

ANSI/IES LM-79-19

MEASUREMENT AND TEST REPORT

For

AOK LED Light Company Limited

#1/F of 1#Building, East Block of 3/F of Building 1, And 2/F of Building 4, ST George's Science and Technology Industrial Park, Northside of Xinyu Road, Xiangshan Community, Xianqiao Street Baoan District, 518000 Shenzhen, Guangdong, CHINA

#rTest Model: AOK-800WiSF-HV-S5-00-5070-30-P

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:	DG3220519-21531E-10
Test Date:	2022-05-23 to 2022-05-24
Report Date:	2022-06-08
Approved by:	Bill Xiong / EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5/F(B-West) -7/F, the 3rd Phase of Wan Li Industrial Building D, Shihua Road, Futian Free Trade Zone Shenzhen, Guangdong, China. Tel: +86-755-33320018 Fax: +86-755-33320008
Test Facility:	Test facility was located at No.12, Pulong East 1 st Road, Tangxia Town, 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.

1. Product Description#

General Information:

One test sample was in good condition and received on 2022-05-19, and used for testing.

Model Tested: AOK-800WiSF-HV-S5-00-5070-30-P
 Manufacturer: AOK LED Light Company Limited
 Brand Name: AOK
 Product Designation: Stadium Light
 Burning Time Before Test: 0hour(For New Products)

Rated Values:

Rated Voltage/Frequency: 180-528V AC 60Hz
 Rated Power: 800 W
 Nominal CCT: 5000K
 Nominal Lumen Output: 112000 lm

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
1.5m temperature integrating sphere	SENSING	SPR-600	S09008	2021-09-27	2022-09-26
High-precision rapid spectral analysis system	EVERFINE	HAAS-2000	M112048CA1361125	2021-09-27	2022-09-26
Digital power meter	YOKOGAWA	WT310	13398	2022-01-05	2023-01-04
Programmable Precision DC Power Supply	EVERFINE	WY5015	11060010	2022-01-05	2023-01-04
thermometer	SENSING	NA	NA	2022-02-14	2023-02-13
Standard Light Source	EVERFINE	D204	N/A	2021-10-15	2022-10-14
Precision frequency power supply	ALL Power	APW-105N	970613	2022-01-05	2023-01-04
AC POWER SUPPLY	EVERFINE	VPS1030 PWM	1012017	2022-01-06	2023-01-05
Digital CC&CV DC Power Supply	EVERFINE	WY12010	1009009	2022-01-06	2023-01-05
Digital power meter	YOKOGAWA	WT-210	91j926132	2022-01-06	2023-01-05
full-field speed goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	2021-10-26	2022-10-25

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
wireless remote thermohygrometer	N/A	433MHz	N/A	2022-01-10	2023-01-09
Standard Light Source	EVERFINE	D908	1012003	2021-10-15	2022-10-14

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.

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 $U=22\text{K}$ ($K=2$), 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]

The Stabilization time: **30 minutes**

Total operating time for integrating sphere test: **1.5 hour**

Test orientation: **Downward**

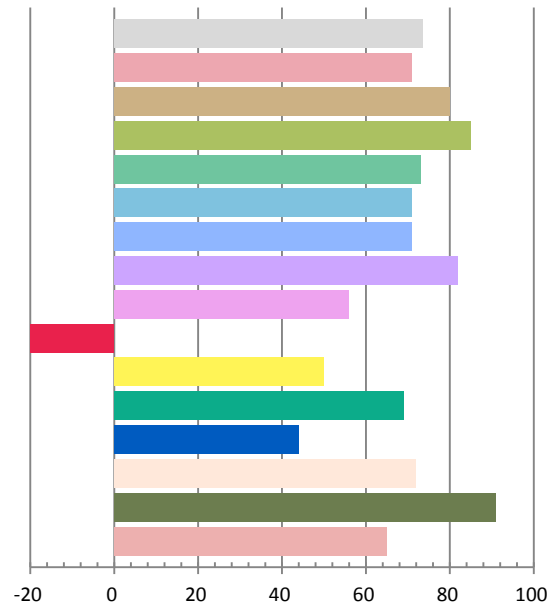
Photometric and Electrical Measurement Result

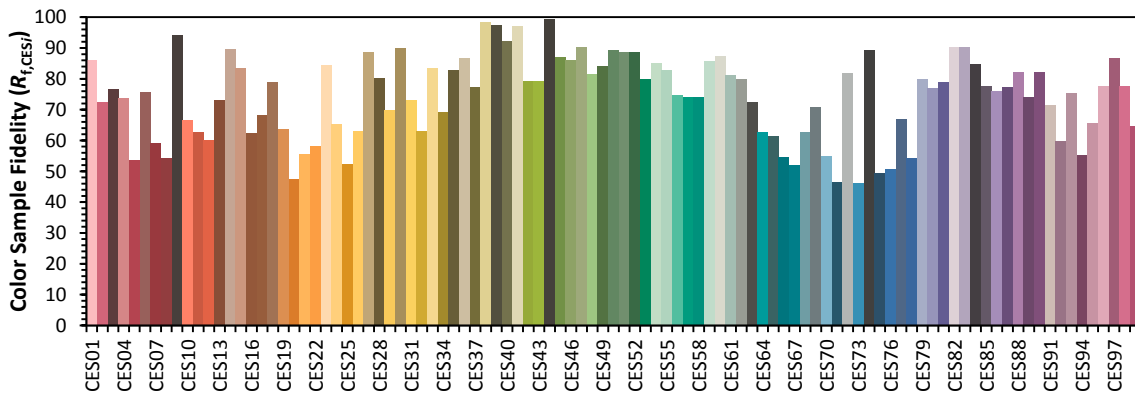
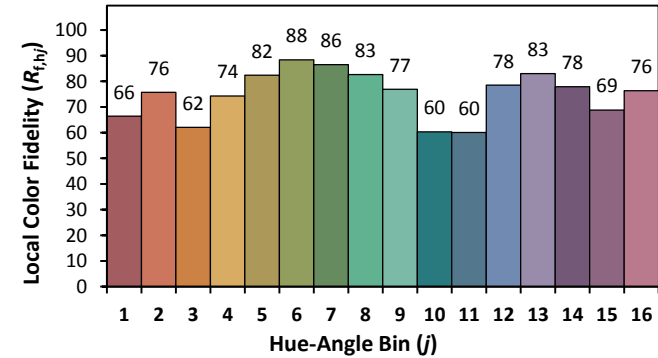
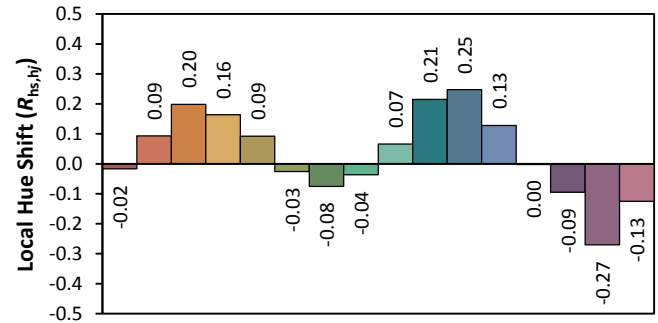
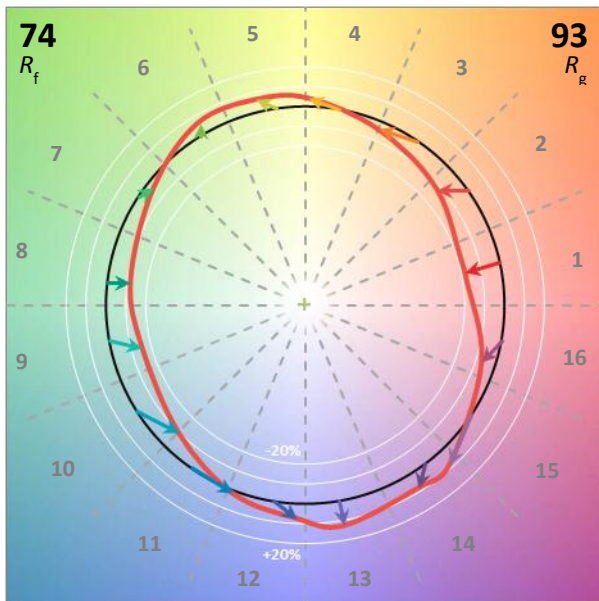
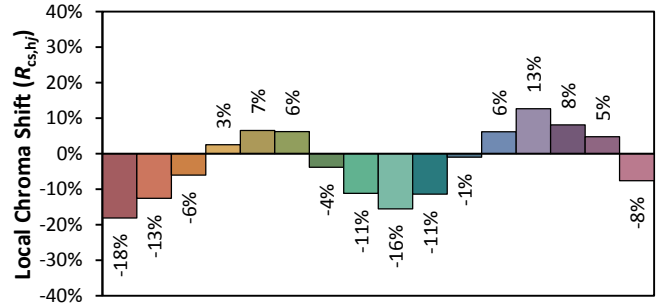
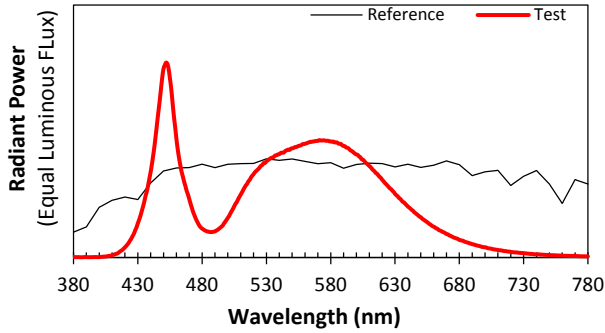
Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
220.0	60	3.611	791.7	0.9966	122622	154.88

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
365.791	5125	0.00118	0.3419	0.3513	0.2093	0.4841

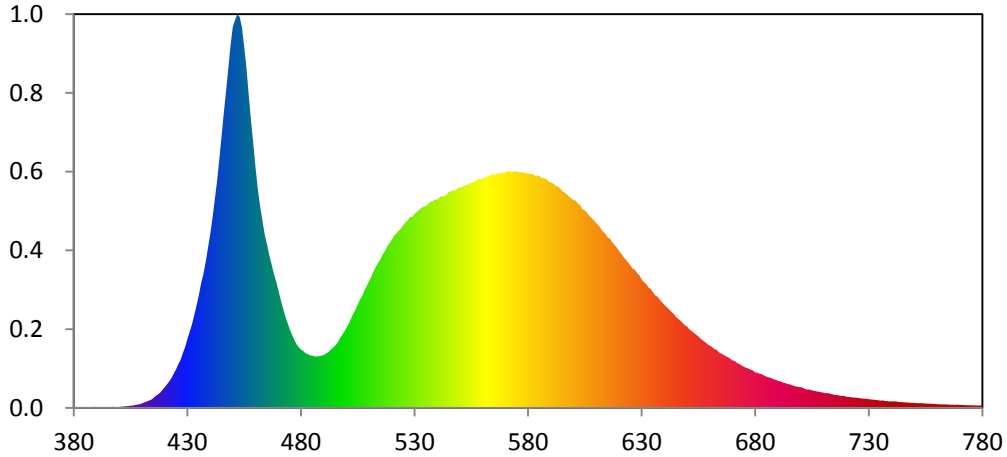
Color Rendering Index

Ra			
73.5			
R1	R2	R3	R4
71	80	85	73
R5	R6	R7	R8
71	71	82	56
R9	R10	R11	R12
-30	50	69	44
R13	R14	R15	
72	91	65	





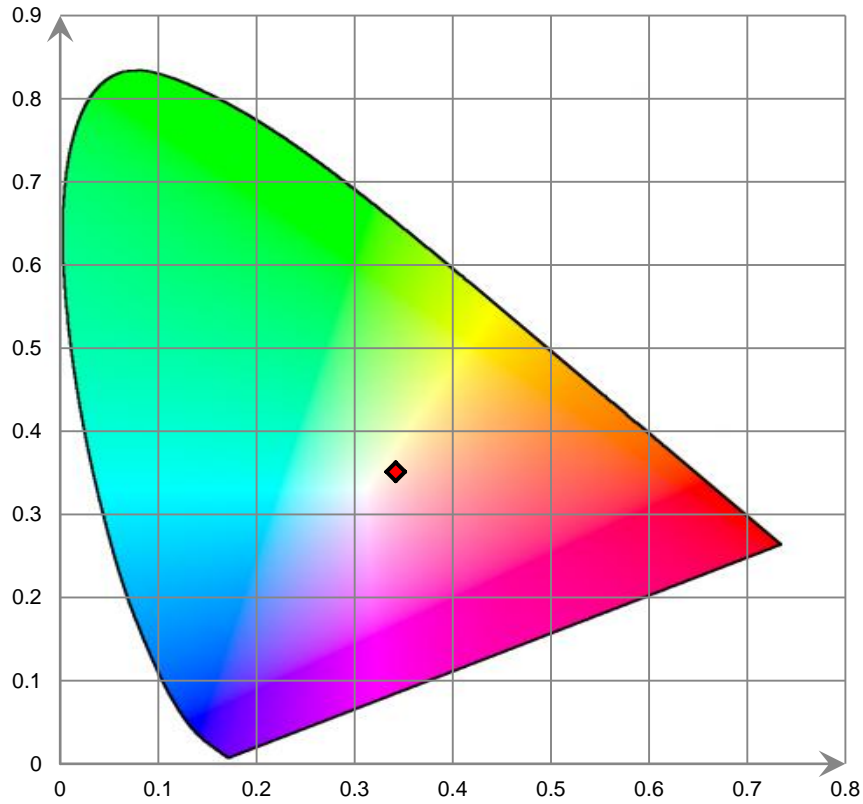
Relative Spectral Power Distribution



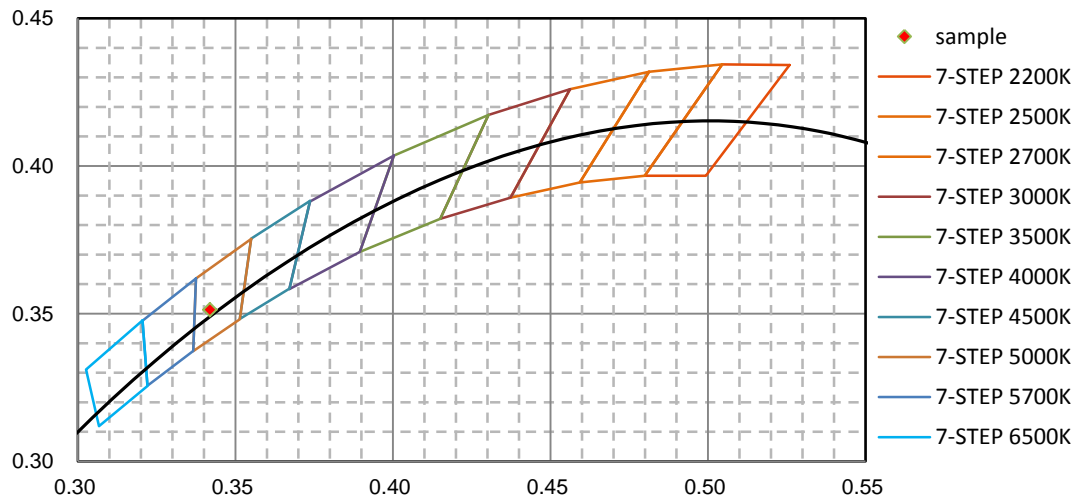
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	9.669E+00	421	2.069E+02	462	1.780E+03	503	8.271E+02	544	1.877E+03
381	8.446E+00	422	2.343E+02	463	1.650E+03	504	8.663E+02	545	1.900E+03
382	6.808E+00	423	2.650E+02	464	1.529E+03	505	9.129E+02	546	1.908E+03
383	6.826E+00	424	3.035E+02	465	1.443E+03	506	9.560E+02	547	1.919E+03
384	7.326E+00	425	3.390E+02	466	1.349E+03	507	9.879E+02	548	1.913E+03
385	5.440E+00	426	3.840E+02	467	1.272E+03	508	1.037E+03	549	1.935E+03
386	4.906E+00	427	4.251E+02	468	1.183E+03	509	1.078E+03	550	1.942E+03
387	4.634E+00	428	4.850E+02	469	1.119E+03	510	1.119E+03	551	1.946E+03
388	7.865E+00	429	5.370E+02	470	1.040E+03	511	1.157E+03	552	1.961E+03
389	8.847E+00	430	6.068E+02	471	9.592E+02	512	1.204E+03	553	1.965E+03
390	6.716E+00	431	6.698E+02	472	8.860E+02	513	1.244E+03	554	1.973E+03
391	7.024E+00	432	7.389E+02	473	8.104E+02	514	1.283E+03	555	1.984E+03
392	5.903E+00	433	8.197E+02	474	7.532E+02	515	1.310E+03	556	1.988E+03
393	6.584E+00	434	9.012E+02	475	6.946E+02	516	1.355E+03	557	1.998E+03
394	5.681E+00	435	9.891E+02	476	6.478E+02	517	1.381E+03	558	2.014E+03
395	8.232E+00	436	1.094E+03	477	6.019E+02	518	1.424E+03	559	2.017E+03
396	6.773E+00	437	1.174E+03	478	5.623E+02	519	1.455E+03	560	2.023E+03
397	9.525E+00	438	1.282E+03	479	5.347E+02	520	1.482E+03	561	2.029E+03
398	8.019E+00	439	1.405E+03	480	5.145E+02	521	1.515E+03	562	2.039E+03
399	7.142E+00	440	1.523E+03	481	5.007E+02	522	1.538E+03	563	2.047E+03
400	7.634E+00	441	1.665E+03	482	4.836E+02	523	1.558E+03	564	2.057E+03
401	1.153E+01	442	1.822E+03	483	4.736E+02	524	1.581E+03	565	2.055E+03
402	1.257E+01	443	1.991E+03	484	4.636E+02	525	1.609E+03	566	2.063E+03
403	1.531E+01	444	2.184E+03	485	4.603E+02	526	1.635E+03	567	2.064E+03
404	1.595E+01	445	2.387E+03	486	4.535E+02	527	1.650E+03	568	2.070E+03
405	1.877E+01	446	2.591E+03	487	4.529E+02	528	1.684E+03	569	2.073E+03
406	2.107E+01	447	2.782E+03	488	4.550E+02	529	1.682E+03	570	2.074E+03
407	2.622E+01	448	2.996E+03	489	4.603E+02	530	1.712E+03	571	2.087E+03
408	2.980E+01	449	3.199E+03	490	4.654E+02	531	1.727E+03	572	2.082E+03
409	3.304E+01	450	3.359E+03	491	4.794E+02	532	1.745E+03	573	2.081E+03
410	3.836E+01	451	3.419E+03	492	4.917E+02	533	1.761E+03	574	2.083E+03
411	4.897E+01	452	3.466E+03	493	5.091E+02	534	1.773E+03	575	2.083E+03
412	5.565E+01	453	3.444E+03	494	5.284E+02	535	1.778E+03	576	2.077E+03
413	6.453E+01	454	3.349E+03	495	5.478E+02	536	1.796E+03	577	2.075E+03
414	7.131E+01	455	3.179E+03	496	5.698E+02	537	1.816E+03	578	2.076E+03
415	8.726E+01	456	2.997E+03	497	6.059E+02	538	1.819E+03	579	2.065E+03
416	1.049E+02	457	2.760E+03	498	6.376E+02	539	1.834E+03	580	2.064E+03
417	1.202E+02	458	2.525E+03	499	6.709E+02	540	1.836E+03	581	2.059E+03
418	1.358E+02	459	2.327E+03	500	7.059E+02	541	1.857E+03	582	2.062E+03
419	1.587E+02	460	2.114E+03	501	7.401E+02	542	1.865E+03	583	2.045E+03
420	1.822E+02	461	1.930E+03	502	7.845E+02	543	1.862E+03	584	2.048E+03

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	2.044E+03	626	1.229E+03	667	4.564E+02	708	1.418E+02	749	4.455E+01
586	2.026E+03	627	1.216E+03	668	4.470E+02	709	1.377E+02	750	4.469E+01
587	2.022E+03	628	1.186E+03	669	4.342E+02	710	1.345E+02	751	4.276E+01
588	2.019E+03	629	1.166E+03	670	4.187E+02	711	1.291E+02	752	4.139E+01
589	1.994E+03	630	1.132E+03	671	4.141E+02	712	1.300E+02	753	4.128E+01
590	1.985E+03	631	1.109E+03	672	3.962E+02	713	1.247E+02	754	3.975E+01
591	1.978E+03	632	1.091E+03	673	3.876E+02	714	1.201E+02	755	3.875E+01
592	1.957E+03	633	1.061E+03	674	3.748E+02	715	1.147E+02	756	3.753E+01
593	1.951E+03	634	1.045E+03	675	3.638E+02	716	1.141E+02	757	3.675E+01
594	1.937E+03	635	1.018E+03	676	3.534E+02	717	1.105E+02	758	3.592E+01
595	1.913E+03	636	9.905E+02	677	3.466E+02	718	1.057E+02	759	3.491E+01
596	1.897E+03	637	9.790E+02	678	3.369E+02	719	1.062E+02	760	3.401E+01
597	1.884E+03	638	9.538E+02	679	3.298E+02	720	9.956E+01	761	3.186E+01
598	1.863E+03	639	9.305E+02	680	3.130E+02	721	9.712E+01	762	3.064E+01
599	1.845E+03	640	9.069E+02	681	3.092E+02	722	9.491E+01	763	3.205E+01
600	1.832E+03	641	8.885E+02	682	3.010E+02	723	9.126E+01	764	3.063E+01
601	1.825E+03	642	8.690E+02	683	2.968E+02	724	9.140E+01	765	3.028E+01
602	1.797E+03	643	8.462E+02	684	2.829E+02	725	8.926E+01	766	2.850E+01
603	1.784E+03	644	8.317E+02	685	2.761E+02	726	8.535E+01	767	2.992E+01
604	1.748E+03	645	8.038E+02	686	2.684E+02	727	8.328E+01	768	2.705E+01
605	1.740E+03	646	7.876E+02	687	2.628E+02	728	8.071E+01	769	2.889E+01
606	1.718E+03	647	7.682E+02	688	2.515E+02	729	8.119E+01	770	2.615E+01
607	1.690E+03	648	7.501E+02	689	2.479E+02	730	7.757E+01	771	2.706E+01
608	1.671E+03	649	7.279E+02	690	2.372E+02	731	7.506E+01	772	2.507E+01
609	1.651E+03	650	7.178E+02	691	2.347E+02	732	7.300E+01	773	2.434E+01
610	1.627E+03	651	6.935E+02	692	2.246E+02	733	7.000E+01	774	2.343E+01
611	1.608E+03	652	6.771E+02	693	2.198E+02	734	6.840E+01	775	2.276E+01
612	1.579E+03	653	6.612E+02	694	2.125E+02	735	6.429E+01	776	2.207E+01
613	1.553E+03	654	6.450E+02	695	2.079E+02	736	6.562E+01	777	2.259E+01
614	1.534E+03	655	6.297E+02	696	2.025E+02	737	6.139E+01	778	2.041E+01
615	1.504E+03	656	6.103E+02	697	1.935E+02	738	6.025E+01	779	2.261E+01
616	1.491E+03	657	5.931E+02	698	1.885E+02	739	5.706E+01	780	2.015E+01
617	1.461E+03	658	5.784E+02	699	1.845E+02	740	5.747E+01		
618	1.435E+03	659	5.603E+02	700	1.826E+02	741	5.697E+01		
619	1.415E+03	660	5.494E+02	701	1.780E+02	742	5.688E+01		
620	1.383E+03	661	5.365E+02	702	1.667E+02	743	5.257E+01		
621	1.359E+03	662	5.178E+02	703	1.621E+02	744	5.217E+01		
622	1.328E+03	663	5.119E+02	704	1.614E+02	745	5.065E+01		
623	1.307E+03	664	4.899E+02	705	1.552E+02	746	4.840E+01		
624	1.282E+03	665	4.797E+02	706	1.500E+02	747	4.799E+01		
625	1.256E+03	666	4.697E+02	707	1.458E+02	748	4.659E+01		

CIE 1931 x y Chromaticity Diagram



7-Step Chromaticity Quadrangles



[Goniophotometer System]

The Stabilization time: **30 minutes**

Total operating time for luminous intensity distribution: **1.5 hour**

Test orientation: **Downward**

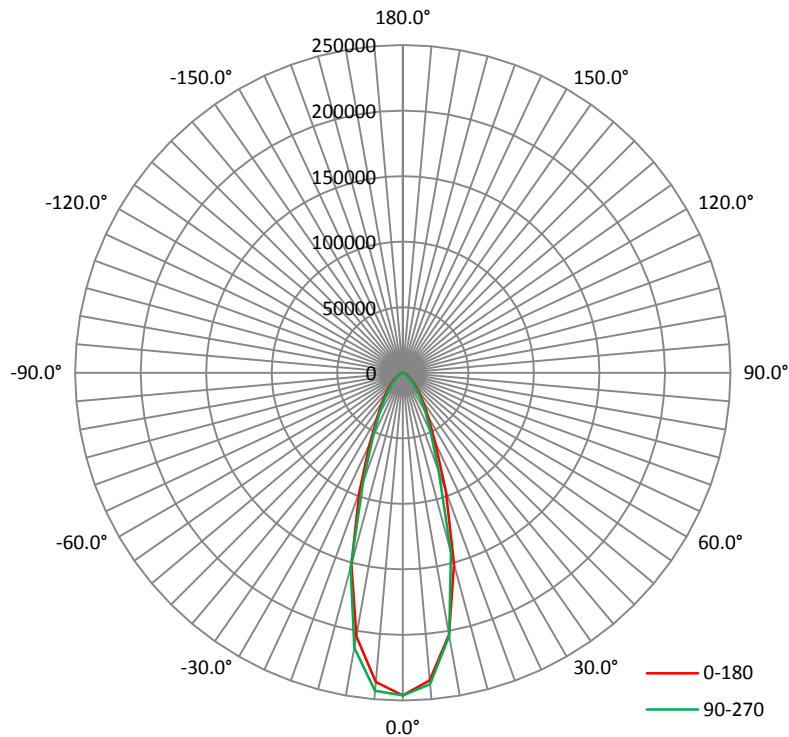
Electrical Measurement

Input Voltage (V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
220.1	60	3.609	791.9	0.9968

Photometric Measurement

Luminous Flux (lm)	Efficacy (lm/W)	I _{max} (cd)	S/MH (C0/180)	S/MH (C90/270)
122734	154.99	246441	0.58	0.53

Luminous Intensity Distribution



	C0/180	C45/225	C90/270	C135/315	AVG.
Beam Angle (50% I _{max}):	34.9	34.1	33.5	34.2	34.2
Field Angle (10% I _{max}):	73.2	71.8	68.9	72.4	71.6

Luminous Intensity (cd) Distribution Data

C Y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
0°	246094	246094	246094	246094	246094	246094	246094	246094
1°	245909	246118	246266	246393	246414	246349	246201	246097
2°	244947	245472	245999	246357	246441	246229	245806	245427
3°	243154	244032	245160	245951	246142	245714	244835	244001
4°	240400	241744	243576	244933	245276	244699	243183	241727
5°	236775	238560	241115	242990	243498	242844	240765	238544
6°	232180	234403	237377	239730	240308	239783	237333	234469
7°	226648	229267	232575	234968	235627	235487	232776	229546
8°	220208	222904	226319	228857	229806	229704	227105	223569
9°	212609	215617	218612	220972	221842	222126	219860	216637
10°	204131	206847	210030	211996	212987	213537	211662	208714
11°	194670	197113	199564	201406	202649	203247	202318	199781
12°	184681	186703	188633	190305	191506	192409	192039	190282
13°	173876	175363	176841	178185	179852	180720	180973	179621
14°	163039	164196	164470	165685	167070	168239	169060	168918
15°	151565	151973	152225	152822	153808	155265	156756	157509
16°	140250	140215	139553	139095	140082	141869	144144	145680
17°	128911	128659	127154	126111	126073	128499	131440	134082
18°	117750	117199	115466	113146	112645	115450	119471	122380
19°	107269	106543	103854	100992	100097	103144	107650	111412
20°	97236	96456	93622	89975	88688	91918	96840	100786
21°	88170	87159	84048	80249	79015	82331	87151	91054
22°	79645	78757	75372	71906	70855	73818	78274	82266
23°	71958	70852	68059	64845	64092	66516	70712	74020
24°	65134	64287	62502	59808	59108	61271	64133	67018
25°	59798	59047	56970	54794	54139	56048	59021	61503
26°	54503	53847	51438	49780	49169	50826	53957	56028
27°	49208	48647	47346	46032	45335	46956	48894	50553
28°	45331	44869	44008	42561	41791	43455	45242	46487
29°	41879	41615	40732	39308	38614	40196	41935	42986
30°	38911	38640	37875	36305	35760	37015	38902	39868
31°	36249	35954	35292	33707	33312	34326	36231	36974
32°	33802	33526	32758	31251	30957	31808	33699	34437
33°	31600	31258	30615	29186	28605	29687	31447	32070
34°	29496	29154	28468	27134	26329	27618	29330	29891
35°	27596	27210	26503	25137	23972	25650	27325	27925
36°	25828	25397	24711	23217	21849	23754	25528	26072
37°	24190	23742	22940	21164	19924	21751	23752	24419
38°	22608	22182	21381	19286	18416	19826	22110	22836
39°	21077	20710	19887	17473	17100	17993	20552	21373
40°	19654	19374	18508	16001	15922	16445	19124	20023
41°	18264	18039	17277	14803	14804	15153	17827	18663
42°	16988	16794	15989	13717	13723	14052	16569	17389
43°	15800	15611	14792	12766	12756	13092	15370	16138
44°	14699	14438	13580	11826	11825	12132	14197	14924
45°	13660	13388	12324	10912	10956	11228	12992	13823
46°	12630	12382	11212	10087	10136	10364	11849	12780
47°	11660	11470	10098	9268	9322	9544	10726	11840
48°	10706	10597	9148	8521	8574	8774	9654	10933
49°	9820	9746	8346	7805	7843	8034	8781	10040

Luminous Intensity (cd) Distribution Data

C y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
50°	9006	8980	7603	7128	7170	7363	7988	9242
51°	8247	8232	6962	6520	6536	6732	7314	8475
52°	7534	7535	6308	6022	6005	6224	6675	7753
53°	6904	6913	5832	5526	5476	5720	6157	7106
54°	6284	6284	5360	5031	4948	5215	5641	6506
55°	5822	5810	4888	4632	4528	4803	5124	6029
56°	5360	5336	4525	4290	4168	4437	4725	5551
57°	4960	4914	4201	3994	3877	4115	4371	5074
58°	4592	4541	3898	3711	3619	3816	4046	4681
59°	4239	4209	3645	3484	3401	3568	3770	4332
60°	3952	3917	3399	3252	3167	3323	3515	4016
61°	3695	3646	3182	3038	2904	3099	3282	3732
62°	3448	3387	2977	2843	2682	2894	3060	3461
63°	3224	3154	2767	2609	2468	2658	2843	3227
64°	3014	2925	2577	2422	2291	2460	2641	2996
65°	2815	2703	2386	2231	2116	2261	2445	2772
66°	2623	2499	2210	2060	1956	2089	2263	2563
67°	2436	2290	2044	1902	1806	1929	2090	2348
68°	2254	2096	1874	1746	1651	1771	1919	2151
69°	2082	1910	1715	1601	1517	1625	1761	1957
70°	1911	1733	1541	1452	1369	1473	1588	1775
71°	1751	1564	1375	1302	1238	1323	1412	1604
72°	1597	1404	1236	1163	1083	1183	1267	1443
73°	1452	1260	1101	1016	962	1040	1132	1298
74°	1311	1121	981	881	854	896	1011	1157
75°	1171	990	862	775	748	786	892	1024
76°	1045	870	751	674	649	684	779	902
77°	927	753	650	587	563	596	677	786
78°	815	647	559	499	478	509	582	680
79°	702	553	468	412	392	422	488	583
80°	593	458	376	340	321	348	394	487
81°	484	364	304	273	258	281	320	390
82°	376	285	242	219	207	224	257	308
83°	287	218	188	170	161	175	199	238
84°	207	159	144	132	130	135	154	177
85°	141	114	109	111	113	114	118	126
86°	88	81	85	94	97	96	90	90
87°	64	61	69	80	83	82	72	62
88°	40	41	55	55	55	57	58	43
89°	17	20	42	42	42	43	44	24
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
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°	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
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

Luminous Intensity (cd) Distribution Data

C \ y	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°
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.)

C Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
0°	246094	246094	246094	246094	246094	246094	246094	246094
1°	245561	245497	245521	245566	245587	245521	245450	245404
2°	244311	244377	244579	244778	244753	244553	244241	243953
3°	242287	242545	243147	243624	243491	243093	242344	241681
4°	239354	239983	241088	241714	241512	240838	239634	238437
5°	235517	236608	238123	238870	238515	237671	235903	234321
6°	230891	232203	234242	234881	234334	233447	231326	229122
7°	225294	226842	228936	229356	228951	227826	225251	223023
8°	218759	220465	222152	222576	221894	220724	218191	215897
9°	211274	212721	214333	214304	213718	212467	210038	207708
10°	202840	204209	205115	204724	203983	202955	200703	198730
11°	193604	194267	194456	194113	193399	192065	190433	188706
12°	183662	183631	183384	182501	181884	180409	179408	178486
13°	173165	172786	171312	170236	169093	168052	167444	167506
14°	162194	161046	159121	157516	156024	155054	155352	155934
15°	150986	149615	146731	143894	142045	141637	142746	144586
16°	139558	137771	133791	130271	128066	128219	130141	132604
17°	128129	125927	120862	116655	114094	114814	117548	120630
18°	116721	114100	109119	103960	101214	102720	106015	109551
19°	106065	102941	97992	92784	90070	91650	95489	99107
20°	96018	93065	87969	82464	80149	81992	85781	89692
21°	86726	83781	78760	73930	71858	73802	77237	80688
22°	78230	75469	71121	66897	65223	66833	70010	72995
23°	70661	68267	64213	60788	59564	60918	63375	66095
24°	63843	61600	58527	55892	54800	55971	57979	59928
25°	57964	56205	53790	51589	50538	51665	53252	54802
26°	52816	51325	49627	47611	46729	47786	49110	50136
27°	48393	47286	46025	44267	43261	44342	45618	46269
28°	44620	43866	42765	40920	40065	41114	42352	42902
29°	41394	40706	39775	38117	37146	38195	39486	39812
30°	38492	37822	37004	35318	34345	35402	36802	37057
31°	35868	35227	34445	32785	31885	32884	34306	34519
32°	33476	32802	32103	30469	29477	30598	32102	32242
33°	31243	30637	29895	28269	27082	28470	29942	30150
34°	29170	28576	27896	26221	24985	26482	28011	28174
35°	27256	26697	26038	24147	22913	24413	26225	26399
36°	25482	25013	24292	22177	21068	22459	24506	24766
37°	23788	23358	22665	20413	19469	20669	22924	23214
38°	22207	21892	21089	18641	18021	18887	21375	21802
39°	20677	20484	19611	17098	16810	17364	19941	20425
40°	19213	19108	18187	15756	15669	15993	18564	19084
41°	17870	17833	16854	14584	14621	14800	17248	17820
42°	16598	16540	15551	13636	13677	13851	15999	16558
43°	15449	15336	14274	12687	12733	12903	14743	15364
44°	14366	14217	13118	11740	11791	11957	13607	14236
45°	13364	13199	11962	10888	10933	11104	12471	13222
46°	12361	12183	10916	10044	10081	10252	11339	12211
47°	11359	11258	9960	9257	9289	9478	10350	11272
48°	10446	10379	9075	8529	8533	8726	9436	10407
49°	9568	9553	8262	7799	7808	8001	8584	9567

Luminous Intensity (cd) Distribution Data (cont.)

C y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
50°	8763	8736	7548	7134	7152	7345	7834	8770
51°	8022	8028	6894	6520	6512	6717	7174	8054
52°	7342	7343	6298	5947	5936	6155	6545	7361
53°	6723	6720	5754	5456	5409	5644	5990	6746
54°	6169	6178	5274	5007	4919	5171	5465	6184
55°	5656	5661	4862	4613	4518	4767	5035	5675
56°	5201	5217	4485	4263	4143	4388	4638	5229
57°	4820	4805	4162	3947	3837	4055	4284	4820
58°	4466	4428	3864	3672	3564	3763	3969	4455
59°	4144	4099	3593	3417	3287	3488	3682	4118
60°	3877	3790	3357	3174	3006	3236	3426	3815
61°	3622	3513	3120	2921	2755	2982	3173	3519
62°	3384	3263	2896	2691	2530	2744	2937	3260
63°	3165	3021	2678	2474	2332	2518	2714	3021
64°	2963	2804	2465	2269	2151	2308	2501	2791
65°	2767	2585	2280	2086	1986	2121	2305	2573
66°	2574	2379	2095	1919	1830	1949	2121	2367
67°	2390	2190	1921	1766	1678	1787	1942	2167
68°	2209	2000	1751	1616	1535	1633	1771	1976
69°	2036	1825	1577	1474	1391	1483	1592	1797
70°	1874	1648	1433	1333	1247	1338	1445	1625
71°	1716	1486	1289	1191	1103	1193	1297	1479
72°	1569	1342	1144	1045	978	1043	1150	1333
73°	1435	1199	1024	909	866	902	1023	1188
74°	1301	1070	901	800	763	794	901	1052
75°	1168	942	789	697	659	688	781	922
76°	1047	823	687	600	565	594	677	801
77°	932	716	575	509	472	504	567	693
78°	815	609	483	422	393	418	471	586
79°	697	507	401	347	321	344	390	487
80°	576	415	328	279	260	276	317	395
81°	462	327	264	225	209	221	253	310
82°	364	254	204	189	179	186	196	238
83°	273	203	167	153	148	150	154	188
84°	208	151	129	117	118	115	113	138
85°	143	99	93	102	103	100	88	89
86°	78	70	77	86	87	84	73	62
87°	45	49	58	60	58	56	55	42
88°	30	33	39	40	30	28	37	28
89°	16	17	20	21	1	1	19	14
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
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	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
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

Luminous Intensity (cd) Distribution Data (cont.)

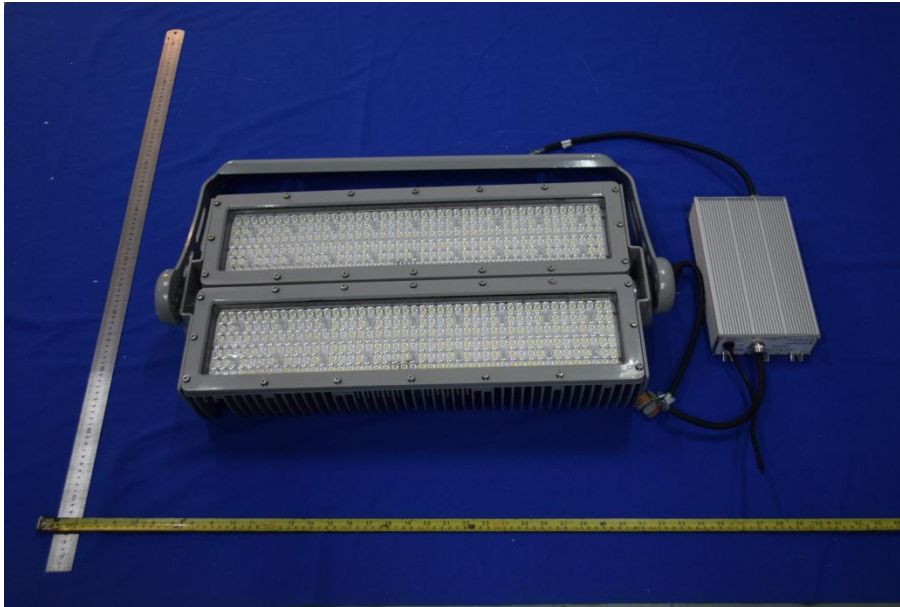
C \ Y	180°	202.5°	225°	247.5°	270°	292.5°	315°	337.5°
150°	0	0	0	0	0	0	0	0
151°	0	0	0	0	0	0	0	0
152°	0	0	0	0	0	0	0	0
153°	0	0	0	0	0	0	0	0
154°	0	0	0	0	0	0	0	0
155°	0	0	0	0	0	0	0	0
156°	0	0	0	0	0	0	0	0
157°	0	0	0	0	0	0	0	0
158°	0	0	0	0	0	0	0	0
159°	0	0	0	0	0	0	0	0
160°	0	0	0	0	0	0	0	0
161°	0	0	0	0	0	0	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)	%
0-5	5802.2	4.73
5-10	15978.9	13.02
10-15	21050.4	17.15
15-20	19394.6	15.80
20-25	14802.0	12.06
25-30	11456.6	9.33
30-35	9175.0	7.48
35-40	7219.4	5.88
40-45	5530.2	4.51
45-50	4035.7	3.29
50-55	2802.3	2.28
55-60	1967.7	1.60
60-65	1422.8	1.16
65-70	993.2	0.81
70-75	621.7	0.51
75-80	328.5	0.27
80-85	123.8	0.10
85-90	29.2	0.02
90-95	0.0	0.00
95-100	0.0	0.00
100-105	0.0	0.00
105-110	0.0	0.00
110-115	0.0	0.00
115-120	0.0	0.00
120-125	0.0	0.00
125-130	0.0	0.00
130-135	0.0	0.00
135-140	0.0	0.00
140-145	0.0	0.00
145-150	0.0	0.00
150-155	0.0	0.00
155-160	0.0	0.00
160-165	0.0	0.00
165-170	0.0	0.00
170-175	0.0	0.00
175-180	0.0	0.00

Deg	Flux (lm)	%
0-5	5802.2	4.73
0-10	21781.1	17.75
0-15	42831.5	34.90
0-20	62226.1	50.70
0-25	77028.0	62.76
0-30	88484.7	72.09
0-35	97659.7	79.57
0-40	104879.0	85.45
0-45	110409.2	89.96
0-50	114444.9	93.25
0-55	117247.2	95.53
0-60	119215.0	97.13
0-65	120637.8	98.29
0-70	121631.0	99.10
0-75	122252.7	99.61
0-80	122581.2	99.88
0-85	122705.0	99.98
0-90	122734.1	100.00
0-95	122734.1	100.00
0-100	122734.1	100.00
0-105	122734.1	100.00
0-110	122734.1	100.00
0-115	122734.1	100.00
0-120	122734.1	100.00
0-125	122734.1	100.00
0-130	122734.1	100.00
0-135	122734.1	100.00
0-140	122734.1	100.00
0-145	122734.1	100.00
0-150	122734.1	100.00
0-155	122734.1	100.00
0-160	122734.1	100.00
0-165	122734.1	100.00
0-170	122734.1	100.00
0-175	122734.1	100.00
0-180	122734.1	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. 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*****