

IES LM-79-19

MEASUREMENT AND TEST REPORT

For

Shenzhen ULA1L Photoelectricity Co.,Ltd.

Unit A,5th Floor, Building A,Wanda Industrial District,Zhoushi Road,Langxin Community,Shiyan Street,Bao'an District,Shenzhen,Guangdong,China.

#**Test Model: U-TRI-24W-B-MS**

Report Type:	Electrical and Photometric tests including: Luminous Flux, Power Factor, Chromaticity, Luminous Intensity Distribution
Reviewed By:	Hexy He <i>Hexy He</i>
Report Number:	R2DG201124801-10
Test Date:	2020-11-25 to 2020-11-27
Report Date:	2020-12-21
Approved by:	Bill Xiong / 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
Accreditation:	The IAS Accreditation Number TL-460.


1. Product Description

General Information:

One test sample was in good condition and received on 2020-11-24, and used for testing.

#Model Tested: U-TRI-24W-B-MS

#Manufacturer: Shenzhen ULA1L Photoelectricity Co.,Ltd.

#Brand Name: 

#Product Designation: LED Tri-proof Light

Burning Time Before Test: 0hour(For New Products)

#Rated Values:

Rated Voltage/Frequency: AC220-240V 50/60HZ

Rated Power: 24W

Nominal CCT: 3000K

Nominal Lumen Output: 3120lm

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 IAS accreditation scope)

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	2020-10-21	2021-10-20
High-precision rapid spectral analysis system	EVERFINE	HAAS-2000	M112048CA1361125	2020-10-21	2021-10-20
Digital power meter	YOKOGAWA	WT310	13398	2020-07-01	2021-06-30
Programmable Precision DC Power Supply	ITECH	IT6154	0061 0417 6471 0010 19	2020-04-10	2021-04-09
thermometer	SENSING	NA	NA	2020-03-13	2021-03-12
Standard Light Source	EVERFINE	D204	N/A	2020-07-19	2021-07-18
Precision frequency power supply	ALL Power	APW-105N	970613	2020-03-10	2021-03-09
AC POWER SUPPLY	EVERFINE	VPS1030 PWM	1012017	2020-03-13	2021-03-12
Digital CC&CV DC Power Supply	EVERFINE	WY12010	1009009	2020-03-13	2021-03-12
Digital power meter	YOKOGAWA	WT-210	91j926132	2020-03-13	2021-03-12
full-field speed goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	2020-03-13	2021-03-12

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Wireless Remote Sensor	N/A	433MHz	N/A	2020-03-13	2021-03-12
Standard Light Source	EVERFINE	D908	1012003	2020-10-20	2021-10-19

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.

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 $U=22\text{K}$ ($K=2$), 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 $U=0.39\%$ of rdg, AC Voltage $U=0.25\%$ of rdg, Power $U=0.42\%$ ($K=2$), 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]

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

Test orientation: **Downward**

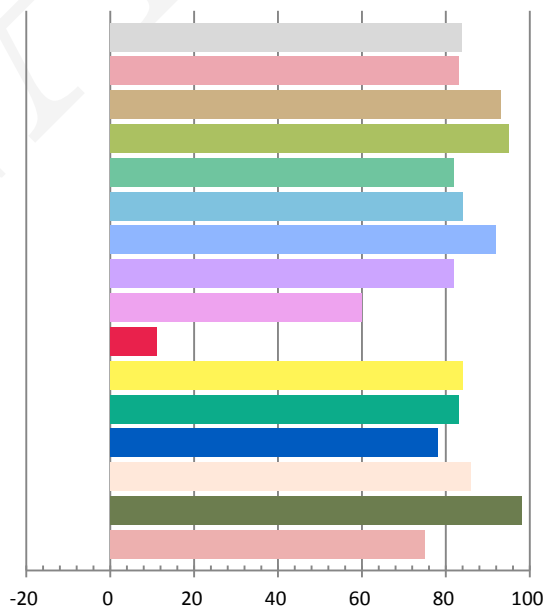
Photometric and Electrical Measurement Result

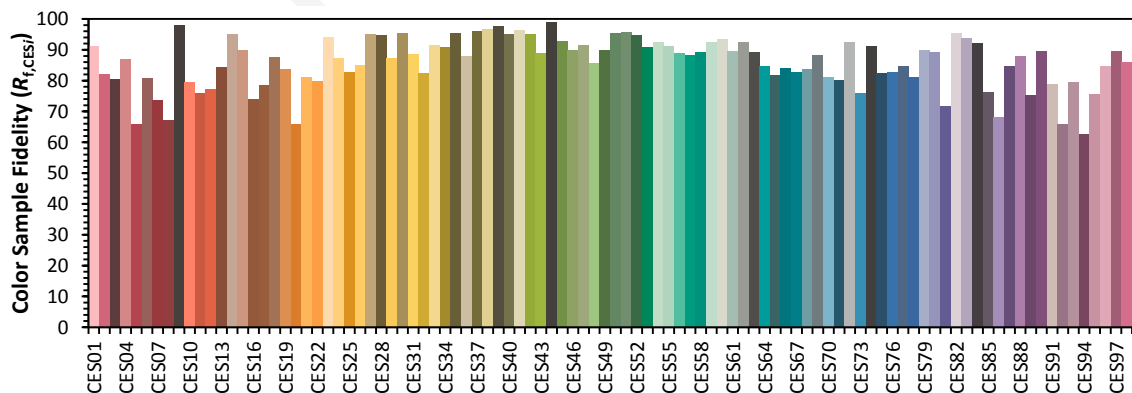
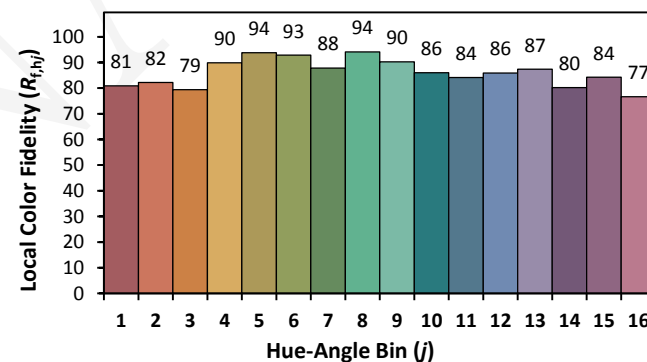
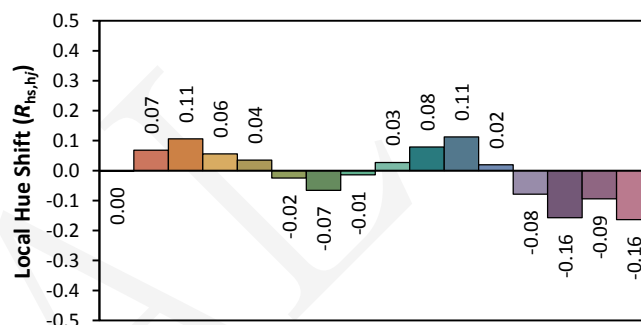
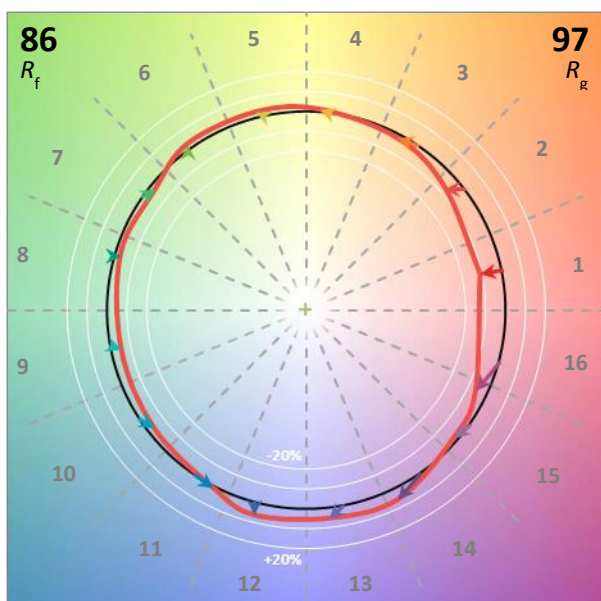
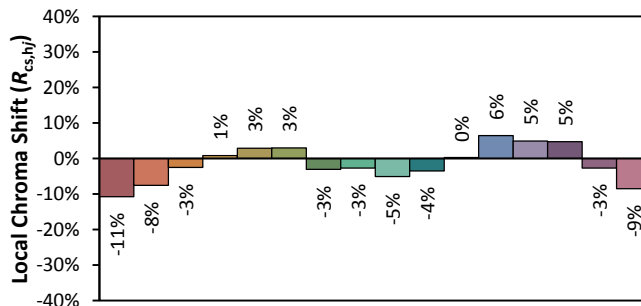
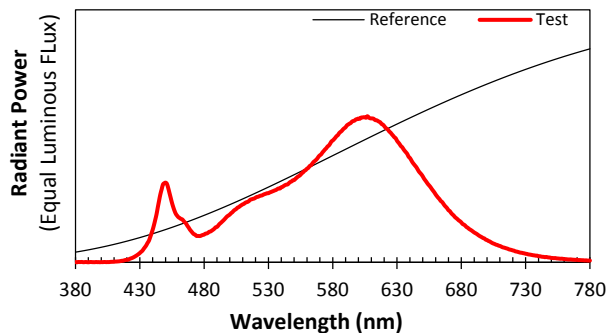
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
230.0	50	0.1256	26.21	0.9072	3625.7	138.33

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
11.154	2928	-0.00143	0.4400	0.4015	0.2537	0.5208

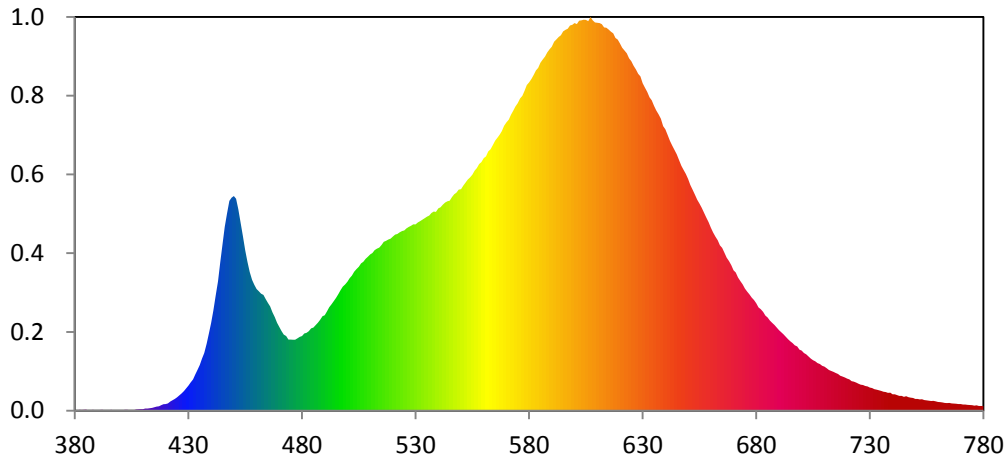
Color Rendering Index

Ra			
83.9			
R1	R2	R3	R4
83	93	95	82
R5	R6	R7	R8
84	92	82	60
R9	R10	R11	R12
11	84	83	78
R13	R14	R15	
86	98	75	





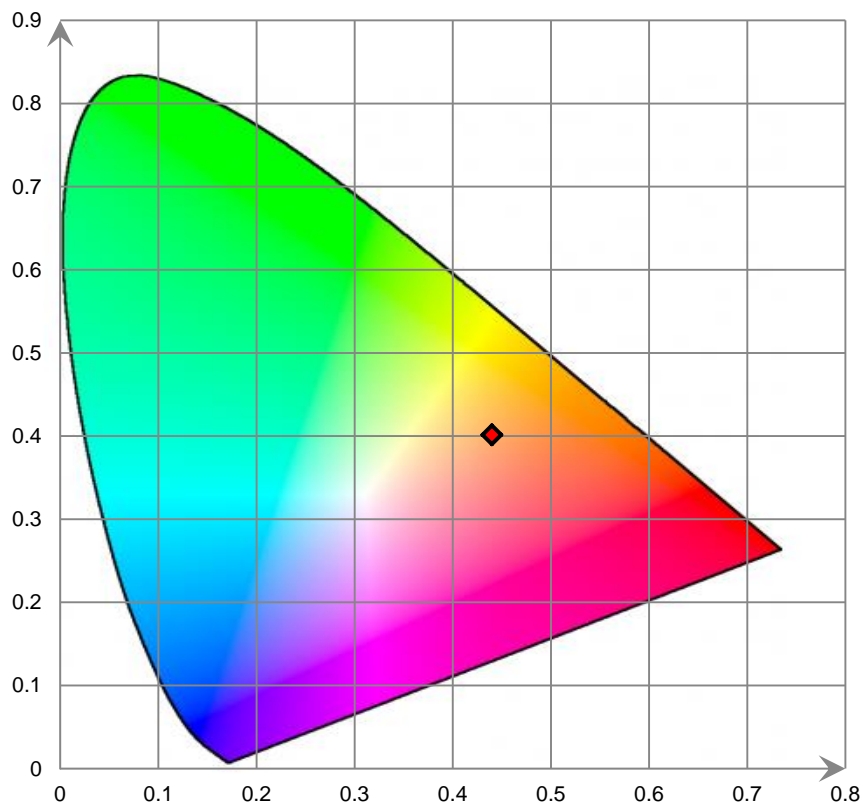
Relative Spectral Power Distribution



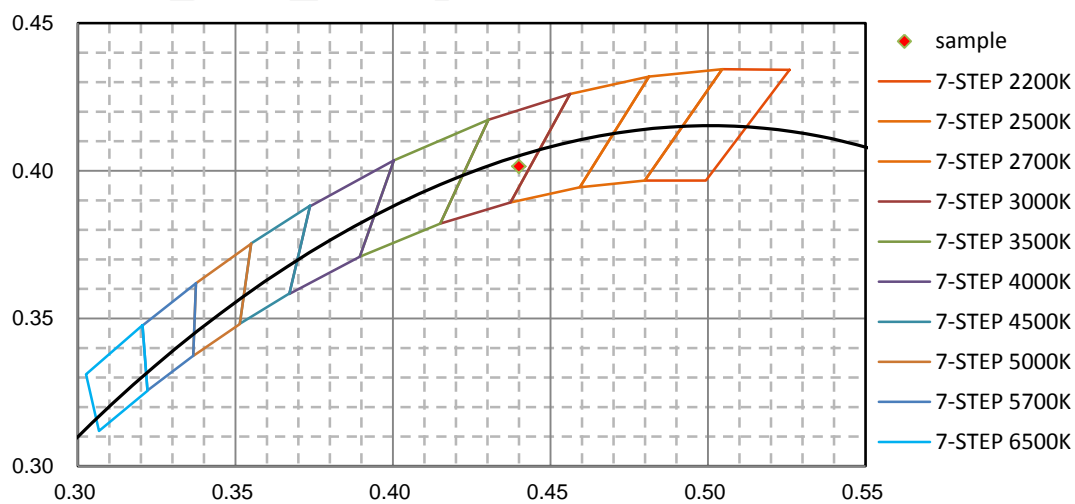
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	1.768E-01	421	1.418E+00	462	2.283E+01	503	2.712E+01	544	4.085E+01
381	1.170E-02	422	1.796E+00	463	2.258E+01	504	2.764E+01	545	4.097E+01
382	1.844E-01	423	2.056E+00	464	2.179E+01	505	2.807E+01	546	4.166E+01
383	1.489E-01	424	2.300E+00	465	2.104E+01	506	2.875E+01	547	4.223E+01
384	1.732E-01	425	2.617E+00	466	2.035E+01	507	2.905E+01	548	4.253E+01
385	2.068E-01	426	2.993E+00	467	1.921E+01	508	2.960E+01	549	4.314E+01
386	7.147E-02	427	3.403E+00	468	1.826E+01	509	3.005E+01	550	4.323E+01
387	1.133E-01	428	3.836E+00	469	1.716E+01	510	3.049E+01	551	4.390E+01
388	1.847E-01	429	4.346E+00	470	1.635E+01	511	3.077E+01	552	4.450E+01
389	9.720E-02	430	4.887E+00	471	1.553E+01	512	3.132E+01	553	4.508E+01
390	3.609E-02	431	5.529E+00	472	1.484E+01	513	3.161E+01	554	4.548E+01
391	1.391E-01	432	6.098E+00	473	1.458E+01	514	3.183E+01	555	4.605E+01
392	1.820E-01	433	7.084E+00	474	1.389E+01	515	3.231E+01	556	4.684E+01
393	1.152E-01	434	7.973E+00	475	1.389E+01	516	3.296E+01	557	4.733E+01
394	9.692E-02	435	8.913E+00	476	1.384E+01	517	3.315E+01	558	4.813E+01
395	8.879E-02	436	1.018E+01	477	1.386E+01	518	3.339E+01	559	4.848E+01
396	1.767E-01	437	1.126E+01	478	1.414E+01	519	3.356E+01	560	4.927E+01
397	1.014E-01	438	1.308E+01	479	1.441E+01	520	3.398E+01	561	4.963E+01
398	1.298E-01	439	1.508E+01	480	1.458E+01	521	3.437E+01	562	5.058E+01
399	5.640E-02	440	1.712E+01	481	1.507E+01	522	3.447E+01	563	5.098E+01
400	1.429E-01	441	1.955E+01	482	1.518E+01	523	3.480E+01	564	5.177E+01
401	9.968E-02	442	2.237E+01	483	1.552E+01	524	3.505E+01	565	5.269E+01
402	1.670E-01	443	2.524E+01	484	1.606E+01	525	3.518E+01	566	5.323E+01
403	1.726E-01	444	2.894E+01	485	1.623E+01	526	3.556E+01	567	5.384E+01
404	1.135E-01	445	3.242E+01	486	1.670E+01	527	3.586E+01	568	5.456E+01
405	1.606E-01	446	3.584E+01	487	1.716E+01	528	3.606E+01	569	5.558E+01
406	1.326E-01	447	3.840E+01	488	1.772E+01	529	3.634E+01	570	5.626E+01
407	2.313E-01	448	4.094E+01	489	1.844E+01	530	3.634E+01	571	5.677E+01
408	2.680E-01	449	4.155E+01	490	1.861E+01	531	3.674E+01	572	5.773E+01
409	2.942E-01	450	4.189E+01	491	1.937E+01	532	3.697E+01	573	5.852E+01
410	3.121E-01	451	4.134E+01	492	2.018E+01	533	3.727E+01	574	5.935E+01
411	4.151E-01	452	3.929E+01	493	2.074E+01	534	3.754E+01	575	5.999E+01
412	4.325E-01	453	3.664E+01	494	2.141E+01	535	3.784E+01	576	6.091E+01
413	4.946E-01	454	3.399E+01	495	2.203E+01	536	3.807E+01	577	6.142E+01
414	5.517E-01	455	3.130E+01	496	2.274E+01	537	3.855E+01	578	6.239E+01
415	6.689E-01	456	2.905E+01	497	2.351E+01	538	3.884E+01	579	6.353E+01
416	8.107E-01	457	2.709E+01	498	2.421E+01	539	3.879E+01	580	6.404E+01
417	8.682E-01	458	2.551E+01	499	2.465E+01	540	3.947E+01	581	6.471E+01
418	1.078E+00	459	2.455E+01	500	2.516E+01	541	3.969E+01	582	6.550E+01
419	1.262E+00	460	2.374E+01	501	2.586E+01	542	4.019E+01	583	6.636E+01
420	1.313E+00	461	2.331E+01	502	2.637E+01	543	4.059E+01	584	6.686E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	6.789E+01	626	6.730E+01	667	2.987E+01	708	9.120E+00	749	2.493E+00
586	6.853E+01	627	6.655E+01	668	2.916E+01	709	8.773E+00	750	2.303E+00
587	6.908E+01	628	6.571E+01	669	2.841E+01	710	8.612E+00	751	2.293E+00
588	6.989E+01	629	6.520E+01	670	2.739E+01	711	8.294E+00	752	2.198E+00
589	7.049E+01	630	6.388E+01	671	2.695E+01	712	7.942E+00	753	2.251E+00
590	7.100E+01	631	6.303E+01	672	2.600E+01	713	7.775E+00	754	2.090E+00
591	7.198E+01	632	6.217E+01	673	2.526E+01	714	7.583E+00	755	2.036E+00
592	7.242E+01	633	6.112E+01	674	2.465E+01	715	7.356E+00	756	1.969E+00
593	7.289E+01	634	6.055E+01	675	2.382E+01	716	7.177E+00	757	1.886E+00
594	7.324E+01	635	5.948E+01	676	2.326E+01	717	6.840E+00	758	1.924E+00
595	7.398E+01	636	5.858E+01	677	2.271E+01	718	6.677E+00	759	1.832E+00
596	7.430E+01	637	5.779E+01	678	2.205E+01	719	6.502E+00	760	1.703E+00
597	7.451E+01	638	5.694E+01	679	2.160E+01	720	6.269E+00	761	1.689E+00
598	7.513E+01	639	5.552E+01	680	2.097E+01	721	6.122E+00	762	1.613E+00
599	7.526E+01	640	5.488E+01	681	2.015E+01	722	5.776E+00	763	1.527E+00
600	7.562E+01	641	5.378E+01	682	1.983E+01	723	5.668E+00	764	1.509E+00
601	7.542E+01	642	5.260E+01	683	1.930E+01	724	5.475E+00	765	1.537E+00
602	7.607E+01	643	5.171E+01	684	1.857E+01	725	5.278E+00	766	1.446E+00
603	7.613E+01	644	5.085E+01	685	1.818E+01	726	5.094E+00	767	1.395E+00
604	7.626E+01	645	5.002E+01	686	1.759E+01	727	5.019E+00	768	1.350E+00
605	7.625E+01	646	4.891E+01	687	1.716E+01	728	4.842E+00	769	1.310E+00
606	7.600E+01	647	4.777E+01	688	1.672E+01	729	4.722E+00	770	1.306E+00
607	7.681E+01	648	4.696E+01	689	1.622E+01	730	4.522E+00	771	1.198E+00
608	7.614E+01	649	4.618E+01	690	1.571E+01	731	4.424E+00	772	1.204E+00
609	7.574E+01	650	4.520E+01	691	1.532E+01	732	4.199E+00	773	1.144E+00
610	7.566E+01	651	4.401E+01	692	1.492E+01	733	4.102E+00	774	1.110E+00
611	7.562E+01	652	4.307E+01	693	1.441E+01	734	3.994E+00	775	1.090E+00
612	7.540E+01	653	4.214E+01	694	1.394E+01	735	3.854E+00	776	9.909E-01
613	7.477E+01	654	4.116E+01	695	1.355E+01	736	3.712E+00	777	1.057E+00
614	7.470E+01	655	4.041E+01	696	1.318E+01	737	3.644E+00	778	9.341E-01
615	7.436E+01	656	3.958E+01	697	1.276E+01	738	3.495E+00	779	9.477E-01
616	7.393E+01	657	3.858E+01	698	1.253E+01	739	3.515E+00	780	9.200E-01
617	7.360E+01	658	3.767E+01	699	1.191E+01	740	3.202E+00		
618	7.270E+01	659	3.679E+01	700	1.172E+01	741	3.219E+00		
619	7.240E+01	660	3.573E+01	701	1.126E+01	742	3.043E+00		
620	7.165E+01	661	3.480E+01	702	1.101E+01	743	2.912E+00		
621	7.080E+01	662	3.396E+01	703	1.058E+01	744	2.879E+00		
622	7.023E+01	663	3.325E+01	704	1.018E+01	745	2.708E+00		
623	6.970E+01	664	3.227E+01	705	9.871E+00	746	2.829E+00		
624	6.875E+01	665	3.176E+01	706	9.621E+00	747	2.658E+00		
625	6.818E+01	666	3.084E+01	707	9.284E+00	748	2.565E+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**

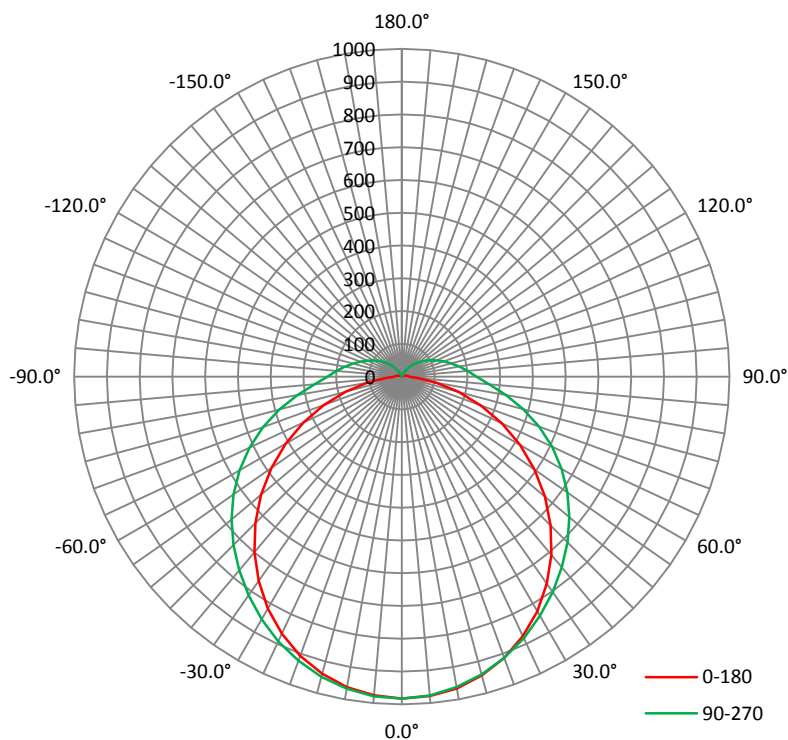
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
230.0	50	0.1257	26.21	0.9067

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
3629.74	138.49	983.8	1.25	1.28

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	109.8	123.5	133.0	123.0	122.3
Field Angle (10% I _{max}):	161.1	214.6	240.7	213.7	207.5

Luminous Intensity (cd) Distribution Data

C Y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0°	983	983	983	983	983	983	983	983
1°	982	983	983	983	982	983	983	983
2°	981	982	981	983	983	982	982	983
3°	979	981	981	982	982	983	982	982
4°	978	979	980	981	983	981	980	981
5°	976	978	979	979	980	979	979	979
6°	974	976	978	977	977	977	978	978
7°	973	973	975	975	975	976	975	976
8°	969	972	972	972	973	973	973	974
9°	967	968	968	970	971	971	971	971
10°	962	964	966	967	967	968	967	967
11°	959	960	963	963	964	964	964	964
12°	954	956	957	959	962	961	960	960
13°	949	952	954	956	957	957	956	955
14°	944	947	949	951	954	953	951	951
15°	939	942	945	947	949	949	947	945
16°	933	936	940	942	943	943	943	941
17°	927	930	934	937	939	938	935	935
18°	921	925	929	931	934	933	931	930
19°	915	918	921	926	929	927	925	923
20°	907	911	916	921	923	922	919	916
21°	899	904	910	914	917	916	913	909
22°	891	896	902	908	912	910	906	901
23°	883	888	896	902	905	904	899	894
24°	875	880	889	895	900	897	891	886
25°	866	872	881	889	892	890	885	877
26°	857	863	874	881	885	883	877	869
27°	848	854	866	874	878	876	868	861
28°	838	846	858	866	870	868	861	852
29°	829	836	848	858	863	860	853	843
30°	818	826	840	851	855	852	844	833
31°	807	816	832	843	847	844	835	823
32°	796	806	821	835	840	836	826	813
33°	784	795	813	826	831	828	817	802
34°	773	785	804	818	824	819	807	793
35°	761	774	794	809	815	810	798	781
36°	750	763	785	800	806	801	788	770
37°	738	752	775	791	797	792	777	759
38°	725	741	765	782	789	783	768	748
39°	713	729	753	773	781	774	758	736
40°	700	717	744	764	771	765	747	724
41°	687	705	734	754	762	756	737	712
42°	673	693	722	745	754	746	726	700
43°	659	681	712	736	745	738	715	688
44°	646	668	701	726	737	727	703	676
45°	632	656	691	716	726	717	693	663
46°	618	644	680	706	716	706	682	650
47°	604	630	668	696	707	697	670	637
48°	590	618	657	687	698	686	659	625
49°	576	605	645	676	688	676	648	611

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
50°	561	591	634	666	678	666	636	598
51°	546	578	623	656	668	656	625	584
52°	531	565	610	645	659	645	612	571
53°	516	552	599	636	647	635	601	557
54°	501	538	588	625	638	624	588	544
55°	486	524	576	614	627	613	577	530
56°	471	511	564	603	616	602	565	515
57°	456	497	552	592	605	591	551	502
58°	440	483	540	580	594	580	540	488
59°	425	469	527	569	583	568	528	474
60°	409	455	515	558	572	556	515	459
61°	394	441	503	546	560	545	503	445
62°	378	427	490	535	549	533	490	431
63°	362	413	478	523	537	521	477	416
64°	347	399	465	511	525	509	464	402
65°	331	385	452	499	513	497	451	387
66°	315	372	440	487	501	484	439	373
67°	300	357	427	474	489	472	425	359
68°	284	343	414	462	476	459	412	345
69°	269	329	401	449	463	447	400	330
70°	253	315	388	436	451	434	386	316
71°	237	301	376	424	438	421	373	302
72°	222	287	362	411	426	408	359	287
73°	207	273	350	399	412	395	347	273
74°	191	259	337	385	399	382	333	259
75°	176	246	324	372	386	369	320	245
76°	162	233	311	360	374	356	308	232
77°	147	219	298	347	361	343	294	218
78°	133	206	286	334	348	331	282	205
79°	119	193	273	322	336	318	270	192
80°	106	181	261	310	323	306	257	179
81°	93	168	249	297	311	294	245	166
82°	81	157	238	286	300	282	233	155
83°	69	146	227	275	288	271	222	143
84°	59	135	216	264	277	260	211	132
85°	50	125	206	253	267	250	202	122
86°	42	116	197	243	257	240	192	113
87°	34	108	188	235	248	231	184	105
88°	28	101	180	226	240	224	177	99
89°	25	95	173	219	233	217	170	93
90°	23	90	168	213	227	211	165	89
91°	22	86	163	208	221	206	160	85
92°	21	82	158	202	216	200	156	82
93°	21	80	154	197	210	195	151	78
94°	20	76	149	192	205	190	147	75
95°	20	73	145	187	200	185	143	72
96°	19	70	141	182	195	180	138	69
97°	19	67	136	177	190	176	134	66
98°	18	64	132	172	185	171	130	63
99°	18	62	128	168	180	166	126	61

Luminous Intensity (cd) Distribution Data

C γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
100°	17	59	124	163	175	162	122	58
101°	16	56	120	159	171	158	119	55
102°	15	54	117	154	167	153	115	53
103°	14	51	113	150	162	149	111	50
104°	12	49	109	146	158	145	107	48
105°	11	46	106	142	154	141	104	45
106°	10	44	102	138	150	137	100	43
107°	10	42	99	134	145	133	97	41
108°	9	40	95	130	141	129	94	39
109°	9	38	92	126	138	125	91	37
110°	8	36	89	123	134	122	87	35
111°	8	34	86	119	130	118	84	33
112°	8	32	82	115	126	115	81	31
113°	8	30	79	112	123	111	78	29
114°	7	28	76	108	119	108	75	27
115°	7	26	73	105	116	104	72	26
116°	7	25	71	102	112	101	69	24
117°	6	23	68	98	109	98	67	22
118°	6	21	65	95	105	95	64	20
119°	6	20	62	92	102	91	61	19
120°	5	18	59	89	99	88	59	17
121°	5	17	57	86	95	85	56	16
122°	5	15	54	83	92	82	54	14
123°	5	14	52	80	89	79	51	13
124°	4	12	49	77	86	76	48	12
125°	4	11	46	74	83	73	46	10
126°	4	10	44	71	80	70	43	9
127°	4	9	42	68	77	68	41	8
128°	4	8	39	65	74	65	39	7
129°	3	7	37	62	71	62	37	6
130°	3	6	35	59	68	59	34	6
131°	3	5	33	57	65	56	32	5
132°	3	5	31	54	62	53	30	4
133°	3	4	28	51	59	51	28	4
134°	3	4	26	49	57	48	26	4
135°	2	3	24	46	54	45	24	3
136°	2	3	23	43	51	43	22	3
137°	2	3	21	41	48	40	20	3
138°	2	3	19	38	45	38	19	3
139°	2	3	17	36	43	36	17	3
140°	2	3	16	33	40	33	15	3
141°	2	3	14	31	37	31	14	3
142°	2	3	12	29	35	28	12	3
143°	2	2	11	26	32	26	11	3
144°	2	2	10	24	30	24	9	3
145°	2	2	8	22	27	22	8	3
146°	2	2	7	20	25	20	7	3
147°	2	2	6	18	23	18	6	3
148°	2	2	6	16	21	16	5	3
149°	2	3	5	14	18	14	5	3

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
150°	2	3	4	12	16	12	4	3
151°	2	3	4	11	14	11	4	3
152°	2	3	4	9	12	9	4	3
153°	2	3	3	8	11	8	3	3
154°	2	3	3	6	9	6	3	3
155°	2	3	3	6	8	6	3	3
156°	2	3	3	5	6	5	3	3
157°	2	3	3	4	6	4	3	3
158°	2	3	3	4	5	4	3	3
159°	2	3	3	4	4	4	3	3
160°	2	3	3	4	4	4	3	3
161°	2	3	3	4	4	4	3	3
162°	2	3	3	4	4	3	3	3
163°	2	3	3	3	4	3	3	3
164°	2	3	3	3	3	3	3	3
165°	2	3	3	3	3	3	3	3
166°	2	3	3	3	3	3	3	3
167°	2	3	3	3	3	3	3	2
168°	2	2	3	3	3	3	3	2
169°	2	2	3	3	3	3	3	2
170°	2	2	3	3	3	3	2	2
171°	2	2	3	3	3	3	2	2
172°	2	2	3	3	3	3	2	2
173°	2	2	2	3	3	2	2	2
174°	2	2	2	3	3	2	2	2
175°	2	2	2	2	2	2	2	2
176°	2	2	2	2	2	2	2	2
177°	2	2	2	2	2	2	2	2
178°	2	2	2	2	2	2	2	2
179°	2	2	2	2	2	2	2	2
180°	2	2	2	2	2	2	2	2

Luminous Intensity (cd) Distribution Data (cont.)

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0°	983	983	983	983	983	983	983	983
1°	984	983	982	982	983	982	982	982
2°	982	983	983	981	981	981	981	982
3°	981	981	982	979	980	980	979	980
4°	980	981	980	979	978	978	979	978
5°	979	978	978	977	977	976	976	975
6°	977	976	976	975	977	974	973	975
7°	974	974	973	973	972	972	972	972
8°	972	972	969	970	970	968	969	969
9°	969	969	968	967	966	966	965	966
10°	966	965	964	963	962	961	961	962
11°	964	962	960	959	959	958	958	958
12°	958	959	957	955	954	953	953	953
13°	954	953	953	950	950	949	947	948
14°	949	948	947	946	945	944	943	943
15°	944	943	942	941	941	939	938	936
16°	939	938	938	936	937	934	932	932
17°	933	932	932	931	930	930	927	926
18°	927	926	925	926	925	923	921	919
19°	920	920	920	920	919	917	914	913
20°	914	913	914	914	913	911	907	906
21°	908	906	907	908	908	905	901	898
22°	899	899	901	901	901	899	893	890
23°	891	890	893	894	894	892	885	883
24°	882	883	886	888	888	885	879	874
25°	874	874	878	881	881	878	871	865
26°	865	866	870	874	875	870	862	857
27°	855	857	862	866	867	864	855	848
28°	846	848	854	859	860	855	847	838
29°	837	839	846	851	851	847	839	828
30°	827	829	837	843	843	839	829	819
31°	818	819	829	835	836	831	820	809
32°	805	810	820	826	828	822	811	799
33°	795	799	811	818	820	814	802	788
34°	783	788	801	810	811	806	793	777
35°	771	777	792	801	803	797	783	765
36°	759	767	782	792	796	788	773	756
37°	747	755	772	783	786	780	763	744
38°	735	743	762	774	778	770	753	733
39°	723	732	752	765	769	760	743	722
40°	710	720	741	755	760	751	732	709
41°	698	708	731	747	752	742	722	697
42°	684	697	720	737	742	733	711	685
43°	670	684	710	727	733	723	700	673
44°	656	671	698	718	724	714	690	661
45°	642	659	688	709	715	704	679	647
46°	628	647	677	699	706	694	668	635
47°	614	634	666	688	696	685	657	623
48°	599	621	654	679	687	674	646	610
49°	585	608	643	669	677	664	634	597

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°	570	595	632	658	667	654	623	584
51°	556	582	620	649	658	644	611	571
52°	541	569	609	639	647	634	600	558
53°	525	554	597	628	638	623	587	545
54°	510	541	585	617	627	613	576	531
55°	494	527	573	607	617	603	565	517
56°	479	514	561	596	607	591	553	504
57°	464	500	549	585	596	581	541	490
58°	448	486	537	574	585	569	530	477
59°	432	472	525	563	575	558	517	463
60°	417	459	513	551	563	547	505	449
61°	401	444	500	540	552	536	493	436
62°	385	430	488	529	541	524	480	421
63°	369	416	476	517	530	512	468	408
64°	352	402	463	505	518	501	455	393
65°	337	388	450	493	506	489	443	379
66°	321	373	438	481	495	477	430	366
67°	305	359	425	468	482	465	418	352
68°	289	345	412	457	470	453	406	338
69°	273	331	399	444	458	440	393	324
70°	257	317	387	432	446	428	380	310
71°	241	302	374	420	434	416	367	297
72°	225	288	361	407	421	403	355	282
73°	209	275	348	395	408	391	342	269
74°	194	261	335	382	396	378	329	255
75°	179	247	323	370	383	366	317	242
76°	163	233	310	357	371	353	304	229
77°	148	220	297	344	358	341	292	215
78°	134	207	285	332	346	329	280	203
79°	120	194	273	320	334	317	268	190
80°	106	182	261	308	322	305	256	178
81°	92	169	249	296	310	293	244	166
82°	80	158	238	285	299	282	233	154
83°	68	146	227	274	288	271	222	143
84°	57	136	216	263	277	261	212	134
85°	48	126	206	253	267	251	202	124
86°	39	116	197	244	258	241	193	114
87°	32	108	188	235	249	233	185	106
88°	27	101	181	227	241	225	178	99
89°	23	95	174	220	234	218	171	93
90°	22	91	169	214	228	212	166	89
91°	21	87	164	209	223	207	162	85
92°	21	84	160	204	217	202	157	82
93°	20	80	155	199	212	197	153	79
94°	20	77	151	193	207	192	148	76
95°	19	74	146	188	202	187	144	72
96°	19	71	142	184	197	182	140	70
97°	18	68	138	179	192	178	136	67
98°	17	66	134	174	187	173	132	64
99°	17	63	130	170	182	168	128	61

Luminous Intensity (cd) Distribution Data (cont.)

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
100°	16	60	126	165	178	164	124	59
101°	16	58	122	161	173	160	120	56
102°	15	55	118	156	169	155	116	54
103°	14	53	114	152	164	151	112	51
104°	13	50	111	148	160	147	109	49
105°	12	48	107	144	156	143	105	47
106°	11	46	104	140	151	139	102	44
107°	10	43	100	136	148	135	98	42
108°	9	41	97	132	144	131	95	40
109°	8	39	94	129	140	127	92	38
110°	8	37	90	125	136	123	89	36
111°	8	35	87	121	132	119	86	34
112°	7	33	84	117	129	116	82	32
113°	7	31	81	114	124	112	79	30
114°	7	29	78	110	120	109	77	28
115°	7	28	75	107	117	106	74	27
116°	6	26	72	103	113	102	71	25
117°	6	24	69	100	110	99	68	23
118°	6	22	67	97	107	96	65	21
119°	5	21	64	94	103	93	62	20
120°	5	19	61	90	100	90	60	18
121°	5	18	59	87	97	86	57	17
122°	5	16	56	84	94	83	55	15
123°	4	15	53	81	91	80	52	14
124°	4	13	51	78	87	77	50	12
125°	4	12	48	75	84	75	47	11
126°	4	11	46	72	81	71	45	10
127°	4	9	44	69	78	69	42	9
128°	3	8	41	67	75	66	40	8
129°	3	7	39	64	72	63	38	7
130°	3	6	37	61	69	60	36	6
131°	3	5	34	58	66	57	33	5
132°	3	5	32	55	63	55	31	4
133°	3	4	30	53	60	52	29	3
134°	2	3	28	50	58	50	27	3
135°	2	3	26	47	55	47	25	2
136°	2	2	24	45	52	44	24	2
137°	2	2	22	42	49	42	22	2
138°	2	2	20	39	46	39	20	2
139°	2	2	18	37	44	37	18	2
140°	2	2	16	34	41	35	17	2
141°	1	1	14	32	38	32	15	1
142°	1	1	12	29	36	30	14	1
143°	1	1	10	27	33	28	13	1
144°	1	1	9	24	31	26	11	1
145°	1	1	7	22	28	24	10	1
146°	1	1	6	19	26	22	9	1
147°	1	1	5	17	24	20	8	1
148°	1	1	3	15	21	18	7	1
149°	1	1	2	13	19	16	6	1

Luminous Intensity (cd) Distribution Data (cont.)

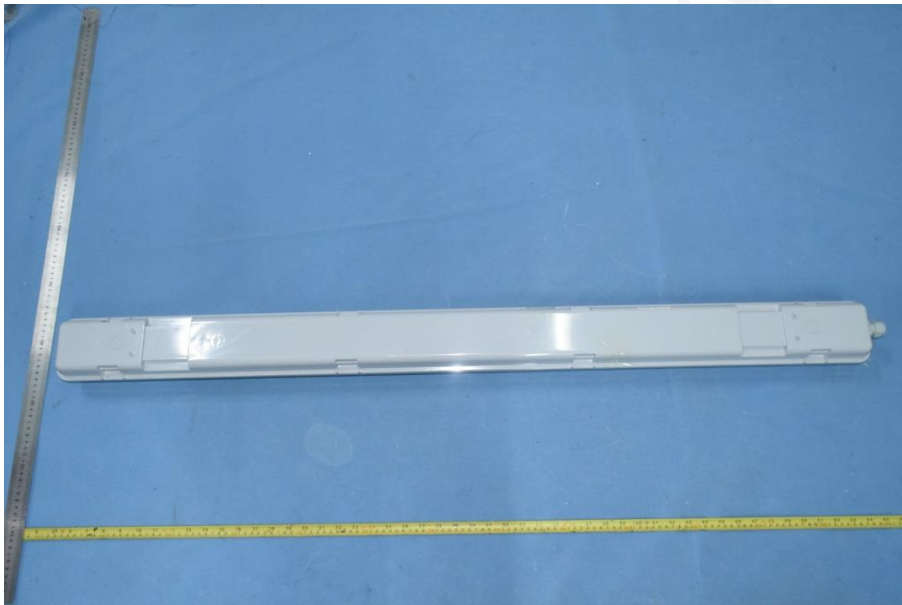
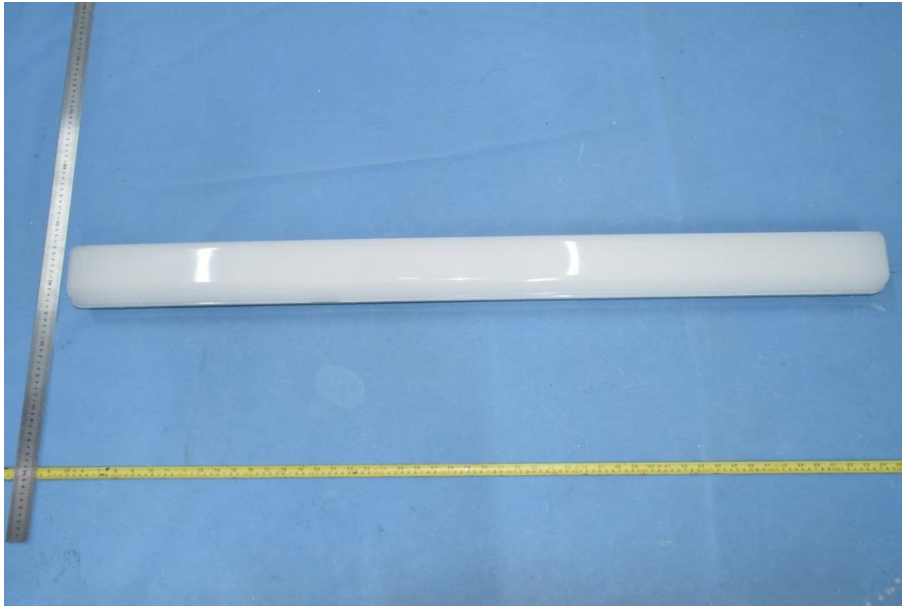
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
150°	1	1	2	11	17	14	5	1
151°	1	1	2	9	15	13	4	1
152°	1	1	2	7	13	11	4	1
153°	1	1	1	6	10	9	3	1
154°	1	1	1	4	9	8	2	1
155°	1	1	1	3	7	6	2	1
156°	1	1	1	2	6	5	2	1
157°	1	1	1	2	4	4	2	1
158°	1	1	1	2	3	3	2	1
159°	1	1	1	2	2	2	2	1
160°	1	1	1	2	2	2	2	1
161°	1	1	1	2	2	2	2	1
162°	1	1	1	1	2	2	2	1
163°	1	1	1	1	2	2	2	1
164°	1	1	1	1	2	2	2	1
165°	2	1	1	1	2	2	1	1
166°	2	1	1	1	2	2	1	1
167°	2	1	1	1	1	2	1	1
168°	2	2	1	1	1	1	1	1
169°	2	2	1	1	1	1	1	1
170°	2	2	1	1	1	1	1	1
171°	2	2	1	1	1	1	1	1
172°	2	2	1	1	1	1	1	1
173°	2	2	1	1	1	1	1	1
174°	2	2	1	1	1	1	1	1
175°	2	2	2	1	1	1	1	1
176°	2	2	2	2	2	2	2	2
177°	2	2	2	2	2	2	2	2
178°	2	2	2	2	2	2	2	2
179°	2	2	2	2	2	2	2	2
180°	2	2	2	2	2	2	2	2

Zonal Lumen Density Measurement

Deg	Flux (lm)	%
0-5	23.4	0.65
5-10	69.5	1.91
10-15	113.1	3.12
15-20	153.0	4.21
20-25	188.0	5.18
25-30	217.0	5.98
30-35	239.4	6.60
35-40	254.9	7.02
40-45	263.2	7.25
45-50	264.5	7.29
50-55	259.0	7.14
55-60	246.9	6.80
60-65	228.6	6.29
65-70	204.7	5.64
70-75	176.3	4.86
75-80	145.3	4.00
80-85	114.7	3.16
85-90	89.9	2.48
90-95	75.8	2.09
95-100	65.0	1.79
100-105	54.8	1.51
105-110	45.5	1.25
110-115	37.1	1.03
115-120	29.6	0.81
120-125	22.9	0.63
125-130	17.0	0.47
130-135	12.1	0.33
135-140	8.1	0.22
140-145	5.0	0.14
145-150	2.7	0.08
150-155	1.3	0.03
155-160	0.6	0.02
160-165	0.4	0.01
165-170	0.2	0.00
170-175	0.1	0.01
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	23.4	0.65
0-10	92.9	2.56
0-15	206.1	5.68
0-20	359.1	9.89
0-25	547.1	15.07
0-30	764.1	21.05
0-35	1003.6	27.65
0-40	1258.4	34.67
0-45	1521.6	41.92
0-50	1786.2	49.21
0-55	2045.2	56.35
0-60	2292.1	63.15
0-65	2520.7	69.44
0-70	2725.3	75.08
0-75	2901.7	79.94
0-80	3047.0	83.94
0-85	3161.7	87.10
0-90	3251.6	89.58
0-95	3327.3	91.67
0-100	3392.3	93.46
0-105	3447.2	94.97
0-110	3492.7	96.22
0-115	3529.7	97.25
0-120	3559.3	98.06
0-125	3582.2	98.69
0-130	3599.2	99.16
0-135	3611.2	99.49
0-140	3619.3	99.71
0-145	3624.4	99.85
0-150	3627.1	99.93
0-155	3628.4	99.96
0-160	3628.9	99.98
0-165	3629.3	99.99
0-170	3629.6	99.99
0-175	3629.7	100.00
0-180	3629.7	100.00

6. Product Photo





LED Tri-Proof Light

Model:U-TRI-24W-B-MS

Power:24W

Input Voltage:AC 220~240V 50/60Hz

Power Factor:>0.9

CCT:3000K

Daylight + ON/OFF sensor for 15 minutes



IP65

Made in China

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 with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of the Company.
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