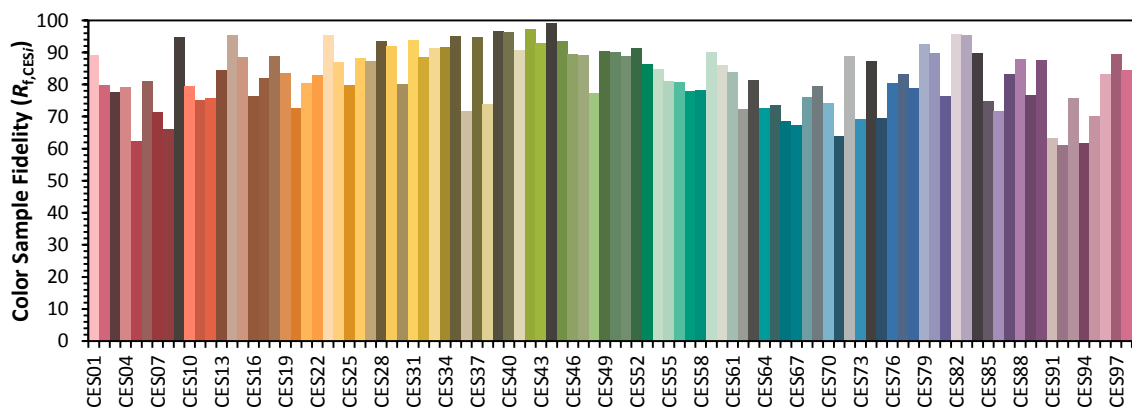
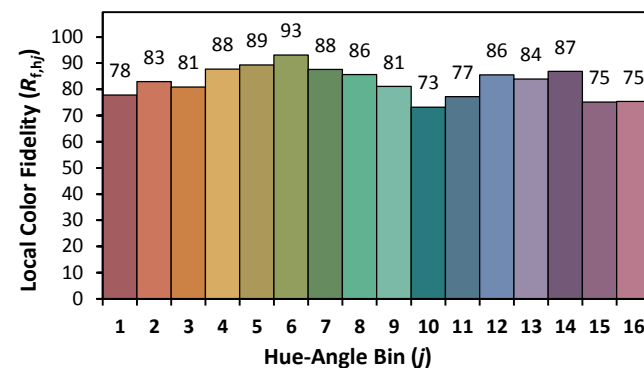
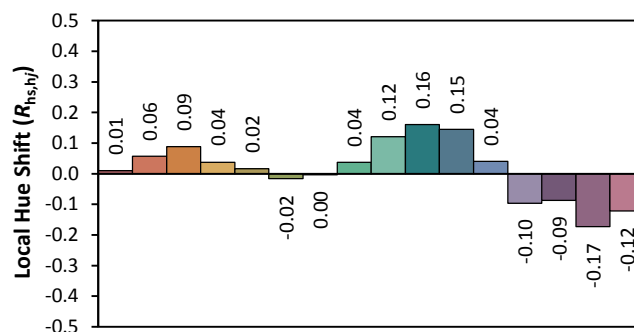
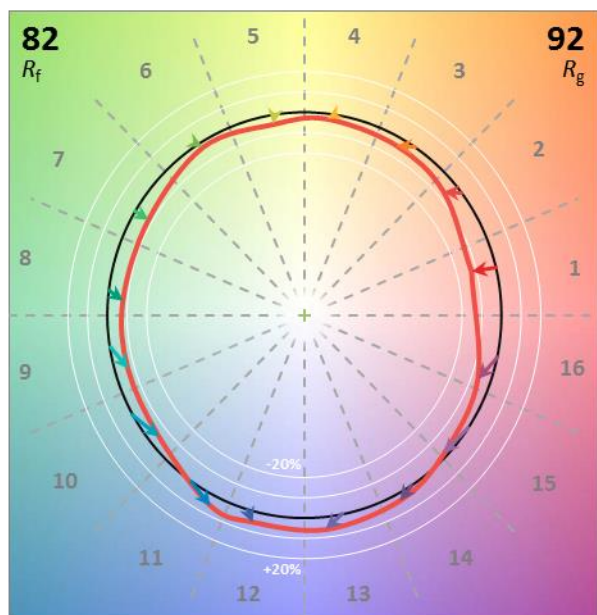
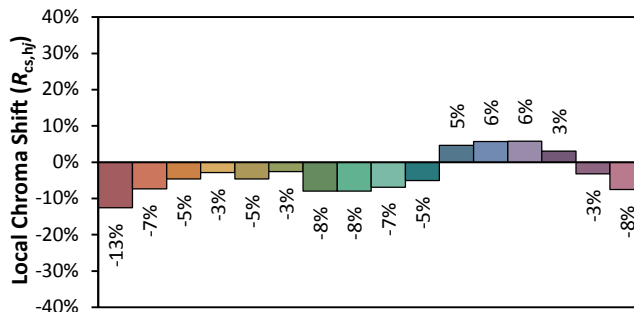
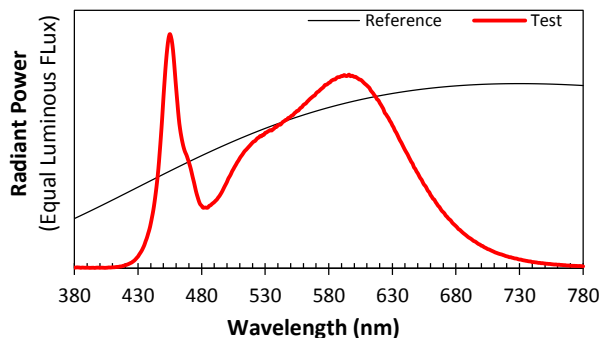
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
230.1	50	0.0954	21.3	0.9705	3336.3	156.63

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
9.9625	3972	0.00203	0.3832	0.3828	0.2245	0.5046

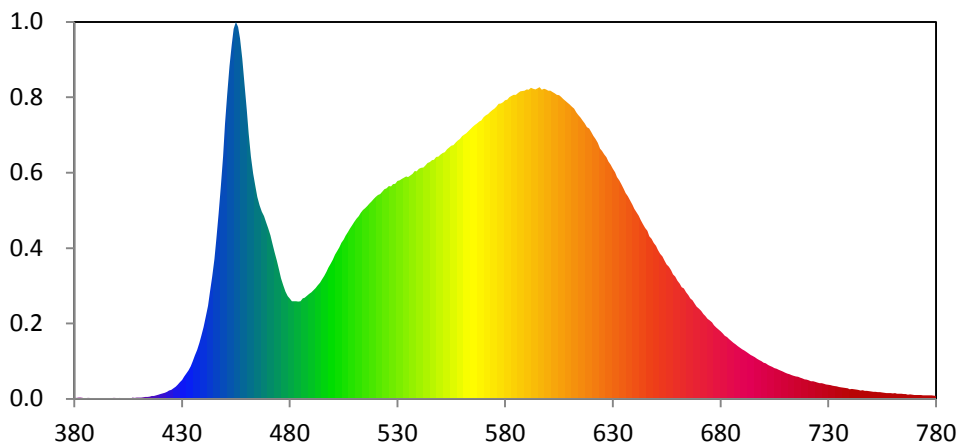
Color Rendering Index

Ra			
82.6			
R1	R2	R3	R4
81	91	96	79
R5	R6	R7	R8
80	87	85	62
R9	R10	R11	R12
5	78	78	58
R13	R14	R15	
84	98	74	





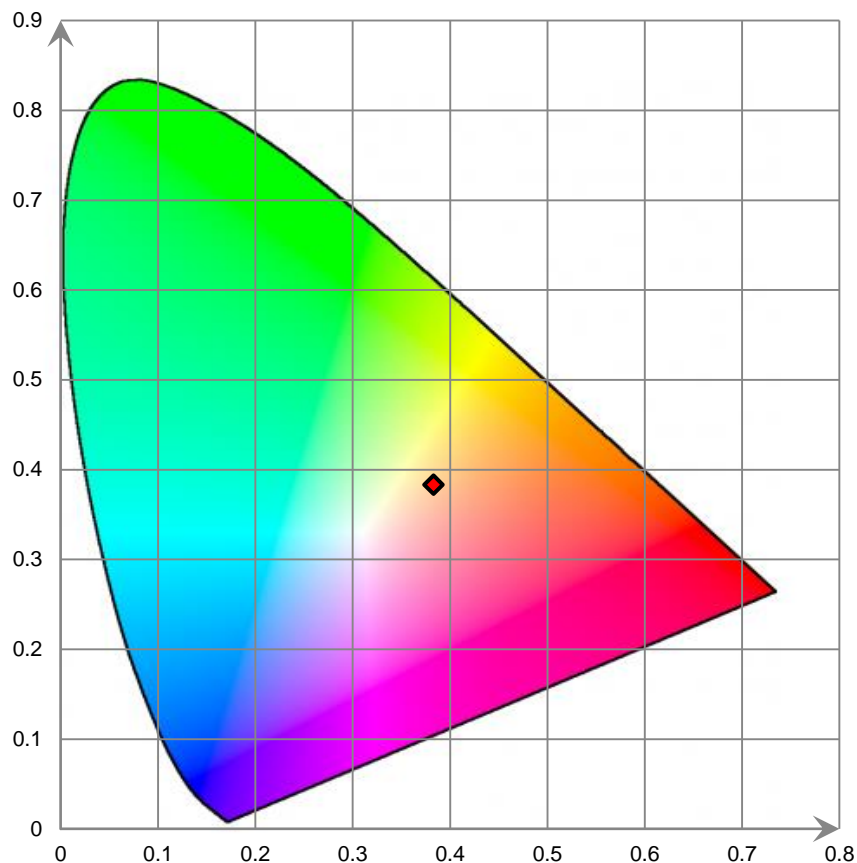
Relative Spectral Power Distribution



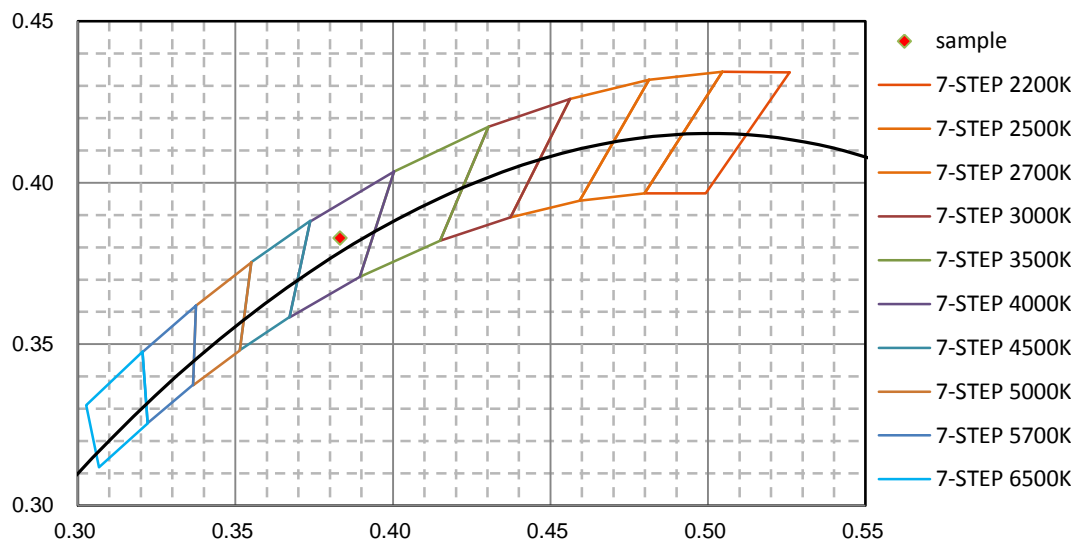
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.464E-01	421	1.006E+00	462	4.556E+01	503	2.848E+01	544	4.435E+01
381	1.687E-01	422	1.156E+00	463	4.239E+01	504	2.934E+01	545	4.454E+01
382	2.268E-01	423	1.329E+00	464	3.997E+01	505	3.000E+01	546	4.491E+01
383	2.024E-01	424	1.525E+00	465	3.800E+01	506	3.072E+01	547	4.497E+01
384	1.714E-01	425	1.700E+00	466	3.643E+01	507	3.135E+01	548	4.549E+01
385	9.679E-02	426	1.990E+00	467	3.522E+01	508	3.206E+01	549	4.560E+01
386	1.645E-01	427	2.269E+00	468	3.437E+01	509	3.262E+01	550	4.592E+01
387	1.499E-01	428	2.648E+00	469	3.327E+01	510	3.331E+01	551	4.626E+01
388	1.188E-01	429	3.104E+00	470	3.207E+01	511	3.388E+01	552	4.641E+01
389	1.155E-01	430	3.533E+00	471	3.078E+01	512	3.439E+01	553	4.696E+01
390	1.362E-01	431	4.153E+00	472	2.927E+01	513	3.498E+01	554	4.724E+01
391	1.241E-01	432	4.735E+00	473	2.756E+01	514	3.551E+01	555	4.765E+01
392	7.906E-02	433	5.372E+00	474	2.601E+01	515	3.588E+01	556	4.772E+01
393	9.786E-02	434	6.147E+00	475	2.427E+01	516	3.631E+01	557	4.822E+01
394	1.129E-01	435	7.025E+00	476	2.269E+01	517	3.674E+01	558	4.860E+01
395	1.153E-01	436	8.169E+00	477	2.138E+01	518	3.716E+01	559	4.886E+01
396	5.935E-02	437	9.185E+00	478	2.015E+01	519	3.760E+01	560	4.942E+01
397	1.237E-01	438	1.051E+01	479	1.931E+01	520	3.802E+01	561	4.970E+01
398	1.504E-01	439	1.182E+01	480	1.892E+01	521	3.837E+01	562	4.994E+01
399	1.490E-01	440	1.348E+01	481	1.833E+01	522	3.854E+01	563	5.042E+01
400	9.162E-02	441	1.544E+01	482	1.833E+01	523	3.899E+01	564	5.080E+01
401	1.436E-01	442	1.751E+01	483	1.837E+01	524	3.940E+01	565	5.120E+01
402	1.295E-01	443	2.007E+01	484	1.829E+01	525	3.960E+01	566	5.154E+01
403	1.126E-01	444	2.296E+01	485	1.837E+01	526	4.004E+01	567	5.186E+01
404	7.979E-02	445	2.629E+01	486	1.888E+01	527	3.995E+01	568	5.217E+01
405	1.140E-01	446	3.008E+01	487	1.903E+01	528	4.038E+01	569	5.238E+01
406	1.360E-01	447	3.482E+01	488	1.940E+01	529	4.043E+01	570	5.296E+01
407	2.090E-01	448	3.995E+01	489	1.971E+01	530	4.100E+01	571	5.334E+01
408	1.760E-01	449	4.558E+01	490	2.002E+01	531	4.111E+01	572	5.356E+01
409	2.023E-01	450	5.170E+01	491	2.043E+01	532	4.139E+01	573	5.394E+01
410	2.411E-01	451	5.740E+01	492	2.079E+01	533	4.161E+01	574	5.429E+01
411	2.524E-01	452	6.256E+01	493	2.136E+01	534	4.184E+01	575	5.460E+01
412	2.829E-01	453	6.661E+01	494	2.185E+01	535	4.169E+01	576	5.496E+01
413	3.456E-01	454	6.961E+01	495	2.246E+01	536	4.205E+01	577	5.550E+01
414	3.648E-01	455	7.094E+01	496	2.312E+01	537	4.231E+01	578	5.558E+01
415	4.083E-01	456	6.998E+01	497	2.390E+01	538	4.287E+01	579	5.580E+01
416	5.054E-01	457	6.777E+01	498	2.468E+01	539	4.281E+01	580	5.615E+01
417	5.121E-01	458	6.399E+01	499	2.541E+01	540	4.330E+01	581	5.632E+01
418	6.616E-01	459	5.920E+01	500	2.618E+01	541	4.345E+01	582	5.677E+01
419	7.547E-01	460	5.443E+01	501	2.712E+01	542	4.350E+01	583	5.699E+01
420	8.776E-01	461	4.989E+01	502	2.777E+01	543	4.391E+01	584	5.717E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	5.720E+01	626	4.601E+01	667	1.853E+01	708	5.281E+00	749	1.433E+00
586	5.759E+01	627	4.545E+01	668	1.789E+01	709	5.117E+00	750	1.395E+00
587	5.787E+01	628	4.467E+01	669	1.733E+01	710	4.928E+00	751	1.332E+00
588	5.789E+01	629	4.410E+01	670	1.697E+01	711	4.741E+00	752	1.314E+00
589	5.800E+01	630	4.327E+01	671	1.655E+01	712	4.612E+00	753	1.265E+00
590	5.823E+01	631	4.262E+01	672	1.592E+01	713	4.461E+00	754	1.267E+00
591	5.819E+01	632	4.172E+01	673	1.557E+01	714	4.328E+00	755	1.194E+00
592	5.853E+01	633	4.111E+01	674	1.507E+01	715	4.215E+00	756	1.151E+00
593	5.835E+01	634	4.034E+01	675	1.474E+01	716	4.128E+00	757	1.101E+00
594	5.820E+01	635	3.951E+01	676	1.440E+01	717	3.976E+00	758	1.098E+00
595	5.840E+01	636	3.872E+01	677	1.383E+01	718	3.851E+00	759	1.091E+00
596	5.865E+01	637	3.808E+01	678	1.342E+01	719	3.681E+00	760	1.009E+00
597	5.818E+01	638	3.731E+01	679	1.308E+01	720	3.582E+00	761	1.047E+00
598	5.833E+01	639	3.652E+01	680	1.272E+01	721	3.479E+00	762	9.774E-01
599	5.822E+01	640	3.576E+01	681	1.232E+01	722	3.316E+00	763	9.555E-01
600	5.796E+01	641	3.510E+01	682	1.183E+01	723	3.316E+00	764	9.308E-01
601	5.800E+01	642	3.445E+01	683	1.162E+01	724	3.175E+00	765	8.842E-01
602	5.772E+01	643	3.363E+01	684	1.125E+01	725	3.087E+00	766	8.876E-01
603	5.748E+01	644	3.288E+01	685	1.088E+01	726	2.955E+00	767	7.931E-01
604	5.718E+01	645	3.215E+01	686	1.055E+01	727	2.916E+00	768	7.982E-01
605	5.711E+01	646	3.160E+01	687	1.025E+01	728	2.848E+00	769	7.713E-01
606	5.682E+01	647	3.055E+01	688	9.938E+00	729	2.694E+00	770	7.034E-01
607	5.642E+01	648	3.010E+01	689	9.607E+00	730	2.610E+00	771	7.211E-01
608	5.602E+01	649	2.930E+01	690	9.302E+00	731	2.589E+00	772	6.942E-01
609	5.570E+01	650	2.874E+01	691	9.077E+00	732	2.474E+00	773	6.987E-01
610	5.537E+01	651	2.799E+01	692	8.831E+00	733	2.371E+00	774	6.690E-01
611	5.498E+01	652	2.727E+01	693	8.524E+00	734	2.312E+00	775	6.668E-01
612	5.460E+01	653	2.678E+01	694	8.219E+00	735	2.219E+00	776	6.261E-01
613	5.387E+01	654	2.596E+01	695	8.073E+00	736	2.166E+00	777	6.481E-01
614	5.339E+01	655	2.528E+01	696	7.811E+00	737	2.076E+00	778	6.295E-01
615	5.293E+01	656	2.486E+01	697	7.510E+00	738	2.034E+00	779	5.870E-01
616	5.234E+01	657	2.418E+01	698	7.259E+00	739	1.997E+00	780	5.443E-01
617	5.186E+01	658	2.342E+01	699	7.111E+00	740	1.822E+00		
618	5.114E+01	659	2.302E+01	700	6.781E+00	741	1.837E+00		
619	5.090E+01	660	2.221E+01	701	6.701E+00	742	1.769E+00		
620	5.013E+01	661	2.166E+01	702	6.382E+00	743	1.734E+00		
621	4.952E+01	662	2.103E+01	703	6.201E+00	744	1.664E+00		
622	4.886E+01	663	2.075E+01	704	6.000E+00	745	1.584E+00		
623	4.816E+01	664	2.005E+01	705	5.770E+00	746	1.590E+00		
624	4.709E+01	665	1.950E+01	706	5.661E+00	747	1.487E+00		
625	4.663E+01	666	1.890E+01	707	5.474E+00	748	1.507E+00		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

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

Test orientation: **Downward**

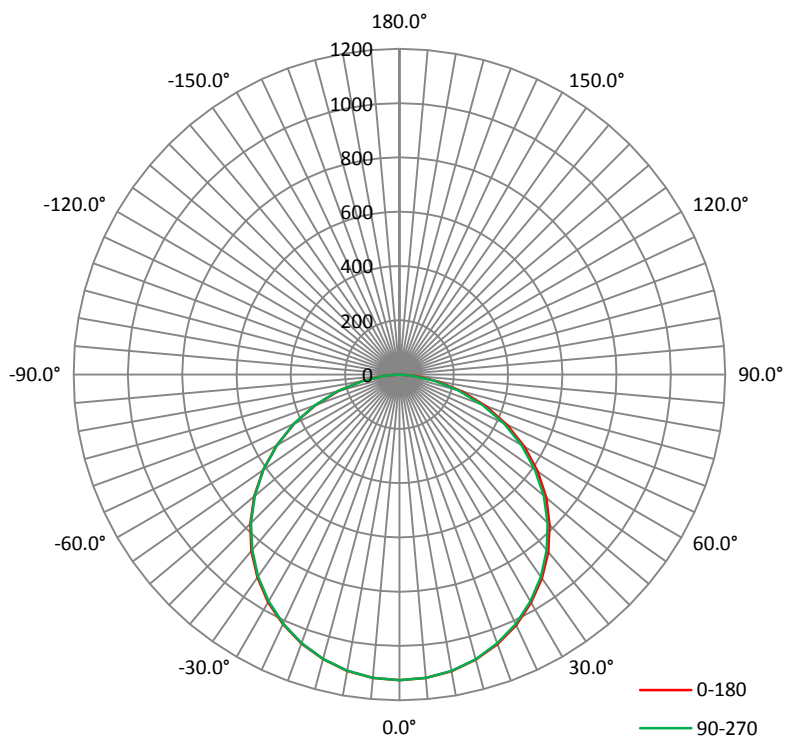
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
230.07	50	0.0954	21.290	0.9700

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
3338.43	156.81	1126	1.28	1.27

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	116.1	115.7	115.3	115.7	115.7
Field Angle (10% I_{max}):	163.4	163.1	162.5	163.1	163.0

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0°	1126	1126	1126	1126	1126	1126	1126	1126
1°	1126	1126	1126	1126	1126	1126	1126	1126
2°	1125	1125	1125	1125	1125	1125	1125	1125
3°	1124	1124	1125	1124	1124	1124	1124	1124
4°	1123	1123	1123	1123	1123	1123	1123	1123
5°	1121	1121	1121	1121	1121	1121	1121	1121
6°	1119	1119	1119	1119	1119	1119	1119	1119
7°	1117	1117	1117	1117	1117	1117	1117	1117
8°	1114	1114	1114	1114	1114	1114	1114	1114
9°	1111	1111	1111	1111	1111	1111	1111	1111
10°	1108	1108	1108	1107	1107	1107	1107	1108
11°	1104	1104	1104	1103	1103	1103	1104	1104
12°	1100	1100	1100	1099	1099	1099	1099	1100
13°	1095	1095	1095	1095	1094	1095	1095	1095
14°	1091	1090	1090	1090	1089	1090	1090	1090
15°	1085	1085	1085	1085	1084	1084	1084	1085
16°	1080	1080	1079	1079	1079	1079	1079	1079
17°	1074	1074	1073	1073	1072	1073	1073	1074
18°	1068	1068	1067	1066	1066	1066	1067	1067
19°	1061	1061	1061	1060	1060	1060	1060	1061
20°	1055	1055	1054	1053	1053	1053	1053	1054
21°	1047	1047	1046	1046	1045	1045	1046	1047
22°	1040	1039	1039	1038	1037	1038	1038	1039
23°	1032	1032	1031	1030	1029	1030	1030	1031
24°	1023	1023	1022	1021	1021	1021	1022	1023
25°	1015	1015	1014	1013	1013	1012	1013	1014
26°	1006	1006	1005	1004	1003	1003	1005	1005
27°	997	997	996	995	994	994	995	996
28°	987	987	986	985	984	984	986	987
29°	977	977	976	975	974	974	976	977
30°	967	967	966	964	964	964	966	967
31°	957	956	955	954	953	954	955	956
32°	946	946	944	943	942	943	944	945
33°	934	934	933	931	931	931	933	934
34°	923	923	922	920	919	920	921	923
35°	911	911	910	908	907	908	909	911
36°	899	899	897	896	895	896	897	899
37°	887	887	885	883	883	883	885	886
38°	874	874	872	870	870	870	872	874
39°	861	861	859	857	857	857	859	861
40°	848	848	846	844	843	844	846	847
41°	834	834	832	831	830	831	832	834
42°	820	820	818	817	816	816	819	820
43°	806	806	804	802	801	802	804	806
44°	791	791	790	788	787	788	790	791
45°	776	777	775	773	772	773	775	777
46°	762	761	760	758	757	758	760	762
47°	746	746	745	743	742	743	745	746
48°	730	731	729	727	727	727	730	731
49°	714	714	713	711	711	711	714	715

Luminous Intensity (cd) Distribution Data

$\begin{matrix} C \\ \backslash \\ y \end{matrix}$	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
50°	698	698	697	695	695	695	698	699
51°	682	682	681	679	679	679	682	683
52°	665	665	664	662	662	663	664	666
53°	648	649	647	646	645	646	648	649
54°	631	631	630	628	628	629	631	632
55°	613	614	613	611	611	612	614	615
56°	596	596	595	594	593	594	596	598
57°	578	578	577	575	575	576	578	579
58°	559	560	559	558	558	559	560	562
59°	541	542	541	540	539	540	543	544
60°	522	523	523	521	521	522	524	525
61°	504	505	504	503	503	504	506	507
62°	484	485	485	484	484	485	487	487
63°	466	467	466	465	465	466	468	468
64°	446	447	447	446	446	447	449	449
65°	427	428	428	427	427	428	430	430
66°	407	409	408	408	408	409	411	410
67°	388	389	389	388	388	390	391	391
68°	368	369	370	369	369	370	372	371
69°	348	350	350	350	350	351	352	351
70°	329	330	330	330	330	332	333	331
71°	309	311	311	311	311	312	313	311
72°	290	291	292	291	292	293	293	291
73°	270	272	272	273	273	274	274	272
74°	251	252	253	253	253	254	255	252
75°	231	233	234	234	235	236	235	233
76°	212	214	215	215	216	217	216	214
77°	193	195	197	197	197	198	197	195
78°	174	177	178	179	178	180	179	176
79°	156	158	161	160	159	161	161	158
80°	138	140	143	141	140	143	143	141
81°	121	123	125	123	122	124	125	123
82°	103	106	108	105	104	106	108	107
83°	87	89	90	88	87	88	91	90
84°	72	74	74	72	71	73	74	75
85°	57	59	58	56	56	57	58	60
86°	41	43	42	41	40	41	42	44
87°	27	29	27	26	26	27	28	30
88°	15	15	14	13	13	14	15	17
89°	10	10	9	9	9	9	10	5
90°	5	5	5	4	4	5	5	3
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
98°	0	0	0	0	0	0	0	0
99°	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°
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°	1	0	0	0	1	0	0	0
122°	1	1	0	1	1	1	1	1
123°	1	1	1	1	1	1	1	1
124°	1	1	1	1	1	1	1	1
125°	1	1	1	1	1	1	1	1
126°	1	1	1	1	1	1	1	1
127°	1	1	1	1	1	1	1	1
128°	1	1	1	1	1	1	1	1
129°	1	1	1	1	1	1	1	1
130°	1	1	1	1	1	1	1	1
131°	1	1	1	1	1	1	1	1
132°	1	1	1	1	1	1	1	1
133°	1	1	1	1	1	1	1	1
134°	1	1	1	1	1	1	1	1
135°	1	1	1	1	1	1	1	1
136°	1	1	1	1	1	1	1	1
137°	1	1	1	1	1	1	1	1
138°	1	1	1	1	1	1	1	1
139°	1	1	1	1	1	1	1	1
140°	1	1	1	1	1	1	1	1
141°	1	1	1	1	1	1	1	1
142°	1	1	1	1	1	1	1	1
143°	1	1	1	1	1	1	1	1
144°	1	1	1	1	1	1	1	1
145°	1	1	1	1	1	1	1	1
146°	1	1	1	1	1	1	1	1
147°	1	1	1	1	1	1	1	1
148°	1	1	1	1	2	1	1	1
149°	1	1	1	2	2	2	1	1

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
150°	1	1	2	2	2	2	1	1
151°	1	2	2	2	2	2	2	1
152°	2	2	2	2	2	2	2	2
153°	2	2	2	2	2	2	2	2
154°	2	2	2	2	2	2	2	2
155°	2	2	2	2	2	2	2	2
156°	2	2	2	2	2	2	2	2
157°	2	2	2	2	2	2	2	2
158°	2	2	2	2	2	2	2	2
159°	2	2	2	2	2	2	2	2
160°	2	2	2	2	2	2	2	2
161°	2	2	2	2	2	2	2	2
162°	2	2	2	2	2	2	2	2
163°	2	2	2	2	2	2	2	2
164°	2	2	2	2	2	2	2	2
165°	2	2	2	2	2	2	2	2
166°	2	2	2	2	2	2	2	2
167°	2	2	2	2	2	2	2	2
168°	2	2	2	2	2	2	2	2
169°	2	2	2	2	2	2	2	2
170°	2	2	2	2	2	2	2	2
171°	2	2	2	2	2	2	2	2
172°	2	2	2	2	2	2	2	2
173°	2	2	2	1	1	2	2	2
174°	2	2	1	1	1	2	2	2
175°	1	1	1	1	1	1	2	2
176°	1	1	1	1	1	1	1	2
177°	1	1	1	1	1	1	1	1
178°	1	1	1	1	1	1	1	1
179°	1	1	1	1	1	1	1	1
180°	1	1	1	1	1	1	1	1

Luminous Intensity (cd) Distribution Data (cont.)

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0°	1126	1126	1126	1126	1126	1126	1126	1126
1°	1126	1126	1126	1126	1126	1126	1126	1126
2°	1126	1126	1126	1126	1126	1126	1126	1126
3°	1125	1125	1125	1125	1125	1125	1125	1125
4°	1123	1123	1124	1123	1124	1123	1123	1123
5°	1122	1122	1122	1122	1122	1122	1122	1122
6°	1120	1120	1120	1120	1120	1120	1120	1120
7°	1118	1118	1118	1117	1118	1117	1118	1118
8°	1115	1115	1115	1115	1115	1115	1115	1115
9°	1112	1112	1112	1112	1112	1112	1112	1112
10°	1109	1109	1109	1108	1108	1108	1109	1109
11°	1105	1105	1105	1105	1104	1104	1105	1105
12°	1101	1101	1101	1100	1100	1100	1101	1101
13°	1097	1096	1096	1096	1096	1096	1096	1097
14°	1092	1092	1092	1091	1091	1091	1092	1092
15°	1087	1087	1086	1086	1086	1086	1087	1087
16°	1082	1081	1081	1080	1080	1080	1081	1082
17°	1076	1076	1075	1074	1074	1074	1075	1076
18°	1070	1069	1069	1068	1068	1068	1069	1070
19°	1064	1063	1062	1061	1061	1061	1063	1064
20°	1057	1056	1055	1054	1054	1054	1056	1057
21°	1050	1049	1048	1047	1047	1047	1048	1049
22°	1042	1042	1041	1039	1039	1040	1041	1042
23°	1035	1034	1033	1031	1031	1031	1033	1034
24°	1027	1026	1024	1023	1023	1023	1025	1026
25°	1018	1017	1016	1014	1014	1014	1016	1018
26°	1009	1008	1007	1005	1005	1005	1007	1009
27°	1000	999	998	996	996	996	998	1000
28°	991	990	988	986	986	986	988	990
29°	981	980	978	976	976	976	978	980
30°	971	970	968	966	965	966	968	970
31°	961	960	958	955	955	956	958	960
32°	950	949	947	945	944	945	947	949
33°	939	938	936	933	932	933	936	938
34°	928	926	924	922	921	922	924	926
35°	916	915	912	910	909	910	912	915
36°	904	902	900	898	896	897	900	903
37°	892	890	888	885	884	885	888	891
38°	879	878	875	872	871	872	875	878
39°	867	865	862	859	858	859	862	865
40°	853	852	849	846	844	846	849	852
41°	840	838	835	832	831	832	835	838
42°	826	824	821	818	817	818	821	824
43°	812	810	807	804	802	804	807	810
44°	798	796	793	789	788	789	792	796
45°	783	781	778	774	773	774	777	781
46°	768	766	763	759	758	759	763	766
47°	753	751	748	744	742	744	747	751
48°	738	736	732	728	727	728	732	735
49°	722	720	716	712	711	712	716	719

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°
50°	706	704	700	696	694	696	699	703
51°	690	688	684	680	678	680	683	687
52°	674	671	667	663	661	663	666	670
53°	657	654	650	646	644	646	649	653
54°	640	637	633	629	627	629	632	636
55°	622	620	616	612	610	611	615	618
56°	605	602	598	594	592	594	597	601
57°	587	585	581	576	575	576	579	583
58°	569	567	563	558	556	558	561	565
59°	551	549	544	540	538	539	543	547
60°	533	530	526	522	520	521	524	528
61°	514	511	507	503	501	502	505	509
62°	495	493	489	484	482	483	487	490
63°	476	474	470	465	463	464	468	471
64°	457	454	451	446	444	445	449	452
65°	438	435	431	427	424	426	429	433
66°	418	416	412	408	405	407	410	414
67°	398	396	393	388	385	387	390	394
68°	378	376	373	368	364	367	370	374
69°	358	356	354	348	344	347	351	355
70°	338	336	334	327	324	326	331	335
71°	318	316	314	307	303	306	312	316
72°	299	297	295	287	283	286	292	296
73°	279	277	275	267	263	265	273	277
74°	259	258	255	247	243	245	253	257
75°	240	238	235	227	223	226	233	238
76°	221	219	215	208	204	207	214	219
77°	202	200	195	189	184	187	194	200
78°	183	181	176	169	165	168	175	181
79°	164	162	156	150	147	149	156	162
80°	146	144	138	133	129	131	137	144
81°	129	127	120	115	112	114	120	126
82°	112	110	103	98	96	98	103	109
83°	95	93	86	82	80	81	86	92
84°	79	77	71	66	64	66	70	76
85°	64	61	55	52	50	51	54	60
86°	49	46	41	38	36	37	40	45
87°	35	32	29	26	25	25	28	32
88°	24	22	17	15	13	14	16	19
89°	13	11	5	3	2	2	4	7
90°	1	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
98°	0	0	0	0	0	0	0	0
99°	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°
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	1	0	0	0	0	1
134°	1	1	1	1	1	0	0	1
135°	1	1	1	1	1	1	1	1
136°	1	1	1	1	1	1	1	1
137°	1	1	1	1	1	1	1	1
138°	1	1	1	1	1	1	1	1
139°	1	1	1	1	1	1	1	1
140°	1	1	1	1	1	1	1	1
141°	1	1	1	1	1	1	1	1
142°	1	1	1	1	1	1	1	1
143°	1	1	1	1	1	1	1	1
144°	1	1	1	1	1	1	1	1
145°	1	1	1	1	1	1	1	1
146°	1	1	1	1	1	1	1	1
147°	1	1	1	1	1	1	1	1
148°	1	1	1	1	1	1	1	1
149°	1	1	1	1	1	1	1	1

Luminous Intensity (cd) Distribution Data (cont.)

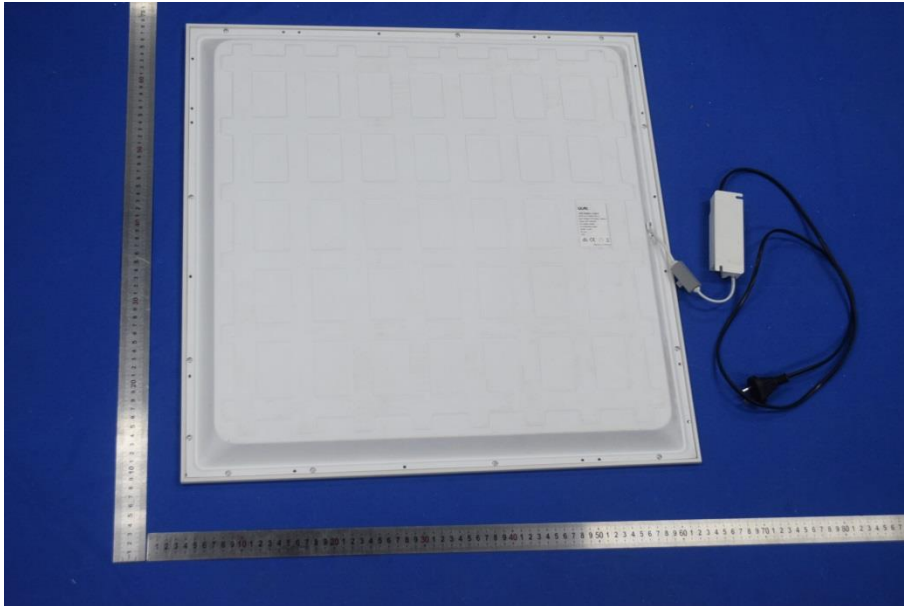
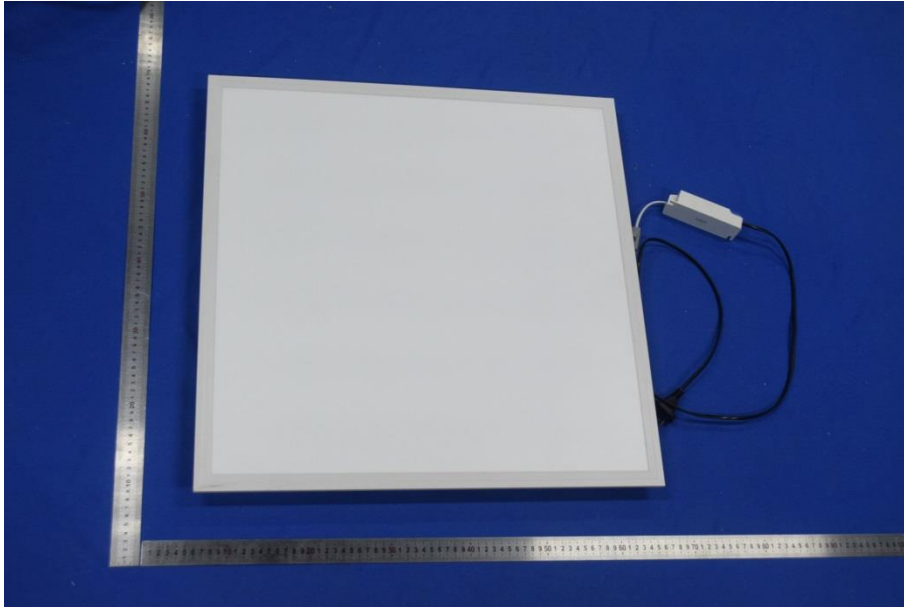
$\begin{matrix} C \\ \backslash \\ y \end{matrix}$	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
150°	1	1	1	1	1	1	1	1
151°	1	1	1	1	1	1	1	1
152°	1	1	1	1	1	1	1	1
153°	1	1	1	1	1	1	1	1
154°	1	1	1	1	1	1	1	1
155°	1	1	1	1	1	1	1	1
156°	1	1	1	1	1	1	1	1
157°	1	1	1	1	1	1	1	1
158°	1	1	1	1	1	1	1	1
159°	1	1	1	1	1	1	1	1
160°	1	1	1	1	1	1	1	1
161°	1	1	1	1	1	1	1	1
162°	1	1	1	1	1	1	1	1
163°	1	1	1	1	1	1	1	1
164°	1	1	1	1	1	1	1	1
165°	1	1	1	1	1	1	1	1
166°	1	1	1	1	1	1	1	1
167°	1	1	1	1	1	1	1	1
168°	1	1	1	1	1	1	1	1
169°	1	1	1	1	1	1	1	1
170°	1	1	1	1	1	1	1	1
171°	1	1	1	1	1	1	1	1
172°	1	1	1	1	1	1	1	1
173°	1	1	1	1	1	1	1	1
174°	1	1	1	1	1	1	1	1
175°	1	1	1	1	1	1	1	1
176°	1	1	1	1	1	1	1	1
177°	1	1	1	1	1	1	1	1
178°	1	1	1	1	1	1	1	1
179°	1	1	1	1	1	1	1	1
180°	1	1	1	1	1	1	1	1

Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	26.9	0.80
5-10	79.8	2.39
10-15	130.1	3.90
15-20	176.4	5.28
20-25	217.0	6.51
25-30	250.8	7.51
30-35	276.5	8.28
35-40	293.3	8.79
40-45	300.6	9.00
45-50	298.0	8.93
50-55	285.4	8.55
55-60	263.1	7.88
60-65	231.7	6.94
65-70	192.5	5.77
70-75	147.3	4.41
75-80	99.4	2.97
80-85	52.6	1.58
85-90	13.5	0.40
90-95	0.2	0.01
95-100	0.1	0.00
100-105	0.1	0.01
105-110	0.1	0.00
110-115	0.2	0.01
115-120	0.2	0.00
120-125	0.2	0.01
125-130	0.2	0.00
130-135	0.3	0.01
135-140	0.3	0.01
140-145	0.3	0.01
145-150	0.3	0.01
150-155	0.3	0.01
155-160	0.3	0.00
160-165	0.2	0.01
165-170	0.2	0.01
170-175	0.1	0.00
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	26.9	0.80
0-10	106.6	3.19
0-15	236.8	7.09
0-20	413.1	12.37
0-25	630.1	18.88
0-30	880.9	26.39
0-35	1157.4	34.67
0-40	1450.8	43.46
0-45	1751.4	52.46
0-50	2049.4	61.39
0-55	2334.8	69.94
0-60	2597.9	77.82
0-65	2829.6	84.76
0-70	3022.1	90.53
0-75	3169.4	94.94
0-80	3268.8	97.91
0-85	3321.4	99.49
0-90	3334.9	99.89
0-95	3335.1	99.90
0-100	3335.2	99.90
0-105	3335.3	99.91
0-110	3335.5	99.91
0-115	3335.6	99.92
0-120	3335.8	99.92
0-125	3336.0	99.93
0-130	3336.2	99.93
0-135	3336.5	99.94
0-140	3336.8	99.95
0-145	3337.1	99.96
0-150	3337.4	99.97
0-155	3337.7	99.98
0-160	3337.9	99.98
0-165	3338.1	99.99
0-170	3338.3	100.00
0-175	3338.4	100.00
0-180	3338.4	100.00

6. Product Photo





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. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
4. 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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