

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-20W-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:	R2DG201124800-10
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-20W-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: 20W

Nominal CCT: 3000K

Nominal Lumen Output: 3000lm

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**

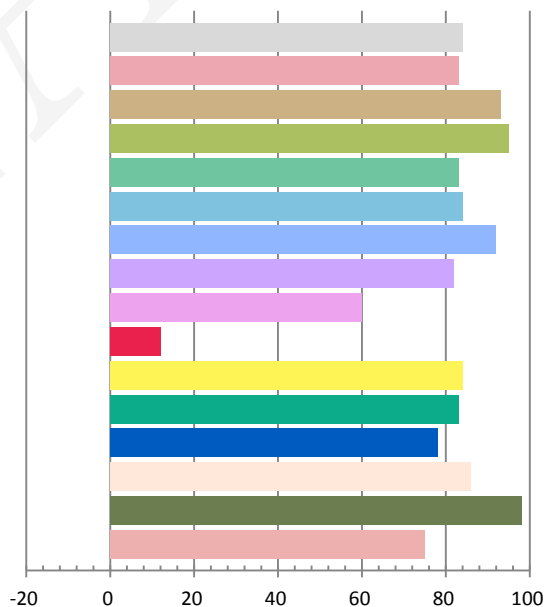
Photometric and Electrical Measurement Result

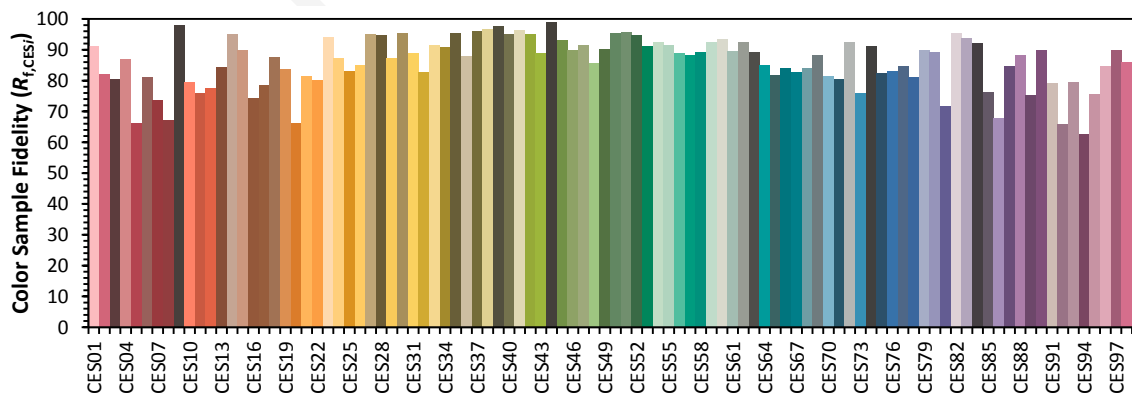
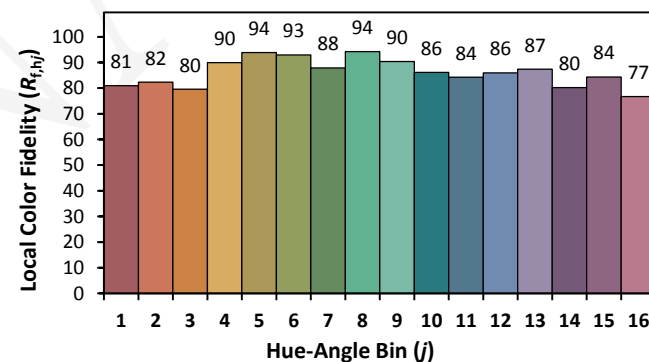
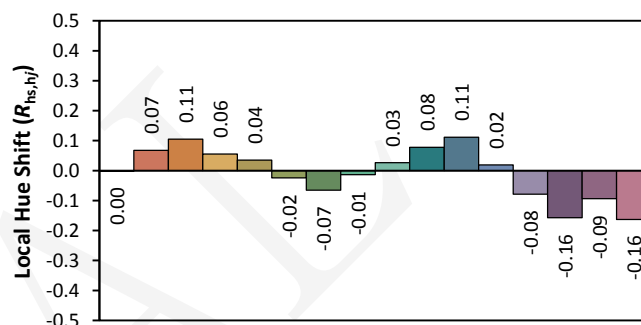
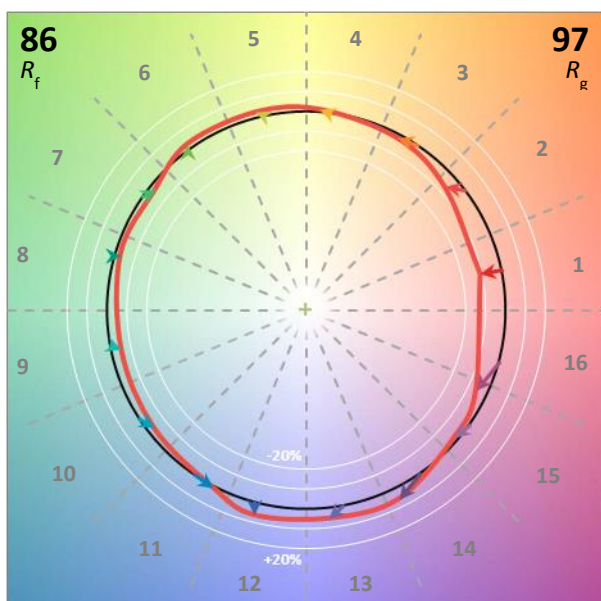
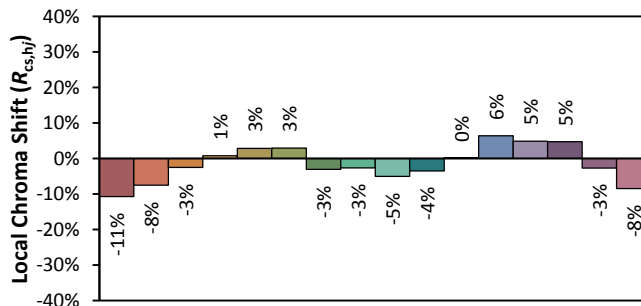
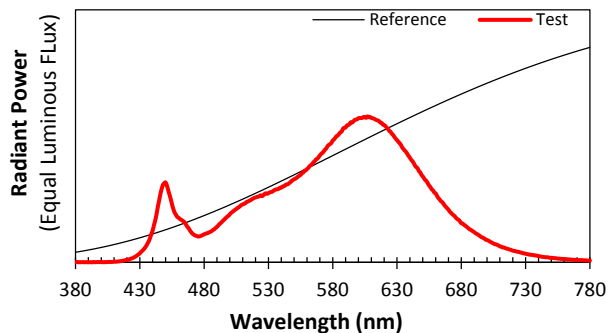
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
230.1	50	0.1012	20.96	0.9003	2937.1	140.12

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
9.0267	2919	-0.00124	0.4409	0.4023	0.2539	0.5213

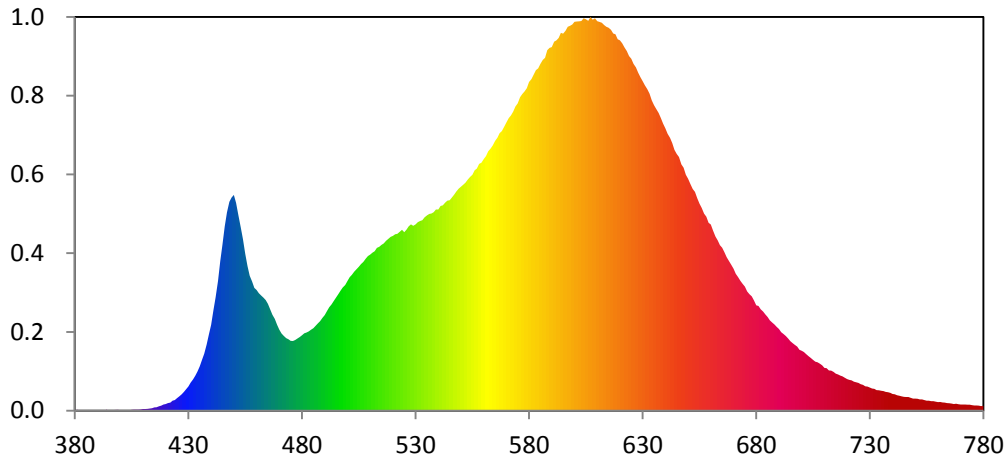
Color Rendering Index

Ra			
84.0			
R1	R2	R3	R4
83	93	95	83
R5	R6	R7	R8
84	92	82	60
R9	R10	R11	R12
12	84	83	78
R13	R14	R15	
86	98	75	





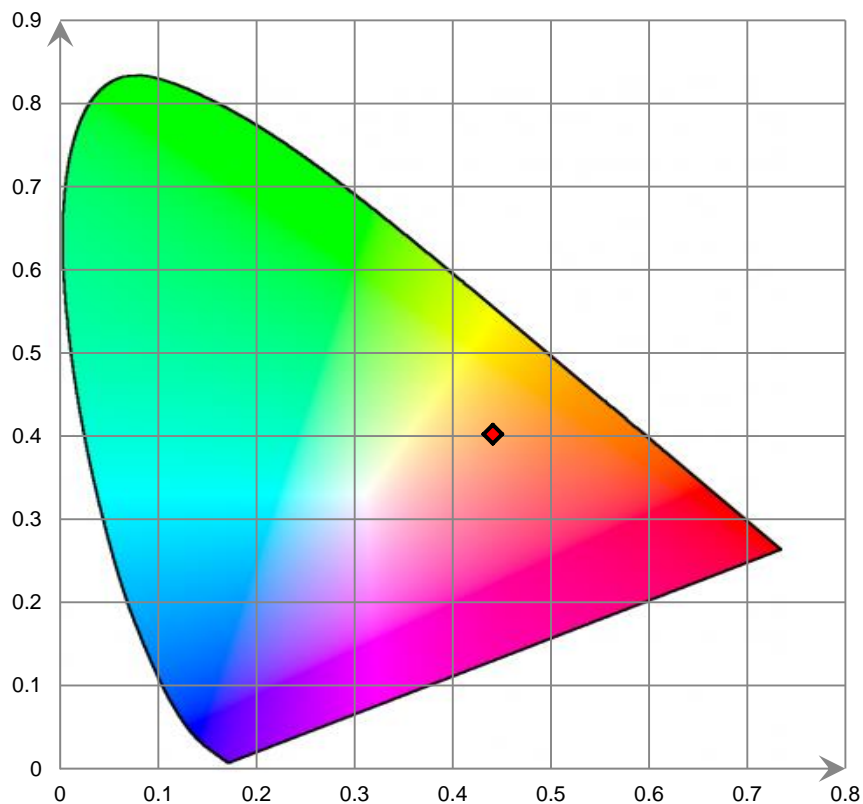
Relative Spectral Power Distribution



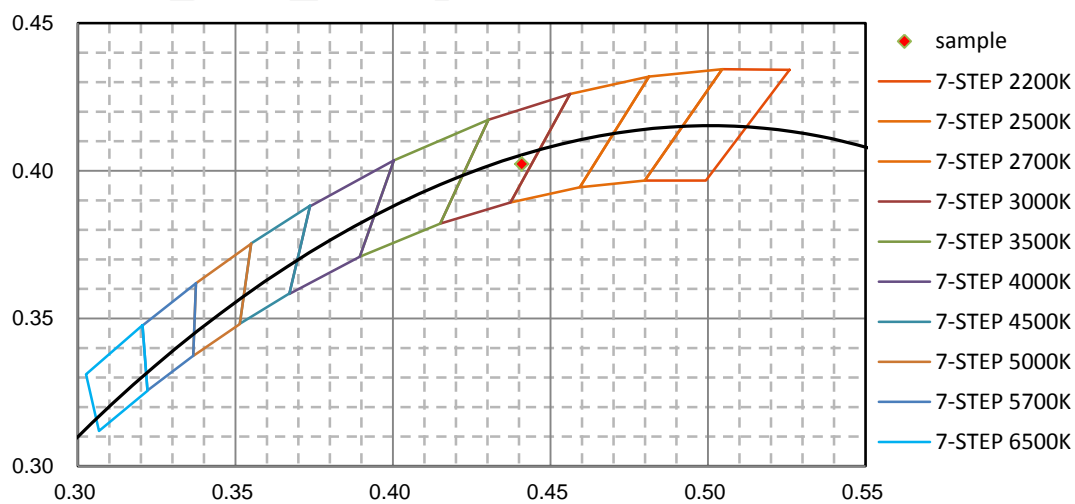
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	3.334E-02	421	1.200E+00	462	1.819E+01	503	2.193E+01	544	3.316E+01
381	1.642E-01	422	1.295E+00	463	1.784E+01	504	2.235E+01	545	3.323E+01
382	4.698E-02	423	1.592E+00	464	1.745E+01	505	2.271E+01	546	3.366E+01
383	7.142E-02	424	1.699E+00	465	1.688E+01	506	2.314E+01	547	3.410E+01
384	5.175E-02	425	1.991E+00	466	1.600E+01	507	2.347E+01	548	3.461E+01
385	8.600E-02	426	2.263E+00	467	1.514E+01	508	2.395E+01	549	3.504E+01
386	1.270E-01	427	2.584E+00	468	1.449E+01	509	2.440E+01	550	3.537E+01
387	2.276E-02	428	2.984E+00	469	1.357E+01	510	2.464E+01	551	3.567E+01
388	9.927E-02	429	3.414E+00	470	1.280E+01	511	2.494E+01	552	3.601E+01
389	4.237E-02	430	3.826E+00	471	1.219E+01	512	2.518E+01	553	3.649E+01
390	2.905E-02	431	4.436E+00	472	1.181E+01	513	2.570E+01	554	3.688E+01
391	5.875E-02	432	4.951E+00	473	1.144E+01	514	2.587E+01	555	3.724E+01
392	5.647E-02	433	5.529E+00	474	1.129E+01	515	2.619E+01	556	3.794E+01
393	5.528E-03	434	6.200E+00	475	1.103E+01	516	2.640E+01	557	3.821E+01
394	1.643E-01	435	7.002E+00	476	1.102E+01	517	2.682E+01	558	3.895E+01
395	5.770E-02	436	8.018E+00	477	1.115E+01	518	2.712E+01	559	3.914E+01
396	9.698E-02	437	9.000E+00	478	1.140E+01	519	2.745E+01	560	3.972E+01
397	1.143E-01	438	1.045E+01	479	1.165E+01	520	2.760E+01	561	4.019E+01
398	1.265E-01	439	1.205E+01	480	1.191E+01	521	2.786E+01	562	4.096E+01
399	1.378E-01	440	1.356E+01	481	1.220E+01	522	2.791E+01	563	4.136E+01
400	6.759E-02	441	1.579E+01	482	1.234E+01	523	2.822E+01	564	4.185E+01
401	1.301E-01	442	1.789E+01	483	1.253E+01	524	2.854E+01	565	4.260E+01
402	2.802E-02	443	2.048E+01	484	1.281E+01	525	2.817E+01	566	4.306E+01
403	1.203E-01	444	2.360E+01	485	1.302E+01	526	2.858E+01	567	4.381E+01
404	7.985E-02	445	2.626E+01	486	1.339E+01	527	2.910E+01	568	4.414E+01
405	1.551E-01	446	2.908E+01	487	1.378E+01	528	2.942E+01	569	4.478E+01
406	1.787E-01	447	3.131E+01	488	1.414E+01	529	2.919E+01	570	4.552E+01
407	1.693E-01	448	3.297E+01	489	1.467E+01	530	2.941E+01	571	4.617E+01
408	1.820E-01	449	3.367E+01	490	1.510E+01	531	2.977E+01	572	4.661E+01
409	1.965E-01	450	3.405E+01	491	1.572E+01	532	2.994E+01	573	4.722E+01
410	2.787E-01	451	3.279E+01	492	1.633E+01	533	3.007E+01	574	4.801E+01
411	2.723E-01	452	3.091E+01	493	1.675E+01	534	3.052E+01	575	4.850E+01
412	3.026E-01	453	2.895E+01	494	1.734E+01	535	3.083E+01	576	4.949E+01
413	3.607E-01	454	2.705E+01	495	1.788E+01	536	3.105E+01	577	5.000E+01
414	4.031E-01	455	2.479E+01	496	1.839E+01	537	3.111E+01	578	5.039E+01
415	5.202E-01	456	2.288E+01	497	1.897E+01	538	3.134E+01	579	5.089E+01
416	5.537E-01	457	2.129E+01	498	1.946E+01	539	3.176E+01	580	5.188E+01
417	7.073E-01	458	2.039E+01	499	1.985E+01	540	3.177E+01	581	5.233E+01
418	7.945E-01	459	1.940E+01	500	2.048E+01	541	3.230E+01	582	5.304E+01
419	9.838E-01	460	1.905E+01	501	2.108E+01	542	3.240E+01	583	5.376E+01
420	1.051E+00	461	1.855E+01	502	2.146E+01	543	3.282E+01	584	5.403E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	5.473E+01	626	5.473E+01	667	2.424E+01	708	7.417E+00	749	1.915E+00
586	5.538E+01	627	5.419E+01	668	2.361E+01	709	7.161E+00	750	1.903E+00
587	5.571E+01	628	5.335E+01	669	2.303E+01	710	6.775E+00	751	1.893E+00
588	5.692E+01	629	5.265E+01	670	2.241E+01	711	6.712E+00	752	1.786E+00
589	5.725E+01	630	5.201E+01	671	2.161E+01	712	6.352E+00	753	1.793E+00
590	5.738E+01	631	5.136E+01	672	2.110E+01	713	6.331E+00	754	1.694E+00
591	5.826E+01	632	5.074E+01	673	2.049E+01	714	6.132E+00	755	1.584E+00
592	5.844E+01	633	5.003E+01	674	2.003E+01	715	5.863E+00	756	1.585E+00
593	5.882E+01	634	4.898E+01	675	1.957E+01	716	5.727E+00	757	1.495E+00
594	5.964E+01	635	4.823E+01	676	1.884E+01	717	5.545E+00	758	1.496E+00
595	5.951E+01	636	4.761E+01	677	1.840E+01	718	5.414E+00	759	1.423E+00
596	5.996E+01	637	4.700E+01	678	1.805E+01	719	5.200E+00	760	1.362E+00
597	6.061E+01	638	4.617E+01	679	1.738E+01	720	4.989E+00	761	1.382E+00
598	6.075E+01	639	4.529E+01	680	1.664E+01	721	4.860E+00	762	1.313E+00
599	6.095E+01	640	4.455E+01	681	1.652E+01	722	4.782E+00	763	1.291E+00
600	6.138E+01	641	4.370E+01	682	1.601E+01	723	4.578E+00	764	1.218E+00
601	6.142E+01	642	4.307E+01	683	1.566E+01	724	4.487E+00	765	1.188E+00
602	6.145E+01	643	4.224E+01	684	1.519E+01	725	4.394E+00	766	1.138E+00
603	6.151E+01	644	4.115E+01	685	1.478E+01	726	4.184E+00	767	1.063E+00
604	6.192E+01	645	4.053E+01	686	1.425E+01	727	4.096E+00	768	1.101E+00
605	6.178E+01	646	4.005E+01	687	1.393E+01	728	3.853E+00	769	1.017E+00
606	6.153E+01	647	3.887E+01	688	1.361E+01	729	3.808E+00	770	9.738E-01
607	6.215E+01	648	3.834E+01	689	1.323E+01	730	3.669E+00	771	9.726E-01
608	6.172E+01	649	3.725E+01	690	1.289E+01	731	3.503E+00	772	9.781E-01
609	6.193E+01	650	3.660E+01	691	1.241E+01	732	3.460E+00	773	9.449E-01
610	6.149E+01	651	3.579E+01	692	1.211E+01	733	3.264E+00	774	9.628E-01
611	6.137E+01	652	3.500E+01	693	1.178E+01	734	3.230E+00	775	8.738E-01
612	6.121E+01	653	3.454E+01	694	1.141E+01	735	3.155E+00	776	8.320E-01
613	6.086E+01	654	3.355E+01	695	1.097E+01	736	3.103E+00	777	8.389E-01
614	6.059E+01	655	3.269E+01	696	1.068E+01	737	2.968E+00	778	8.110E-01
615	6.044E+01	656	3.200E+01	697	1.039E+01	738	2.916E+00	779	7.335E-01
616	6.012E+01	657	3.110E+01	698	1.012E+01	739	2.821E+00	780	7.849E-01
617	5.953E+01	658	3.063E+01	699	9.625E+00	740	2.650E+00		
618	5.940E+01	659	2.968E+01	700	9.469E+00	741	2.600E+00		
619	5.862E+01	660	2.939E+01	701	9.258E+00	742	2.437E+00		
620	5.846E+01	661	2.841E+01	702	8.925E+00	743	2.367E+00		
621	5.798E+01	662	2.748E+01	703	8.605E+00	744	2.277E+00		
622	5.732E+01	663	2.689E+01	704	8.330E+00	745	2.189E+00		
623	5.676E+01	664	2.613E+01	705	8.014E+00	746	2.175E+00		
624	5.597E+01	665	2.573E+01	706	7.753E+00	747	2.159E+00		
625	5.555E+01	666	2.503E+01	707	7.652E+00	748	2.051E+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**

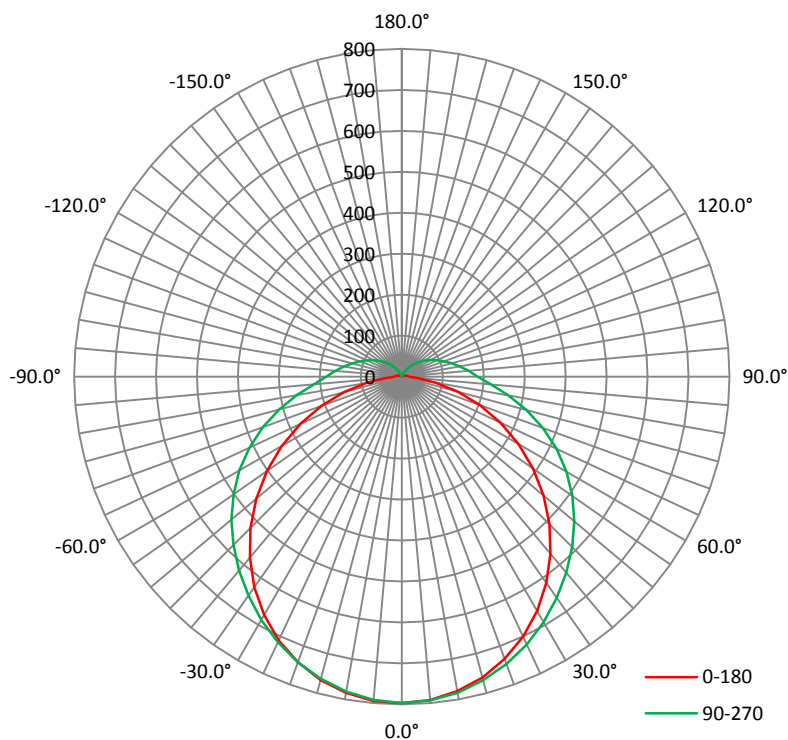
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
230.0	50	0.1012	20.96	0.9004

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I_{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
2943.46	140.43	797.9	1.24	1.30

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I_{max}):	109.7	123.4	133.1	123.2	122.4
Field Angle (10% I_{max}):	160.9	214.2	240.9	214.3	207.6

Luminous Intensity (cd) Distribution Data

C Y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0°	797	797	797	797	797	797	797	797
1°	796	798	797	797	796	797	796	796
2°	796	797	797	796	796	796	795	796
3°	796	796	796	795	795	795	794	795
4°	795	797	795	794	793	793	793	793
5°	795	794	793	793	792	791	791	792
6°	793	793	792	791	790	790	790	790
7°	791	791	790	789	788	788	787	788
8°	789	789	788	787	787	785	785	786
9°	786	786	786	784	783	784	783	783
10°	784	784	783	782	781	780	780	780
11°	781	782	780	779	778	778	776	776
12°	778	778	777	776	774	774	773	772
13°	775	774	774	772	771	770	768	769
14°	771	771	770	769	767	766	765	764
15°	767	767	766	765	764	762	761	760
16°	763	764	762	760	759	758	756	756
17°	758	758	757	757	756	754	751	751
18°	753	753	753	752	752	748	747	745
19°	747	747	748	747	747	745	742	740
20°	742	742	743	743	742	740	737	734
21°	736	737	738	739	737	736	731	727
22°	730	731	732	734	732	730	725	722
23°	724	724	727	728	727	724	719	715
24°	717	719	721	723	721	718	713	708
25°	711	712	715	717	716	712	706	702
26°	703	705	709	710	710	706	700	695
27°	695	698	702	705	704	700	694	687
28°	688	690	696	699	698	694	687	679
29°	680	683	689	692	692	688	680	672
30°	672	675	682	686	686	681	673	664
31°	663	667	675	680	680	675	665	655
32°	655	659	668	673	673	668	658	647
33°	646	651	660	666	666	661	650	639
34°	637	643	653	659	660	654	642	629
35°	628	633	645	652	653	646	635	621
36°	618	625	637	644	646	640	627	612
37°	608	615	629	638	639	632	618	603
38°	598	606	621	630	632	624	611	594
39°	587	596	612	622	624	618	602	584
40°	577	587	604	616	618	610	594	575
41°	566	578	596	608	611	603	585	564
42°	556	568	587	601	603	595	576	555
43°	545	558	579	593	596	587	567	545
44°	533	548	570	585	588	579	559	535
45°	523	538	560	577	581	571	550	525
46°	511	527	552	568	574	563	541	515
47°	499	517	542	561	566	555	532	505
48°	487	506	533	553	558	547	523	494
49°	475	496	524	544	550	539	514	483

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
50°	463	485	515	536	543	530	504	473
51°	451	474	505	529	534	522	495	462
52°	439	463	496	520	526	514	485	451
53°	427	452	487	511	518	505	475	441
54°	415	441	477	502	510	497	466	429
55°	402	430	467	494	501	488	457	419
56°	389	419	457	485	493	479	447	408
57°	377	407	447	476	484	470	437	396
58°	364	396	437	467	476	461	427	385
59°	351	384	428	458	466	453	418	374
60°	338	373	418	449	458	443	407	363
61°	325	362	408	440	449	434	398	352
62°	313	350	397	430	439	424	387	340
63°	300	339	387	421	430	415	377	329
64°	287	328	377	411	420	405	367	318
65°	274	315	366	401	410	395	357	306
66°	261	304	356	392	401	385	347	295
67°	248	292	346	381	391	376	337	283
68°	235	281	335	371	381	365	327	272
69°	222	269	325	361	371	356	316	261
70°	209	258	315	351	361	346	306	249
71°	196	246	304	341	351	335	295	238
72°	183	234	293	331	340	325	285	227
73°	171	223	283	320	330	315	274	216
74°	158	212	272	310	320	305	264	205
75°	146	201	262	299	310	294	254	194
76°	133	190	251	289	299	284	244	183
77°	121	179	241	279	289	274	234	172
78°	109	168	231	269	279	264	224	162
79°	98	157	221	259	269	255	214	152
80°	87	147	211	249	260	245	204	142
81°	76	137	201	240	250	235	195	132
82°	66	127	192	230	241	226	186	123
83°	56	118	183	221	232	218	177	114
84°	48	109	174	212	223	209	169	105
85°	40	101	166	204	215	201	161	98
86°	32	93	159	197	208	193	154	90
87°	26	87	152	190	201	187	147	84
88°	22	81	145	183	194	180	142	79
89°	19	76	141	178	189	175	137	75
90°	18	73	136	173	184	171	133	71
91°	17	70	132	169	179	166	129	68
92°	17	67	129	164	175	162	126	66
93°	16	65	125	160	171	158	122	63
94°	16	62	121	156	167	154	119	61
95°	15	59	118	152	162	150	115	58
96°	15	57	114	148	158	146	112	56
97°	15	55	111	144	154	142	109	53
98°	14	52	107	140	151	139	105	51
99°	14	50	104	137	147	135	102	49

Luminous Intensity (cd) Distribution Data

C γ	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
100°	13	48	101	133	143	131	99	47
101°	13	45	98	129	139	128	96	45
102°	12	43	95	126	135	124	93	43
103°	11	41	92	122	132	121	90	41
104°	10	40	89	119	128	118	87	39
105°	10	38	86	116	125	114	84	37
106°	9	36	83	112	122	111	82	35
107°	8	34	80	109	118	108	79	34
108°	7	32	78	106	115	105	76	32
109°	7	31	75	103	112	102	74	30
110°	7	29	72	100	109	99	71	29
111°	6	27	70	97	106	96	69	27
112°	6	26	67	94	103	93	66	26
113°	6	24	65	91	100	90	64	24
114°	6	23	62	88	97	88	61	23
115°	5	21	60	86	94	85	59	21
116°	5	20	57	83	91	82	57	20
117°	5	18	55	80	89	80	54	18
118°	5	17	53	78	86	77	52	17
119°	4	15	50	75	83	74	50	16
120°	4	14	48	72	80	72	47	14
121°	4	13	46	70	78	69	45	13
122°	4	12	44	67	75	67	43	12
123°	3	10	42	65	73	64	41	11
124°	3	9	40	62	70	62	39	10
125°	3	8	38	60	67	60	37	9
126°	3	7	36	57	65	57	36	8
127°	3	7	34	55	62	55	34	7
128°	2	6	32	53	60	52	32	6
129°	2	5	30	50	58	50	30	5
130°	2	4	28	48	55	48	28	5
131°	2	4	26	46	53	46	26	4
132°	2	3	25	44	50	43	25	3
133°	2	3	23	41	48	41	23	3
134°	2	2	21	39	46	39	21	3
135°	2	2	20	37	43	37	20	2
136°	2	2	18	35	41	35	18	2
137°	2	2	17	33	39	33	17	2
138°	2	2	15	31	37	31	15	2
139°	1	2	14	29	35	29	14	2
140°	1	2	13	27	32	27	13	2
141°	1	2	11	25	30	25	11	2
142°	1	2	10	23	28	23	10	2
143°	1	2	9	21	26	21	9	2
144°	1	2	8	20	24	20	8	2
145°	1	2	7	18	22	18	7	2
146°	1	2	6	16	21	16	6	2
147°	1	2	5	15	19	15	5	2
148°	1	2	4	13	17	13	4	2
149°	1	2	3	11	15	11	4	2

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
150°	1	2	3	10	13	10	3	2
151°	1	2	3	9	12	9	3	2
152°	2	2	2	7	10	7	2	2
153°	2	2	2	6	9	6	2	2
154°	2	2	2	5	7	5	2	2
155°	2	2	2	4	6	4	2	2
156°	2	2	2	3	5	4	2	2
157°	2	2	2	3	4	3	2	2
158°	2	2	2	3	3	3	2	2
159°	2	2	2	3	3	2	2	2
160°	2	2	2	2	3	2	2	2
161°	2	2	2	2	3	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	2	2	2	2	2
174°	2	2	2	2	2	2	2	1
175°	1	1	2	2	2	2	1	1
176°	1	1	2	2	2	2	1	1
177°	1	1	1	1	2	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°	797	797	797	797	797	797	797	797
1°	796	797	797	795	796	798	797	797
2°	796	796	796	797	797	796	797	797
3°	795	796	796	795	795	796	796	797
4°	793	795	795	794	795	796	795	796
5°	793	792	793	793	793	794	794	795
6°	790	791	792	791	792	792	793	793
7°	788	788	789	790	790	791	790	792
8°	785	787	787	788	788	789	789	789
9°	782	785	784	785	786	787	787	787
10°	779	781	782	783	784	785	785	784
11°	776	778	779	779	781	782	783	781
12°	773	775	775	777	778	778	779	779
13°	769	770	772	773	775	775	775	775
14°	765	767	768	769	771	772	772	772
15°	761	762	764	766	767	769	768	768
16°	756	758	759	762	764	765	764	762
17°	751	752	755	758	760	761	759	759
18°	745	747	750	754	756	757	755	754
19°	740	742	745	749	751	753	751	748
20°	733	736	740	744	747	748	746	744
21°	728	730	734	739	742	744	742	738
22°	721	725	729	734	738	738	736	732
23°	714	718	723	729	732	733	730	726
24°	708	712	717	722	727	728	724	719
25°	700	704	711	718	722	722	718	713
26°	693	698	705	712	716	716	712	705
27°	686	690	698	706	710	710	705	699
28°	678	682	692	700	704	704	699	691
29°	669	675	685	694	698	699	692	683
30°	661	667	678	687	692	692	686	677
31°	652	658	671	680	686	686	679	668
32°	643	651	663	674	679	678	672	660
33°	634	642	656	667	673	671	663	652
34°	625	634	648	659	666	665	656	644
35°	615	624	641	654	659	658	648	635
36°	605	616	632	646	653	651	641	625
37°	596	606	624	639	646	644	633	617
38°	585	597	616	632	639	637	624	607
39°	575	588	607	624	632	630	617	597
40°	564	578	599	617	625	622	609	589
41°	554	568	591	609	618	615	600	579
42°	543	558	582	602	610	606	591	569
43°	532	548	573	594	603	599	582	559
44°	521	539	565	586	596	591	574	549
45°	510	528	556	579	588	583	565	539
46°	499	518	547	571	581	575	556	528
47°	487	507	538	562	573	567	547	518
48°	475	497	529	554	565	559	537	508
49°	464	486	519	546	558	552	528	497

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°	452	476	510	538	549	543	519	486
51°	440	465	501	529	541	535	510	476
52°	428	454	492	521	533	526	501	465
53°	416	443	482	512	525	517	491	454
54°	404	433	473	504	517	509	481	443
55°	391	421	463	495	508	500	471	432
56°	379	411	453	487	500	491	462	420
57°	367	399	444	478	491	482	452	409
58°	354	388	434	469	482	474	442	398
59°	342	377	423	459	474	465	432	386
60°	329	365	414	450	464	455	422	375
61°	317	354	404	441	455	446	412	363
62°	304	343	394	432	446	436	402	352
63°	291	332	384	422	436	427	391	341
64°	279	321	373	412	427	417	381	329
65°	265	309	363	403	417	407	371	317
66°	253	298	353	393	407	397	360	306
67°	240	286	343	383	397	387	350	295
68°	228	274	332	373	387	377	340	283
69°	215	263	322	363	377	368	329	270
70°	202	252	312	352	367	357	319	260
71°	190	241	301	342	357	347	308	248
72°	177	230	291	332	347	336	298	237
73°	165	218	280	321	336	325	287	225
74°	153	207	270	311	325	315	276	214
75°	141	196	259	301	315	305	266	203
76°	128	186	249	291	305	294	255	192
77°	116	175	239	280	295	284	245	181
78°	105	164	228	270	285	273	235	170
79°	94	154	219	260	274	264	224	159
80°	83	144	209	250	264	254	215	149
81°	73	134	199	240	255	244	205	139
82°	63	125	190	231	245	234	195	129
83°	54	115	181	222	236	225	186	120
84°	45	107	173	213	227	216	177	110
85°	38	99	165	205	218	208	169	102
86°	31	92	157	197	211	199	161	95
87°	26	85	150	190	203	192	154	88
88°	21	80	144	183	196	185	148	82
89°	19	75	139	177	191	180	142	77
90°	17	72	135	172	185	175	138	74
91°	17	69	131	168	181	170	134	71
92°	17	66	127	164	176	166	130	68
93°	16	64	123	160	172	162	126	65
94°	16	61	119	155	168	157	122	63
95°	15	59	116	151	163	153	118	60
96°	15	56	113	148	159	149	115	58
97°	14	54	109	144	155	145	112	55
98°	14	52	106	140	152	142	108	53
99°	14	50	103	136	148	138	105	51

Luminous Intensity (cd) Distribution Data (cont.)

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
100°	13	47	100	133	144	134	102	49
101°	12	45	97	129	140	131	99	47
102°	12	43	94	125	136	127	96	45
103°	11	42	91	122	133	123	93	43
104°	10	40	88	118	130	119	90	41
105°	9	38	85	115	126	116	87	39
106°	8	36	82	112	122	113	84	37
107°	7	34	80	109	119	110	81	35
108°	7	33	77	106	116	107	79	33
109°	7	31	75	103	112	103	76	32
110°	6	29	72	100	109	101	73	30
111°	6	28	70	97	106	98	71	28
112°	6	26	67	94	103	95	68	27
113°	6	25	65	91	100	92	66	25
114°	6	23	62	88	98	89	63	24
115°	5	22	60	86	95	86	61	22
116°	5	20	58	83	92	84	59	21
117°	5	19	55	80	89	81	56	19
118°	5	18	53	78	87	78	54	18
119°	4	16	51	75	84	76	52	16
120°	4	15	49	73	81	73	50	15
121°	4	14	47	70	79	71	47	14
122°	4	13	45	68	76	68	45	13
123°	4	12	43	65	73	66	43	11
124°	3	10	41	63	71	63	41	10
125°	3	9	39	61	68	61	39	9
126°	3	8	37	58	66	59	37	8
127°	3	7	35	56	63	56	35	7
128°	3	7	33	54	61	54	33	6
129°	2	6	31	51	59	52	31	5
130°	2	5	29	49	56	49	30	5
131°	2	4	27	47	54	47	28	4
132°	2	4	26	45	52	45	26	3
133°	2	3	24	43	49	43	24	3
134°	2	2	22	40	47	41	23	2
135°	2	2	21	38	45	39	21	2
136°	1	2	19	36	42	37	20	2
137°	1	2	17	34	40	35	18	2
138°	1	2	16	32	38	32	17	1
139°	1	1	14	30	36	30	15	1
140°	1	1	13	28	34	29	14	1
141°	1	1	11	26	31	27	13	1
142°	1	1	10	24	29	25	12	1
143°	1	1	8	22	27	23	11	1
144°	1	1	7	20	25	21	9	1
145°	1	1	6	18	23	20	8	1
146°	1	1	5	16	21	18	8	1
147°	1	1	4	14	19	16	7	1
148°	1	1	3	12	17	15	6	1
149°	1	1	2	10	15	13	5	1

Luminous Intensity (cd) Distribution Data (cont.)

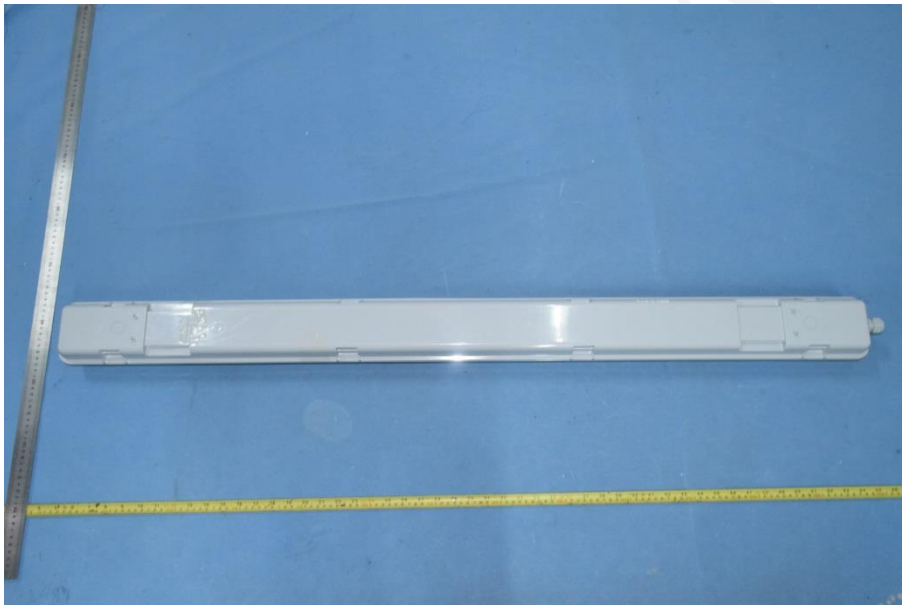
C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
150°	1	1	1	9	14	12	4	1
151°	1	1	1	7	12	10	4	1
152°	1	1	1	6	10	9	3	1
153°	1	1	1	4	9	8	3	1
154°	1	1	1	3	7	7	2	1
155°	1	1	1	2	6	5	2	1
156°	1	1	1	2	5	4	2	1
157°	1	1	1	2	3	3	2	1
158°	1	1	1	1	2	3	2	1
159°	1	1	1	1	2	2	1	1
160°	1	1	1	1	2	2	1	1
161°	1	1	1	1	2	2	1	1
162°	1	1	1	1	1	2	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	19.0	0.65
5-10	56.3	1.91
10-15	91.8	3.12
15-20	124.1	4.21
20-25	152.5	5.18
25-30	176.0	5.98
30-35	194.2	6.60
35-40	206.7	7.02
40-45	213.5	7.26
45-50	214.6	7.29
50-55	210.1	7.13
55-60	200.3	6.81
60-65	185.4	6.29
65-70	166.0	5.64
70-75	143.0	4.86
75-80	117.8	4.00
80-85	92.9	3.16
85-90	72.8	2.48
90-95	61.4	2.08
95-100	52.7	1.79
100-105	44.5	1.51
105-110	36.9	1.25
110-115	30.1	1.03
115-120	24.0	0.81
120-125	18.6	0.63
125-130	13.8	0.47
130-135	9.8	0.34
135-140	6.6	0.22
140-145	4.1	0.14
145-150	2.2	0.07
150-155	1.0	0.04
155-160	0.4	0.01
160-165	0.3	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	19.0	0.65
0-10	75.4	2.56
0-15	167.1	5.68
0-20	291.2	9.89
0-25	443.7	15.07
0-30	619.7	21.05
0-35	813.9	27.65
0-40	1020.6	34.67
0-45	1234.1	41.93
0-50	1448.6	49.22
0-55	1658.7	56.35
0-60	1859.0	63.16
0-65	2044.4	69.45
0-70	2210.4	75.09
0-75	2353.4	79.95
0-80	2471.2	83.95
0-85	2564.1	87.11
0-90	2636.9	89.59
0-95	2698.3	91.67
0-100	2751.0	93.46
0-105	2795.4	94.97
0-110	2832.3	96.22
0-115	2862.4	97.25
0-120	2886.5	98.06
0-125	2905.0	98.69
0-130	2918.8	99.16
0-135	2928.6	99.50
0-140	2935.2	99.72
0-145	2939.3	99.86
0-150	2941.5	99.93
0-155	2942.5	99.97
0-160	2942.9	99.98
0-165	2943.2	99.99
0-170	2943.3	100.00
0-175	2943.4	100.00
0-180	2943.5	100.00

6. Product Photo



UVA1

LED Tri-Proof Light

Model:U-TRI-20W-B-MS

Power:20W

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.
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*****END OF REPORT*****