LM-79-08 Test Report

For

RAB Lighting Inc.

(Brand Name:RAB Lighting)

408 W 14th St, New York, NY 10014 United States
Xiao Xiang,15921313292,Gary.Xiao@rablighting.com

Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model name(s): AL22-150[blank, SF, WM, UNV][blank, W][blank, / PIR, /MVS, /LCBS, /LCBS/MVS]

Model Different: All construction and rating are the same, except CCT

Test & Report By:

Winny Wu

Engineer: Winny Wu

Date: 2024-03-26

Review By:

Jason Luo

Manager: Jason Luo

1.1 Product Information:

Organization Name	RAB Lighting Inc.	
Brand Name	RAB Lighting	
Model Number	AL22-150[blank, SF, WM, UNV][blank, W][blank, /PIR, /MVS, /LCBS, /LCBS/MVS]	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Pole/Arm-Mounted Area and Roadway Luminaires	
Rated Voltage / Frequency	120-277Vac, 50/60 Hz	
Nominal Power	150W(Power adjustable)	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K, 5000K (Color tunable)	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-2880RC35005A1 L128-5780RC35005A1	
Sample Number	UTU2503014E-A1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		

1.2 Test Specifications:

Date of Receipt	2024-03-10
Date of Test	2024-03-12
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2019 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	BL-QP-033

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.
Goniophotometer far field detector f1'=1.42%, Test distance: 14.14m

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.Use 2m diameter integrated sphere (94-98% coating reflectance) and 4π geometry.
Self-absorption:
AST-S-GE12-150WBT3/T4/T5DA1-abcdWfg:1.2431

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25º C ± 1º C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-150 (Setting at 3000K T3)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	120.0	60	1.246	149.32	0.999	3.02
4E-A1	277.0	60	0.544	144.36	0.958	7.73
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

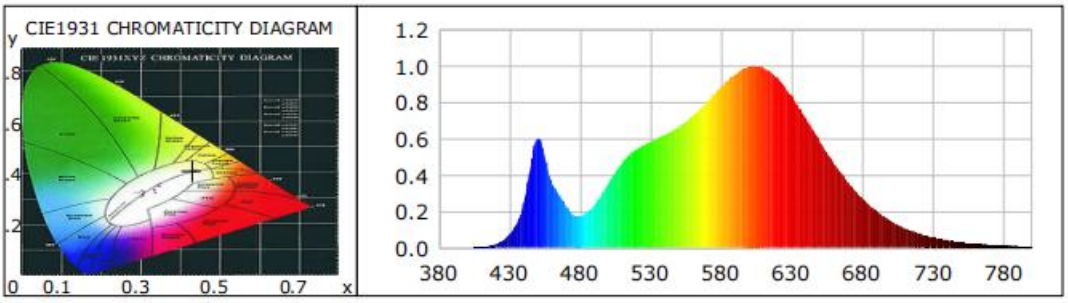
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3190
Duv	0.0031
Chromaticity (x, y)	x=0.4281 y=0.4086
Chromaticity (u', v')	u'=0.243 v'=0.5218
Color Rendering Index (CRI)	83
R9	10
Rf	86
Rg	96
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	82	R9	10
R2	89	R10	76
R3	97	R11	83
R4	83	R12	66
R5	81	R13	83
R6	87	R14	98
R7	86	R15	74
R8	63	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	21339.5	21153.0	>=10000(-10%)
Luminous Efficacy (lm/W)	142.91	146.53	Premium: >= 120(-3%)
Most worst Luminous/Highest	141.66		
Zonal lumens in the 0-90° zone (%)	100	--	Category 1: >=100(-1) Category 2: >=85(-3)
Zonal lumens in the 80-90°zone (%)	3.0	--	<=10(+3)
Beam Angle (°)	116.0	--	--
Center Beam Candle Power (cd)	5023	--	--

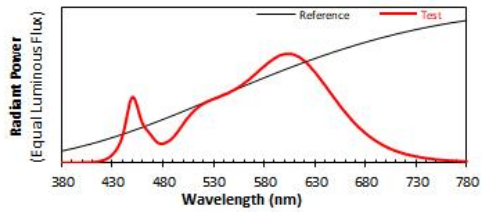
Spectral Power Distribution & Chromaticity Diagram

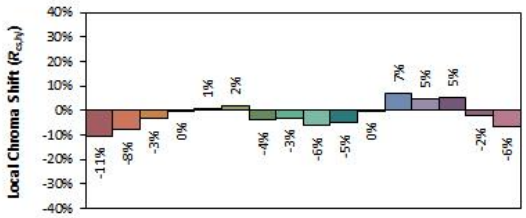


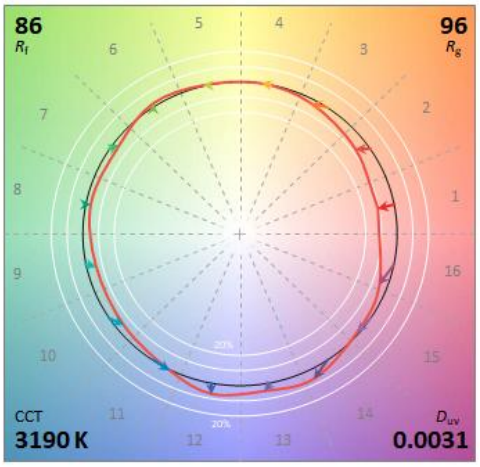
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.1983	535	0.5656	231.5778	690	0.3577	146.4480
385	0.0007	0.2820	540	0.5838	239.0255	695	0.3123	127.8703
390	0.0001	0.0436	545	0.6033	247.0461	700	0.2707	110.8614
395	0.0004	0.1643	550	0.6230	255.0863	705	0.2347	96.1137
400	0.0006	0.2601	555	0.6422	262.9616	710	0.2022	82.7990
405	0.0017	0.6874	560	0.6674	273.2659	715	0.1746	71.4912
410	0.0043	1.7801	565	0.6964	285.1521	720	0.1483	60.7184
415	0.0093	3.7981	570	0.7301	298.9531	725	0.1269	51.9722
420	0.0194	7.9252	575	0.7638	312.7514	730	0.1084	44.3890
425	0.0391	15.9919	580	0.8046	329.4448	735	0.0927	37.9612
430	0.0744	30.4823	585	0.8461	346.4348	740	0.0781	31.9819
435	0.1356	55.5158	590	0.8877	363.4945	745	0.0668	27.3360
440	0.2476	101.3674	595	0.9233	378.0515	750	0.0577	23.6171
445	0.4588	187.8489	600	0.9591	392.6989	755	0.0492	20.1410
450	0.6046	247.5760	605	0.9854	403.4846	760	0.0418	17.1084
455	0.5015	205.3405	610	0.9980	408.6519	765	0.0357	14.6252
460	0.3565	145.9701	615	0.9989	409.0317	770	0.0294	12.0273
465	0.2908	119.0551	620	0.9904	405.5524	775	0.0258	10.5735
470	0.2292	93.8438	625	0.9684	396.5410	780	0.0219	8.9823
475	0.1825	74.7341	630	0.9351	382.8768	785	0.0188	7.7150
480	0.1749	71.6061	635	0.8872	363.2841	790	0.0158	6.4727
485	0.1948	79.7548	640	0.8330	341.0981	795	0.0137	5.6090
490	0.2330	95.3908	645	0.7720	316.1239	800	0.0112	4.6035
495	0.2901	118.7970	650	0.7123	291.6420			
500	0.3565	145.9888	655	0.6466	264.7406			
505	0.4171	170.7716	660	0.5840	239.1151			
510	0.4701	192.4961	665	0.5220	213.7359			
515	0.5109	209.1772	670	0.4635	189.7998			
520	0.5419	221.8754	675	0.4082	167.1550			
525	0.5656	231.5778	680	0.3577	146.4480			
530	0.5838	239.0255	685	0.3123	127.8703			

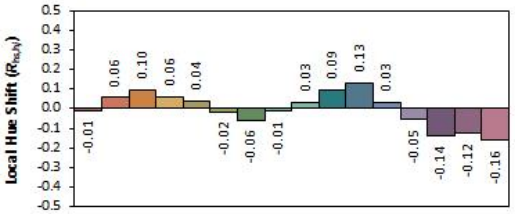
TM30

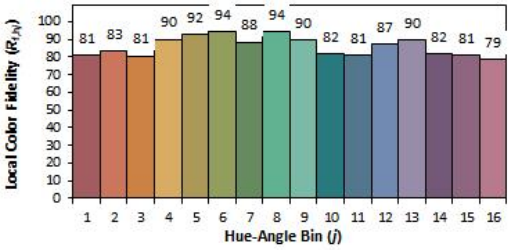
ANSI/IES TM-30-18 Color Rendition Report

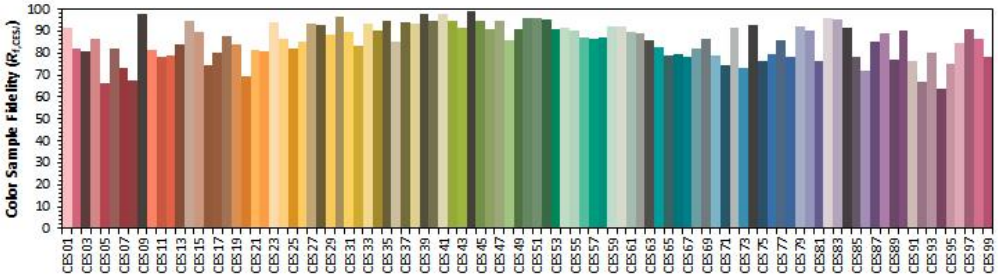












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4281
y	0.4086
u'	0.2430
v'	0.5218

CIE 13.3-1995 (CRI)

R_a	83
R_9	10

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Zonal Lumen Tabulation

Zonal Lumen Summary

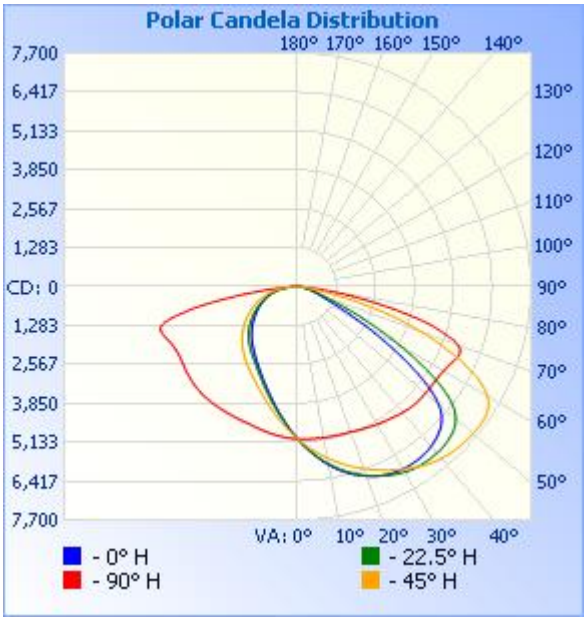
Zone	Lumens	% Lamp	% Luminaire
0-30	4,181.0	19.6%	19.6%
0-40	7,267.5	34.1%	34.1%
0-60	14,847.0	69.6%	69.6%
60-90	6,491.4	30.4%	30.4%
70-100	3,118.8	14.6%	14.6%
90-120	0	0%	0%
0-90	21,338.3	100%	100%
90-180	0	0%	0%
0-180	21,338.3	100%	100%

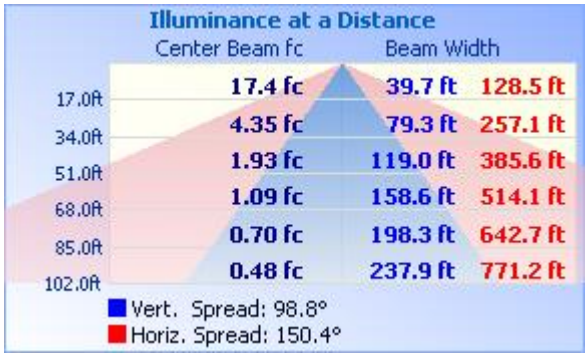
Lumens Per Zone

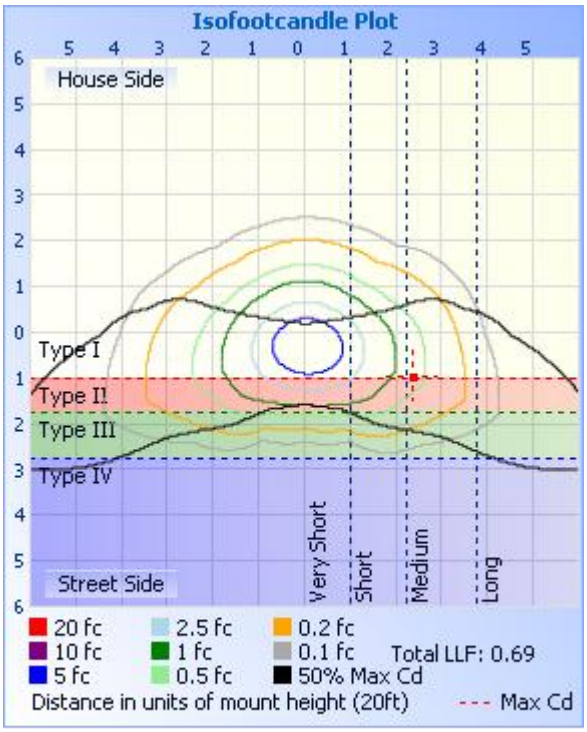
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	478.2	2.2%	90-100	0	0%
10-20	1,411.8	6.6%	100-110	0	0%
20-30	2,291.0	10.7%	110-120	0	0%
30-40	3,086.5	14.5%	120-130	0	0%
40-50	3,707.9	17.4%	130-140	0	0%
50-60	3,871.6	18.1%	140-150	0	0%
60-70	3,372.6	15.8%	150-160	0	0%
70-80	2,481.6	11.6%	160-170	0	0%
80-90	637.2	3.0%	170-180	0	0%

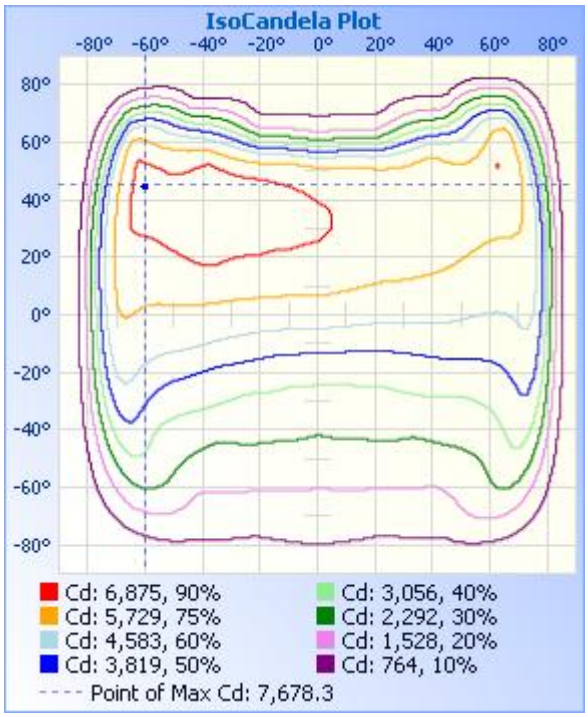
Certificate#4810.01

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023	5023
1	5126	5118	5098	5066	5028	4988	4953	4932	4919	4927	4949	4978	5018	5057	5090	5114	5126
2	5230	5213	5173	5107	5032	4953	4884	4839	4817	4833	4872	4935	5011	5089	5157	5205	5230
3	5324	5308	5248	5147	5034	4916	4815	4745	4714	4735	4797	4889	5005	5120	5224	5296	5324
4	5420	5399	5318	5188	5037	4878	4745	4654	4614	4643	4720	4844	4997	5151	5285	5384	5420
5	5518	5494	5392	5229	5040	4841	4673	4560	4515	4546	4644	4796	4986	5178	5348	5472	5518
6	5613	5582	5464	5270	5042	4806	4605	4471	4419	4455	4567	4752	4976	5206	5409	5557	5613
7	5706	5672	5533	5310	5044	4770	4537	4383	4323	4364	4493	4704	4965	5232	5470	5642	5706
8	5799	5763	5604	5352	5046	4733	4468	4297	4227	4274	4418	4657	4954	5258	5528	5724	5799
9	5888	5848	5674	5393	5049	4697	4401	4213	4136	4188	4347	4609	4940	5283	5585	5802	5888
10	5975	5934	5745	5434	5053	4661	4335	4130	4047	4103	4275	4563	4927	5308	5637	5881	5975
11	6058	6015	5814	5475	5056	4625	4270	4049	3960	4019	4204	4518	4914	5331	5692	5954	6058
12	6140	6096	5883	5520	5060	4590	4205	3969	3875	3938	4134	4472	4900	5353	5741	6025	6140
13	6216	6173	5951	5562	5063	4555	4144	3892	3793	3859	4067	4427	4887	5374	5792	6094	6216
14	6288	6247	6015	5606	5068	4520	4083	3817	3712	3781	4002	4383	4874	5394	5840	6159	6288
15	6357	6318	6082	5650	5070	4486	4022	3743	3635	3704	3935	4339	4860	5413	5887	6221	6357
16	6423	6386	6144	5693	5076	4451	3964	3674	3561	3632	3873	4296	4846	5434	5932	6277	6423
17	6484	6450	6209	5738	5084	4419	3907	3604	3489	3562	3810	4255	4833	5453	5973	6331	6484
18	6541	6514	6271	5784	5087	4387	3851	3537	3419	3494	3751	4214	4819	5473	6012	6381	6541
19	6595	6573	6331	5828	5091	4357	3795	3473	3351	3428	3693	4174	4810	5492	6048	6427	6595
20	6647	6631	6389	5875	5098	4327	3742	3412	3286	3364	3636	4136	4799	5512	6084	6472	6647
21	6695	6686	6448	5923	5113	4298	3692	3351	3222	3304	3581	4098	4791	5530	6119	6514	6695
22	6738	6735	6505	5972	5128	4270	3642	3291	3161	3242	3529	4062	4787	5549	6152	6552	6738
23	6779	6786	6562	6021	5144	4241	3596	3236	3102	3186	3479	4029	4783	5570	6182	6587	6779
24	6816	6831	6619	6072	5155	4211	3548	3181	3046	3130	3431	3997	4780	5586	6212	6616	6816
25	6849	6874	6675	6122	5168	4182	3503	3128	2991	3077	3384	3965	4776	5611	6241	6644	6849
26	6877	6917	6731	6174	5183	4161	3458	3076	2937	3026	3339	3934	4773	5639	6268	6670	6877

27	6899	6960	6784	6226	5197	4137	3415	3027	2886	2977	3295	3904	4769	5668	6295	6691	6899
28	6920	6999	6842	6278	5211	4112	3372	2980	2837	2929	3253	3875	4766	5694	6321	6709	6920
29	6938	7032	6894	6328	5224	4087	3330	2934	2788	2885	3212	3847	4765	5720	6345	6725	6938
30	6949	7064	6950	6381	5240	4062	3288	2891	2744	2842	3172	3820	4765	5743	6367	6737	6949
31	6956	7092	7007	6434	5256	4038	3245	2850	2699	2803	3133	3790	4766	5770	6391	6745	6956
32	6958	7114	7058	6489	5272	4014	3203	2808	2657	2764	3095	3763	4763	5795	6412	6748	6958
33	6958	7135	7110	6541	5291	3991	3161	2769	2615	2726	3057	3737	4762	5821	6431	6749	6958
34	6956	7149	7157	6597	5306	3968	3121	2731	2574	2688	3019	3709	4762	5848	6447	6748	6956
35	6950	7156	7208	6651	5320	3943	3079	2693	2534	2651	2979	3682	4759	5875	6467	6744	6950
36	6943	7162	7251	6705	5338	3918	3038	2656	2495	2615	2942	3654	4757	5904	6486	6737	6943
37	6929	7168	7293	6759	5356	3894	2996	2619	2456	2579	2905	3625	4755	5931	6500	6726	6929
38	6911	7167	7331	6812	5374	3869	2955	2583	2418	2544	2867	3598	4752	5955	6515	6711	6911
39	6889	7160	7364	6864	5392	3845	2914	2547	2380	2509	2828	3569	4749	5985	6529	6696	6889
40	6860	7157	7395	6916	5408	3820	2871	2511	2342	2474	2789	3539	4745	6011	6538	6681	6860
41	6830	7156	7424	6967	5426	3796	2829	2475	2304	2439	2751	3508	4742	6036	6544	6659	6830
42	6793	7146	7450	7011	5440	3771	2786	2439	2265	2403	2710	3480	4738	6060	6554	6635	6793
43	6753	7126	7468	7048	5454	3746	2743	2402	2226	2367	2668	3450	4731	6081	6560	6608	6753
44	6706	7106	7487	7085	5465	3718	2700	2364	2188	2330	2627	3418	4721	6099	6563	6577	6706
45	6650	7078	7498	7115	5475	3689	2658	2325	2147	2292	2585	3384	4714	6113	6564	6545	6650
46	6584	7050	7510	7137	5482	3658	2616	2286	2107	2252	2542	3352	4705	6127	6573	6507	6584
47	6499	7012	7521	7158	5486	3626	2573	2247	2066	2212	2501	3317	4693	6141	6579	6466	6499
48	6396	6963	7532	7177	5489	3593	2529	2205	2025	2171	2458	3280	4682	6153	6588	6416	6396
49	6265	6897	7542	7193	5489	3558	2485	2164	1984	2130	2415	3244	4669	6164	6597	6353	6265
50	6095	6810	7548	7204	5493	3520	2438	2120	1942	2086	2370	3204	4654	6171	6604	6274	6095
51	5878	6700	7552	7216	5494	3483	2393	2077	1899	2043	2325	3165	4639	6177	6607	6168	5878
52	5610	6556	7555	7232	5493	3445	2347	2032	1857	1998	2280	3126	4623	6186	6609	6032	5610
53	5294	6365	7552	7247	5495	3409	2299	1986	1815	1953	2234	3086	4608	6194	6613	5857	5294
54	4937	6129	7546	7264	5495	3371	2253	1940	1773	1907	2186	3046	4594	6202	6615	5640	4937
55	4548	5843	7537	7277	5497	3335	2204	1893	1730	1860	2138	3004	4578	6213	6614	5377	4548
56	4155	5512	7519	7290	5507	3301	2156	1843	1687	1814	2090	2963	4563	6225	6605	5071	4155
57	3743	5141	7482	7300	5514	3268	2107	1795	1646	1765	2041	2922	4547	6240	6588	4728	3743

58	3345	4748	7426	7314	5524	3237	2059	1746	1604	1718	1992	2880	4536	6258	6555	4366	3345
59	2960	4344	7346	7334	5539	3205	2007	1696	1562	1669	1942	2840	4529	6277	6499	3994	2960
60	2591	3936	7232	7355	5559	3178	1958	1646	1522	1620	1891	2800	4522	6300	6414	3611	2591
61	2246	3534	7084	7377	5584	3151	1907	1597	1482	1571	1839	2761	4518	6329	6306	3228	2246
62	1966	3127	6895	7408	5612	3129	1856	1547	1442	1521	1787	2725	4521	6356	6155	2857	1966
63	1686	2748	6668	7442	5642	3108	1805	1498	1402	1473	1733	2691	4526	6389	5972	2505	1686
64	1455	2386	6396	7482	5680	3092	1755	1447	1362	1423	1680	2657	4535	6428	5750	2216	1455
65	1264	2091	6100	7529	5722	3081	1704	1397	1322	1376	1629	2623	4553	6475	5489	1928	1264
66	1110	1798	5776	7581	5761	3074	1652	1348	1282	1327	1575	2591	4572	6528	5214	1641	1110
67	982	1505	5425	7629	5784	3073	1601	1299	1242	1279	1522	2562	4598	6591	4902	1410	982
68	881	1280	5067	7671	5779	3078	1549	1250	1202	1231	1471	2540	4635	6659	4588	1217	881
69	798	1095	4701	7678	5737	3081	1497	1199	1163	1181	1417	2525	4671	6736	4244	1057	798
70	725	949	4328	7631	5635	3076	1444	1149	1124	1132	1363	2517	4703	6806	3883	926	725
71	664	831	3947	7511	5462	3050	1391	1097	1087	1081	1306	2515	4729	6859	3512	821	664
72	607	734	3555	7350	5164	2990	1338	1047	1051	1030	1252	2515	4742	6899	3133	730	607
73	557	653	3142	7187	4866	2893	1285	995	1016	979	1197	2515	4733	6923	2776	653	557
74	509	582	2710	7032	4565	2774	1235	943	981	927	1146	2511	4674	6933	2428	585	509
75	466	520	2281	6876	4153	2629	1186	890	950	875	1096	2496	4532	6925	2125	526	466
76	424	465	1912	6680	3689	2457	1134	837	918	822	1045	2452	4291	6897	1823	472	424
77	384	415	1544	6366	3221	2271	1079	789	886	774	994	2374	3966	6829	1521	424	384
78	346	371	1175	5884	2742	2058	1007	741	846	728	935	2250	3595	6659	1254	380	346
79	309	329	907	5235	2287	1837	923	694	795	683	870	2090	3167	6280	1014	338	309
80	274	290	700	4460	1846	1599	848	647	733	637	805	1892	2685	5691	817	300	274
81	241	254	542	3606	1447	1355	785	600	660	593	748	1646	2187	4952	654	264	241
82	209	221	424	2760	1112	1123	725	553	582	550	690	1387	1776	4174	525	232	209
83	177	188	327	2109	826	906	655	491	499	495	623	1150	1365	3374	413	200	177
84	147	158	252	1460	627	701	558	429	417	440	539	934	1027	2582	318	168	147
85	118	127	192	812	428	496	461	366	334	385	454	720	739	1966	241	137	118
86	90	98	132	490	231	293	364	299	251	321	369	505	486	1353	179	108	90
87	65	71	85	243	125	150	246	226	168	238	269	291	286	740	118	81	65
88	41	45	47	136	57	57	109	132	88	152	158	137	196	354	71	53	41

89	21	21	19	31	25	19	17	21	18	36	47	44	108	238	35	28	21
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179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BUG Rating

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	2539.6	11.9	11.9
FM (30-60)	7270.9	34.1	34.1
FH (60-80)	3795.9	17.8	17.8
FVH (80-90)	363.0	1.7	1.7
BL (0-30)	1641.3	7.7	7.7
BM (30-60)	3396.9	15.9	15.9
BH (60-80)	2057.8	9.6	9.6
BVH (80-90)	274.0	1.3	1.3
UL (90-100)	0.0	0.0	0.0
UH (100-180)	0.0	0.0	0.0
Total	21339.4	100.0	100.0
BUG Rating	**B3-U0-G3**		

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-150 (Setting at 3000K T4)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301 4E-A1	120.0	60	1.188	142.37	0.999	3.06
	277.0	60	0.523	138.29	0.954	8.29
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

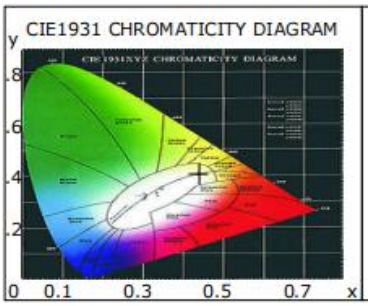
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3051
Duv	0.0040
Chromaticity (x, y)	x=0.439 y=0.4149
Chromaticity (u', v')	u'=0.2473 v'=0.5259
Color Rendering Index (CRI)	83
R9	9
Rf	86
Rg	95
Rcs,h1(%)	-11

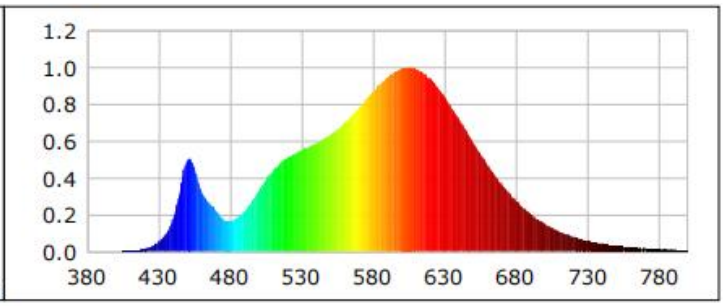
Special Color Rendering Indices			
R1	81	R9	9
R2	90	R10	77
R3	98	R11	83
R4	83	R12	66
R5	81	R13	83
R6	88	R14	99
R7	85	R15	73
R8	61	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	21746.2	21709.8	>=10000(-10%)
Luminous Efficacy (lm/W)	152.74	156.99	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	152.49		
Zonal lumens in the 0-90° zone (%)	100	--	Category 1: >=100(-1) Category 2: >=85(-3)
Zonal lumens in the 80-90°zone (%)	3.8	--	<=10(+3)
Beam Angle (°)	142.1	--	--
Center Beam Candle Power (cd)	4789	--	--

Spectral Power Distribution & Chromaticity Diagram

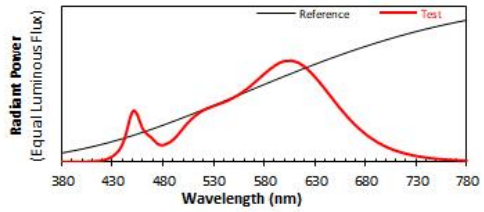


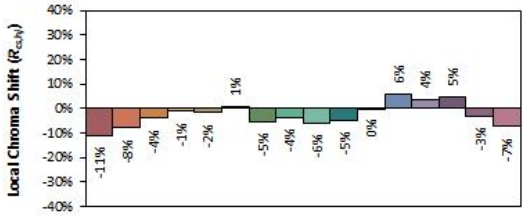


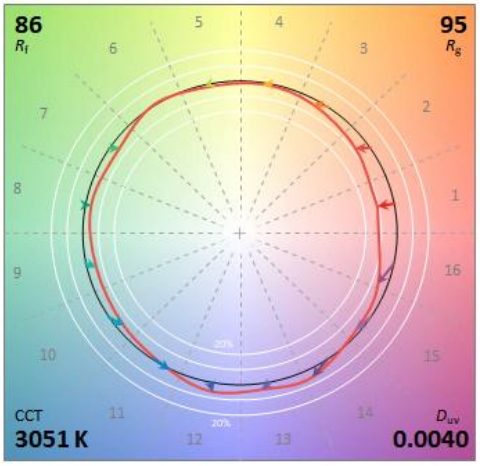
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0001	0.0483	535	0.5321	228.2458	690	0.3632	155.8201
385	0.0000	0.0167	540	0.5507	236.2352	695	0.3181	136.4525
390	0.0002	0.1066	545	0.5697	244.3654	700	0.2753	118.1042
395	0.0002	0.0754	550	0.5891	252.6926	705	0.2388	102.4226
400	0.0006	0.2707	555	0.6091	261.3033	710	0.2047	87.8114
405	0.0018	0.7537	560	0.6355	272.6199	715	0.1765	75.7062
410	0.0029	1.2307	565	0.6652	285.3485	720	0.1511	64.8328
415	0.0066	2.8282	570	0.7007	300.5893	725	0.1289	55.2966
420	0.0142	6.0989	575	0.7374	316.3167	730	0.1096	47.0178
425	0.0282	12.0948	580	0.7799	334.5435	735	0.0937	40.2098
430	0.0529	22.6938	585	0.8241	353.5249	740	0.0799	34.2730
435	0.0967	41.4747	590	0.8707	373.5192	745	0.0686	29.4070
440	0.1759	75.4684	595	0.9100	390.3387	750	0.0575	24.6704
445	0.3381	145.0269	600	0.9493	407.2205	755	0.0493	21.1583
450	0.4972	213.2667	605	0.9770	419.1055	760	0.0420	18.0050
455	0.4554	195.3582	610	0.9946	426.6334	765	0.0359	15.3863
460	0.3276	140.5112	615	0.9996	428.7872	770	0.0310	13.3051
465	0.2680	114.9440	620	0.9940	426.4014	775	0.0271	11.6099
470	0.2229	95.6053	625	0.9723	417.0893	780	0.0219	9.4076
475	0.1760	75.5094	630	0.9405	403.4243	785	0.0190	8.1712
480	0.1659	71.1729	635	0.8940	383.4776	790	0.0170	7.3037
485	0.1842	79.0201	640	0.8410	360.7406	795	0.0132	5.6610
490	0.2187	93.8085	645	0.7820	335.4658	800	0.0110	4.7384
495	0.2702	115.8926	650	0.7195	308.6275			
500	0.3313	142.1324	655	0.6555	281.2015			
505	0.3890	166.8484	660	0.5911	253.5762			
510	0.4390	188.3067	665	0.5287	226.7728			
515	0.4787	205.3322	670	0.4709	201.9992			
520	0.5089	218.2792	675	0.4144	177.7794			
525	0.5321	228.2458	680	0.3632	155.8201			
530	0.5507	236.2352	685	0.3181	136.4525			

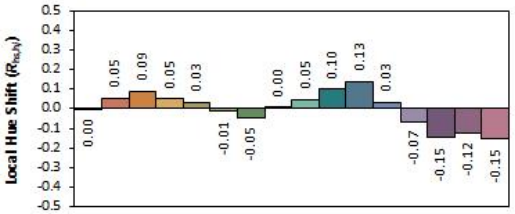
TM30

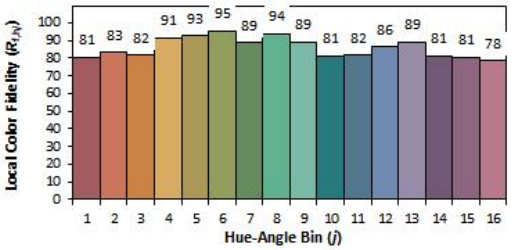
ANSI/IES TM-30-18 Color Rendition Report

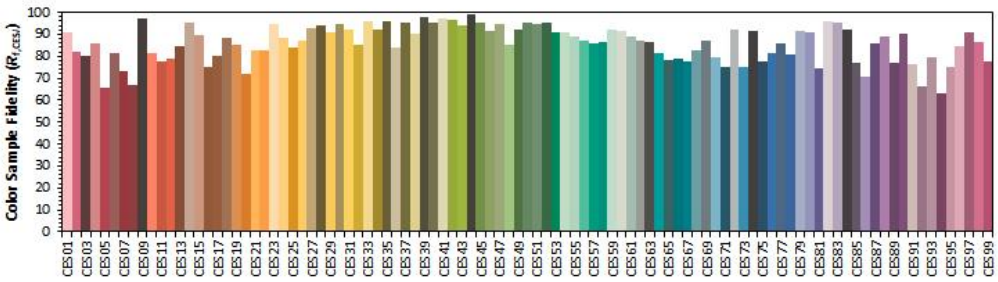












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4390
y	0.4149
u'	0.2473
v'	0.5259

CIE 13.3-1995 (CRI)

R_a	83
R_g	9

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Zonal Lumen Tabulation

Zonal Lumen Summary

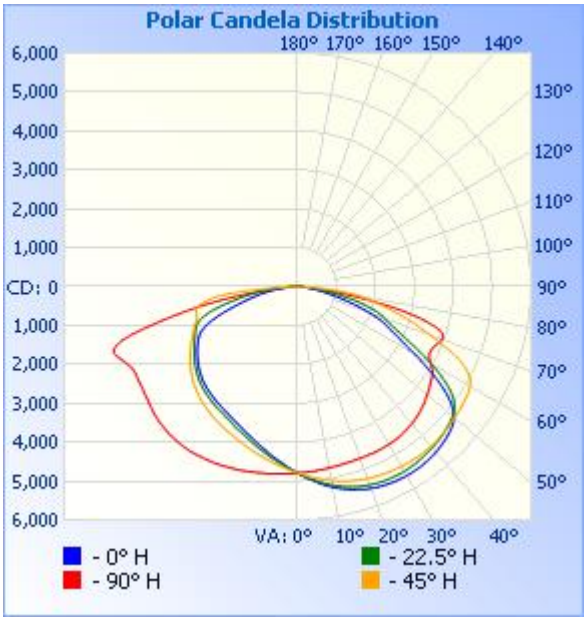
Zone	Lumens	% Lamp	% Luminaire
0-30	4,018.2	18.5%	18.5%
0-40	6,977.1	32.1%	32.1%
0-60	14,348.5	66%	66%
60-90	7,396.8	34%	34%
70-100	3,762.3	17.3%	17.3%
90-120	0	0%	0%
0-90	21,745.3	100%	100%
90-180	0	0%	0%
0-180	21,745.3	100%	100%

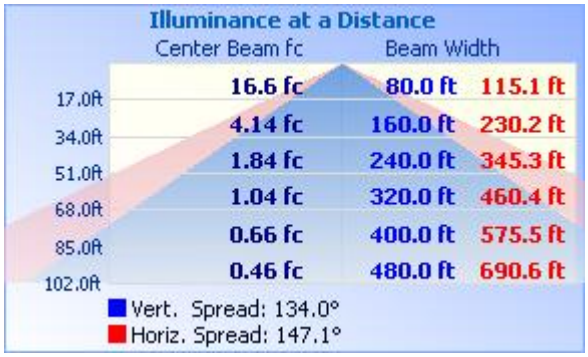
Lumens Per Zone

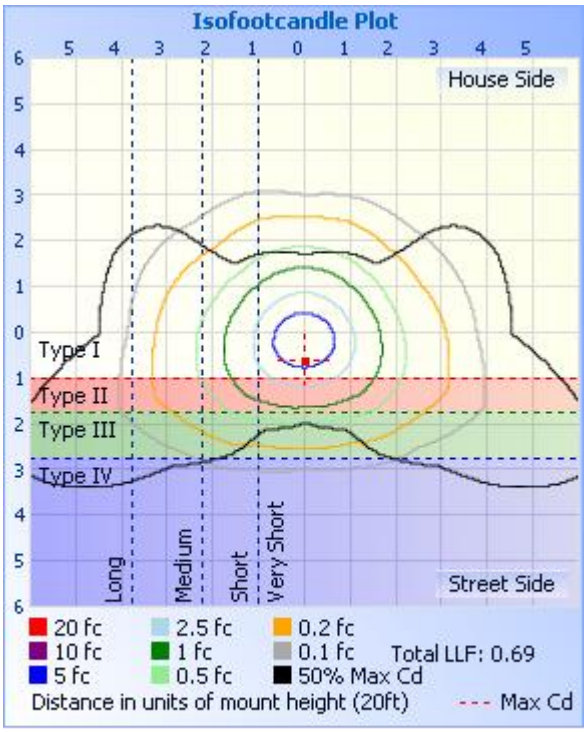
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	457.3	2.1%	90-100	0	0%
10-20	1,356.5	6.2%	100-110	0	0%
20-30	2,204.3	10.1%	110-120	0	0%
30-40	2,958.9	13.6%	120-130	0	0%
40-50	3,546.0	16.3%	130-140	0	0%
50-60	3,825.3	17.6%	140-150	0	0%
60-70	3,634.5	16.7%	150-160	0	0%
70-80	2,929.8	13.5%	160-170	0	0%
80-90	832.5	3.8%	170-180	0	0%

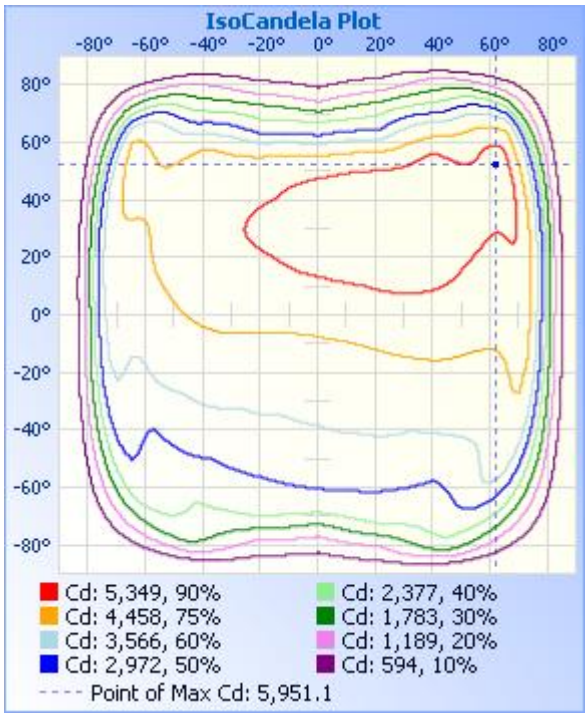
Certificate#4810.01

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789	4789
1	4842	4837	4814	4799	4784	4765	4748	4736	4742	4752	4758	4775	4798	4816	4827	4833	4842
2	4885	4871	4842	4814	4776	4742	4709	4694	4699	4712	4729	4766	4806	4839	4862	4878	4885
3	4935	4917	4874	4823	4771	4720	4674	4645	4651	4664	4704	4757	4814	4866	4904	4928	4935
4	4979	4955	4902	4835	4765	4692	4631	4605	4600	4623	4673	4745	4821	4894	4945	4968	4979
5	5025	4996	4929	4849	4762	4668	4603	4555	4552	4587	4649	4734	4829	4918	4984	5015	5025
6	5066	5034	4957	4862	4754	4644	4564	4513	4511	4547	4615	4725	4839	4945	5020	5063	5066
7	5112	5071	4984	4872	4746	4623	4524	4464	4465	4511	4599	4714	4848	4970	5059	5105	5112
8	5156	5109	5010	4884	4742	4596	4487	4423	4425	4467	4568	4705	4853	4993	5096	5146	5156
9	5193	5142	5038	4893	4734	4572	4454	4383	4381	4437	4539	4696	4864	5016	5134	5190	5193
10	5234	5179	5066	4908	4727	4550	4416	4342	4335	4395	4513	4687	4871	5044	5168	5231	5234
11	5271	5211	5089	4919	4721	4529	4383	4299	4290	4355	4484	4676	4879	5071	5203	5270	5271
12	5305	5241	5111	4927	4716	4507	4349	4261	4252	4319	4459	4665	4888	5093	5241	5306	5305
13	5338	5277	5132	4941	4712	4488	4312	4217	4213	4285	4429	4656	4898	5121	5272	5340	5338
14	5368	5299	5154	4949	4710	4467	4279	4176	4176	4250	4405	4646	4908	5147	5304	5374	5368
15	5399	5324	5173	4962	4704	4448	4245	4139	4133	4214	4381	4639	4918	5170	5333	5406	5399
16	5424	5351	5193	4973	4701	4428	4217	4102	4095	4177	4356	4630	4926	5198	5364	5433	5424
17	5451	5371	5207	4982	4699	4409	4183	4067	4057	4145	4331	4622	4939	5224	5394	5461	5451
18	5477	5389	5226	4995	4697	4393	4153	4031	4020	4112	4306	4611	4946	5249	5422	5487	5477
19	5501	5405	5238	5007	4696	4377	4118	3995	3990	4082	4280	4605	4957	5272	5450	5514	5501
20	5517	5422	5251	5018	4694	4356	4089	3961	3956	4049	4257	4600	4964	5298	5475	5538	5517
21	5537	5436	5263	5030	4697	4341	4059	3931	3924	4022	4234	4589	4973	5322	5501	5555	5537
22	5551	5447	5272	5041	4695	4326	4033	3900	3892	3995	4216	4580	4981	5347	5523	5573	5551
23	5562	5459	5286	5051	4692	4308	4000	3869	3860	3967	4190	4570	4991	5370	5549	5593	5562
24	5573	5468	5295	5062	4694	4295	3976	3838	3834	3940	4168	4561	5000	5396	5569	5606	5573
25	5582	5470	5302	5073	4695	4281	3947	3810	3809	3913	4147	4551	5010	5417	5594	5621	5582
26	5591	5475	5309	5084	4693	4265	3923	3783	3783	3884	4128	4544	5015	5442	5613	5632	5591
27	5597	5476	5319	5092	4692	4248	3898	3757	3761	3861	4109	4535	5021	5467	5631	5644	5597
28	5600	5481	5325	5102	4689	4236	3874	3736	3741	3839	4088	4525	5026	5492	5650	5653	5600

29	5606	5480	5331	5112	4683	4221	3852	3711	3717	3821	4067	4514	5030	5515	5670	5661	5606
30	5609	5480	5339	5119	4683	4207	3825	3690	3703	3798	4050	4499	5036	5539	5691	5668	5609
31	5612	5477	5340	5127	4680	4189	3801	3671	3681	3778	4027	4486	5040	5559	5708	5672	5612
32	5608	5473	5346	5133	4673	4172	3778	3649	3665	3762	4007	4477	5044	5580	5733	5674	5608
33	5605	5465	5348	5136	4666	4151	3759	3629	3647	3745	3990	4465	5048	5596	5753	5674	5605
34	5605	5462	5350	5139	4660	4132	3739	3610	3634	3730	3969	4448	5049	5614	5766	5673	5605
35	5596	5451	5355	5145	4650	4118	3721	3591	3618	3712	3945	4433	5046	5636	5782	5672	5596
36	5591	5441	5354	5148	4638	4093	3692	3573	3601	3694	3925	4417	5047	5649	5794	5668	5591
37	5579	5428	5353	5150	4625	4072	3668	3557	3583	3676	3906	4403	5046	5666	5806	5661	5579
38	5566	5417	5350	5150	4609	4047	3645	3539	3567	3660	3883	4385	5037	5681	5816	5655	5566
39	5557	5403	5348	5148	4597	4025	3617	3521	3549	3644	3862	4363	5033	5697	5825	5651	5557
40	5541	5395	5342	5150	4582	4001	3594	3503	3533	3626	3836	4345	5029	5710	5830	5640	5541
41	5527	5379	5340	5150	4564	3976	3569	3482	3513	3609	3815	4326	5025	5721	5838	5629	5527
42	5506	5365	5333	5145	4543	3946	3543	3463	3497	3590	3787	4311	5011	5729	5840	5622	5506
43	5487	5350	5324	5138	4523	3917	3518	3441	3473	3567	3762	4287	4999	5733	5840	5614	5487
44	5466	5334	5319	5129	4503	3886	3488	3417	3454	3548	3733	4261	4989	5740	5840	5602	5466
45	5440	5312	5312	5119	4481	3853	3457	3394	3435	3523	3703	4234	4979	5742	5835	5586	5440
46	5417	5296	5300	5108	4458	3818	3430	3368	3412	3501	3678	4208	4965	5742	5836	5570	5417
47	5384	5273	5293	5094	4435	3783	3400	3342	3383	3475	3651	4183	4951	5740	5836	5551	5384
48	5351	5250	5282	5083	4401	3749	3366	3317	3357	3450	3618	4151	4934	5738	5829	5527	5351
49	5307	5225	5269	5069	4370	3714	3337	3282	3333	3424	3580	4120	4915	5730	5825	5502	5307
50	5242	5195	5255	5056	4342	3678	3301	3254	3305	3393	3549	4092	4891	5720	5819	5477	5242
51	5160	5158	5245	5037	4312	3638	3268	3224	3270	3367	3518	4058	4871	5712	5818	5442	5160
52	5052	5110	5238	5021	4282	3600	3232	3193	3242	3334	3480	4028	4850	5703	5815	5399	5052
53	4925	5048	5230	5009	4253	3560	3199	3155	3214	3301	3445	3996	4829	5695	5810	5341	4925
54	4766	4959	5217	4996	4221	3524	3164	3125	3181	3268	3404	3966	4813	5684	5809	5257	4766
55	4581	4854	5205	4981	4193	3486	3124	3087	3146	3233	3367	3936	4799	5676	5800	5148	4581
56	4379	4714	5194	4967	4166	3446	3084	3058	3113	3201	3330	3906	4781	5672	5800	5004	4379
57	4162	4545	5182	4954	4129	3407	3049	3017	3080	3171	3290	3872	4767	5662	5793	4839	4162
58	3919	4366	5166	4942	4089	3372	3009	2982	3043	3133	3254	3844	4759	5658	5784	4651	3919
59	3708	4174	5149	4924	4024	3329	2967	2947	3008	3101	3212	3819	4753	5656	5770	4450	3708

60	3499	3956	5116	4892	3953	3289	2931	2914	2973	3064	3175	3797	4744	5655	5754	4232	3499
61	3293	3751	5077	4836	3884	3228	2888	2878	2931	3030	3139	3775	4734	5650	5720	3989	3293
62	3093	3540	5015	4771	3832	3162	2849	2844	2892	3002	3093	3750	4727	5641	5674	3767	3093
63	2935	3346	4929	4705	3801	3090	2807	2810	2849	2966	3054	3729	4733	5636	5606	3550	2935
64	2789	3150	4819	4658	3797	3022	2768	2779	2801	2936	3019	3714	4753	5633	5502	3342	2789
65	2660	2987	4678	4641	3805	2963	2728	2748	2735	2906	2984	3698	4787	5633	5381	3148	2660
66	2544	2826	4495	4647	3823	2927	2687	2716	2660	2880	2950	3699	4824	5639	5236	2987	2544
67	2421	2694	4275	4667	3853	2908	2646	2675	2563	2853	2912	3707	4874	5663	5069	2840	2421
68	2302	2567	4035	4701	3886	2899	2593	2630	2450	2823	2874	3728	4931	5706	4884	2707	2302
69	2149	2463	3829	4734	3920	2891	2532	2577	2294	2788	2843	3763	4977	5748	4663	2589	2149
70	1986	2383	3623	4771	3948	2892	2459	2504	2141	2738	2805	3807	5013	5802	4453	2508	1986
71	1813	2288	3412	4814	3955	2892	2396	2394	1974	2672	2763	3847	5002	5866	4227	2412	1813
72	1634	2183	3224	4853	3913	2901	2352	2271	1815	2576	2733	3877	4907	5915	3992	2317	1634
73	1452	2057	3036	4887	3815	2904	2325	2128	1662	2461	2713	3875	4710	5951	3744	2197	1452
74	1272	1915	2848	4901	3633	2894	2309	1976	1512	2328	2695	3814	4401	5945	3471	2057	1272
75	1126	1754	2669	4885	3406	2850	2292	1800	1389	2181	2687	3654	3997	5830	3252	1904	1126
76	992	1591	2482	4831	3121	2773	2275	1639	1272	2016	2682	3425	3593	5623	3052	1742	992
77	854	1428	2296	4720	2807	2669	2253	1483	1159	1830	2677	3156	3175	5360	2827	1567	854
78	741	1255	2123	4477	2384	2519	2214	1328	1044	1658	2656	2859	2802	5053	2622	1399	741
79	646	1079	1960	4081	1949	2313	2148	1156	940	1493	2609	2619	2425	4689	2430	1230	646
80	546	916	1809	3494	1584	2023	2065	1014	839	1340	2498	2335	2025	4204	2225	1076	546
81	464	780	1676	2879	1300	1715	1967	899	736	1192	2379	2042	1630	3657	2018	918	464
82	387	647	1512	2294	994	1463	1820	793	631	1062	2267	1707	1302	3038	1854	781	387
83	310	547	1292	1777	725	1196	1569	693	532	933	2105	1406	979	2306	1694	657	310
84	242	424	1063	1199	473	868	1315	584	438	809	1811	1077	724	1698	1488	536	242
85	183	328	798	812	302	594	955	479	350	663	1424	800	514	1213	1160	416	183
86	124	244	480	436	159	345	602	390	269	533	984	557	342	819	779	304	124
87	75	146	228	194	49	157	308	264	181	415	618	329	210	464	460	211	75
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96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BUG Rating

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	2217.0	10.2	10.2
FM (30-60)	6052.3	27.8	27.8
FH (60-80)	3688.9	17.0	17.0
FVH (80-90)	421.5	1.9	1.9
BL (0-30)	1801.1	8.3	8.3
BM (30-60)	4279.7	19.7	19.7
BH (60-80)	2874.7	13.2	13.2
BVH (80-90)	410.8	1.9	1.9
UL (90-100)	0.0	0.0	0.0
UH (100-180)	0.0	0.0	0.0
Total	21746.0	100.0	100.0
BUG Rating	**B4-U0-G4**		

2.3 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-150 (Setting at 3000K T5)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	120.0	60	1.235	148.07	0.999	3.16
4E-A1	277.0	60	0.541	143.63	0.958	8.24
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

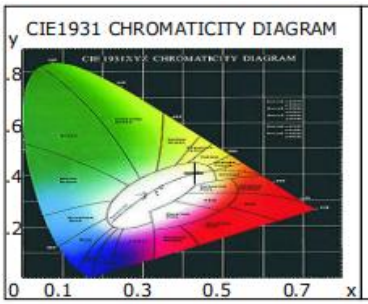
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3190
Duv	0.0031
Chromaticity (x, y)	x=0.4281 y=0.4084
Chromaticity (u', v')	u'=0.2431 v'=0.5218
Color Rendering Index (CRI)	83
R9	10
Rf	86
Rg	96
Rcs,h1(%)	-11

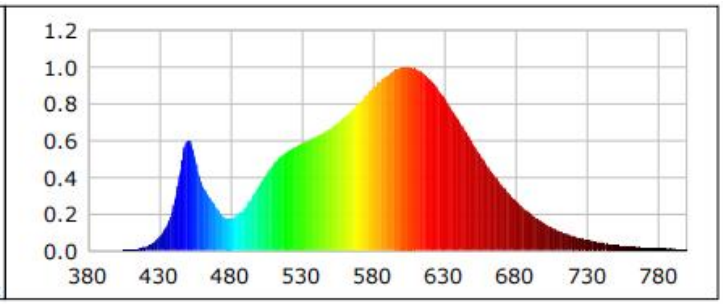
Special Color Rendering Indices			
R1	82	R9	10
R2	89	R10	76
R3	97	R11	83
R4	83	R12	66
R5	81	R13	83
R6	87	R14	98
R7	86	R15	74
R8	62	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	20526.9	20502.8	>=10000(-10%)
Luminous Efficacy (lm/W)	138.63	142.75	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	138.47		
Zonal lumens in the 0-90° zone (%)	100	--	Category 1: >=100(-1) Category 2: >=85(-3)
Zonal lumens in the 80-90°zone (%)	4.9	--	<=10(+3)
Beam Angle (°)	150.6	--	--
Center Beam Candle Power (cd)	4167	--	--

Spectral Power Distribution & Chromaticity Diagram

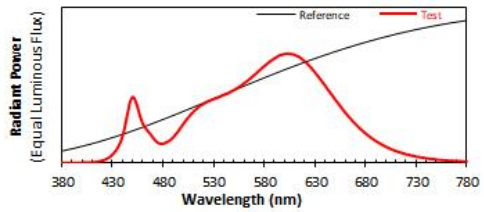


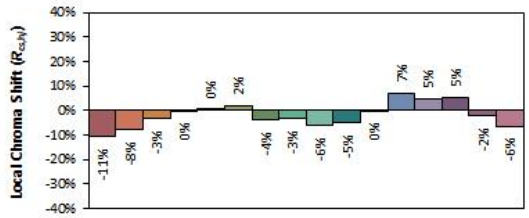


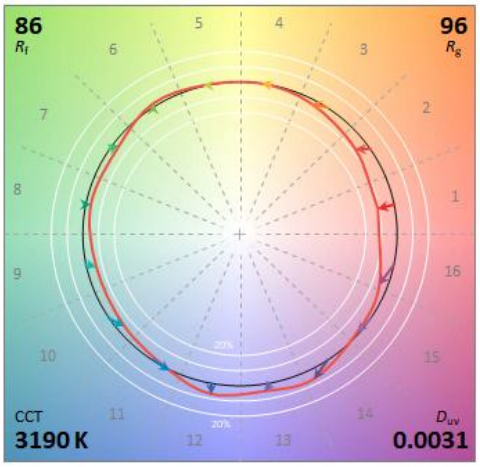
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0009	0.3561	535	0.5646	231.3916	690	0.3562	145.9777
385	0.0010	0.4111	540	0.5827	238.8260	695	0.3115	127.6561
390	0.0004	0.1451	545	0.6020	246.7094	700	0.2705	110.8754
395	0.0005	0.1894	550	0.6217	254.8078	705	0.2342	95.9655
400	0.0009	0.3581	555	0.6405	262.5167	710	0.2012	82.4423
405	0.0020	0.8010	560	0.6665	273.1546	715	0.1734	71.0725
410	0.0041	1.6676	565	0.6954	284.9815	720	0.1480	60.6645
415	0.0095	3.8855	570	0.7295	298.9639	725	0.1266	51.8933
420	0.0197	8.0814	575	0.7642	313.1900	730	0.1083	44.4009
425	0.0392	16.0803	580	0.8033	329.2095	735	0.0925	37.8909
430	0.0742	30.4017	585	0.8457	346.5973	740	0.0791	32.4170
435	0.1356	55.5686	590	0.8875	363.7376	745	0.0680	27.8789
440	0.2451	100.4621	595	0.9227	378.1396	750	0.0569	23.3377
445	0.4553	186.5999	600	0.9578	392.5395	755	0.0490	20.1001
450	0.6037	247.4075	605	0.9842	403.3787	760	0.0418	17.1398
455	0.5038	206.4893	610	0.9977	408.8912	765	0.0354	14.5199
460	0.3591	147.1806	615	0.9993	409.5419	770	0.0302	12.3793
465	0.2912	119.3359	620	0.9891	405.3529	775	0.0261	10.6843
470	0.2310	94.6874	625	0.9676	396.5745	780	0.0219	8.9777
475	0.1832	75.0960	630	0.9315	381.7594	785	0.0184	7.5332
480	0.1757	72.0159	635	0.8852	362.8040	790	0.0164	6.7226
485	0.1950	79.9274	640	0.8314	340.7239	795	0.0139	5.7064
490	0.2325	95.3025	645	0.7699	315.5529	800	0.0111	4.5691
495	0.2897	118.7464	650	0.7100	290.9998			
500	0.3554	145.6748	655	0.6452	264.4164			
505	0.4155	170.2786	660	0.5805	237.9098			
510	0.4689	192.1870	665	0.5207	213.4029			
515	0.5101	209.0605	670	0.4611	188.9695			
520	0.5403	221.4269	675	0.4067	166.6890			
525	0.5646	231.3916	680	0.3562	145.9777			
530	0.5827	238.8260	685	0.3115	127.6561			

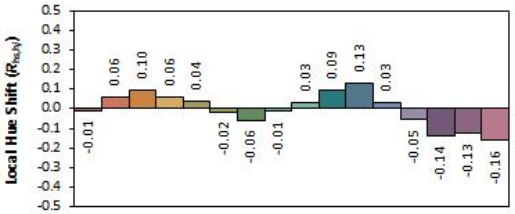
TM30

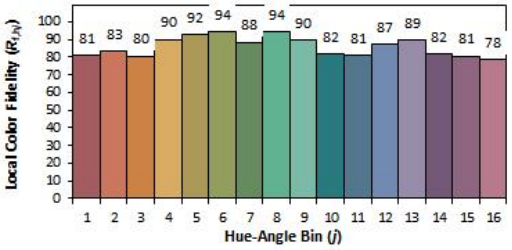
ANSI/IES TM-30-18 Color Rendition Report

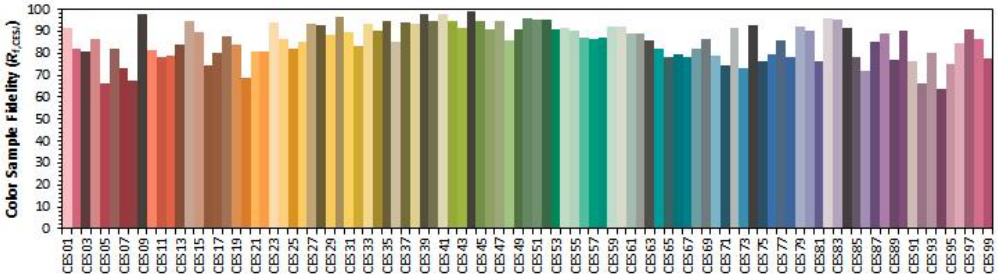












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.4281
y	0.4084
u'	0.2431
v'	0.5218

CIE 13.3-1995 (CRI)

R_a	83
R_9	10

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

Zonal Lumen Tabulation

Zonal Lumen Summary

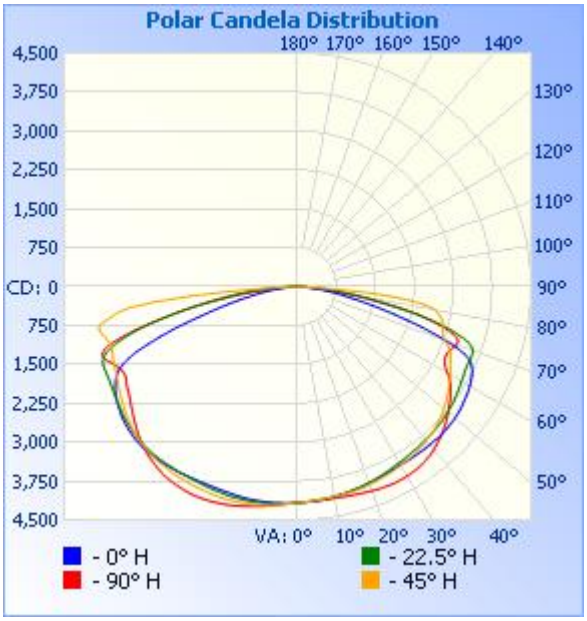
Zone	Lumens	% Lamp	% Luminaire
0-30	3,533.3	17.2%	17.2%
0-40	6,151.0	30%	30%
0-60	12,773.7	62.2%	62.2%
60-90	7,752.7	37.8%	37.8%
70-100	4,148.2	20.2%	20.2%
90-120	0	0%	0%
0-90	20,526.4	100%	100%
90-180	0	0%	0%
0-180	20,526.4	100%	100%

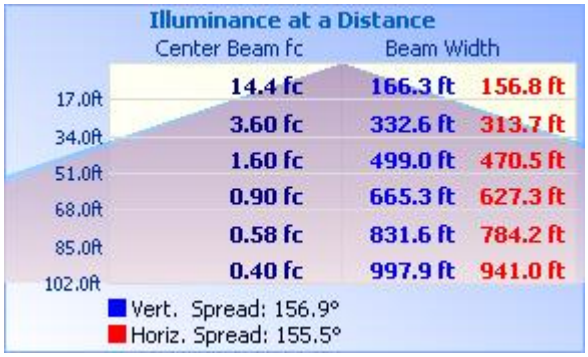
Lumens Per Zone

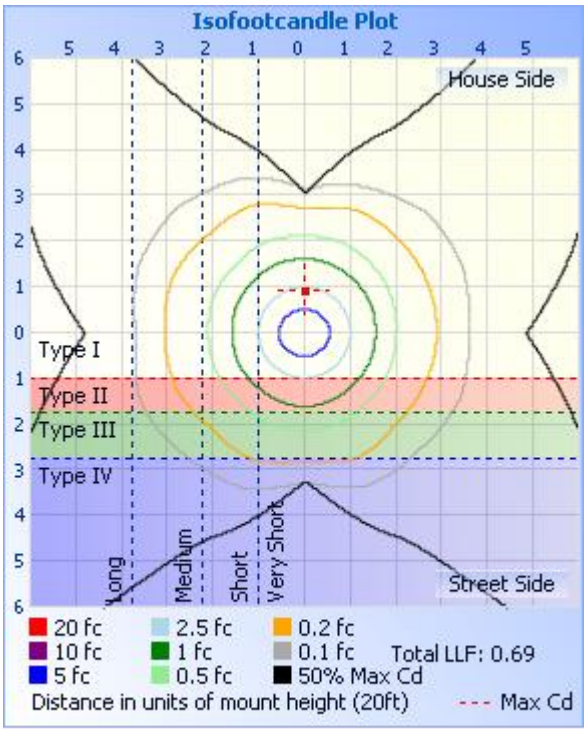
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	398.9	1.9%	90-100	0	0%
10-20	1,190.4	5.8%	100-110	0	0%
20-30	1,944.0	9.5%	110-120	0	0%
30-40	2,617.6	12.8%	120-130	0	0%
40-50	3,149.5	15.3%	130-140	0	0%
50-60	3,473.2	16.9%	140-150	0	0%
60-70	3,604.5	17.6%	150-160	0	0%
70-80	3,138.1	15.3%	160-170	0	0%
80-90	1,010.1	4.9%	170-180	0	0%

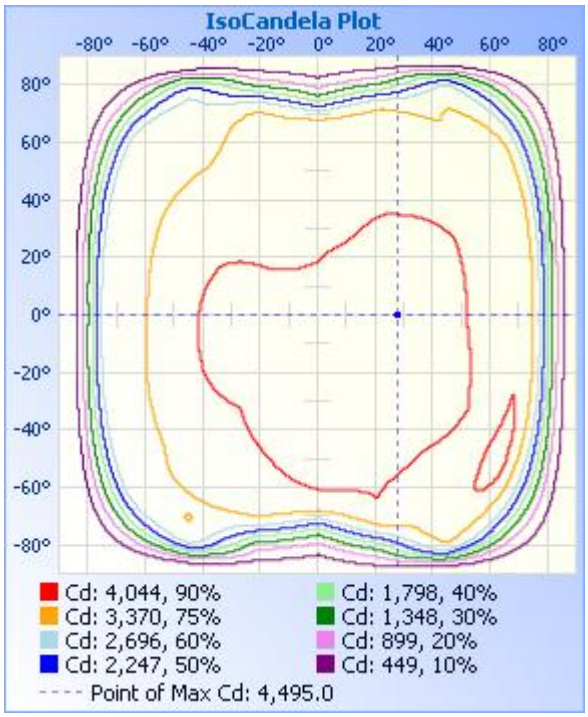
Certificate#4810.01

Photometric Data









Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167	4167
1	4164	4159	4161	4153	4158	4162	4166	4166	4172	4175	4176	4175	4177	4174	4172	4165	4164
2	4158	4152	4153	4148	4154	4159	4162	4169	4176	4183	4187	4185	4187	4182	4176	4166	4158
3	4155	4147	4144	4140	4152	4157	4163	4168	4178	4190	4198	4199	4197	4193	4179	4165	4155
4	4147	4141	4140	4134	4147	4154	4164	4167	4181	4196	4209	4211	4211	4200	4184	4165	4147
5	4146	4133	4134	4130	4146	4156	4162	4170	4186	4200	4221	4227	4223	4212	4190	4165	4146
6	4139	4127	4125	4127	4142	4151	4161	4171	4188	4209	4229	4239	4239	4224	4193	4164	4139
7	4130	4121	4122	4125	4143	4148	4163	4172	4192	4216	4242	4254	4254	4236	4200	4162	4130
8	4129	4115	4117	4122	4139	4150	4160	4172	4195	4221	4249	4269	4266	4249	4206	4162	4129
9	4122	4108	4113	4121	4139	4152	4159	4175	4195	4226	4259	4282	4283	4261	4209	4160	4122
10	4114	4101	4111	4120	4140	4152	4159	4173	4198	4232	4272	4297	4297	4271	4214	4157	4114
11	4107	4094	4107	4118	4141	4153	4159	4172	4198	4234	4279	4314	4311	4284	4219	4155	4107
12	4097	4089	4100	4117	4145	4157	4159	4172	4197	4238	4289	4326	4329	4295	4225	4148	4097
13	4093	4082	4097	4117	4149	4160	4159	4167	4200	4239	4298	4340	4345	4309	4229	4145	4093
14	4084	4072	4093	4120	4154	4164	4156	4169	4199	4240	4302	4352	4361	4322	4233	4140	4084
15	4079	4064	4093	4123	4158	4166	4157	4164	4198	4240	4307	4365	4375	4339	4236	4136	4079
16	4069	4054	4084	4125	4164	4171	4155	4161	4194	4242	4312	4377	4391	4347	4238	4129	4069
17	4062	4050	4080	4127	4169	4176	4152	4160	4195	4241	4316	4392	4404	4359	4236	4127	4062
18	4049	4038	4073	4128	4174	4179	4151	4157	4190	4244	4320	4404	4420	4369	4239	4118	4049
19	4042	4031	4066	4133	4183	4183	4149	4152	4189	4242	4324	4413	4431	4378	4242	4113	4042
20	4033	4021	4059	4135	4188	4184	4145	4146	4191	4238	4324	4421	4441	4385	4242	4106	4033
21	4025	4014	4052	4136	4196	4188	4140	4149	4190	4238	4327	4427	4452	4394	4240	4101	4025
22	4018	4001	4045	4138	4204	4192	4137	4147	4191	4237	4326	4437	4463	4399	4237	4094	4018
23	4009	3992	4035	4141	4208	4195	4130	4144	4193	4238	4328	4446	4471	4404	4235	4085	4009
24	4002	3980	4029	4141	4212	4200	4129	4141	4193	4234	4328	4455	4479	4412	4231	4077	4002
25	3994	3969	4021	4143	4219	4205	4125	4140	4199	4234	4325	4459	4485	4417	4229	4068	3994
26	3986	3960	4013	4142	4223	4204	4120	4136	4202	4233	4329	4467	4490	4421	4223	4059	3986
27	3980	3948	4006	4141	4223	4208	4111	4136	4206	4230	4330	4469	**4495**	4426	4217	4050	3980
28	3981	3937	3996	4140	4224	4210	4107	4133	4210	4232	4331	4471	4493	4428	4210	4040	3981

29	3973	3928	3986	4136	4222	4209	4102	4133	4216	4234	4328	4470	4491	4429	4203	4035	3973
30	3968	3920	3976	4133	4217	4206	4097	4134	4225	4235	4326	4471	4488	4431	4196	4028	3968
31	3964	3912	3968	4127	4215	4204	4092	4134	4230	4236	4325	4469	4484	4427	4190	4024	3964
32	3968	3906	3957	4116	4208	4198	4086	4133	4240	4240	4324	4468	4481	4424	4184	4015	3968
33	3969	3896	3948	4110	4201	4191	4087	4140	4247	4243	4327	4464	4474	4413	4177	4008	3969
34	3967	3885	3938	4101	4193	4185	4083	4140	4255	4244	4322	4462	4467	4408	4173	4003	3967
35	3968	3877	3927	4088	4183	4179	4081	4139	4263	4246	4320	4459	4458	4400	4167	3997	3968
36	3969	3873	3916	4075	4168	4170	4079	4135	4271	4251	4315	4451	4445	4389	4158	3987	3969
37	3971	3867	3904	4064	4149	4158	4068	4139	4277	4254	4314	4444	4431	4377	4152	3979	3971
38	3970	3859	3893	4048	4134	4144	4064	4143	4285	4257	4312	4434	4413	4369	4138	3976	3970
39	3974	3853	3880	4027	4113	4132	4056	4141	4287	4259	4308	4425	4394	4357	4124	3973	3974
40	3972	3849	3865	4010	4090	4120	4051	4138	4292	4258	4305	4415	4377	4342	4116	3967	3972
41	3972	3845	3854	3992	4067	4101	4043	4137	4297	4261	4298	4403	4356	4330	4101	3960	3972
42	3975	3836	3837	3974	4040	4083	4034	4133	4300	4262	4288	4390	4331	4310	4090	3953	3975
43	3975	3830	3820	3951	4014	4064	4024	4127	4301	4258	4284	4375	4302	4290	4071	3947	3975
44	3975	3820	3805	3926	3988	4044	4014	4122	4300	4254	4270	4357	4277	4270	4058	3940	3975
45	3974	3813	3784	3901	3956	4018	3999	4115	4300	4250	4260	4341	4247	4250	4040	3932	3974
46	3973	3806	3763	3876	3925	3998	3988	4106	4296	4247	4248	4323	4221	4225	4016	3923	3973
47	3967	3802	3745	3849	3893	3974	3975	4100	4293	4241	4234	4301	4195	4203	4001	3913	3967
48	3961	3792	3724	3820	3857	3947	3960	4089	4282	4235	4221	4274	4160	4173	3983	3903	3961
49	3959	3780	3703	3798	3823	3924	3941	4075	4271	4226	4204	4256	4126	4147	3960	3894	3959
50	3952	3771	3677	3761	3783	3895	3921	4065	4263	4217	4189	4238	4089	4122	3940	3879	3952
51	3945	3760	3650	3735	3748	3868	3906	4053	4250	4206	4168	4212	4059	4095	3914	3863	3945
52	3938	3753	3627	3703	3711	3845	3883	4040	4235	4195	4151	4193	4026	4069	3890	3848	3938
53	3929	3742	3600	3673	3677	3817	3861	4024	4222	4182	4133	4166	3989	4042	3866	3838	3929
54	3916	3727	3574	3642	3639	3786	3841	4006	4203	4169	4107	4145	3960	4013	3833	3826	3916
55	3901	3713	3542	3607	3597	3755	3820	3990	4179	4154	4083	4125	3930	3983	3808	3809	3901
56	3886	3699	3516	3572	3558	3730	3793	3975	4160	4144	4062	4098	3897	3958	3780	3795	3886
57	3877	3689	3483	3544	3519	3704	3771	3955	4139	4130	4037	4079	3869	3932	3751	3782	3877
58	3863	3674	3456	3510	3474	3673	3749	3938	4113	4118	4015	4061	3845	3910	3724	3767	3863
59	3850	3660	3426	3478	3417	3649	3726	3922	4085	4103	3994	4039	3826	3885	3693	3753	3850

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61	3814	3639	3366	3392	3268	3562	3678	3891	4023	4077	3950	4012	3775	3839	3645	3734	3814
62	3794	3628	3339	3333	3214	3509	3653	3874	3980	4069	3927	3997	3750	3817	3614	3722	3794
63	3771	3615	3309	3265	3173	3434	3635	3859	3939	4058	3905	3980	3739	3793	3584	3714	3771
64	3747	3606	3282	3193	3156	3369	3609	3849	3883	4052	3889	3960	3746	3771	3560	3711	3747
65	3709	3604	3251	3146	3154	3325	3586	3836	3797	4051	3870	3949	3763	3749	3534	3710	3709
66	3665	3606	3221	3120	3158	3294	3566	3817	3693	4048	3858	3959	3795	3735	3513	3717	3665
67	3598	3606	3194	3114	3174	3288	3544	3793	3542	4046	3841	3972	3841	3738	3490	3726	3598
68	3474	3612	3146	3111	3201	3283	3511	3757	3354	4041	3829	4003	3893	3756	3466	3730	3474
69	3285	3610	3084	3117	3232	3289	3457	3691	3092	4021	3814	4057	3949	3782	3447	3731	3285
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71	2774	3549	2968	3150	3273	3311	3350	3430	2550	3903	3782	4164	3984	3879	3412	3692	2774
72	2506	3455	2940	3167	3238	3334	3335	3235	2271	3773	3773	4220	3921	3926	3390	3612	2506
73	2214	3303	2924	3198	3143	3362	3339	3006	1980	3609	3778	4248	3772	3964	3376	3479	2214
74	1949	3116	2918	3200	3000	3370	3353	2731	1750	3408	3802	4213	3533	3975	3369	3286	1949
75	1695	2894	2914	3167	2816	3337	3371	2473	1543	3172	3828	4087	3245	3912	3373	3065	1695
76	1479	2634	2895	3080	2591	3271	3396	2209	1351	2910	3863	3865	2951	3758	3383	2821	1479
77	1263	2379	2858	2971	2346	3188	3401	1958	1178	2611	3895	3590	2625	3529	3375	2554	1263
78	1092	2095	2819	2819	2022	3042	3378	1708	1014	2332	3915	3270	2338	3260	3372	2279	1092
79	940	1792	2762	2592	1690	2821	3305	1449	881	2063	3887	2986	2047	2990	3355	1985	940
80	802	1513	2718	2266	1402	2506	3189	1233	761	1817	3749	2709	1735	2700	3284	1729	802
81	657	1300	2631	1899	1146	2158	3070	1063	642	1572	3610	2378	1424	2404	3145	1490	657
82	541	1106	2467	1612	908	1852	2861	906	542	1367	3477	1986	1159	2084	2986	1254	541
83	432	899	2155	1282	689	1524	2474	766	442	1174	3225	1642	899	1758	2796	1046	432
84	338	711	1848	916	475	1137	1981	621	359	982	2731	1255	680	1343	2480	862	338
85	253	556	1432	646	308	772	1439	497	278	787	2081	940	491	1007	2025	683	253
86	169	402	819	392	159	483	870	386	200	622	1357	653	340	728	1371	474	169
87	95	227	359	215	53	233	416	247	137	460	787	393	213	467	779	329	95
88	33	82	105	36	20	55	98	111	71	278	290	198	118	249	331	161	33
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180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BUG Rating

Lum. Classification System (LCS)

LCS Zone		Lumens	%Lamp	%Lum
FL	(0-30)	1748.5	8.5	8.5
FM	(30-60)	4508.9	22.0	22.0
FH	(60-80)	3290.1	16.0	16.0
FVH	(80-90)	489.7	2.4	2.4
BL	(0-30)	1784.8	8.7	8.7
BM	(30-60)	4732.9	23.1	23.1
BH	(60-80)	3451.7	16.8	16.8
BVH	(80-90)	520.3	2.5	2.5
UL	(90-100)	0.0	0.0	0.0
UH	(100-180)	0.0	0.0	0.0
Total		20526.9	100.0	100.0
BUG Rating		**B4-U0-G4**		

2.4 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-150 (Setting at 4000K T5)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	120.0	60	1.186	142.19	0.999	3.12
4E-A1	277.0	60	0.517	137.38	0.959	8.15
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3862
Duv	0.0001
Chromaticity (x, y)	x=0.3868 y=0.3808
Chromaticity (u', v')	u'=0.2276 v'=0.5043
Color Rendering Index (CRI)	84
R9	17
Rf	85
Rg	98
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	83	R9	17
R2	89	R10	75
R3	94	R11	85
R4	85	R12	64
R5	83	R13	85
R6	86	R14	97
R7	87	R15	77
R8	68	--	--
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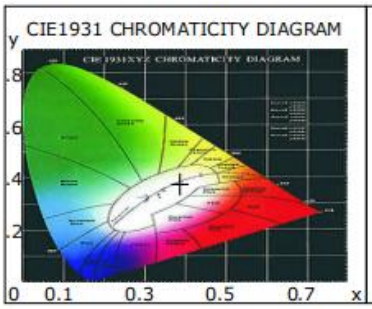
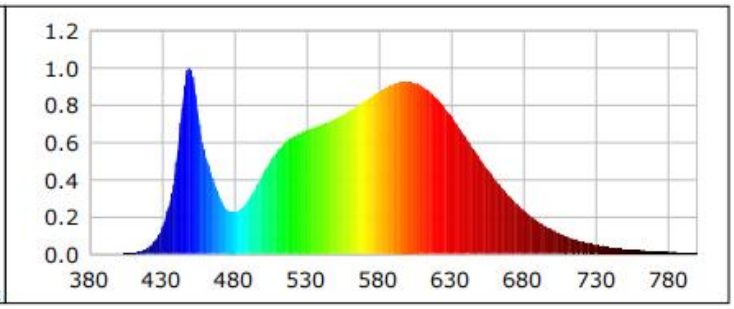
Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	21108.1	20914.7	>=10000(-10%)
Luminous Efficacy (lm/W)	148.45	152.24	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	147.09		

Spectral Power Distribution & Chromaticity Diagram

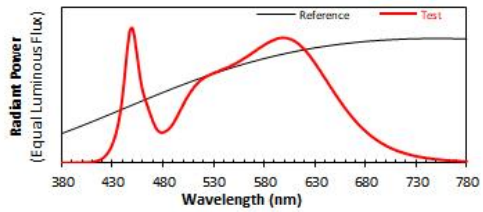


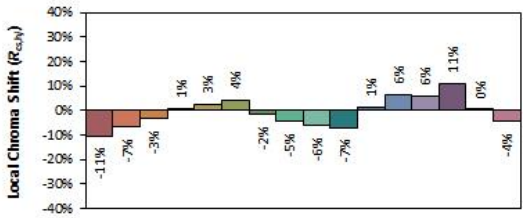


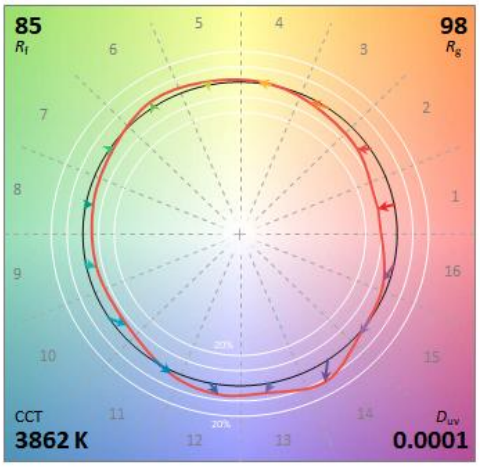
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0008	0.3312	535	0.6476	269.4150	690	0.3116	129.6378
385	0.0003	0.1211	540	0.6627	275.6999	695	0.2708	112.6400
390	0.0005	0.2156	545	0.6796	282.7424	700	0.2344	97.5097
395	0.0010	0.4055	550	0.6946	288.9800	705	0.2030	84.4413
400	0.0010	0.4194	555	0.7094	295.1308	710	0.1736	72.2167
405	0.0021	0.8900	560	0.7286	303.1111	715	0.1495	62.1945
410	0.0059	2.4527	565	0.7500	312.0086	720	0.1283	53.3755
415	0.0138	5.7504	570	0.7730	321.5729	725	0.1092	45.4397
420	0.0313	13.0402	575	0.7966	331.3800	730	0.0926	38.5347
425	0.0682	28.3552	580	0.8229	342.3510	735	0.0798	33.2007
430	0.1381	57.4406	585	0.8490	353.1944	740	0.0680	28.3070
435	0.2644	109.9743	590	0.8734	363.3363	745	0.0575	23.9232
440	0.4940	205.5227	595	0.8926	371.3540	750	0.0492	20.4872
445	0.8625	358.8081	600	0.9119	379.3674	755	0.0417	17.3592
450	0.9935	413.3283	605	0.9235	384.1754	760	0.0353	14.6963
455	0.7595	315.9550	610	0.9261	385.2546	765	0.0307	12.7648
460	0.5311	220.9415	615	0.9181	381.9442	770	0.0265	11.0175
465	0.4126	171.6606	620	0.9028	375.5842	775	0.0225	9.3713
470	0.3059	127.2755	625	0.8746	363.8377	780	0.0188	7.8364
475	0.2370	98.6149	630	0.8381	348.6823	785	0.0161	6.6890
480	0.2246	93.4304	635	0.7913	329.1815	790	0.0138	5.7245
485	0.2455	102.1444	640	0.7393	307.5739	795	0.0105	4.3564
490	0.2909	121.0087	645	0.6838	284.4908	800	0.0096	4.0097
495	0.3577	148.8100	650	0.6262	260.4946			
500	0.4318	179.6316	655	0.5684	236.4506			
505	0.4981	207.2205	660	0.5101	212.2136			
510	0.5535	230.2851	665	0.4555	189.4916			
515	0.5952	247.5948	670	0.4036	167.9039			
520	0.6252	260.0762	675	0.3549	147.6237			
525	0.6476	269.4150	680	0.3116	129.6378			
530	0.6627	275.6999	685	0.2708	112.6400			

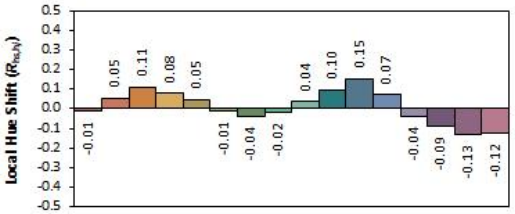
TM30

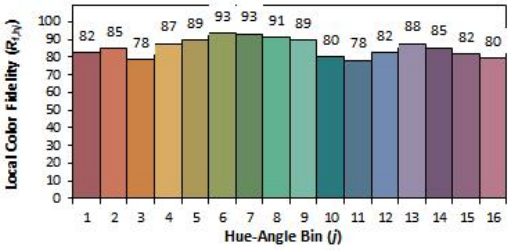
ANSI/IES TM-30-18 Color Rendition Report

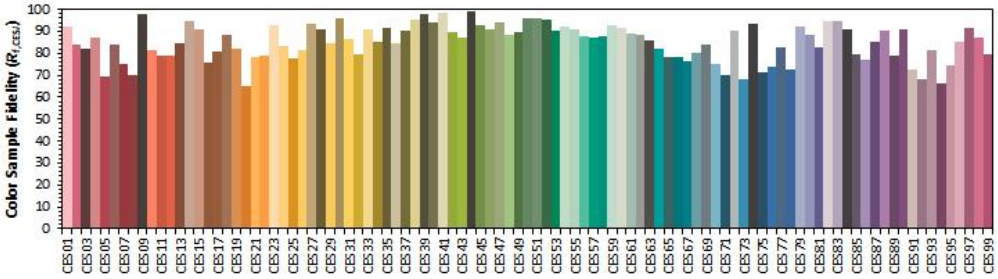












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3868
y	0.3808
u'	0.2276
v'	0.5043

CIE 13.3-1995 (CRI)

R_a	84
R_9	17

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

2.5 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction BL-QP-033)

Test date	2024-03-12	Test Ambient:	25.2 ° C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AL22-150 (Setting at 5000K T5)	Operation time(min)	110

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
UTU250301	120.0	60	1.221	146.19	0.998	3.06
4E-A1	277.0	60	0.534	141.75	0.958	8.23
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

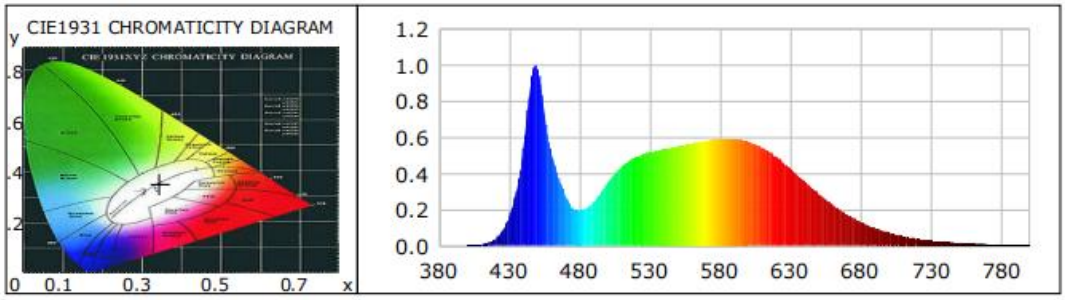
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	4946
Duv	0.0003
Chromaticity (x, y)	x=0.3467 y=0.3536
Chromaticity (u', v')	u'=0.2117 v'=0.4859
Color Rendering Index (CRI)	83
R9	13
Rf	83
Rg	98
Rcs,h1(%)	-11

Special Color Rendering Indices			
R1	82	R9	13
R2	87	R10	69
R3	90	R11	83
R4	84	R12	58
R5	82	R13	83
R6	82	R14	95
R7	88	R15	77
R8	70	--	--
--	--	--	--
--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria
Test Voltage (V)	120.0	277.0	--
Frequency (Hz)	60	60	
Total Luminous (lm)	20723.9	20654.4	>=10000(-10%)
Luminous Efficacy (lm/W)	141.76	145.71	Premium: >= 120(-3%)
Most worst Luminous/Highest Watts	141.28		

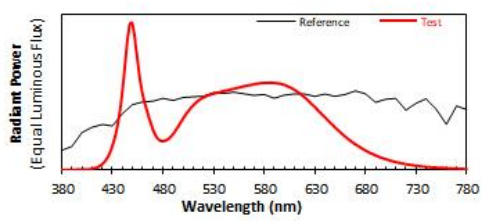
Spectral Power Distribution & Chromaticity Diagram

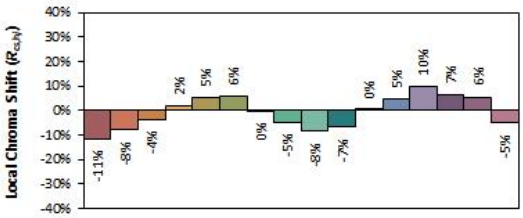


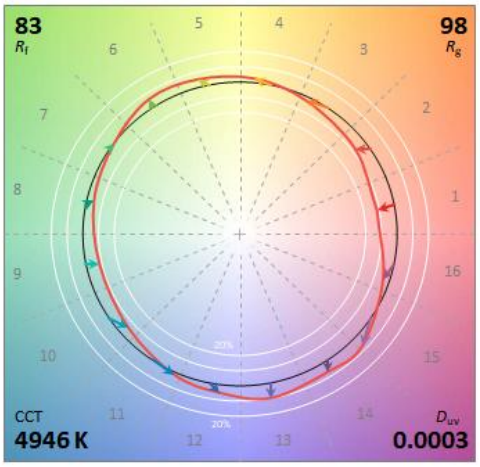
WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.1378	535	0.5065	291.7092	690	0.1736	100.0059
385	0.0006	0.3624	540	0.5161	297.2586	695	0.1520	87.5546
390	0.0004	0.2352	545	0.5255	302.6832	700	0.1315	75.7260
395	0.0008	0.4343	550	0.5351	308.2001	705	0.1134	65.3383
400	0.0016	0.9467	555	0.5422	312.2784	710	0.0977	56.2541
405	0.0023	1.2990	560	0.5503	316.9417	715	0.0839	48.3175
410	0.0068	3.9390	565	0.5593	322.1280	720	0.0724	41.6894
415	0.0167	9.6198	570	0.5672	326.6920	725	0.0616	35.4816
420	0.0385	22.1489	575	0.5733	330.2168	730	0.0524	30.1592
425	0.0814	46.8929	580	0.5813	334.8047	735	0.0445	25.6069
430	0.1632	94.0169	585	0.5875	338.3553	740	0.0377	21.7256
435	0.3024	174.1518	590	0.5905	340.1167	745	0.0333	19.1770
440	0.5432	312.8571	595	0.5910	340.3749	750	0.0275	15.8444
445	0.8931	514.3703	600	0.5909	340.3341	755	0.0238	13.7211
450	0.9838	566.5990	605	0.5862	337.6367	760	0.0202	11.6164
455	0.7307	420.8290	610	0.5771	332.3615	765	0.0175	10.0753
460	0.5075	292.2925	615	0.5610	323.0791	770	0.0147	8.4818
465	0.3812	219.5714	620	0.5429	312.6660	775	0.0138	7.9415
470	0.2734	157.4481	625	0.5209	299.9903	780	0.0108	6.2173
475	0.2104	121.1907	630	0.4915	283.1056	785	0.0092	5.3235
480	0.1952	112.4538	635	0.4601	265.0226	790	0.0081	4.6710
485	0.2083	119.9573	640	0.4263	245.5299	795	0.0070	4.0567
490	0.2427	139.7844	645	0.3903	224.7946	800	0.0052	3.0135
495	0.2944	169.5622	650	0.3568	205.4994			
500	0.3499	201.5345	655	0.3209	184.8172			
505	0.3985	229.4972	660	0.2876	165.6466			
510	0.4403	253.6185	665	0.2561	147.4788			
515	0.4708	271.1479	670	0.2272	130.8358			
520	0.4911	282.8335	675	0.1984	114.2517			
525	0.5065	291.7092	680	0.1736	100.0059			
530	0.5161	297.2586	685	0.1520	87.5546			

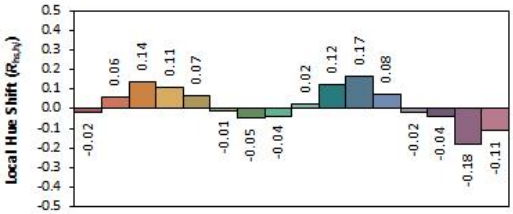
TM30

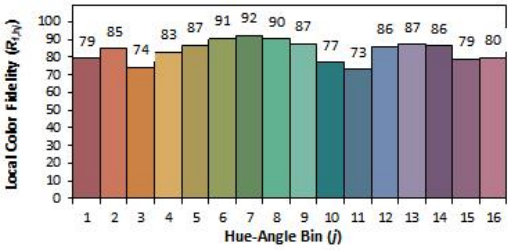
ANSI/IES TM-30-18 Color Rendition Report

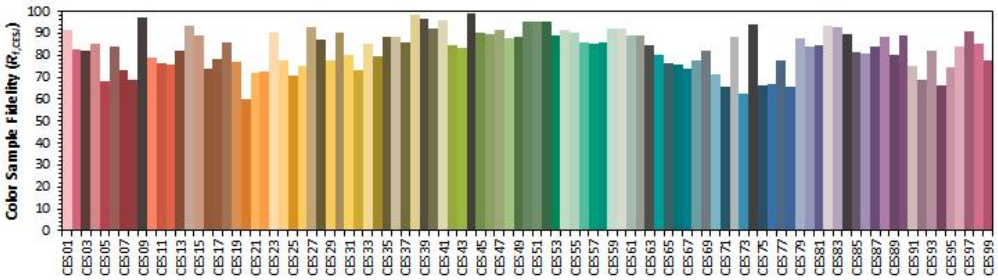












Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x	0.3467
y	0.3536
u'	0.2117
v'	0.4859

CIE 13.3-1995 (CRI)

R_a	83
R_9	13

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3. Test Equipment

Equipment Name	Model No.	Serial No.	Calibration Date
Goniophotometeric System	GPM-3000	DYHXF120001	2025-01-08
AC Power Source	CHP-500C	DYBWD010159	2025-01-02
Standard Lamp*	24V/150W	DYJYR040040	2025-01-14
Standard Lamp**	24V/100W	DYBWR030014	2025-01-14
Digital Power Meter	WT500	DYDWQ20010	2025-01-02
Integral Sphere (2M)	2M	DYJCE120067	2025-01-08
Digital Power Meter	WT500	DYDWQ200006	2025-01-02
Optical Color and Electrical Measurement System	CMS-3000S	DYJCE120067	2025-01-08

* Reference standard lamp (150W incandescent directional lamp) calibrated by Guangzhou Institute of Measurement and Testing Technology.

** Reference standard lamp (100W incandescent omni-directional lamp) calibrated by Guangzhou Institute of Measurement and Testing Technology.

Expand Uncertainty:

Photometric Measurement (Sphere): 2.02%, k=2

Chromaticity Measurement(Sphere):24.8K, k=2

Photometric Measurement(Goniophotometer):2.88%, k=2

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